DESIGNING THE ECONOMY:
A PROFILE OF ONTARIO'S DESIGN WORKFORCE

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Meric S. Gertler and **Tara Vinodrai**

Department of Geography &
Munk Centre for International Studies
University of Toronto

March 2004

PREPARED FOR THE
DESIGN INDUSTRY ADVISORY COMMITTEE (DIAC)

Contact information:

Meric S. Gertler
Department of Geography
University of Toronto

Phone: (416) 978-1591
Fax: (416) 946-3886
E-mail: meric.gertler@utoronto.ca

Tara Vinodrai
Department of Geography
University of Toronto

Phone: (416) 946-3054
Fax: (416) 946-3886
E-mail: tara.vinodrai@utoronto.ca

Executive Summary

In recent years, we have come to appreciate the growing importance of creativity in shaping economic success. For firms in all sectors, whether they are in the arts, services, traditional manufacturing, or high-tech, competitive success depends increasingly on their ability to tap into and unleash the creative ideas of their workforce. Design constitutes one of the most important manifestations of the creative process.

Current research suggests that there is an intimate connection between creativity and cities. On the one hand, cities have always served as the principal sites for the production and display of creative products and activities. At the same time, recent evidence suggests that the local presence of a critical mass of creative activities and people is a necessary condition for a city's innovative dynamism and overall economic success. Design, as one of the most critical elements of creative activity, has assumed an ever more important position as part of the urban creative economy.

Despite its growing significance, our knowledge of design – its size and importance in the provincial and urban economies, its occupational composition, the demographic and ethnic make-up of the design workforce, and its contribution to the success of a wide range of economic activities – remains poorly developed. This report provides a comprehensive overview and analysis of Ontario's design workforce.

The analysis in this report is statistical in nature and is based on data collected by Statistics Canada and the US Bureau of Labor Statistics. The analysis focuses on six design occupations: architects, landscape architects, industrial designers, graphic designers, interior designers, and theatre, fashion, exhibit, and other creative designers. Given the important relationship between creativity and cities, we rank Ontario's cities against other major metropolitan centres in Canada and the United States. We introduce a unique, new measure called the Design Index to capture the concentration and critical mass of designers in various urban centres.

The most striking findings emerging from our research are outlined below:

1. *Ontario has a large, urban-based design workforce* - There are 40,050 designers in Ontario. Almost 90% of Ontario's designers work in one of Ontario's major urban centres and two-thirds of designers can be found in Toronto.

2. *Ontario's design workforce is growing*. Between 1987 and 2002, growth of Ontario's design workforce significantly outpaced the growth of the overall workforce. Over the past ten years, the design workforce grew at a rate of 4.6% per year, more than four times the rate of the overall workforce.

3. *Ontario's design workforce is distinctive*. Almost half of the design workforce is comprised of graphic designers. The design workforce is younger than the overall labour force in Ontario. The design workforce is slightly more male-dominated than the Ontario workforce as a whole; this is most pronounced amongst architects, landscape architects, and industrial designers. There are similar proportions of immigrants in Ontario's design workforce and the overall workforce.

4. *Designers work in almost every sector of the economy*. Designers can be found in manufacturing, retail, information and cultural industries, and many other sectors. Fewer than half of designers work in design or architectural firms. In other words, designers now work in almost every corner of the Ontario economy. This implies that design is a vital input to the competitive success of firms in a wide range of sectors.

5. *Design work is precarious*. Three times as many designers are self-employed compared to Ontario's overall labour force and almost 22% of designers work at home, as compared to only 6% of the overall labour force. There is also evidence that design work is increasingly being outsourced. This suggests that design work can be quite contingent for individuals working in this field, making economic survival difficult.

6. *Ontario's design workforce is well educated*. The design workforce has higher levels of formal education (college or university) than the overall workforce in Ontario: 34% of designers have a university degree as compared to only 22% of the overall workforce. However, few designers have doctorate-level education.

7. *The educational backgrounds of designers are diverse*. While 53% of designers have formal education or training with a specialization in the fine and applied arts or engineering and applied sciences, the remainder has a variety of educational backgrounds that include specializations in areas such as the social sciences and humanities, business, and mathematics, computer and physical sciences.

8. *Income levels vary amongst designers*. Levels of income vary by design discipline, employment status, education level, gender, and age.

    - *Design discipline* - Architects have the highest average employment income, followed by industrial designers and landscape architects. However, graphic designers, interior designers, and other designers all have average employment incomes below that of the labour force as a whole.
    - *Employment status* - Self-employed designers (with the exception of architects) have lower income levels than those who work for an employer. This pattern is in keeping with that for Ontario's labour force as a whole.
    - *Education* - While income generally increases with level of formal education, this trend is less noticeable for the design workforce. There is virtually no difference in levels of income amongst designers without a university degree. The increase in income associated with a university degree is significant but is less pronounced for designers than for the overall workforce.
    - *Gender and age* - There is a gender gap between the income of male and female designers, but this gap is smaller than for Ontario's labour force as whole. This gender gap is more pronounced for architects, landscape architects, and industrial designers. Finally, while it is generally understood that average employment income increases with age and experience, this is true for men in the design workforce but less the case for women in the design workforce.

9. *Toronto has a critical mass of designers*. Toronto has the largest critical mass of designers in Canada – both in terms of absolute and relative size. Toronto has the 3rd largest design workforce in North America, following New York and Boston. Toronto ranks 4th on the Design Index, behind San Francisco, Boston, and New York.

Our findings raise a number of issues for public policy:

First, the fact that designers can be found in almost every corner of the economy suggests that design is a vital input into the success of firms in a wide range of sectors. At a time when there is an emerging consensus about the rising importance of design to innovation and competitiveness, the challenge for

public policy is to find effective ways to highlight the importance of designers' contributions to the competitiveness and innovativeness of firms.

Second, the performance of Toronto (and Ontario) in our analysis of the geography of design is quite noteworthy. The significance of these results should not be overlooked. The key question for policy makers is: how can we capitalize on these impressive rankings to market and re-brand Toronto, Ontario, and Canada as centres for design and creativity? This represents an unparalleled opportunity to remake our image worldwide.

Third, given the increasingly contingent and precarious nature of design work, and acknowledging that there is increasing competition between places for talent, how will the sector continue to attract and retain highly skilled and talented designers?

Finally, investments in higher education appear to be valued in the design labour market. However, educational trajectories for some of the design disciplines have traditionally not led to the completion of a four-year degree program. The question that arises is whether it makes sense to enact strategies that encourage higher levels of educational attainment within the design workforce?

Despite the significant challenges we have identified above, this report clearly suggests that Ontario has a large and vibrant design workforce. Ontario is home to one of the largest design clusters in North America. However, this remains a relatively unexplored and under appreciated asset. Ontario's design sector represents a significant opportunity to unleash the creativity and competitiveness of this region.

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1 Design and Creativity in Ontario

In recent years, we have come to appreciate the growing importance of creativity in shaping economic success. For firms in all sectors, whether they are in the arts, services, traditional manufacturing, or high-tech, competitive success depends increasingly on their ability to tap into and unleash the creative ideas of their workforce. Design constitutes one of the most important manifestations of the creative process, since it helps firms to meet their clients' needs more effectively. Furthermore, in today's knowledge-based economy, competition rests on both the tangible and intangible attributes of goods and services. Design is the core process by which these characteristics are shaped.

Thanks to the work of Richard Florida and others,[1] we have also begun to understand the intimate connection between creativity and cities. On the one hand, cities have always served as the principal sites for the production and display of creative products and activities – including visual arts, music, literature, drama, fashion, and other artisanal crafts. At the same time, recent evidence suggests that the local presence of a critical mass of creative activities and people is a necessary condition for a city's innovative dynamism and overall economic success. Design, as one of the most critical elements of creative activity, has assumed an ever more important position as part of the urban creative economy.

Despite its growing significance, our detailed knowledge of design – its size and importance in the provincial and urban economies, its occupational composition, the demographic and ethnic make-up of the design workforce, and its contribution to the success of a wide range of economic activities – remains poorly developed.

The objectives of this report, as determined by the Design Industry Advisory Committee (DIAC), are to answer the following questions for Ontario and its largest urban centres:

- What is the size and occupational composition of the design workforce? How has this changed over time?
- What particular strengths (defined in occupational terms) are apparent? How do these vary across Ontario's cities?
- What is the demographic, ethnic/multicultural and gender composition of the design workforce?
- What forms of work (employed vs. self-employed, part-time vs. full-time) are most prevalent?
- What levels of income and educational attainment have been achieved? How do these vary by design discipline?
- What is the geography of design work? How do Ontario's cities rank in comparison to other Canadian and US urban centres?

The following sections of this report provide the first comprehensive analysis of these questions. The data used throughout this analysis (described in further detail in the following section) are statistical in nature, having been compiled by Statistics Canada and the US Bureau of Labor Statistics.

We conclude this report with a discussion of the most pressing issues for public policy arising from our analysis.

[1] Florida, R. (2002) *The Rise of the Creative Class*. New York: Basic Books; Gertler, M.S., Florida, R., Gates, G. and Vinodrai, T. (2002) *Competing on Creativity*. Toronto: Institute for Competitiveness and Prosperity, and the Ontario Ministry of Enterprise, Opportunity and Innovation.

2 Definitions, Data and Methods

In this section we identify the data sources that we use throughout the analysis. We outline the approach that we take to understanding the design workforce in Ontario using the lens of geography and occupations. Finally, we introduce a new, unique measure that we call the 'Design Index' and explain how it is derived.

2.1 Data Sources

The data used in this analysis are from a variety of sources. Canadian data are from Statistics Canada's *2001 Census of Population*. This is supplemented by data from the *Labour Force Survey (1987-2002)* and the *Survey of Service Industries: Specialized Design (2002)*. Comparable US data are taken from the Bureau of Labor Statistics' *Occupational Employment Statistics* (OES) program (see Appendix A for complete descriptions of these data sources).

2.2 Occupations

Studying designers is different from studying the design industry. For example, a person working in the design industry may not be involved in design work, e.g. a sales manager working for an industrial design firm. However, an industrial designer may be found working for an automotive parts manufacturer. An occupational approach is useful for uncovering the talents that exist within the labour market and places the emphasis on the skills and capacities of the workforce. [2]

Given that this is a study of the design workforce, we take an occupational approach to defining the design sector. We include six design occupations in our analysis of designers:

- Architects
- Landscape architects
- Industrial designers
- Graphic designers
- Interior designers
- Theatre, fashion, exhibit, and other creative designers

Statistics Canada uses the 2001 National Occupational Classification (NOC) to classify a person's occupation. To allow for comparability with the United States, we also identify designers using the US Statistical Occupational Classification (SOC). Appendix B shows the occupations included in our analysis for both Canada and the United States. Appendices C and D provide detailed descriptions of these design occupations in Canada and the United States respectively.

[2] See Markusen, A. and King, D. 2003. *The Artistic Dividend: The Arts' Hidden Contribution to Regional Development*. Minneapolis: Project on Regional and Industrial Economics, Humphrey Institute of Public Affairs, University of Minnesota; Markusen, A., Schrock, G. and Cameron, M. 2004. *The Artistic Divident Revisited*. Minneapolis: Project on Regional and Industrial Economics, Humphrey Institute of Public Affairs, University of Minnesota

2.3 Geography

The geographic focus of this study is Ontario. However, Ontario's design workforce is an urban workforce. Therefore, we examine the size, growth and composition of the design workforce across Ontario's major cities. We benchmark Ontario's 11 cities against 16 other cities in Canada and 337 cities in the United States. Other statistics related to demography, diversity, employment status, income, and education are reported only for Ontario.

We define cities using the Statistics Canada concept of a Census Metropolitan Area (CMA). These regions are urban areas that have a core urban population of 100,000 or more persons. The geographic extent of these urban areas is defined on the basis of commuting flows between municipalities around the core urban area. Of the 27 CMAs in Canada in 2001, 11 are located in Ontario: Hamilton, Kingston, Kitchener, London, Ottawa-Hull, St. Catharines-Niagara, Oshawa, Sudbury, Thunder Bay, Toronto, and Windsor.

We use the US Bureau of the Census' concept of the Metropolitan Statistical Area (MSA) when we conduct comparisons between Canadian and US cities. There are 261 MSAs and 76 Primary Metropolitan Statistical Areas (PMSAs) for a total of 337 metropolitan areas. Due to significant differences in population size, we divide Canadian and US cities into four size categories when we conduct our analysis.

2.4 The Design Index

In this study we introduce a new and unique measure that we call the Design Index. It is similar to the Bohemian Index used by Richard Florida in *The Rise of the Creative Class* and in our work with him on the creativity and competitiveness of Ontario's cities.[3]

The Design Index is defined using employment in design occupations. It is a measure of the relative concentration of designers in a particular city and is calculated using a location quotient. The Design Index compares a city's share of the nation's designers to a city's share of the nation's population. A value greater than 1 means that a city has a higher proportion of designers in their workforce compared to Canada, and a value less than 1 means that a city has a lower proportion of designers than the national average.

When we extend the analysis to include US cities, we recalculate the Design Index to compare a city's share of the North American design workforce to a city's share of the North American workforce. A value greater than 1 means that a city has a higher proportion of designers in their workforce compared to North America, and a value less than 1 means that a city has a lower proportion of designers than the continental average.

[3] Gertler, M.S., Florida, R., Gates, G. and Vinodrai, T. (2002) *Competing on Creativity*. Toronto: Institute for Competitiveness and Prosperity, and the Ontario Ministry of Enterprise, Opportunity and Innovation.

3 Size and Composition of the Design Workforce

Table 1 and Table 2 show the size and composition of Ontario's design workforce both in absolute and percentage terms. There are 40,050 designers in Ontario, accounting for 44% of Canada's design workforce (see Appendix E). Overall, Ontario's design workforce is an urban workforce, with 90% of the design workforce located in one of the eleven cities in Ontario, compared to only 77% of the overall workforce.

Ontario's design workforce is heavily concentrated in Toronto, accounting for 64% of Ontario's design workforce compared to only 42% of the overall workforce. Toronto has the largest critical mass of designers across each of the six design occupations, with more than seven times as many designers as Ottawa, the city with the next largest number of designers. More than 70% of architects and theatre, fashion, exhibit, and other creative designers are located in Toronto.

Only five cities in Ontario have more than 1000 designers: Ottawa, Toronto, Hamilton, London, and Windsor. Kingston, Oshawa, St. Catharines-Niagara, Windsor, Sudbury, and Thunder Bay each account for 2% or less of Ontario's design workforce. Three Ontario cities (Kingston, Sudbury, and Thunder Bay) have fewer than 300 designers.

Table 1: Employment by design occupation in Ontario's cities, 2001

	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers[1]	All Designers
Ottawa-Hull	620	135	290	1,715	570	225	3,555
Kingston	55	0	20	110	50	15	250
Oshawa	25	35	70	490	125	30	775
Toronto	3,680	570	2,610	12,680	3,410	2,695	25,645
Hamilton	165	100	225	925	275	90	1,780
St. Catharines-Niagara	95	30	100	445	90	35	795
Kitchener	65	45	170	645	135	75	1,135
London	65	10	130	605	195	70	1,075
Windsor	80	35	180	260	65	25	645
Greater Sudbury	10	10	0	85	25	20	150
Thunder Bay	10	0	15	70	20	15	130
Ontario	5,135	1,095	4,505	20,230	5,515	3,570	40,050
CANADA	12,800	2,410	9,795	44,615	11,655	9,825	91,100

Source: Statistics Canada, Census of Population, 2001.

[1] Includes theatre, fashion, exhibit and other creative designers. Note: Numbers may not add due to rounding.

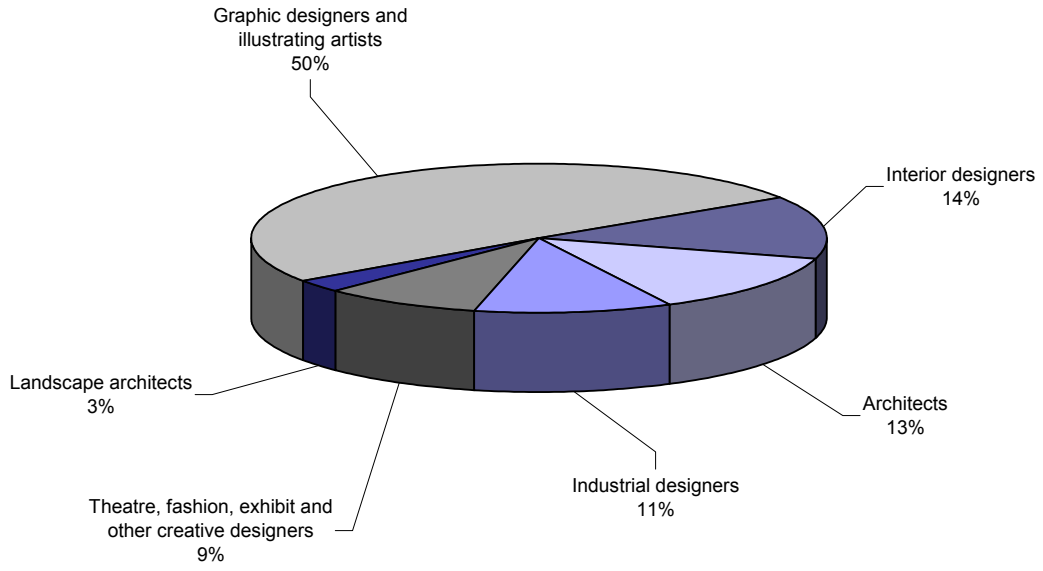
Table 2: Employment by design occupation in Ontario's cities, 2001 (%)

	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers[1]	All Designers
Ottawa-Hull	12.1	12.3	6.4	8.5	10.3	6.3	8.9
Kingston	1.1	0.0	0.4	0.5	0.9	0.4	0.6
Oshawa	0.5	3.2	1.6	2.4	2.3	0.8	1.9
Toronto	71.7	52.1	57.9	62.7	61.8	75.5	64.0
Hamilton	3.2	9.1	5.0	4.6	5.0	2.5	4.4
St. Catharines-Niagara	1.9	2.7	2.2	2.2	1.6	1.0	2.0
Kitchener	1.3	4.1	3.8	3.2	2.4	2.1	2.8
London	1.3	0.9	2.9	3.0	3.5	2.0	2.7
Windsor	1.6	3.2	4.0	1.3	1.2	0.7	1.6
Greater Sudbury	0.2	0.9	0.0	0.4	0.5	0.6	0.4
Thunder Bay	0.2	0.0	0.3	0.3	0.4	0.4	0.3
ONTARIO (%)	100	100	100	100	100	100	100
ONTARIO (Total)	5,135	1,095	4,505	20,230	5,515	3,570	40,050

Source: Statistics Canada, Census of Population, 2001. [1] Includes theatre, fashion, exhibit and other creative designers.
Note: Numbers may not add due to rounding.

Graphic designers account for half of the design workforce in Ontario (Figure 1). Ontario's design workforce is made up of similar proportions of industrial designers (11%), architects (13%) and interior designers (14%). Landscape architects account for only 3% of Ontario's design workforce.

Figure 1: The composition of the design workforce in Ontario, 2001



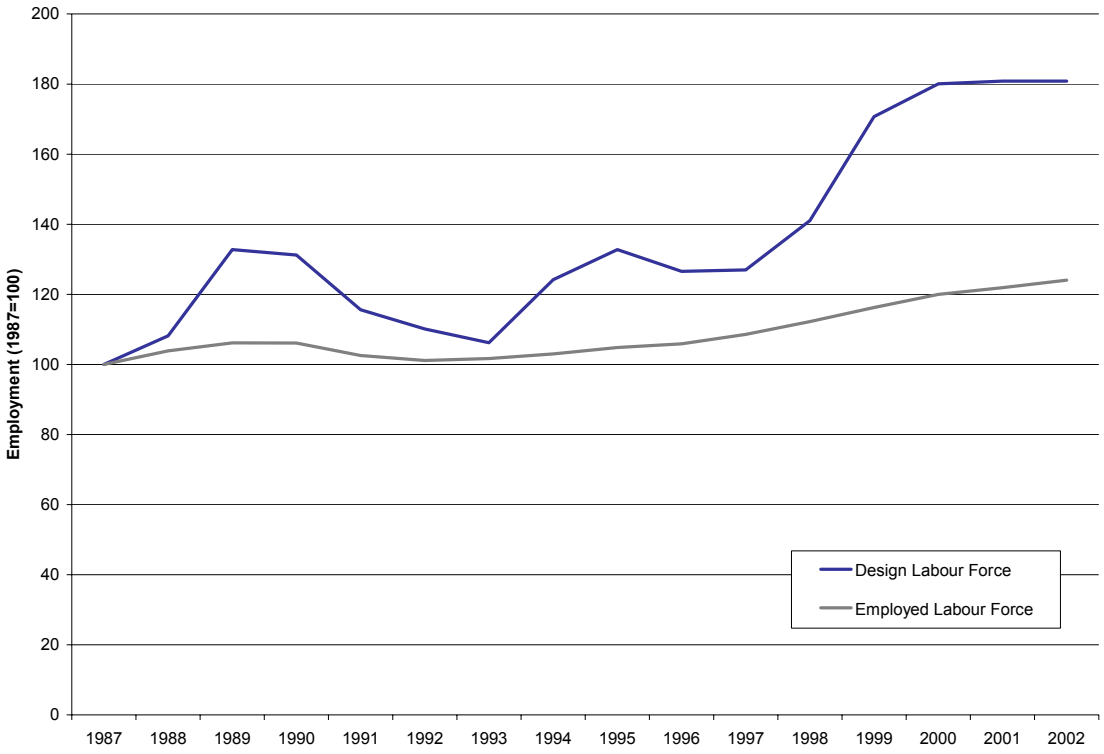
Source: Statistics Canada, Census of Population, 2001.

4 Growth of Ontario's Design Workforce

Figure 2 compares change in the design labour force to the overall employed labour force in Ontario over the fifteen-year period between 1987 and 2002. Employment is indexed to 100 in the base year (1987) to allow for comparisons. Growth of Ontario's design workforce has significantly outpaced that of Ontario's workforce as a whole. This growth has been cyclic, reflecting changes in the business cycle.

Between 1987 and 2002 Ontario experienced an overall increase in the number of designers. Design employment declined throughout the early 1990s, but experienced steady increases through the latter part of the 1990s, with growth slowing in the beginning of the millennium.

Figure 2: Design employment in Ontario, 1987-2002



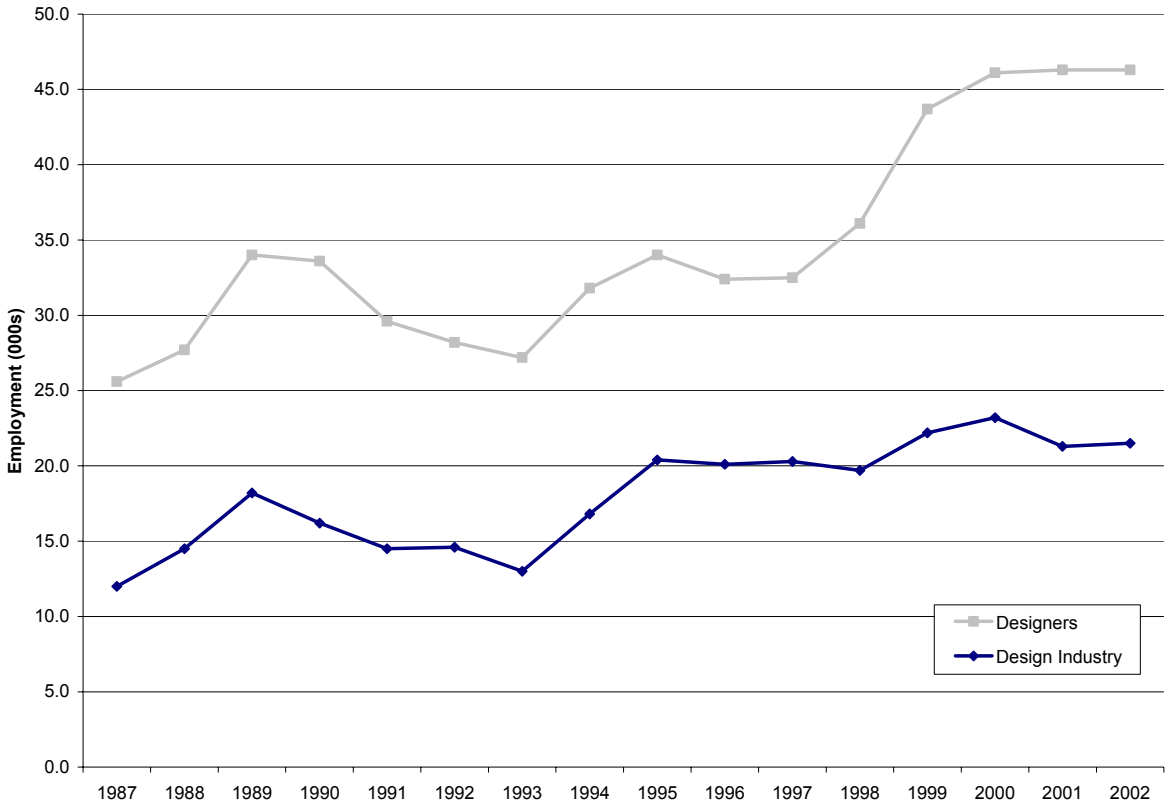
Source: Statistics Canada, 2003. Labour Force Survey 1987-2002. [Custom Tabulations].
Note: Employment is indexed to the earliest year in the data series (1987=100)

Figure 3 shows changing levels of employment for the design industry and design occupations. Here, the distinction between design industry and design occupation employment is important. For example, someone working in the design industry may not be involved in design work (e.g. a sales manager working for an industrial design firm). Conversely, a designer could be employed by an automotive parts firm rather than by a design firm. Since a significant proportion of designers work outside of the design industry (see below), it is not surprising that employment in design occupations is much higher than that for the design industry.

Until the late 1990s employment for designers followed the same pattern as the design industry. In 1997, the gap between the employment of designers and employment in the design industry began to widen. We posit two explanations for this divergence: 1) the increased trend towards the contracting out of design work; and 2) heightened demand for design-intensive Internet and web-based applications.

The growth of the design workforce can be mainly attributed to an increase in the number of people working as graphic designers and – to a lesser extent – as industrial designers and architects. With the introduction of a number of technologies, the barriers to entry in the graphic design field have been significantly reduced. At the same time, the increasing popularity and widespread use of the Internet has resulted in the growth of the new media field, as well as demand for graphic design services both within the design industry and in other sectors of the economy.

Figure 3: Employment for designers and the design industry in Ontario, 1987-2002



Source: Statistics Canada, 2003. Labour Force Survey, 1987-2002. [Custom Tabulations].
Note: The design industry is defined here as 541410 Interior design services; 541420 Industrial design services; 541430 Graphic design services; 541490 Other design services. Architectural services and Landscape architectural services are excluded from this analysis. Levels of design employment for design occupations may differ from those reported elsewhere due to differences in data sources.

Between 1991 and 2001, the design workforces in Ontario and Canada grew at annual rates of 4.6% and 4.3% respectively (Table 3). These rates were more than four times the rate of growth of the labour force as a whole. In every city in Ontario the growth of the design workforce outpaced the growth (or decline) of the overall labour force by a significant margin. Only Sudbury experienced a decline in the size of both its design workforce and the overall labour force. Despite a declining labour force, Thunder Bay's

design workforce grew by 0.8% annually between 1991 and 2001. The design workforces in Oshawa, Toronto, Hamilton, Kitchener, and Windsor experienced high growth rates over this period.

Table 3: Design employment growth in Ontario's cities, 1991-2001

	Designers			Average Annual Growth (%)	
	1991	1996	2001	Design Workforce	Overall Labour Force
Ottawa-Hull	2,940	3,055	3,555	1.9	1.0
Kingston	230	295	250	0.8	0.2
Oshawa	445	505	775	5.7	2.0
Toronto	16,170	18,210	25,645	4.7	1.4
Hamilton	920	1,410	1,780	6.8	0.7
St. Catharines-Niagara	620	505	795	2.5	0.3
Kitchener	620	900	1,135	6.2	1.5
London	870	745	1,075	2.1	0.4
Windsor	390	475	645	5.2	1.6
Greater Sudbury	155	130	150	-0.3	-0.8
Thunder Bay	120	130	130	0.8	-0.7
Ontario	25,550	29,655	40,050	4.6	1.0
CANADA	59,735	69,230	91,100	4.3	0.9

Source: Statistics Canada, Census of Population, 2001. [Authors' calculations]

As noted above, Ontario's design workforce grew at a rate of 4.6% per year between 1991 and 2001. However, there is substantial variation in growth rates between the six design occupations (Table 4). The industrial design workforce grew at the highest rate (10.7% per year) between 1991 and 2001, whereas there was very little growth in the number of theatre, fashion, exhibit, and other creative designers over the same period.

Table 4: Employment growth by design occupation in Ontario, 1991-2001

	1991	1996	2001	Average Annual Growth (%)
Architects	3,415	3,375	5,135	4.2
Landscape architects	580	560	1,095	6.6
Industrial designers	1,625	2,795	4,505	10.7
Graphic designers	12,880	15,880	20,230	4.6
Interior designers	3,700	3,510	5,515	4.1
Other designers[1]	3,350	3,535	3,570	0.6
All Design Occupations	25,550	29,655	40,050	4.6
All Occupations	5,435,845	5,401,395	5,992,765	1.0

Source: Statistics Canada, Census of Population, 2001. [Authors' calculations].

[1] Includes theatre, fashion, exhibit and other creative designers.

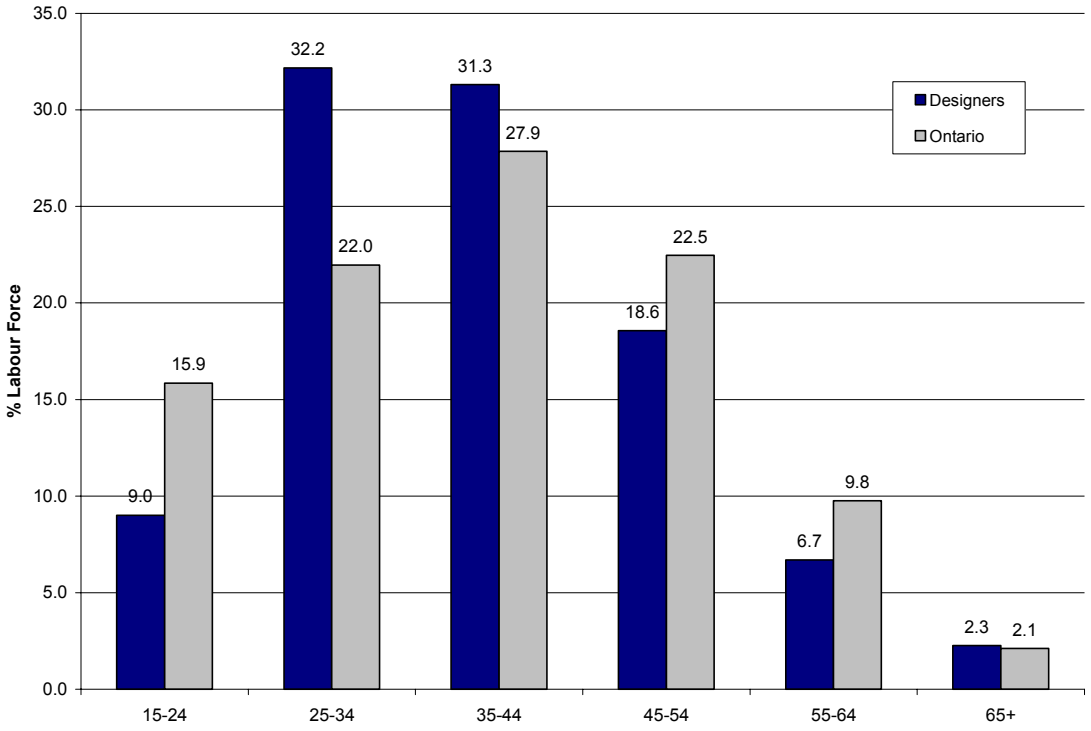
5 Demography and Diversity

In this section, we explore a number of dimensions related to the demography and diversity of Ontario's design workforce. These include age structure and gender composition, as well as the extent to which immigrants are represented in design occupations.

5.1 Age Structure

The design workforce is younger than the overall labour force in Ontario (Figure 4). There are higher proportions of workers in the 25-34 and 35-44 age categories in the design workforce compared to Ontario's workforce.

Figure 4: Age structure of Ontario's design workforce, 2001



Source: Statistics Canada, Census of Population, 2001.

Table 5 expands upon this observation by showing the age structure for each of the six design occupations. Graphic designers have a higher proportion of 25-34 year olds compared to other design occupations. There are low proportions of designers between the ages of 15 and 24 compared to the labour force as a whole; this is especially true for architects. This is likely related to the educational requirements for practicing in (some) design-related fields.

Table 5: Age structure by design occupation in Ontario, 2001

	Designers (Total)	Age Groups (%)					
		15-24	25-34	35-44	45-54	55-64	65+
Architects	5,135	2.5	26.2	28.9	26.5	11.1	4.7
Landscape architects	1,095	7.3	24.7	37.4	20.1	9.6	0.9
Industrial designers	4,505	8.5	28.3	32.6	18.4	9.4	2.6
Graphic designers	20,230	11.2	35.6	31.8	15.9	4.2	1.4
Interior designers	5,515	6.3	28.2	31.6	22.8	8.3	2.8
Other designers[1]	3,570	11.2	34.7	28.0	15.5	7.6	2.9
All Design Occupations	40,050	9.0	32.2	31.3	18.6	6.7	2.3
Employed Labour Force	5,992,765	15.9	22.0	27.9	22.5	9.8	2.1

Source: Statistics Canada, Census of Population, 2001.
Note: Numbers may not add due to rounding.
[1] Includes theatre, fashion, exhibit and other creative designers.

5.2 Gender Composition

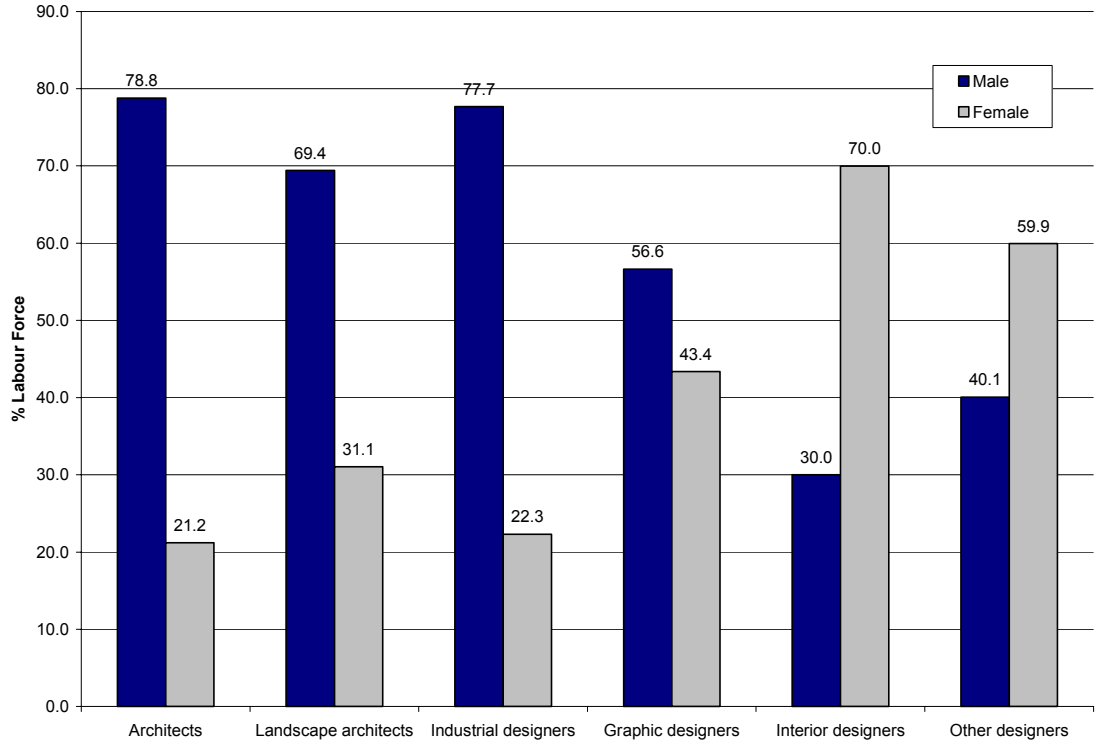
Ontario's design workforce, comprised of 57% men and 43% women, is slightly more male-dominated than the workforce as a whole (Table 6). Women outnumber men in only two occupational categories: interior designers and theatre, fashion, exhibit, and other creative designers (Figure 5). Within the design workforce, architects, landscape architects, and industrial designers are the most heavily male-dominated design occupations, with higher proportions of men as compared to either Ontario's design workforce or overall workforce.

Table 6: Gender composition by design occupation in Ontario, 2001

	Designers (Total)	Males		Females	
		#	%	#	%
Architects	5,135	4,045	78.8	1,090	21.2
Landscape architects	1,095	760	69.4	340	31.1
Industrial designers	4,505	3,500	77.7	1,005	22.3
Graphic designers	20,230	11,455	56.6	8,775	43.4
Interior designers	5,515	1,655	30.0	3,860	70.0
Other designers[1]	3,570	1,430	40.1	2,140	59.9
All Design Occupations	40,050	22,845	57.0	17,210	43.0
Employed Labour Force	5,992,765	3,173,275	53.0	2,819,490	47.0

Source: Statistics Canada, Census of Population, 2001.
Note: Numbers may not add due to rounding.
[1] Includes theatre, fashion, exhibit and other creative designers.

Figure 5: Gender composition by design occupation for Ontario, 2001



Source: Statistics Canada, Census of Population, 2001.

5.3 Immigration and Place of Birth

Immigrants account for similar proportions of Ontario's overall workforce (29%) and Ontario's design workforce (31%) (Figure 6). However, there is variability across the six design occupations. In relative terms, immigrants are least prevalent amongst landscape architects (23%), whereas architects (44%) and industrial designers (41%) have high proportions of immigrants.

While there are similar proportions of immigrants in Ontario's design workforce and the overall workforce (Figure 6), the geographic origins of these groups are somewhat different (Figure 7). The design workforce has slightly more immigrants from Western countries (United States and Europe) as compared to the labour force as a whole.

Figure 6: Immigrants in Ontario's design workforce, 2001

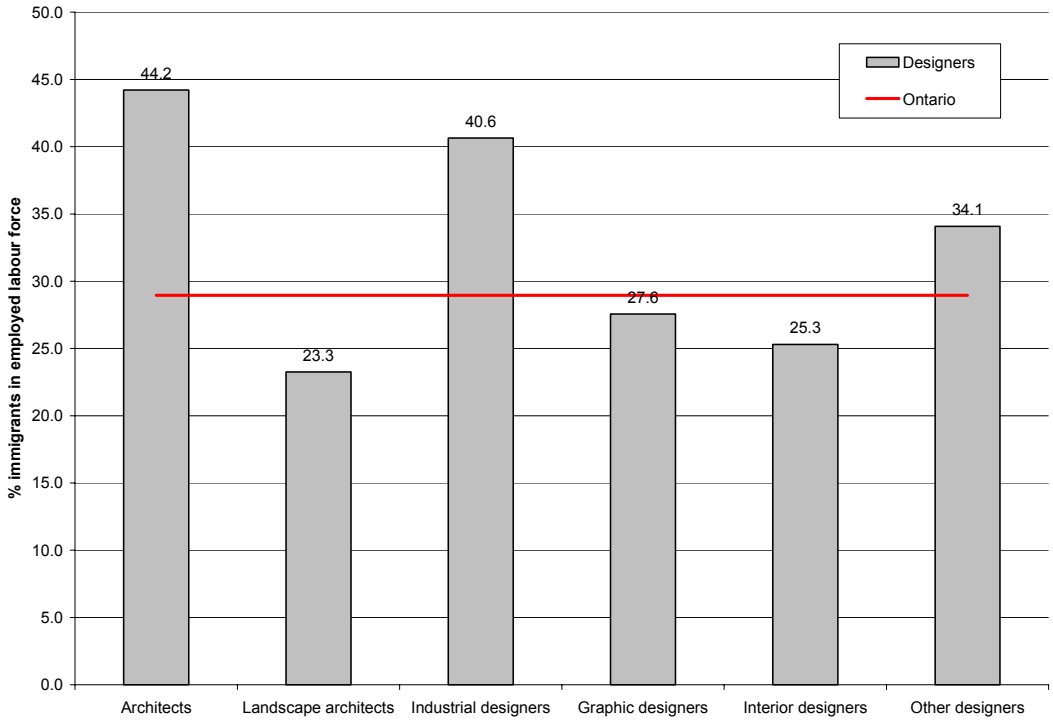
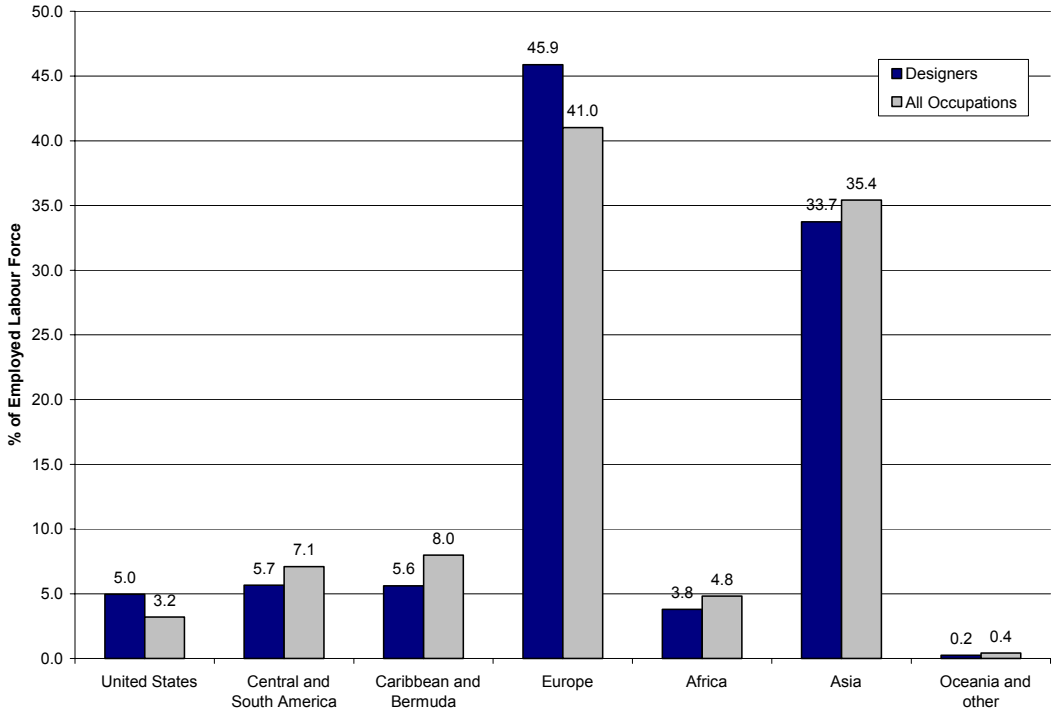


Figure 7: Place of birth for Ontario's immigrant design workforce, 2001

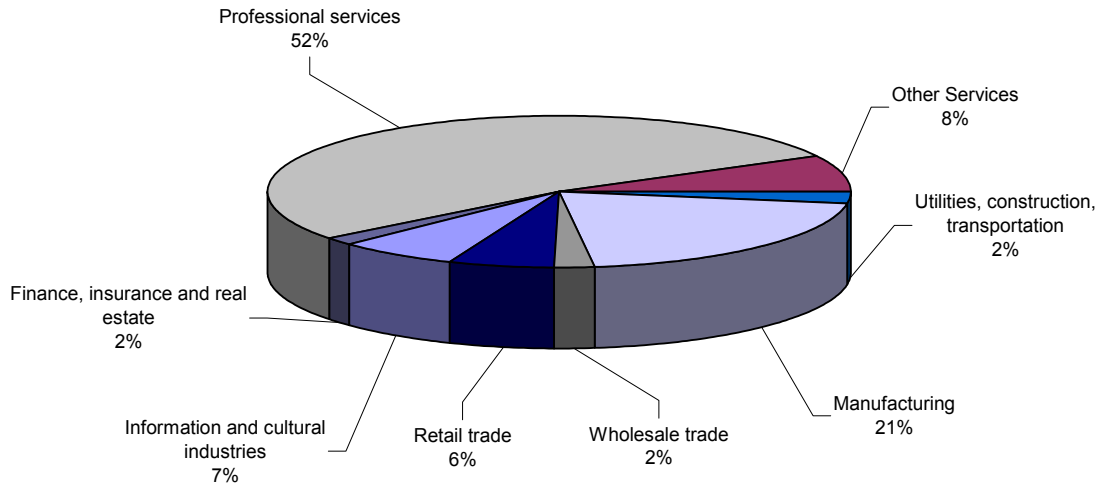


Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]

6 Design Across the Economy

Designers in Ontario work in almost every industrial sector, with the highest proportion of designers working in professional, scientific, and technical services (52%), followed by manufacturing (21%), information and cultural industries (7%), and retail trade (6%) (Figure 8).

Figure 8: Industrial mix of Ontario's design workforce, 2001



Source: Statistics Canada, Census of Population, 2001.

While designers work in almost every industrial sector, more than half of designers work in professional, scientific and technical services. This is especially true for architects, where 87% of architects work in this sector (Table 7; see also Appendix F). Industrial designers are the most highly concentrated in the manufacturing sector (59%), but can be found in a number of other sectors as well. Landscape architects are concentrated in only a small number of industrial sectors: construction; professional, scientific, and technical services; administrative and support, waste management and remediation services; and public administration. High proportions of interior designers (20%) and theatre, fashion, exhibit, and other creative designers (23%) work in the retail trade sector. High proportions of graphic designers (20%) and theatre, fashion, exhibit, and other creative designers (27%) can be found in the manufacturing sector. Graphic designers are the most diversified group of designers, working in the largest number of industrial sectors.

Table 7: Employment by industry and design occupation in Ontario, 2001 (%)

Industry[1]	All Designers	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers[2]
Utilities	0.1	0.8	-	-	-	-	-
Construction	2.1	2.4	4.0	2.8	0.4	8.7	-
Manufacturing	20.4	2.3	-	58.8	20.1	3.5	26.7
Wholesale trade	2.4	-	-	4.8	2.2	2.9	4.2
Retail trade	5.6	-	-	2.4	2.5	20.2	22.5
Transportation and warehousing	0.1	-	-	-	0.3	-	-
Information and cultural industries	6.6	0.5	-	1.3	11.8	1.0	4.7
Finance and insurance	1.1	0.5	-	-	1.8	0.8	-
Real estate	0.5	0.5	-	0.6	0.3	1.0	1.4
Professional, scientific and technical services	52.4	86.5	52.0	24.9	51.9	57.1	27.5
Administrative and support, waste management and remediation services	1.9	-	20.0	0.9	1.8	0.8	3.3
Educational services	0.8	1.1	-	-	1.2	-	-
Health care and social assistance	0.2	-	-	-	0.4	-	-
Arts, entertainment and recreation	1.8	-	-	-	2.5	-	7.5
Accommodation and food services	0.1	-	-	-	-	0.6	-
Other services (except public administration)	0.9	1.2	-	1.0	1.1	-	-
Public administration	2.1	2.6	16.7	0.4	1.5	2.5	1.1
ONTARIO (%)	100	100	100	100	100	100	100
ONTARIO (Total)	25,575	3,775	750	3,335	12,770	3,145	1,800

Source: Statistics Canada, Census of Population, 2001.

Note: Estimates include the full-year, full-time employed labour force only. Therefore, these numbers may not match numbers reported elsewhere in this document. Numbers may not add due to rounding or data suppression. 'Agriculture, forestry, fishing, and hunting', 'Mining, and oil and gas extraction', or 'Management of companies and enterprises' are excluded since there is no design employment in these industries in Ontario.

[1] Industries defined using 2-digit NAICS. [2] Includes theatre, fashion, exhibit and other creative designers.

Table 7 shows that slightly more than half of the design workforce is employed in professional, scientific, and technical services (see also Appendix F). Figure 9 (below) shows expanded detail of this sector. Designers working in this sector are primarily employed in the specialized design services (28%) or architectural services (15%) industries, with a smaller proportion working in the advertising industry (6%). Therefore, approximately 43% of designers work in the specialized design services or architectural services industries, meaning that the majority of designers work outside of these two industries.

Table 7 also shows that approximately 20% of designers are employed in the manufacturing sector. Figure 10 (below) demonstrates that designers can be found in almost every corner of the manufacturing sector. This is partly a reflection of the composition of the Ontario economy.

Figure 9: Design employment in professional services in Ontario, 2001

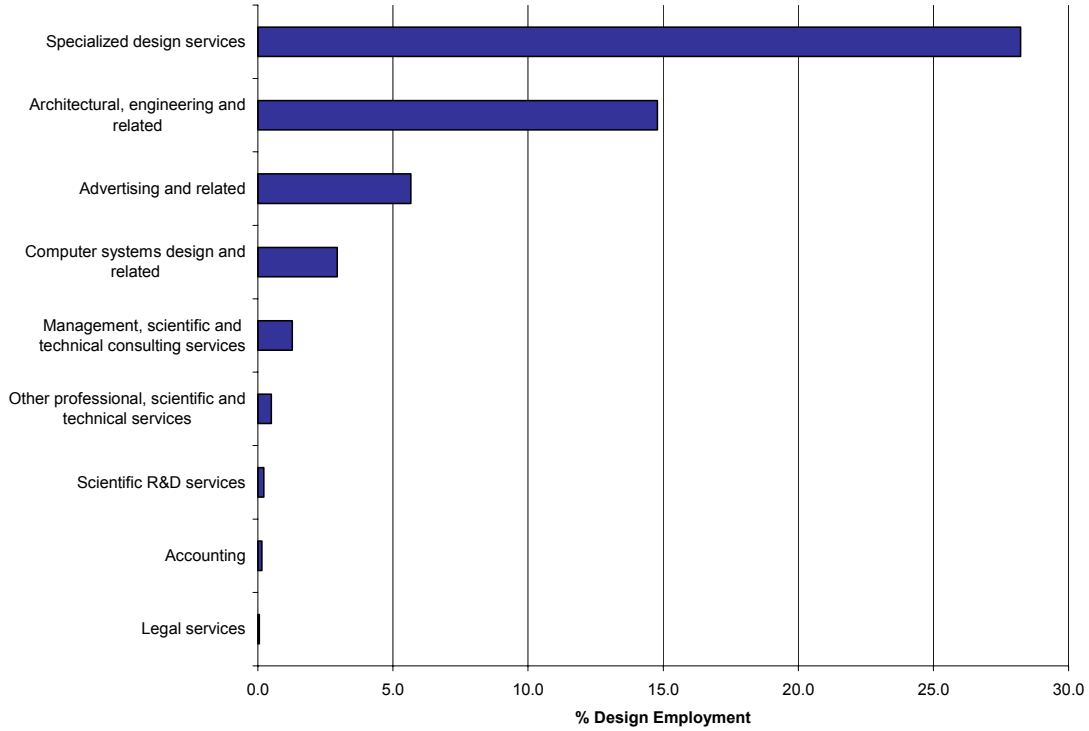
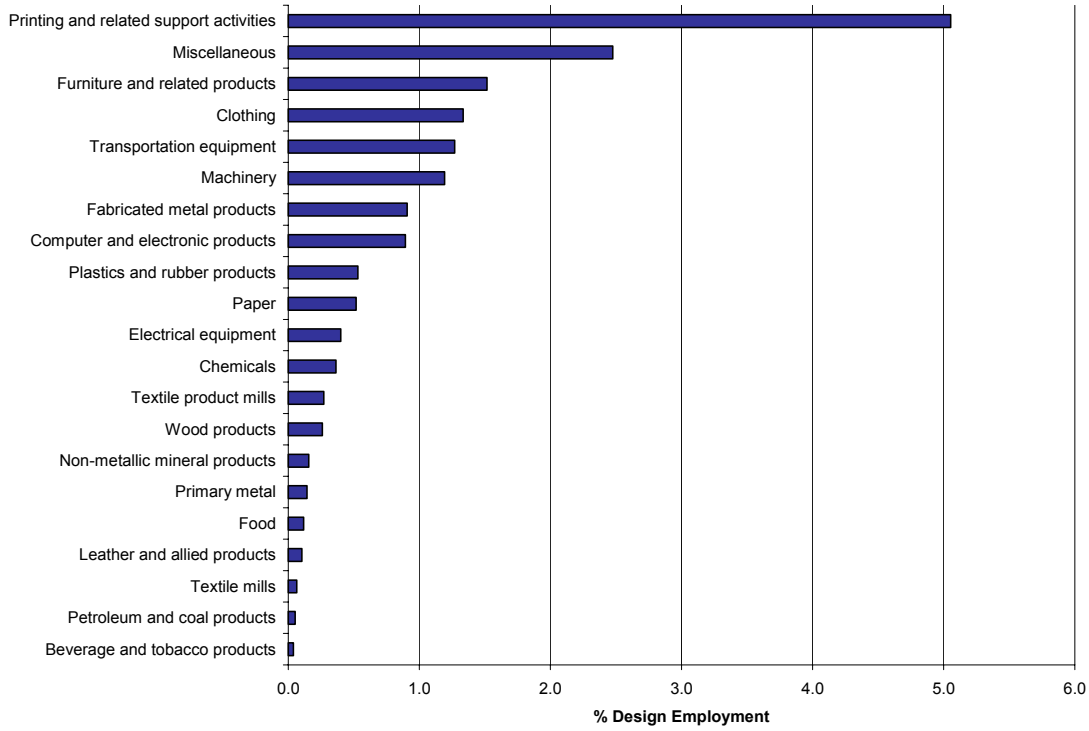


Figure 10: Design employment in the manufacturing sector for Ontario, 2001



Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]
Note: Numbers may not add due to rounding. 'Miscellaneous manufacturing' includes jewellery and silverware manufacturing; sporting and athletic goods manufacturing; doll, toy and game manufacturing; and other forms of manufacturing.

7 The Nature of Design Work

Ontario's design workforce has almost three times as many self-employed individuals (33%) compared to Ontario's overall employed labour force (11%) (Table 8). Industrial designers have much lower levels of self-employment (19%) compared to other design occupations (Figure 11). Interior designers and other designers have the highest levels of self-employment with self-employment rates of 41% and 37% respectively.

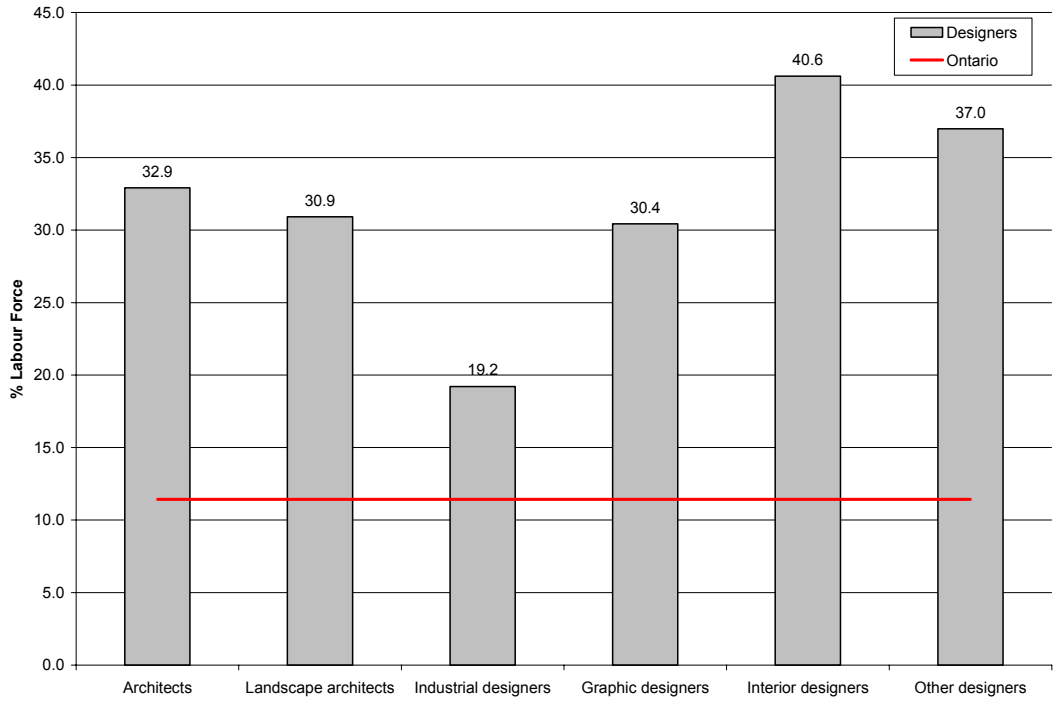
Table 8: Employment status by design occupation in Ontario, 2001

	Designers	Wage Earners		Self Employed		Unpaid Family Workers	
	(Total)	#	%	#	%	#	%
Architects	5,135	3,440	67.0	1,690	32.9	10	0.2
Landscape architects	1,100	760	69.1	340	30.9	0	0.0
Industrial designers	4,505	3,640	80.8	865	19.2	0	0.0
Graphic designers	20,225	14,050	69.5	6,155	30.4	25	0.1
Interior designers	5,515	3,265	59.2	2,240	40.6	15	0.3
Other designers[1]	3,570	2,240	62.7	1,320	37.0	10	0.3
All Design Occupations	40,050	27,395	68.4	12,610	31.5	60	0.1
Employed Labour Force	5,992,765	5,286,215	88.2	685,425	11.4	21,125	0.4

Source: Statistics Canada, Census of Population, 2001.

[1] Includes theatre, fashion, exhibit and other creative designers. Note: Numbers may not add due to rounding.

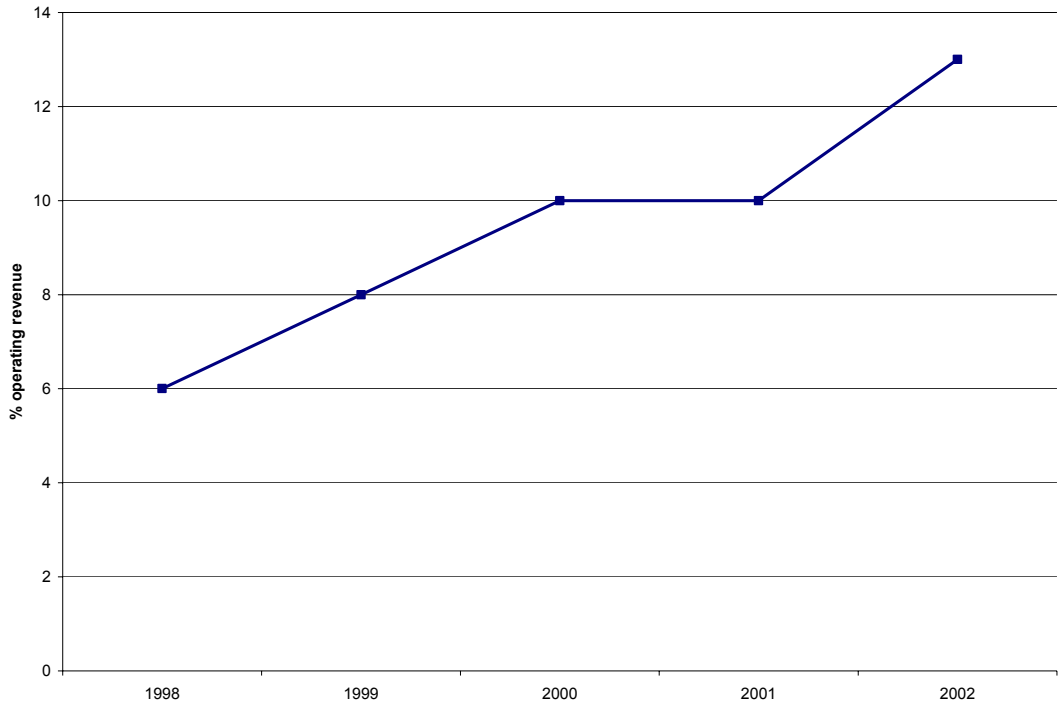
Figure 11: Self-employment in Ontario's design workforce, 2001



Source: Statistics Canada, Census of Population, 2001.

Between 1998 and 2002 the Canadian design industry (excluding architecture) increased the proportion of operating revenue spent on professional fees. [4] Professional fees are those fees paid for outsourced work, including contractors and freelancers. In 1998, only 6% of operating revenue was spent on professional fees. By 2002, this had more than doubled to account for 13% of expenditures.

Figure 12: Expenditures on professional fees by the specialized design services industry, 1998-2002



Source: Statistics Canada, 2002. Annual Report: Survey of Specialized Design.
Note: The specialized design services industry is defined as 541320 Landscape architectural services; 541410 Interior design services; 541420 Industrial design services; 541430 Graphic design services; 541490 Other design services. Architectural services are included in a separate survey and are excluded from this analysis.

Finally, almost 22% of the design workforce works at home, as compared to only 6% of the overall labour force (Table 9). Working at home is most prominent amongst graphic designers (24%) and interior designers (28%). Architects and interior designers are the most likely groups to be internationally oriented, with 1.4% and 1.2% working outside of Canada. [5]

[4] Similar data were not readily available for Ontario.
[5] This does not include all of the many ways in which designers are connected to the global economy, including contracts with international customers, professional networks, etc.

Table 9: Place of work by design occupation in Toronto, 2001

	Total	Worked at home	No fixed workplace	Worked outside Canada	Worked at usual place
Architects	100	16.5	2.1	1.4	80.1
Landscape architects	100	19.6	10.7	0.0	70.5
Industrial designers	100	13.9	6.6	0.6	78.9
Graphic designers	100	24.0	4.2	0.2	71.6
Interior designers	100	28.4	7.6	1.2	62.6
Other designers[1]	100	15.3	14.7	0.6	69.2
All Design Occupations	100	21.5	5.8	0.6	72.1
Employed Labour Force	100	6.3	8.3	0.5	84.8

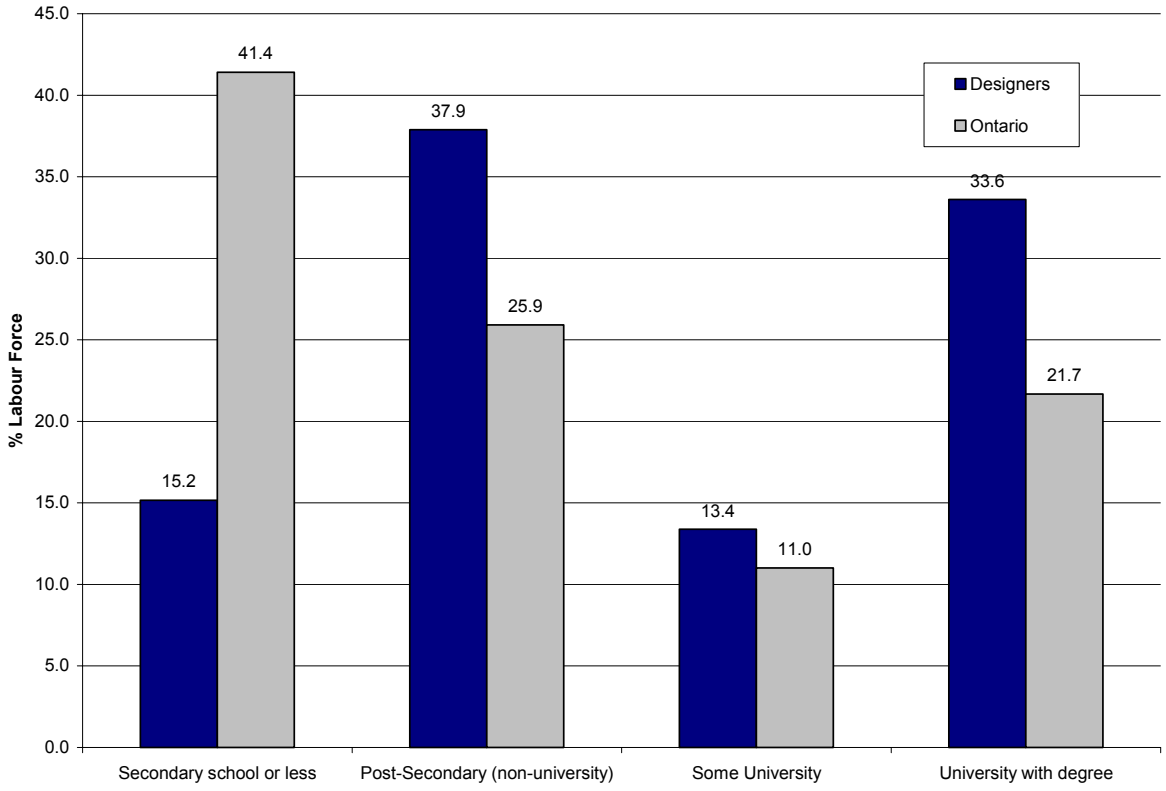
Source: Statistics Canada, Census of Population, 2001.[Custom tabulations]
Note: Numbers may not add due to rounding. Due to a number of limitations, data were only available for Toronto.
[1] Includes theatre, fashion, exhibit and other creative designers.

The high incidence of self-employment and designers working at home, coupled with the increasing levels of expenditures on professional fees noted above are strong indicators that design work is increasingly being outsourced. It remains unclear as to whether this work is being outsourced locally or overseas.

8 Educational Attainment and Specialization

The design workforce has higher levels of formal education (college or university) than the overall workforce in Ontario (Figure 13). In Ontario, 34% of designers have a university degree as compared to only 22% of the overall workforce. Furthermore, 41% of Ontario's overall workforce has a high school diploma or less; this is true for only 15% of the design workforce.

Figure 13: Educational attainment of Ontario's design workforce, 2001



Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]
Note: 'Some university' includes university certificate or diploma below the bachelor level or university education without a degree.

Table 10 (below) shows the level of educational attainment by design occupation. A very high proportion of architects and landscape architects have at least one university degree. This is not surprising given the accreditation requirements of these professions. Graphic designers and theatre, fashion, exhibit and other creative designers have the lowest incidence of university degrees. However, other post-secondary credentials (e.g., college diplomas, certificates, etc.) are of greater importance in this group. As a group, theatre, fashion, exhibit and other creative designers have the lowest levels of formal education, with 20% having completed a secondary school diploma or less.

Table 10: Highest level of schooling by design occupation in Ontario, 2001

	Employed Labour Force (%)	Highest Level of Schooling (%) Secondary School or less	Post-Secondary (non-university)	Some University[2]	University with degree
Architects	100	1.5	9.2	4.2	85.0
Landscape architects	100	6.5	12.6	11.6	70.2
Industrial designers	100	9.6	40.3	14.2	35.7
Graphic designers	100	10.7	54.6	14.5	20.1
Interior designers	100	8.3	46.2	14.9	30.8
Other designers[1]	100	19.9	38.3	17.6	24.5
All Design Occupations	100	9.7	43.3	13.4	33.6
All Occupations	100	34.5	32.8	11.0	21.7

Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]
Note: Numbers may not add due to rounding.
[1] Includes theatre, fashion, exhibit and other creative designers.
[2] Includes university certificate or diploma below the bachelor level or university education without a degree.

Table 11 shows the level of educational attainment of designers with at least one university degree. At every level of post-graduate education (except the doctorate level), designers have higher proportions of post-graduate qualifications than the overall workforce in Ontario. At the doctorate level, only 0.4% of designers have doctorates compared to 0.8% of the overall workforce. Master's degrees are most prevalent amongst architects (21%), landscape architects (11%) and industrial designers (8%). Furthermore, these three groups account for almost all of the designers with doctorate-level education. Graphic designers, interior designers, and theatre, fashion, exhibit, and other creative designers do not tend to have university level education beyond a bachelor's degree.

Table 11: Highest level of schooling for designers with at least a university degree in Ontario, 2001

	Total University (%)	Bachelor or first professional degree	Certificate above bachelor	Master's Degree	Earned Doctorate
Architects	85.0	51.7	11.5	20.5	1.2
Landscape Architects	70.2	52.6	5.6	11.2	0.9
Industrial Designers	35.7	22.7	3.7	8.0	1.3
Graphic Designers	20.1	15.9	1.8	2.3	0.2
Interior Designers	30.8	24.9	2.9	2.9	0.0
Other designers[1]	24.5	20.4	1.5	2.5	0.0
All Design Occupations	33.6	24.0	3.5	5.7	0.4
Employed Labour Force	21.7	14.4	2.6	4.0	0.8

Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]
Note: Numbers may not add due to rounding.
[1] Includes theatre, fashion, exhibit and other creative designers.

Designers tend to have formal education or training with a specialization in either the fine and applied arts (which includes graphic and other creative design) or engineering and applied sciences (which includes architecture, landscape architecture, industrial design and related disciplines) (Table 12).

Table 12: Educational specialization in Ontario's design workforce, 2001

Area of Educational Specialization	All Occupations (%)	Designers (%)
Educational, recreational and counselling services	4.8	1.1
Fine and applied arts	2.8	35.6
Humanities and related fields	3.5	5.3
Social sciences and related fields	6.6	3.6
Commerce, management and business administration	11.5	4.8
Agricultural, biological, nutritional, and food sciences	2.1	1.0
Engineering and applied sciences	3.1	17.3
Applied science technologies and trades	10.9	9.5
Health professions and related technologies	5.6	0.7
Mathematics, computer and physical sciences	2.4	1.4
No specialization	46.7	19.8
ONTARIO (%)	100	100

Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]
Note: Numbers may not add due to rounding.

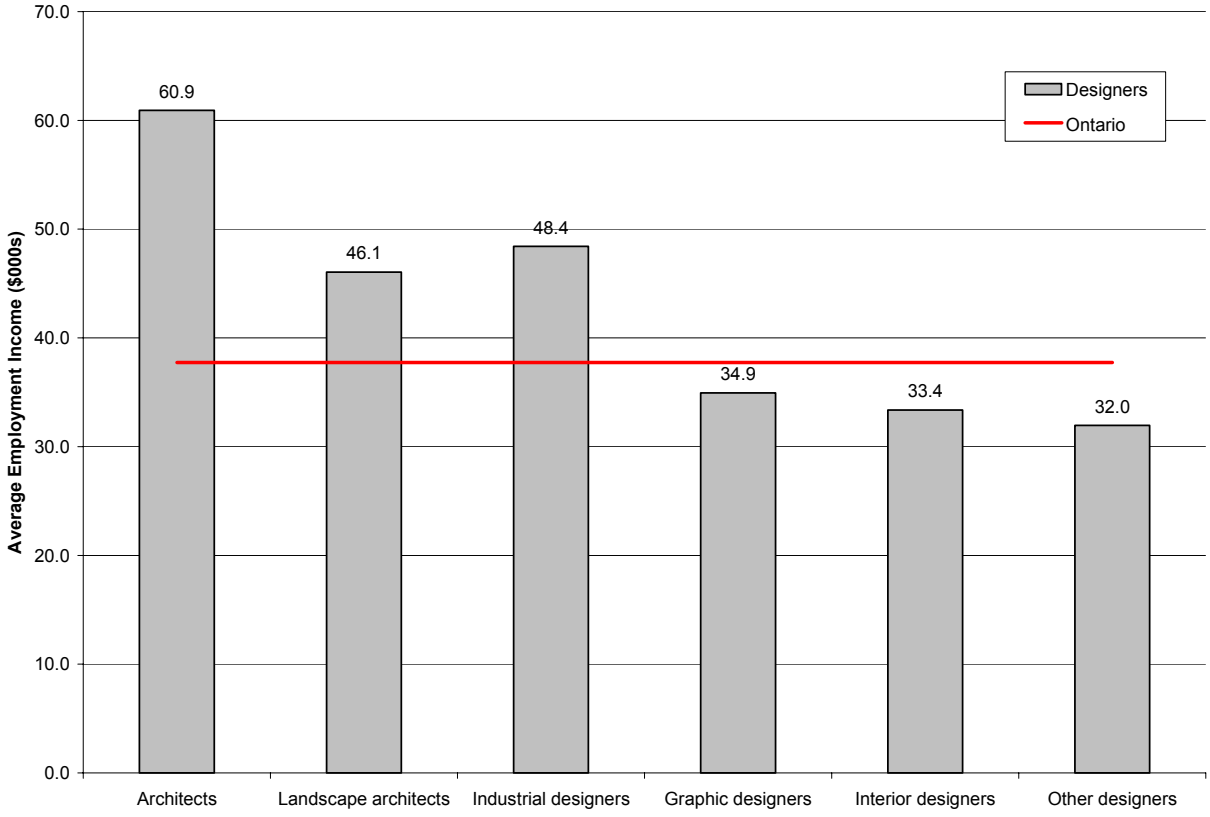
However, it is interesting to note that designers have a variety of educational backgrounds that include specializations in areas such as the social sciences and humanities, business, and mathematics, computer and physical sciences.

9 Income and Earnings of Designers

Figure 14 shows the average employment income for each of the six design occupations compared to the provincial average. [6] Within the design workforce, architects had the highest average employment income, followed by industrial designers and landscape architects. However, graphic designers, interior designers, and other designers have average employment incomes below that of the labour force as a whole

In the previous section, we identified that there are very high proportions of designers who are self-employed. Except for architects, self-employed designers have lower income levels than those who work for an employer (Figure 15). This is the same pattern as for Ontario's labour force as a whole. This gap in income between designers with an employer and those who are self-employed is most pronounced for industrial and graphic designers and least pronounced for landscape architects and theatre, fashion, exhibit and other creative designers.

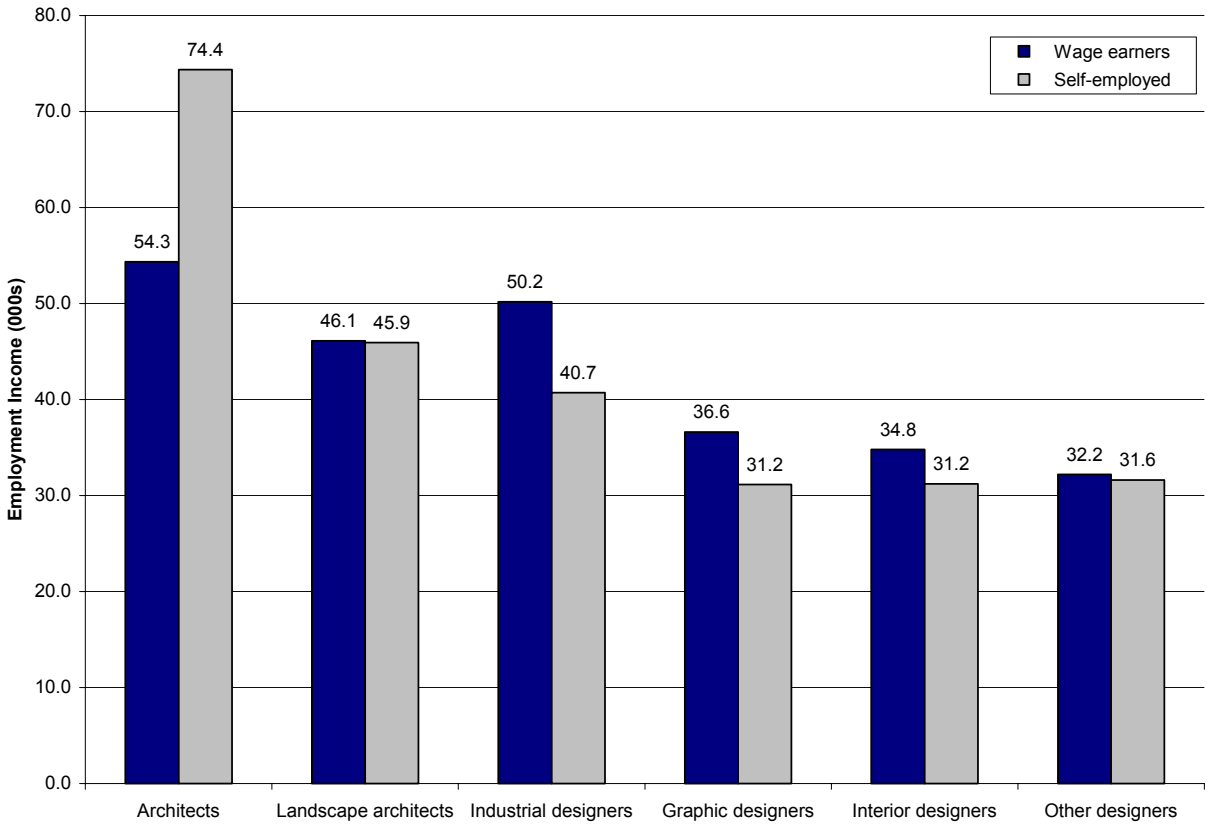
Figure 14: Average employment income for Ontario's design workforce, 2000



Source: Statistics Canada, Census of Population, 2001. [Custom tabulations].

[6] Average employment income is reported for individuals in the employed labour force who received any employment income during calendar year 2000. While individual professional associations conduct salary surveys of their membership, it is difficult to make direct comparisons between occupations because of data inconsistencies. Furthermore, membership in the associations is smaller than the number of persons who report working in these occupations.

Figure 15: Average employment income by employment status for Ontario's design workforce, 2000

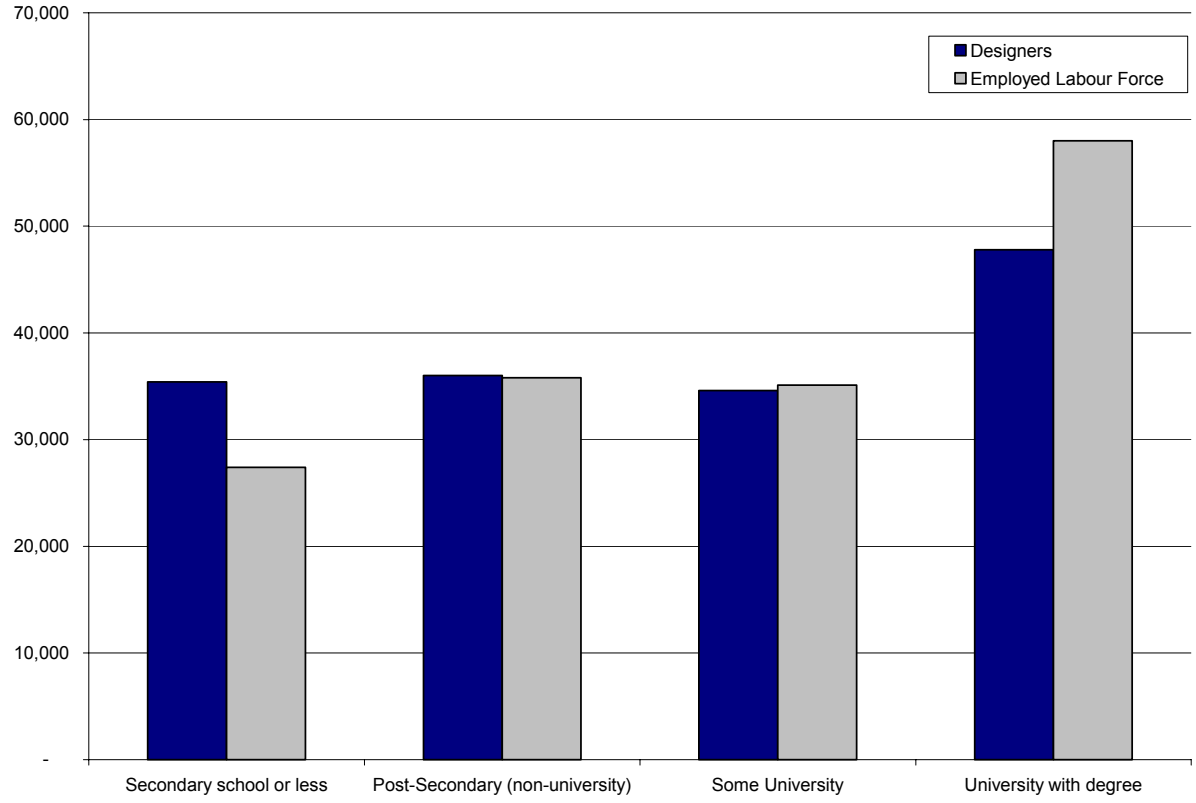


Source: Statistics Canada, Census of Population, 2001. [Custom tabulations].

It is generally accepted that income increases with level of formal education. While this is true for Ontario's labour force as a whole, this trend is less pronounced for the design workforce (Figure 16). There is virtually no difference in income levels amongst designers without a university degree. Furthermore, the increase in income associated with a university degree is less pronounced for designers than in the overall workforce.

We examine the trend observed in Figure 16 (below) more closely. Table 13 shows average employment income by educational attainment for each of the six design occupations separately. Across the six design occupations there is only a marginal increase in income prior to earning a university degree. Architects experience the largest income gains from earning a university degree, followed by landscape architects and industrial designers. Of the six design occupations, only university-educated architects earn more than the average university-educated worker in Ontario. There are only small income gains related to higher levels of formal education for graphic, interior, theatre, fashion, exhibit and other creative designers.

Figure 16: Average employment income by education for Ontario's design workforce, 2000



Source: Statistics Canada, Census of Population, 2001. [Custom tabulations].

Table 13: Average employment income by education for Ontario's design workforce, 2000

	Employed Labour Force (%)	Highest Level of Schooling (%) Secondary School or less	Post-Secondary (non-university)	Some University[2]	University with degree
Architects	60,900	44,300	48,600	48,800	63,100
Landscape architects	46,100	33,700	39,300	55,100	46,800
Industrial designers	48,400	53,700	45,800	43,400	51,900
Graphic designers	34,900	34,000	35,100	31,800	37,400
Interior designers	33,400	31,700	32,700	32,200	35,400
Other designers[1]	32,000	29,600	31,600	32,600	34,000
All Design Occupations	39,700	35,400	36,000	34,600	47,800
All Occupations	37,700	27,400	35,800	35,100	58,000

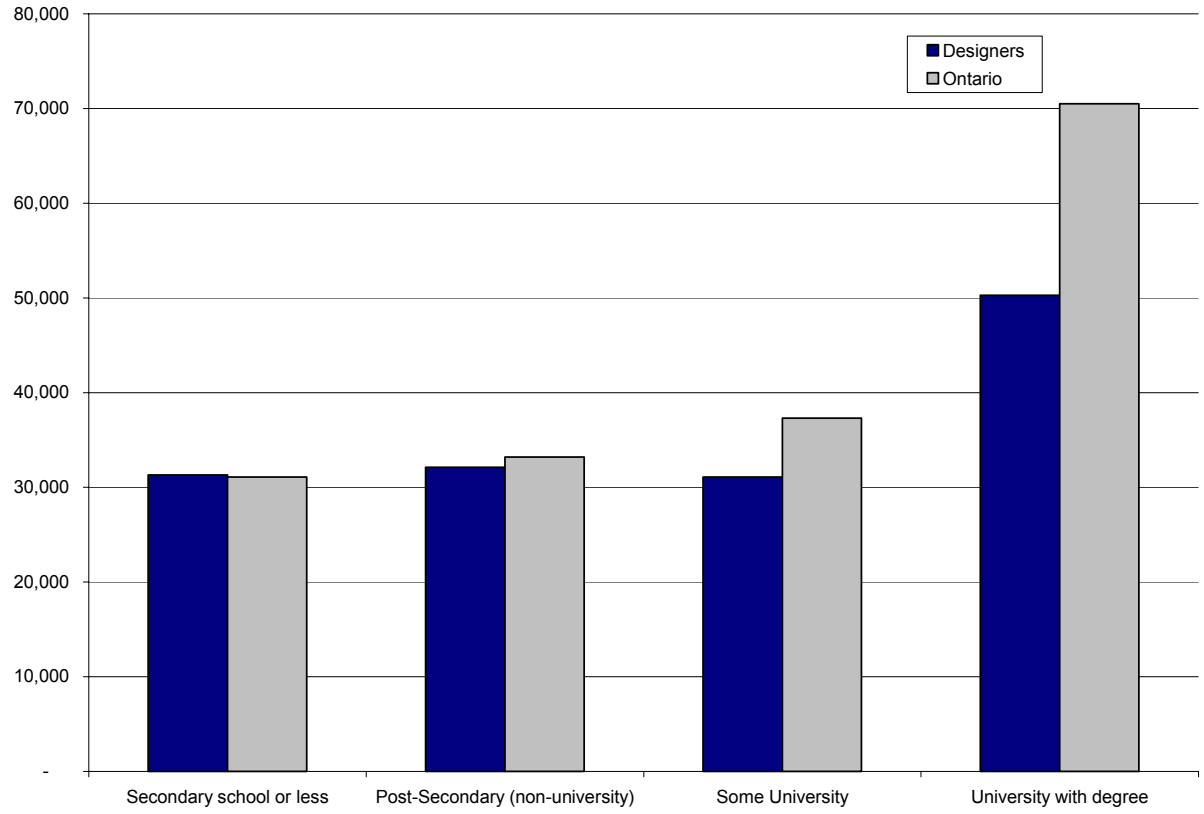
Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]

[1] Includes theatre, fashion, exhibit and other creative designers.

[2] Includes university certificate or diploma below the bachelor level or university education without a degree.

Given that such a significant portion of the design workforce is self-employed (see above) and, with the exception of architects, self-employed designers earn less than their counterparts with an employer (see Figure 15 above), we examine employment income for self-employed designers by their educational attainment. Similar to the design workforce as a whole, there is virtually no difference in levels of income amongst self-employed designers prior to earning a university degree. Furthermore, the increase in income associated with a university degree is less pronounced for self-employed designers than amongst the Ontario's self-employed workforce.

Figure 17: Average employment income by education for Ontario's self-employed design workforce, 2000

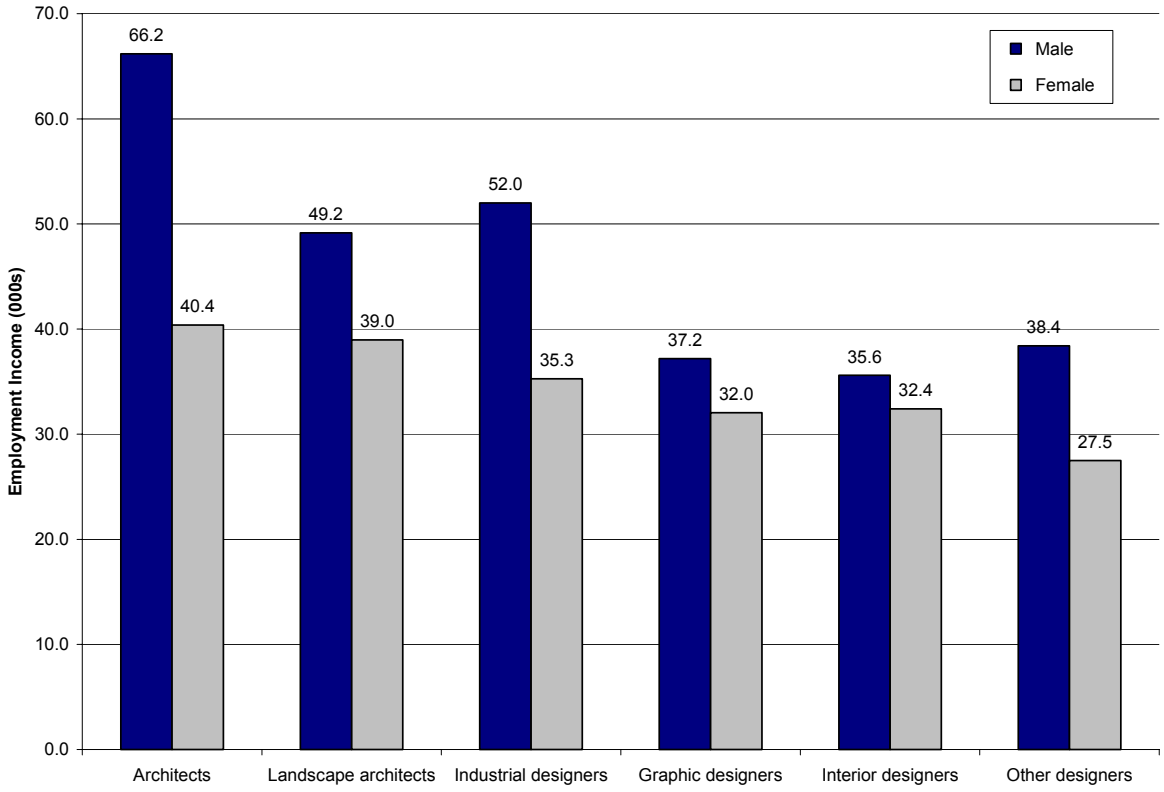


Source: Statistics Canada, Census of Population, 2001. [Custom Tabulations]

Finally, Figure 18 and Table 14 show the differences in average employment income by gender. There is a gender gap between the income of male and female designers, but this gap is smaller than that which exists in Ontario's labour force as whole. This gender gap is more pronounced for architects, landscape architects, and industrial designers. There is a much smaller earnings gap between men and women in the interior design and graphic design fields. However, female designers (with the exception of theatre, fashion, exhibit and other designers) have an average employment income that is higher than the female labour force. The earnings gap between men and women has been well documented and is often explained by career interruptions due to family reasons, gender-based discrimination in the labour market, as well as other structural barriers.[7]

[7] Drolet, M. 2001. *The Persistent Wage Gap: New Evidence on the Canadian Gender Wage Gap*. Analytical Studies Branch Research Paper Series No. 157. Catalogue No. 11-F0019-MIE-2001157. Ottawa: Analytical Studies Branch, Statistics Canada.

Figure 18: Average employment income by gender for Ontario's design workforce, 2000



Source: Statistics Canada, Census of Population, 2001. [Custom tabulations].

Table 14: Average employment income by gender for Ontario's design workforce, 2000

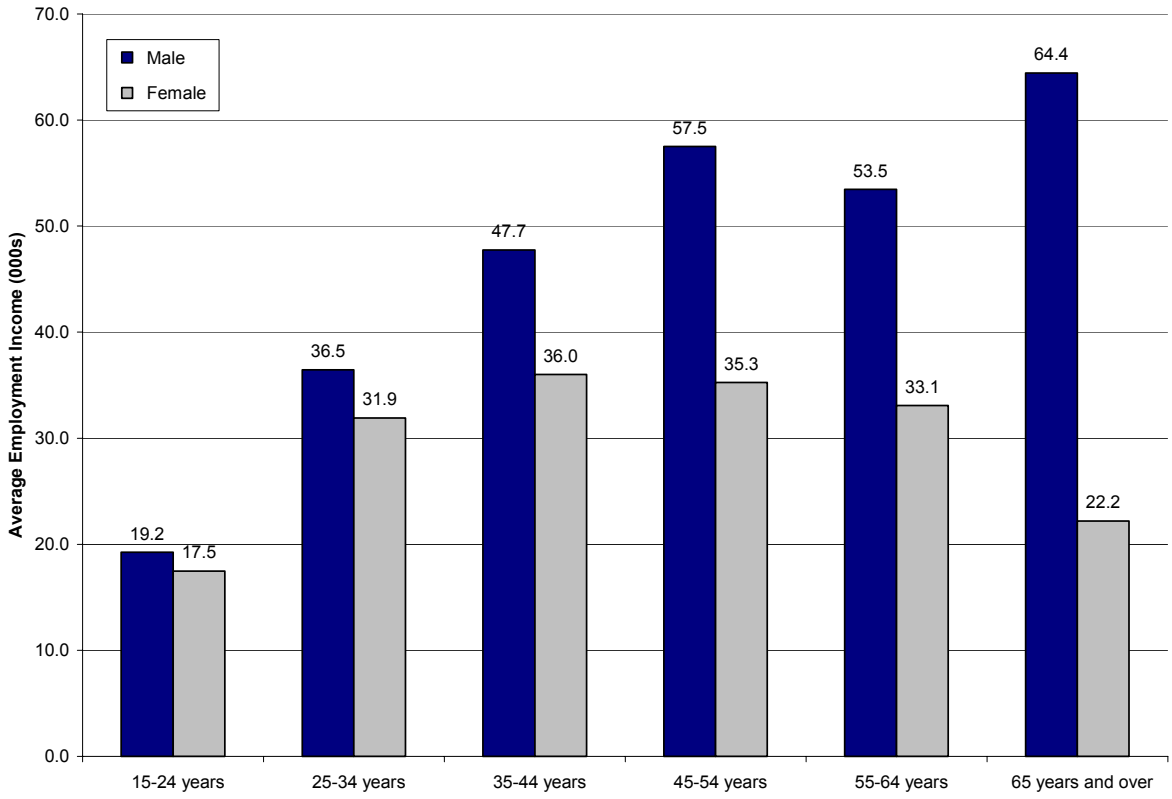
	Employed Labour Force	Male	Female
Architects	60,900	66,200	40,400
Landscape architects	46,100	49,200	39,000
Industrial designers	48,400	52,000	35,300
Graphic designers	34,900	37,200	32,000
Interior designers	33,400	35,600	32,400
Other designers[1]	32,000	38,400	27,500
Design Occupations	37,700	45,100	32,400
All Occupations	39,700	45,500	28,900

Source: Statistics Canada, Census of Population, 2001. [Custom tabulations].

[1] Includes theatre, fashion, exhibit and other creative designers.

It is generally understood that average employment income increases with age and experience. While this is true for men in the design workforce, this is less the case for women in the design workforce. This pattern also holds for Ontario's workforce as a whole. The gender gap in employment income exists across all age groups but is most pronounced amongst older age cohorts. As noted previously, this is partly a product of career interruptions due to family reasons, as well as structural differences in the labour market.

Figure 19: Average employment income by gender and age for Ontario's design workforce, 2000



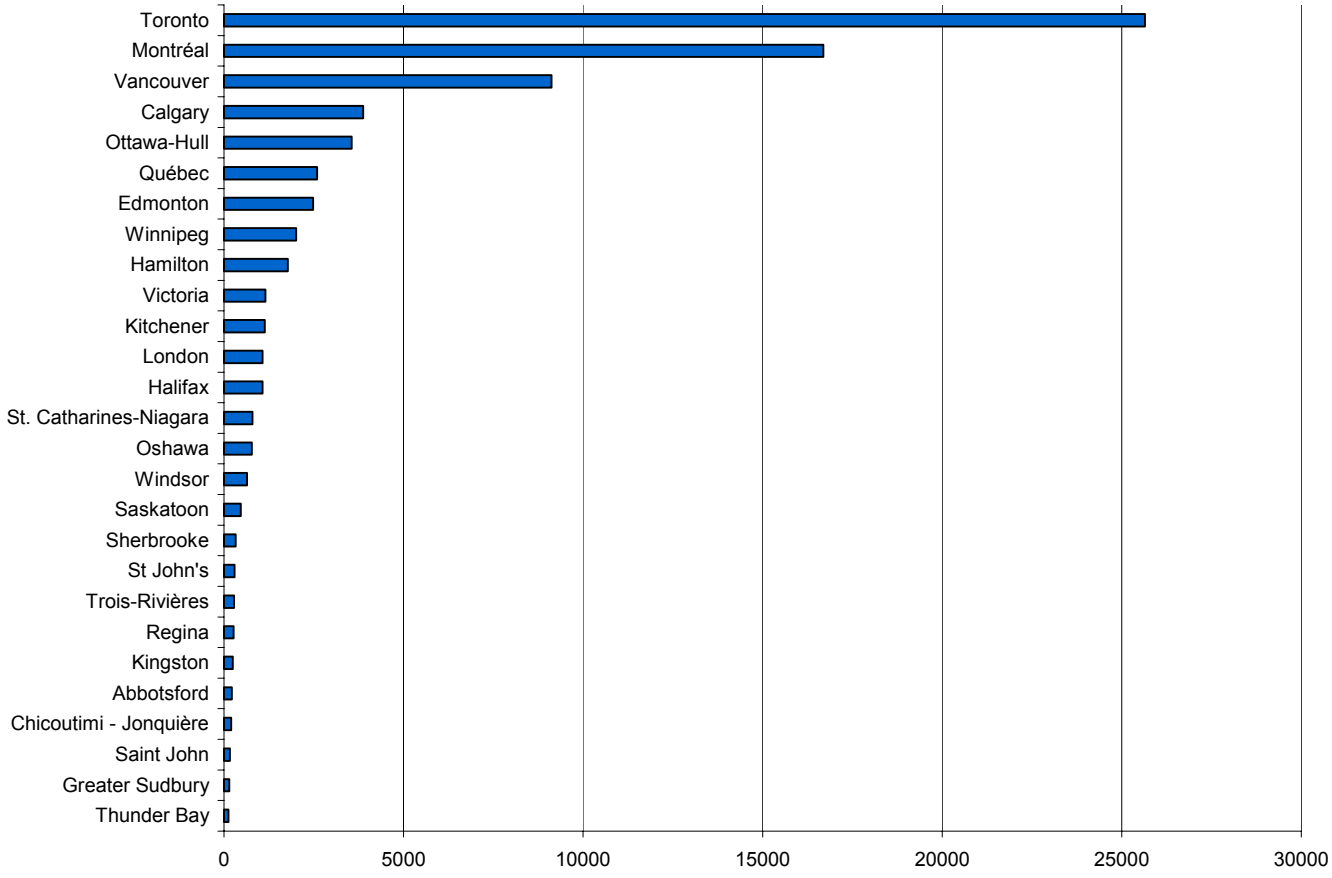
Source: Statistics Canada, Census of Population, 2001. [Custom tabulations].

10 The Design Index: The Geography of Design Work in Canada

Ontario's design workforce is urban: over 90% of Ontario's designers live in one of eleven cities. Cities are the key sites where designers live and work. This is true both in Ontario and across Canada. However, some cities have been more able to attract and retain design talent. To assess how Ontario's cities compare to other Canadian cities, we measure the design workforce both in terms of its *absolute size* (employment) and its *relative size and concentration* (the Design Index).

We begin by looking at the *absolute* size of the design workforce in Canadian cities. Toronto, Montréal and Vancouver have the largest numbers of designers, followed by Calgary, Ottawa, Québec City, and Edmonton (Figure 20). Indeed, Toronto has the largest critical mass of designers, with 50% more designers than Montréal, the city with the second largest number of designers. Hamilton, Kitchener, and London rank in the top-half of the rankings of Canadian cities by size of the design workforce. Other Ontario cities (St. Catharines-Niagara, Oshawa, Windsor, Kingston, Sudbury, and Thunder Bay) rank in the bottom-half of the rankings of Canadian cities by absolute size of the design workforce.

Figure 20: Designers in Canadian cities, 2001

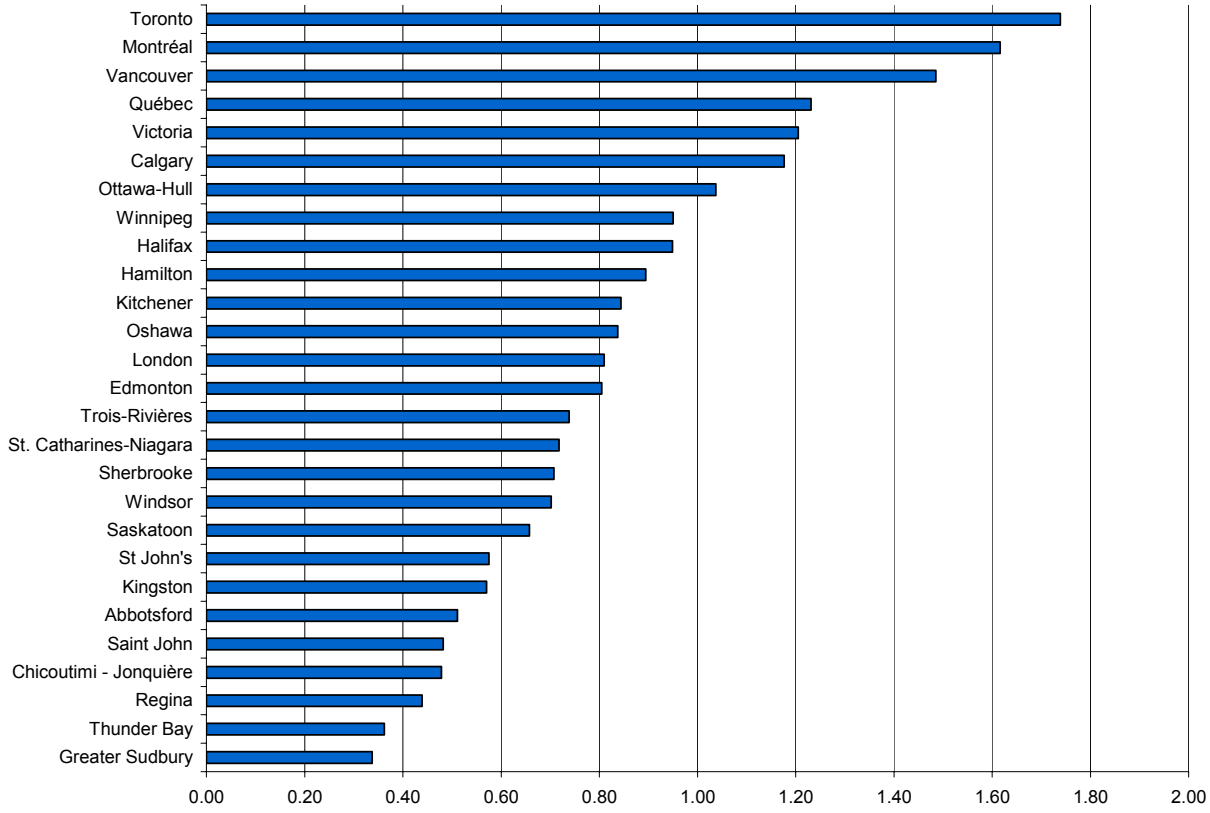


Source: Statistics Canada, Census of Population, 2001.

Next, we turn to examining the *relative size and concentration* of the design workforce in Canadian cities. We introduce a new measure that we call the Design Index. The Design Index is a location quotient that compares the proportion of designers in a city's workforce to the national average. A value greater than 1 means that the city has a higher proportion of designers in their workforce compared to Canada. A value less than 1 means that the city has a lower proportion of designers than the national average.

Toronto, Montréal, and Vancouver have the highest proportions of workers in design-related occupations, followed by Québec City, Victoria, and Calgary (Figure 21). Ottawa-Hull, Hamilton, Kitchener, Oshawa, and London are in the top-half of the rankings of Canadian cities by proportion of workers in design-related occupations. Other Ontario cities such as St. Catharines-Niagara, Windsor, Kingston, Thunder Bay, and Sudbury have low proportions of designers in their workforces.

Figure 21: The Design Index for Canadian cities, 2001



Source: Statistics Canada, Census of Population, 2001.

In addition to the Design Index, we calculate location quotients for each of the six design occupations individually. This tells us about the relative concentration of each group of designers separately. The results of this analysis can be found in Appendices G to L.

Table 15 provides a summary of these rankings for the 11 cities in Ontario included in our analysis (see Appendices G to L). Overall, Toronto has the highest concentration of designers of the 27 CMAs in Canada and it ranks highly across the six design occupations. Hamilton ranks 10th overall, but has the highest concentration of landscape architects. While Windsor ranks 18th of 27 overall, it has the second highest concentration of industrial designers. Sudbury and Thunder Bay rank very low overall, and across the six design occupations. Kingston also ranks quite poorly overall, but ranks slightly higher for proportions of architects and interior designers.

Table 15: Summary rankings for Ontario's cities

	Design Index	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers[1]
Toronto	**1**	2	5	3	1	1	2
Ottawa-Hull	**7**	8	4	13	9	7	9
Hamilton	**10**	16	1	9	11	9	15
Kitchener	**11**	21	9	7	10	15	11
Oshawa	**12**	26	7	15	8	10	22
London	**13**	20	24	10	12	8	13
St. Catharines-Niagara	**16**	15	16	12	17	17	23
Windsor	**18**	14	6	2	21	20	25
Kingston	**21**	11	--	20	24	13	21
Thunder Bay	**26**	25	--	21	25	25	19
Greater Sudbury	**27**	27	21	--	26	26	16

Source: Authors' Calculations; Statistics Canada, Census of Population, 2001.

[1] Includes theatre, fashion, exhibit and other creative designers.

11 Design Employment in Canada and the United States

In the previous section, we compared Ontario's cities to other Canadian cities. Now we extend the analysis to benchmark Canadian cities against US cities. However, we begin by assessing the national differences that exist between the United States and Canada in terms of the size and composition of their respective design workforces.

Table 16 compares levels of design employment in Canada and the United States. Canada has a higher proportion of designers in the employed labour (4.6 designers per 1000) compared to the United States (3.4 designers per 1000).[8] The Canadian design labour force has higher proportions of industrial designers (13%) and graphic designers (50%) compared to the United States. The US design labour force has higher proportions of architects (20%), landscape architects (4%), and other designers (15%) compared to Canada.

Table 16: Design employment in Canada and the United States, 2001

	Canada			United States		
	Size	% Design	Designers per 1000 labour force	Size	% Design	Designers per 1000 labour force
Architects	7,820	12.6	0.6	84,980	19.8	0.7
Landscape Architects	1,510	2.4	0.1	17,980	4.2	0.1
Industrial Designers	8,045	12.9	0.6	33,600	7.8	0.3
Graphic Designers	31,350	50.4	2.3	187,880	43.7	1.5
Interior Designers	6,710	10.8	0.5	39,340	9.1	0.3
Theatre, Fashion, Exhibit, and Other Creative Designers	6,725	10.8	0.5	66,250	15.4	0.5
All Design Occupations	62,160	100	4.6	430,030	100.0	3.4
All Occupations	13,654,450			127,980,410		

Source: Occupational Employment Statistics Program, US Bureau of Labor Statistics, 2001; Census of Population, Statistics Canada, 2001

Note: For purposes of comparability between Canada and the United States we exclude persons who are self-employed and/or who work in farm-related industries. See Appendices B and C for data definitions.

Next, we compare Canadian and US cities on the basis of the *absolute size* of the design workforce (employment) and also on the *relative concentration* of the design workforce (Design Index). Here, we recalculate the Design Index to compare the proportion of designers in a city's workforce to the North American average. A value greater than 1 means that the city has a higher proportion of designers in their workforce compared to North America. A value less than 1 means that the city has a lower proportion of designers than the North American average. Due to differences in the urban structure of Canada and the United States, we divide the 337 cities used in this analysis into four categories based on population size.

[8] The US Occupational Employment Statistics (OES) Program does not include self-employed individuals in its survey. To ensure that the Canadian numbers were compatible with the US data, self-employed workers are excluded from the analysis. Self-employed designers account for slightly less than one-third of the Canadian design workforce and this is higher in large urban areas meaning that some error could be introduced into our analysis. However, given that the level of self-employment amongst US designers is quite similar, we feel that very little error has been introduced (US Bureau of Labor Statistics, 2004).

Canadian cities perform well against their US counterparts across all four size categories. With the exception of Sudbury, Abbotsford, and Thunder Bay's ranks on the Design Index, Canadian cities rank in the *top-quartile* in terms of the absolute and relative size of their design workforces. Toronto has the 3rd largest design workforce in North America, following New York and Boston. Toronto ranks 4th on the Design Index, behind San Francisco, Boston, and New York.

Table 17: Canada's cities by population size – North American ranks for design employment

	Design Workforce (Size Rank)	Design Index (North American LQ Rank)
Population more than 1 million (66 cities)		
Toronto	3	4
Montreal	6	5
Vancouver	17	7
Ottawa	32	11
Population 500,000 to 1 million (47 cities)		
Calgary	1	1
Edmonton	2	8
Québec	3	2
Winnipeg	6	3
Hamilton	8	5
Population 250,000 to 500,000 (89 cities)		
London	3	17
Kitchener	9	9
St. Catharines-Niagara	11	18
Halifax	15	10
Victoria	20	4
Windsor	21	16
Oshawa	27	13
Population less than 250,000 (162 cities)		
Saskatoon	7	11
Regina	14	27
St John's	18	19
Greater Sudbury	19	47
Chicoutimi - Jonquière	21	17
Sherbrooke	25	5
Abbotsford	33	43
Kingston	34	30
Trois-Rivières	48	7
Saint John	49	22
Thunder Bay	50	41

Source: Authors' calculations; Occupational Employment Statistics Program, US Bureau of Labor Statistics, 2001; Census of Population, Statistics Canada, 2001.
Note: For purposes of comparability between Canada and the United States we exclude persons who are self-employed and/or who work in farm-related industries. See Appendices B and C for data definitions.

Table 18 shows the ranking of the top twenty-five North American cities with populations over 1 million by both the *absolute* and *relative* size of their respective design workforces.[9] Toronto, Montreal, and Vancouver rank 3rd, 6th, and 17th respectively in terms of the absolute size of the design work force compared to other North American cities with populations over 1 million

[9] Numbers may not match those reported elsewhere due to differences in data definition (i.e., the exclusion of self-employed workers).

In terms of relative size (as measured by the Design Index), the four Canadian cities in this size category have much higher concentrations of designers than the North American average. This is reflected in the high ranks of Toronto (4), Montreal (5), Vancouver (7) and Ottawa (11).

Table 18: Top 25 North American cities (1 million +) for design employment, 2001

	Design Employment	Designers (000s)	Design Employment Concentration	Design LQ
1	New York, NY PMSA	35.2	San Francisco, CA PMSA	3.3
2	Boston, MA-NH PMSA	17.5	Boston, MA-NH PMSA	2.6
3	**Toronto, ON CMA**	**17.3**	New York, NY PMSA	2.5
4	Chicago, IL PMSA	17.1	**Toronto, ON CMA**	**2.2**
5	Los Angeles-Long Beach, CA PMSA	15.0	**Montréal, QU CMA**	**2.2**
6	**Montréal, QU CMA**	**12.1**	Seattle-Bellevue-Everett, WA PMSA	2.1
7	San Francisco, CA PMSA	11.5	**Vancouver, BC CMA**	**1.8**
8	Detroit, MI PMSA	10.0	Columbus, OH MSA	1.6
9	Philadelphia, PA-NJ PMSA	9.8	Milwaukee-Waukesha, WI PMSA	1.4
10	Seattle-Bellevue-Everett, WA PMSA	9.8	Portland-Vancouver, OR-WA PMSA	1.4
11	Minneapolis-St. Paul, MN-WI MSA	8.3	**Ottawa-Hull, ON CMA**	**1.4**
12	Dallas, TX PMSA	7.9	Minneapolis-St. Paul, MN-WI MSA	1.4
13	Atlanta, GA MSA	7.8	Detroit, MI PMSA	1.4
14	Washington, DC-MD-VA-WV PMSA	7.4	West Palm Beach-Boca Raton, FL MSA	1.4
15	Phoenix-Mesa, AZ MSA	6.8	Denver, CO PMSA	1.4
16	Houston, TX PMSA	6.0	Nassau-Suffolk, NY PMSA	1.3
17	**Vancouver, BC CMA**	**5.7**	Phoenix-Mesa, AZ MSA	1.2
18	Denver, CO PMSA	5.5	Grand Rapids-Muskegon-Holland, MI MSA	1.2
19	Nassau-Suffolk, NY PMSA	5.5	Chicago, IL PMSA	1.2
20	St. Louis, MO-IL MSA	5.3	Kansas City, MO-KS MSA	1.2
21	Columbus, OH MSA	4.8	Philadelphia, PA-NJ PMSA	1.2
22	Portland-Vancouver, OR-WA PMSA	4.6	St. Louis, MO-IL MSA	1.2
23	Baltimore, MD PMSA	4.1	Dallas, TX PMSA	1.2
24	Milwaukee-Waukesha, WI PMSA	4.1	Cincinnati, OH-KY-IN PMSA	1.1
25	San Diego, CA MSA	4.0	Charlotte-Gastonia-Rock Hill, NC-SC MSA	1.1

Source: Authors' calculations; Occupational Employment Statistics Program, US Bureau of Labor Statistics, 2001; Census of Population, Statistics Canada, 2001.

Note: For purposes of comparability between Canada and the United States we exclude persons who are self-employed and/or who work in farm-related industries. See Appendices B and C for data definitions.

12 Conclusions and Emerging Issues

Having now completed this comprehensive analysis of design activities in the Ontario economy, there are several key issues that warrant further discussion.

First, it is clear that more than half of Ontario's designers work in sectors outside of the design or architectural services industries. In other words, designers work in almost every corner of the Ontario economy. This implies that design is a vital input to the competitive success of firms in a wide range of sectors. If predictions about the evolution of the knowledge economy are accurate, they suggest that this input will only become more important over time.

And yet, at the same time, there is some evidence to suggest that design has not traditionally occupied a position of high priority or status for the majority of Canada's businesses, or within Canadian society more generally.[10] At a time when there is an emerging consensus about the rising importance of design for competitiveness[11], the challenge for public policy is to find effective ways to highlight the importance of designers' contributions to the competitiveness and innovativeness of firms. One possible strategy for achieving this is through the production and broad dissemination of case studies that demonstrate how the application of effective design has contributed to the development of successful products and businesses. In this way, the various benefits arising from the employment of designers could be made more tangible and compelling.

Second, our analysis of the absolute and relative size and geography of Ontario's design workforce has produced some noteworthy and surprising findings. Fully 44 percent of Canada's designers live in Ontario. Within Ontario, 90 percent of all designers reside in one of the province's 11 metropolitan areas, and nearly two-thirds are in the Toronto region alone. In fact, Toronto has the largest design workforce in Canada and also the third largest in North America (exceeded only by New York and Boston). When it comes to the Design Index (our measure of the degree of specialization in design occupations), Toronto ranks fourth in North America, behind San Francisco, Boston and New York. This is an extraordinary set of statistics whose significance has not been evident until now.

This remarkable performance also raises a pressing question for public policy. The excerpt below, taken from the City of Toronto's recent Economic Development Strategy, clearly conveys the City's aspirations and rationale underlying the goal to make design one of the centerpieces of Toronto's innovative economy:

> *"In advanced economies, the generation of new ideas and the translation of those ideas into innovative products and services of superior quality are the primary way economic value is added. Adding value to products and improving the efficiency of production processes through the use of advanced design and new technologies, whether in manufacturing or services presents tremendous potential for the City.*
>
> *Innovation stems from creativity; creativity in turn stems from the vibrant and diverse culture great cities foster. The strategy strengthens and builds on the rich diversity of creative talent and cultural expression within Toronto's arts and*

[10] This sentiment was expressed consistently in the Stakeholder Consultations organized by the DIAC and held at the Design Exchange, Toronto on 21 January and 3 March 2004. It is also confirmed by the findings of other work commissioned by DIAC for this project (see Corbett Communications, 2004).

[11] Institute for Competitiveness and Prosperity. 2002. *Closing the Prosperity Gap: First Annual Report*. Toronto.

culture community. Places that celebrate creativity and innovation in many fields will succeed in retaining and attracting knowledge workers."[12]

The key question for policy makers is: how can we capitalize on these impressive rankings to market and re-brand Toronto, Ontario, and Canada as centres for design and creativity? This represents an unparalleled opportunity to remake our image worldwide.

Third, our analysis reveals that design work is often highly contingent, and that economic survival for designers can be precarious. Designers are often self-employed and frequently work from home. At the same time, a growing proportion of design work is being outsourced or contracted out. Moreover, there is evidence that self-employed designers earn less than those who work for other organizations. This leads to another important question for industry leaders to consider. Given the increasingly contingent and precarious nature of design work, and acknowledging that competition for talent is becoming more challenging, how will the design sector continue to attract and retain highly skilled and talented designers?

Finally, concerning educational attainment and its relationship to earnings, we have shown that there is a clear financial payoff that comes from having completed a university degree – a relationship that seems to hold across most of the design disciplines. In other words, the design labour market appears to value investments in higher education. At the same time, educational trajectories for some of the design disciplines have traditionally not led to the completion of a four-year degree program. Does is make sense, from the perspective of public policy or industry organizations, to enact strategies that encourage higher levels of educational attainment within the design workforce?

Despite the significant challenges we have identified above, this report clearly suggests that Ontario has a large and vibrant design workforce. Ontario is home to one of the largest design clusters in North America. However, this remains a relatively unexplored and under appreciated asset. Ontario's design sector represents a significant opportunity to unleash the creativity and competitiveness of this region.

[12] City of Toronto. 2001. *Toronto Economic Development Strategy*.

References

Drolet, M. 2001. *The Persistent Wage Gap: New Evidence on the Canadian Gender Wage Gap*. Analytical Studies Branch Research Paper Series No. 157. Catalogue No. 11-F0019-MIE-2001157. Ottawa: Analytical Studies Branch, Statistics Canada.

Bureau of Labor Statistics. 2001. *Occupational Employment and Wage Estimates*. Occupational Employment Statistics (OES) Program. http://www.bls.gov/oes/oes_dl.htm [Accessed: November 25, 2003]

Bureau of Labor Statistics. 2004. *Occupational Outlook Handbook, 2004-2005 edition*. http://www.bls.gov/oco/ocos090.htm [Accessed: March 10, 2004]

City of Toronto. 2001. *Toronto Economic Development Strategy* [Available from http://www.city.toronto.on.ca/business_publications/econdev_strategy.htm]

Corbett Communications. 2004. *Interim Report: Reengineering Growth - Research Study on Design Industry Skill Development*. Report prepared for the Design Industry Advisory Committee.

Florida, R. 2002. *The Rise of the Creative Class*. New York: Basic Books.

Gertler, M.S., Florida, R., Gates, G., and Vinodrai, T. 2002. *Competing on Creativity: Ontario's Cities in North American Context*. Report prepared for the Institute of Competitiveness and Prosperity and the Ontario Ministry of Enterprise, Opportunity and Innovation. [Available from http://www.utoronto.ca/progris/recentpub.htm]

Markusen, A. and King, D. 2003. *The Artistic Dividend: The Arts' Hidden Contribution to Regional Development*. Minneapolis: Project on Regional and Industrial Economics, Humphrey Institute of Public Affairs, University of Minnesota. [Available from http://www.hhh.umn.edu/projects/prie/pub.htm]

Markusen, A., Schrock, G. and Cameron, M. 2004. *The Artistic Divident Revisited*. Minneapolis: Project on Regional and Industrial Economics, Humphrey Institute of Public Affairs, University of Minnesota. [Available from http://www.hhh.umn.edu/projects/prie/pub.htm]

Institute for Competitiveness and Prosperity. 2002. *Closing the Prosperity Gap: First Annual Report*. [Available at http://www.competeprosper.ca/task/task_report.html]

Statistics Canada. 2001. *2001 Census Handbook*. Catalogue No. 92-379-XIE02001. Ottawa: Statistics Canada.

Statistics Canada. 2001. *Number and Average Employment Income (2) in Constant (2000) Dollars, Sex (3), Work Activity (3) and Occupation - 1991 Standard Occupational Classification (Historical) (707A) for Population 15 Years and Over With Employment Income, for Canada, Provinces, Territories and Census Metropolitan Areas, 1995 and 2000 - 20% Sample Data*. Catalogue No. 97F0019XCB01003. Ottawa: Statistics Canada.

Statistics Canada. 2001. *Occupation - 1991 Standard Occupational Classification (Historical) (707), Age Groups (11A) and Sex (3) for Labour Force 15 Years and Over, for Canada, Provinces, Territories, Census Metropolitan Areas and Census Agglomerations, 1991 to 2001 Censuses - 20% Sample Data*. Catalogue No. 97F0012XCB01022. Ottawa: Statistics Canada.

Statistics Canada. 2001. *Occupation - 2001 National Occupational Classification for Statistics (720), Class of Worker (6) and Sex (3) for Labour Force 15 Years and Over, for Canada, Provinces, Territories, Census Metropolitan Areas and Census Agglomerations, 2001 Census - 20% Sample Data*. Catalogue No. 97F0012XCB01017. Ottawa: Statistics Canada.

Statistics Canada. 2001. *Occupation - 2001 National Occupational Classification for Statistics (718), Industry - 1997 North American Industry Classification System (120), Class of Worker (5), Sex (3) and 2000 Employment Income (2) for Population 15 Years and Over With Employment Income Who Worked Full Time, Full Year, for Census Metropolitan Areas, 2001 Census - 20% Sample Data*. Catalogue No. 97F0012XCB01053. Ottawa: Statistics Canada.

Statistics Canada. 2001. *Occupation - 2001 National Occupational Classification for Statistics (718), Industry - 1997 North American Industry Classification System (120), Class of Worker (5), Sex (3) and 2000 Employment Income (2) for Population 15 Years and Over With Employment Income Who Worked Full Time, Full Year, for Canada, Provinces and Territories, 2001 Census - 20% Sample Data*. Catalogue No. 97F0012XCB01049. Ottawa: Statistics Canada.

Statistics Canada. 2002. *Annual Report: Survey of Specialized Design*. Ottawa: Statistics Canada.

Statistics Canada. 2003. *Labour Force Survey, 1987-2003: Custom Tabulations*. Ottawa: Statistics Canada.

Statistics Canada. 2004. *2001 Census of Population: Custom Tabulations*. Ottawa: Statistics Canada.

About the Researchers

Meric Gertler, PhD is Professor of Geography and Planning, and the Goldring Chair in Canadian Studies at the University of Toronto. He is also Co-Director of the Program on Globalization and Regional Innovation Systems (PROGRIS) at University of Toronto's Munk Centre for International Studies. Together with David Wolfe, he co-directs the Innovation Systems Research Network (ISRN) and its provincial sub-network, the Ontario Network on the Regional Innovation System (ONRIS). Along with Richard Florida, Gary Gates, and Tara Vinodrai, he is co-author of the report *Competing on Creativity: Placing Ontario's Cities in North American Context*.

Tara Vinodrai, MA is a doctoral candidate in economic geography at the University of Toronto and is a Research Associate with PROGRIS. Her doctoral dissertation examines the relationship between creative work (including design), institutions, and innovation in Toronto. Along with Meric Gertler, Richard Florida, and Gary Gates, she is co-author of the report *Competing on Creativity: Placing Ontario's Cities in North American Context*. Previously, she has worked as a research economist in the Microeconomic Analysis Division of Statistics Canada in Ottawa on issues related to the knowledge-based economy.

Acknowledgements

The authors wish to express their thanks to Arlene Gould and the other members of the Design Industry Advisory Committee (DIAC) for funding this study and providing feedback. The authors thank Christine Raissis and Peter Viducis from the City of Toronto for kindly providing customized data tables and Paola Poletto of the Design Exchange for providing access to previous studies and documents. The authors thank John Corbett of Corbett Communications and Michael Grant of Grant Insights for sharing the findings of their study. The authors thank the members of the DIAC Stakeholders Group for their valuable comments and suggestions.

Appendix A: Data Sources

Canadian Census of Population, 2001
The most recent Census of Population for Canada was taken on Census Day: May 15, 2001. The Census requires every household in Canada to respond to a questionnaire. In the 2001 Census, 80% of households received a short questionnaire containing seven questions on basic information for every household member (name, sex, date of birth, marital status, common-law status, relationship to the person filling in the questionnaire, and first language learned. The remaining 20% of households received a 59-question long form which is used to collect information in a number of social, economic, and demographic areas, including labour force participation, language, education, religion, household tenure, immigration and mobility. For more information, see Statistics Canada. 2001. *2001 Census Handbook*. Catalogue No. 92-379-XIE02001. Ottawa: Statistics Canada.

Labour Force Survey, 1987-2002
The Labour Force Survey (LFS) is a monthly household survey conducted by Statistics Canada. It is from this survey that the official unemployment rate is calculated. The LFS divides the working-age population (aged 15 years and over) into three categories: employed, unemployed, and not in the labour force. The survey is conducted in 52,000 households across Canada. People living in the Northwest Territories, Nunavut, residents of Indian reservations, hospitals, penitentiaries, and long-term care facilities are excluded. Full-time members of the armed forces are also excluded. Respondents remain in the survey for six consecutive months. For more information please see http://www.statcan.ca/english/survey/labour/labour.htm

Annual Survey of Service Industries: Specialized Design
The annual survey of specialized design services is a business survey intended to collect the financial and operating data needed to produce statistics on the Specialized Design Industry in Canada. It is an establishment based sample survey where the target population consists of all statistical establishments (sometimes referred to as firms or units) classified as Specialized Design according to the North American Industry Classification System during the reference year. Specialized design services are: landscape architectural services, interior design services, industrial design services, graphic design services, and other specialized design services. Note that architectural services are covered under a separate survey. In 2002, the sample size was 1,179 establishments. For more information see http://www.statcan.ca/english/survey/business/design/design.htm and http://www.statcan.ca/english/sdds/4719.htm

US Occupational Employment Statistics (OES) Program, 2001
The Occupational Employment Statistics (OES) program is part of the Bureau of Labor Statistics (BLS) in the United States Department of Labor. The OES produces employment and wage estimates for over 700 occupations. These estimates are available for the nation as a whole, for individual States, and for metropolitan areas. The OES is an establishment-based survey that covers all full-time and part-time wage and salary workers in non-farm industries. The survey does not cover the self-employed, owners and partners in unincorporated firms, household workers, or unpaid family workers. The OES program surveys establishments in Agricultural Services, Mining; Construction; Manufacturing; Transportation, Communication, Electric, Gas, and Sanitary Services; Wholesale Trade; Retail Trade; Finance, Insurance, and Real Estate; Services; and Government. For more information, please see http://www.bls.gov/oes/home.htm

Appendix B: Defining Design Occupations in Canada and the United States

CANADA – National Occupational Classification

NOC	Occupation Description
C051	Architects
C052	Landscape Architects
C151	Industrial Designers
F141	Graphic designers and illustrating artists
F142	Interior designers
F143	Theatre, fashion, exhibit and other creative designers

Source: Statistics Canada, 2001. *National Occupational Classification –Statistics (NOC-S)* http://www.statcan.ca/english/concepts/occupation.htm [Accessed: November 26, 2003]

UNITED STATES – Standard Occupational Classification

SOC	Occupation Description
17-1011	Architects, Except Landscape and Naval
17-1012	Landscape Architects
27-1011	Art Directors
27-1014	Multi-media Artists and Animators
27-1021	Commercial and Industrial Designers
27-1022	Fashion Designers
27-1024	Graphic Designers
27-1025	Interior Designers
27-1026	Merchandise Displayers and Window Trimmers
27-1027	Set and Exhibit Designers
27-1029	Designers, All Other

Source: Bureau of Labour Statistics, US Department of Labour. *Standard Occupational Classification (SOC) System User Guide*. http://www.bls.gov/soc/home.htm, [Accessed: November 25, 2003].

Appendix C: Description of Design Occupations in Canada

Architects (C051) - Architects conceptualize, plan and develop designs for the construction and renovation of commercial, institutional and residential buildings. Architects are employed by architectural firms, private corporations and governments, or they may be self-employed. *Exclusions*: Landscape architects are classified in unit group C052 - Landscape Architects; Naval architects are classified in unit group C048 - Other Professional Engineers, n.e.c.

Landscape Architects (CO52) - Landscape architects conceptualize landscape designs, develop contract documents and oversee the construction of landscape development for commercial projects, office complexes, parks, golf courses and residential development. They are employed by government environmental and development agencies, landscape consulting firms and by architectural and engineering firms, or they are self-employed.

Industrial Designers (C151) - Industrial designers conceptualize and produce designs for manufactured products. They are employed by manufacturing industries and private design firms or they may be self-employed. *Exclusions*: Interior designers, graphic designers and other non-industrial designers are classified in an appropriate unit group of minor group F14 - Creative Designers and Craftspersons

Graphic Designers and Illustrators (F141) - Graphic designers conceptualize and produce graphic art and visual materials to effectively communicate information for publications, advertising, films, packaging, posters, signs and interactive media such as web sites and CD-ROMs. They are employed by advertising and graphic design firms, by establishments with advertising or communications departments and by multimedia production companies, or they may be self-employed. Graphic designers who are also supervisors, project managers or consultants are included in this unit group. Illustrators conceptualize and create illustrations to represent information through images. They are almost solely self-employed. *Exclusions*: Interior designers are classified in unit group F142 - Interior Designers.

Interior Designers (F142) - Interior designers conceptualize and produce aesthetic, functional and safe designs for interior spaces in residential, commercial, cultural, institutional and industrial buildings. They are employed by architectural firms, interior design firms, retail establishments, construction companies, hospitals, airlines, hotel and restaurant chains, and other establishments or they may be self-employed. *Exclusions*: Interior decorators are classified in unit group G211 - Retail Salespersons and Sales Clerks; Designers concerned with visual images and graphic art are classified in unit group F141 - Graphic Designers and Illustrators.

Theatre, Fashion, Exhibit and Other Creative Designers (F143) - Designers in this unit group conceptualize and produce designs for film, television, theatre and video productions, garments and textiles, displays and exhibits, and for other creative items such as jewellery and trophies. Theatre designers are employed by performing arts and broadcasting companies and by festivals; fashion designers are employed by clothing and textiles companies or may be self-employed; and exhibit designers are employed by museums and retail establishments. Other creative designers in this unit group are employed by manufacturing establishments or may be self-employed. *Exclusions*: Interior designers are classified in unit group F142 - Interior Designers; Graphic designers are classified in unit group F141 - Graphic Designers and Illustrators.

Source: Statistics Canada, 2001. *National Occupational Classification –Statistics (NOC-S)*
http://www.statcan.ca/english/concepts/occupation.htm [Accessed: November 26, 2003]

Appendix D: Description of Design Occupations in the United States

Architects (17-1011) - Plan and design structures, such as private residences, office buildings, theaters, factories, and other structural property.

Landscape Architects (17-1012) - Plan and design land areas for such projects as parks and other recreational facilities, airports, highways, hospitals, schools, land subdivisions, and commercial, industrial, and residential sites.

Art Directors (27-1011) - Formulate design concepts and presentation approaches, and direct workers engaged in art work, layout design, and copy writing for visual communications media, such as magazines, books, newspapers, and packaging.

Multi-media Artists and Animators (27-1014) - Create special effects, animation, or other visual images using film, video, computers, or other electronic tools and media for use in products or creations, such as computer games, movies, music videos, and commercials.

Commercial and Industrial Designers (27-1021) - Develop and design manufactured products, such as cars, home appliances, and children's toys. Combine artistic talent with research on product use, marketing, and materials to create the most functional and appealing product design.

Fashion Designers (27-1022) - Design clothing and accessories. Create original garments or design garments that follow well established fashion trends. May develop the line of color and kinds of materials.

Graphic Designers (27-1024) - Design or create graphics to meet a client's specific commercial or promotional needs, such as packaging, displays, or logos. May use a variety of mediums to achieve artistic or decorative effects.

Interior Designers (27-1025) - Plan, design, and furnish interiors of residential, commercial, or industrial buildings. Formulate design which is practical, aesthetic, and conducive to intended purposes, such as raising productivity, selling merchandise, or improving life style. May specialize in a particular field, style, or phase of interior design. Exclude “Merchandise Displayers and Window Trimmers” (27-1026).

Merchandise Displayers and Window Trimmers (27-1026) - Plan and erect commercial displays, such as those in windows and interiors of retail stores and at trade exhibitions.

Set and Exhibit Designers (27-1027) - Design special exhibits and movie, television, and theater sets. May study scripts, confer with directors, and conduct research to determine appropriate architectural styles.

Other Designers (27-1029) - All designers not listed separately.

Source: US Department of Labor, Bureau of Labor Statistics (1998). *Standard Occupational Classification System*. http://www.bls.gov/soc/home.htm, [Accessed: November 26, 2003].

Appendix E: Employment by Design Occupations in Ontario's cities (% Canada)

Ontario accounts for 44% of Canada's design workforce, as compared to only 38% of Canada's overall workforce. With the exception of architects and theatre, fashion, exhibit and other creative designers, over 45% of the Canadian workforce in each of the six design occupations is located in Ontario. Toronto accounts for 28% of Canada's design workforce, as compared to only 16% of Canada's overall workforce. With the exception of landscape architects, over 25% of the Canadian workforce in each of the six design occupations is located in Toronto.

Employment by design occupation in Ontario cities, 2001 (% of Canada's design workforce)

	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers[1]	All Designers
Ottawa-Hull	4.8	5.6	3.0	3.8	4.9	2.3	3.9
Kingston	0.4	0.0	0.2	0.2	0.4	0.2	0.3
Oshawa	0.2	1.5	0.7	1.1	1.1	0.3	0.9
Toronto	28.8	23.7	26.6	28.4	29.3	27.4	28.2
Hamilton	1.3	4.1	2.3	2.1	2.4	0.9	2.0
St. Catharines-Niagara	0.7	1.2	1.0	1.0	0.8	0.4	0.9
Kitchener	0.5	1.9	1.7	1.4	1.2	0.8	1.2
London	0.5	0.4	1.3	1.4	1.7	0.7	1.2
Windsor	0.6	1.5	1.8	0.6	0.6	0.3	0.7
Greater Sudbury	0.1	0.4	0.0	0.2	0.2	0.2	0.2
Thunder Bay	0.1	0.0	0.2	0.2	0.2	0.2	0.1
Ontario	40.1	45.4	46.0	45.3	47.3	36.3	44.0
CANADA (%)	100	100	100	100	100	100	100
CANADA (Total)	12,800	2,410	9,795	44,615	11,655	9,825	91,100

Source: Statistics Canada, Census of Population, 2001.

[1] Includes theatre, fashion, exhibit and other creative designers.

Appendix F: Design Employment by Industry in Ontario

Industry (2-digit NAICS)	All Designers	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers[1]
Utilities	30	30	-	-	-	-	-
Construction	545	90	30	95	55	275	-
Manufacturing	5,205	85	-	1,960	2,570	110	480
Wholesale trade	610	-	-	160	285	90	75
Retail trade	1,435	-	-	80	315	635	405
Transportation and warehousing	35	-	-	-	35	-	-
Information and cultural industries	1,685	20	-	45	1,505	30	85
Finance and insurance	275	20	-	-	230	25	-
Real estate	135	20	-	20	40	30	25
Professional, scientific and technical services	13,405	3,265	390	830	6,630	1,795	495
Administrative and support, waste management and remediation services	490	-	150	30	225	25	60
Educational services	195	40	-	-	155	-	-
Health care and social assistance	45	-	-	-	45	-	-
Arts, entertainment and recreation	460	-	-	-	325	-	135
Accommodation and food services	20	-	-	-	-	20	-
Other services (except public administration)	220	45	-	35	140	-	-
Public administration	535	100	125	15	195	80	20
ONTARIO (Total)	25,575	3,775	750	3,335	12,770	3,145	1,800

Source: Statistics Canada, Census of Population, 2001.

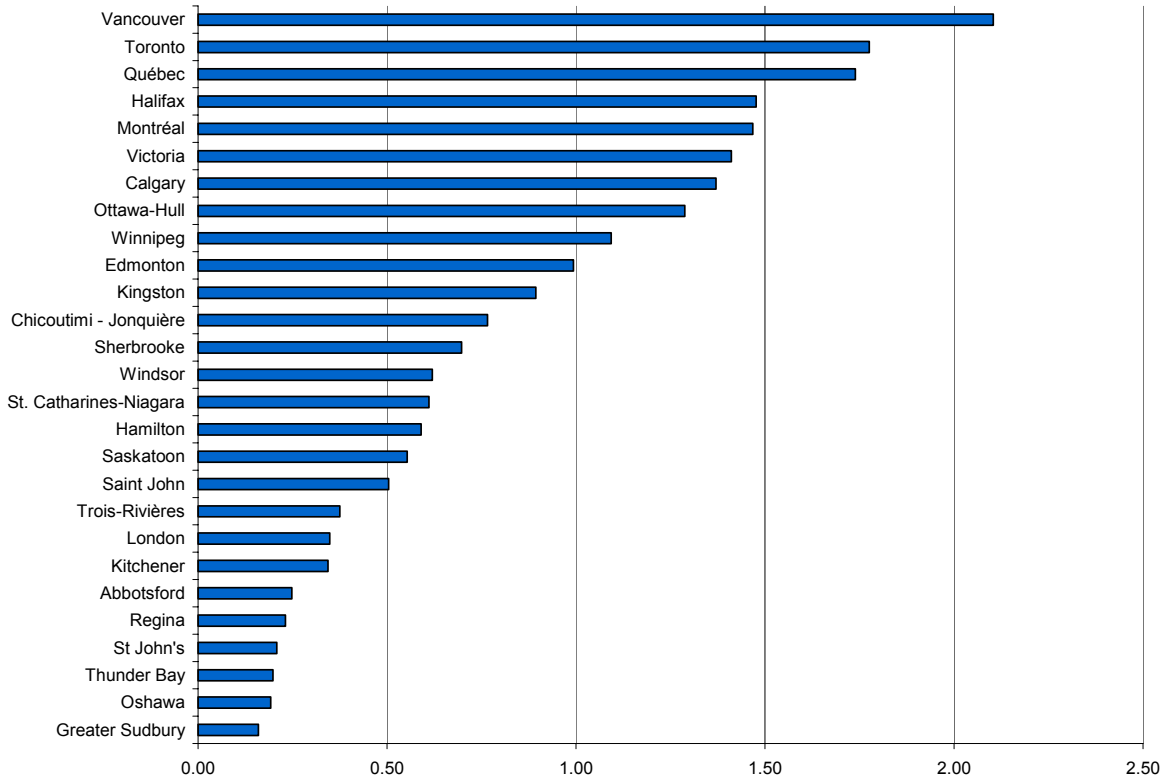
Note: Estimates include the full-year, full-time employed labour force only. Numbers may not add due to rounding or data suppression. 'Agriculture, forestry, fishing, and hunting', 'Mining, and oil and gas extraction', or 'Management of companies and enterprises' are excluded since there is no design employment in these industries in Ontario.

[1] Includes theatre, fashion, exhibit and other creative designers.

Appendix G: Location Quotients for Architects in Canadian Cities

Vancouver has the highest concentration of architects compared to the other 26 Canadian CMAs, followed by Toronto, Québec City, Halifax, Montréal, and Victoria. Toronto and Ottawa-Hull are the only two Ontario cities to have a higher proportion of architects than the national average. These two cities and Kingston are in the top-half of the rankings of Canadian cities by proportion of architects. Windsor, St. Catharines-Niagara, Hamilton, and London rank in the third quartile of Canadian cities ranked by proportion of architects. Finally, Kitchener, Thunder Bay, Oshawa, and Sudbury all have very low proportions of architects.

Location quotients for architects in Canadian cities, 2001

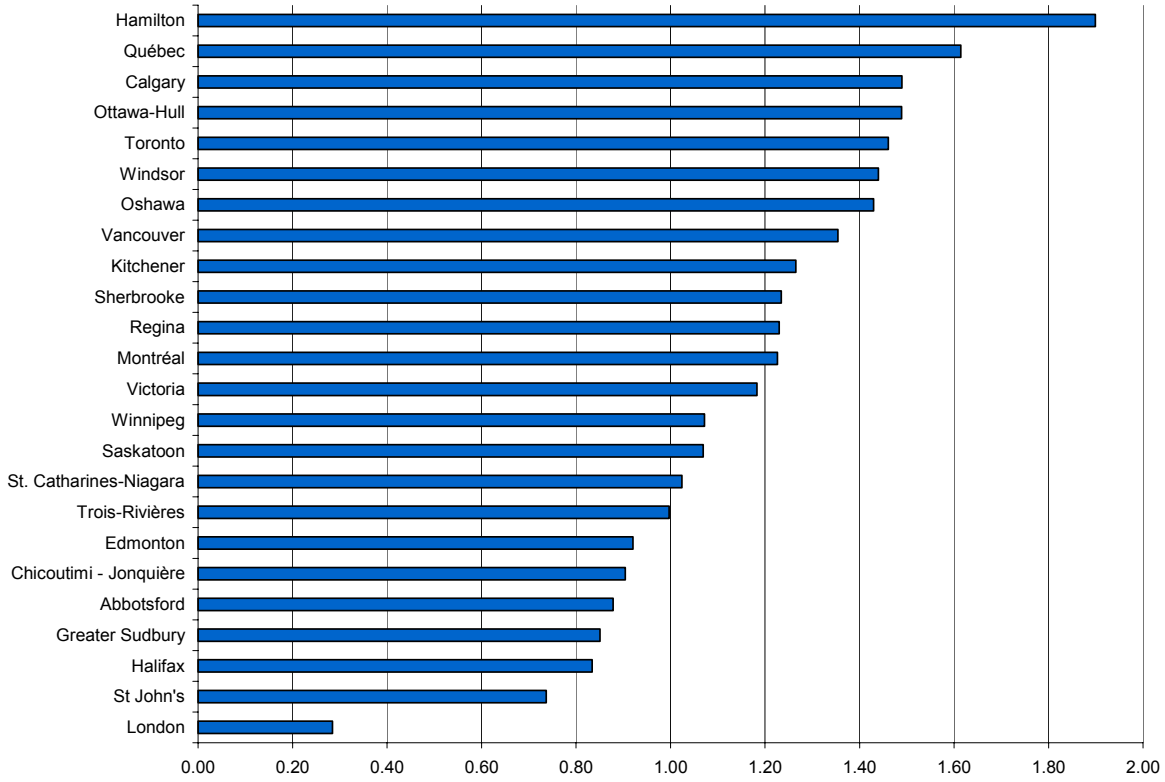


Source: Statistics Canada, Census of Population, 2001.

Appendix H: Location Quotients for Landscape Architects in Canadian Cities

Hamilton and Québec City have the highest proportions of landscape architects in their labour forces, followed by Calgary, Ottawa-Hull, Toronto, Windsor, and Oshawa. Kitchener ranks in the top-half of Canadian cities, while St. Catharines-Niagara, Sudbury, and London rank in the third quartile for the proportion of landscape architects. Sudbury and London are the only two Ontario cities with a lower proportion of landscape architects than the national average; Kingston and Thunder Bay are excluded since there are no workers classified as landscape architects living in these cities.

Location quotients for landscape architects in Canadian cities, 2001

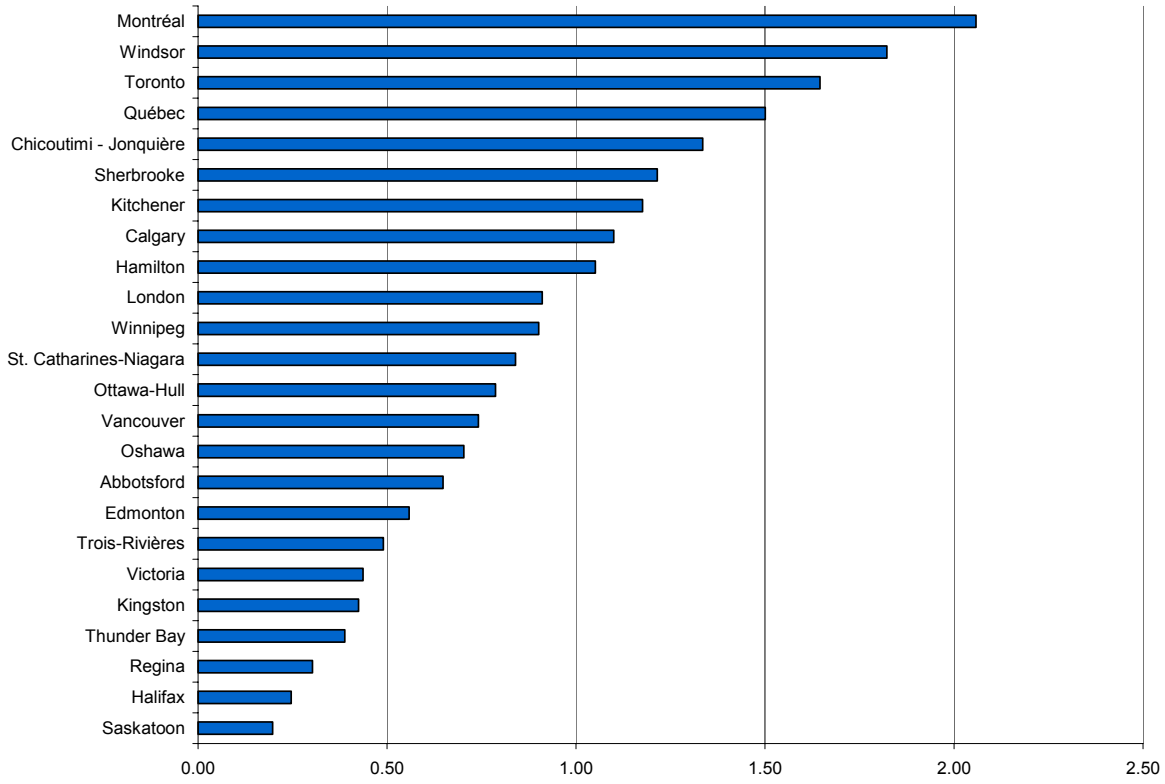


Source: Statistics Canada, Census of Population, 2001.
Note: Excludes Kingston, Saint John, and Thunder Bay CMAs since there are no individuals classified as landscape architects living there.

Appendix I: Location Quotients for Industrial Designers in Canadian Cities

Montréal, Windsor, and Toronto have the highest proportions of industrial designers, followed by Québec City, Chicoutimi-Jonquière, and Sherbrooke. Toronto, Windsor, Kitchener, and Hamilton are the only Ontario cities with a higher proportion of industrial designers than the national average. London, St. Catharines-Niagara, and Ottawa rank in the top-half of Canadian cities, while Oshawa ranks in the third quartile for the proportion of industrial designers. Kingston and Thunder Bay rank in the bottom quartile of Canadian cities; Sudbury is excluded since there are no workers classified as industrial designers living there.

Location quotients for industrial designers in Canadian cities, 2001

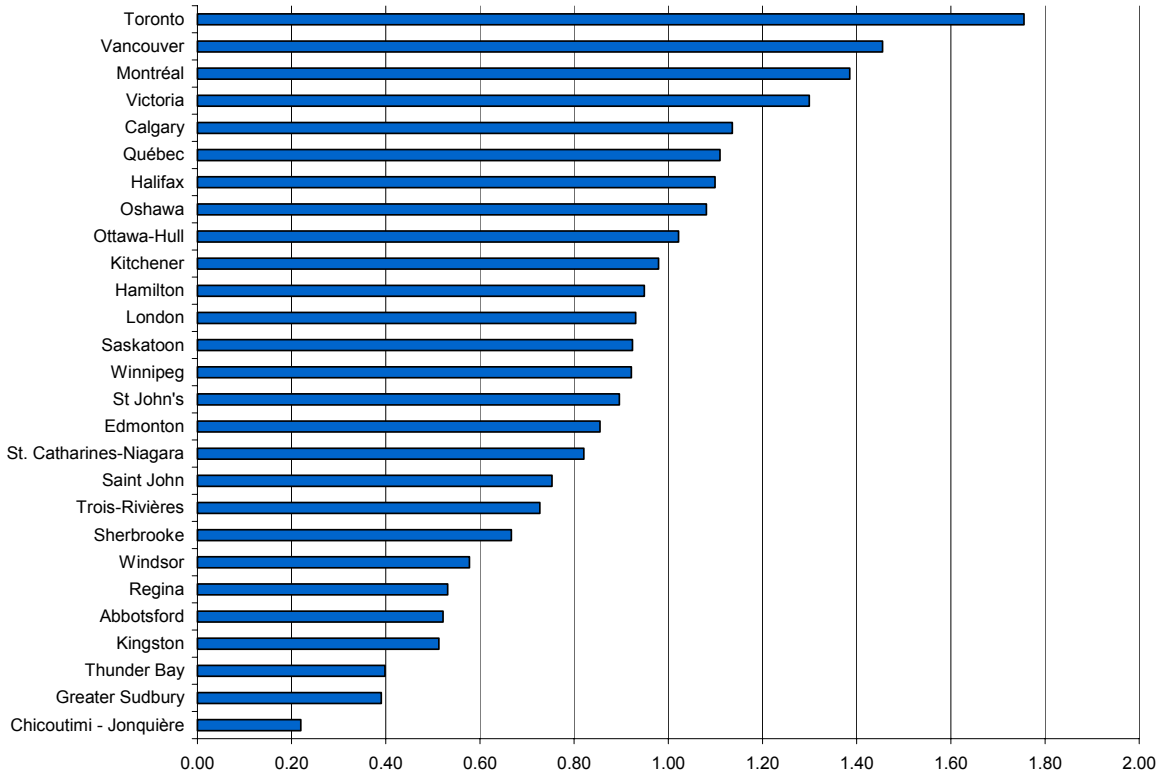


Source: Statistics Canada, Census of Population, 2001.
Note: Excludes the Sudbury, Saint John, and St. John's CMA since there are no individuals classified as industrial designers living there.

Appendix J: Location Quotients for Graphic Designers in Canadian Cities

Toronto has the highest proportion of graphic designers in their workforce, followed by Vancouver, Montréal, and Victoria. Oshawa, Ottawa-Hull, Kitchener, Hamilton, and London rank in the top-half of Canadian cities for the proportion of graphic designers. St. Catharines-Niagara and Windsor rank in the third quartile for the proportion of graphic designers. Kingston, Thunder Bay and Sudbury rank in the bottom quartile of Canadian cities for the proportion of graphic designers.

Location quotients for graphic designers in Canadian cities, 2001

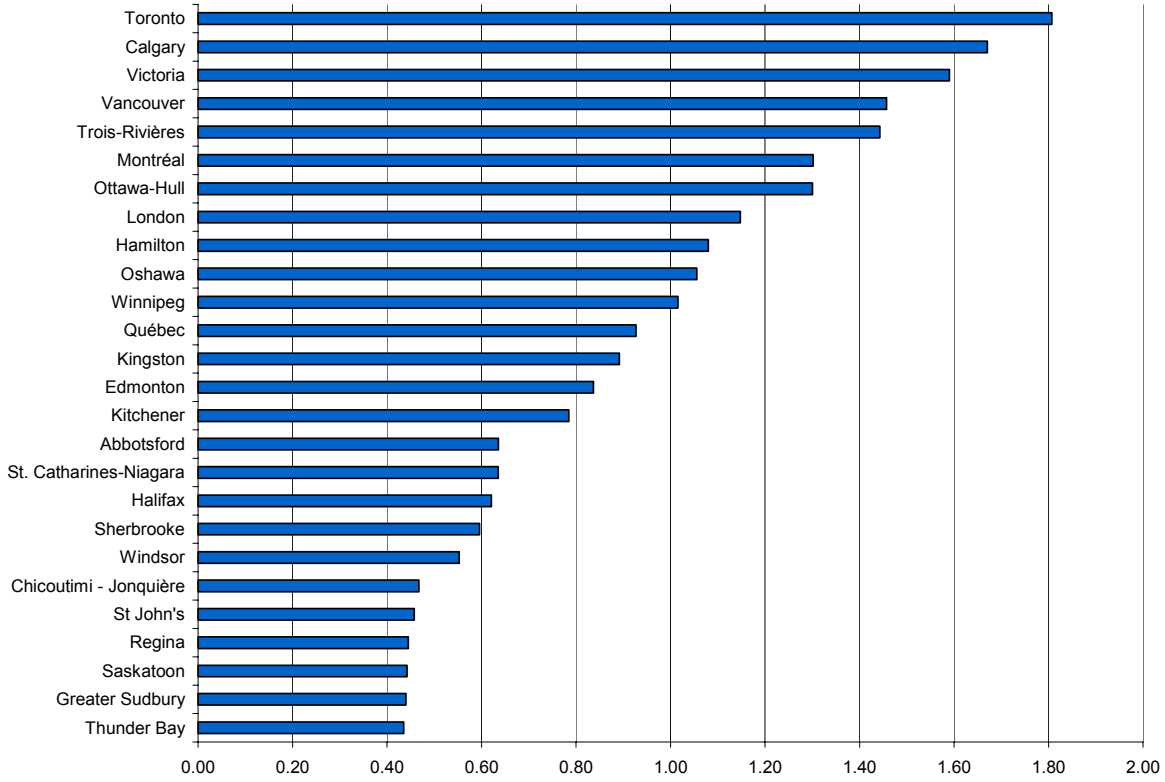


Source: Statistics Canada, Census of Population, 2001.

Appendix K: Location Quotients for Interior Designers in Canadian Cities

Toronto, Calgary, and Victoria have the highest proportions of interior designers, followed by Vancouver, Trois-Rivières, Montréal, and Ottawa-Hull. London, Hamilton, Oshawa, and Kingston rank in the top-half of Canadian cities for the proportion of interior designers. Kitchener and St. Catharines-Niagara rank in the third quartile for the proportion of interior designers. Windsor, Thunder Bay and Sudbury rank in the bottom quartile of Canadian cities for the proportion of interior designers.

Location quotients for interior designers in Canadian cities, 2001

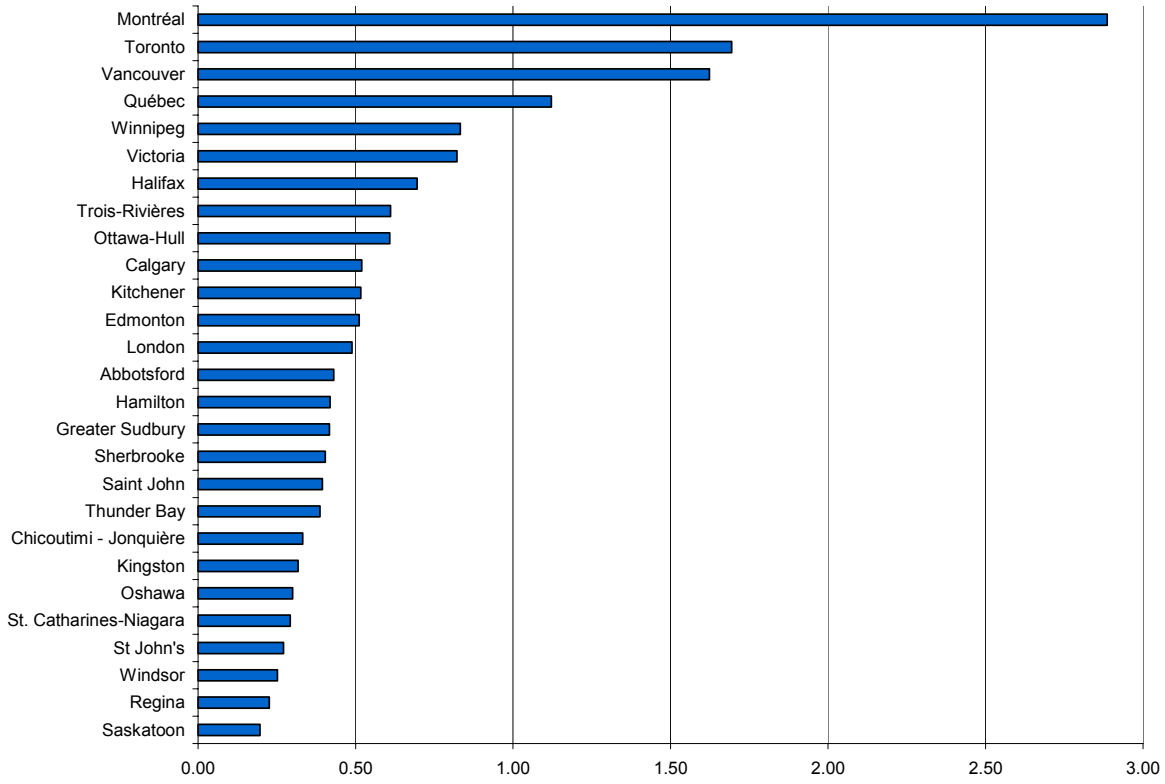


Source: Statistics Canada, Census of Population, 2001.
Note: Excludes the Saint John CMA since there are no individuals classified as interior designers living there.

Appendix L: Location Quotients for Other Designers in Canadian Cities

Montréal, Toronto, Vancouver and Québec City are the only four CMAs with a higher proportion of theatre, fashion, exhibit and other designers compared to the national average. Ottawa-Hull, Kitchener, and London rank in the top-half of Canadian cities for the proportion of theatre, fashion, exhibit and other designers. Thunder Bay and Sudbury rank in the third quartile for the proportion of theatre, fashion, exhibit and other designers. Kingston, Oshawa, St. Catharines-Niagara and Windsor rank in the bottom quartile of Canadian cities for the proportion of theatre, fashion, exhibit and other designers.

Location quotients for theatre, fashion, exhibit and other designers in Canadian CMAs, 2001



Source: Statistics Canada, Census of Population, 2001.