Montreal Health Report

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Edition 2005

Attracting, educating and retaining talent

> >> > a publication of the Board of Trade of Metropolitan Montreal

Chambre de commerce
du Montréal métropolitain
Board of Trade of Metropolitan Montreal

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**Chambre de commerce
du Montréal métropolitain**
Board of Trade of Metropolitan Montreal

380 St.Antoine West, suite 6000
Montreal, Quebec, Canada H2Y 3X7
(514) **871-4000** (514) 871-1255

www.btmm.qc.ca

Montreal Health Report

"Attracting, educating and retaining talent"

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Word from the President and CEO of the Board of Trade of Metropolitan Montreal

by Isabelle Hudon

Leveraging Montreal's strengths to win the talent war

One of the most striking findings of the first *Montreal Health Report* (May 2004) was beyond a doubt the low concentration of university graduates in the Montreal population compared with the other 11 cities examined. This finding was all the more disturbing because it went completely against the perceptions of the business people surveyed, who believed instead that Montreal was a leader in this regard.

Consequently, for this second edition of the *Health Report*, we decided to focus strictly on analyzing Montreal's performance in terms of talent as measured by the number of university graduates. Here again, we tried to obtain a complete, nuanced and thought-provoking picture by comparing Montreal's results with those of the other cities and measuring the perceptions and beliefs of individuals by way of a survey. We did all this in order to find out how Montreal is faring on the three major fronts of the talent war — education, attraction and retention — as it rapidly approaches the day, sometime in 2016, when the net growth of its workforce will be entirely fuelled by immigration.

Education: A real strength for Montreal

In some ways, the people surveyed last year were not entirely wrong in their positive perception of Montreal in terms of university graduates. For although this year's figures confirm that Montreal ranks dead last out of 12 cities in graduates as a percentage of the population, they also show that our universities nonetheless constitute an exceptional strength for the city.

Our first finding shows that Montreal is educating its talent pool at a good pace, thereby narrowing the gap with the other cities relatively quickly. Of course, it still has a long way to go, but the headway achieved is nevertheless encouraging. Montreal has made these great strides mainly by educating local talent. As we will see a little further, Montreal has not attracted educated immigrants at the same rate as Toronto or Vancouver. In this context, our universities — the four in Montreal as well as the grandes écoles and other satellite campuses in the region — have played a key role, offering a top quality education to their thousands of students.

This brings us to the second finding: Our universities make the city a veritable education powerhouse, and this sets it apart favourably from the other cities examined. Indeed, Montreal is sought after for the quality of its universities not only by Quebec students, but also by young people from across Canada and around the world. In fact, in Montreal's four universities, 18% of the students registered hail from outside Quebec, of which more than half come from abroad.

Attraction: Montreal, in a class of its own

Where Montreal fares less well is mainly in its ability to attract talent. A comparison of Canadian migration data from 1996 and 2001 reveals that Montreal does not attract as many graduates — or for that matter, immigrants overall — as a city of its size and calibre should within the Canadian context.

This "sub-performance" stems from the fact that Montreal has had far less success than its Canadian counterparts in attracting international immigrants. Of the five largest Canadian cities, Montreal posts the lowest growth rate in educated immigrants, nearly half of Toronto's. It is therefore regional, and especially provincial migration, that provides Montreal with its main source of "immigrant" graduates.

Retention: many who come, stay

Montreal fares better when it comes to retaining talent: While it may attract relatively fewer people than its counterparts, its share of emigrant graduates (who have left Montreal for other cities in the country) is within the Canadian average such that its net migration is positive. In other words, Montreal is not suffering from a brain drain.

According to a CROP survey conducted among Montreal university graduates, 70% of them remain in the city after completing their studies. The fact that 57% of these students lived in the metropolitan area before enrolling in university means that Montreal manages to hold onto some of those who came here to study. While it is true that most of the graduates who stay come from the other regions of Quebec, the CROP survey nevertheless shows that some students from outside Quebec also choose to make Montreal their home after graduation. Although their numbers are relatively low, it is still encouraging considering that no real concerted strategy has been developed in this regard. It also suggests that more could be convinced to remain if such a strategy existed. This is all the more true given that of all the reasons cited for leaving, rarely was a dislike for Montreal one of them.

Leveraging Montreal's strengths

To summarize, Montreal's most formidable challenge is attracting talent to its territory, especially from abroad. Once here, people discover that besides interesting job opportunities, the city offers an enviable quality of life and a stimulating cultural environment. In this context, it seems quite logical to leverage the drawing power of Montreal's universities to bring more permanent immigrants to Quebec and to make a concerted effort to facilitate their integration and help them settle in the city.

This *Health Report* shows that we should be adjusting our talent strategy based on Montreal's strengths, i.e., focus on tomorrow's talent rather than on the existing pool. In many respects, this approach differs widely from that used by our competitors. And this is precisely why we believe it could be successful. Indeed, Montreal's greatest achievements have been driven by boldness, innovation, dreams and creativity. They were possible because we capitalized on Montreal's differences and turned them into powerful assets. It is therefore certainly more in line with Montreal's personality, and especially its strengths, to wage the war for talent by attracting people who have a thirst for knowledge and keeping them here by imbuing them with our creative passion.

Chapter 1 – The Process

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The first *Montreal Health Report* was prepared as a result of a commitment made by the Board of Trade of Metropolitan Montreal at the *Montreal Symposium 2017: A 375-Year Old City of the World* held on May 1 and 2, 2002. At the end of this forum that brought together numerous experts and some 250 participants, we undertook to "promote the interests of the metropolitan business community by using performance indicators to annually compare the city with other metropolitan regions."

The first edition of the *Montreal Health Report* was essentially a development tool based on the latest statistical indicators, which presented a profile of the competitiveness of 12 large North-American cities and on how the Montreal business community perceived the city's ranking in this regard. This study allowed us to compare these large cities in the areas of collective wealth, economic pull, the prevalence of new economy jobs, quality of life, social cohesion, and finally, growth potential.

In light of the findings in the first report, the 2005 edition focuses on talent, more precisely, on university graduates, a particular aspect of the competitiveness of North-American cities and arguably the most important battle for Montreal's future.

For the purpose of comparison, the study examines the same 11 cities as last year (Atlanta, Boston, Calgary, Chicago, Miami, New York, Ottawa, Philadelphia, Seattle, Toronto and Vancouver) based on demographic, economic and geographic criteria.

Following the comparative analysis conducted on the basis of statistical and perceptual indicators, the report culminates in a reflection on possible ways to improve Montreal's performance in the talent war.

As a first step, the Board of Trade hired CROP to conduct an opinion survey from a sample of Montreal graduates. The purpose of the survey, in which 1,329 people were interviewed, was to study the migration patterns of Montreal graduates, more specifically, to trace their career path after obtaining their degree; define the factors that prompt them to stay or leave Montreal after graduation; find out their migration plans for the next two years; and finally, compare the profile of Quebec graduates who left the province and those who remained, particularly in terms of their creativity.

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In conjunction with this opinion survey, the Board of Trade once again turned to the Institut national de recherche scientifique, Urbanisation, Culture et Société (INRS-UCS) to conduct a comparative study of Montreal's performance in relation to other Canadian and American cities. The study begins with an analysis of the migration patterns of graduates in 136 Canadian cities. In the next step, professors Mario Polèse and Richard Shearmur, with the help of Philippe Chenard, looked at university enrolment, as well as degree granting and the graduates presence in the 12 comparative North-American cities. Various Canadian and American data was used in this analysis as well as a Statistics Canada databank created for the INRS-UCS.

With a view to explaining talent migration factors, the INRS-UCS researchers developed a simple Canadian migration flow model based on the regional geographic situation and city size. The data was then applied to the model to determine whether a city fulfills the model's expectations.

The following indicators were used in the subsequent comparative analysis:

1. Number of graduates and their growth in the population;
2. University enrolment;
3. Number of degrees granted annually at the undergraduate, graduate and post-graduate levels;
4. Number of PhDs granted annually in sciences and engineering;
5. A relative attraction index estimating migration weight in graduate growth.

Using these analyses, the researchers and pollsters were able to determine Montreal's position in terms of its ability to educate, attract and retain university graduates at all levels. They were also able to determine the origin of the graduate population in each city studied and calculate the proportion of local graduates in relation to foreign talent.

Finally, based on the results, we identified and will be proposing to the relevant stakeholders a variety of measures to help the metropolitan region better position itself among the cities with the strongest talent pools.

The main interventions or measures that the Board of Trade will be proposing over the next few years revolve around the attraction, education and retention of talent, three key aspects that will ensure Montreal attracts the talent it needs to resolve its demographic issues and develop to its full potential.

Like the previous edition, the *Montreal Health Report* provides up-to-the-minute data on Montreal's competitive position, both in real and perceptual terms, and puts forward action paths to improve the region's competitiveness. Routinely faced with the task of setting human capital priorities, the city's economic development stakeholders will no doubt find this innovative tool most useful.

Chapter 2 – Presentation of comparative cities

Today, the world's major urban economies are competing against each other, and the role they play as drivers of wealth creation, innovation and growth requires unflagging support. In this economic context, one thing is clear: cities must be able to rely on a talented workforce capable of ensuring economic prosperity. Since talented people are highly mobile, and since the competition to attract and keep them is fierce, cities need a strategy. In recent years, we have seen many examples of cities – mostly resource-based economies – that were not forward thinking and paid a heavy price through business closures, job losses and a substantial decrease in their GDP.

- Atlanta
- Boston
- Calgary
- Chicago
- Miami
- New York
- Ottawa
- Philadelphia
- Seattle
- Toronto
- Vancouver
- **Montreal**

The metropolitan areas of Cleveland and Pittsburgh, whose economies are largely based on industrial production, are frequently cited as examples of urban hubs that have suffered because they came up short in terms of training and retaining talent. Largely due to its inability to maintain an innovative economy, which attracts talented people, Cleveland lost 30% of its population during the 1970s, 15% in the '80s and 5% in the '90s.

While many initiatives can favour the retention of talent, two in particular merit special attention. One is education, from elementary school right through to university. In fact, school success can be at the core of a strategy aimed at training and creating talent based on the future requirements of the labour market. This higher education has a twofold advantage; first, training a workforce capable of meeting the needs of employers, and second, making students, whether local or foreign, aware of the reality of the city in which they are studying. The other initiative, attracting talent, is an important factor that can only be achieved by having a dynamic job market. In this regard, the strong recruitment drives of large corporations such as Microsoft, Boeing, Merck Frosst, Bombardier and Ubisoft and major law firms help attract talent to the cities in which they are located.

A number of structured initiatives to attract and retain talent have been observed in North America's most successful cities. In order to effectively compete with its counterparts, Montreal would do well to study their methods and means and adapt their strategies to its own needs.

Atlanta

This major hub in the Southeastern U.S. has decided to base its development on "industries of the mind," i.e., companies whose activities revolve around a skilled, talented workforce. Backed by the city, the Metro Atlanta Chamber of Commerce (MACC) is one of Atlanta's most active promotion organizations that strives, through various initiatives, to attract bioscience, transportation, logistics and IT firms. Since 1990, Atlanta has seen its population mushroom by 53% and each year for the past 10 years, no fewer than 180 companies have either set up or expanded their operations in the metropolitan area.

This chamber of commerce also tries to create the best possible environment to attract and retain talented people and companies. This element takes on strategic importance since the sustained expansion of Atlanta's economy, and especially its population growth, has led to traffic congestion and strained urban infrastructures. These problems have become a major concern for city authorities and the MACC, two entities that work to preserve the city's unique character and quality of life, which they believe are central to the city's appeal. Consequently, updating the urban infrastructures has become a strategic priority so as to ensure an adequate quality of life for the citizens of Atlanta, reputed by locals to be "a big peach," so irresistible.

In this context, with the city's long-term development in mind and with a view to remaining one of the leading cities in the world, the MACC formed a regional educational committee consisting of business people who identify the best ways for companies to contribute to student success in the metropolitan area's 10 regions. The MACC therefore plays a contributory role by encouraging *rapprochement* between business people and the education sector with the aim of forging ties between future graduates and employers. This type of initiative encourages regional companies to hire locally educated students, thereby holding onto talented people, who in turn help grow the economy.

Boston

With more than 65 institutions of higher learning, Boston boasts one of the greatest number of universities and colleges in North America and by extension, one of the highest concentrations of students, many of whom hail from abroad. Yet despite the fact that Boston offers its graduates an enviable quality of life and excellent employment opportunities, nearly 50% depart.

Because this exodus greatly hinders the city's development, which depends in large part on a skilled workforce, the Greater Boston Chamber of Commerce (GBCC) decided to conduct a detailed study to find out how many Bostonians left the city and why.

What the GBCC discovered is that a great many graduates leave for job-related reasons, and according to the organization, these departures could easily be avoided if better job conditions existed.

A series of recommendations were then formulated to improve graduate retention, for example, by enhancing ties between employers and future graduates; by promoting business internships in the city — which would allow students to become more familiar with the Boston area —; by making housing more affordable for young professionals; and by promoting construction of apartment buildings on unused industrial land on the outskirts of downtown.

Finally, the GBCC would like to lead a drive to mobilize business people, non-profit organizations and the government authorities to make an effort to retain talented graduates who will contribute to the city's future growth.

Calgary

Among Canadian cities, Calgary is in many respects enjoying the most flourishing growth. As a result, many businesses are facing the challenge of finding talented people to fill new positions and thereby ensure the city's sustained development. In this particular context, rather than focus on retention, Calgary must ensure a well-trained future workforce.

A noteworthy initiative whose goal is to implement tangible actions to ensure companies have a well-trained, skilled workforce is the Calgary Human Capital Project. Announced in January, this initiative was launched by various companies and organizations working to grow Calgary and includes institutions of higher learning, the City of Calgary, the Calgary Chamber of Commerce and Calgary Economic Development. Based on the principle that for the city and the province of Alberta skilled human capital attracts business, a series of actions must be put in motion to ensure the creation of a workforce that meets the needs of the city's employers.

Of the recommendations made as a result of this initiative, three appear particularly relevant. First, clearly identifying future industry workforce needs – and adapting the training accordingly –; second, promoting the benefits of training and education as an important element of the city's economic development; and third, better recognition of foreign graduates. This last initiative has been found to a similar degree in many other cities in need of skilled immigrants.

Chicago

An industrial city of the Rust Belt, Chicago loses more graduates than it gains. With such industries as agri-food, processing and heavy manufacturing, which includes automobile construction, the metropolitan area has a strong manufacturing base and as such, seems to have trouble making the shift to a knowledge economy despite its highly regarded education system, schools and universities.

The Chicago Mathematics and Science Initiative (CMSI) is a plan developed to improve mathematics/science teaching and learning in elementary and high schools by forging partnerships between public schools and local universities.

For its part, because the Federal Bank of Chicago cares about education and economic development, it organized a conference on the efforts required to improve the workforce in the Midwest. More recently, in March 2005, it held a conference on head offices and recommended that economic development strategies focus on attracting head offices and on the services and infrastructures required to do so. Head offices create hundreds of direct and indirect jobs, particularly in business services (accounting, marketing, insurance, etc.). This issue is especially important to Chicago, which at 36, ranks second after New York in the number of head offices but whose number has been slipping since 1975.

Miami

Recognized in the world as the business capital of Latin America, Miami attracts companies through various measures implemented by the state of Florida, including the Enterprise Zone program, which offers businesses incentives to set up or expand in a specific Miami zone in need of revitalization. These incentives include a property tax credit, a credit on salaries paid to employees residing in this zone (Empowerment Zone) and a sales tax refund. As for Miami residents, they pay no state income tax.

For its part, the Greater Miami Chamber of Commerce has created the "One Community One Goal" project with a view to creating more than 135,000 high-paying, skilled jobs by 2005 in key industries such as film and entertainment, biomedical, financial services, information and communication technologies, international trade and aviation.

At the end of 2003, Governor Bush and the Palm Beach County moved mountains to release US$569 million in incentives of all kinds to lure the California-based Scripps Research Institute, one of the country's largest biotech research organizations. If the project comes to pass (in 2006, according to forecasts), the benefits in terms of growth, jobs and revenues will be felt in all of southern Florida, a state known for its low-paying jobs. The impact of this announcement is already being felt: the South Florida Bioscience Consortium is contemplating a brand image for the region and the Boston Scientific Symbiosis Corporation has announced an US$11 million expansion in Miami-Dade County that will create 120 jobs.

Miami is also closely monitoring proposals made by Governor Bush this past spring to allocate US$100 million to create centres of excellence in Florida universities with a view to attracting the kind of people who can transform inventions into commercial successes.

New York

Shaken by the terrorist attacks of September 11, 2001, the fashion and finance capital of the world is also fighting against the brain drain. According to a demographic study, New York lost nearly 190,000 graduates at the end of the 1990s. Twelve of the fifteen cities that are on the losing end in this regard are in the Northeast and Midwest, and New York is unfortunately at the head of the list.

Still, some 50 incentive measures exist for doing business in New York, proposed by the New York City Economic Development Corporation (NYCEDC). For example, the Alliance for Downtown New York is an organization that works together with real estate companies to make it easier for businesses to set up downtown and to meet the specific needs of those operating in the knowledge and IT fields (www.downtownny.com). Hundreds of companies form the Information Technology District, located in the heart of New York's Silicon Alley. There is also the New York Empowerment Zone (EZ), a federal program created in 1996 to revitalize Upper Manhattan and the South Bronx through private investments. Companies that set up in this zone benefit from, among other things, tax credits on salaries.

Perhaps because of its strong entertainment, cultural and finance industries, New York does not seem in a hurry to shift to a knowledge economy. In biotechnology, and particularly in the area of stem cell research, researchers find themselves tempted to leave the Big Apple for California, which in response to the Bush Administration's refusal to fund this research, took the risky step of providing the funds itself, passing Bill 71 last November calling for a US$3 billion investment in this field over the next 10 years. This move could attract many researchers from across the U.S. and particularly New York, which is lagging behind as a science and technology incubator.

Ottawa

The Ottawa-Gatineau metropolitan area is a particularly structuring growth centre in Canada's high-tech industry, boasting strong computer, telecommunications and biotechnology sectors that employ a specialized workforce. Keenly aware of the importance of these companies and workers for the region's development, the City of Ottawa developed a strategy that includes a specific initiative to attract and retain talent.

Thus, within its Ottawa growth management plan, called Ottawa 2020, the city has included a Talent Plan to direct its development in the coming years. The plan is three pronged: to develop the skills of the existing workforce, to recruit outside the region based on local business needs, and to maintain or retain employees. It is interesting to note that Ottawa's strategy is based on existing initiatives with a view to optimizing existing structures rather than creating new ones.

It also bears mentioning that the Talent Plan is based on the assumptions that a future Ottawa workforce would offer bilingual services and explore linkages with the workforce initiatives led by the City of Gatineau since Gatineau has a largely bilingual and highly skilled population. The latter assumption reflects the knowledge that, from an economic standpoint, these two cities that form the National Capital region often function as a single unit.

Unquestionably, one of the most interesting growth initiatives in this region is the one launched by the Ottawa Centre for Research and Innovation (OCRI). OCRI is the rallying point for business, education and research organizations to create the winning economic conditions that will allow Ottawa's companies to thrive locally and compete globally. OCRI is also behind TalentWorks, a community initiative aimed at building Ottawa's talent pool by facilitating collaboration between business, education, government and labour and community groups in order to attract, train and retain skilled workers from specific sectors of the local economy as well as influence and improve strategic planning and economic development.

Philadelphia

Seattle

Philadelphia

America's sixth largest economy, Philadelphia has not fared well in recent surveys conducted by travel and business magazines. Among others, in spring 2004, Inc. Magazine rated the city as one of the 10 worst locations to do business. And according to all indications, it would not fare any better in terms of attracting and retaining talent. Notwithstanding this ranking, a large group of local economic development partners have joined forces to implement coherent measures to transform Philadelphia into a city of innovation, knowledge and business.

Signed into law in spring 2004, the Keystone Innovation Zones Program uses designated zones, usually near institutions of higher education across Pennsylvania, to draw companies that will offer well-paying jobs to educated workers. The program also contains measures to encourage venture capital investments and deploys special efforts to attract or assist biotechnology and nanotechnology firms.

The Knowledge Industry Partnership is a broad-based coalition of economic development and higher education leaders that in 2003 launched the OneBigCampus initiative (www.onebigcampus.com). This US$7.8 million project seeks to stem the brain drain by boosting and encouraging the student population to explore the metropolitan area and make it their home.

Founded in December 2001, Innovation Philadelphia is a public-private partnership (PPP) created to better position the city in the knowledge economy by attracting and retaining technology-based and early-stage businesses by providing them with seed capital, commercialization assistance and educated human capital. Last year Innovation Philadelphia welcomed to its facilities another PPP, the Molecular Valley Convergence Center, whose goal is to promote the region's chemical industry.

In December 2004, Carol Coletta, a Memphis consultant and host of the Smart City radio talk show, published a study on Philadelphia entitled *The Young & The Restless: How Philadelphia Competes for Talent* in which she concludes that Philadelphia has the key elements required to win the war for talent thanks to its 83 colleges and universities as well as its cultural diversity and receptiveness to new ideas.

In 2002, Greater Philadelphia First, an organization that has since merged with the Greater Philadelphia Chamber of Commerce, published *Knowledge Region Agenda*, a benchmark study on the greater metropolitan region and other urban centres according to a series of knowledge indicators.

Philadelphia has one of the heaviest tax burdens in the U.S., explaining the exodus of thousands of residents and companies over the last 30 years. To remedy this situation and develop the city's competitiveness, the Philadelphia Tax Reform Commission was created. In November 2003 this commission filed a report in which it recommended the city abolish the business privilege tax in 2014 and reduce the wage tax to 3.25% by 2014. These two forms of taxation hinder the city's competitiveness, especially the wage tax, which halts the creation of well-paying jobs such as those found in the knowledge economy.

Seattle

One of North America's most dynamic cities, Seattle's drawing power is clearly apparent. Mainly oriented towards the aeronautics and military industries, the city has in the last 20 years gradually shifted to innovative economies in which the computer and IT industries play a major role. As a result of the extensive number of highly skilled people working in these high-tech sectors, Seattle is now referred to as an "ideopolis."

The most unique aspect of this city and its economic development base is that it naturally attracts and retains talent, unlike most other cities which work feverishly to do so. In this regard, it was observed that in the early 2000s when the technology sector was going through difficult times, many of the 60,000 people who lost their jobs – mainly young skilled professionals – stayed in Seattle rather than move elsewhere to find another job.

Home to Microsoft's headquarters and the many companies that operate in its shadow, as well as to major corporations such as Amazon.com and Starbucks, Seattle is a leader when it comes to knowledge-based rankings and concentration of talent. This dynamic, which is typical of thriving cities, makes talent attraction less of an issue (since such people are naturally drawn to this type of environment), and especially Seattle, which also offers a superior quality of life.

Finally, this city has built a creative technical business ecosystem conducive to the emergence and pooling of new development initiatives that combine university research, public projects to improve quality of life and access to venture capital, which is known to attract and retain talent.

Toronto

One of Toronto's most striking aspects in terms of attracting and retaining talent is definitely the abundance of immigrants who choose to make it their home. Therefore, although organizations such as the Toronto City Summit Alliance recognized in their needs analysis for metro Toronto, the importance of attracting more talent, the data confirms that attraction and retention are not the problem. The issue, rather, is how to leverage this talent.

Indeed, with 43.7% of its population hailing from overseas (versus 40% in Miami and 24% in New York), metro Toronto is one of the most ethnically and culturally diverse cities in the world. Moreover, 60% of them were selected for their skills. Consequently, in many respects, talent is not lacking.

The challenge for Toronto is to integrate this talent into its economy. According to a study by the Conference Board of Canada, the fact that Canadian immigrants are not employed in jobs commensurate with their skills costs them about $4 billion in lost revenue per year. Because of its large immigrant population, Toronto is by far the most affected by its failure to fully leverage the talent of its population.

To address this problem, in 2003 the city created the Toronto Region Immigrant Employment Council (TRIEC) to effectively integrate immigrants into the labour market. This initiative was made possible primarily by the Toronto City Summit Alliance (TCSA) – a group of leaders representing the city's various sectors and communities that has identified the integration of immigrants into the labour market as a key challenge facing the Toronto region. To this end, the TCSA, along with a private foundation called the Maytree Foundation, formed TRIEC.

TRIEC works on three fronts to achieve its goals: immigrants, employers and governments. For immigrants, it provides a series of services to facilitate their entry into the labour market and recognition of their skills. For employers, TRIEC capitalizes on its ties with the business community and partners to change perceptions of the value of the work and skills of immigrant workers. Finally, TRIEC lobbies the various levels of government to change their ways of doing things and make greater efforts to facilitate the integration of skilled immigrants into the workforce.

Vancouver

In many respects, Vancouver's situation is not very different from Toronto's. The second most popular destination for Canada-bound immigrants and a gateway to Asia, Vancouver has been and continues to be a preferred destination for newcomers. Thus, with 37.5% of its population originating abroad, Vancouver ranks third in the world. In this context, like in Toronto, the most important issue is not attraction or retention but rather how to fully leverage this talent.

One of the responses to this issue is the Looking Ahead Initiative BC, part of the Employment Access Strategy for Immigrants (EASI) that helps immigrants integrate into the labour market and have their skills recognized. In addition to being physically located within an organization that offers integration services to Vancouver immigrants, the Looking Ahead initiative also offers its services online, notably by offering an employer resource guide.

The Looking Ahead initiative is currently still in development and plans to expand its actions. An interesting aspect of EASI's approach is that many stakeholders – governments, professional associations, community organizations, academic institutions and business people – participate in ongoing reflections on this issue, which could lead to other initiatives.

Conclusion: Where does Montreal stand?

This presentation of cities and their means of attracting and retaining talent should inspire Montreal, a city confronted with the same challenges. Be that as its may, any means we choose will have to be adapted to Montreal's reality, i.e., Quebec's low birth rate means that the development of the province's economic engine will essentially depend on immigrants, particularly skilled ones.

The topic of how to attract and retain talent first surfaced at the Montreal Summit in 2002. The City of Montreal subsequently published *Montreal, Knowledge City*, a detailed report of a study conducted to find out what prompts talented people to stay or leave Montreal and what must be done to make Montreal a winning city in the 21st century.

For the Board of Trade of Metropolitan Montreal, one of Montreal's economic development partners, the battle to attract, train and retain talent has been a key issue for some time now. *Operation Back to School* is just one initiative launched by the organization in this regard. This annual event seeks to reduce the dropout rate by sending more than 400 business men and women to over 65 French and English high schools in the metropolitan area to share their experiences with secondary 3, 4 and 5 students and make them aware of the importance of finishing school.

As well, American urban economist Richard Florida, through his work and particularly his bestseller *The Rise of the Creative Class*, has done much to make the governments and economic development players in the world's major cities aware of the talent issue in knowledge economies. In a recently completed study on Montreal, he touts Montreal's creative potential as measured by assorted indicators.

It is clear that this matter is moving to the forefront. However, the time has come to realistically assess Montreal's position, develop solutions that will work for us and provide greater support for promising initiatives. The following sections of this *Health Report* discuss these very matters.

Chapter 3 – Greater Montreal: Diagnosis

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This section summarizes the findings of the INRS study and the CROP survey of Montreal university graduates with a view to painting as complete a picture as possible of Montreal's health in the area of educating, attracting and retaining talent.

Education: a real strength for Montreal

Education is a city's primary means of developing its graduate base. In this regard, the first edition of the *Health Report* (May 2004) revealed Montreal's unfavourable position vis-à-vis the 11 other cities studied in terms of graduates as a proportion of the population (Table 1[1]).

TABLE 1 – GRADUATES AS A PROPORTION OF THE POPULATION, 2000*

	Metropolitan area	%
1	Boston	23.1%
2	Seattle	21.2%
3	Ottawa	20.9%
4	Atlanta	20.5%
5	New York	20.3%
6	Chicago	18.4%
7	Toronto	18.4%
8	Philadelphia	17.7%
9	Vancouver	17.0%
10	Calgary	16.9%
11	Miami	15.5%
12	**Montreal**	**14.7%**

** Bachelor and higher. 2001 for Canada.*

[1] *POLÈSE, Mario and Richard SHEARMUR, The Production, Attraction and Retention of University Graduates – Comparative Study of Metropolitan Montreal and Other Canadian and U.S. Metropolitan Areas, Institut national de la recherche scientifique Urbanisation, Culture et Société, 2005. For complete text of this study, see Appendix 2.*

We will have to wait until the 2006 census to find out if Montreal has advanced in relation to its competitors. That said, the data scrutinized this year by the INRS researchers leads us to believe that Montreal will improve somewhat.

In fact, the trend shows that in the past few years Montreal has become a force to contend with in terms of educating local talent. Attesting to this fact, the figures show that between 1990 and 2000 Montreal recorded the third largest increase in graduates as a proportion of the population (Table 2[2]).

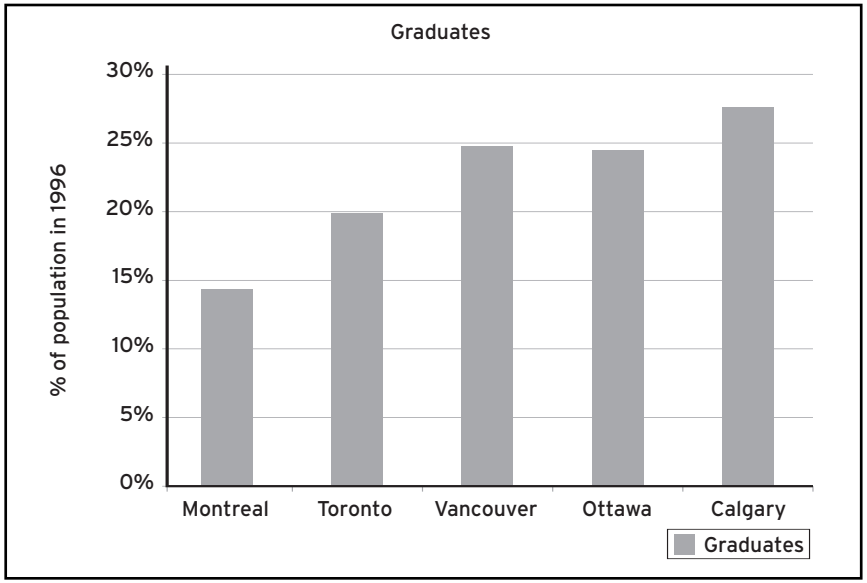
TABLE 2 — **GRADUATE GROWTH, IN PERCENTAGE, 1990-2000**

	Metropolitan area	Growth 1990-2000*
1	Vancouver	46.0%
2	Toronto	37.2%
3	**Montreal**	**36.4%**
4	Calgary	33.1%
5	Ottawa	30.0%
6	Chicago	23.0%
7	Atlanta	20.9%
8	Miami	20.7%
9	Philadelphia	19.2%
10	Seattle	19.1%
11	New York	17.9%
12	Boston	13.9%

** % graduates in the population of 2000 / percentage in 1990*

As we will see later, most of the new graduates added to the population during this decade are residents of the metropolitan area or elsewhere in Quebec. This was not the case for Vancouver and Toronto, which in addition to their locally educated talent pool, recorded a large influx of graduate immigrants (Figure 1[3]). In other words, Montreal's gains would have been impossible without an education system and a university network capable of generating and meeting the greater demand by Quebec students. In this regard, it is interesting to note that between 1998 and 2002, the absolute number of Quebec students enrolled in local universities jumped 16% compared to 5% for students outside Quebec[4].

FIGURE 1 — GRADUATE IMMIGRANTS, 1996-2001



[2] *Ibid.*

[3] *Ibid. Between 1996 and 2001, the graduate immigrant population increased 20% in Toronto, 24.5% in Vancouver and 14% in Montreal.*

[4] *Calculated based on data from the Document de consultation de la Commission parlementaire sur la qualité, l'accessibilité et le financement des universités, Ministère de l'Éducation du Québec, 2003.*

As a result of its ability to produce graduates, Montreal is fairly well positioned as a university town. In fact, the data shows that Montreal is sought after for the quality of its university education, meaning that in addition to Quebec students — whose numbers are growing —, students from across Canada and around the world are flocking to Montreal to study. Thus in 2002, Montreal's universities counted 27,970 students from outside Quebec, or 18% of all enrolments (Table 3[5]).

As the following tables show, this combination of growing Quebec enrolment and the strong presence of students from outside Quebec make Montreal one of the leading university towns among the 12 cities studied. In fact, in absolute numbers, Montreal places in the middle for the number of university enrolments and degrees granted (Tables 4 and 5[6]). And our city scores even better when its size is factored in. Indeed, a look at the rankings for the per capita granting of different types of degrees (Table 6[7]) shows Montreal near the top in degree production.

TABLE 3 — ENROLMENT IN MONTREAL INSTITUTIONS (ABSOLUTE NUMBERS) IN 2002 FALL TRIMESTER

Institutions	Population of students with the "Quebec residentstatus	Canada and international population of students not having the "Quebec resident" status	Total population of students	% of population of students not having the "Quebec resident" status
McGill University	16,176	13,505	29,681	45.50%
Université de Montréal	33,988	3,701	37,689	9.82%
École Polytechnique	4,606	1,033	5,639	18.32%
HEC Montréal	9,927	999	10,926	9.14%
Concordia University	23,711	5,360	29,071	18.44%
Université du Québec à Montréal	34,682	3,193	37,875	8.43%
École de technologie supérieure	4,134	179	4,313	4.15%
TOTAL MONTREAL	127,224	27,970	155,194	18.02%

[5] *Ibid.*
[6] *Polèse and Shearmur, op. cit.*
[7] *Ibid.*

TABLE 4 –
UNIVERSITY ENROLMENT, 2001

	Metropolitan area	Actual student population*
1	New York	505,692
2	Boston	237,846
3	Chicago	199,463
4	Philadelphia	176,837
5	Toronto	92,701
6	**Montreal**	**88,601**
7	Atlanta	87,408
8	Miami	65,573
9	Seattle	59,006
10	Vancouver	42,904
11	Ottawa	37,231
12	Calgary	22,899

** Full-time equivalent*

TABLE 5 –
DEGREES GRANTED, BACHELOR AND HIGHER, 2001

	Metropolitan area	Actual student population*
1	New York	119,156
2	Boston	61,956
3	Chicago	52,155
4	Philadelphia	44,819
5	**Montreal**	**23,092**
6	Toronto	22,425
7	Atlanta	19,430
8	Miami	17,001
9	Seattle	16,650
10	Vancouver	11,230
11	Ottawa	9,160
12	Calgary	5,005

TABLEAU 6 –
DEGREES GRANTED PER CAPITA, 2001 **

	Metropolitan area	Bachelor
1	Ottawa	0.70
2	Boston	0.62
3	**Montreal**	**0.51**
4	Philadelphia	0.49
5	Vancouver	0.45
6	Calgary	0.43
7	Toronto	0.39
8	New York	0.34
9	Chicago	0.33
10	Seattle	0.32
11	Atlanta	0.30
12	Miami	0.25

Metropolitan area	Master
Boston	0.41
Chicago	0.23
Philadelphia	0.21
New Yor	0.21
Miami	0.17
Atlanta	0.15
Montreal	**0.14**
Ottawa	0.14
Seattle	0.13
Vancouver	0.09
Calgary	0.09
Toronto	0.08

Metropolitan area	PhD
Boston	0.0328
Montreal	**0.0227**
Vancouver	0.0216
Ottawa	0.0207
Philadelphia	0.0204
Miami	0.0194
Chicago	0.0155
Atlanta	0.0145
New York	0.0143
Toronto	0.0137
Seattle	0.0134
Calgary	0.0126

Metropolitan area	Total
Boston	1.06
Ottawa	0.86
Philadelphia	0.72
Montreal	**0.67**
Chicago	0.57
Vancouver	0.57
New York	0.56
Calgary	0.53
Toronto	0.48
Atlanta	0.47
Seattle	0.47
Miami	0.44

*** Multiplied by 100 to facilitate presentation.*

In short, education is an asset for Montreal not only because it allows the city to increase the number of local graduates, but because it is also a pull factor for future graduates. As the following sections will show, this ability to attract foreign students is an invaluable asset that Montreal would do well to leverage more.

Attraction: Montreal in a class of its own in Canada

The data collected by the INRS researchers present a mixed picture of Montreal's performance in the area of talent attraction, more specifically, its ability to lure graduate immigrants[8]. For their analysis, the researchers compared Canadian migration data from 1996 and 2001. Their immediate observation was that Montreal does not attract as many graduates as a city of its size should within the Canadian context. Figure 2[9] shows the extent of the flows not explained by the INRS migration model, which was built based on flows normally attributable to the main migration factors (region, type of agglomeration and size). The actual results are then compared for different cities. In this case, Montreal's poor performance does not mean that the city lost graduates but rather that it attracts *fewer* than predicted by the model. Conversely, the other cities exceed the model's projections.

[8] *In the study, the term "immigrant" refers to people who come to settle in an urban region regardless of whether they come from another region in the same country (for example, a person from Gaspé who moves to Montreal) or from abroad.*

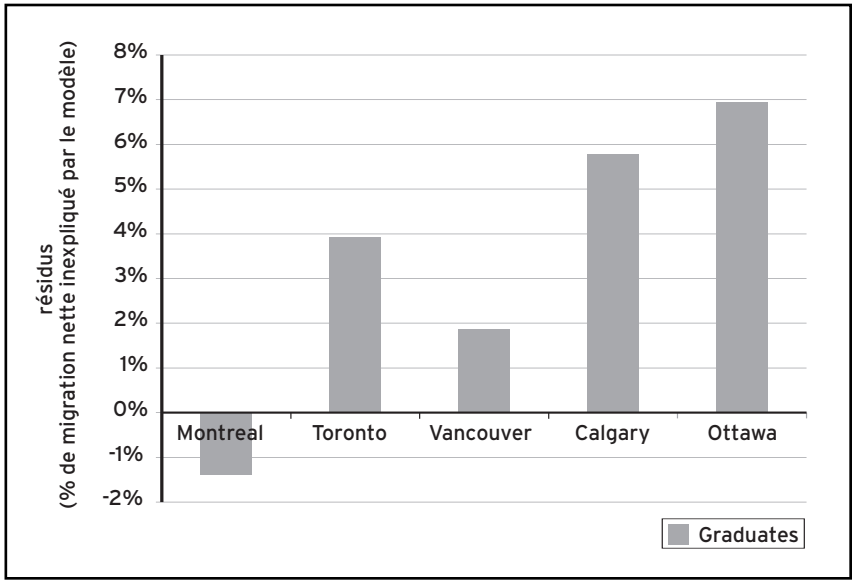
[9] *Polèse et Shearmur, op. cit.*

[10] *Ibid.*

[11] *Note that in this chart, the growth percentages are calculated by comparing a population (for example, international graduate immigrants) in 2001 to the same population in 1996. Consequently, the graduate category grew more than the international immigrant population overall because immigrants accounted for a somewhat larger proportion of international immigrants between 1996 and 2001 than the immigrant population living in Canada before 1996.*

FIGURE 2 — **FLOWS NOT EXPLAINED BY THE GRADUATES NET MIGRATION MODEL**

Model : Net migration = f(6 regions) + f'(5 classes of cities) + f''(urban size)



These more modest attraction results are largely explained by the fact that Montreal has had far less success than Canada's other major cities in luring international immigrants. As Figure 3[10] shows, Montreal has the lowest growth rate for international graduate immigrants, or almost half Toronto's. Figure 3 also shows that not only is this category of immigrants growing more slowly in Montreal, but that international immigration overall is lagging.[11]

FIGURE 3 – INTERNATIONAL IMMIGRANTS, 1996-2001

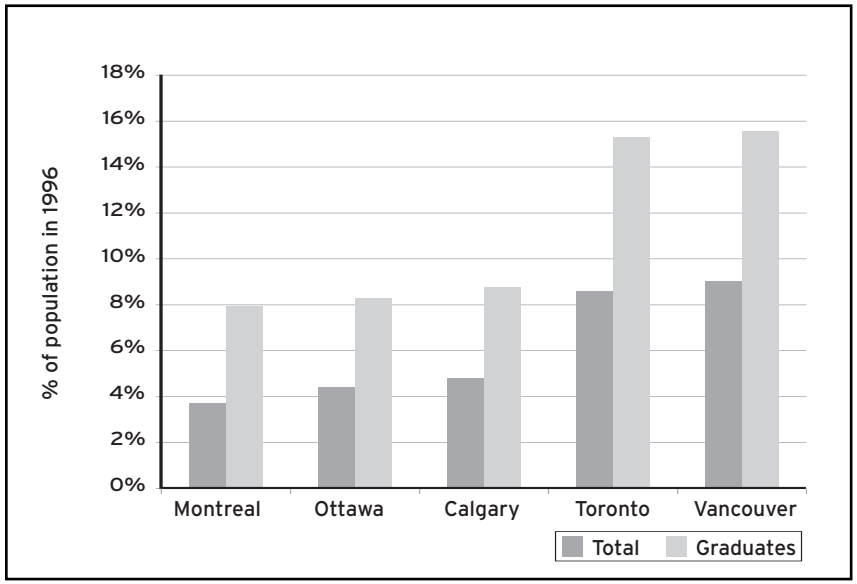
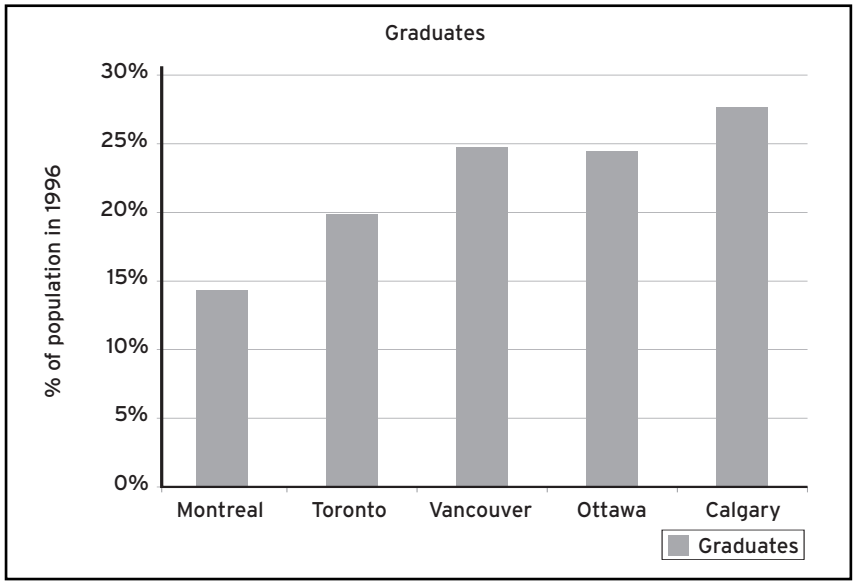


FIGURE 4 – GRADUATED IMMIGRANTS (FROM ELSEWHERE IN CANADA AND ABROAD). 1996-2001



Fortunately for Montreal, the gap with Canada's two largest cities is not as great when we include national graduate migration in the graduate influx, as shown in Figure 4[12]. In fact, when we combine the inflow of international graduate immigrants with Canadian graduates, Montreal's position is not that far away from Toronto's. This confirms Montreal's strong pull on a regional and especially provincial level, which helps narrow the gap with Toronto and Vancouver, created as a result of their international immigration. Moreover, it is interesting to note that national migration is serving Ottawa and Calgary extremely well and explains why the growth rate of their graduate population is comparable or greater than the country's international immigration champions, Vancouver and Toronto.

Lastly, while these figures confirm that Montreal's pull is not as strong as its counterparts', they also lend credence to the earlier observation that Montreal's strength lies in its ability to educate talent: indeed, of the top five cities in Table 2, all of which are Canadian, Montreal is the one that uses local talent most to fuel its graduate population growth.

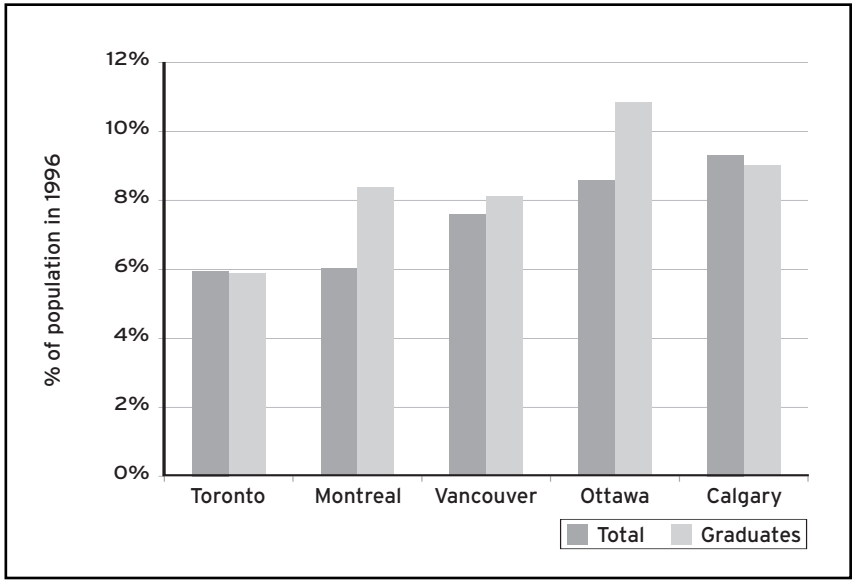
[12] *Polèse and Shearmur, op. cit.*

Retention: Montreal, a beloved Metropolis

Fortunately, although Montreal's power of attraction appears limited, its ability to hold onto talent is something to be proud of.

At first blush, the data is not very reassuring. Montreal loses slightly more graduates than the Canadian average (Figure 5[13]). However, this information must be put in the context of Montreal, where many graduates are educated, including a good number from outside the province. Consequently, the production of graduates accentuates the impression of a brain drain since students who come to Montreal to study are classified as *non-graduate* immigrants but in fact leave as graduates. Also, it is not surprising that Ottawa, the nation's leader in per capita undergraduate degree granting, has the highest graduate emigration rate. It is therefore interesting to look at the emigration rate for all the categories combined, which shows Montreal's outflow to be below the Canadian average and in line with Toronto's. Although this fact is somewhat reassuring for Montreal, it also implies that Montrealers are as mobile as Torontonians and that it would be a mistake to think that the linguistic barrier still hinders mobility.

FIGURE 5 — EMIGRANTS (TOTAL AND GRADUATED). 1996-2001

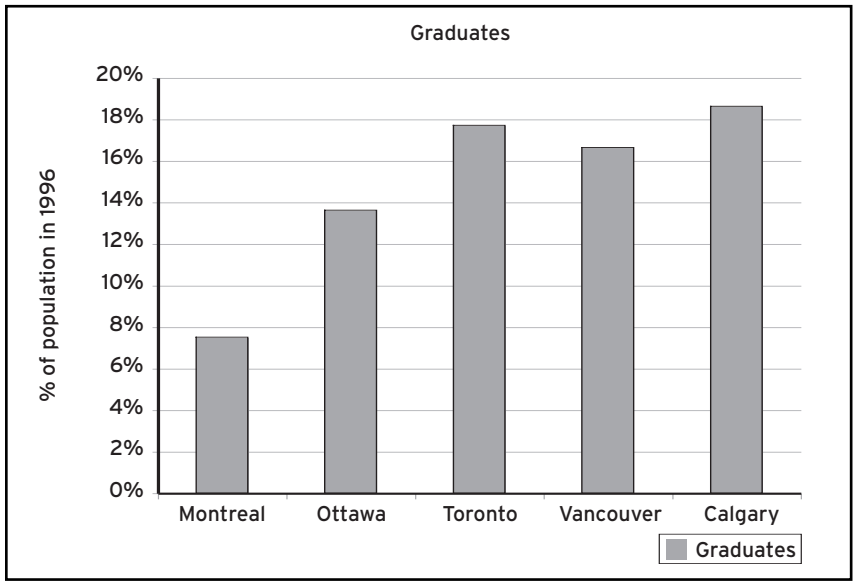


Despite this greater mobility and Montreal's limited power of attraction, the fact remains that the city holds onto enough talented people so as not to be suffering from a brain drain. As Figure 6[14] shows, Montreal still attracted more graduates between 1996 and 2001 than it lost. Even though the gap with the other cities is quite apparent on this chart, it is important to remember that it is above all due to Montreal's weaker power of attraction and not retention.

[13] *Ibid.*
[14] *Ibid*

FIGURE 6 –NET GRADUATED MIGRATION (WITHOUT EMIGRATION ABROAD). 1996-2001

(positive percentage signify net immigration)



CROP's survey of Montreal university graduates reveals that Montreal possesses a number of interesting assets to keep its graduates from leaving. In fact, the findings show that for many students – whether they come from elsewhere in Quebec, other provinces, the U.S. or abroad – once they set foot in Montreal, they're often here to stay.

As mentioned earlier, Montreal's strong university base is a pull factor for students. Of those surveyed, 57% lived in the metropolitan area before attending university and 43% came from outside the city, including 21% from elsewhere in Quebec and 22% from elsewhere in Canada, the U.S. or abroad. This is a fairly representative portrait of the university student population in Montreal (Table 7[15]).

TABLE 7 –
PLACE OF RESIDENCE BEFORE ATTENDING UNIVERSITY

Place of residence	%
Montreal	57%
Elsewhere in Quebec	21%
Elsewhere in Canada	11%
United States	4%
Europe	2%
Asia	2%
Africa	1%
Latin America	1%
Middle East	1%
No answer	1%

After graduation, 70% of the respondents found their first job in the Montreal region. Since 57% of them already lived in the metropolitan area before beginning their studies, this means that Montreal also succeeds in holding onto students from outside the city. Table 8[16] shows where graduates secured their first job in relation to where they lived before attending university. The findings reveal that one out of two (52%) graduates from outside Montreal stays for his or her first job. Of those who remain, it is not surprising to find that most of those who found their first job in Montreal were from elsewhere in Quebec (65%). Moreover, the survey shows that a significant proportion of students from elsewhere in Canada and beyond our borders also choose to remain in Montreal once they graduate, 46% and 36% respectively. In other words, Montreal has the ability to both attract and keep students here even from parts of the world from which Montreal attracts few graduate immigrants.

[15] *CROP, Study of Migration Patterns of Montreal University Graduates, June 2005. For complete results of this study, see Appendix 1.*
[16] *Ibid.*

TABLE 8 – LOCATION OF FIRST JOB ACCORDING TO PLACE OF RESIDENCE BEFORE ATTENDING UNIVERSITY

		Place of residence before attending university			
First job	Total (n = 1227)	Montreal (n = 669)	Elsewhere in Quebec (n = 307)	Elsewhere in Canada (n = 118)	Outside Canada (n = 126)
Montreal	70%	82%	65%	46%	36%
Elsewhere in Quebec	9%	5%	25%	2%	3%
Elsewhere in Canada	11%	8%	6%	32%	13%
Outside Canada	11%	4%	4%	21%	48%

In the longer term, the CROP survey shows that Montreal loses slightly more talent since at the time it was conducted, the proportion of respondents still living in the Montreal area had dropped to 60% (Table 9[17]). However, even in the medium term, one out of three students from elsewhere in Canada, the U.S. or abroad settles permanently in Montreal.

TABLE 9 - CURRENT SITUATION (LOCATION OF JOB) ACCORDING TO PLACE OF RESIDENCE BEFORE ATTENDING UNIVERSITY

		Place of residence before attending university			
Current situation	Total (n = 1227)	Montreal (n = 669)	Elsewhere in Quebec (n = 307)	Elsewhere in Canada (n = 118)	Outside Canada (n = 126)
Montreal	60%	70%	56%	36%	33%
Elsewhere in Quebec	12%	9%	33%	3%	3%
Elsewhere in Canada	15%	14%	6%	36%	16%
Outside Canada	13%	7%	4%	24%	48%

What is particularly interesting is that those from outside Quebec chose to stay despite the fact that the city does not have any real concerted retention strategy in place. And when asked why they left or stayed, more often than not, the respondents gave reasons that indicated a fondness rather than a rejection of the city. There is therefore every reason to believe that far more would remain if specific efforts were targeted their way.

Another interesting finding is that few students cited the linguistic situation as an obstacle or a reason to leave. In fact, the majority of both Anglophones and allophones (67% in both cases, Table 10[18], and all pre-university places of residence combined) found their first job in Montreal. And the linguistic barrier was spontaneously identified as the main reason for leaving Montreal by only 7% of respondents from outside Quebec and as a secondary reason by another 7%.

TABLE 10 – LOCATION OF FIRST JOB ACCORDING TO THE LANGUAGE OF GRADUATED

		First language sopken		
First job	Total (n = 1227)	French (n = 750)	English (n = 408)	Other language (n = 69)
Montreal	70%	78%	57%	57%
Elsewhere in Quebec	9%	14%	1%	3%
Elsewhere in Canada	11%	5%	21%	11%
Outside Canada	11%	4%	20%	29%

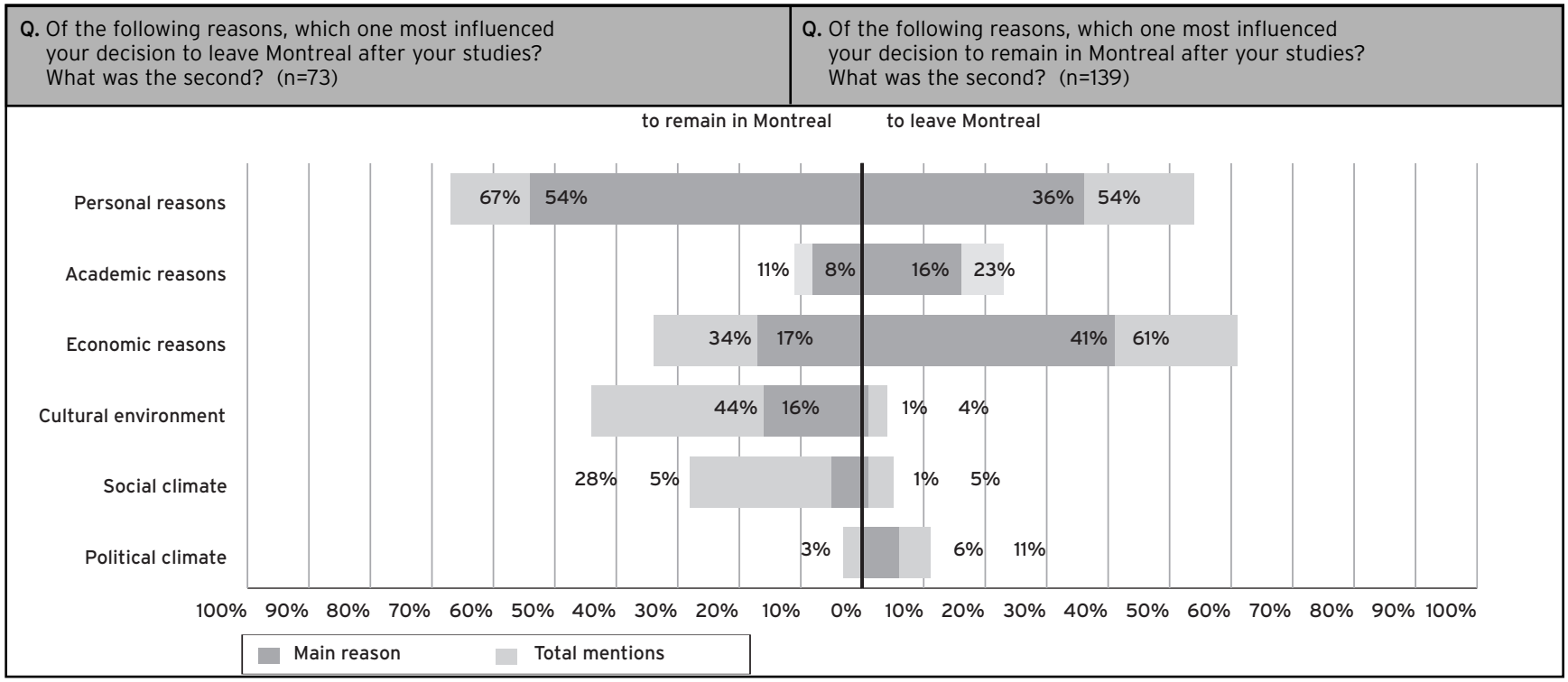
[17] *Ibid.*
[18] *Ibid.*

In actual fact, based on the reasons cited for staying or leaving by students from outside Quebec, it is tempting to conclude that the heart rules the decision to stay but the mind rules the decision to leave (Figure 7[19]) Not surprisingly, personal reasons are important justifications for both leaving and staying. However, beyond these entirely typical considerations, it bears mentioning that economic reasons predominate for those who left (61% mention it compared to 34% of those who stayed). Besides personal reasons, the cultural environment is most cited by those who stay (44% against 4% for those who left), followed by economic reasons and the social climate (28% against 5%).

What conclusions can we draw from these findings? First, that students like Montreal and that those who can, take advantage of employment opportunities in the city in order to enjoy its quality of life. Of those who leave, many already had the intention to do so, but in many cases the reason is that they couldn't find a satisfying economic challenge. Second, quality of life and cultural vitality are key components of Montreal's ability to retain individuals and as such, we must find a way to meet the economic needs and aspirations of our citizens so they can fully enjoy the quality of life our city offers.

[19] *Ibid.*

FIGURE 7 – **REASONS FOR REMAINING IN OR LEAVING MONTREAL GIVEN BY GRADUATES FROM OUTSIDE QUEBEC**



Chapter 4 – Action paths to attract, educate and retain talent

Driving development by attracting, educating and retaining talent

Measures to attract talent

In light of Quebec's demographic reality, coupled with the fact that by 2016 the net growth of our workforce will be entirely fuelled by immigration, for which we must prepare by implementing the appropriate initiatives, one cannot help but conclude that attracting foreign talent is one of the most promising solutions for Quebec and Montreal. And while various measures can be deployed to entice people from other countries to come settle in Montreal, we at the Board of Trade believe that **special attention should be paid to attracting foreign students.** As shown earlier, Montreal universities are already quite popular with this group, and as such, this path is worth exploring.

Indeed, these students are excellent potential immigrants because they will have had time during their studies to familiarize themselves with Montreal's unique environment, particularly the French fact and the city's enviable quality of life. Studying in Montreal before settling here has a number of benefits: getting to know the city, eliminating the problem of degree recognition, and most importantly, easier integration since the students will have already built a social network that will serve them throughout their professional careers and lives.

One way to attract more foreign students is by creating a common **brand image** for our universities to facilitate their promotion abroad. This initiative could be carried out together with the federal and provincial departments in charge of immigration, which would be greatly facilitated by the fact that the students are already living in Quebec.

Accelerating the permanent residence status process for foreign students who plan to remain in Montreal after graduation is another way to enhance Quebec's appeal. In the same vein, the government might study the possibility of **granting permanent residence status to recent graduates** in exchange for a two- to three-year commitment to work in Quebec. Besides being an excellent argument for retention, this initiative is bound to convince many potential students to choose Montreal and Quebec over other provinces or states where the immigration process is often long, difficult and discouraging.

Many **international exchange programs** already exist in Quebec, for example, at HEC Montréal, the Polytechnique and numerous departments in the region's four universities. These programs enhance the mobility of researchers, students and foreign professors. We believe that multiplying such inter-university exchanges and agreements will better position our universities with foreign students as well as create additional collaboration opportunities between researchers. Involving an organization dedicated to the city's promotion such as Tourisme Montréal is bound to enhance Montreal's appeal.

It may also be worthwhile to set up a **merit scholarship program** through a foundation or a government to encourage foreign students to study in Montreal. These scholarships could be used as an incentive to settle here, especially if they are awarded in exchange for a commitment to work in Quebec for a few years after graduation.

While special attention must be paid to attracting foreign students, we must not neglect experienced talent. In this regard, the city must be able to attract foreign workers, particularly highly talented individuals capable of filling positions in the corporations, international companies and headquarters based in Montreal. Among the many initiatives that can be explored in this regard, some merit special attention. For example, Montreal's ethnic chambers of commerce could certainly help attract business immigrants from the countries with which they are in contact.

We can also leverage information technology to promote Montreal by partnering with the governments' human resources departments, private recruitment agencies and university departments responsible for alumni tracking. Such an initiative would have the twofold advantage of offering former Montrealers the opportunity to view Montreal's job offers online and to encourage international expatriates to return.

Finally, one of the most promising support measures for the development of Quebec and Montreal is the provincial tax credits granted to certain foreign researchers and employees working in Quebec. A great way to attract world-class talent, who come here to exercise their profession for a few years, this measure is also a good first step towards keeping them here on a permanent basis.

Measures to educate talent

Insofar as the excellence of Montreal's universities is a major factor in attracting foreign students to study and settle here, it certainly is relevant to reiterate the importance of **adequate university funding – stable, recurrent and predictable –** to ensure a quality education. In its brief filed before the Parliamentary Committee on Education for the Quality, Accessibility and Funding of Universities on February 17, 2004, the Board of Trade stressed that a world-class university system is the very foundation of Montreal's economic competitiveness. However, chronic underfunding is a major stumbling block and a problem for which creative solutions must promptly be found. Our institutions of higher learning must have the financial means and flexibility required to attract and retain the best professors, researchers and students.

As such, all the stakeholders concerned must become actively involved in setting up a new, lasting funding structure that truly responds to our collective reality. Our request that the government **offset half the annual operating deficit**, estimated by the Conférence des recteurs et des principaux des universités du Québec (CREPUQ) at $375.3 million, is not unreasonable: $187 million more each year represents a mere 0.36% of the government's total budget and 1.7% of the $11 billion education envelope.

Whereas the government must increase its contribution, **the business community must also do its part to boost university funding**. It can make a tangible difference by exercising greater leadership in education, training and research. In the past few years, the private sector has often been one of the biggest financial contributors to higher education, notably, through foundations. We believe that in addition to continuing this practice, the business community could become more substantially involved. Another option to consider is partnering with graduates to help them repay their student loans.

While the Board of Trade believes that the public and private sectors should do their part, it would also like to see **students assume a greater proportion of their education costs**, which are by far the lowest in Canada. Of course, we only endorse this increased contribution insofar as it does not prevent the less privileged from attending university.

Measures to retain talent

In the talent war, the retention aspect is as important as attraction and education and calls for specific measures. Although quite varied, the following initiatives all merit examination. Some can be implemented when the stakeholders see fit while others can be deployed over time. They are divided between those aimed at foreign and local students completing their studies and those aimed at skilled immigrants.

First, we might consider creating **gateways between the private sector and students** by encouraging recruitment drives on campus.

Recruitment fairs and company visits could also be organized more often to bring employers in contact with students.

As well, the Quebec government could allow employers to **repay their employees' student loans** and making these amounts eligible for the 1% law on manpower training.

In addition to measures aimed at students in general, we should also focus on trying to keep foreign students here. As mentioned earlier, Montreal's universities enjoy a good reputation internationally, with some 15,000 foreign, Francophone and non-Francophone students choosing to do some or all of their university studies in our city. We would do well to keep this young talent pool in Montreal by integrating them deeply into student life so they can forge ties and helping them find jobs after graduation.

These integration efforts can include systematic **twinning or mentorship** for at least one month after their arrival at the university and/or the creation of a **university residence**, made available to Quebec and foreign students for a reasonable fee. The mixed character of this residence is essential so that foreign students feel welcome and accepted by their Quebec peers. In short, foreign students must live the Montreal experience, and such a project would be structuring for the city.

Foreign students should also be encouraged to consider **co-op programs** or academic programs with mandatory internships. Such programs offer the advantage of providing students with their first work experience in Quebec, thereby facilitating their integration into the workforce after graduation.

After graduation, this group should systematically be provided with **follow-up and support** as part of a joint retention campaign by the universities and the government's immigration department. This follow-up should make it possible to answer the following questions: What are their plans? Do they want to continue studying? Do they plan to work? Do they need help with their immigration application? In short, everything must be done to encourage them to stay.

Those who wish to continue studying (after the end of an inter-university exchange program or graduation) and are ready to commit themselves to stay in Montreal for a certain number of years, should be offered such incentives as **Canadian resident tuition fees** (which are five to six times less than for international students).

In order for students to properly integrate into Montreal, they must be allowed to work from the time they arrive. As the law currently stands, foreign student visas only allow them to work within the university. Interestingly, this restriction does not apply to universities in the regions. We feel that the immigration laws should be relaxed to **allow international students to get a working visa to work off campus**. An internship (paid or not) or a part-time job will allow them to get to know the professional milieu and integrate more easily into the workforce when an employment opportunity arises since employers recognize Quebec work experience more than foreign experience. Allowing international students to work will also make it easier for them to assume the costly process of obtaining the **permanent residency** status that will make it all the easier to find a job.

With regards to foreign medical students, they are, like their Quebec counterparts, strongly encouraged to go practice in the regions for a number of years after graduation, failing which their salary is much less than the average in this profession. In order to prevent them from setting up their practice elsewhere, it would be wise to **stop requiring new graduates, e.g. medical students, to work in the regions**.

In addition to developing measures aimed at foreign students, who represent a choice immigration clientele (because they are already here and are educated here), we must not overlook skilled immigrants. By choosing to settle in Montreal, this group faces several challenges, including adapting to a new culture, environment and job. But even before they can work in their field, they must overcome the formidable obstacle of having their degree recognized. In most cases, this skill recognition is not automatic — far from it —, particularly in fields that are unionized or governed by professional orders. Although not closed to them, these fields pose many obstacles before allowing new immigrants to practice their professions such as learning French, completing an upgrade course, or in some cases, a complementary diploma, and passing a knowledge test. It would therefore be appropriate to ensure that rather than being protectionist, these steps are truly necessary to ensure citizen safety and a balanced market, and that ultimately, **the skills (degree and/or work experience) are recognized** so that our new arrivals can quickly and effectively put their talent to use. Otherwise, not only will we lose these professionals to other cities, they will not likely serve as good ambassadors for Montreal. And for a city looking to attract talent, neither one of these situations is desirable.

Appendix 1 – Study of Migration Patterns of Montreal University Graduates – CROP

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CROP
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Sondages d'opinion

Context and Objectives

This analysis report presents the results of a study conducted by CROP for the Board of Trade of Metropolitan Montreal on the migration patterns of Montreal university graduates.

More specifically, this study seeks to:

- trace the professional path of Montreal graduates after they finished university;
- define the factors that prompt graduates to remain in or leave Montreal after obtaining their degree;
- find out the migration plans of graduates in the next two years;
- compare the profile of Quebec graduates who left the province with that of those who stayed;

Graduates of four Montreal universities:

Concordia University – Real education for the real world
UQÀM
McGill
Université de Montréal
Université du Québec – École de technologie supérieure

Methodology

Study population

- Graduates of four Montreal universities: Université de Montréal, McGill University, Concordia University and Université du Québec à Montréal and its affiliated institute, École de technologie supérieure.
- CROP e-mailed 10,000 invitations to graduates, i.e., 2,000 per institution.

Data collection

- The data was collected by CROP through an online survey conducted from June 5 to 9, 2005.
- The e-mail invitations were sent either by CROP or by the universities to their respective graduates.

Administrative results

- In all, 1,329 respondents completed the online questionnaire, broken down as follows:
  - Université de Montréal: 367
  - McGill University: 216
  - Concordia University: 324
  - Université du Québec à Montréal: 184
  - École de technologie supérieure: 238
- The maximum margin of error is + or – 0.98%, 19 times out of 20.

Data processing

- The results for which the sample size is less than 30 must be interpreted with caution. These results are only presented for information purposes and no statistical inference should be drawn.
- The total of some results does not always equal 100% since the calculations are based on rounded percentages.
- When relevant, statistically significant differences are indicated with numbers in a balloon or circle.
- When a subgroup of respondents displays a certain attitude in a proportionately greater number than the rest of the population and in a statistically significant manner, we speak of "overrepresentation."
- The data is weighted based on the student pool of each university so that the sample reflects the real statistical weight of the opinion of these groups within the population study.
- The weighting base is as follows:
  - Université de Montréal: 37,150
  - McGill University: 32,143
  - Concordia University: 30,931
  - Université du Québec à Montréal: 42,257
  - École de technologie supérieure: 4,500

Main findings

Are students attracted to Montreal universities?

- Yes, since 43% of the respondents lived outside Montreal before beginning their university studies

However, the retention of graduate students is not at its highest:

- 70% find work within Greater Montreal after graduation
- But 30% leave after obtaining their degree
- This proportion rises to about 60% for graduates who lived elsewhere in Canada, the U.S. or abroad before beginning their studies

The reasons for leaving Montreal are economic and pertain mostly to employment:

- Employment opportunities elsewhere
- Hard to find a job in Montreal

The second cause is personal reasons:

- Return to their region or country of origin

Spontaneously, the linguistic barrier and political climate do not appear to be determining factors in explaining the departure of most of those who leave Montreal after graduation.

However, Montreal's power of retention is also rooted in economic aspects:

- Employment opportunities in Montreal (those who live elsewhere in Quebec – Francophones)
- Cost of living (Anglophones, allophones, born outside Canada)

Along with family connections and sentimental attachment to Montreal:

- Family and friends live here
- Because they love living here (spontaneous response of 30% of the respondents)

And in Montreal's quality of life:

- One of the three most important reasons to explain the motivation to remain in Montreal (aided question)

The outflow continues in the years after graduation, to Montreal's detriment:

- Of the 70% who found jobs in Montreal after graduation, only 60% remain today (some of those who found a job in Montreal have left)
- This trend could continue in the future (exhibited by 12% of respondents currently residing in Quebec who are contemplating leaving Quebec in the next two years)

The main reason this subgroup may leave is:

- A more interesting career elsewhere

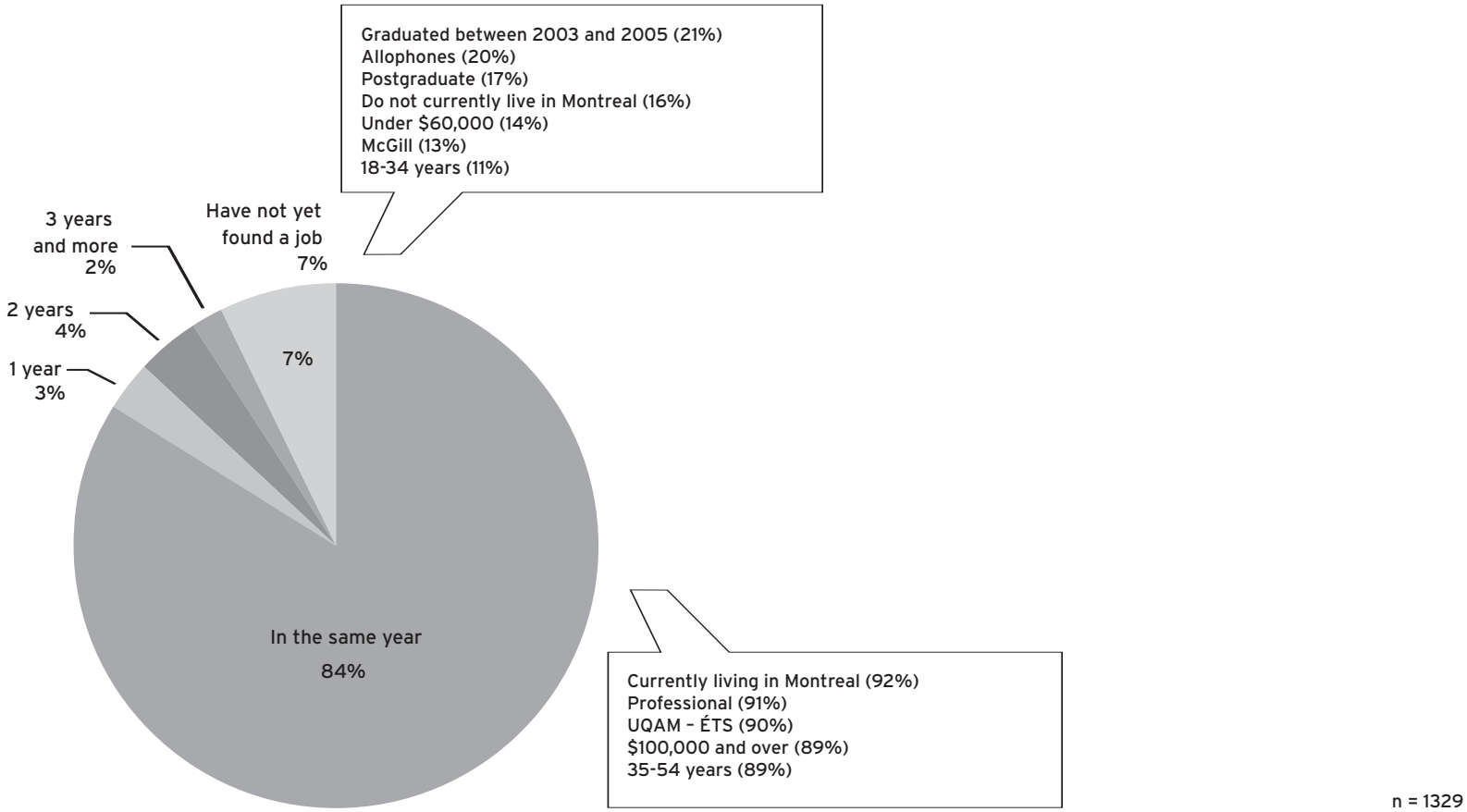
It should be noted, however, that of those who currently do not live in Montreal, 21% are considering returning in the next two years:

- Some said they would only return as tourists

Analysis of results

Graduate path after finishing university

Job search after graduation	Q. How long after graduating did you find employment?

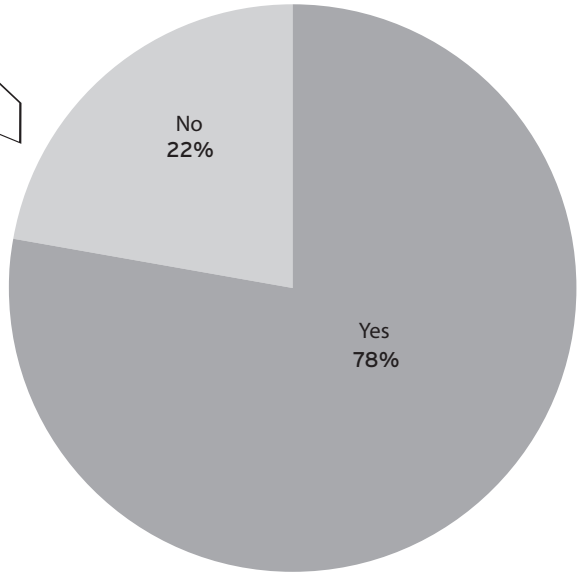


Analysis of results

Graduate path after finishing university

Employment in field of study	Q. Did you find work in your field of study?

Office employees (47%)
Anglophones (33%)
Concordia (33%)
Graduated before 1985 (32%)
Lived elsewhere in Canada before attending university (32%)
Lived abroad before attending university (31%)
McGill (29%)
Bachelor (28%)



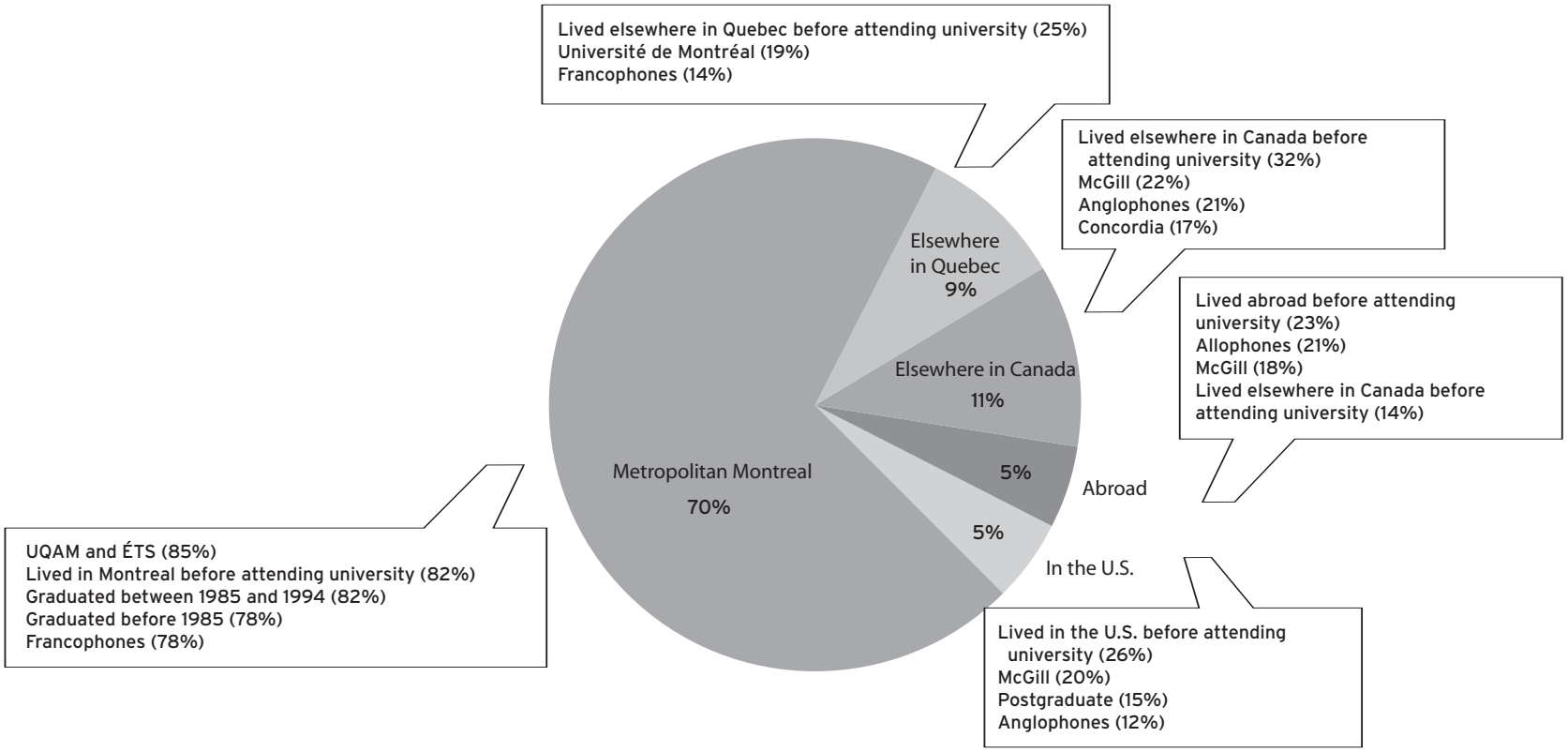
Postgraduate (92%)
Université de Montréal (90%)
Lived elsewhere in Quebec before attending university (87%)
Professionals (85%)
Francophones (83%)

n = 1227
Among respondents who found work

Analysis of results

Graduate path after finishing university

Employment in field of study	Q. Was the first job you found in metropolitan Montreal? If not, indicate in which region of Quebec, Canadian province, U.S. state or country.



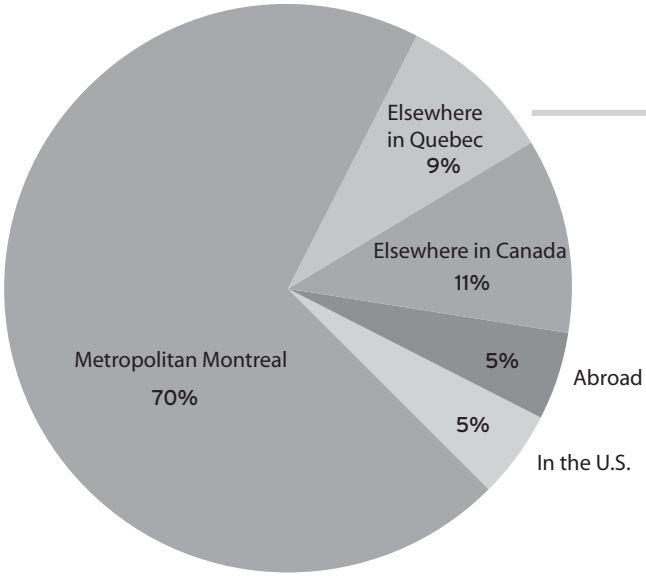
n = 1227
Among respondents who found work

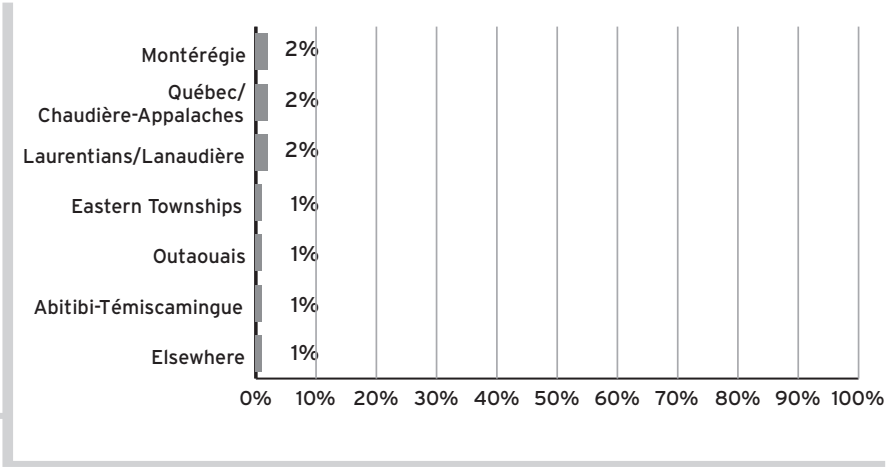
Analysis of results

Graduate path after finishing university

Employment in field of study - Migration to other parts of Quebec

Q. Was the first job you found located in the Montreal area? If not, indicate in which region of Quebec.





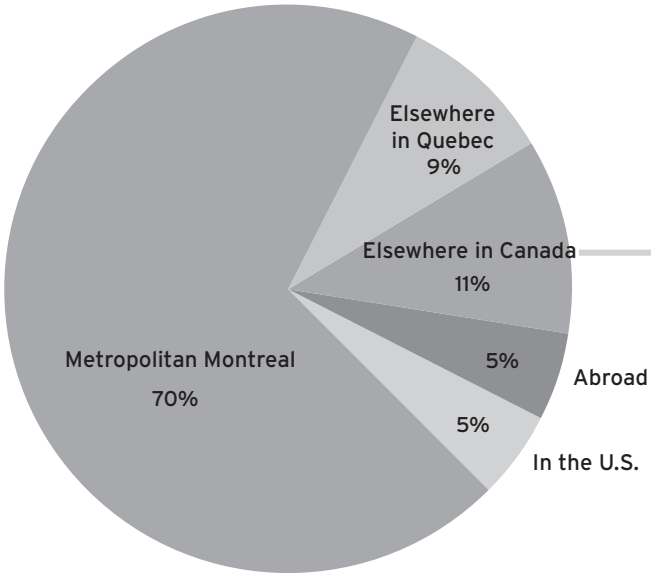
n = 1227
Among respondents who found work

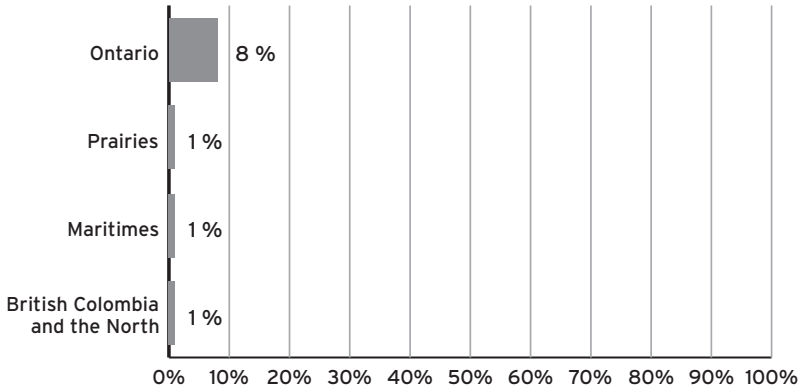
Analysis of results

Graduate path after finishing university

Employment in field of study - Migration to other parts of Canada

Q. Was the first job you found located in Montreal area ?
If not, indicate in which Canadian province.





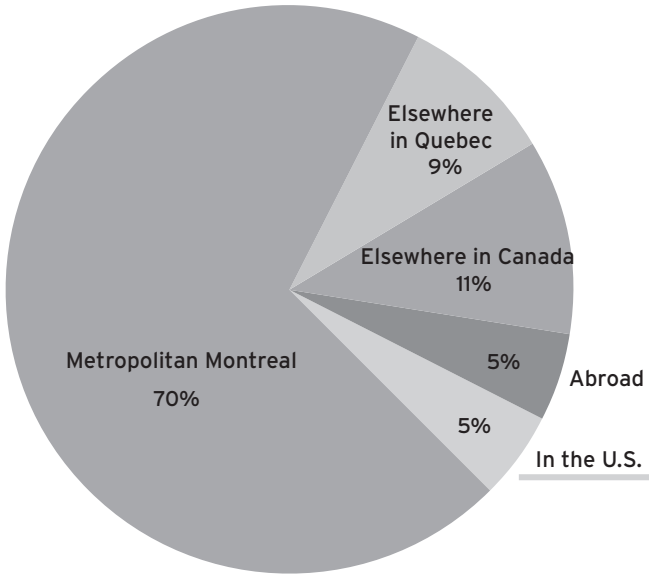
n = 1227
Among respondents who found work

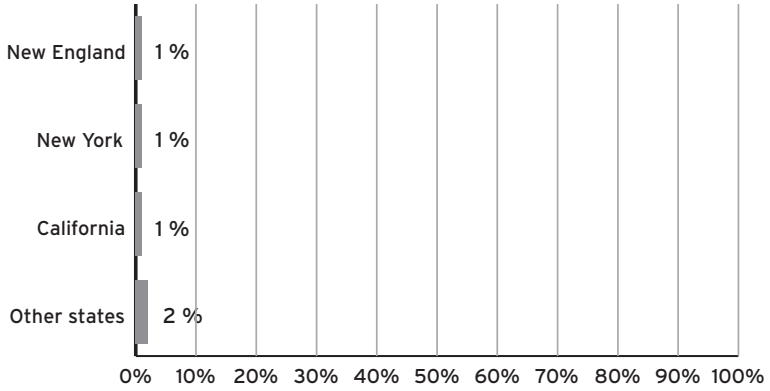
Analysis of results

Graduate path after finishing university

Employment in field of study – Emigration to the U.S.

Q. Was the first job you found located in the Montreal area?
If not, indicate in which U.S. state.



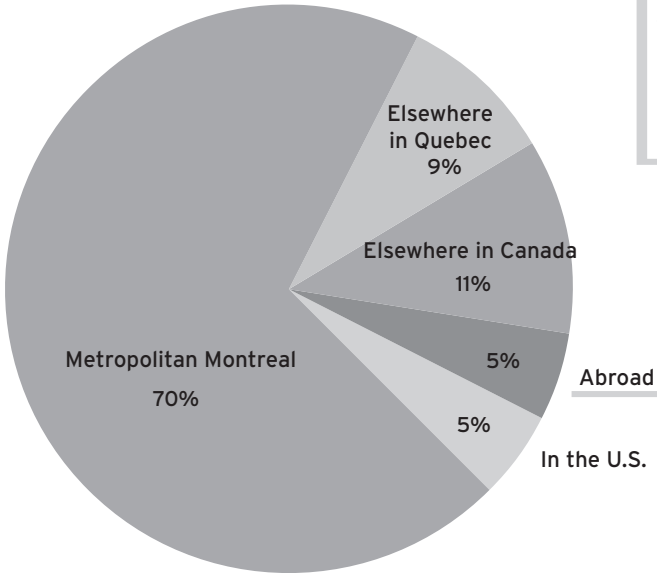


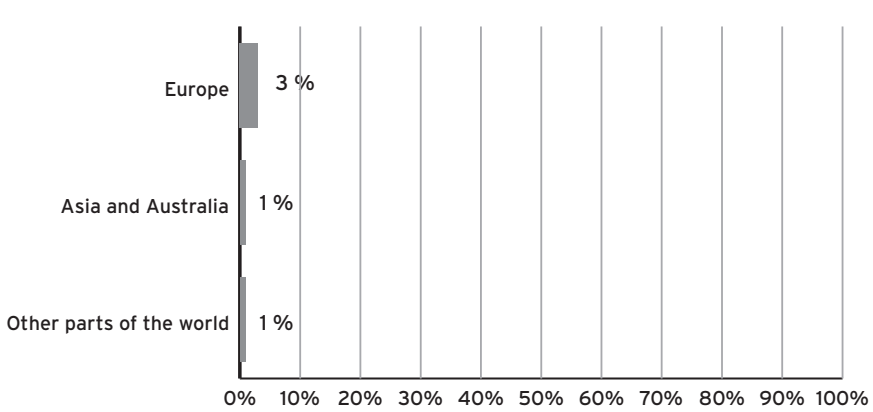
n = 1227
Among respondents who found work

Analysis of results

Graduate path after finishing university

Employment in field of study – Emigration abroad	Q. Was the first job you found located in the Montreal area? If not, indicate in which country?





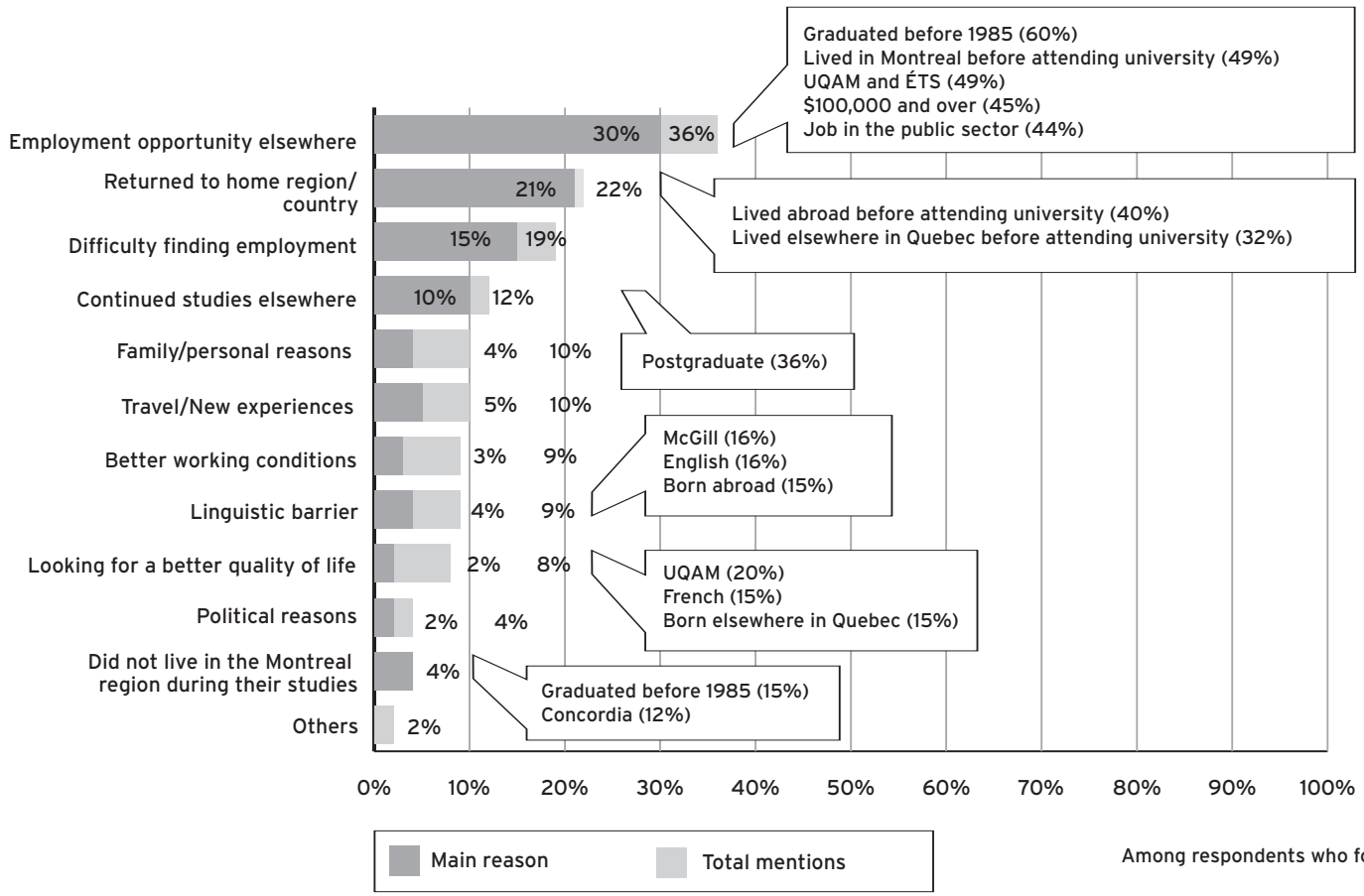
n = 1227
Among respondents who found work

Analysis of results

Respondents who left Montreal after their first job

Reasons for leaving Montreal

Q. What was your main reason for leaving the Montreal area when you finished your studies? Are there others?



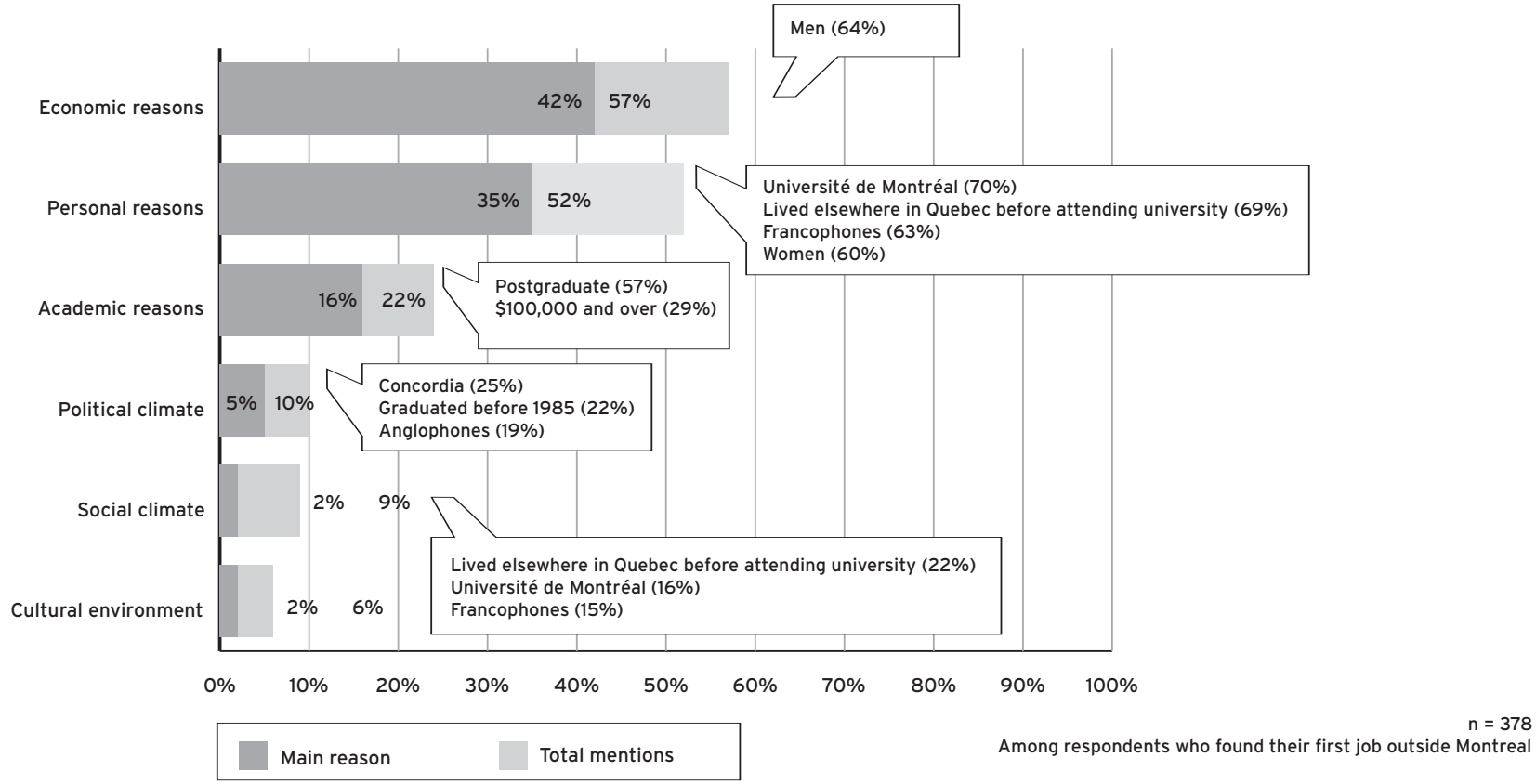
n = 378
Among respondents who found their first job outside Montreal

Analysis of results

Respondents who left Montreal after their first job

Reasons for leaving Montreal

Q. Which of the following was your most important reason for deciding to leave the Montreal area when you finished your studies? What was the second?



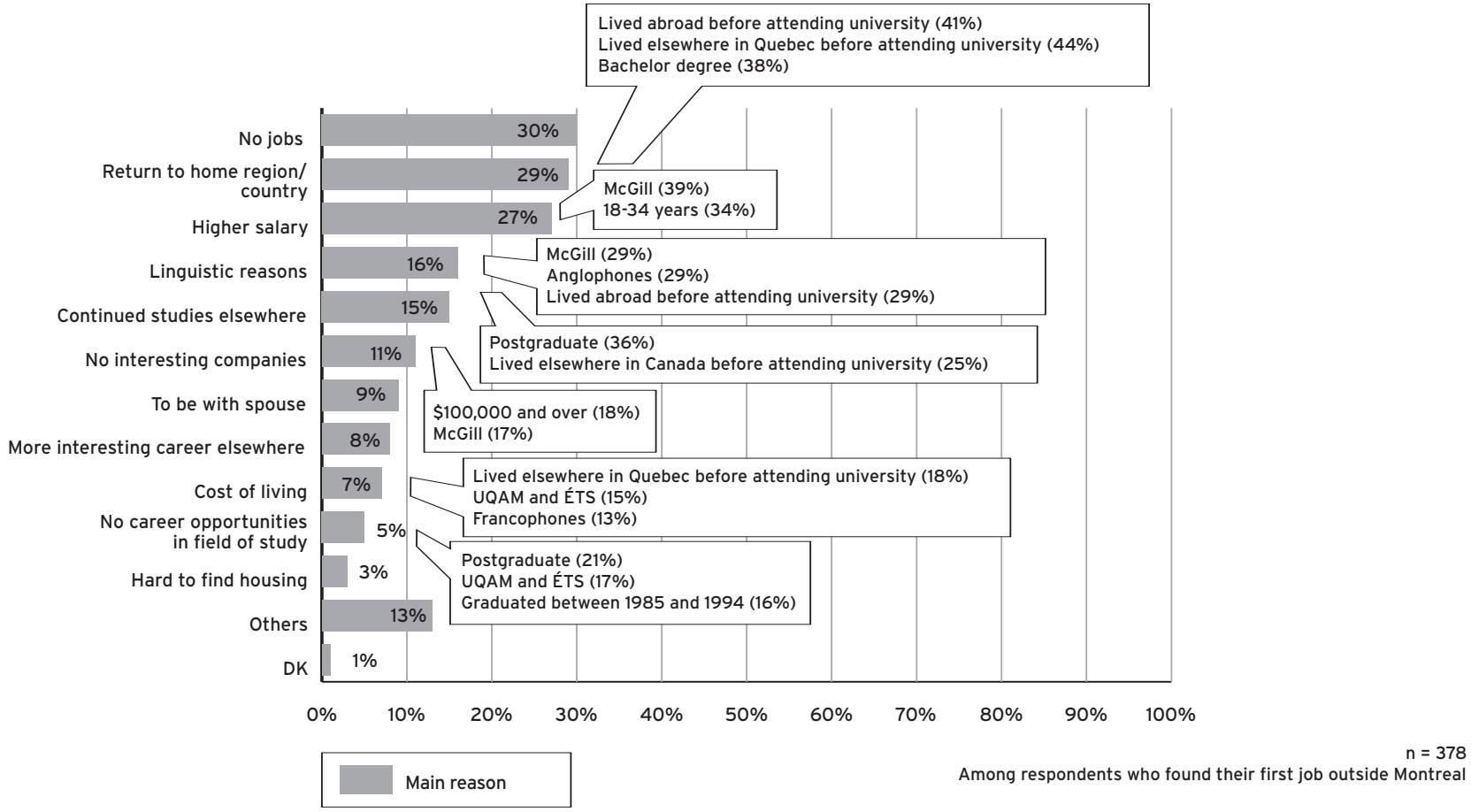
n = 378
Among respondents who found their first job outside Montreal

Analysis of results

Respondents who left Montreal after their first job

Reasons for leaving Montreal

Q. Which of the following more specific reasons explain your decision to leave the Montreal area when you finished your studies?



Analysis of results

Respondents who left Montreal after their first job

All reasons combined

- Concordia, McGill
- Anglophones, allophones
- Born elsewhere in or outside Canada
- Lived elsewhere in or outside Canada before attending university
- Postgraduate
- 18-34 years
- Graduated between 2000 and 2002 or before 1985

Economic reasons

Including job opportunities and working conditions, difficulty finding a job, salary offered and interest in career and employer

- UQAM and ÉTS, McGill
- $100,000 and over, $60,000 to 100,000
- Lived in Montreal before attending university
- Graduate and postgraduate
- 18-34 years, 35-54 years
- Men
- Graduated before 1985
- Public employer

Academic reasons

Including continuing studies elsewhere and opportunity of a university career

- Postgraduate
- $100,000 and over
- Lived elsewhere in Canada before attending university

Personal reasons

Including return to home region/country, family and person reasons, travel and new experiences, linguistic barrier

- McGill
- Women
- Born and lived elsewhere in Quebec before attending university
- Lived outside Canada attending university
- UQAM and ÉTS, Université de Montréal
- Bachelor
- Francophones
- Private employer

Political climate

- Concordia
- Graduated before 1985
- Anglophones
- Lived in Montreal before attending university

Social climate

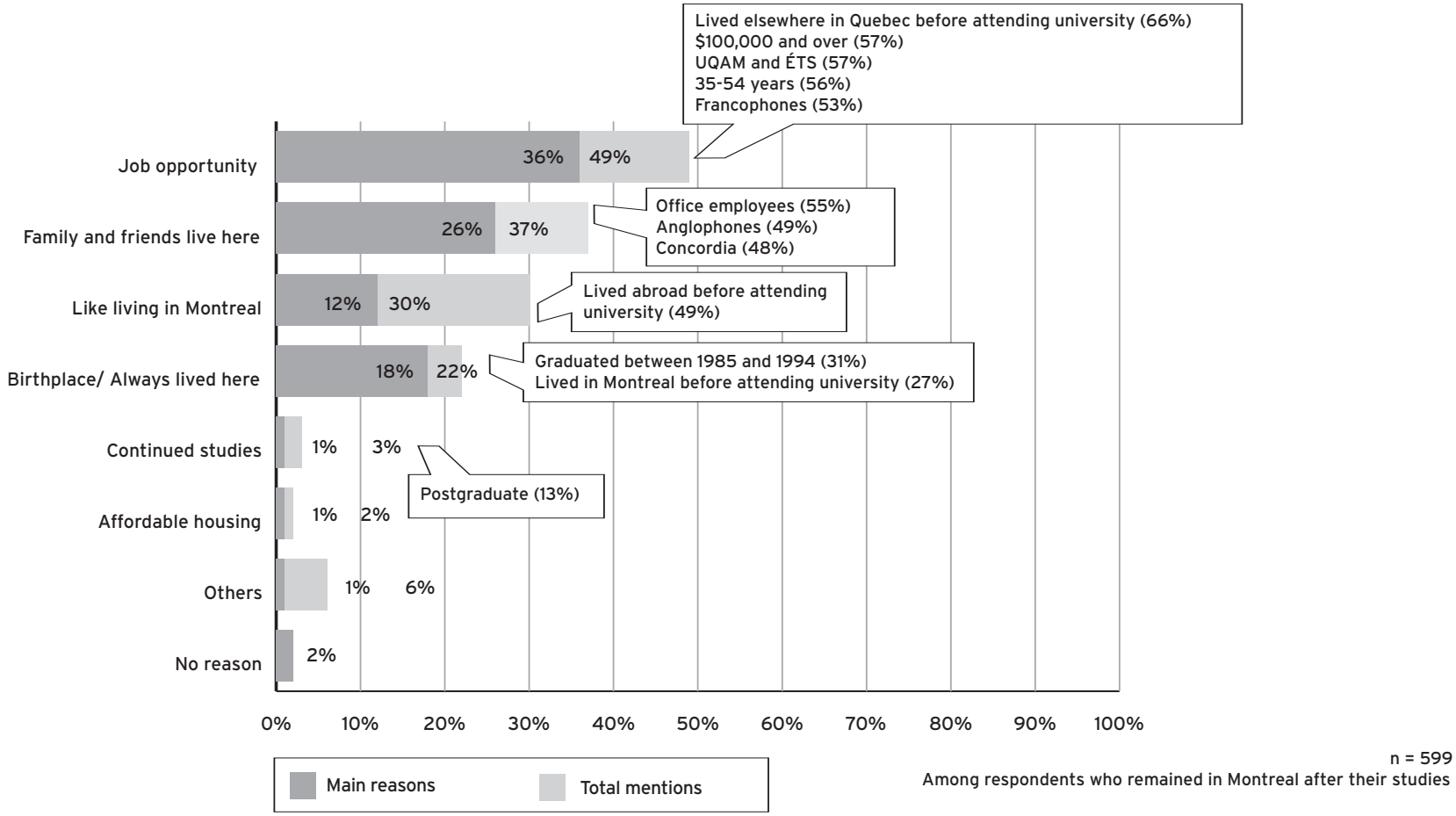
Including quality of life and cost of living

- UQAM and ÉTS, Université de Montréal
- Born elsewhere in Quebec
- Lived elsewhere in Quebec before attending university
- Francophones

Analysis of results

Respondents who remained in Montreal after their first job

Reasons for staying in Montreal	Q. What was your main reason for staying in the Montreal area when you finished your studies? Are there others?

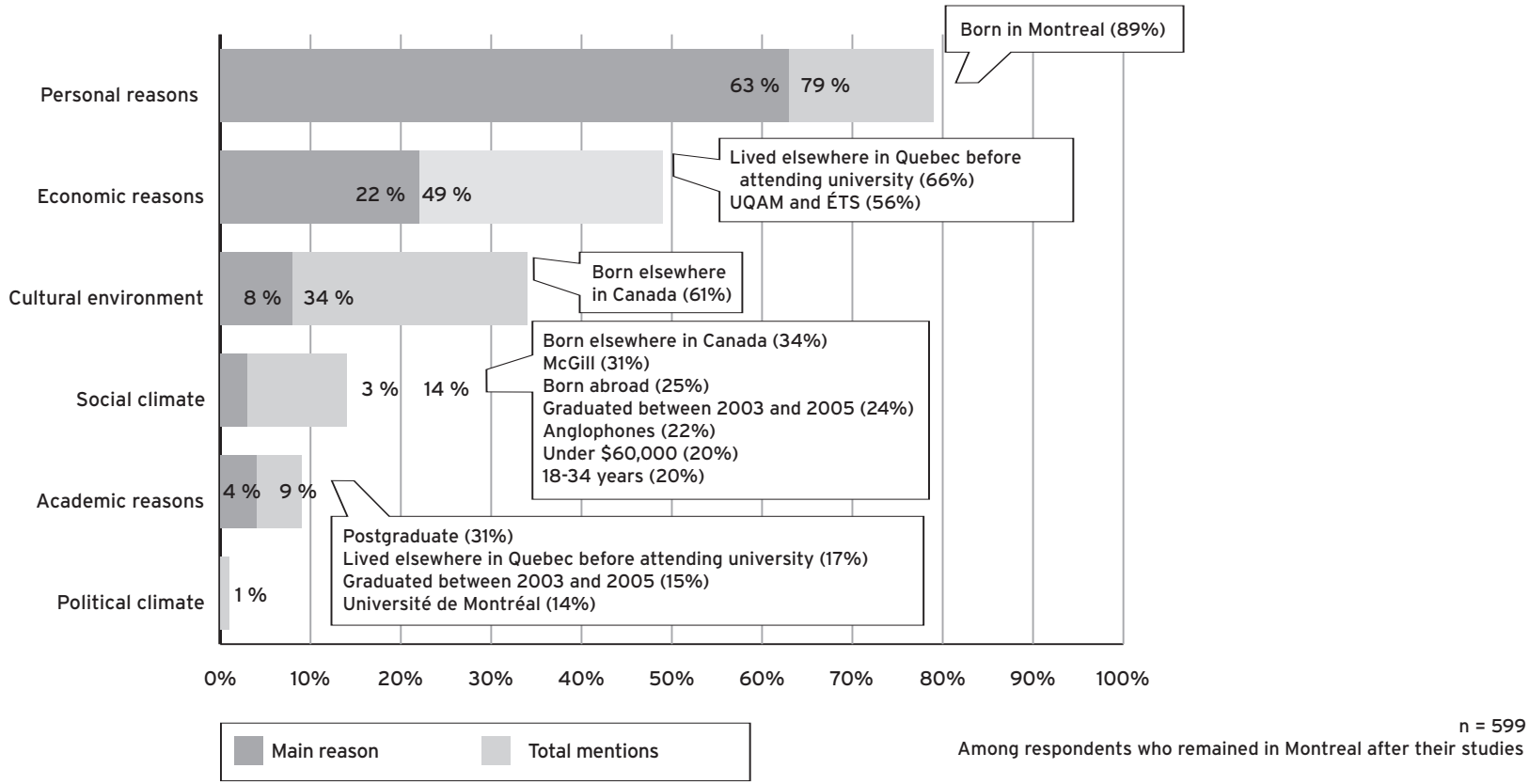


n = 599
Among respondents who remained in Montreal after their studies

Analysis of results

Respondents who remained in Montreal after their first job

Reasons for staying in Montreal	Q. Which of the following was your most important reason for deciding to stay in the Montreal area when you finished your studies? What was the second?



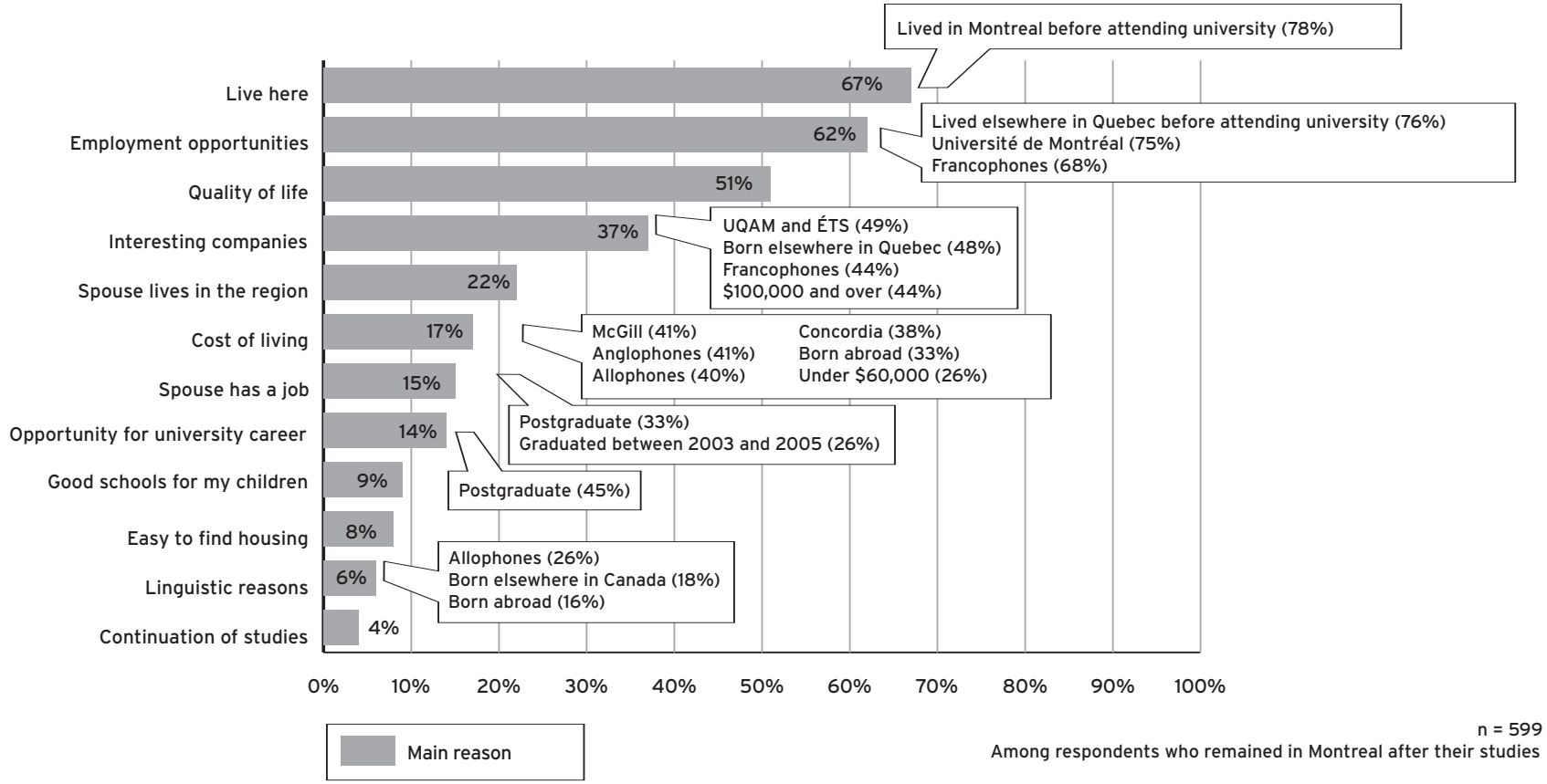
n = 599
Among respondents who remained in Montreal after their studies

Analysis of results

Respondents who remained in Montreal after their first job

Reasons for staying in Montreal

Q. Which of the following more specific reasons explain your decision for staying in the Montreal area when you finished your studies?



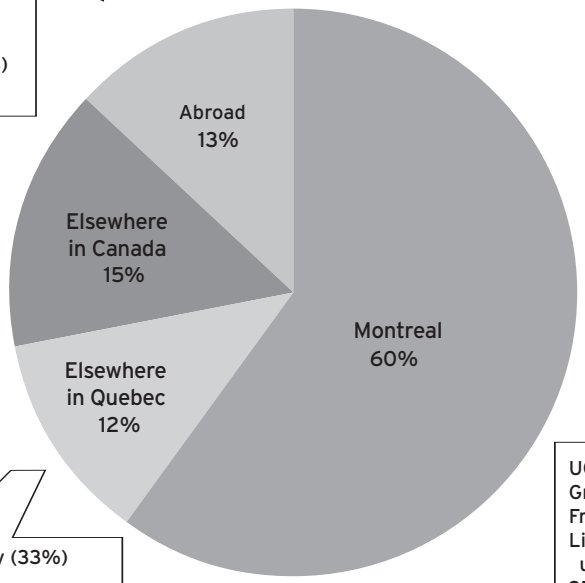
n = 599
Among respondents who remained in Montreal after their studies

Analysis of results

Current situation

Current situation	Q. Do you still live in the same city where you first worked after graduation?

Lived abroad before attending university (48%)
McGill (40%)
Allophones (34%)
Lived elsewhere in Canada before attending university (24%)
Anglophones (25%)
Postgraduate (22%)
Graduated between 2000 and 2002 (21%)
18-34 years (20%)



Lived elsewhere in Canada before attending university (36%)
Concordia (36%)
Anglophones (35%)
Graduated before 1985 (32%)
55 years and over (31%)
McGill (23%)

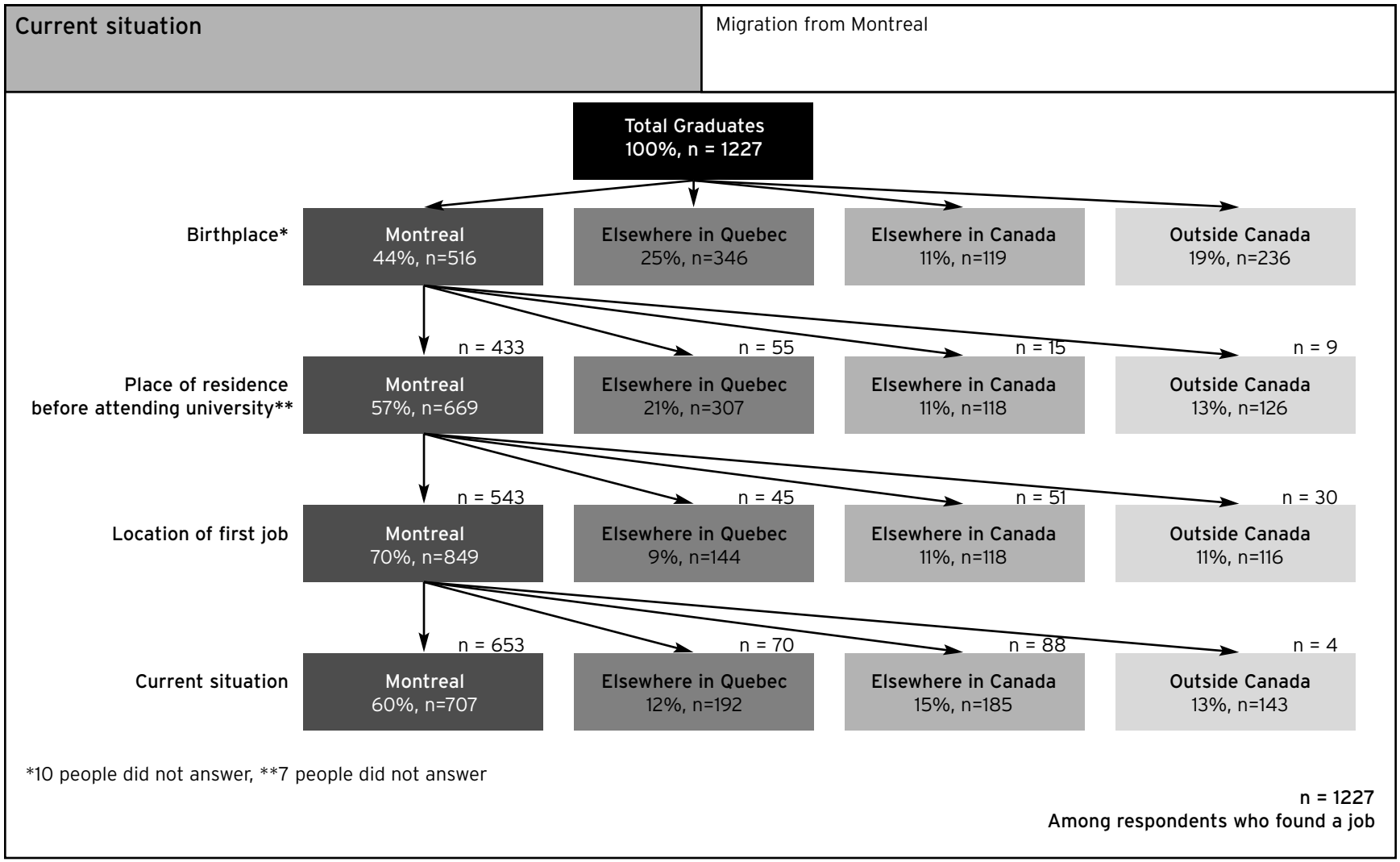
Lived elsewhere in Quebec before attending university (33%)
Université de Montréal (25%)
Francophones (19%)
Public employer (16%)

UQAM and ÉTS (80%)
Graduated from 1985 to 1994 (74%)
Francophones (73%)
Lived in Montreal before attending university (70%)
35-54 years (68%)

n = 1227
Among respondents who found a job

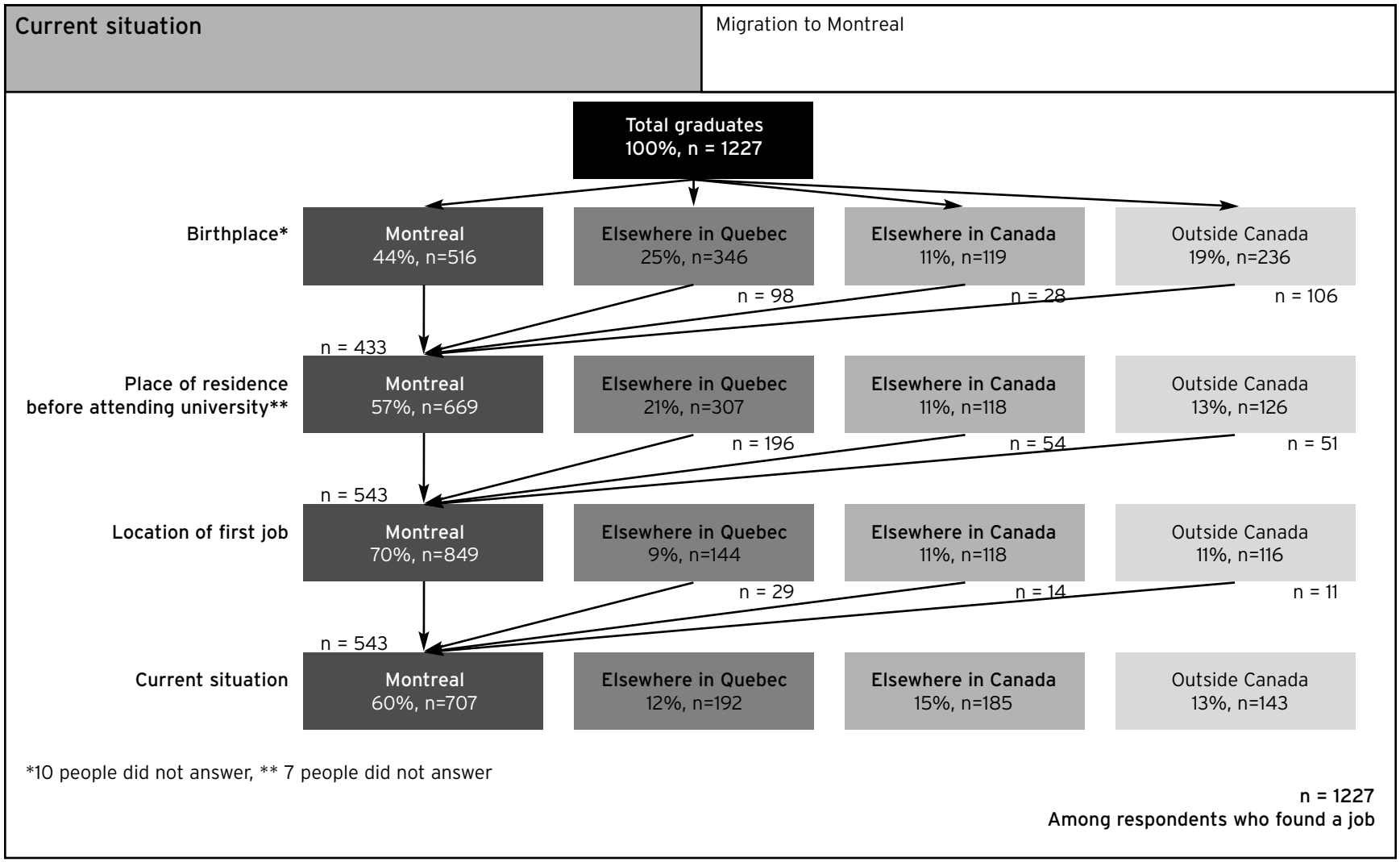
Analysis of results

Current situation



Analysis of results

Current situation



Current situation of graduates based on place of residence before attending university

A strong majority (70%) of graduates who lived in Montreal before attending university still live here while a third of those who lived elsewhere in Canada, the U.S. or abroad before their studies have remained. For each of these two groups, about 60% of the respondents are now established elsewhere in Canada, the U.S. or abroad.

Place of residence before attending university

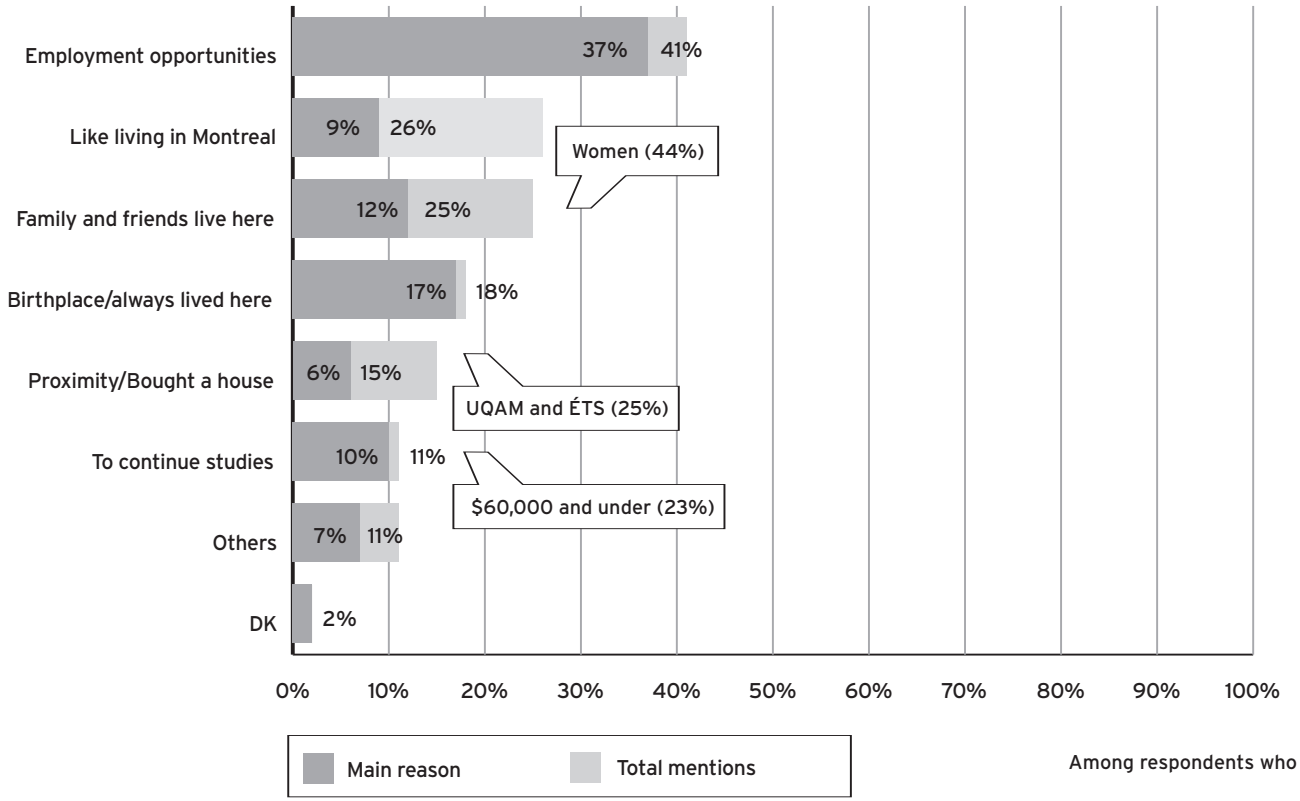
Current situation	Total n = 1227	Montreal n = 669	Elsewhere in Quebec n = 307	Elsewhere in Canada n = 118	Outside Canada n = 126
Montréal	**60%** 707	**70%** 449	**56%** 168	**36%** 41	**33%** 45
Elsewhere in Quebec	**12%** 192	**9%** 64	**33%** 112	**3%** 10	**3%** 6
Elsewhere in Canada	**15%** 185	**14%** 105	**6%** 16	**36%** 41	**16%** 20
Outside Canada	**13%** 143	**7%** 12	**4%** 11	**24%** 26	**48%** 55

Analysis of results

Current situation

Reasons for returning to Montreal

Q. What was your main reason for returning to live in the Greater Montreal area? Are there others?

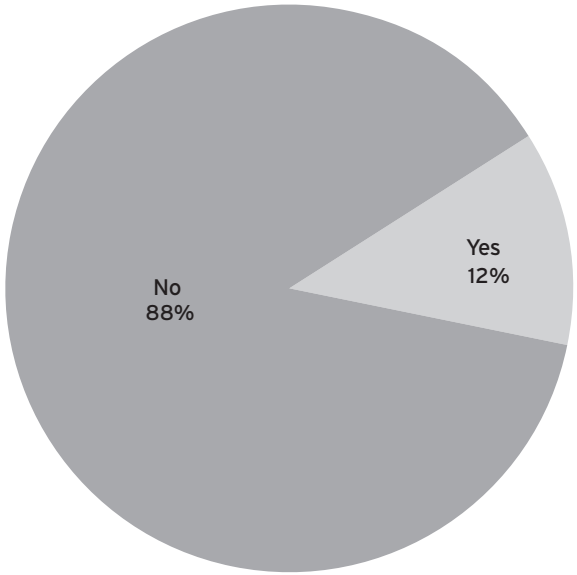


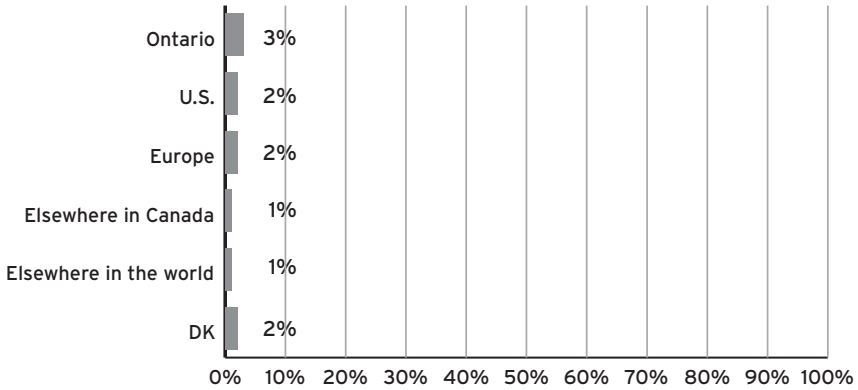
n = 108
Among respondents who left and then returned to Montreal

Analysis of results

Potential migration

Potential migration in the next two years	Q. Within the next two years, do you plan to leave Quebec and find a job in another Canadian province, in the United States or in another country?





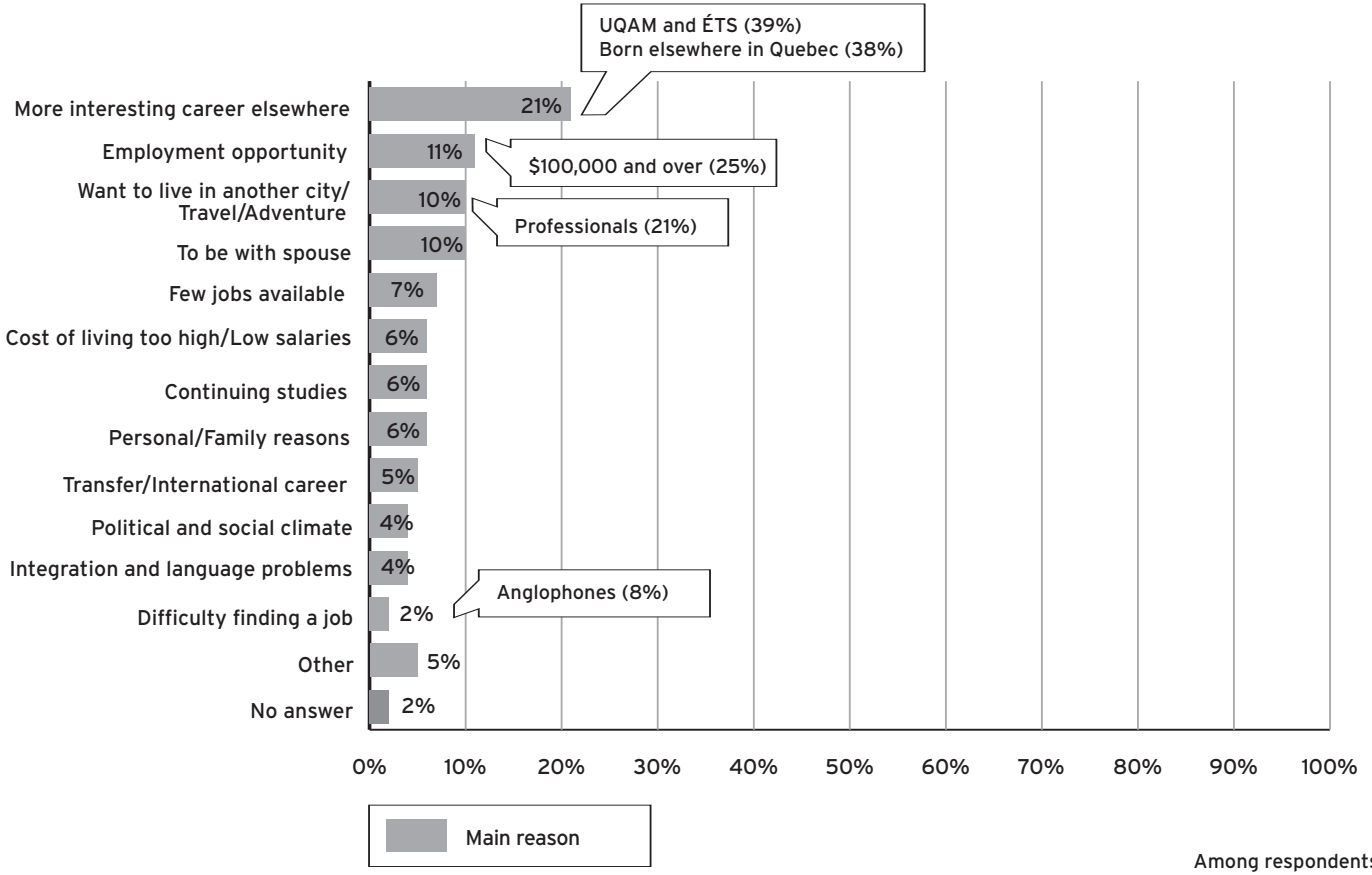
Graduated between 2003 and 2005(36%)
Anglophones (33%)
Lived abroad before attending university (25%)
Lived elsewhere in Canada before attending university (24%)
$60,000 and under (21%)

n = 899
Among respondents currently living in Quebec

Analysis of results

Potential Migration

Decision to leave Quebec	Q. What main reason would explain this eventual choice?

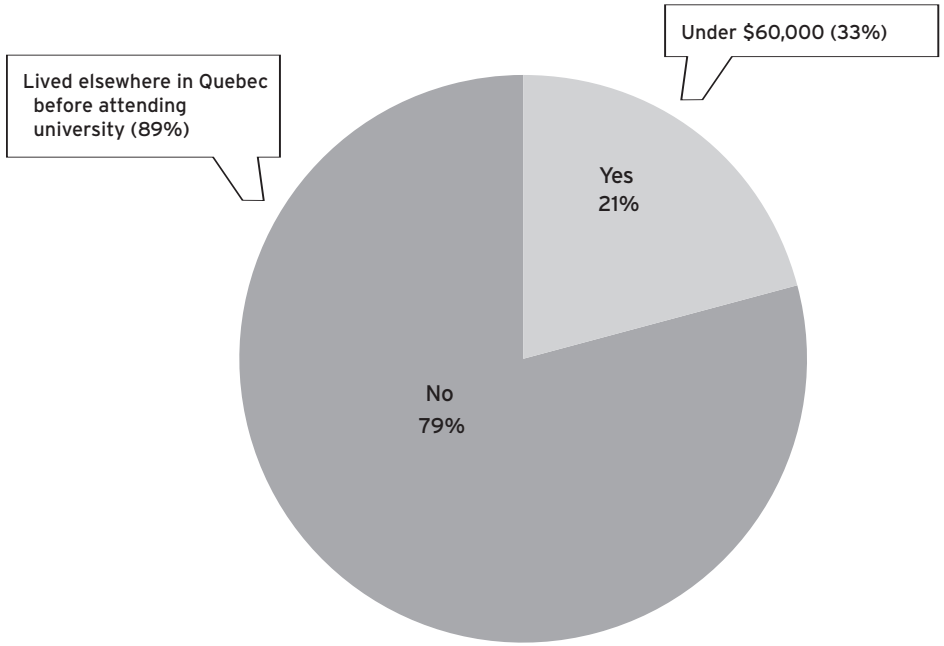


n = 118
Among respondents contemplating leaving Quebec

Analysis of results

Potential Migration

Potential return to Montreal in the next two years	Q. Within the next two years, do you plan to returning to Montreal?

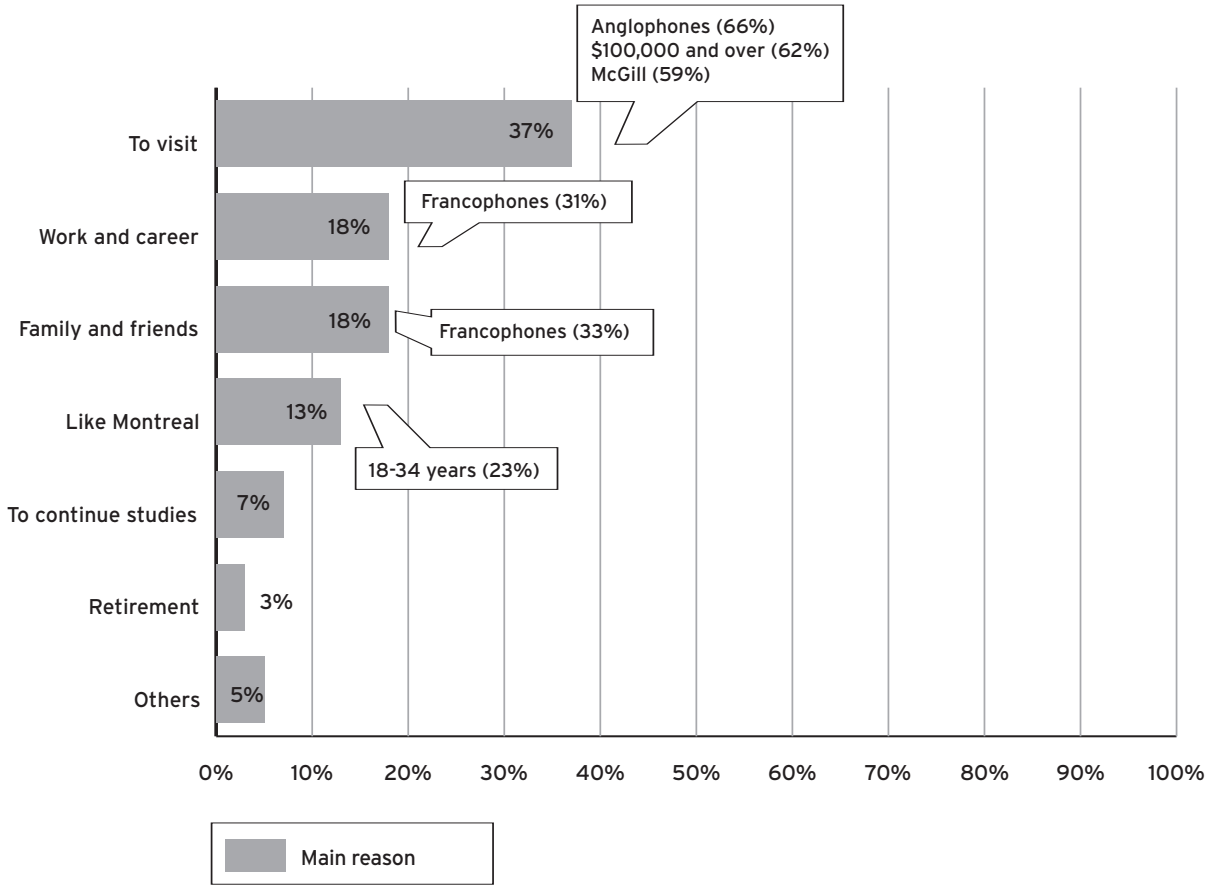


n = 520
Among respondents not living in Montreal

Analysis of results

Potential Migration

Respondents contemplating returning to Montreal	Q. What is the main reason?



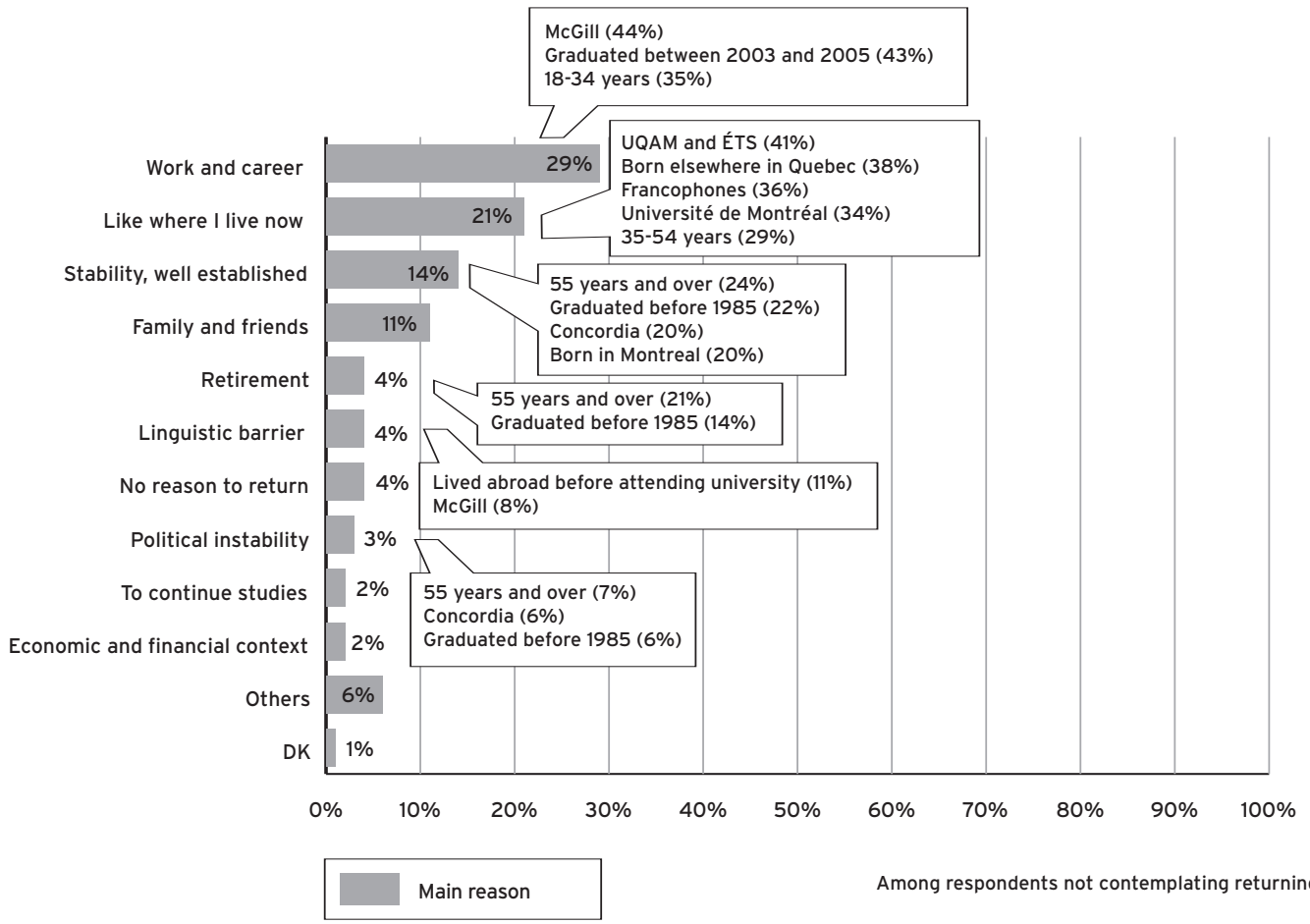
n = 99
Among respondents contemplating returning to Montreal

Analysis of results

Potential Migration

Respondents not contemplating returning to Montreal

Q. What is the main reason?

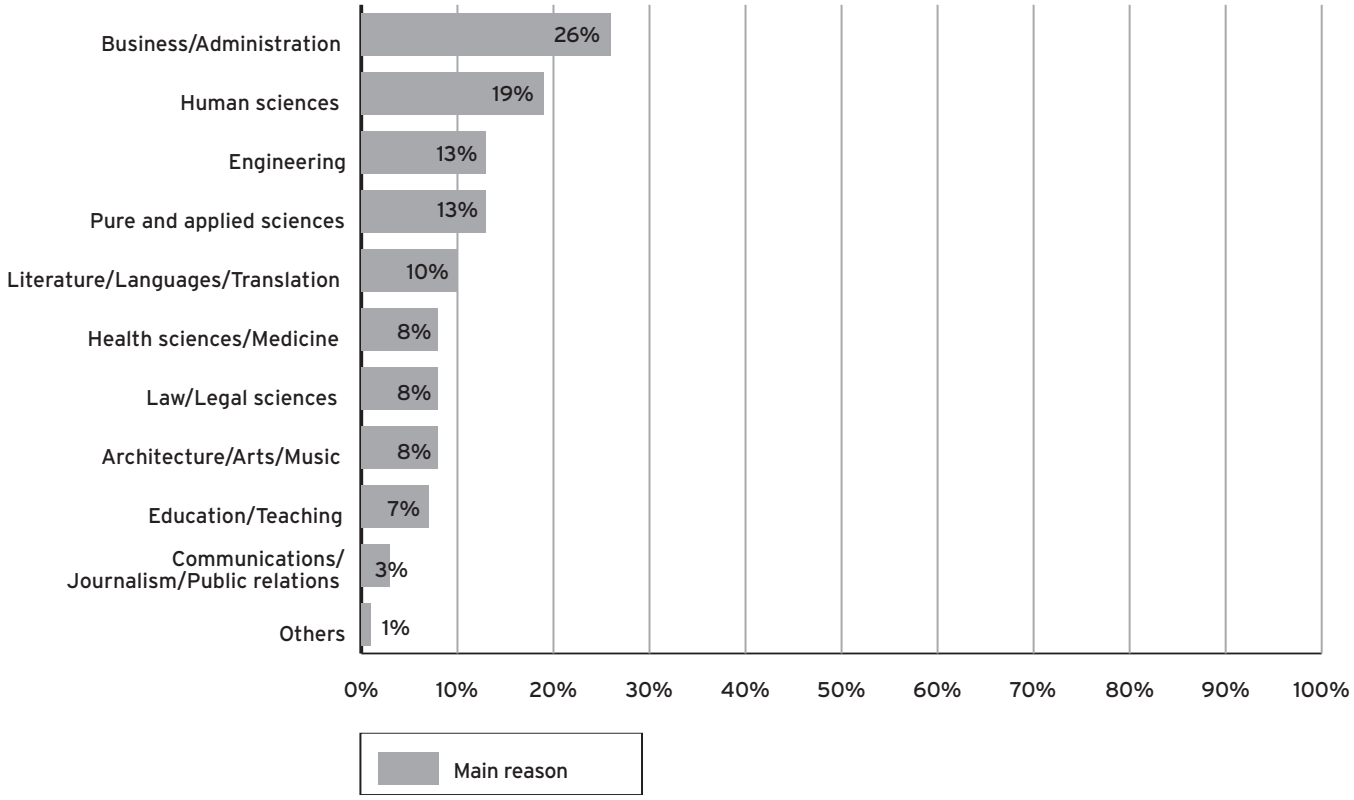


n = 421

Among respondents not contemplating returning to the Greater Montreal region

Respondent profile

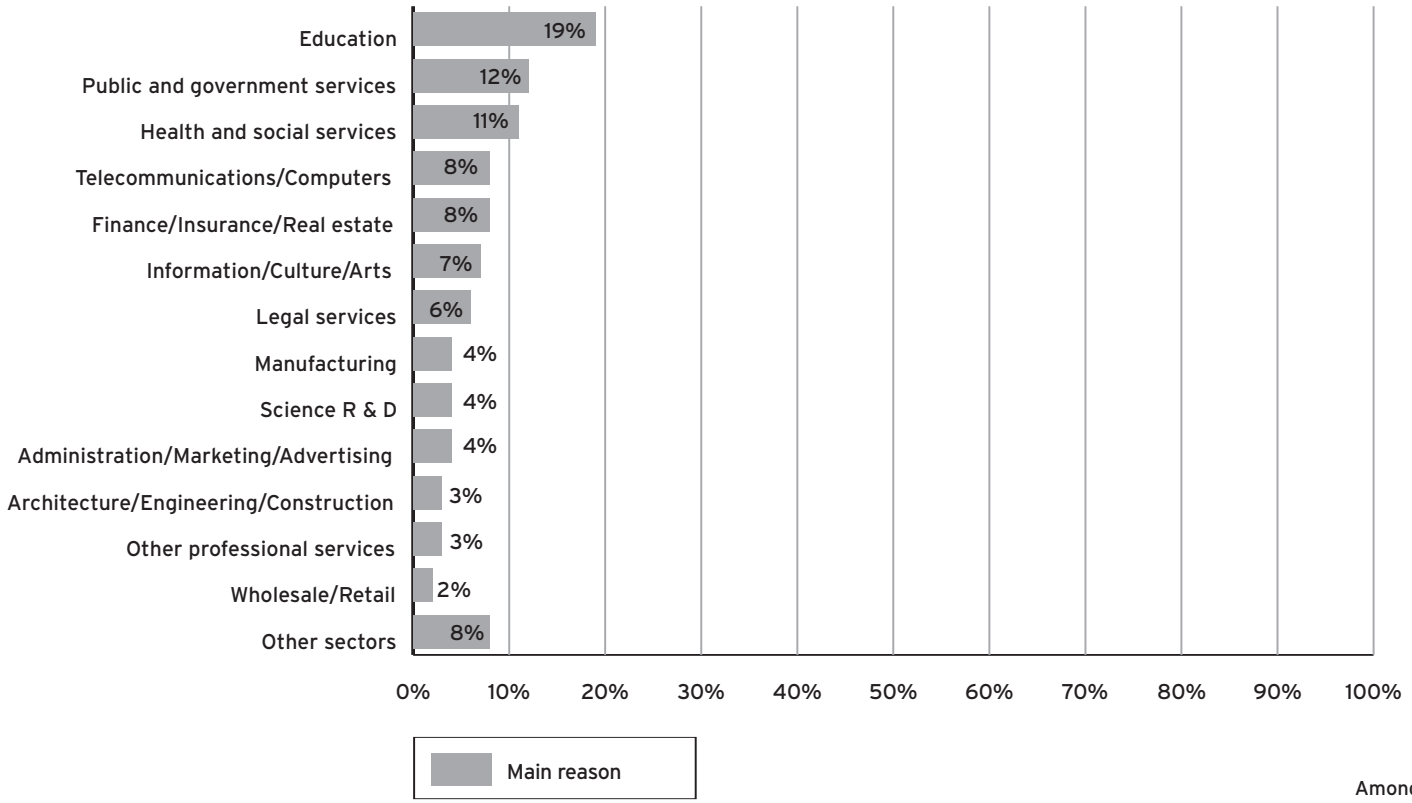
Field of study	Q. What was your field of study?



n = 1329

Respondent profile

Sector of activity	Q. To which of the following areas of activity belongs the company you work for?



n = 1149
Among the working population

Respondent profile

Respondent profile

*After weighting

University attended	n = 1329	%*
Concordia University	328	22
Université de Montréal	419	32
UQAM	217	30
McGill University	259	25
ÉTS	240	3
Quebec universities	36	4
Canadian universities	42	3
American universities	21	2
Other universities	43	3

Year degree was obtained	n = 1329	%*
Between 2003 and 2005	303	19
2000 and 2002	304	22
1995 and 1999	321	26
1985 and 1994	182	17
Before 1985	219	17

Level of schooling	n = 1329	%*
Uncompleted Bachelor	23	2
Completed Bachelor	607	41
Uncompleted Master	141	11
Completed Master	406	34
Uncompleted PhD	69	5
Completed PhD	83	7

Employment category	n = 1329	%*
Full time	1021	76
Part time	75	6
Student	103	8
Home worker	37	3
Retired	40	3
Unemployed, looking for work	53	4

Respondent profile

Respondent profile

*After weighting
**Among the working population

	n = 1149**	%*
Employer category		
Self-employed	125	12
Private company	458	32
Public company	490	49
Other	76	7

	n = 1149**	%*
Principal occupation		
Professional	868	73
Owner or head of a large corporation	21	2
Technician or semi-professional	43	4
Owner or head of a small company	53	5
Office or service employee or sales person	140	14
Tradesperson, specialized or blue collar Worker	13	1
Other	8	1
No answer	3	0

Respondent profile

Respondent profile

*After weighting

	n = 1329	%*
Sex		
Male	745	50
Female	584	50

	n = 1329	%*
Age		
18-34 years	715	48
35-54 years	455	39
55 years and over	155	12
Refused to answer	4	0

	n = 1329	%*
Annual household income		
Under $60,000	424	30
From $60,000 to 100,000	437	32
$100,000 and over	468	37

	n = 1329	%*
Language		
French	812	60
English	432	33
Other	85	6

	n = 1329	%*
Birthplace		
Montreal	553	44
Elsewhere in Québec	376	25
Elsewhere in Canada	126	11
Europe	93	6
U.S.	46	4
Asia	39	3
Africa	30	2
Middle-East	28	2
Latin America	23	2
Other	3	0
No answer	12	1

	n = 1329	%*
Place of residence before attending university		
Montreal	714	57
Elsewhere in Quebec	335	21
Elsewhere in Canada	127	11
U.S.	44	4
Europe	38	2
Asia	20	2
Africa	16	1
Latin America	16	1
Middle East	12	1
No answer	7	1

Respondent profile

Throughout my various daily activities, it is very important for me to feel creative.

Creativity	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally agree	21	49	49	49	50
Somewhat agree	56	43	43	41	43
Somewhat disagree	21	7	7	9	6
Totally disagree	2	1	0	1	1

Do you feel similar to creative, imaginative people?

Creativity	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Very similar	32	40	41	40	37
Somewhat similar	50	48	48	43	51
Somewhat different	17	11	11	16	11
Very different	1	1	0	1	1

Society should regard people of the same sex who live together as being the same as a married couple.

Tolerance	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally agree	24	46	47	45	45
Somewhat agree	31	31	31	34	28
Somewhat disagree	24	12	12	10	14
Totally disagree	20	11	10	12	14

Other cultures have a lot to teach us; contact with them is enriching for us.

Tolerance	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally agree	28	63	56	76	76
Somewhat agree	44	33	39	22	20
Somewhat disagree	19	3	3	1	3
Totally disagree	8	1	1	1	1

** The 3SC, CROP's Sociocultural Trend Survey System, is a strategic research and consulting program based on the study of sociocultural change.*

The 3SC describes consumers and citizens according to 100 hot buttons, values, motivations and social phenomena. These dimensions are measured based on some 300 questions administered to a representative sample of 2,600 Canadians aged 15 or over (including 1,000 Quebecers).

Respondent profile

I learn a great deal from meeting people who are different from me.

Social learning	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally agree	37	56	51	65	63
Somewhat agree	54	41	45	31	35
Somewhat disagree	8	3	4	4	2
Totally disagree	1	0	0	0	0

An indispensable way to learn is to be in contact and converse with very different kinds of people.

Social learning	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally agree	38	55	54	54	58
Somewhat agree	51	39	40	40	36
Somewhat disagree	9	5	5	5	4
Totally disagree	1	1	1	0	1

I set difficult goals for myself that I try to attain.

Need for personal challenges	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally agree	14	41	37	45	48
Somewhat agree	50	46	48	48	40
Somewhat disagree	30	12	14	4	10
Totally disagree	5	1	1	2	2

In order to get what I like, I would be prepared to take great risks in life

Openness to risk	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally	5	14	10	21	20
Somewhat	17	45	45	46	47
A little	43	32	36	24	25
Not at all	35	9	9	9	8

** The 3SC, CROP's Sociocultural Trend Survey System, is a strategic research and consulting program based on the study of sociocultural change.*

The 3SC describes consumers and citizens according to 100 hot buttons, values, motivations and social phenomena. These dimensions are measured based on some 300 questions administered to a representative sample of 2,600 Canadians aged 15 or over (including 1,000 Quebecers).

Respondent profile

I do not feel uncomfortable living with the uncertainties and the unexpected in life today.

Ability to live with uncertainty	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally	10	19	19	21	18
Somewhat	32	44	44	46	41
A little	36	27	28	22	30
Not at all	22	9	8	11	11

I like trying to take advantage of the unforeseen, of opportunities that present themselves.

Turning uncertainty into opportunity	Montreal 3SC* 2004 %	Total %	Quebecers who remained %	Quebecers who left %	Non-Quebecers %
Totally	11	45	44	49	43
Somewhat	37	44	44	43	45
A little	35	10	11	7	10
Strongly disagree	15	1	1	1	2

** The 3SC, CROP's Sociocultural Trend Survey System, is a strategic research and consulting program based on the study of sociocultural change.*

The 3SC describes consumers and citizens according to 100 hot buttons, values, motivations and social phenomena. These dimensions are measured based on some 300 questions administered to a representative sample of 2,600 Canadians aged 15 or over (including 1,000 Quebecers).

Appendix 1-A – Survey

In collaboration with Université du Québec à Montréal (and its affiliated institute, ETS), Concordia University, McGill University and Université de Montréal, the Board of Trade of Metropolitan Montreal commissioned CROP (Centre de recherche sur l'opinion publique) to conduct a survey with a view to establishing a profile of Montreal university graduates and determining the extent of their migration in the last few years. The survey interviewed university graduates in the Montreal area and is reproduced in its entirety in this report.

The CROP firm, the Public Opinion Research Centre, was commissioned by your university to conduct a survey of its graduates. We would like you to answer the questions below as indicated.

1. In what year did you graduate from university?

   Indicate the graduation year _____

2a. How long after graduating did you find employment?

   In the same year 1
   More than one year .....2 > PtoQ2b

2b. Indicate the number of years _____

3. Did you find work in your field of study?

   Yes 1
   No 2

4. Was the first job you found located in the Montreal area?

   Yes .....1 > PtoQ11
   No .....2 > PtoQ5

5. Was this job located...
   In Quebec (specify the region) .....1 > PtoQ7
   Outside Quebec .....2 > PtoQ6

6. Was it...
   In Canada (specify the province _____) ....
   In the United States (specify the state ____) ..
   In another part of the world
   (specify the country _____) .....

7a. What was your main reason for leaving the Montreal area when you finished your studies? (only one answer)
   Reason (specify):_____

7b. Were there other reasons? (several possible answers)
   Reason (specify):_____
   _____

8. Which of the following was your most important reason for deciding to leave the Montreal area when you finished your studies? (only one answer)

   Personal or family reasons 1
   Academic reasons 2
   Economic reasons 3
   Cultural environment 4
   Social climate 5
   Political climate 6

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9. Which of the following was your second most important reason for deciding to leave the Montreal area when you finished your studies? (only one answer)

Personal or family reasons 1
Academic reasons 2
Economic reasons 3
Cultural environment 4
Social climate 5
Political climate 6

10. Which of the following more specific reasons explain your decision to leave the Montreal area when you finished your studies? (several possible answers)

Returned to where I lived before going to university 01
No jobs available in my field of study 02
No interesting companies to find work in 03
No job prospects for my spouse 04
No suitable schools for my children 05
No opportunity to pursue a university career 06
Opportunity to earn a better salary elsewhere 07
Because I accompanied my spouse to another city 08
Because of the cost of living in the Greater Montreal area .09
No possibility of easily finding accommodations or a house 10
For language reasons 11
Other (specify) 96

11. Do you still live in the same city where you started working after university?

Yes 1
No .....2 > PtoQ12

12. In what city do you currently live?
City _____ (specify the province or country)

Questions applicable to those who returned to live in the Greater Montreal area

13. What was your main reason for returning to live in the Greater Montreal area? (only one possible answer)_____
Reason (specify):_____

14. Are there other reasons? (several possible answers)
Reason (specify):_____
_____ 96

Questions applicable to those who stayed in the Greater Montreal Area after their university studies

15a. What was your main reason for staying in the Montreal area when you finished your studies? (only one answer)
Reason (specify):_____ 96

15b. Are there other reasons? (several possible answers)
Reason (specify):_____
_____ 96

16. 16. Which of the following was your most important reason for deciding to stay in the Montreal Area when you finished your studies? (only one answer)

Personal or family reasons 1
Academic reasons 2
Economic reasons 3
Cultural environment 4
Social climate 5
Political climate 6

17. Which of the following was your second most important reason for deciding to stay in the Montreal Area when you finished your studies? (only one answer)

Personal or family reasons 1
Academic reasons 2
Economic reasons 3
Cultural environment 4
Social climate 5
Political climate 6

18. Which of the following more specific reasons explain your decision for staying in the Montreal Area when you finished your studies? (several possible answers)

Personal or loved one's residence 01
Jobs available in my field of study 02
Interesting companies to find work in 03
Work opportunities for my spouse 04
Availability of suitable schools for my children 05
Opportunity to pursue a university career 06
Because of the quality of life in the Greater Montreal area ..07
Because of the cost of living in the Greater Montreal area ..08
Because my spouse lived in the Greater Montreal area 09
Possibility of finding accommodations or a house easily 10
For language reasons 11
Other (specify)_____
_____ 96

Applicable to those who currently live in Quebec

19. Within the next two years, do you plan to leave Quebec and find a job in another Canadian province, in the United States or in another country?

Yes 1
No .....2 > Q22

If yes

20. Specify...
The Canadian province _____
The American State _____
The country _____

21. What main reason would explain this eventual choice? (only one answer)
Raison (précisez):_____ 96

We'd like to have some general information in order to group your answers with those of other respondents participating in this survey.

22. Here is a series of opinions that are often heard; for each one, indicate whether you totally agree, somewhat agree, somewhat disagree or totally disagree, by choosing the number corresponding to your opinion:

	Totally agree	Somewhat agree	Somewhat disagree	Totally disagree
a) Other cultures have a lot to teach us; contact with them is enriching for us		1	2	34
b) Throughout my various daily activities, it is very important for me to feel creative		1	2	34
c) Society should regard people of the same sex who live together as being the same as a married couple	1	2	3	4
d) I love to meet people whose way of life derives from very different cultures	1	2	3	4
e) An indispensable way is to be in contact and converse with very different kinds of people	1	2	3	4
f) I set difficult goals for myself that I try to attain	1	2	3	4
g) I learn a great deal from meeting people who are different from me	1	2	3	4

23. Here is a sentence that describes a type of people. Indicate whether you feel very similar, somewhat similar, somewhat different or very different from this type of people:

	Very similar	Somewhat similar	Somewhat different	Very different
a) Creative, imaginative people	1	2	3	4

24. Here is a series of opinions that are often heard; for each one, indicate whether it corresponds totally, somewhat, a little or not at all with what you think or do yourself:

	Totally	Somewhat	A little	Not at all
a) I like trying to take advantage of the unforeseen, of opportunities that present themselves	1	2	3	4
b) I do not feel uncomfortable living with the uncertainties and the unexpected in life today	1	2	3	4
c) In order to get what I like, I would be prepared to take great risks in life	1	2	3	4

25. Including yourself, how many persons live in your household?

1 person alone (the respondent) 1
2 persons 2
3 persons 3
4 persons 4
5 persons 5
6 or more persons 6

26. And of that number, how many are 18 years of age or over?

1 person (the respondent) 1
2 persons 2
3 persons 3
4 persons 4
5 persons 5
6 or more persons 6

27. How many are less than 18 years of age?

1 person (the respondent) 1
2 persons 2
3 persons 3
4 persons 4
5 persons 5
6 or more persons 6

28. Could you indicate your exact age?

Age _____

29. What is the highest level of study you have attained?

University BA in part 1
University BA completed 2
2nd university cycle in part 3
2nd university cycle completed 4
3rd university cycle in part 5
3rd university cycle completed 6

30. In what year did you finish university?

Year_____

31. What university did you graduate from?

Concordia University 1
Université de Montréal 2
Université du Québec à Montréal 3
McGill University 4

32. Which of the following categories best describes your current employment?

Full time employment 1
Part time employment 2
At home full time 3
Student 4
Retired 5
Unemployed, looking for employment 6

33. What is usually your main occupation?

Professional 01
Large company owner or director 02
Technician or semi-professional 03
Small business owner or director 04
Office worker (white collar), service, salesperson 05
Tradesperson, skilled worker, semiskilled worker or blue collar 06
Other 96

34. Usually, are you self-employed, or do you work for a private company, or for a public or semi-public company?

Self-employed 1
Private company 2
Public or semi-public company 3
Other 4

35. To which of the following areas of activity belongs the company you work for? (one possible mention)

Agriculture and fishing 01
Forestry 02
Mines 03
Manufacturing 04
Construction 05
Transportation and storage 06
Public services (electricity, gas, water, waste disposal, etc.) 07
Wholesale trade 08
Retail trade 09
Finance and insurance 10
Real estate 11
Information and culture (radio, television, publishing, etc.) 12
Telecommunications 13
Professional, scientific and technical services:
- marketing, advertising or public relations 14
- administration (management, accounting, human resources, etc.) 15
- legal services 16
- computers 17
- architecture, engineering 18
- science (research and development) 19
- others 20

Government services (legal, taxation, public safety, public services management, etc.) 21
Education 22
Health and social services 23
Food and lodging 24
Arts, entertainment and leisure 25
Others (personal services, domestic services, associations and organizations, etc.) 26

36. Are you an owner or a tenant of your current residence?

Owner 1
Tenant 2

37. What language do you speak most often at home?

French 1
English 2
Other (specify):_____ 6

38. In what country were you born? In what city?

Country:_____ City:_____

39. In what country did you live before starting university? In what city?

Country:_____ City:_____

40. Which of the following categories best describes the total income last year, before taxes, of all members of your household?

Less than $20,000 1
$20,000 to $39,999 2
$40,000 to $59,999 3
$60,000 to $79,999 4
$80,000 to $99,999 5
$100,000 to $149,000 6
$150,000 and over 7

41. Indicate whether you are a man or a woman.

Man 1
Woman 2

42. Would you agree to talk to a journalist about the migration of graduates from the Montreal area?

Yes 1
No 2

Appendix 2 – **Institut national de la recherche scientifique**

Urbanisation, Culture et Société (INRS –UCS)

The training, attraction and retention of university graduates

Comparative study between metropolitan Montreal and other Canadian and U.S. metropolitan areas

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Scientific responsibility: Richard Shearmur and Mario Polèse,
in collaboration with Philippe Chenard, PhD Candidate
Richard.Shearmur@ucs.inrs.ca
Mario.Polese@ucs.inrs.ca
Philippe_Chenard@ucs.inrs.ca
Institut national de la recherche scientifique
Urbanisation, Culture et Société

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3465 Durocher Street, Montreal, Quebec H2X 2C6
Telephone: (514) 499-4000 Fax: (514) 499-4065
www.inrs-ucs.uquebec.ca

Université du Québec
Institut national de la recherche scientifique
Urbanisation, Culture et Société

The Training, Attraction and Retention of University Graduates

This study is divided into two parts. The first covers the migration flow of university graduates for 136 Canadian cities. The second covers the university population (student enrolment) and degree granting in 12 North American cities. In both cases, the Canadian data are based on special tabulations by Statistics Canada compiled for INRS Urbanisation, Culture et Société[1]. More detailed information on the sources and data transformation can be found in Appendix 3.

Context: a theoretical overview

The theory of human capital suggests that for the individual, education is a form of capital that produces tangible benefits in the form of higher income (Fields, 2003). From a macroeconomic perspective, this same theory postulates that the more qualified people there are in a region, the faster its growth (Romer, 1989).

More recently, these ideas have led to the assumption that the prosperity of a city or region is underpinned by a population of talented individuals — often, but not necessarily with formal qualifications (Florida, 2004). This takes on even greater significance as the economy evolves into a knowledge economy where intangible forms of capital (social and human) and knowledge are becoming fundamental to growth (Castells, 1996). If these theories are accepted, cities and regions will have to do all they can to attract and retain this talented population. Florida (2004) suggests, among other things, that the presence of a strong cultural environment and universities are important factors of attraction and retention. Angell (2000) points out that competition around the world is fierce in this regard.

Despite the lively debate surrounding these ideas, their empirical bases are often tenuous, particularly when applied at the regional level. Indeed, while the statement that talent and qualifications are the key to individual prosperity is certainly true, it cannot necessarily be generalized to the regional or city level.

If people do not move, the proliferation of degrees in a given area can lead either to their devaluation or to an increase in local added value (Wolf, 2002). But by definition, a region or city is open. People are mobile, especially educated ones: the causality between education and local growth is therefore difficult to establish (Shearmur, 1998). While there may be a strong correlation between the number of graduates and local prosperity, it is not clear whether it is the prosperity that attracts the graduates or whether the graduates create the prosperity. Moreover, certain factors are strongly inter-related: the educated population varies with the size of the city or region and its proximity to large urban centres. Consequently, a correlation between an educated population and growth could simply reflect a well-established link between urban size (agglomeration economies) and growth: if such is the case, the causal links between education and growth would be highly complex and conditional, for example, they would depend on the infrastructures and local markets, which are only found in some large cities. In all, it is highly likely that education or talent leads to local growth but only under certain conditions not directly tied to these elements.

1. *The database is located in the Laboratoire d'analyse spatiale et d'économie régionale (LASER). For more information, see the INRS-UCS Web site at: http://www.inrs-ucs.uquebec.ca/*

1.
University graduate migration in the canadian urban system, 1996 to 2001

The following sections briefly explore university graduate migration in the Canadian urban system. Studying these flows allows us to better understand the talent push and pull factors, provided we accept that the graduate population is a reliable indicator of talent. The purpose of this analysis is to determine whether there are certain geographic characteristics that attract graduates to Canada's largest urban centres. The characteristics examined were chosen in order to test certain hypotheses pertaining to the direction and causes of migration.

1.1 A simple migration model

Before testing hypotheses derived from theories on talent pull factors, we will first verify two structural factors that could influence migration. First, *the Canadian region*: flows are greater towards certain regions than others due to complex reasons related to history, the regional economic situation and ties that may exist between various communities across Canada. The second is *location on the periphery or near a metropolitan area* (cities with populations of over 500,000): in fact, migration tends to flow from the periphery towards the core, particularly since the early 1980s.

Our analysis covers 136 Canadian cities between 1996 and 2001 with populations of more than 10,000 in 1991 and located south of the 55th parallel. Changes in municipal boundaries make it impossible to reconstruct all 144 cities with populations of more than 10,000 in 1991. Each city was classified according to two criteria:

1. By home region: Six regions were used: Atlantic Canada, Quebec, Ontario, the Prairies (Manitoba and Saskatchewan), Alberta and British Colombia;

2. By type of agglomeration: metropolitan areas (over 500,000 inhabitants), large central agglomerations (between 50,000 and 500,000 inhabitants, within 150 km of a metropolitan area), small central agglomerations (between 10,000 and 50,000 inhabitants, within 150 km of a metropolitan area), large peripheral agglomerations (between 50,000 and 500,000 inhabitants, more than 150 km from a metropolitan area), small peripheral agglomerations (between 10,000 and 50,000 inhabitants, more than 150 km from a metropolitan area).

The effect of urban size is also included in the model using a logarithm of total population.

In this analysis, we verify the effect of each dimension on the net migration for the following four types of population:

- total population;
- non-graduate population aged 20 to 34;
- graduate population aged 20 to 24;
- total graduate population.

1.1.1 Results

The effect of each factor (region, type of agglomeration, size) is studied by controlling the effect of the other two factors (see Appendix 1). For example, the analysis method used (an econometric model based on the General Linear Model (GLM)) allows us to eliminate the effect of home region and type of agglomeration in order to focus on the effect of urban size.

Effect of urban size – The most determining factor for understanding migration is urban size. The larger a city, the more migrants it will attract. This is true regardless of the type of population studied, but the effect is greater for young graduates. If the log of population increases by one (for example, if the population increases from 100,000 to 1,000,000), the net migration of young graduates rises 10%. The values are lower for the other types of population: 1.9% for the total population, 4.4% for young non-graduates, and 4.9% for all graduates.

Centrality – Centrality also plays an important role: total migration of young graduates and non-graduates is considerably greater to small and large central agglomerations than to metropolitan areas. Net migration is 5% to 10% higher towards central agglomerations than to metropolitan areas or peripheral agglomerations. The only category for which this result does not hold is young graduates, for which there is no surplus immigration towards central agglomerations of similar size and region. The large peripheral agglomerations tend to lose the most young graduates.

The region – Quebec urban centres systematically have the lowest net migration. For the total population, this figure is 2% to 7% less than the other five regions. For young graduates, the figure is similar (although slightly less) to the Prairies, Ontario and Alberta, but less than British Colombia. For total graduates, Quebec has much lower net flows than Alberta and British Colombia.

Overall, this simple migration model is a good tool, explaining 30% to 50% of the variance for the total population, young non-graduates and total graduates. However, with only 18% of the total variance explained, the results for young graduates, although significant, are not as strong.

1.1.2 Other explanatory factors

Richard Florida (2004) suggests that talented individuals are attracted by a vibrant cultural life and by the presence of knowledge institutions such as universities. Another possibility is that highly qualified people are attracted by cutting-edge economic activities such as high-order service jobs and high-tech manufacturing (Wolf, 2002).

Neither one of these theories is confirmed by our analysis (Appendix 2).

Culture – A strong cultural scene (measured by the percentage of jobs in theatre, film production, entertainment and sports) is not accompanied by higher net migration regardless of the population category analyzed.

Universities – The presence of universities is measured by the percentage of university jobs in each city. In what at first appears to be a contradiction, a greater presence of university employment is a push factor for young people, young graduates and total graduates. However, closer scrutiny reveals no incongruence because our migration measurement is based on answers obtained in 2001 to the question: "Where did you live five years ago?" People who obtain a degree in a university town and who then find employment in a non-university town contribute to this negative effect. This is because university towns are graduate "producers." These graduates then tend to disperse over the whole territory.

The fact that higher university employment is associated with higher outflows, especially of young graduates, is an indication that universities are functioning as they should, producing graduates who then leave the city in which they studied.

High-order service jobs – The presence of high-order service jobs does not have a significant statistical effect on net migration. However, for young graduates and total graduates in particular, the results suggest the existence of pull effects that are obscured by other factors not considered in our simple model.

High-tech manufacturing jobs – The presence of high-tech manufacturing jobs has no significant statistical effect on net migration. However, our results suggest that perhaps there is a pull effect for young people (graduates and non-graduates alike).

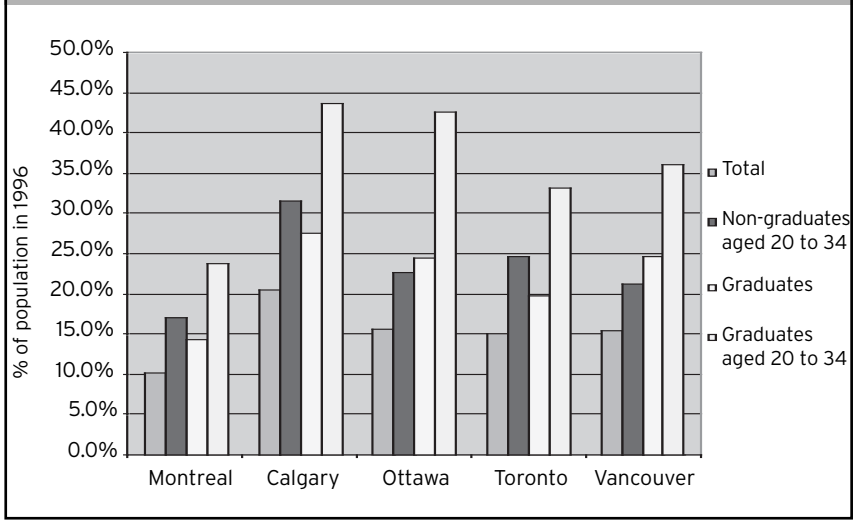
In all, although we cannot identify other pull factors than the structural ones already described, this does not mean that the theories advanced by Florida and others on the pull power of high-tech sectors are necessarily wrong but rather that they cannot be generalized. Moreover, it is highly likely that within the Canadian urban system, multiple, complex effects have a marginal impact on migration flows. In other words, once we recognize the existence of certain simple effects (urban size, region and type of agglomeration), we must scrutinize each case individually. A theory of general migration based on Richard Florida's theses is too simplistic to reflect the reality of the flows observed.

1.2 Canada's major cities

1.2.1 Immigration

Figure 1 illustrates the immigration rate for each one of Canada's five largest cities, i.e., arrivals from 1996 to 2001 divided by the number of citizens in 1996. This rate is calculated separately for each type of population.

Figure 1 : Immigrants (incoming), 1996-2001



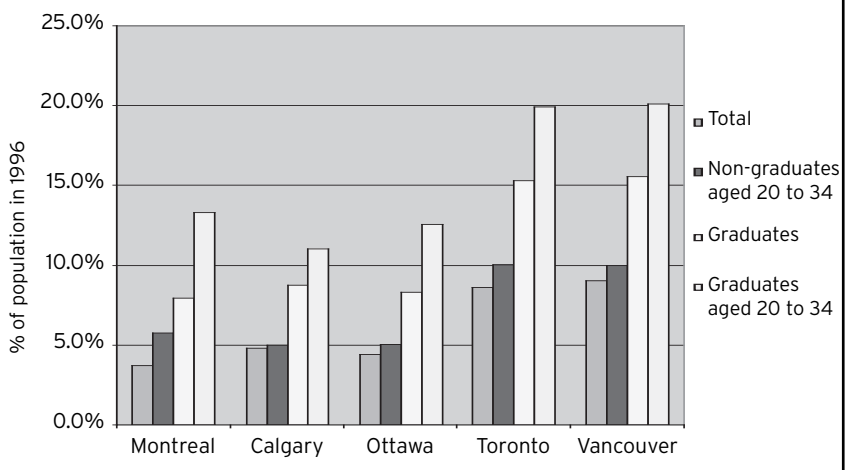
As we see, Montreal's immigration rate for the total graduate population is significantly lower than Toronto's and Vancouver's. Calgary, a hub in a booming region, has an extremely high migration rate. Ottawa — undoubtedly due to its government role and the presence of the civil service, but also as a result of its recent economic vitality — has a very high immigration rate for young graduates.

Toronto's migration rate for young non-graduates is higher than Vancouver, Montreal and Ottawa.

1.2.2 International immigration

A look at the international component (Figure 2) of immigration shows that Montreal also has a very low rate compared to Toronto and Vancouver.

Figure 2 : International Immigrants (incoming), 1996-2001

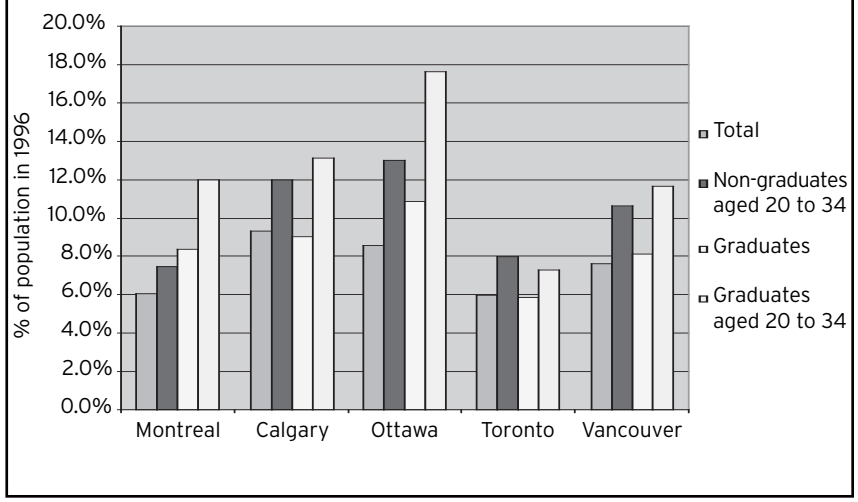


Proportionally, Montreal attracts the same number of international graduates as Ottawa and Calgary while Toronto and Vancouver lead the way for all the population types, particularly young and older graduates. More generally, these results show that Montreal's appeal is mostly on a local level (and we assume, mainly for the regions of Quebec) whereas Toronto's and Vancouver's reach is truly international.

1.2.3 Emigration

For obvious statistical reasons, emigration (out migration) cannot directly take into account Canada's outflow since the census only considers individuals residing in Canada in 2001 and not those who left. It is therefore important to bear in mind that the emigration flow is only a partial flow. However, given that international emigration in Canada is far less than international immigration, we believe our general conclusions are still valid.

Figure 3 : Emigrants (outgoing), 1996, 2001



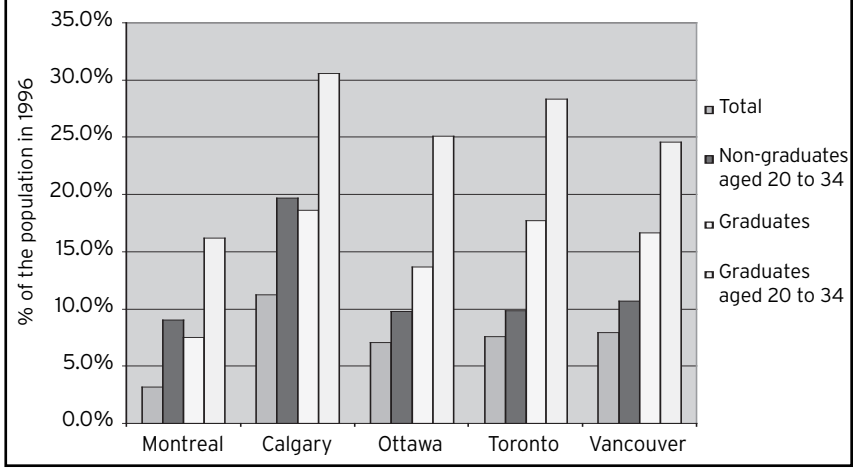
A look at the total population flows (Figure 3) shows that the smaller the city, the greater the outflow, a correlation consistent with the results of our model. However, the situation is different for graduates, particularly young ones. Here we see that Montreal is less successful than Toronto and Vancouver at holding on to its graduates or young graduates. The city's departure rate for young graduates is the same as Calgary's, and only Ottawa loses young graduates faster than Montreal.

1.2.4 Net migration

Subtracting the outflow from the inflow produces the net migration (Figure 4). Our measure of net migration is approximate since it does not take into account emigration overseas. We believe that this bias – which is minor – tends to favour the least international cities (since it underestimates their outflow) and will therefore favour Montreal over Vancouver and Toronto. Despite this bias, we see that the net migration, especially for graduates and young graduates, is much lower for Montreal than for Canada's four other major cities.

Figure 4 : Net Migration (excluding emigration abroad), 1996-2001

(A positive percentage means net immigration)



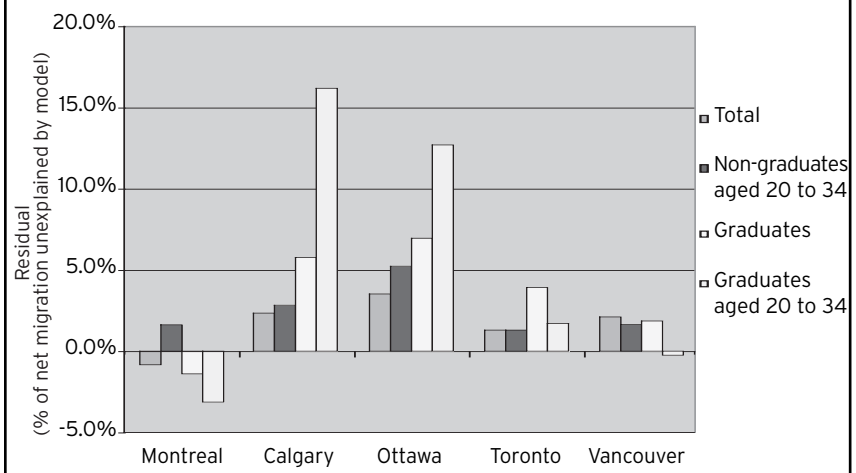
Still, Montreal is not in the red, gaining more people than it loses, especially graduates. However, it has far less pull than any other major city in Canada.

1.3 Montreal's situation: possible explanations

We have seen that a number of factors can explain the migration flows observed: the region, type of agglomeration and size. Some of the differences observed between the five Canadian cities could be due to these factors. It is therefore relevant to analyze the flows not predicted by our model, in other words, the residual flows after discounting the flows attributable to urban size, home region and type of agglomeration.

Figure 5 : Flows Unexplained by the Net Migration Model (see Appendix 1)

Model: Net migration = f(6 regions) + f'(5 classes of city) + f''(urban size)



These flows are illustrated in Figure 5: Calgary and Ottawa have significantly higher net migration — particularly of graduates and young graduates — than would be expected if only size, type and home region were considered. Toronto's and Vancouver's flows are slightly higher than the model's expectations. Toronto seems especially appealing to graduates overall while Vancouver is slightly less attractive than expected to young graduates.

Only Montreal performs below the model's expectations: excluding the migration of young non-graduates, Montreal's net migration is less than expected given its size and the fact that it is located in Quebec. Given that this last factor already adjusts the net migration expectations downwards, Montreal's appeal seems particularly low.

The difference in migration between Toronto and Montreal is found mostly in the number of immigrants (Figure 1), more specifically, the number of international immigrants (Figure 2). In fact, emigration is similar for both cities except with regards to young graduates, who leave Montreal more readily (Figure 3). Montreal is therefore less appealing than Toronto but manages overall to hold on to its population – except young graduates – in a manner proportional to its size and the fact that it is part of Quebec.

We can propose explanatory hypotheses but not explanations for these results. The observed trends are compatible with a more local (Québécois) migration role for Montreal versus a more international one for Toronto and Vancouver. Calgary and Ottawa, which do not attract many international immigrants, appear to attract migrants from across Canada. Young non-graduates and older graduates tend to remain in Montreal, perhaps due to linguistic and cultural barriers. These barriers are not as strong for young graduates, who seem ready to leave Montreal in a significantly higher proportion than observed for Toronto, resulting in a negative migration balance for young graduates once the effects of size, region and type of agglomeration (Figure 5) are taken into account.

1.4 Conclusions

The results of this analysis are not very surprising, demonstrating that despite the observed consistency in migration flows (Appendix 1), each city must also be examined individually. Calgary, the economic capital of a booming region in the second half of the 1990s, is highly appealing to Canadian migrants. Toronto and Vancouver are the preferred points of entry for international immigrants but also attract a significant portion of intra-Canadian migrants. Ottawa, which experienced strong economic growth between 1996 and 2001, is the nation's capital and as such its migration flows, particularly of graduates, are mostly related to the federal civil service. Its strong incoming and outgoing flows can be partially explained by the temporary postings that characterize the civil service but may also reflect Ottawa-Gatineau's role as a graduate "producer" (see part 2).

Finally, while Montreal enjoyed solid economic growth between 1996 and 2001, it did not outperform its Canadian counterparts. Moreover, its international and national migration appeal is somewhat limited, perhaps as a result of its linguistic and social choices (high taxation, "Quebec model," French fact, etc.). Wanted and accepted by Quebec society, these choices may not be as appealing to migrants, who view Montreal from an outsider's perspective. Nevertheless, although lower than the other Canadian cities, its net migration rates – both national and international – are positive. The situation is therefore no cause for concern and merely reflects the city's economic reality and its society's choices.

2.
Comparative study of the number of university graduates (registrations and degrees granted) for 12 North-American cities

In terms of its population's level of schooling, metropolitan Montreal's unenviable position is well known. Overall, the region has fewer university graduates than most of the other regions in North America. In fact, in 2001, the proportion of university graduates in the metropolitan population (14.7%) was the lowest of 11 reference metropolitan areas:[2] see Table 1. This situation was partially explained in the previous part, i.e., Montreal's weak drawing power in relation to its main Canadian rivals. However, as we will see, the proportion of graduates is growing faster in Montreal than the other cities. This is due in large part to Montreal's good performance as a local graduate producer.

In this part, we will examine other data for the Montreal CMA, using 11 North American cities as points of comparison, i.e., the five largest in Canada (presented in the last part) plus seven in the U.S. The definition of metropolitan area and the problems of comparison between Canadian and American cities (respectively CMA and MSA/CMSA) are discussed in Polèse and Shearmur (2004). The metropolitan areas in the tables presented in this part are always classified in decreasing order according to the value of the indicator involved.

2.1 Methodology guidance

Additional information with regards to the sources and certain calculations can be found in Appendix 3. There are major limitations to the data on students enrolled in university and university degrees granted by urban area. Although based on reliable sources, the raw data are not standardized in the strict sense of the term neither in the U.S. nor Canada. For example, the "Number of students enrolled in university in urban area x" is not standardized data regularly published by statistical agencies. This type of data is typically part of special tabulations that rely on information collected by the university. The university is the basic criterion used to organize the information. This poses a problem when we want to allocate the enrolments (or degrees) to a specific area for universities with more than one campus, school, faculty, etc. located in different cities. For example, in the case of Greater Montreal, the ENAP, INRS and Université de Sherbrooke, to name just a few, all have campuses in the region. However, enrolments and degree granting is recorded for the main university such that students enrolled in these three institutions in Montreal do not appear in the information compiled by Statistics Canada for the Montreal CMA since the universities' headquarters are outside Greater Montreal. Similar situations undoubtedly arise in all metropolitan areas, making it impossible to account for such situations without direct access to detailed information for each institution in each metropolitan area, if indeed such information exists.

2. *The eleven metropolitan areas used for comparison purposes are those found in the Board of Trade of Metropolitan Montreal's Health Bulletin. The same urban areas are examined in Polèse and Shearmur (2004).*

2.
Comparative study of the number of university graduates (registrations and degrees granted) for 12 North-American cities

A broad concept that can encompass a variety of meanings, the term "part-time student" also poses a problem. According to university practice, enrolment information is recorded as "full-time equivalent" without taking into account differences between institutions or people.[3] Furthermore, enrolment and degree data implicitly assume the same reality across all universities. For instance, a Masters degree has a certain connotation, when in reality not all Masters are created equal. The studies to obtain a graduate degree vary by institution, discipline and jurisdiction from one to three years and with or without a thesis. As we will see later (see Table 7), like its Canadian counterparts, Montreal does not fare well in Masters granting, probably due to differences in philosophy and operation between the Quebec and the Canadian and American university systems.

Our data also does not reflect the vast number of intermediate university degrees (DESS, certificates, etc.). Here too, practices can vary greatly from one institution to another and from one state, province or country to another. As such, we have excluded data on American first professional degrees since we do not have equivalent data for Canadian institutions. Although difficult to ascertain, this may introduce a slight downward bias for total enrolments (Tables 4 and 5) in U.S. cities. Finally, few would dispute the fact that all university degrees, even of the same level, are not created equal, i.e., they do not have the same value on the market. For example, a degree from Harvard or MIT is more highly regarded than a qualification from other less prestigious institutions.

In light of these factors, the enrolment and degree-granting data should be interpreted with caution.[4] The information in the following tables (except for Tables 1 to 3) must be viewed as approximations rather than firm figures. Readers should also not pay too much attention to small differences.

3. *In the American and Canadian data, a full-time student is essentially equivalent to 3.5 part-time students. However, we had to make an adjustment to standardize the two series. (See Appendix 2-C).*

4. *This guidance does not apply to population data (level of schooling) drawn from censuses and on which the analysis in part 1 and Tables 1 to3 are based.*

2.
Comparative study of the number of university graduates (registrations and degrees granted) for 12 North-American cities

Table 1

Graduates as a Proportion of the Population, 2000*

Metropolitan Area	%
1 Boston	23.1%
2 Seattle	21.2%
3 Ottawa	20.9%
4 Atlanta	20.5%
5 New York	20.3%
6 Chicago	18.4%
7 Toronto	18.4%
8 Philadelphia	17.7%
9 Vancouver	17.0%
10 Calgary	16.9%
11 Miami	15.5%
12 Montreal	**14.7%**

* Bachelor and higher. 2001 for Canada.

Table 2

Graduate Growth in Percentage, 1990-2000

Metropolitan Area	Growth 1990-2000
1 Vancouver	81.3%
2 Atlanta	75.4%
3 Calgary	67.8%
4 Seattle	65.4%
5 Toronto	64.9%
6 Boston	58.9%
7 Ottawa	48.0%
8 Miami	46.6%
9 Montreal	**44.8%**
10 Chicago	39.7%
11 New York	38.2%
12 Philadelphia	25.0%

Table 3

Growth in Graduate Proportion, 1990-2000

Metropolitan Area	Growth 1990-2000*
1 Vancouver	46.0%
2 Toronto	37.2%
3 Montreal	**36.4%**
4 Calgary	33.1%
5 Ottawa	30.0%
6 Chicago	23.0%
7 Atlanta	20.9%
8 Miami	20.7%
9 Philadelphia	19.2%
10 Seattle	19.1%
11 New York	17.9%
12 Boston	13.9%

* % graduates in the population of 2000 / percentage in 1990

2.2 Change in the graduate population from 1990-2000

As Table 1 shows, Montreal ranks last in terms of university graduates as a proportion of its population. However, the picture improves when we look at the change from 1990-2000 (1991-2001 for the Canadian cities). The real growth in the number of graduates (expressed as a percentage in Table 2) largely reflects the city's overall growth. Not surprisingly therefore, the top of the list shows rapidly growing cities like Vancouver, Atlanta, Calgary and Seattle, all located in the southern or western part of the continent. We already know that Calgary and Vancouver are major immigration cities (Figure 1). Despite the fact that Montreal is not a rapidly growing city compared to its North American counterparts, the percentage increase in the number of graduates was nevertheless greater than for New York, Chicago and Philadelphia, suggesting that the *proportion* of graduates grew faster than in other cities.

This intuition is confirmed by Table 3, which shows a very solid performance by Montreal in graduate growth as a *proportion* of the population (third place). At first blush, it appears that Montreal is catching up, but a closer look shows that all the other Canadian cities are also improving, indicating that the gap between American and Canadian cities is narrowing. Although Montreal ranks third in graduate growth as a proportion of the population, Vancouver and Toronto are experiencing even stronger gains. In other words, while the gap is shrinking in relation to American cities (and some Canadian cities), which is good news, it is getting bigger vis-à-vis those two cities. We already saw that the net immigration of graduates in Toronto and Vancouver between 1996 and 2001 (a trend that was likely the same for 1991-1996) was, overall, significantly higher than for Greater Montreal (Figure 4).

2.
Comparative study of the number of university graduates (registrations and degrees granted) for 12 North-American cities

Table 4

University Enrolment, 2001

Metropolitan Area	Actual Student Population*
1 New York	505,692
2 Boston	237,846
3 Chicago	199,463
4 Philadelphia	176,837
5 Toronto	92,701
6 Montreal	**88,601**
7 Atlanta	87,408
8 Miami	65,573
9 Seattle	59,006
10 Vancouver	42,904
11 Ottawa	37,231
12 Calgary	22,899

* Full-time equivalent

Table 5

University Enrolment, 2001*

Metropolitan Area	Per Resident
1 Boston	4.09
2 Ottawa	3.50
3 Philadelphia	2.86
4 Montreal	**2.59**
5 Calgary	2.41
6 New York	2.39
7 Chicago	2.18
8 Vancouver	2.16
9 Atlanta	2.13
10 Toronto	1.98
11 Miami	1.69
12 Seattle	1.66

* Multiplied by 100 to facilitate presentation

Table 6

Degrees Granted, Bachelor and Higher, 2001

Metropolitan Area	Actual Student Population
1 New York	119,156
2 Boston	61,956
3 Chicago	52,155
4 Philadelphia	44,819
5 Montreal	**23,092**
6 Toronto	22,425
7 Atlanta	19,430
8 Miami	17,001
9 Seattle	16,650
10 Vancouver	11,230
11 Ottawa	9,160
12 Calgary	5,005

However, the strong growth (in relative terms: Table 3) in the number of graduates in Montreal – greater than in Calgary or Ottawa-Gatineau despite its weaker ability to attract educated immigrants – leads us to believe that Montreal partially succeeds in compensating for its weak drawing power by producing more graduates locally.

2.3 Local graduate production

Tables 4 and 5 show, respectively, the number of students enrolled in university by city, all degrees combined, and the same information on a per capita basis. Student enrolment in local universities largely depends on the size of the city. Big cities have more and larger universities and by extension, more students. It is therefore not surprising to see New York and Chicago at the top of the ranking (Table 4). However, Boston's second place position (even in absolute number of students) is the first sign of the city's unique position on the North American university scene. Still, in sixth place, Montreal is faring rather well, an indication of the strength of its universities, which have twice as many students as those in Vancouver or Ottawa-Gatineau. In all, although Montreal holds a very respectable position as a university centre in North America, it is not in the same league as large university centres such as Boston or Chicago.

Montreal's good performance stands out even more when the data is presented on a per capita basis (Table 5). The city ranks fourth after Boston, Ottawa-Gatineau and Philadelphia. While Ottawa-Gatineau's first place ranking may be surprising, a look at Figure 3 provides an explanation: With a population of just over a million, the Ottawa-Gatineau region is a graduate producer for the rest of the country, hence the high number of graduates[5]. As we will see later (Table 7), Ottawa-Gatineau's role as a graduate producer (and exporter, no doubt) is limited to the undergraduate level. This differs sharply from the large university research centres, led by Boston, whose strength lies at the graduate and post-graduate levels. In fact, Boston is a unique case, due both to the density and prestige of the universities on its territory. In many respects, the Boston area is the leading university and intellectual centre (and some would also say the main incubator of innovation[6]) on the north-eastern seaboard and even all of North America.

5. *The case of Ottawa-Gatineau is also cause for caution when interpreting the per capita indicators. Small university cities with large institutions will automatically show higher ratios, but this does not make them hubs of high knowledge. In the U.S., small cities such as Ithaca (Cornell) and New Haven (Yale) come to mind.*

6. *Boston also ranks first for the number of patents per capita (see Polèse and Shearmur, 2004).*

Table 7

Degrees Granted Per Capita, 2001*

Metropolitan Area	Bachelor
1 Ottawa	0.70
2 Boston	0.62
3 Montreal	**0.51**
4 Philadelphia	0.49
5 Vancouver	0.45
6 Calgary	0.43
7 Toronto	0.39
8 New York	0.34
9 Chicago	0.33
10 Seattle	0.32
11 Atlanta	0.30
12 Miami	0.25

Metropolitan Area	Master
1 Boston	0.41
2 Chicago	0.23
3 Philadelphia	0.21
4 New York	0.21
5 Miami	0.17
6 Atlanta	0.15
7 Montreal	**0.14**
8 Ottawa	0.14
9 Seattle	0.13
10 Vancouver	0.09
11 Calgary	0.09
12 Toronto	0.08

Metropolitan Area	PhD
1 Boston	0.0328
2 Montreal	**0.0227**
3 Vancouver	0.0216
4 Ottawa	0.0207
5 Philadelphia	0.0204
6 Miami	0.0194
7 Chicago	0.0155
8 Atlanta	0.0145
9 New York	0.0143
10 Toronto	0.0137
11 Seattle	0.0134
12 Calgary	0.0126

Metropolitan Area	Total
1 Boston	1.06
2 Ottawa	0.86
3 Philadelphia	0.72
4 Montreal	**0.67**
5 Chicago	0.57
6 Vancouver	0.57
7 New York	0.56
8 Calgary	0.53
9 Toronto	0.48
10 Atlanta	0.47
11 Seattle	0.47
12 Miami	0.44

* Multiplied by 100 to facilitate presentation.

Although not Boston, Montreal does rank very favourably in relation to the other cities, a position confirmed when we look at the number of degrees granted (Tables 6 and 7). Once again, the absolute number is sensitive to city size. Still, the number of degrees granted in Montreal in 2001 is significantly higher than in Vancouver, Calgary and Ottawa-Gatineau, and is even slightly more than in Toronto. Consequently, in relation to the other Canadian cities, Montreal fares quite well, and for some criteria may even outrank Toronto. The results per capita (Table 7) only further confirm Montreal's positioning: third place for undergraduate degrees (behind Ottawa-Gatineau and Boston) and second (after Boston) for PhDs granted per capita.

2.
Comparative study of the number of university graduates (registrations and degrees granted) for 12 North-American cities

Table 8
PhDs Granted in Sciences and Engineering, 2000*

Metropolitan Area	Actual Student Population
1 Boston	943
2 New York	431
3 Atlanta	329
4 Chicago	316
5 Montreal	**309**
6 Seattle	264
7 Philadelphia	220
8 Vancouver	220
9 Toronto	200
10 Miami	99
11 Ottawa	75
12 Calgary	61

* 1998 for Canada

Table 9
PhDs Granted in Sciences and Engineering, 2000*

Metropolitan Area	Per 1,000 residents
1 Boston	0.162
2 Vancouver	0.109
3 Montreal	**0.087**
4 Atlanta	0.080
5 Seattle	0.074
6 Ottawa	0.068
7 Calgary	0.063
8 Toronto	0.041
9 Philadelphia	0.036
10 Chicago	0.035
11 Miami	0.026
12 New York	0.020

*1998 for Canada

Tables 8 and 9 show the same information but for PhDs in sciences and engineering, key fields for high-tech industries. Here again, Montreal fares well, ranking third on a per capita basis, although well behind Boston. Vancouver also performs impressively, coming in ahead of Montreal. The ranking of these two cities makes their disappointing patent performance all the more surprising. Part of the explanation can perhaps be traced to the economic foundations of the two provinces concerned. British Colombia's economy, even more than Quebec's, is based on resource extraction and processing: forestry, mines and metallurgy, hydroelectricity, etc., all sectors that require engineers and related professions (geologists, chemists, etc.). Perhaps science and engineering graduates, both in Vancouver and Montreal, are more likely to make their careers in core industries rather than direct their energies to invention and innovation in emerging industries. This hypothesis merits exploration but is beyond the scope of this study.

Table 10
Relative Pull Index by Metropolitan Area

Metropolitan Area	Relative Pull Index*
1 Atlanta	1.87
2 Seattle	1.79
3 Toronto	1.50
4 Vancouver	1.34
5 Calgary	1.29
6 Miami	1.12
7 New York	1.00
8 Chicago	0.92
9 Boston	0.80
10 Ottawa	0.77
11 Montreal	**0.65**
12 Philadelphia	0.49

* Index: Estimated migration weighting in graduate growth, 1990-2000

2.4 Conclusions

Disregarding the special case of Ottawa-Gatineau (exporter of undergraduate graduates to the rest of the country), Montreal performs rather well overall as a graduate producer, ranking above the average of the 12 reference North American cities, and generally ahead of Canada's four other major cities. The fact that Montreal is gaining ground academically in relation to other cities (see Table 3) despite its weak graduate pull power is explained, at least in part, by its strong local graduate production. However, the reason behind the stronger proportional graduate growth in Toronto and Vancouver is their ability to attract rather than produce graduates. Simply put, Montreal's weakness is its power of attraction; its strength is graduate production. Although the latter somewhat offsets the former, it is still not enough to bridge the seemingly growing gap with Toronto and Vancouver.

To summarize the issues at play (local production/migration), we created an indicator, which we concede is rather imperfect, called the *relative pull index* (Table 10), based on the following calculation:

Index = *(Real growth in number of graduates 1990-2000)/*
(Degrees granted 2001 x 10)

We make the reasonable assumption that the number of degrees granted does not vary substantially from one year to another, or if it does, that the bias introduced by annual fluctuations, if any, affects all the cities similarly. The calculation is based on the following reasoning: If real growth (numerator) exceeds local production (denominator), the difference will be mostly due to net graduate immigration. The index is suggestive only and should not be viewed as a mathematical truth since it does not rely on real graduate migration data. The index does not indicate whether a city is generally more attractive, more pleasant or more "cool" but only whether immigration is high or low in relation to local production in order to explain the graduate growth observed from 1990-2000 (1991-2001 for Canada).

The results of this calculation are not at all surprising (Table 10). The cities at the top of the list are those experiencing rapid growth fuelled by immigration (internal and external). Graduate immigration is proportionally higher in vibrant cities where qualified jobs are in greater demand. Although other factors can sometimes come into play, for example, city size (discussed in the first part), the overall vitality of the local economy still appears to be the key element. The pull will be stronger if local production is lacking (supply and demand), an implicit relationship in the calculation of the index that partly explains Philadelphia's and Ottawa-Gatineau's low ranking. In this regard, Montreal's bottom ranking reflects both its strengths and weaknesses: its strength as a graduate producer, and its weakness as an appealing location for graduates. Possible explanations for this weakness can be found in the conclusions of part 1.

General conclusion

Far from painting a gloomy picture, this study contains some good news for metropolitan Montreal. First, the region's historically lower level of university graduates in relation to its U.S. counterparts will soon be a thing of the past—if the trend continues. Second, the region compares very favourably (on a per capita basis) with other cities both in the number of university enrolments and degrees granted. As a general rule, Greater Montreal outperforms the U.S. reference cities (except for Boston). In absolute terms, Montreal universities have twice as many students and grant twice as many degrees as Ottawa-Gatineau or Vancouver, a performance on par with metro Toronto despite Montreal's smaller population. And finally, the city has a net immigration of graduates and as such there is no brain drain.

Where Montreal is lacking is its appeal to graduates. Although net migration is positive, the region attracts fewer graduates overall than Canada's other major cities, resulting in a growing gap, especially with metro Vancouver and Toronto. Based on the results of the statistical model presented in part 1, Montreal's pull is below "normal" expectations given its attributes (size, location, employment structure, etc.). According to this same model, Montreal is also not as successful as Toronto in holding on to young graduates.

The reasons for this underperformance are well known. First, the labour market has historically been less dynamic in Montreal than in most of Canada's other large cities. Second, the linguistic difference is a handicap. With regards to the labour market, should the current boom continues, it will enhance Montreal's attractiveness. However, the linguistic difference is a reality with which we must contend and that will continue to hamper our ability to attract talented individuals seeking to emigrate to North America.

Although welcome news, the solid degree-granting performance of Montreal's universities is a necessity. Because if it hopes to stay in the race, the city must perform above the North-American average as a local producer of talent. And what this means is that its universities must turn out even more graduates.

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Appendix 2-A – GLM Analysis Results
General Linear Model (GLM)

Independent variables:

Cent: Classification variable by type of agglomeration	
MA	Metropolitan areas with populations of over 500,000
CAA	Central agglomerations with populations of 50,000 to 500,000
CAB	Central agglomerations with populations of 10,000 to 50,000
PAA	Peripheral agglomerations with populations of 50,000 to 500,000
PAB	Peripheral agglomerations with populations of 10,000 to 50,000

Reg : Regional classification variable	
AT	Atlantic Canada
AL	Alberta
BC	British Colombia
ON	Ontario
PR	Prairies (Saskatchewan and Manitoba)
QC	Quebec

lp96 : 1996 population logarithm

Dependent variables:

Migration flows are calculated as follows:
Immigration flow = $\frac{\text{number of type 'x' people coming into the region from '96 to '01}}{\text{number of type 'x' people in the region in '96}}$
Emigration flow = $\frac{\text{number of type 'x' people leaving the region from '96 to '01}}{\text{number of type 'x' people in the region in '96}}$
Net flows = immigration flow - emigration flow

The dependent variables are:	
B1	Net flows of the total population
B2	Net flows of youths aged 15 to 19
B3	Net flows of youths aged 20 to 34
B4	Net flows of graduates aged 20 to 34
B5	Graduate net flows

Dependent variables: B1 : TOTAL POPULATION

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	0.20377100	0.02037710	13.92	<.0001
Error	126	0.18439101	0.00146342		
Corrected Total	136	0.38816201			

R-Square	Coeff Var	Root MSE	b1 Mean
0.524964	-955.3576	0.038255	-0.004004

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
cent	4	0.08543974	0.02135993	14.60	<.0001
reg	5	0.04270277	0.00854055	5.84	<.0001
lp96	1	0.01415608	0.01415608	9.67	0.0023

Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-.2513734396 B	0.06012855	-4.18	<.0001
cent	**ACA**	**0.0534794481 B**	**0.01457135**	**3.67**	**0.0004**
cent	**ACB**	**0.0679082879 B**	**0.00982718**	**6.91**	**<.0001**
cent	AM	0.0121963949 B	0.02910051	0.42	0.6758
cent	APA	0.0042642931 B	0.01358546	0.31	0.7541
cent	APB	0.0000000000 B	.	.	.
reg	**AL**	**0.0740854054 B**	**0.01477981**	**5.01**	**<.0001**
reg	**AT**	**0.0340108585 B**	**0.01209957**	**2.81**	**0.0057**
reg	**BC**	**0.0284383003 B**	**0.01123643**	**2.53**	**0.0126**
reg	**ON**	**0.0170191499 B**	**0.00899102**	**1.89**	**0.0607**
reg	**PR**	**0.0333018442 B**	**0.01276123**	**2.61**	**0.0102**
reg	QC	0.0000000000 B	.	.	.
lp96		**0.0186577390**	**0.00599891**	**3.11**	**0.0023**

NOTE: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter «B» are not uniquely estimable.

Dependent variables: B2 : YOUTHS AGED 15 TO 19

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	0.30731205	0.03073120	10.02	<.0001
Error	126	0.38626092	0.00306556		
Corrected Total	136	0.69357297			

R-Square	Coeff Var	Root MSE	b2 Mean
0.443085	520.0500	0.055368	-0.010647

Source	DF	Type II SS	Mean Square	F Value	Pr > F
cent	4	0.09342609	0.02335652	7.62	<.0001
reg	5	0.07448935	0.01489787	4.86	0.0004
lp96	1	0.03422704	0.03422704	11.17	0.0011

Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept	-	3509867271 B	0.08702645	-4.03	<.0001
cent	**ACA**	**0.0482872340 B**	**0.02108969**	**2.29**	**0.0237**
cent	**ACB**	**0.0711240975 B**	**0.01422327**	**5.00**	**<.0001**
cent	AM	-.0178363457 B	0.04211832	-0.42	0.6727
cent	APA	0.0158537198 B	0.01966278	0.81	0.4216
cent	APB	0.0000000000 B	.	.	.
reg	**AL**	**0.0815387022 B**	**0.02139140**	**3.81**	**0.0002**
reg	AT	0.0218549026 B	0.01751219	1.25	0.2144
reg	BC	0.0216299918 B	0.01626293	1.33	0.1859
reg	ON	0.0210604543 B	0.01301305	1.62	0.1081
reg	**PR**	**0.0713497660 B**	**0.01846984**	**3.86**	**0.0002**
reg	QC	0.0000000000 B	.	.	.
lp96		**0.0290116290**	**0.00868246**	**3.34**	**0.0011**

NOTE: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter «B» are not uniquely estimable.

Dependent variables: B3 : NON-GRADUATES AGED 20 TO 34

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	0.89759193	0.08975919	12.88	<.0001
Error	126	0.87839565	0.00697139		
Corrected Total	136	1.77598758			

R-Square	Coeff Var	Root MSE	b3 Mean
0.505404	-76.96445	0.083495	-0.108485

Source	DF	Type II SS	Mean Square	F Value	Pr > F
cent	4	0.28252964	0.07063241	10.13	<.0001
reg	5	0.19280723	0.03856145	5.53	0.0001
lp96	1	0.08028801	0.08028801	11.52	0.0009

Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-.6667863229 B	0.13123689	-5.08	<.0001
cent	**ACA**	**0.1054902538 B**	**0.03180350**	**3.32**	**0.0012**
cent	**ACB**	**0.1217833751 B**	**0.02144885**	**5.68**	**<.0001**
cent	AM	0.0338866364 B	0.06351492	0.53	0.5946
cent	APA	0.0135954075 B	0.02965171	0.46	0.6474
cent	APB	0.0000000000 B	.	.	.
reg	**AL**	**0.1451424411 B**	**0.03225849**	**4.50**	**<.0001**
reg	**AT**	**0.0663318179 B**	**0.02640859**	**2.51**	**0.0133**
reg	**BC**	**0.0412698730 B**	**0.02452468**	**1.68**	**0.0949**
reg	ON	0.0039013114 B	0.01962384	0.20	0.8427
reg	**PR**	**0.0704827205 B**	**0.02785273**	**2.53**	**0.0126**
reg	QC	0.0000000000 B	.	.	.
lp96		**0.0444337322**	**0.01309324**	**3.39**	**0.0009**

NOTE: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter «B» are not uniquely estimable.

Dependent variables: B4 : GRADUATES AGED 20 TO 34

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	1.35642217	0.13564222	2.79	0.0037
Error	126	6.12283463	0.04859393		
Corrected Total	136	7.47925680			

R-Square	Coeff Var	Root MSE	b4 Mean
0.181358	-199.1617	0.220440	-0.110684

Source	DF	Type II SS	Mean Square	F Value	Pr > F
cent	4	0.35574701	0.08893675	1.83	0.1271
reg	5	0.18681229	0.03736246	0.77	0.5739
lp96	1	0.38334449	0.38334449	7.89	0.0058

Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-1.162809214 B	0.34648714	-3.36	0.0010
cent	ACA	-0.078171740 B	0.08396651	-0.93	0.3536
cent	ACB	0.056030123 B	0.05662852	0.99	0.3243
cent	AM	-0.098223083 B	0.16768992	-0.59	0.5591
cent	**APA**	**-0.160702373 B**	**0.07828542**	**-2.05**	**0.0422**
cent	APB	0.000000000 B	.	.	.
reg	AL	0.083343107 B	0.08516775	0.98	0.3297
reg	AT	0.018393434 B	0.06972304	0.26	0.7924
reg	**BC**	**0.109765105 B**	**0.06474923**	**1.70**	**0.0925**
reg	ON	0.045956722 B	0.05181018	0.89	0.3768
reg	PR	0.014393301 B	0.07353582	0.20	0.8451
reg	QC	0.000000000 B	.	.	.
lp96		**0.097091688**	**0.03456833**	**2.81**	**0.0058**

NOTE: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter «B» are not uniquely estimable.

Dependent variables: B5 : ALL GRADUATES

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	0.50044857	0.05004486	5.71	<.0001
Error	126	1.10482874	0.00876848		
Corrected Total	136	1.60527730			

R-Square	Coeff Var	Root MSE	b5 Mean
0.311752	361.6920	0.093640	0.025889

Source	DF	Type II SS	Mean Square	F Value	Pr > F
cent	4	0.17750456	0.04437614	5.06	0.0008
reg	5	0.13072040	0.02614408	2.98	0.0141
lp96	1	0.09569990	0.09569990	10.91	0.0012

Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		.5951212840 B	0.14718323	4.04	<.0001
cent	ACA	0.0071589706 B	0.03566788	0.20	0.8412
cent	**ACB**	**0.0897052435 B**	**0.02405506**	**3.73**	**0.0003**
cent	AM	.0423826068 B	0.07123250	0.59	0.5529
cent	**APA**	**.0578982147 B**	**0.03325463**	**1.74**	**0.0841**
cent	APB	0.0000000000 B	.	.	.
reg	**AL**	**0.1055520136 B**	**0.03617815**	**2.92**	**0.0042**
reg	AT	0.0386978401 B	0.02961744	1.31	0.1937
reg	**BC**	**0.0861483699 B**	**0.02750463**	**3.13**	**0.0022**
reg	ON	0.0351929878 B	0.02200829	1.60	0.1123
reg	PR	0.0333986334 B	0.03123706	1.07	0.2870
reg	QC	0.0000000000 B	.	.	.
lp96		**0.0485113307**	**0.01468418**	**3.30**	**0.0012**

NOTE: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter «B» are not uniquely estimable.

Appendix 2-B – Addition of explanatory variables to the model

Each variable (cult96, univ96, hobs96 and ht96) represents the ratio of sectoral jobs to the city's total employment.

The results below are the statistics and co-efficients pertaining to the added variable, each of which is singularly added to the model presented in Appendix 1. We therefore present the effect of each variable for each type of population studied once the effect of region, type of agglomeration and size are controlled.

Effect of the relative concentration of cultural jobs, cult96:

Parameter	Estimate	Error	t Value	Pr > |t|
B1: cult96	0.0000004806	0.00000077	0.62	0.5335
B2: cult96	0.0000003229	0.00000112	0.29	0.7727
B3: cult96	0.0000009265	0.00000168	0.55	0.5825
B4: cult96	0.000000459	0.00000444	0.10	0.9179
B5: cult96	0.0000010030	0.00000189	0.53	0.5956

Effect of the relative concentration of university jobs, univ96:

Parameter	Estimate	Error	t Value	Pr > |t|
B1: univ96	-.2748924633	0.35807582	-0.77	0.4441
B2 univ96	0.4124075380	0.51816642	0.80	0.4276
B3: univ96	-2.061470934	0.76137012	-2.71	0.0077
B4: univ96	-6.699577848	1.97953997	-3.38	0.0010
B5: univ96	-2.260757473	0.85497874	-2.64	0.0092

Effect of the relative concentration of high-order service jobs, hobs96:

Parameter	Estimate	Error	t Value	Pr > |t|
B1: hobs96	0.7005889003	0.43062922	1.63	0.1063
B2: hobs96	0.7053568662	0.62666316	1.13	0.2625
B3: hobs96	0.9341685375	0.94610998	0.99	0.3254
B4: hobs96	3.257807667	2.49062176	1.31	0.1933
B5: hobs96	1.503990789	1.05667145	1.42	0.1571

Effect of the relative concentration of high-tech manufacturing jobs, ht96:

Parameter	Estimate	Error	t Value	Pr > |t|
B1: ht96	0.4732964923	0.31408491	1.51	0.1344
B2: ht96	0.4265292444	0.45710885	0.93	0.3526
B3: ht96	1.020893755	0.68566872	1.49	0.1390
B4: ht96	2.388708820	1.81372021	1.32	0.1902
B5: ht96	0.8333313460	0.77218289	1.08	0.2826

Appendix 2-C – Methodology notes on sources and calculations used in part 2 tables

Methodology – Canadian Data

Canadian degree-granting data was extracted from *Titres universitaires décernés selon l'établissement et le niveau du programme*, Statistics Canada, and from *Nombre de sanctions décernées dans les universités québécoises, selon le domaine d'études, le type de sanction et le sexe, par établissement universitaire, de 1999 à 2003*, Gestion des données sur les effectifs universitaires (GDEU), Ministère de l'Éducation du Québec, 2004.

Canadian student enrollment data was extracted from *Effectifs selon l'établissement, le niveau de programme et le régime d'étude*, Statistics Canada, 2001.

U.S. degree-granting data was generated from the Dataset Cutting Tool, Integrated Postsecondary Education Data System (IPEDS), National Centre for Education Statistics, 2001. (http://nces.ed.gov/ipedspas/index.asp).

It should be noted that the full-time equivalent used in the IPEDS (enrolled part time = 40% of students enrolled full time) is not the same as the one used by Statistics Canada (28.57%); the full-time equivalent for Canada was therefore adjusted.

Canadian CMA population data was extracted from *Chiffres de population par RMR*, 2001 Census, Statistics Canada. Equivalent U.S. data by MSA and CMSA was extracted from *CMSA Population - Census 2000*, U.S. Census Bureau.

Methodology – U.S. Data

MSA-CMSA geographic definitions were taken from *Metropolitan Areas and Components*, 1999 (last revised January 2002), Office of Management and Budget, White House.

The city classification by county was created using the *Web Zip Code Database* Web site www.zip-codes.com.

Only public and private degree-granting universities with programs of four years and more were used. The qualifications retained were bachelor, master, PhD and first professional degrees.

Following the Carnegie Foundation criteria, the "Associates Colleges," "Other Health Schools," "Theological Seminaries," "Tribal Colleges" and unclassified establishments were excluded.

Appendix 2-D – Brain drain report

This short appendix is intended to provide some answers to the question "Is there a brain drain in Montreal, and if so, is it slowing?"

There can be no clear answer to this question given that it is impossible to measure the number of people who move abroad. In fact, although relatively reliable sources exist to measure migration within a country (census, administrative records (often confidential), none of these provincial or national sources collect information from people who have left the country. Given the greater mobility of graduates, emigration overseas can be considerable, making it impossible to compile a comprehensive report on net migration.

However, two types of calculations are possible based on the census data available:

1. An intra-Canadian migration balance. This calculation does not factor in any entry from another country and any departure abroad. *Given that Canada (and especially its cities) is an immigration country, such reports would tend to underestimate net immigration;*

2. A migration balance that takes into account intra-Canadian movement and immigration from abroad. *Departures abroad are not taken into account; consequently, such reports overestimate net immigration.*

With these two migration measures, we can obtain a range that probably contains the real migration balance, as well as observe changes in this balance over time.

It is also important to bear in mind that there is no clear definition of the notion of "brain drain." For our purposes, this term is synonymous with a negative graduate migration balance while for others, it does not encompass all graduates but only certain high-tech experts. For others still, brain drain is not measured by field but rather by quality, i.e., the departure of our best experts regardless of their specialty or our best experts in key sectors. Without entering into this debate, suffice it to say that positive migration for graduates is only one indicator that allows us to assess whether a city tends to attract or lose its graduates: interpreting this attraction or loss requires a broader study. However, insofar as attracting talent is considered an asset for a city, positive graduate migration should be viewed favourably.

Results

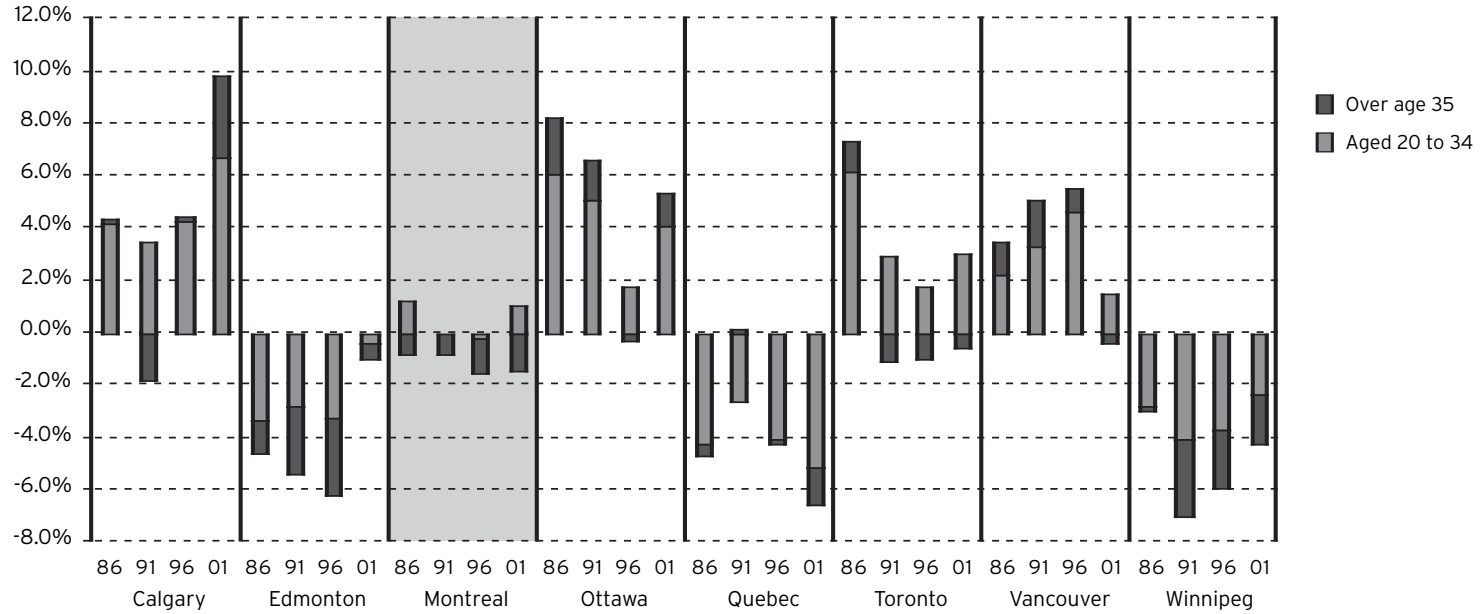
Intra-Canadian graduate migration balance

Since 1981, the intra-Canadian graduate migration balance of the eight major cities has been remarkably stable. Notwithstanding certain variations based on the specific period of study shown in Table 1, Winnipeg, Quebec City and Edmonton tend to lose graduates to the benefit of Calgary, Ottawa, Toronto and Vancouver.

Montreal's negative balance stems mainly from the departure of experienced graduates (over age 35), which in general, is not offset by the arrival of younger ones. Between 1986 and 1991, and 1991 and 1996, even the net internal migration of young graduates was negative in Montreal. Although the city inches to the positive side between 1996 and 2001, the total balance, all graduates combined, remains negative.

Table 1 — Domestic Graduate Migration, 1981-2001*

4 periods: 1981-1986; 1986-1991; 1991-1996; 1996-2001.



* Numbers are expressed as a percentage of the total graduate population at the beginning of the period. The addition of two overlapping bars therefore shows the total graduate migration balance in percentage.

Calgary's pull improved considerable in the most recent period, and Edmonton's net losses to the benefit of the rest of the country are in the process of reversing since Albertan cities have become highly attractive to graduates. Toronto was extremely appealing in the early 1980s. However, since 1986, net migration has been positive for young graduates but negative for older ones. Nevertheless, the arrival of young graduates by and large offsets the departure of older ones. Finally, Vancouver's appeal waned between 1996-2001, a difficult economic period for British Colombia. Similarly, Ottawa's ability to attract talent during the federal budget-cutting years of the 1990s was very low but significantly improved at the end of the decade.

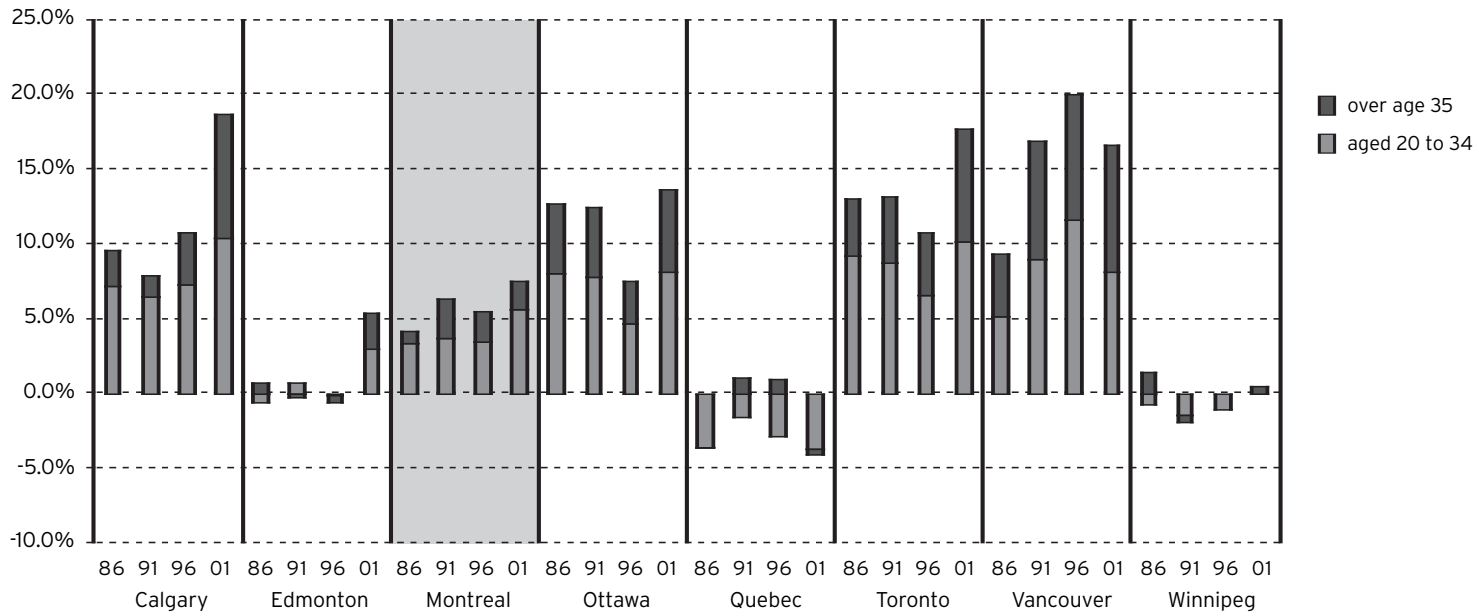
Intra-Canadian graduate migration balance plus international graduate immigration

It is important to keep in mind that the figures presented in this study do not include emigration abroad and are therefore an **overestimation** of the graduate migration balance for the eight cities under study.

Not surprisingly, adding the arrival of international graduates improves the migration report for all the cities. However, the balance for Quebec City and Winnipeg is still negative or zero and remains in the red even if we raise the migration balance estimate.

Table 2 — Net Graduate Migration Including International IMMIGRATION but Excluding EMIGRATION 1981-2001*

4 periods: 1981-1986; 1986-1991; 1991-1996; 1996-2001.



* Numbers are expressed as a percentage of the total graduate population at the beginning of the period. The addition of two overlapping bars therefore shows the total graduate migration balance in percentage.

Toronto, Ottawa and Montreal have all evolved in a similar fashion over time, slowly gaining in appeal between 1981 and 1991 and 1996 and 2001, and losing ground during the recession of the early 1990s. Montreal, despite its size (and despite the expected impact of the city structural factors), systematically attracts fewer graduates overall than Calgary, Ottawa, Vancouver and Toronto. With this migration measure, Calgary is still the most attractive location for graduates, and along with Edmonton is one of the two cities that most significantly improved their performance at the end of the 1990s.

Conclusion

This analysis does not allow us to conclusively determine that Montreal is experiencing a brain drain in absolute terms. However, it does allow us to state that within Canada, Montreal tends to lose graduates to other regions. Still, this trend is very weak and overall, the intra-Canadian graduate migration balance is zero for Montreal and has scarcely changed in the last two decades. Montreal's balance is somewhere between the gains recorded by Toronto, Calgary, Vancouver and Ottawa and the losses posted by Quebec City, Edmonton and Winnipeg. Edmonton and Calgary saw their balance improve substantially between 1996 and 2001.

Montreal's picture brightens somewhat if we include international migration, but this image is biased because we do not count the graduates that move abroad. Although Montreal's relative position vis-à-vis the other cities hardly changes, it slips slightly in relation to Toronto and Vancouver, two cities behind which it already lags and the two top choices for foreign graduates.

Quebec City and Winnipeg appear to be experiencing the biggest brain drain. Edmonton, which was in the same position until 1996, has since made great strides in attracting graduates.

In all, there is no brain drain in Montreal and nothing leads us to believe there has been one since 1981. Notwithstanding the fact that they cannot be adequately measured, the small net losses observed for intra-Canadian migration since 1986 are definitely offset by the arrival of new graduates from abroad. However, where Montreal is concerned, although the number of graduates on its territory is increasing, this growth is strictly the result of foreign immigration and not the city's drawing power of Canadian graduates.