

Metropolitan

N° 5 ■ September 2016

REPORTS

PORTRAIT OF GREATER MONTRÉAL 2016 EDITION

IN THIS ISSUE

Statistical overview of the development of Greater Montréal and North American benchmarks for:

- 1 Metropolitan governance
- 2 Sociodemographics
- 3 Economy and quality of life
- 4 Land use
- 5 Housing and residential development
- 6 Transportation
- 7 Environment



Communauté métropolitaine
de Montréal

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INTRODUCTION

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This issue of *Metropolitan Reports* entitled *Portrait of Greater Montréal, 2016 edition*, presents a statistical overview of the Montréal metropolitan area and its recent development. It focuses on benchmarking Greater Montréal with other major North American metropolitan areas.

With a population of more than 3.9 million, Greater Montréal is one of the largest metropolitan areas in North America, sharing with them many features and challenges. The

information provided in this issue defines the strengths, weaknesses and particularities of Greater Montréal in comparison with the other surrounding major metropolitan areas.

This report addresses themes that are core to the development of metropolitan areas and the activities of the Communauté métropolitaine de Montréal (CMM), such as metropolitan governance, sociodemographic transformations, economic development, urbanization, housing



and social housing, transportation and sustainable mobility, forested and protected areas, and agricultural land.

Although it is not possible to cover all of the dimensions related to the area's development, the portrait paints an up-to-date and original picture of Greater Montréal's reality and positioning in North America.

The *Portrait of Greater Montréal* is meant to provide input into the key issues and challenges

the area is facing and facilitate decision making in local and metropolitan planning.

Much of the data provided in the figures in the portrait may be viewed and downloaded by visiting the [Grand Montréal en statistiques](#) and [Comparaisons nord-américaines](#) sections of [Observatoire Grand Montréal](#).

INTRODUCTION

GREATER MONTRÉAL AND THE OTHER MAJOR NORTH AMERICAN METROPOLITAN AREAS

In this portrait, Greater Montréal is compared with 32 other major metropolitan areas in Canada and the United States (where data allows). In Canada, the benchmarking areas are the seven largest metropolitan areas in terms of population. The three most populous Canadian urban centres, Toronto, Montréal and Vancouver, each have over two million people, while Québec, Edmonton, Calgary and Ottawa-Gatineau range from 800,000 to 1.4 million people. In the United States, the benchmarking areas are the 26 metropolitan areas with populations of two million people or more that were considered in the *Portrait of Greater Montréal, 2010 edition*.

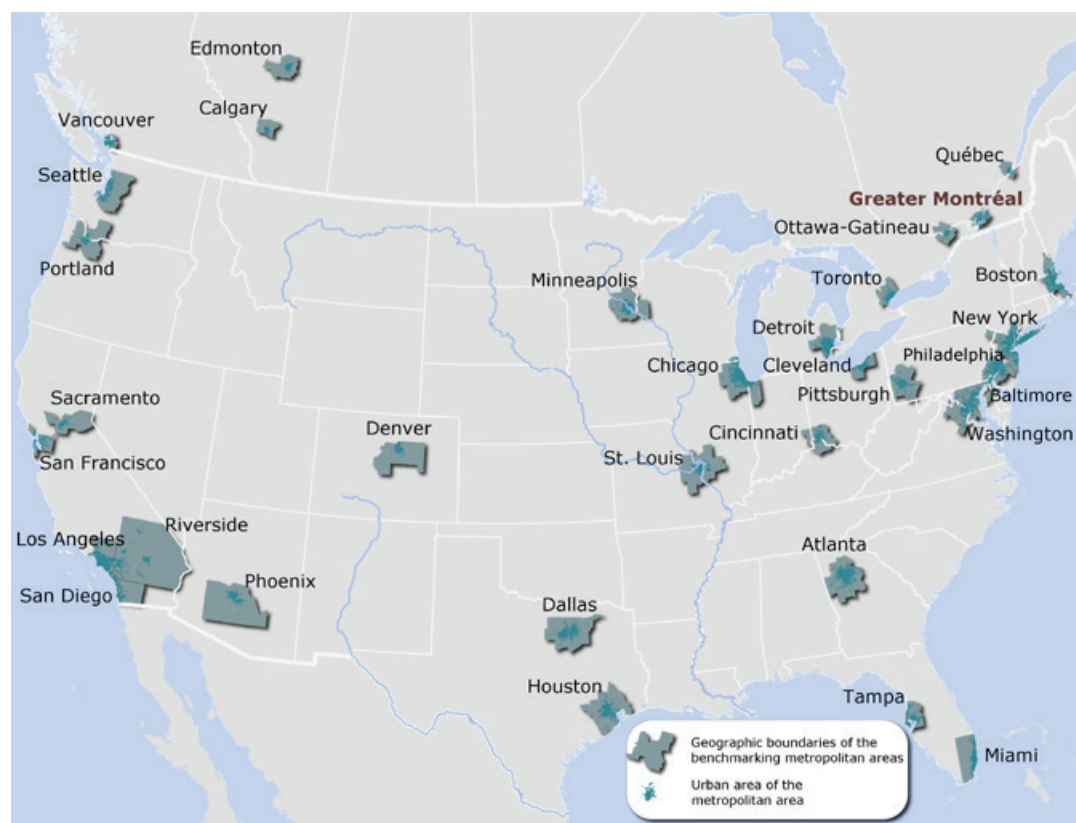
Greater Montréal corresponds to the territory of the CMM. The data presented in this portrait may, however, in some cases, apply to the Montréal

census metropolitan area (CMA), as defined by Statistics Canada, which corresponds, with some exceptions, to the territory of the CMM.¹

The other Canadian benchmarking areas correspond to the CMAs, as defined by Statistics Canada. In the United States, the benchmarking areas correspond to the Metropolitan Statistical Areas (MSAs), as defined by the Office of Management and Budget and used by the US Census Bureau, i.e., the statistical agency of the United States.

¹ The CMM comprises essentially the same municipalities as the Montréal CMA, except that the CMM does not include the municipalities of Gore, Saint-Colomban, Saint-Jérôme, Saint-Placide, L'Épiphanie (Parish and Town), Lavaltrie, Saint-Zotique, Les Coteaux, and Coteau-du-Lac. Unlike the CMA, the CMM includes the municipalities of Contrecoeur, Calixa-Lavallée and Saint-Jean-Baptiste, located on the South Shore. In 2015, according to the Institut de la statistique du Québec, the total population of the CMM was 3,924,550, whereas that of the CMA was 4,060,690.

MAP 1. 33 benchmarking metropolitan areas in North America



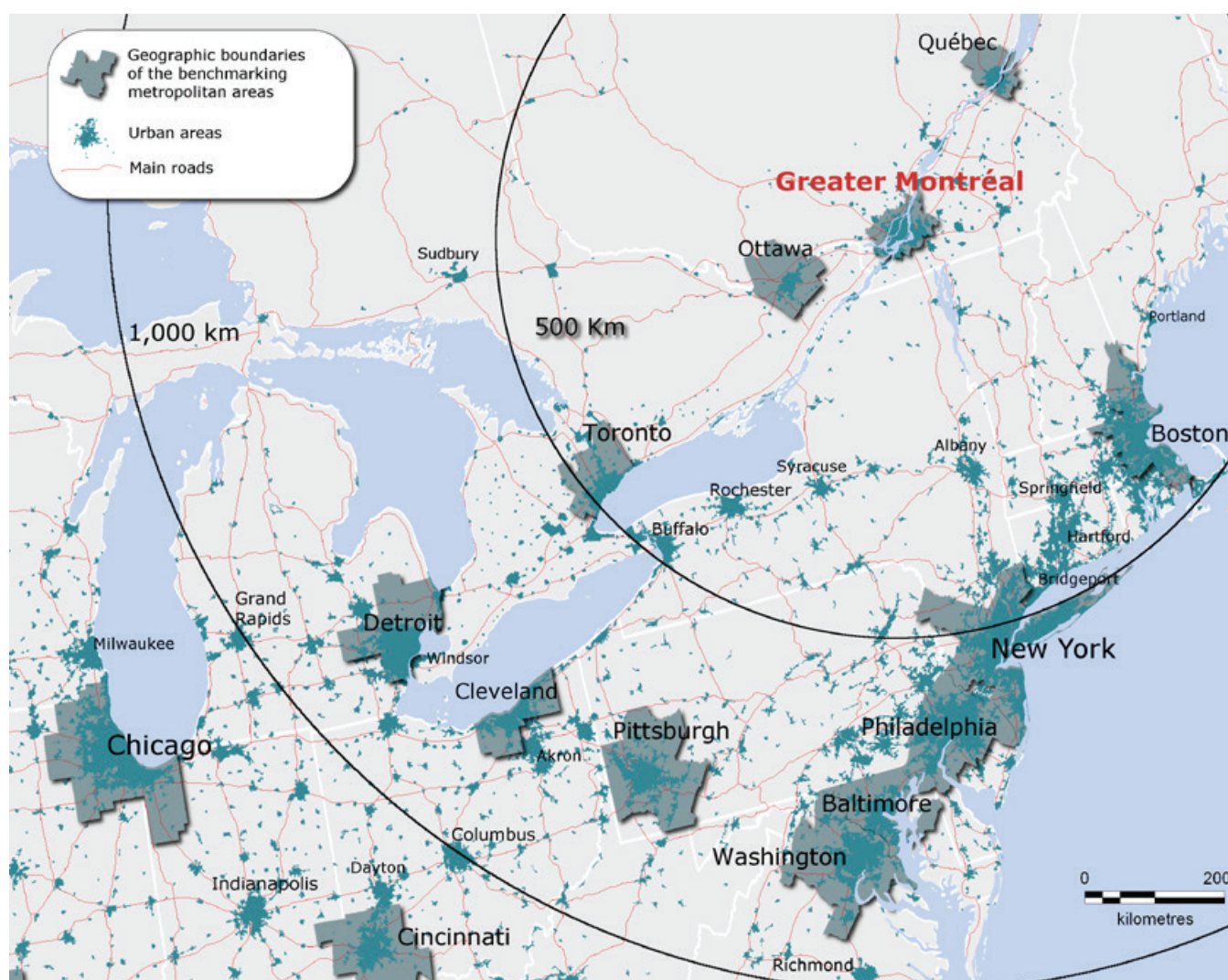
Sources: Statistics Canada; US Census Bureau. Processing: CMM, 2015.

115 MILLION PEOPLE WITHIN A 1,000-KILOMETRE RADIUS

Part of northeastern North America's immense urban system, Greater Montréal is located at the heart of the Québec-Windsor corridor, home to nearly 60% of Canada's population. It is also situated near the largest urban conurbation in the United States, the Boston-Washington corridor, which encompasses the metropolitan areas of Boston, New York, Philadelphia, Baltimore and

Washington, D.C. Other, more modest US urban centres such as Albany, Portland (Maine), Syracuse and Hartford are also less than 500 kilometres from Greater Montréal. In all, there are approximately 115 million people in 16 US states and four Canadian provinces living within a 1,000-kilometre radius of the Montréal metropolitan area.

MAP 2. Greater Montréal within the urban system of northeastern North America



Sources: Statistics Canada; US Census Bureau. Processing: CMM, 2016.

FIVE GEOGRAPHIC SECTORS, 82 MUNICIPALITIES

The 82 municipalities of Greater Montréal are also part of regional county municipalities (RCMs). Greater Montréal encompasses all or part of the 14 RCMs or equivalent territories. The North Shore includes the Les Moulins and Thérèse-De Blainville

RCMs, the territory of Mirabel (equivalent to an RCM) and part of the L'Assomption and Deux-Montagnes RCMs. The South Shore includes the Marguerite-D'Youville and Roussillon RCMs and part of the Beauharnois-Salaberry, La Vallée-du-Richelieu, Vaudreuil-Soulanges and Rouville RCMs. The Montréal agglomeration, the Longueuil agglomeration and Laval, for their part, are territories equivalent to RCMs.

The map displays the Laval agglomeration area, centered around the city of Laval. Surrounding municipalities include L'Assomption, Les Moulins, Marguerite-D'Youville, La Vallée-du-Richelieu, Rouville, Roussillon, Beauharnois-Salaberry, Vaudeuil-Soulanges, Deux-Montagnes, Mirabel, Thérèse-De Blainville, and Longueuil agglomeration. The map also shows the St. Lawrence River and the Saguenay Fjord.

TABLE 1. Population of Greater Montréal sectors, RCMs and municipalities, 2015

Sector/RCM/Municipality	Population 2015
Montréal agglomeration	1,999,795
Baie-D'Urfé	3,867
Beaconsfield	19,777
Côte-Saint-Luc	33,861
Dollard-Des Ormeaux	50,826
Dorval	19,446
Hampstead	7,283
Kirkland	21,312
L'Île-Dorval	5
Montréal	1,754,974
Montréal-Est	3,850
Montréal-Ouest	5,215
Mont-Royal	20,884
Pointe-Claire	31,899
Sainte-Anne-de-Bellevue	4,978
Senneville	927
Westmount	20,691
Longueuil agglomeration	421,342
Boucherville	42,016
Brossard	86,354
Longueuil	243,743
Saint-Bruno-de-Montarville	26,980
Saint-Lambert	22,249
Laval	425,225
North Shore	580,410
<i>Deux-Montagnes RCM (CMM part)</i>	97,746
Deux-Montagnes	17,861
Oka	3,858
Pointe-Calumet	6,543
Sainte-Marthe-sur-le-Lac	17,922
Saint-Eustache	44,900
Saint-Joseph-du-Lac	6,662
<i>L'Assomption RCM (CMM part)</i>	115,402
Charlemagne	6,051
L'Assomption	21,967
Repentigny	83,967
Saint-Sulpice	3,417
<i>Les Moulins RCM</i>	159,098
Mascouche	46,884
Terrebonne	112,214
<i>Thérèse-De Blainville RCM</i>	159,210
Blainville	56,606
Boisbriand	27,389
Bois-des-Filion	9,768
Lorraine	9,416
Rosemère	14,346
Sainte-Anne-des-Plaines	15,053
Sainte-Thérèse	26,632
<i>Mirabel</i>	48,954

Sector/RCM/Municipality	Population 2015
South Shore	497,780
<i>Beauharnois-Salaberry RCM (CMM part)</i>	12,657
Beauharnois	12,657
<i>Marguerite-D'Youville RCM</i>	77,740
Calixa-Lavallée	503
Contrecoeur	7,502
Saint-Amable	12,101
Sainte-Julie	30,053
Varennnes	21,473
Verchères	5,808
<i>La Vallée-du-Richelieu RCM (CMM part)</i>	115,157
Belœil	21,980
Carignan	8,894
Chambly	28,489
McMasterville	5,684
Mont-Saint-Hilaire	18,813
Otterburn Park	8,380
Saint-Basile-le-Grand	16,975
Saint-Jean-Baptiste	3,159
Saint-Mathieu-de-Belœil	2,783
<i>Roussillon RCM</i>	171,885
Candiac	20,876
Châteauguay	48,254
Delson	7,638
La Prairie	24,495
Léry	2,432
Mercier	12,889
Saint-Constant	27,191
Sainte-Catherine	17,218
Saint-Isidore	2,729
Saint-Mathieu	1,978
Saint-Philippe	6,185
<i>Rouville RCM (CMM part)</i>	10,083
Richelieu	5,496
Saint-Mathias-sur-Richelieu	4,587
<i>Vaudreuil-Soulanges RCM (CMM part)</i>	110,258
Hudson	5,148
Les Cèdres	6,698
L'Île-Cadieux	102
L'Île-Perrot	10,771
Notre-Dame-de-l'Île-Perrot	10,802
Pincourt	14,807
Pointe-des-Cascades	1,501
Saint-Lazare	19,707
Terrasse-Vaudreuil	1,961
Vaudreuil-Dorion	37,425
Vaudreuil-sur-le-Lac	1,336
GREATER MONTRÉAL	3,924,552



HIGHLIGHTS

SOCIODEMOGRAPHICS



3.9M
INHABITANTS



4.5M
PEOPLE IN
GREATER MONTRÉAL BY 2031



DIMINUTION OF
INTRAMETROPOLITAN
MIGRATION DEFICIT
FOR MONTRÉAL
AGGLOMERATION SINCE 2010

16TH MOST POPULOUS METROPOLITAN
AREA IN NORTH AMERICA

MODERATE AND CONSTANT DEMOGRAPHIC GROWTH

DEMOGRAPHIC GROWTH STIMULATED PRIMARILY
BY INTERNATIONAL IMMIGRATION IN THE CENTRE
OF THE AREA AND BY INTRAMETROPOLITAN
MIGRATION AND NATURAL GROWTH ON THE
NORTH AND SOUTH SHORES



221,000
NEW HOUSEHOLDS

+



492,000
NEW PEOPLE

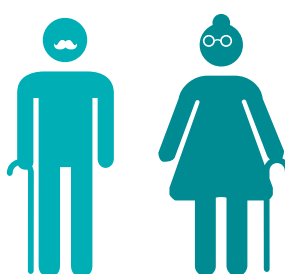
BY 2031



URBAN
REDEVELOPMENT:
THE CITY OF
MONTRÉAL
BECOMES, AGAIN, A DRIVER
OF DEMOGRAPHIC
GROWTH IN
THE AREA



IN GREATER MONTRÉAL,
LIKE IN OTHER
METROPOLITAN AREAS,
AGING IS MOST PROMINENT
IN THE SUBURBS



LOWER PROPORTION
OF HOUSEHOLDS WITH
CHILDREN THAN IN
THE OTHER
NORTH AMERICAN
METROPOLITAN
AREAS



POPULATION
BORN OUTSIDE
CANADA:
23%



6TH
LARGEST
INTERNATIONAL
IMMIGRATION
HUB IN NORTH
AMERICA




49%

OF RECENT IMMIGRANTS HAVE A
UNIVERSITY
DIPLOMA



HIGHLIGHTS

ECONOMY AND QUALITY OF LIFE

13TH LARGEST
LABOUR POOL IN
NORTH AMERICA



ECONOMIC
INTEGRATION
OF IMMIGRANTS
REMAINS A
MAJOR ISSUE
FOR THE AREA

IN 2011, THE
UNEMPLOYMENT
RATE OF RECENT
IMMIGRANTS WAS CLOSE
TO 17% VERSUS 6% FOR
NON-IMMIGRANTS

ECONOMIC BASE FOUNDED ON SEVERAL HIGH-VALUE
INDUSTRIES SUCH AS:



PROFESSIONAL
AND TECHNICAL
SERVICES



INFORMATION
AND CULTURAL
INDUSTRIES



CERTAIN
TRANSPORTATION
INDUSTRIES



REAL-ESTATE
AND FINANCIAL
SERVICES



AEROSPACE
INDUSTRY



4TH HIGHEST INCREASE
IN UNIVERSITY
GRADUATION
RATE IN
NORTH AMERICA
SINCE 2001



SHRINKING
EDUCATION
GAP



GDP AND WAGES
REMAIN MODEST...



... BUT BUSINESS AND LIVING
COSTS ARE AMONG THE
LOWEST IN NORTH AMERICA



4TH IN NORTH AMERICA
FOR QUALITY OF LIFE
ACCORDING TO *MERCER*
AND THE *ECONOMIST*
INTELLIGENCE UNIT



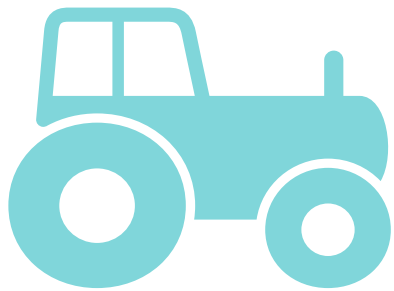
HIGHLIGHTS

LAND USE

3RD NORTH AMERICAN
METROPOLITAN AREA IN TERMS
OF POPULATION DENSITY



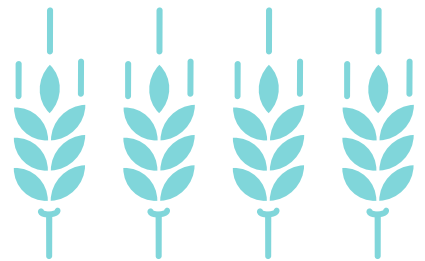
SHARP DECLINE IN DENSITY BETWEEN 1971
AND 1991 BUT OPTIMIZED RESIDENTIAL
DEVELOPMENT IN RECENT YEARS



AN AREA
THAT STANDS
OUT BY
ITS LARGE
AGRICULTURAL
ZONE

6TH

IN TERMS OF
PROPORTION
OF CULTIVATED
LAND



58%
OF THE LAND
AREA
COVERED BY
AGRICULTURAL
ZONE

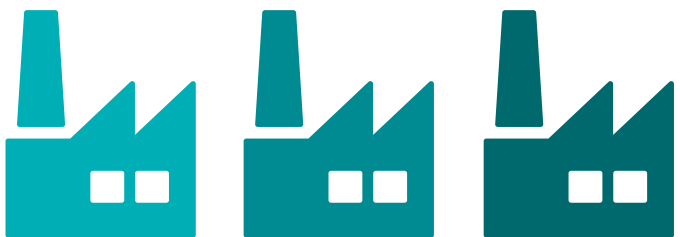


9% OF METROPOLITAN
LAND AREA OCCUPIED BY
INDUSTRIAL, COMMERCIAL
AND OFFICE SPACES



13TH

IN TERMS OF
INDUSTRIAL
SPACE



FOR RENT

INDUSTRIAL
AND OFFICE
VACANCY RATES
WITHIN NORTH
AMERICAN
AVERAGES



17TH

IN TERMS
OF OFFICE
SPACE



HIGHLIGHTS

HOUSING AND RESIDENTIAL DEVELOPMENT



ANNUAL
AVERAGE OF
20,100

NEW HOUSING
UNITS IN THE PAST
15 YEARS

AN AREA
CHARACTERIZED
BY HIGH AND
MEDIUM
DENSITY
HOUSING
STOCK

MARKET SHARE GAINS FOR HIGH-DENSITY RESIDENTIAL
PRODUCTS IN ALL GREATER MONTRÉAL SECTORS AND
ALL MAJOR METROPOLITAN AREAS IN NORTH AMERICA
IN THE PAST FEW YEARS

LOWEST PROPORTION
OF SINGLE-
DETACHED HOUSES
IN NORTH AMERICAN
METROPOLITAN AREAS
32%
OF HOUSING UNITS

5TH NORTH
AMERICAN
METROPOLITAN
AREA IN TERMS
OF PROPORTION
OF TENANT
HOUSEHOLDS



45%
OF HOUSEHOLDS
ARE TENANTS



INCREASE IN
CONSTRUCTION
OF RENTAL
HOUSING UNITS
SINCE 2013

RENTAL
HOUSING
VACANCY RATE
ROSE TO 4%
FOR THE FIRST
TIME SINCE
THE LATE 1990S

RENT \$ / INCOME \$

CLOSE TO
230,000
TENANT
HOUSEHOLDS
EXPERIENCE
HOUSING
AFFORDABILITY
PROBLEMS

LOWEST PROPORTION
OF SOCIAL AND
AFFORDABLE
HOUSING AMONG
MAJOR CANADIAN
METROPOLITAN
AREAS: 8.3% OF
RENTAL HOUSING
UNITS IN THE AREA

3RD

CANADIAN METROPOLITAN
AREA WITH THE MOST
LIMITED HOMEOWNERSHIP
AFFORDABILITY, AFTER
TORONTO AND VANCOUVER



ENOUGH VACANT SPACE
AND REDEVELOPMENT
OPPORTUNITIES TO
ACCOMMODATE THE
221,000 NEW HOUSEHOLDS
EXPECTED BY 2031



36.2%



GREATER MONTRÉAL IS ONE
OF THE METROPOLITAN
AREAS WITH THE
HIGHEST PROPORTION OF
HOUSEHOLDS LIVING CLOSE
TO HIGH-CAPACITY PUBLIC
TRANSIT STATIONS

BETWEEN **2001** AND **2011** **23.9%** OF HOUSEHOLD GROWTH
IN GREATER MONTRÉAL TOOK
PLACE IN TOD ZONES



HIGHLIGHTS

TRANSPORTATION



GREATER MONTRÉAL IS CHARACTERIZED BY THE IMPORTANCE AND THE HIGH RIDERSHIP OF ITS PUBLIC TRANSIT (PT) NETWORK...



... HOWEVER, THE MODAL SHARE OF PUBLIC TRANSIT STAGNATED BETWEEN 2008 AND 2013 AND TRAFFIC CONGESTION REMAINS HIGH

3RD

IN NORTH AMERICA IN TERMS OF PT MODAL SHARE, AFTER TORONTO AND NEW YORK

MONTRÉAL SUBURBS HAVE THE 4TH HIGHEST PT MODAL SHARE IN NORTH AMERICAN SUBURBS

9TH

MOST CONGESTED AREA IN NORTH AMERICA



GOOD PEDESTRIAN
ACCESSIBILITY
AND HIGH BIKE
TRAFFIC IN CENTRAL
NEIGHBOURHOODS
BUT STILL LIMITED IN
SURROUNDING AREAS

2ND MOST BIKE-FRIENDLY
METROPOLITAN AREA
IN NORTH AMERICA



SHARP INCREASE IN BICYCLE USE
IN THE CENTRE OF THE AREA

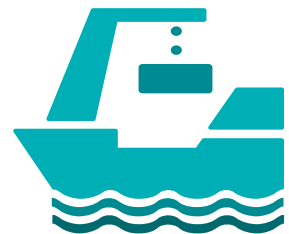


11TH MOST
PEDESTRIAN-
FRIENDLY
METROPOLITAN
AREA IN NORTH
AMERICA



GREATER
MONTRÉAL:
A FREIGHT-
TRANSPOR-
TATION HUB

2ND LARGEST
PORT IN THE
NORTHEAST
AFTER THE
PORT OF
NEW YORK





HIGHLIGHTS ENVIRONMENT

A METROPOLITAN AREA THAT STANDS OUT BY THE SIGNIFICANCE OF ITS AGRICULTURAL ZONE, BUT FOREST COVER REMAINS MODEST



14TH AMONG METROPOLITAN AREAS HAVING LOST THE MOST FOREST COVER SINCE THE START OF THE 2000s

24TH IN NORTH AMERICA IN TERMS OF FOREST COVER



AN AREA CHARACTERIZED BY A SIGNIFICANT RIVER SYSTEM



12% OF THE TERRITORY COVERED BY WATER BODIES



9TH

NORTH AMERICAN
METROPOLITAN
AREA WITH
THE HIGHEST
PROPORTION OF
PROTECTED AREAS
ON ITS TERRITORY

9.6%

OF GREATER MONTRÉAL'S
TERRITORY IS
PROTECTED AREA



THE PROPORTION
OF PROTECTED
LAND TERRITORY,
HOWEVER, IS
STILL LIMITED

2.5%



CLOSE TO 60%

OF RECYCLABLE
MATERIALS ARE
RECOVERED



AIR QUALITY:
TRANSPORTATION AND
WOOD HEATING – TWO
MAIN SOURCES OF FINE
PARTICLE EMISSIONS
IN THE AREA

FOOD WASTE RECOVERY: 10% OF HOUSEHOLDS HAVE CURBSIDE COLLECTION



1.



METROPOLITAN GOVERNANCE



METROPOLITAN PLANNING ORGANIZATIONS PRESENT THROUGHOUT NORTH AMERICA

In North America, as everywhere in the world, population density is increasing in major metropolitan areas. Many of these areas now have a metropolitan planning and governance organization to ensure coordination between various local bodies and management of metropolitan issues.

In the United States, all of the major metropolitan areas included in this report as benchmarks, with the exception of the New York area, have a metropolitan planning organization. In most cases, metropolitan planning is handled by a Council of Governments (COG – also called Association of Governments or Regional Council), an association of local governments that are either voluntary or mandated by the state. The nature and responsibilities of these organizations vary from one metropolitan area to another but usually include jurisdiction over land-use and transportation planning, economic development and environmental protection.

In Canada, almost all of the major metropolitan areas have a metropolitan governance organization, with the exception of Toronto. Metro Vancouver, created by the province of British Columbia in 1967, brings together 23 localities and has jurisdiction over areas such as air quality, housing, waste management, regional planning and water treatment.

In Alberta, the Calgary Regional Partnership is an association of 14 municipalities with jurisdiction over transportation, land-use planning, protection of the environment and waterways, as well as geographic information systems in the Calgary metropolitan area. In Edmonton, the Capital Region Board was created by the Alberta government in 2008 and includes 24 municipalities. The organization works on implementing its metropolitan development plan and has jurisdiction over land-use planning, public transit, housing and geographic information systems.

TABLE 2. North American metropolitan areas and their planning organizations

Metropolitan Area	Metropolitan Planning Organization	Year Founded
Atlanta	Atlanta Regional Commission	1947
Baltimore	Baltimore Metropolitan Council	1992
Boston	Metropolitan Area Planning Council	1963
Calgary	Calgary Regional Partnership	1999
Chicago	Chicago Metropolitan Agency for Planning	2005
Cincinnati	OKI Regional Council of Governments	1964
Cleveland	Northeast Ohio Areawide Coordinating Agency	1968
Dallas	North Central Texas Council of Governments	1966
Denver	Denver Regional Council of Governments	1955
Detroit	Southeast Michigan Council of Governments	1968
Edmonton	Capital Region Board	2008
Houston	Houston-Galveston Area Council	1966
Los Angeles/Riverside	Southern California Association of Governments	1965
Miami	South Florida Regional Planning Council	1969
Minneapolis	Metropolitan Council	1967
Montréal	Communauté métropolitaine de Montréal	2001
Philadelphia	Delaware Valley Regional Planning Commission	1966
Phoenix	Maricopa Association of Governments	1967
Pittsburgh	Southwestern Pennsylvania Commission	1974
Portland	Metro	1979
Québec	Communauté métropolitaine de Québec	2002
Sacramento	Sacramento Area Council of Governments	1967
San Diego	San Diego Association of Governments	1966
San Francisco	Association of Bay Area Governments	1961
Seattle	Puget Sound Regional Council	1956
St. Louis	East-West Gateway Council of Governments	1965
Tampa Bay	Tampa Bay Regional Planning Council	1962
Vancouver	Metro Vancouver	1967
Washington	Metropolitan Washington Council of Governments	1957

Sources: Organizations' websites, and Ahrend, R., C. Gamper and A. Schumann (2014), "The OECD Metropolitan Governance Survey: A Quantitative Description of Governance Structures in Large Urban Agglomerations." *OECD Regional Development Working Papers*, 2014/04. OECD Publishing, Paris.

The Ottawa-Gatineau metropolitan area, which extends over the Québec-Ontario border, does not have a metropolitan governance organization in the strictest sense of the term, but it is home to the National Capital Commission (NCC). The NCC is a federal crown corporation that oversees the planning of federal land, which makes up 13% of Ottawa-Gatineau's territory.

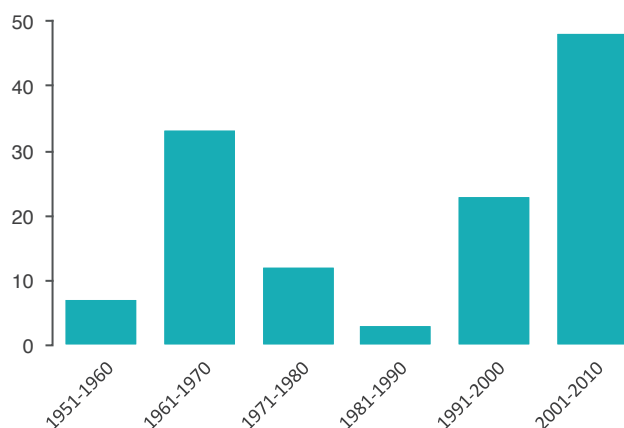
In the case of the metropolitan areas of Montréal and Québec, the province of Québec adopted legislation that created the Communauté métropolitaine de Montréal (CMM) and the Communauté métropolitaine de Québec (CMQ) in 2001 and 2002, respectively. The CMM includes 82 municipalities and the CMQ 28. They are both controlled by a council made up of local elected officials from member municipalities.

The CMM has jurisdiction over what are referred to as the strategic functions of a region, such as land-use planning, economic development, environment, transportation and social housing. The CMM is therefore able to carry out an integrated planning and development strategy for its territory.

The creation of metropolitan planning organizations is now part of a global movement. While their powers, areas of jurisdiction and resources may vary greatly from one area to another, the number of metropolitan planning organizations is increasing across the globe.² In countries of the Organisation for Economic Co-operation and Development (OECD), about two thirds of the 275 metropolitan areas with 500,000 residents or more now have a planning body.

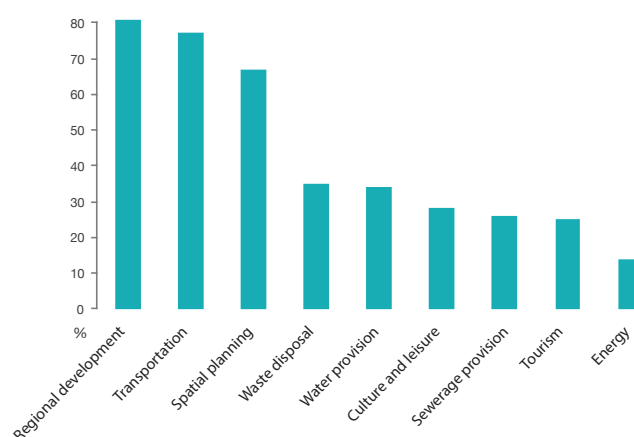
² For more information: Ahrend, R., C. Gamper and A. Schumann (2014), "The OECD Metropolitan Governance Survey: A Quantitative Description of Governance Structures in Large Urban Agglomerations": <http://dx.doi.org/10.1787/5jz43zldh08p-en>; Metropolis (2014) "Comparative Study on Metropolitan Governance": http://www.metropolis.org/sites/default/files/comparative_study_on_metropolitan_governance_eng.pdf.

FIGURE 1. Number of metropolitan planning organizations created or reformed in OECD countries per decade



Source: Kim, S.-J., A. Schumann and R. Ahrend, (forthcoming), "What Governance for Metropolitan Areas?" *OECD Regional Development Working Papers*, OECD Publishing, Paris. Figure taken from *OECD Regional Outlook Regions and Cities: Where Policies and People Meet* (2014).

FIGURE 2. Proportion of metropolitan planning organizations in OECD countries according to areas of jurisdiction



Source: Ahrend, R., C. Gamper and A. Schumann (2014), "The OECD Metropolitan Governance Survey: A Quantitative Description of Governance Structures in Large Urban Agglomerations." *OECD Regional Development Working Papers*, 2014/04. OECD Publishing, Paris.

2.



SOCIODEMOGRAPHICS



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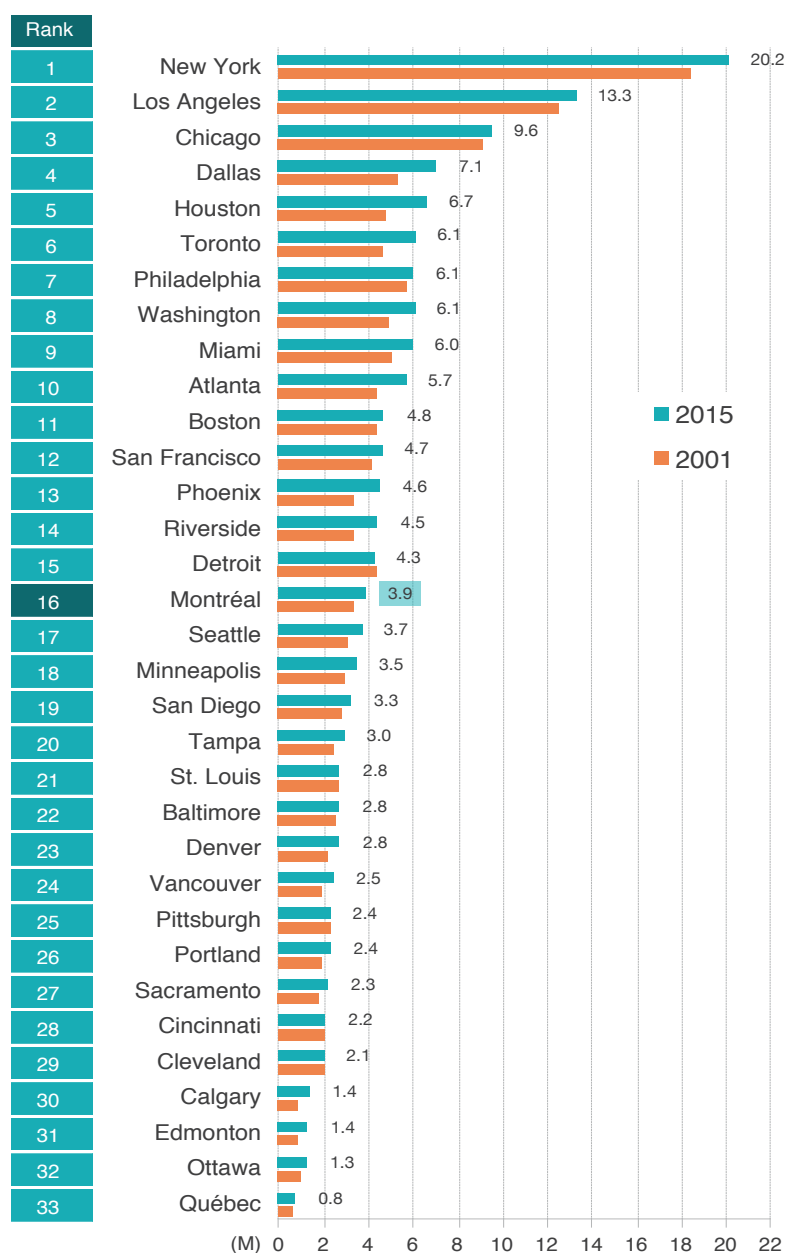
2.1 Population and demographic growth

16TH MOST POPULOUS METROPOLITAN AREA IN NORTH AMERICA

Since the beginning of the 2000s, Greater Montréal has ranked 16th among the most populous metropolitan areas in Canada and the US. In 2015, its population was 3.9 million, having grown by close to 600,000 since 2001. Demographically, Greater Montréal is similar in size to areas such as San Diego, Minneapolis, Seattle, Detroit, Phoenix,

San Francisco and Boston, whose populations vary between 3.3 and 4.8 million. According to the United Nations' most recent estimates, Greater Montréal is the 95th most populous metropolitan area in the world.

FIGURE 3. Total population (in millions), metropolitan areas, 2001 and 2015



Sources: Institut de la statistique du Québec, *Estimation de la population des municipalités du Québec au 1^{er} juillet des années 1996 à 2015*; Statistics Canada, *2001 Census*; Statistics Canada, *Annual Demographic Estimates: Subprovincial Areas, 2015*; US Census Bureau, *Annual Estimates of the Population: April 1, 2000 to July 1, 2009*; US Census Bureau, *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015*. Processing: CMM, 2016.

58% OF THE POPULATION WITHIN LESS THAN A 15-KILOMETRE RADIUS OF DOWNTOWN

In Greater Montréal, slightly more than half of the population (or 1,999,795 people) lives in the Montréal agglomeration, i.e., the Island of Montréal. In 2015, the population of the metropolitan area's other four geographic sectors was 580,410 on the North Shore, 497,780 on the South Shore, 425,225 in Laval, and 421,342 in the Longueuil agglomeration.

MAP 4. Total population in 2015 and households in 2011, Greater Montréal's five sectors

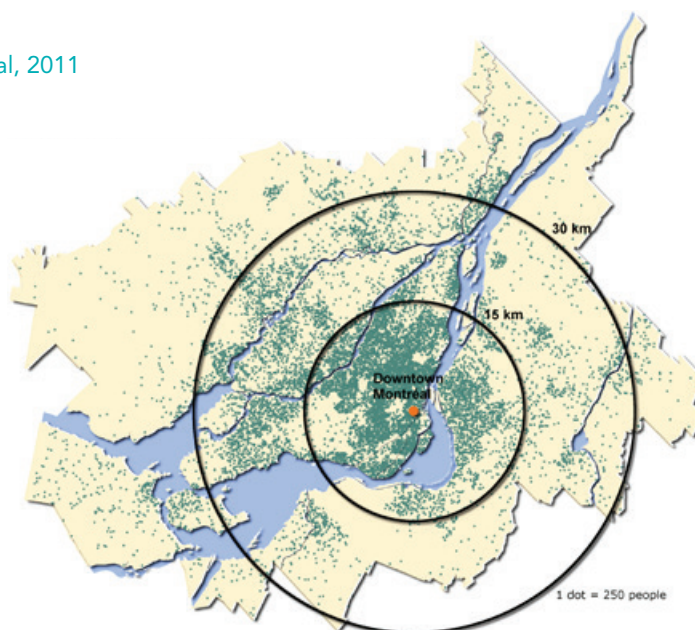


Sources: Institut de la statistique du Québec, *Estimations de la population des municipalités du Québec au 1^{er} juillet des années 1996 à 2015*; Statistics Canada, 2011 National Household Survey (NHS). Processing: CMM, 2016.

Municipal boundaries aside, Greater Montréal has a highly concentrated population in its central areas, i.e., the centre of the Island of Montréal, the west of the Longueuil agglomeration and southern Laval. This zone, which extends in a 15-kilometre radius around downtown Montréal, is the most densely populated area and accounts for 57.5% of the entire population of Greater Montréal.

MAP 5. Population distribution in Greater Montréal, 2011

Distance from downtown	Total population, 2011	% of population of Greater Montréal
Less than 15 km	2,133,100	57.5%
15 to 30 km	1,217,100	32.8%
More than 30 km	358,900	9.7%



Source: Statistics Canada, 2011 Census of Population. Processing: CMM, 2016

MODERATE AND CONSTANT DEMOGRAPHIC GROWTH

Over the past few years, i.e., from 2010 to 2015, Greater Montréal's population increased by 1.1% on average per year, ranking it among other North American metropolitan areas with moderate growth.

This growth rate, which has been relatively stable for more than a decade, is far below the rate

observed in Toronto or many metropolitan areas in the western and southern parts of North America, such as Calgary, Edmonton, Houston, Denver or Dallas. In the Northeast of the continent, however, where growth has been more moderate, Greater Montréal has had the strongest demographic growth since the mid-2000s, after Toronto, Washington, D.C., and Ottawa.

FIGURE 4. Average annual growth rate (AAGR) of the population (%), metropolitan areas, 2004-2009 and 2010-2015



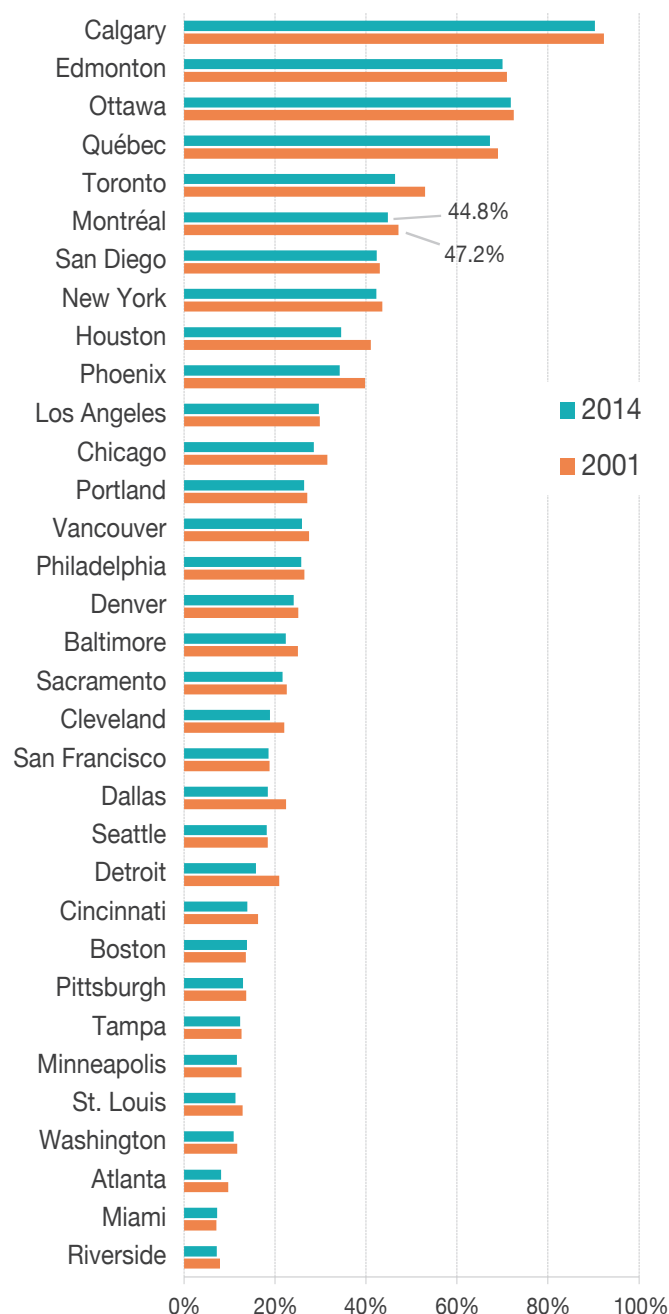
Sources: Institut de la statistique du Québec, *Estimation de la population des municipalités du Québec au 1^{er} juillet des années 1996 à 2015*; Statistics Canada, *Annual Demographic Estimates: Subprovincial Areas, 2015*; US Census Bureau, *Annual Estimates of the Population: April 1, 2000 to July 1, 2009*; US Census Bureau, *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015*. Processing: CMM, 2016.

MONTRÉAL: ONE OF THE CENTRAL CITIES WITH THE HIGHEST DEMOGRAPHIC WEIGHT IN ITS METROPOLITAN AREA

In Greater Montréal, as in most Canadian metropolitan areas, a high percentage of the population lives in the area's central city. This can be explained primarily by the fact that a number of municipal mergers have taken place in Canadian central cities in recent decades.

In Greater Montréal, 44.8% of the population lives in Montréal, the area's central city. Montréal's demographic weight is high for its metropolitan area and stands out across North America. While Greater Montréal is the 16th most populous metropolitan area in North America, Montréal, with 1.75 million inhabitants, is the sixth most populous city in North America, after New York, Los Angeles, Toronto, Chicago and Houston.

FIGURE 5. Percentage of the population living in the central city, metropolitan areas, 2001 and 2014



Note: For Calgary and Edmonton metropolitan areas, the data are for 2001 and 2011.

Sources: Institut de la statistique du Québec, *Estimation de la population des municipalités du Québec au 1^{er} juillet des années 1996 à 2015*; Statistics Canada, 2001 and 2011 Censuses; Statistics Canada, *Annual Demographic Estimates: Subprovincial Areas, 2014*; US Census Bureau, *Annual Estimates of the Population: April 1, 2000 to July 1, 2009*; US Census Bureau, *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2014*. BC Stats.

Processing: CMM, 2016.

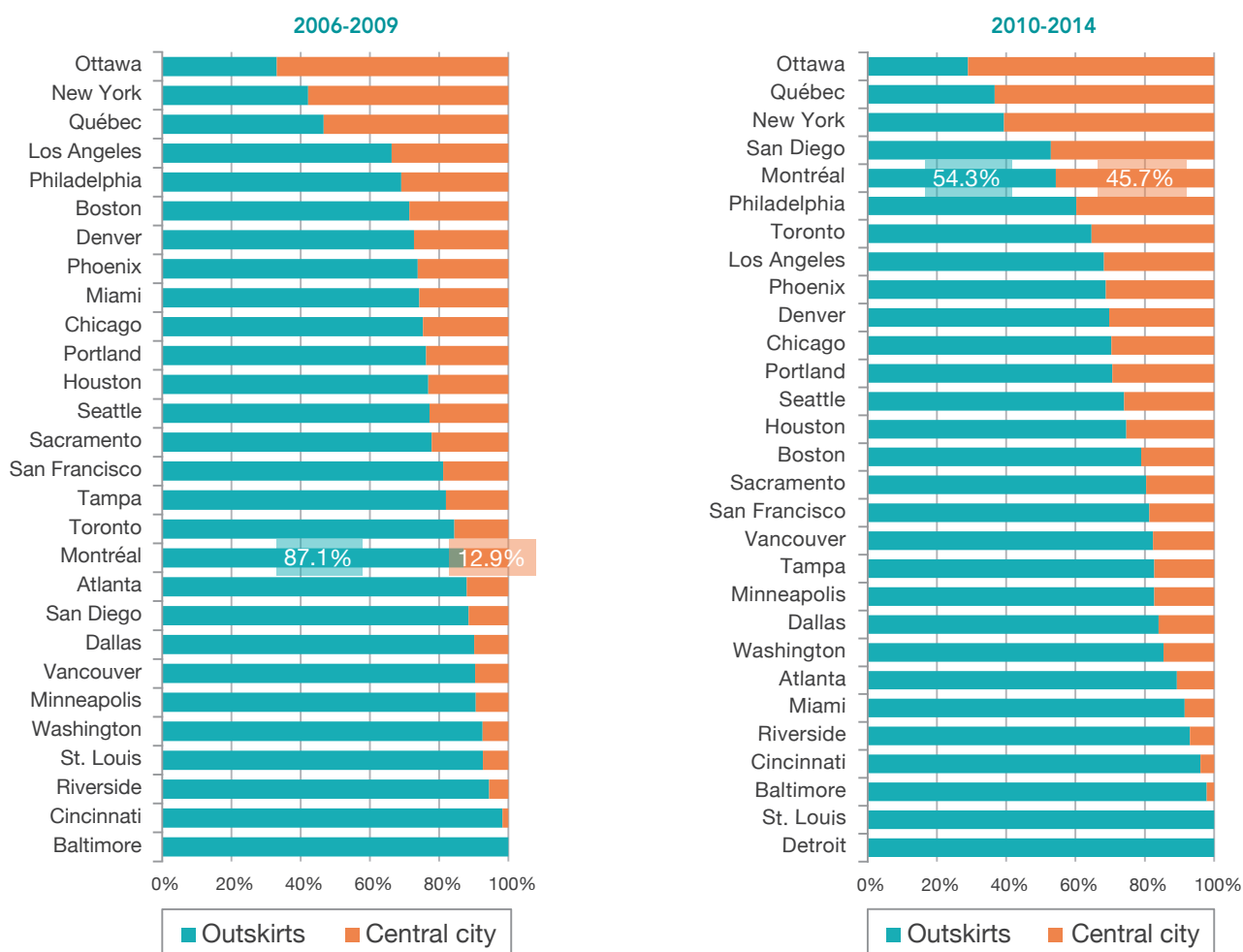
THE CITY OF MONTRÉAL BECOMES, AGAIN, A DRIVER OF DEMOGRAPHIC GROWTH

In most North American metropolitan areas, demographic growth is usually higher in newly urbanized areas located outside central cities. In recent years, however, the metropolitan populations of central cities have been on the rise due to increasing density in existing urban areas.

Between 2006 and 2009, the central cities of North American metropolitan areas accounted for 20% of total metropolitan demographic growth, while between 2010 and 2014 this percentage increased to 26%.

Greater Montréal is one of the metropolitan areas in which the central city — already heavily urbanized — has experienced a period of major urban redevelopment in the past few years. Between 2006 and 2009, 12.9% of Greater Montréal's total demographic growth occurred in Montréal (average annual growth of 4,500 inhabitants), while between 2010 and 2014 this percentage increased to 45.7% (average annual growth of 20,100 inhabitants).

FIGURE 6: Distribution of metropolitan demographic growth between central cities and the rest of metropolitan areas, 2006-2009 and 2010-2014



Sources: Institut de la statistique du Québec, *Estimation de la population des municipalités du Québec au 1^{er} juillet des années 1996 à 2014*; Statistics Canada, *Annual Demographic Estimates: Subprovincial Areas, 2006-2014*; US Census Bureau, *Annual Estimates of the Population: April 1, 2000 to July 1, 2009*; US Census Bureau, *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2014*. Processing: CMM, 2015.

DEMOGRAPHIC GROWTH RATE NOW SIMILAR IN EACH OF GREATER MONTRÉAL'S FIVE SECTORS

The Montréal agglomeration, i.e., the Island of Montréal, has generally posted lower growth rates than Greater Montréal's four other sectors since the early 1960s. Its demographic weight in the metropolitan area fell from 78% in 1961 to 51% in 2015.

Since the early 1990s, however, the gap between the growth rate of the Montréal agglomeration and that of the other four sectors has shrunk considerably.

According to the most recent estimates from the Institut de la statistique du Québec, the demographic growth rate in each of the five

geographic sectors was almost identical between 2011 and 2015. This can be explained by an increase in population growth in the Montréal and Longueuil agglomerations and declining population growth in Laval and the North and South Shores.

This recent balancing out of demographic growth has meant that the proportion of the population of each of the five geographic sectors, within Greater Montréal's total population, remained stable between 2011 and 2015.

FIGURE 7. Demographic growth rate (%), five sectors of Greater Montréal, 1961-2015

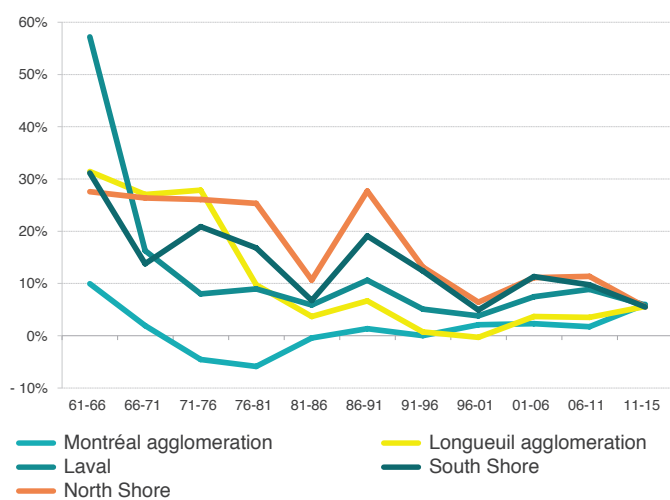
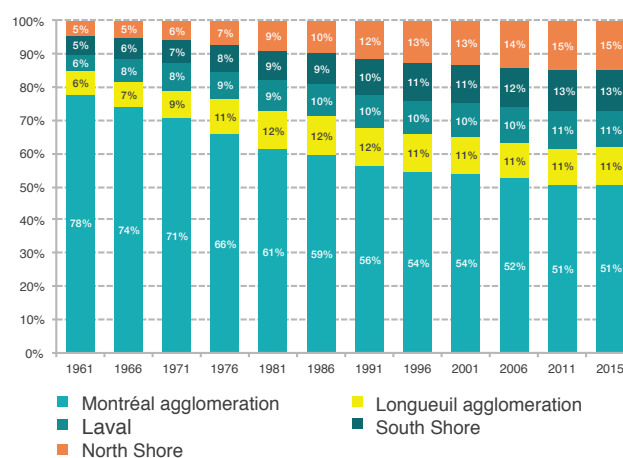


FIGURE 8. Evolution of demographic weight (%), five sectors of Greater Montréal, 1961-2015



Sources: Statistics Canada, *Censuses of Population*, 1961 to 2011; Institut de la statistique du Québec, *Estimation de la population des municipalités du Québec au 1^{er} juillet des années 1996 à 2015*. Processing: CMM, 2015.

DECREASE IN INTRAMETROPOLITAN MIGRATION DEFICIT FOR THE MONTRÉAL AGGLOMERATION

Greater Montréal is characterized by large migration flows from its centre to the neighbouring suburbs. Although the Island of Montréal's population has been on the rise since 2001 due to international immigration and natural growth, it has lost just over 18,000 people on average each year to the other RCMs of Greater Montréal. The only age group for which the Montréal agglomeration is not losing residents to the other RCMs in the area is the 15 to 24 group.

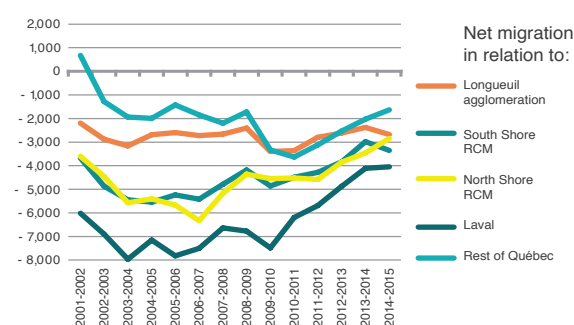
Since 2010, however, migration loss from the Montréal agglomeration to the other RCMs has been decreasing. For the most recent period (2014-2015), the loss was posted at 12,240 people.

Each year, the Longueuil agglomeration and Laval gain a few thousand inhabitants in their migratory exchanges with the Montréal agglomeration. They lose residents to the North and South Shores, although to a lesser extent.

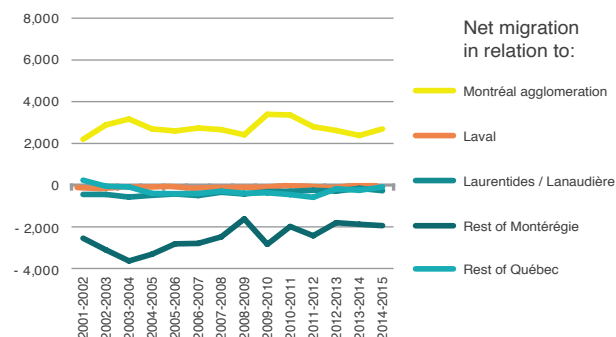
The North and South Shores are the two sectors within Greater Montréal whose populations grow the most from intrametropolitan migration. The North Shore, does, however, post notable migration losses to RCMs located outside the CMM in the Laurentides and Lanaudière areas.

FIGURE 9. Net intrametropolitan migration for Greater Montréal's five sectors,* 2001-2015

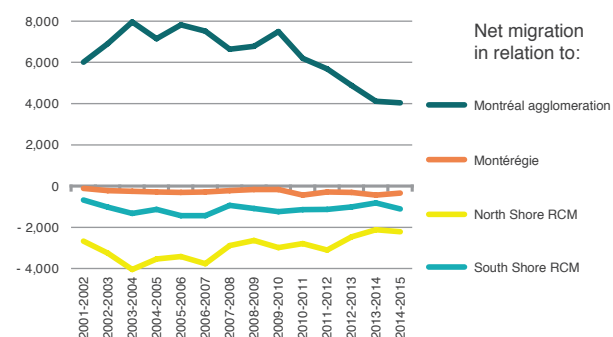
Montréal agglomeration



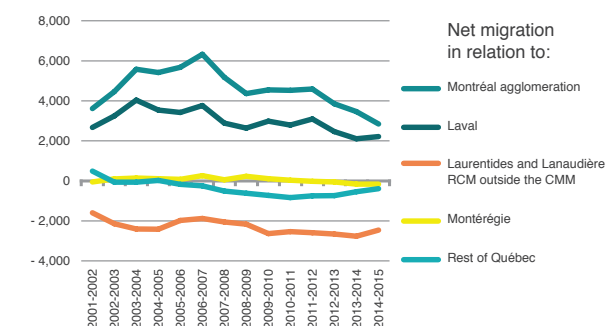
Longueuil agglomeration



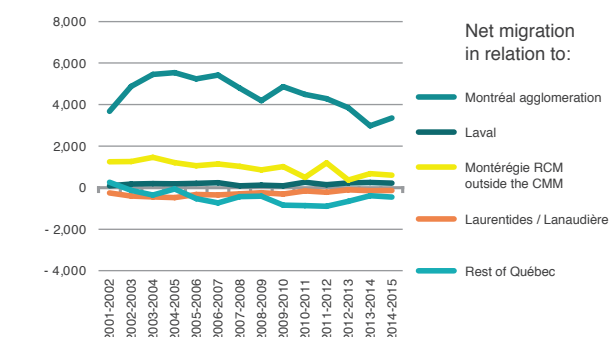
Laval



North Shore RCM



South Shore RCM



*For the North and South Shores, data are presented for all RCM territories included all or in part in the CMM.

Source: Institut de la statistique du Québec, based on the insured persons registration file (FIPA) of the Régie de l'assurance maladie du Québec (RAMQ). Processing: CMM, 2016.

6TH IN NORTH AMERICA FOR INTERNATIONAL IMMIGRATION AND 20TH FOR NATURAL GROWTH

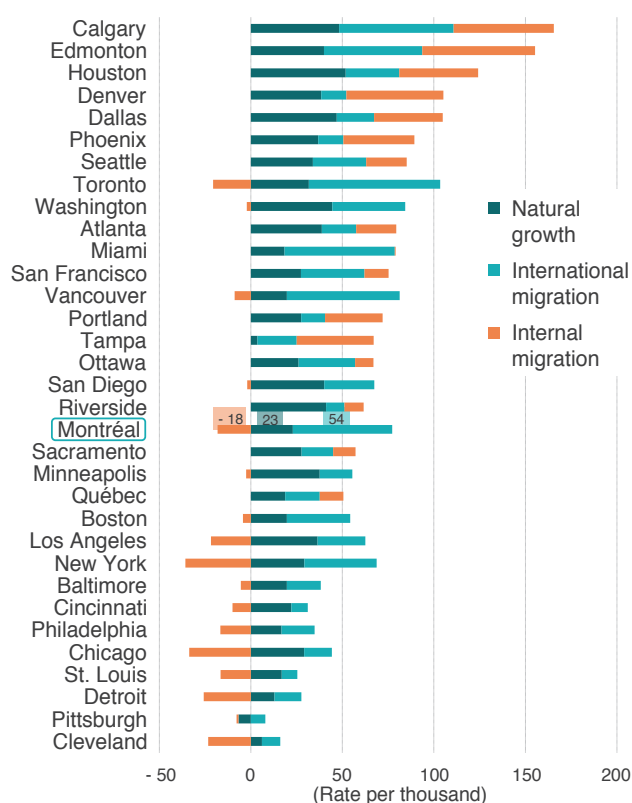
Greater Montréal is one of many metropolitan areas (17 out of 33) that are losing part of their population in domestic migratory exchanges (internal migration) and are relying on natural growth (number of births compared to number of deaths) and international immigration to drive growth. This is also the case, in particular, for Toronto and Vancouver, in Canada, and most major metropolitan areas in the US Northeast and Midwest.

Greater Montréal is also one of the increasingly numerous metropolitan areas (13 out of 33) where international immigration is the main factor of demographic growth. This is also the case in other major metropolitan areas in Canada, with the exception of the Québec area, and in the US in the Miami, New York, Boston, San Francisco, Detroit, Cleveland and Pittsburgh areas. Greater Montréal

is the sixth largest international immigration hub in North America, with an average annual net international immigration of 41,800 people between 2010 and 2015. In 2011, about one Greater Montréal resident in four (23.2%) was born outside Canada.

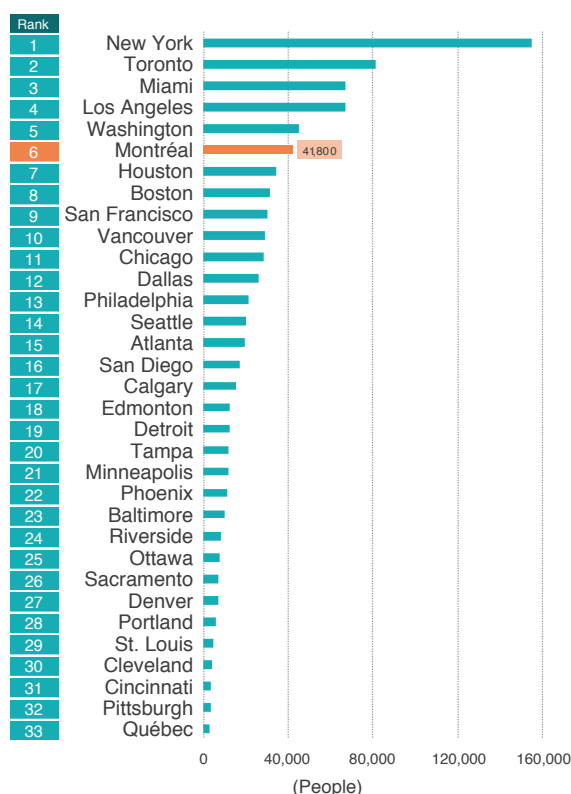
Greater Montréal is ranked 20th among metropolitan areas where, in absolute terms, natural growth is the most important. Natural growth contributed to increasing the area's population by around 18,200 people annually between 2010 and 2014. Greater Montréal's relatively low natural growth rate compared to US metropolitan areas can be explained by a lower fertility rate in Canada than in the US and by an older population in the Montréal area than in most of the other North American metropolitan areas (see p. 35).

FIGURE 10. Components of demographic growth, metropolitan areas, 2010-2015



Note: For Greater Montreal, data are at the CMA level.

FIGURE 11. Average annual net international immigration, metropolitan areas, 2010-2015



Sources: Statistics Canada, *Annual Demographic Estimates: Subprovincial Areas, 2010 to 2015*; US Census Bureau, *Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas: 2010 to 2015*. Processing: CMM, 2016.

2.2 Aging population and types of households

PROPORTION OF THE AGING POPULATION HIGHEST IN THE SUBURBS

In most North American metropolitan areas, the proportion of people aged 65 and over represents 10% to 15% of the total population, for an average of 12%. In Greater Montréal, this proportion was 14.6% in 2011.

For a long time, the suburbs³ of metropolitan areas had a relatively low proportion of senior citizens compared to the proportion in central cities in the same areas. In the past few years, however, the aging of the population in North American metropolitan areas has occurred mainly in the suburbs. As shown in Figure 12, the proportion of people aged 65 and over is now larger in the suburbs than in central cities in most US metropolitan areas. The same situation is expected

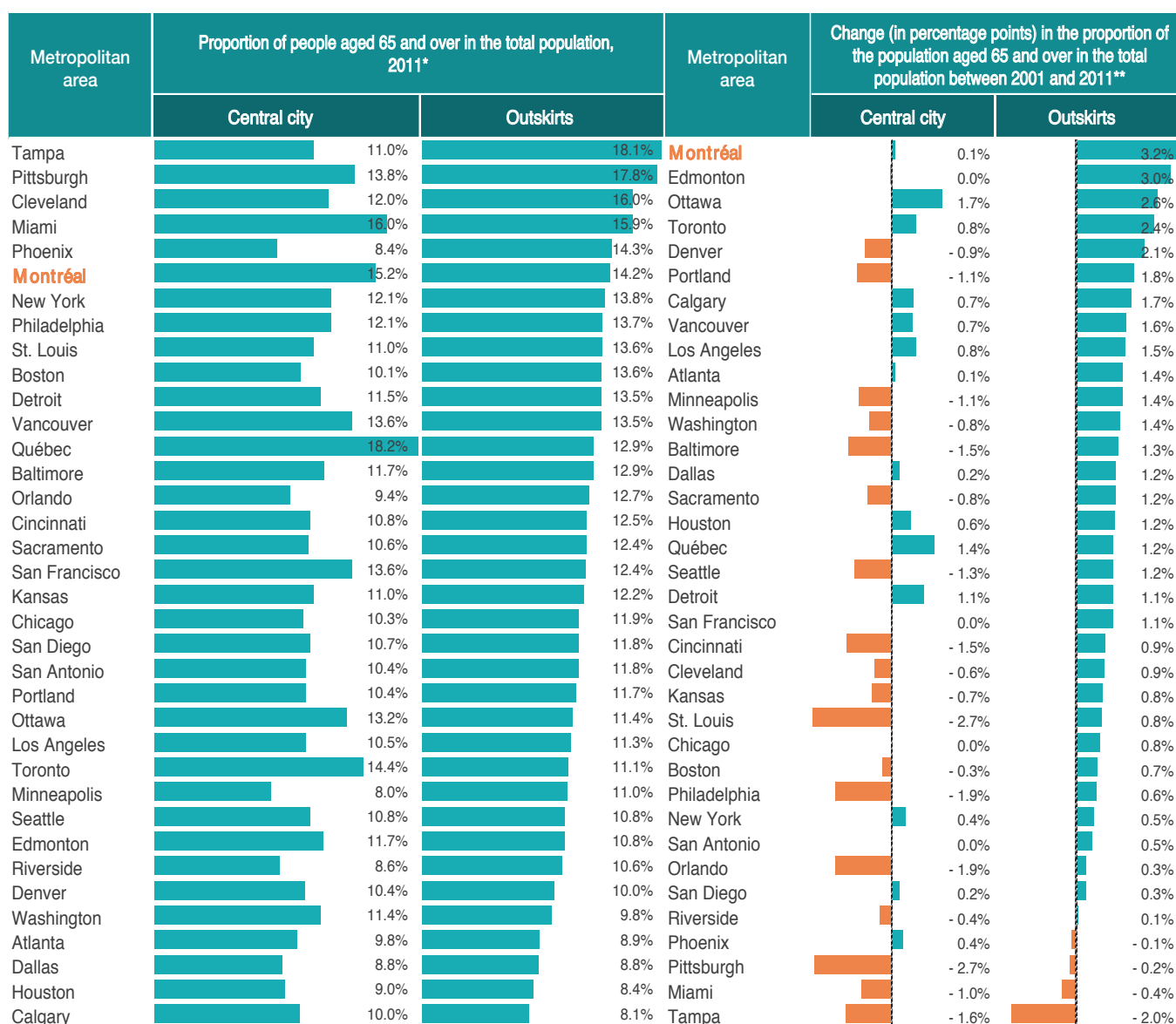
to occur in Canadian metropolitan areas over the next few years. In most US central cities, the population seems to have gotten younger in the past few years while, in the suburbs, the population has continued to get older.

As for Greater Montréal, the population of its suburbs has aged the fastest in the past few years compared to other North American suburban areas. Next in line are the suburbs of Edmonton, Ottawa and Toronto. In Montréal, the area's central city, the proportion of people aged 65 and over stayed almost the same between 2001 and 2011 (+0.1 percentage point).

³ Here, suburbs are defined as the metropolitan territory outside a metropolitan area's central city, i.e., Montréal in the case of Greater Montréal.



FIGURE 12. Proportion of and change in the population aged 65 and over in central cities and outskirts, metropolitan areas



*For US metropolitan areas, the data are for 2010.

** For US metropolitan areas, the data are for 2000 and 2010.

Sources: Statistics Canada, 2001 and 2011 Censuses; US Census Bureau, Censuses 2000 and 2010. Processing: CMM, 2015.

LOWER PROPORTION OF HOUSEHOLDS WITH CHILDREN THAN IN OTHER NORTH AMERICAN METROPOLITAN AREAS

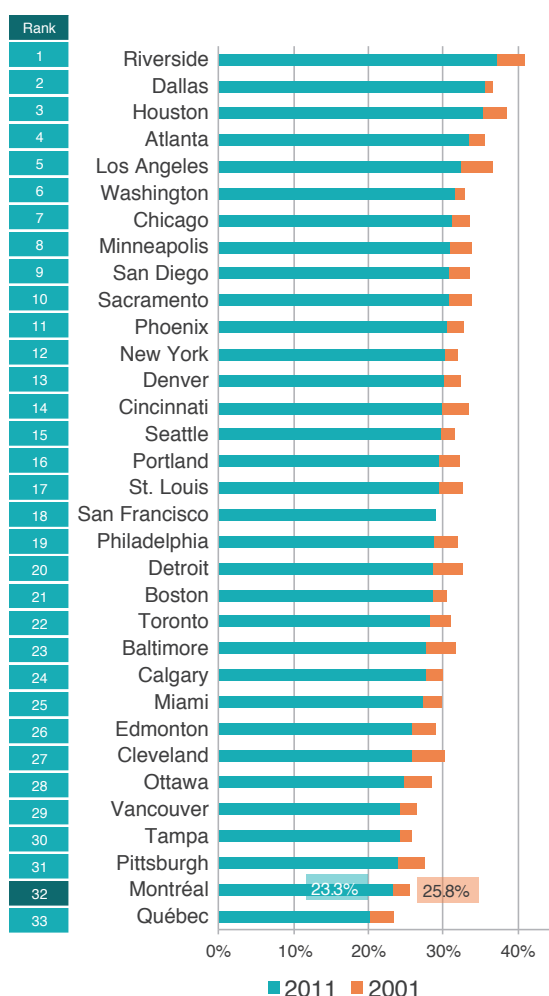
Greater Montréal is one of the North American metropolitan areas with the highest proportion of one-person households (32.7%). This can be explained, in particular, by the relatively high proportion of senior citizens more likely to live alone than other age groups.

Additionally, Greater Montréal is the North American metropolitan area with the lowest proportion of households with children living at home, after Québec. In the past 10 years, all of the major North American metropolitan areas have experienced a drop in the proportion of households with children aged 18 and under. In Greater

Montréal, the percentage dropped 2.5 percentage points, which is above the average observed in the other metropolitan areas (-2.9 points).

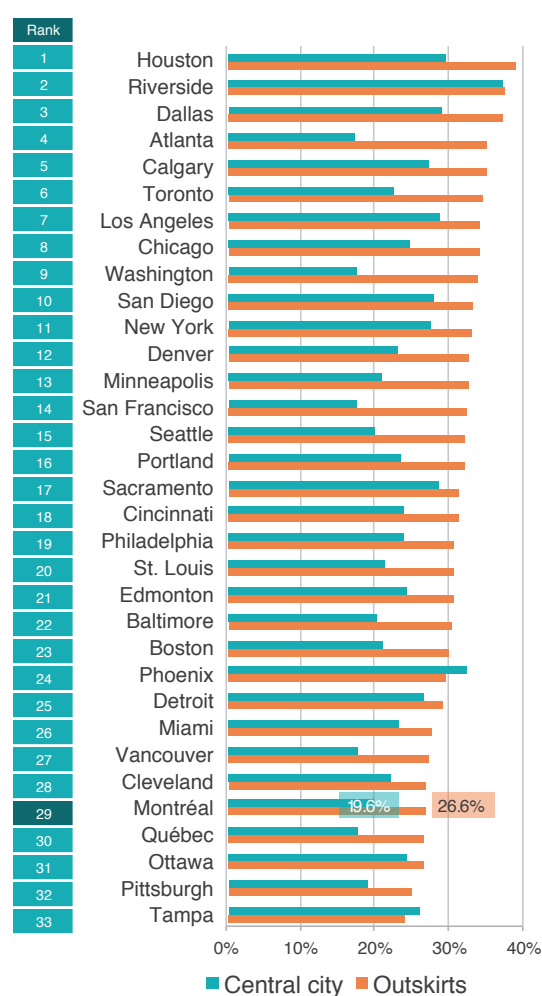
On an intrametropolitan level, in both Canadian and US metropolitan areas, the highest proportion of households with children is generally found in the suburbs of the central cities. In Canada, however, with a population that aged faster in the suburbs than in the central cities between 2001 and 2011, the proportion of households with children is decreasing more rapidly in the suburbs than in the central cities.

FIGURE 13. Proportion of households with children aged 18 and under living at home, metropolitan areas, 2001*-2011



* For US metropolitan areas, the data are for 2000.

FIGURE 14. Proportion of households with children aged 18 and under living at home, central cities and outskirts, metropolitan areas, 2011



2.3 Immigration and language

23% OF GREATER MONTRÉAL'S POPULATION IS BORN OUTSIDE THE COUNTRY

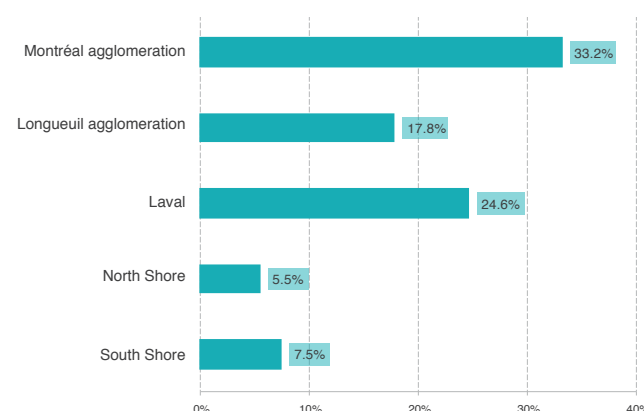
Among the major North American metropolitan areas, Greater Montréal has the ninth-highest proportion of immigrants in its total population (23.2%), after San Diego (23.4%), Calgary (26.2%), New York (29%), San Francisco (29.7%), Los Angeles (34.1%), Miami (38.2%), Vancouver (40%) and Toronto (46%).

Out of Greater Montréal's five geographic sectors, the Montréal agglomeration, which corresponds to the Island of Montréal, is the sector with the highest proportion of immigrants in its total population: one third of the population of this sector is born outside Canada, compared to 24.6% of the population of Laval, 17.8% of the population of the Longueuil agglomeration and 7.5% and 5.5% of the populations of the South and North Shores, respectively.

The top source countries of recent immigrants to Greater Montréal are, by order of importance, Algeria, Morocco, Haiti, France and China. These countries are also the top source countries for

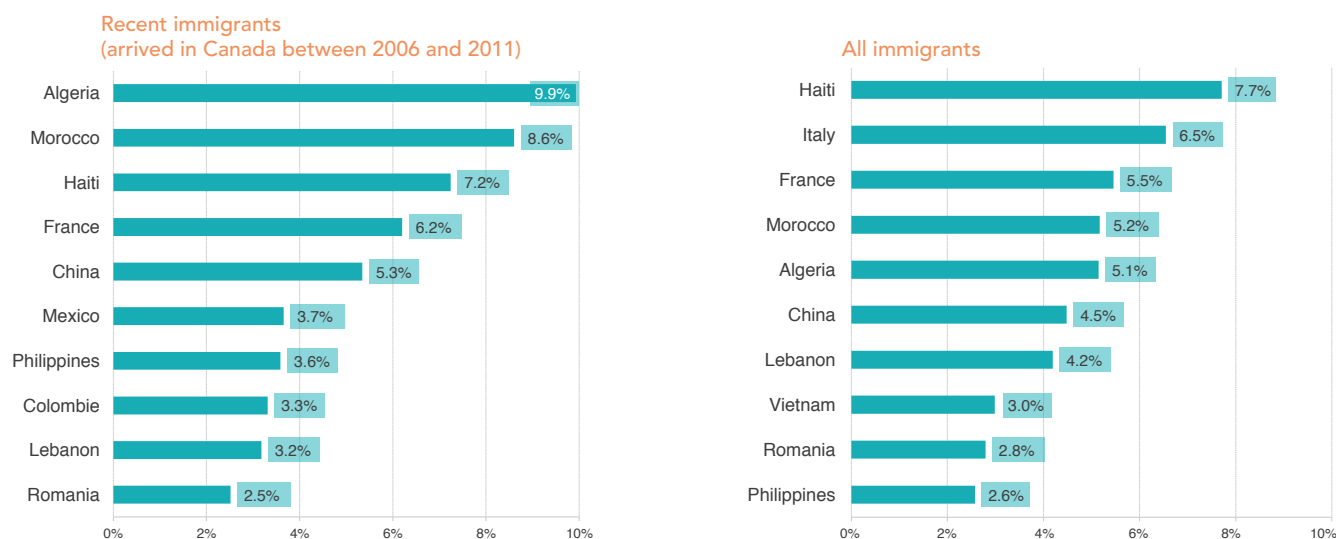
Greater Montréal's entire immigrant population, all immigration periods combined. The only exception is Italy, which is no longer one of the top source countries of recent immigrants, but is still the second largest source country for Greater Montréal's entire immigrant population.

FIGURE 15. Proportion of immigrants in the total population, five sectors of Greater Montréal, 2011



Source: Statistics Canada, 2011 National Household Survey (NHS). Processing: CMM, 2015.

FIGURE 16. Proportion of Greater Montréal immigrants based on top source countries, 2011



Source: Statistics Canada, 2011 National Household Survey (NHS). Processing: CMM, 2015.

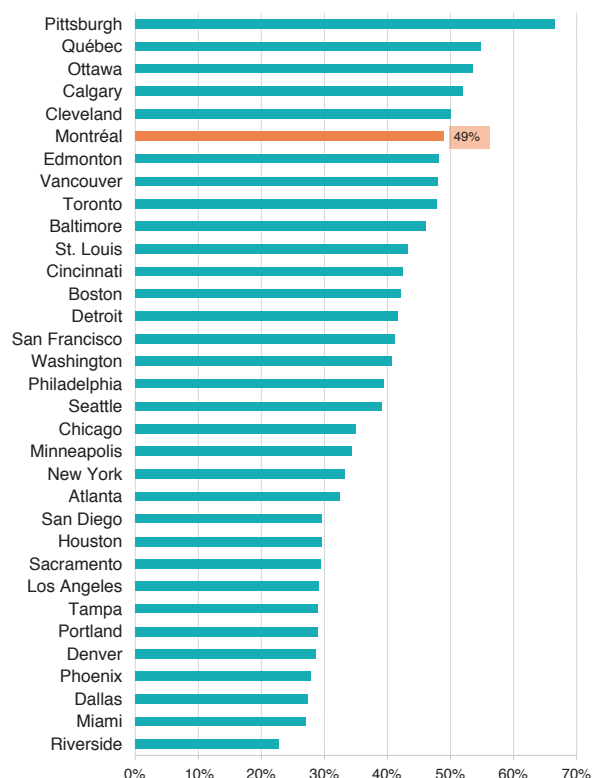
HALF OF RECENT IMMIGRANTS IN GREATER MONTRÉAL HAVE A UNIVERSITY DIPLOMA

Canadian metropolitan areas are ahead of US areas with regard to the university graduation rate of recent immigrants. Among the 10 North American metropolitan areas with the highest percentage of recent immigrants holding a university diploma, seven are located in Canada. In Greater Montréal, in 2011, 49% of recent immigrants had graduated from university. In general, metropolitan areas located in the southern US have the lowest university graduation rate among recent immigrants.

There is a downside, however, to the high education level of Greater Montréal immigrants. A much greater percentage of immigrants are overqualified for employment than non-immigrants. In Québec, in 2012, 43% of employed immigrants were considered overqualified, compared to 29.7% of the total population.⁴

Despite their high level of education, Greater Montréal immigrants who arrived in Canada between 2001 and 2011 have a much higher unemployment rate than immigrants who arrived during a previous immigration period and non-immigrants. Among the recent immigrants to major Canadian metropolitan areas, Greater Montréal immigrants have the highest unemployment rate, which was 15.7% in 2011, followed by Ottawa and Toronto with unemployment rates of 12.9% and 12.2%, respectively. In the Québec and Montréal census metropolitan areas (CMAs), non-immigrants have a lower unemployment rate than immigrants, all immigration periods combined, while in other Canadian metropolitan areas, immigrants who arrived before 1991 have a lower unemployment rate than non-immigrants.

FIGURE 17. Proportion of recent immigrants* with a bachelor's degree or higher, metropolitan areas, 2011

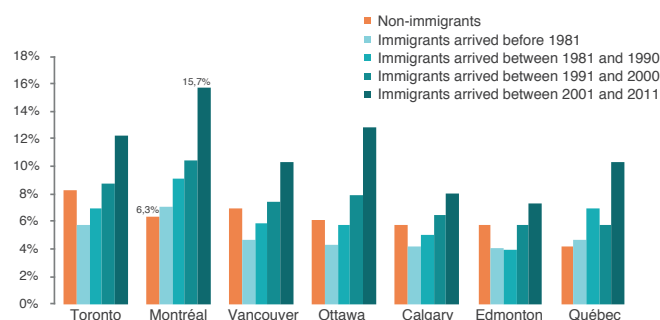


Note: For Greater Montreal, data are at the CMA level.

*For Canadian metropolitan areas, recent immigrants are those who immigrated between 2001 and 2011. In the US, they are those who immigrated between 2000 and 2011.

Sources: Statistics Canada, 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2011. Processing: CMM, 2015

FIGURE 18. Unemployment rate of immigrants and non-immigrants, major Canadian metropolitan areas, 2011



Note: For Greater Montreal, data are at the CMA level.

Sources: Statistics Canada, 2011 National Household Survey (NHS). Processing: CMM, 2015

⁴ MICC (2013). *Éléments explicatifs de la surqualification chez les personnes immigrantes au Québec en 2012*, 29 p.

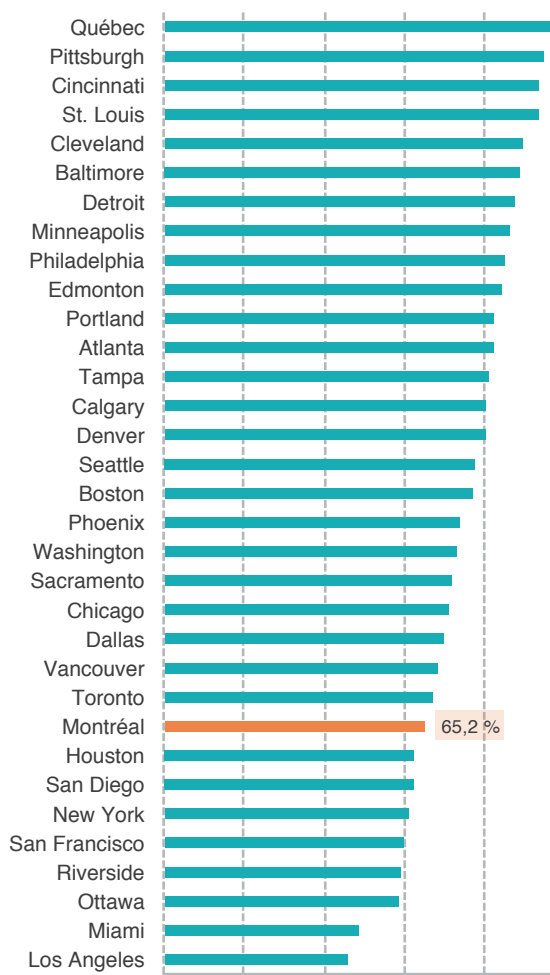
2/3 OF THE POPULATION SPEAKS FRENCH AT HOME

In Greater Montréal, French is the main language spoken at home by close to two-thirds of the population. As in other major North American metropolitan areas, because of historical context and immigration, several other languages are spoken as the main language at home, in addition to official languages.

In Greater Montréal, English also has an important presence and was the main language spoken at home by about 16.5% of the population in 2011. Nearly 12.8% of the population speaks a language other than French or English as the main language at home, while nearly 5.5% of the population speaks more than one language at home fluently.

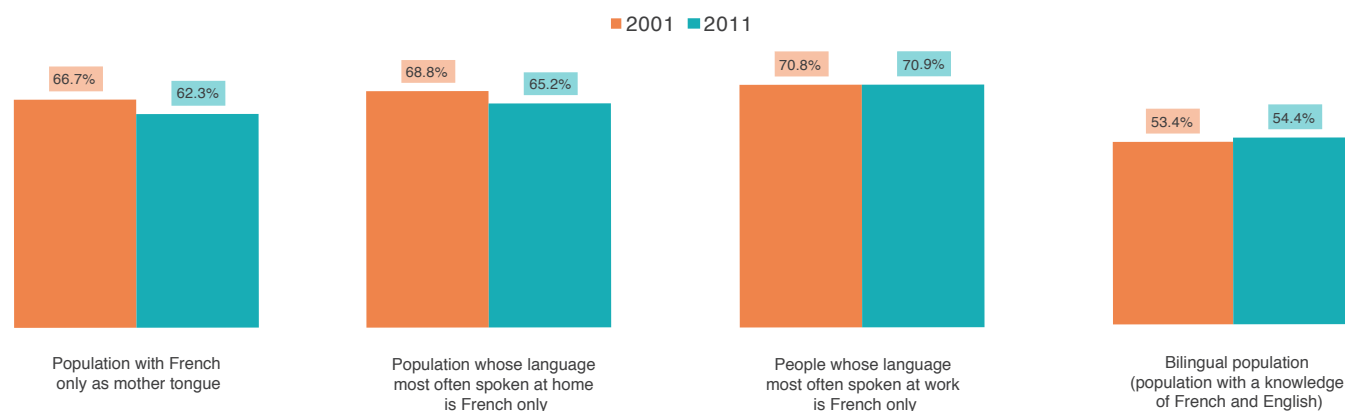
Between 2001 and 2011, as a result of international immigration, the percentage of the population speaking French as the main language at home, or whose mother tongue was French, declined slightly to the benefit of languages other than French or English. However, the percentage of people who use French as their main language at work remained stable between 2001 and 2011, at 71%. The percentage of the population who declared they could speak both French and English increased slightly from 53.4% to 54.4%.

FIGURE 19. Percentage of the population using only French (Montréal and Québec areas) or English (other metropolitan areas) as their main language at home, 2011



Sources: Statistics Canada, 2011 Census of Population; US Census Bureau, American Community Survey (ACS), 2011. Processing: CMM, 2015.

FIGURE 20. Use of French in Greater Montréal, 2001 and 2011



Sources: Statistics Canada, 2001 Census and 2011 National Household Survey (NHS). Processing: CMM, 2015.

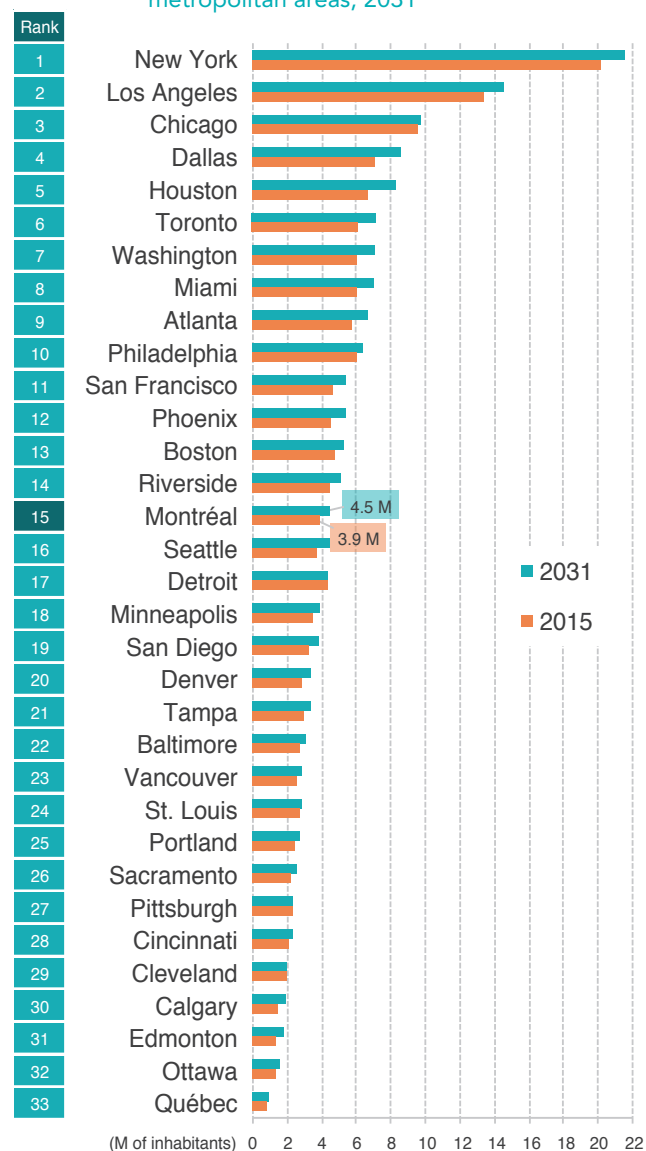
2.4 Demographic projections

4.5M PEOPLE IN GREATER MONTRÉAL BY 2031

If the current trend continues, in 2031, Greater Montréal should be the 15th most populous metropolitan area in North America. Its population will be larger than Detroit's, which experienced demographic stagnation between 2010 and 2015.

According to the most recent demographic projections of the Institut de la statistique du Québec, Greater Montréal's population should reach 4.5 million in 2031.

FIGURE 21. Population projections (in millions), metropolitan areas, 2031



Note: The population estimates shown in this figure are based on demographic growth observed between 2010 and 2015. For Montréal and the Québec metropolitan area, the findings have been adjusted to make them consistent with the population projections of the Institut de la statistique du Québec.

Sources: Institut de la statistique du Québec, *Perspectives démographiques, édition 2014*; Statistics Canada, *Annual population estimates by census metropolitan area, Canada —Population at July 1, 2006 to 2015*; US Census Bureau, *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015*.

Processing: CMM, 2016.

221,000 NEW HOUSEHOLDS AND 492,000 NEW PEOPLE BY 2031

This demographic growth will mean 492,000 new residents and 221,000 new households for Greater Montréal between 2016 and 2031. According to the demographic projections of the Institut de la statistique du Québec, the North Shore, followed by Laval and the South Shore, will post the highest growth rate in the next few years.

In absolute numbers, however, the Montréal agglomeration should welcome the highest number of new residents (181,830) and new households (81,660), followed by the North Shore (106,070 residents; 47,580 households), the South Shore (80,120 people; 37,090 households), Laval (76,560 people; 31,390 households) and the Longueuil agglomeration (47,830 people; 23,040 households).

FIGURE 22. Projected growth rate, population and households, five Greater Montréal sectors, 2016-2031

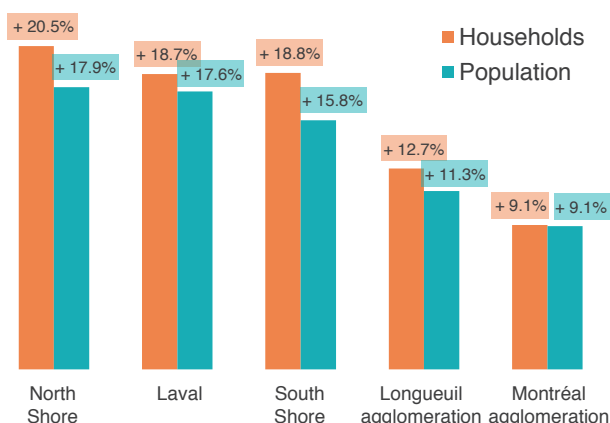
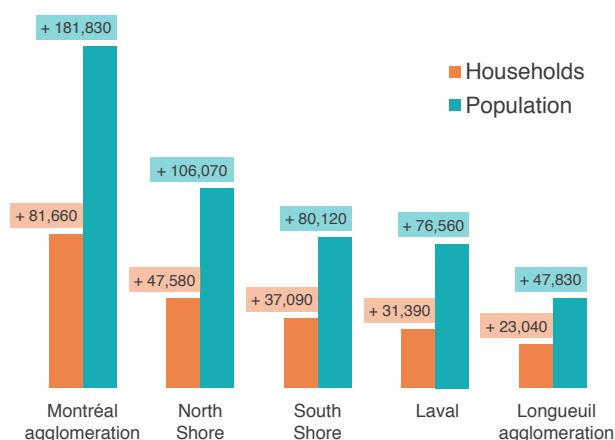


FIGURE 23. Projected growth in absolute numbers, population and households, five Greater Montréal sectors, 2016-2031



Sources: Institut de la statistique du Québec, *Perspectives démographiques*, édition 2014. Processing: CMM, 2015

DEMOGRAPHIC GROWTH STIMULATED PRIMARILY BY INTERNATIONAL IMMIGRATION IN THE CENTRE OF THE AREA AND BY INTRAMETROPOLITAN MIGRATION AND NATURAL GROWTH ON THE NORTH AND SOUTH SHORES

Natural growth should play a positive role in the demographic growth of each of the five sectors of Greater Montréal in the next few years. In fact, according to the reference scenario of the most recent demographic projections of the Institut de la statistique du Québec, between 2016 and 2031, the number of births should surpass the number of deaths in all of the Greater Montréal sectors.

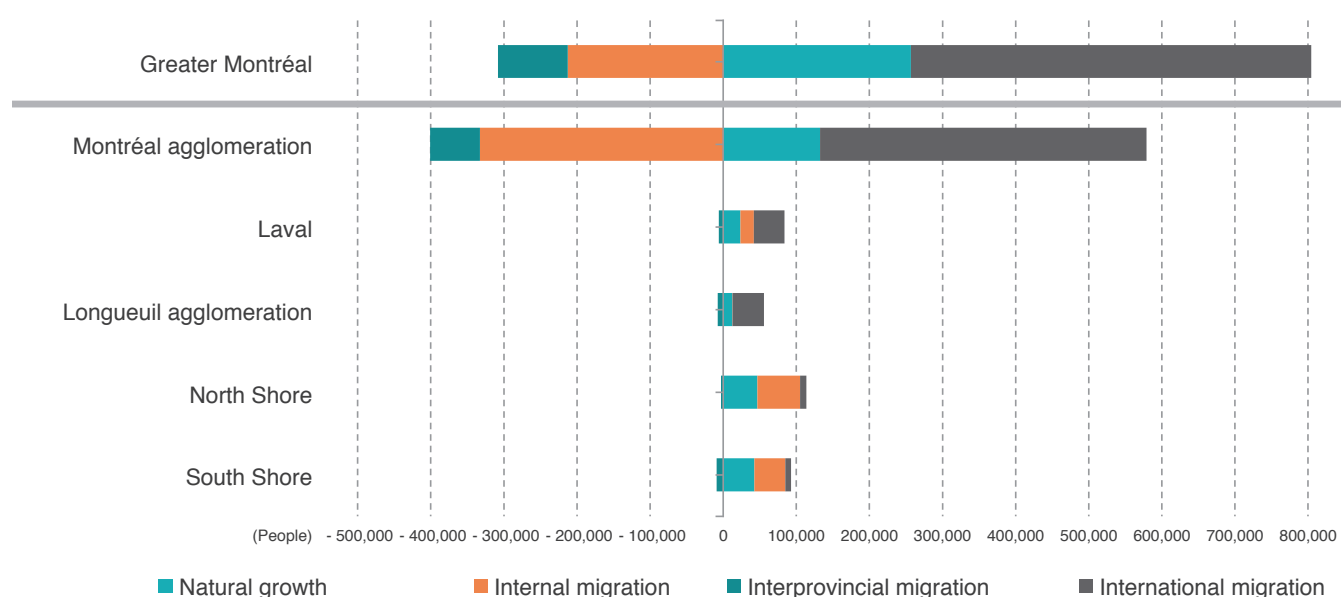
In the Montréal agglomeration, Laval and the Longueuil agglomeration, international migration should be the most important factor of demographic growth. Out of the 547,485 new residents expected to move to Greater Montréal through international immigration, the highest proportion, or 446,325 residents, should settle on the Island of Montréal.

Interprovincial migration is the only factor expected to have a negative impact on demographic growth in each of the five sectors of Greater Montréal. In total, the area is expected to lose 95,296 inhabitants between 2016 and 2031 to other Canadian provinces or territories.

Internal migration, or migration within the province of Québec, should continue to play a positive role in demographic growth for all of the sectors

of Greater Montréal, with the exception of the Montréal agglomeration. Laval, the Longueuil agglomeration, and the North and South Shores are expected to welcome residents from the rest of the province of Québec, while the Montréal agglomeration is the only sector that is expected to lose residents to internal migration by 2031. This can be explained, in particular, by migration from the Island of Montréal to the rest of the metropolitan area.

FIGURE 24. Components of projected demographic growth, 2016-2031, Greater Montréal and its five geographic sectors



	Estimation of the total population		Total growth	Component of growth			
	2016	2031		Natural growth	Internal migration	Interprovincial migration	International migration
			2016-2031	2016-2031	2016-2031	2016-2031	2016-2031
Montréal agglomeration	2,006,966	2,188,795	181,814	↑ 132,299	↓ -332,884	↓ -68,360	↑ 446,325
Laval	435,235	511,795	76,563	↑ 23,198	↑ 18,417	↓ -6,397	↑ 41,925
Longueuil agglomeration	423,591	471,425	47,838	↑ 12,009	↑ 585	↓ -7,892	↑ 42,735
North Shore ¹	606,657	715,634	109,003	↑ 46,476	↑ 58,563	↓ -3,367	↑ 8,610
South Shore ²	527,749	611,031	83,279	↑ 42,354	↑ 42,338	↓ -9,280	↑ 7,890
Greater Montréal ³	4,000,198	4,498,680	498,497	↑ 256,336	↓ -212,981	↓ -95,296	↑ 547,485

¹ The data presented here for the North Shore include the municipalities of Saint-Placide (1,700 inhabitants) and the Town and Parish of L'Épiphanie (8,800 inhabitants), which are not part of the CMM.

² The data presented here for the South Shore include the municipalities of Saint-Zotique (7,700 inhabitants), Les Coteaux (5,200 inhabitants) and Coteau-du-Lac (7,000 inhabitants), which are not part of the CMM, and exclude the municipalities of Contrecoeur (7,200 inhabitants), Calixa-Lavallée (500 inhabitants) and Saint-Jean-Baptiste (3,200 inhabitants), which are part of the CMM.

³ Consider the two notes above.

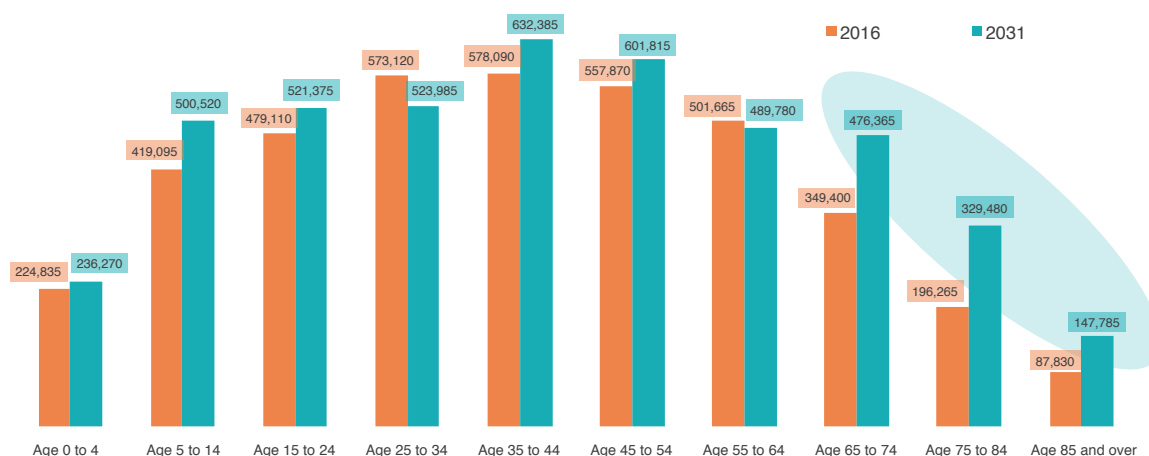
Source: Institut de la statistique du Québec, *Perspectives démographiques*, édition 2014. Processing: CMM, 2016.

THE 65 AND OVER GROUP EXPECTED TO GROW THE MOST BY 2031

The population of Greater Montréal will continue to age between 2016 and 2031, according to the most recent demographic projections of the Institut de la statistique du Québec. In the next 15 years, the population of people aged 65 and over should increase considerably with baby boomers, a cohort born between 1945 and 1965, gradually hitting retirement age. Other age cohorts

expected to post the most significant growth are the 5 to 24 and 35 to 54 age groups. Aging should, however, be less prominent in Greater Montréal than in the rest of the province of Québec, where the population of people aged 65 and over should increase from around 20% in 2016 to almost 30% in 2031. In Greater Montréal, it is expected to increase from 16% to 21%.

FIGURE 25. Projection of the population of Greater Montréal based on age group, 2016 and 2031

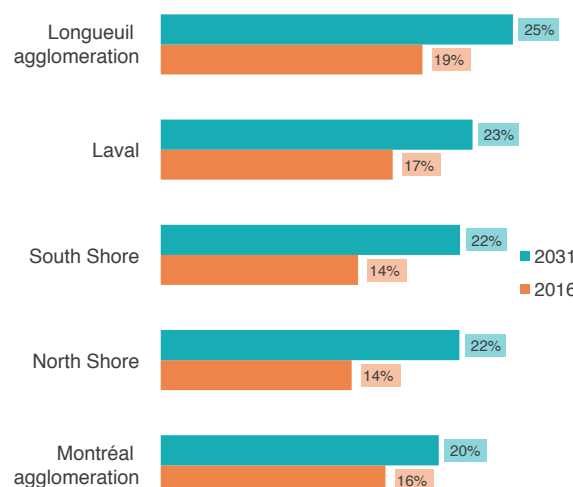


Source: Institut de la statistique du Québec, *Perspectives démographiques*, édition 2014. Processing: CMM, 2015.

Consistent with what has been observed in most North American metropolitan areas over the past few years, the population of the central area of Greater Montréal should age more slowly than the rest of the metropolitan area in the coming years.

This can be explained by the high number of recent immigrants — younger on average than the rest of the population — who are expected to continue to settle in the Montréal agglomeration, as well as the influx of young adults (mainly those in the 20 to 25 age group) from other sectors of the metropolitan area or the province of Québec.

FIGURE 26. Projection of the proportion of the population aged 65 and over, five geographic sectors, 2016 and 2031



Source: Institut de la statistique du Québec, *Perspectives démographiques*, édition 2014. Processing: CMM, 2015.

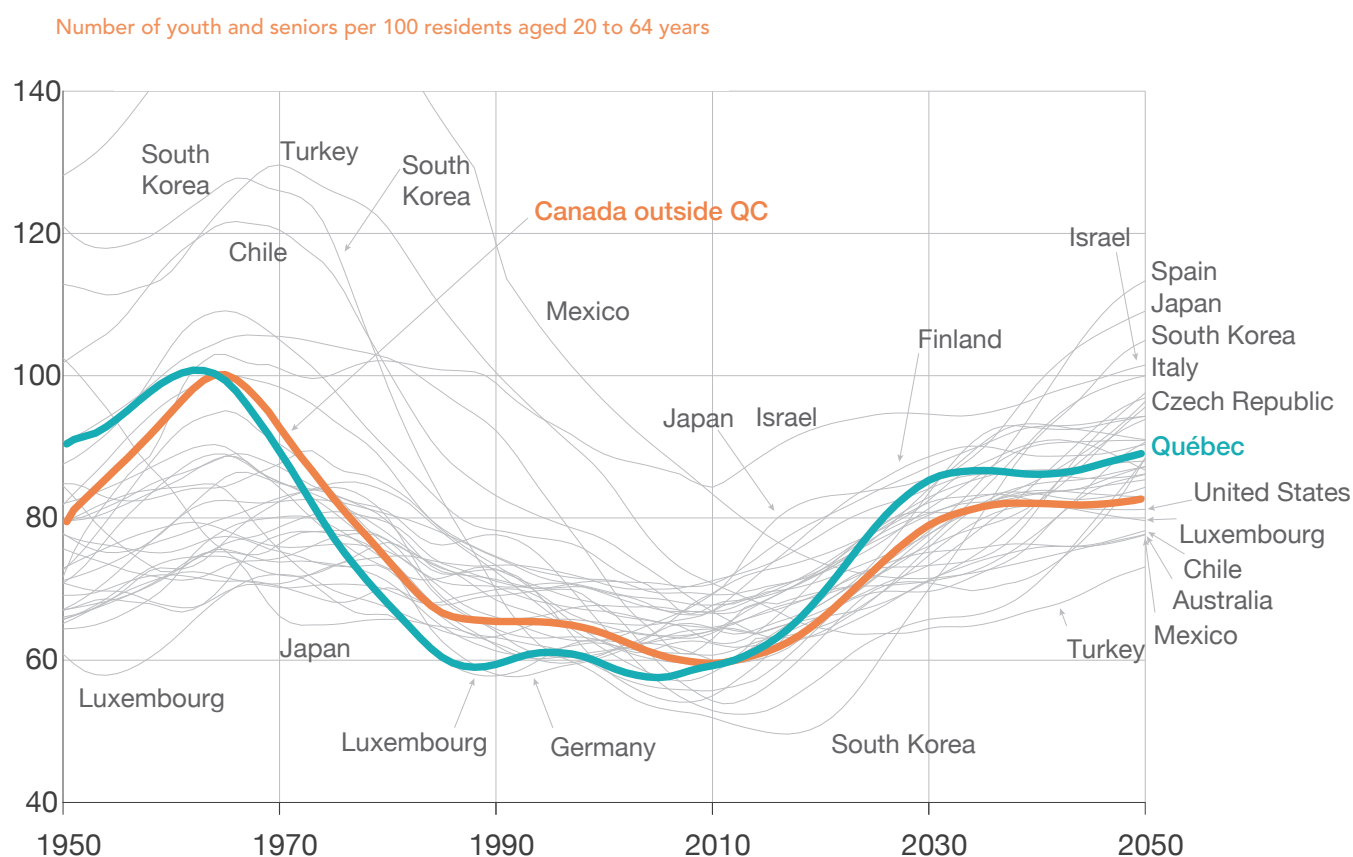
The proportion of the population aged 65 and over on the Island of Montréal is expected to increase from 16% in 2016 to 20% in 2031, representing the lowest increase and rate of the five sectors for 2031. The North and South Shores will see a significant increase in the proportion of people aged 65 and over, which will grow from 14% in 2016 to close to 22% in 2031. In 2031, the Longueuil agglomeration will post the highest increase in the proportion of the population aged 65 and over, i.e., 25%, followed by Laval with 23%.

An aging population is not a trend that is specific to the province of Québec, and it affects most metropolitan areas around the world to varying degrees. A recent study of the Institut de la statistique du Québec comparing the aging populations in the province and OECD countries shows that, since the beginning of the 2010s, with the first baby boomers (population born

between 1946 and 1965) hitting retirement age, the demographic dependency ratio (DDR), i.e., the ratio of the population aged 0 to 19 and 65 and over to the population aged 20 to 64,⁵ has risen considerably in the areas that were studied. One of the particularities of Québec is the speed at which the DDR will increase from 2010 to 2031. While in 2010 the province had one of the lowest DDRs of the OECD countries, in 2031, it could, however, have one of the highest DDRs. After 2031, the demographic dependency ratio is expected to stabilize and fall within the average of OECD countries in 2050. By 2050, Québec's DDR will be lower than it was in the 1950s and 1960s.

⁵ The demographic dependency ratio (DDR) is a measure of the economic effort made by the working-age population to support their children and parents, either directly or through their taxes. It is the ratio of the population generally considered as dependents, i.e., youth (0 to 19 age group) and seniors (65 and over), to the working-age population (20 to 64 age group).

FIGURE 27. Demographic dependency ratio (DDR), Canada outside Québec, Québec and OECD countries, 1950-2050



3.



**ECONOMY AND
QUALITY OF LIFE**



3.1	Labour market and economic base.....	48
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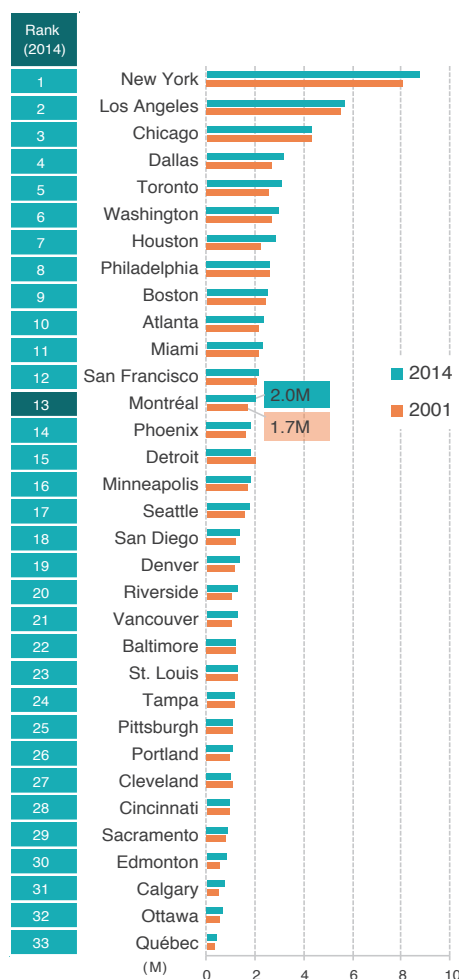
3.1 Labour market and economic base

13TH LARGEST LABOUR POOL IN NORTH AMERICA

In 2014, the Montréal metropolitan area boasted 2.02 million jobs, making it the 13th largest labour pool in North America. Between 2001 and 2014, the number of jobs in the area rose by about 300,000. In 2014, the employment rate (the number of employed people as a percentage of the total population aged 15 and over) was 60.7% in Greater Montréal, ranking the area in the middle of the

other metropolitan areas for this labour market indicator. Since 2001, the employment rate in Greater Montréal has been relatively stable compared to most US metropolitan areas, where employment rates have fallen almost systematically and often drastically. In Greater Montréal, the annual employment rate varied between 60% and 63% from 2001 to 2014.

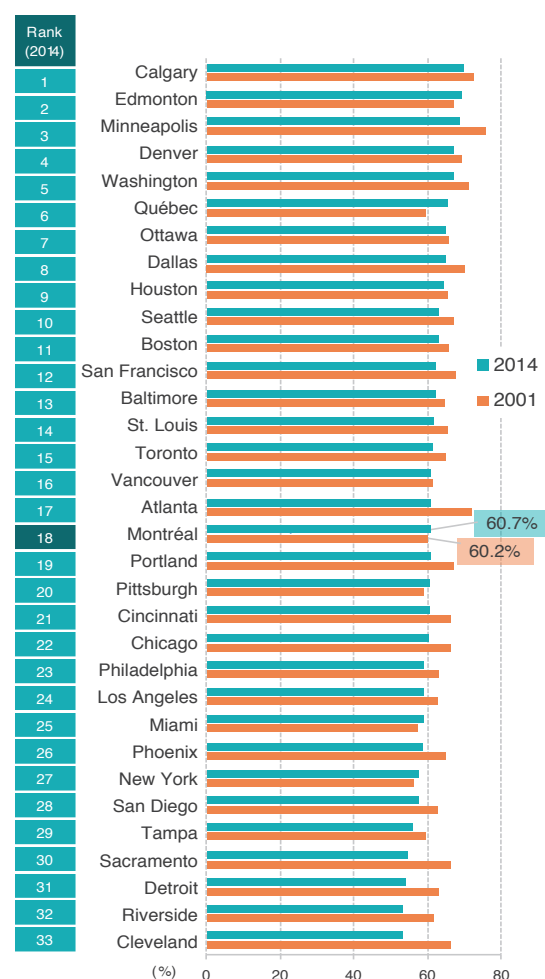
FIGURE 28. Total employment, metropolitan areas, 2001 and 2014



Note: For Greater Montréal, data are at the CMA level.

Sources: Statistics Canada, *Labour Force Survey (LFS)*, 2001 and 2014; Bureau of Labor Statistics, *QCEW*, 2001 and 2014. Processing: CMM, 2015.

FIGURE 29. Employment rates, metropolitan areas, 2001 and 2014



Notes:

- For Greater Montréal, data are at the CMA level.

- The employment rate is the number of employed people as a percentage of the population aged 15 and over.

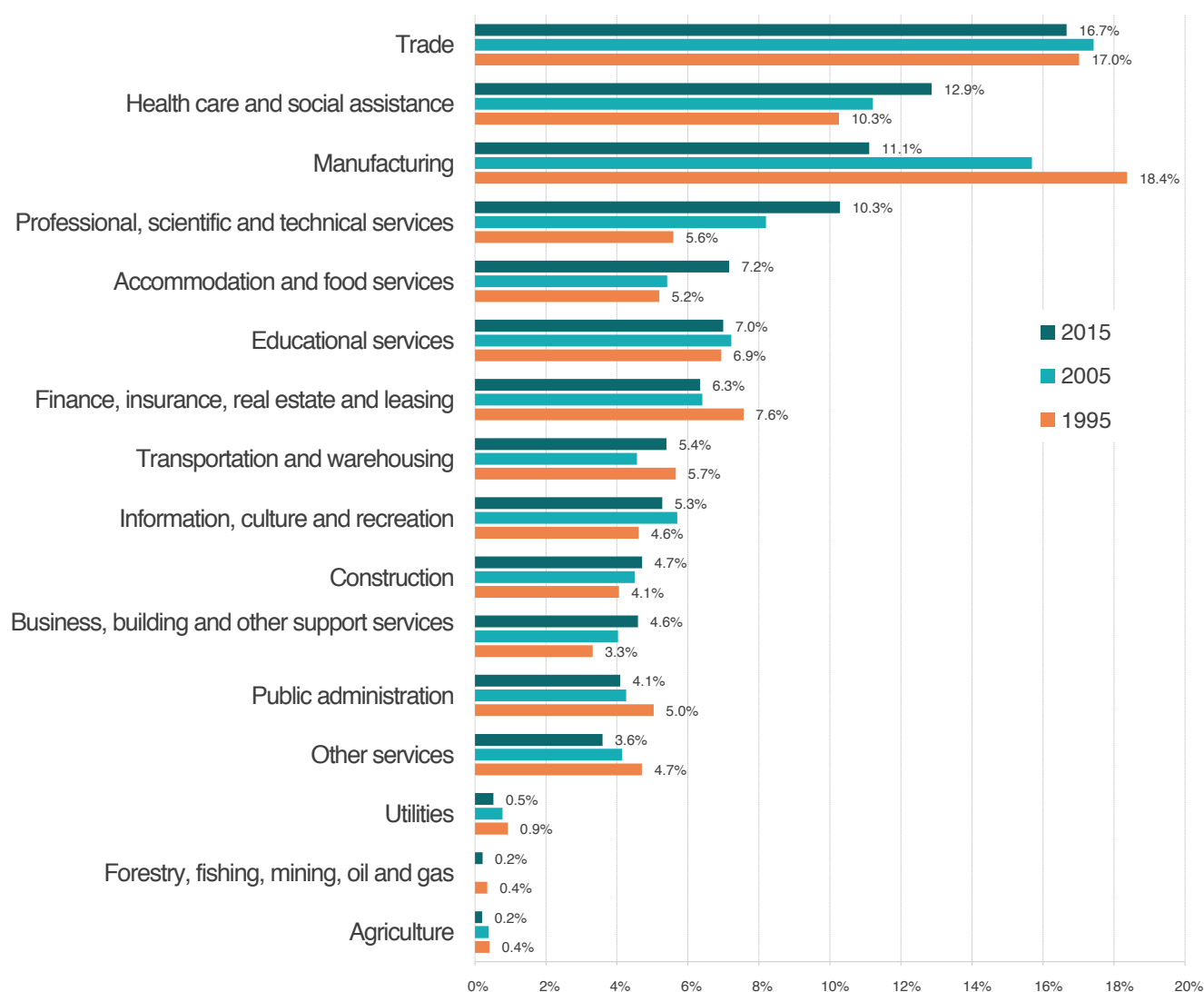
Sources: Statistics Canada, *Labour Force Survey (LFS)*, 2001 and 2014; Bureau of Labor Statistics, *LAUS*, 2001 and 2014. Processing: CMM, 2015.

JOBS CONSISTENTLY MORE CONCENTRATED IN SERVICES AND KNOWLEDGE INDUSTRIES

Over the past 20 years, Greater Montréal's economy has deindustrialized and become more based on services and knowledge. This shift to a service-based economy can be seen primarily in the considerable job growth in the professional, scientific and technical services industry (from 5.6% to 10.3% between 1995 and 2015) and, to a lesser

extent, in the health care and social assistance industry (from 10.3% to 12.9% between 1995 and 2015). At the same time, the share of jobs in manufacturing has dropped sharply in the last 20 years, from 18.4% of total employment in 1995 to 11.1% in 2015.

FIGURE 30. Percentage of jobs by industry, Montréal CMA, 1995, 2005 and 2015



Note: Data are at the Montréal CMA level.

Source: Statistics Canada, *Labour Force Survey (LFS)*, 1995, 2005 and 2015. Processing: CMM, 2016.

ECONOMIC BASE FOUNDED ON MANY INDUSTRIAL CLUSTERS OF EXCELLENCE

Compared to the rest of North America, Greater Montréal offers employment specialization in some 50 industries that make up its economic base.

Calculated using location quotients, the economic base of a metropolitan area includes the industries for which the concentration of employment is higher than that observed in a geographic reference area, which, in our case, is Canada and the US.⁶

The major industries for which the concentration of employment is higher in Greater Montréal than in the rest of North America (Canada and the US) are:

- Professional and technical services
- Wholesale trade
- Information and cultural industries
- Certain manufacturing industries
- Certain transportation industries, such as land passenger transport and support services (airport, port and brokers)
- Certain types of retail businesses and education institutions
- Financial and real estate services, including credit intermediation

As an international financial centre, Montréal was ranked, in 2016, 21st in the world and seventh in North America, behind Chicago, Toronto, Boston, San Francisco, Washington, D.C., and New York, according to the Global Financial Centres Index.⁷

TABLE 3. Greater Montréal's economic base, 2011

Industries	Location quotient (> 1.25)	Jobs (> 1,000)
Wholesale trade	1.87	98,550
E-commerce and agents and brokers	3.17	4,430
Building materials	2.37	14,365
Miscellaneous goods	2.31	11,745
Personal and household goods	2.29	25,420
Machinery, equipment and supplies	2.23	23,200
Motor vehicles and parts	1.56	4,870
Information and culture	1.67	64,315
Software publishers	6.84	5,990
Telecommunications	2.04	25,535
Motion picture and sound recording industries	1.87	9,965
Radio and television broadcasting (except pay TV)	1.55	8,035
Management of companies and enterprises	1.51	2,200
Professional and technical services	1.39	163,860
Design	2.07	8,330
Advertising	1.77	11,340
Computer systems design	1.74	39,415
Scientific R&D	1.60	11,705
Engineering and architecture	1.58	29,885
Accounting and bookkeeping	1.39	18,205
Market studies, surveys, etc.	1.26	10,885
Transportation	1.12	
Support (airport, port, brokers, etc.)	1.72	16,220
Land transportation (transit, school, taxi, etc.)	1.64	16,435
Air transportation	1.43	9,635
Rail transportation	1.39	4,500
Manufacturing	1.10	
Aerospace products	2.84	25,940
Clothing	2.76	9,660
Plastics	2.16	10,095
Leather products	1.82	1,090
Printing	1.64	12,300
Pharmaceutical products	1.55	8,355
Furniture	1.53	8,555
Electrical equipment	1.53	7,960
Paper	1.39	7,425
Beverages	1.31	3,630
Medical and measuring instruments	1.26	3,470
Retail trade	1.08	
Clothing and accessories	1.93	34,200
Furniture and home furnishings	1.51	9,840
Health and personal care products	1.48	24,545
Food	1.38	59,815
Finance and real estate	1.05	
Real estate, rental and leasing	1.60	7,520
Credit intermediation	1.27	50,090
Education	0.86	
Technical and trade schools	2.05	2,010
Cegeps and community colleges	1.39	14,840
Other (fine arts, sports, languages, etc.)	1.26	8,470
Other		
Electric power generation and distribution	1.50	14,695
Performing arts and spectator sports	1.43	12,840
Total – All industries	1.00	1,800,080

Note: Data are at the Montréal CMA level.

Sources: Statistics Canada, *National Household Survey (NHS)*, 2011; US Census Bureau, *American Community Survey (ACS)* and Bureau of Labor Statistics, *QCEW*. Processing: CMM, 2015.

⁶ The location quotients in Table 3 show the ratio between the share of employment in industry X in the Montréal CMA and the share of employment in that industry in all of Canada and the US. A location quotient of more than 1 indicates a higher intensity of employment in the area than its weight in all of Canada and the US.

⁷ GFCI 19 (March 2016). The Global Financial Centres Index (GFCI) is a ranking of the competitiveness of financial centres published twice per year by the Z/Yen Group. In March 2016, it assessed 86 global financial centres. Since the index's first publication in March 2007, Montréal has been ranked year after year among the top 30 financial centres in the world.

Even though Greater Montréal's share of jobs in manufacturing has been declining sharply over the last 10 years, some manufacturing industries are still important to the metropolitan area's economic base. This is especially true in the aerospace, clothing and plastics industries.

Montréal is the third largest global centre for the aerospace industry, after Toulouse and Seattle.

BOX 1.

2015-2020 METROPOLITAN ECONOMIC DEVELOPMENT PLAN AND THE INDUSTRIAL CLUSTERS STRATEGY

Adopted by the CMM Council on April 30, 2015, the *2015-2020 Metropolitan Economic Development Plan* (MEDP) proposes the CMM's economic strategy for orienting the efforts of the area's development stakeholders and enabling Greater Montréal to achieve its full potential. Since 2005, supporting metropolitan clusters has been the focus of the CMM's economic development plans. Funding for some of the metropolitan clusters has reached the end of its third three-year renewal period.

Cluster initiatives are one of the strongest links in the metropolitan economy. They are the result of an industrial mobilization and supported by a shared vision. The metropolitan clusters' success and the benefits of their endeavours increase the competitiveness of the industries they represent. Greater Montréal has nine structured clusters, which, by the end of the activation phase, have managed to engage manufacturers, promote projects and achieve some level of international recognition. The industrial clusters activated in the Montréal metropolitan area include aerospace, life sciences, information and communications technology, clean technology, logistics and transportation, financial services, film and television, aluminum and fashion.

The clusters help enhance the metropolitan area's international positioning by encouraging the attraction of foreign direct investment and highly skilled workers.

2015-2020 Metropolitan Economic Development Plan:

http://cmm.qc.ca/fileadmin/user_upload/documents/20150617_medp-2015-2020.web.pdf

Montréal Clusters: <http://grappesmontreal.ca/home/>

3.2 Human capital

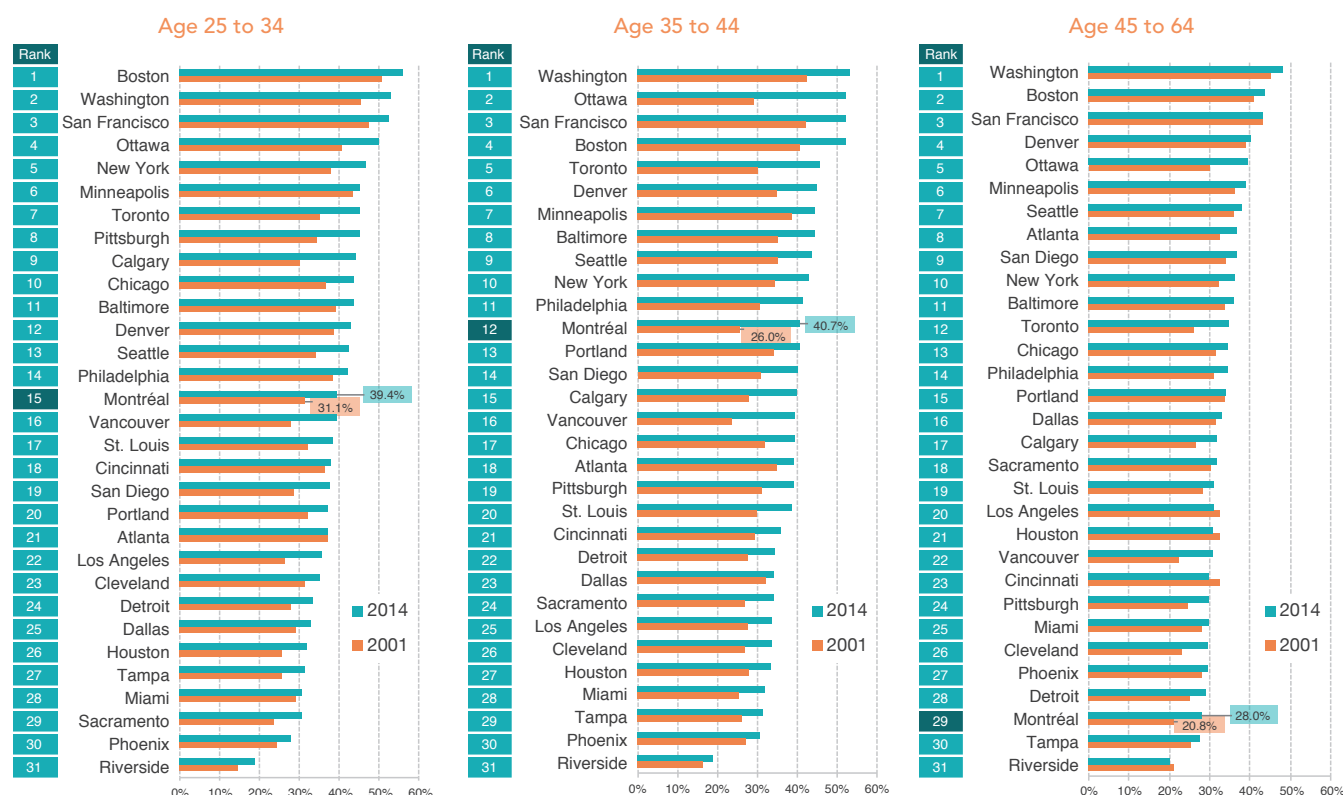
4TH HIGHEST INCREASE IN UNIVERSITY GRADUATION RATE IN NORTH AMERICA SINCE 2001

For a long time, Greater Montréal had one of the poorest university graduation rates in North America, but in the past few years it has been catching up rapidly. From 2001 to 2014, the university graduation rate for the population aged 25 to 64 rose from 25.1% to 34.2% in the Montréal CMA, representing the fourth highest increase in university graduation rates among the major metropolitan areas in North America, just behind the Canadian areas of Ottawa, Vancouver and Toronto.

For young people (25 to 34 age group), the university graduation rate went from 31.1% to 39.4% between 2001 and 2014, while it rose from 26% to 40.7% for people aged 35 to 44 in the same period.

For the population aged 45 to 64, the rate went from 20.8% to 28% in the same period. The university graduation rate for this age group is still one of the lowest in the major metropolitan areas in North America.

FIGURE 31. Proportion of the population with a university diploma, by age group, metropolitan areas, 2001 and 2014



Note: For Montréal, the data are at the Montréal CMA level. We do not have data for the Québec and Edmonton CMA's.

Sources: Statistics Canada, *Labour Force Survey (LFS)*, 2001 and 2014; US Census Bureau, *American Community Survey (ACS)*, 2011 and 2014. Processing: CMM, 2015.

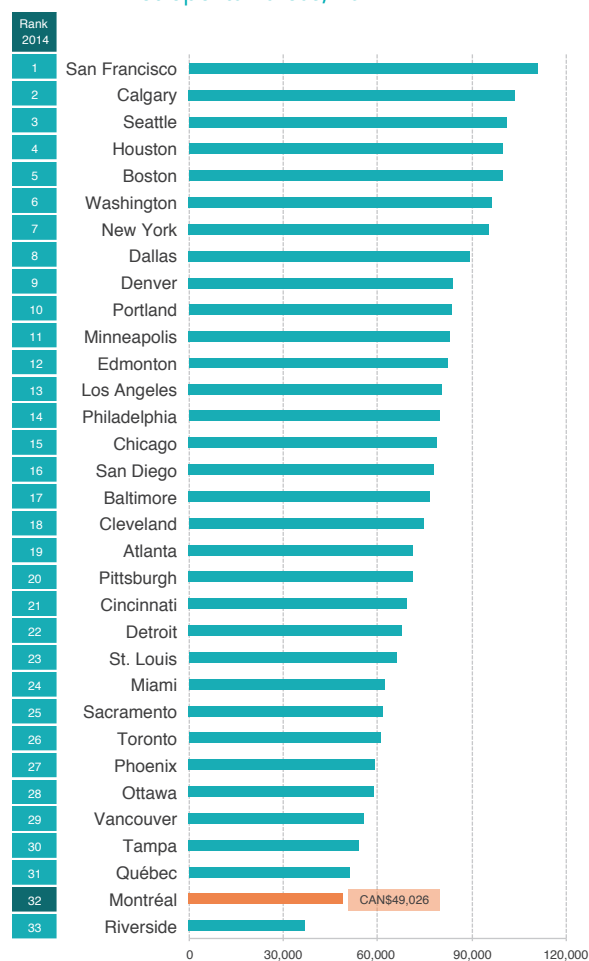
3.3 Gross Domestic Product (GDP) and wages

GDP AND WAGES REMAIN MODEST COMPARED TO OTHER NORTH AMERICAN METROPOLITAN AREAS

With the exception of Alberta metropolitan areas, whose economies depend largely on the oil industry, Canadian metropolitan areas are struggling to attain a productivity level similar to that of their US counterparts. In 2014, five of the eight metropolitan areas that posted the lowest

GDP per capita in North America were Canadian. Greater Montréal is ranked 32nd out of 33 for its GDP per capita, just ahead of Riverside, which has the lowest university graduation rate out of the major metropolitan areas in North America.

FIGURE 32. GDP per capita (current CAN\$), metropolitan areas, 2014

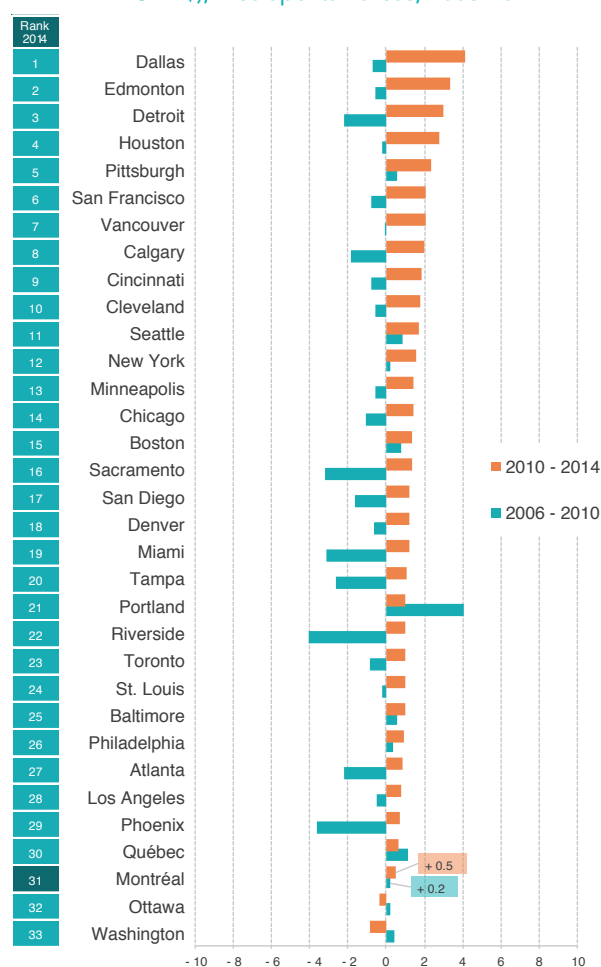


Notes:

- The data for the Canadian areas that were supplied in 2002 constant dollars by the Conference Board of Canada were converted into 2014 current dollars using GDP provincial data provided by Statistics Canada.
- The GDP of the US areas was converted into Canadian dollars using the OECD's purchasing power parity (PPP) exchange rate, which eliminates price level differences among countries.
- For Greater Montréal, data are at the CMA level.

Sources: Conference Board of Canada; Statistics Canada, CANSIM – Provincial and Territorial Economic Accounts; Statistics Canada, Census of Population; Statistics Canada, Annual Demographic Estimates: Subprovincial Areas; Bureau of Economic Analysis, Gross Domestic Product (GDP) by State and Metropolitan Area; US Census Bureau, Population Estimates. Processing: CMM, 2016.

FIGURE 33. Change in GDP (%) per capita (in 2014 constant CAN\$), metropolitan areas, 2006-2014



Empirical data in urban economics have proven that education is a key factor in the productivity of metropolitan areas.⁸ However, despite rising education levels (see p. 52), Canadian metropolitan areas do not seem to be able to catch up to US metropolitan areas in terms of productivity.⁹

Wages are also lower in Canadian metropolitan areas than in the US. Besides Riverside, the lowest wage rates are found in Canadian metropolitan areas. Greater Montréal is ranked 32nd out of 33, ahead of the Québec area.

⁸ See, for example, Glaeser Edward L. and Albert Saiz (2004) "The Rise of the Skilled City." *Brookings-Wharton Papers on Urban Affairs*, 5: 47-94.

⁹ There is no consensus on why this gap is persisting. An inadequate calculation of GDP or purchasing power parities between the US and Canada is one of the possible explanations. The gap could also be due to the difficulties involved in adjusting the productive apparatus, resulting in an increasing overqualification of labour.

At the end of the 2000s, the Great Recession hit the US hard, making wages (in constant dollars) stagnate and even fall. Canadian metropolitan areas were spared the worst of the recession, and their wage rates rose more than in the US, although only slightly. From 2004 to 2009, the highest wage increases were in Canadian metropolitan areas and Houston.

In the 2010s, economic growth continued to be moderate in Canada, with the exception of Alberta. However, in 2011, employment started to pick up in the US, and the American unemployment rate shrunk to 6.2% in 2014, increasing pressure on wages. The economic situation is now reversed, and the five Canadian metropolitan areas outside Alberta had the lowest wage gains from 2010 to 2014.

FIGURE 34. Average weekly wage rates (current CAN\$), metropolitan areas, 2014

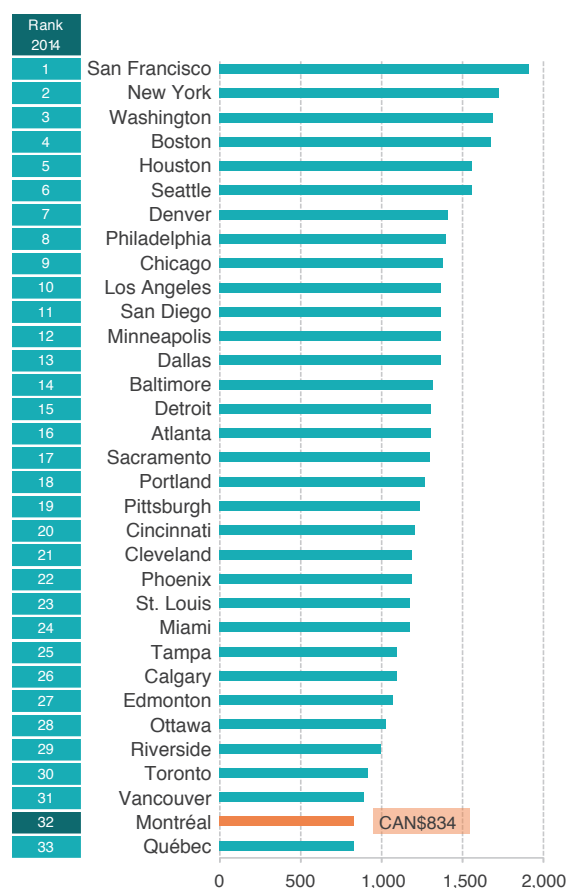
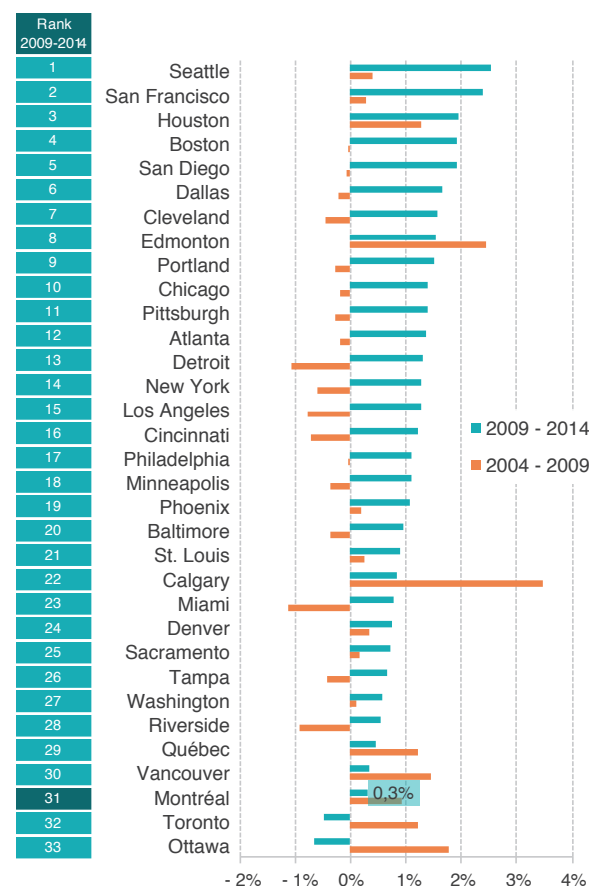


FIGURE 35. Increase (%) in average weekly wage rates per capita (2014 constant CAN\$), metropolitan areas, 2004-2014



Sources: Statistics Canada, *Labour Force Survey (LFS)* and *Consumer Price Index*; US Bureau of Labor Statistics, *QCEW*, *Consumer Price Index - All Urban Consumers*. Processing: CMM, 2016.

3.4 Business costs and cost of living

SOME OF THE LOWEST BUSINESS AND LIVING COSTS

With relatively low GDP and wages, Greater Montréal and other Canadian metropolitan areas also have some of the lowest business and living costs in North America.

Based on KPMG's *Competitive Alternatives 2016* study, which compares business start-up and operating costs in more than 100 cities in 10 countries,¹⁰ Montréal is the city with the lowest business costs, just after the Québec metropolitan area and the Mexico and Monterrey metropolitan areas in Mexico.

These relatively low business costs can be explained, in particular, by low wages and, more recently, by the weak Canadian dollar compared to the US dollar and European currencies. Montréal is also ranked first among the 20 largest cities in North America for the competitiveness of its business tax burden, all sectors combined.

In 2016, the industries for which Montréal has the lowest business costs, compared to other North American metropolitan areas, are clinical trial management, video game design, international financial services, electronic systems testing, and biomedical research and development.¹¹

TABLE 4. KPMG Business Cost Index, 2010 and 2016
(51 cities with the lowest business costs among the 111 cities covered by the index)

Cities	Rank			Index		
	2010	2016		2010	2016	
Monterrey	1	1	-	81.5	76.5	↓
Mexico	2	2	-	82.1	78.6	↓
Québec	3	3	-	92.4	83.9	↓
Montréal	4	4	-	94.2	85.2	↓
Toronto	7	5	↓	95.8	85.6	↓
Vancouver	6	6	-	94.9	86.2	↓
Edmonton	10	7	↓	96.7	86.4	↓
Manchester	5	8	↑	94.7	86.4	↓
Calgary	-	9	-	N/A	87.0	-
Rotterdam	46	10	↓	N/A	87.5	-
Amsterdam	11	11	-	96.7	87.8	↓
Melbourne	12	12	-	96.7	88.8	↓
Rome	35	13	↓	100.9	89.1	↓
Marseille	47	14	↓	N/A	89.4	-
Milan	26	15	↓	99.0	89.5	↓
Sydney	24	16	↓	98.9	90.1	↓
Brisbane	16	17	↑	97.3	90.3	↓
Paris	32	18	↓	100.1	91.7	↓
Osaka	43	19	↓	106.4	91.8	↓
Berlin	38	20	↓	101.7	91.9	↓
Frankfurt	41	21	↓	103.6	92.8	↓
Tokyo	44	22	↓	108.9	93.6	↓
Cincinnati	-	23	-	N/A	94.0	-
Cleveland	-	24	-	N/A	94.6	-
Indianapolis	15	25	↑	97.2	94.6	↓
Tampa	8	26	↑	96.0	94.6	↓
Atlanta	9	27	↑	96.3	95.1	↓
Miami	13	28	↑	97	95.4	↓
London	39	29	-	101.7	95.4	↓
St. Louis	18	30	↑	97.8	96.1	↓
Dallas	17	31	↑	97.7	96.2	↓
Phoenix	20	32	↑	98.1	96.2	↓
Baltimore	14	33	↑	97.1	96.5	↓
Detroit	22	34	↑	98.5	96.8	↓
Minneapolis	27	35	↑	99.0	96.8	↓
Pittsburgh	-	36	-	N/A	97.0	-
Houston	19	37	↑	97.9	97.6	↓
Portland	25	38	↑	98.9	97.6	↓
Denver	30	39	↑	99.6	97.8	↓
Las Vegas	31	40	↑	99.8	98.0	↓
Chicago	23	41	↑	98.8	98.3	↓
Riverside	29	42	↑	99.5	98.5	↓
Sacramento	-	43	-	N/A	98.5	-
Washington, D.C.	28	44	↑	99.0	99.4	↑
Philadelphia	21	45	↑	98.3	99.8	↑
San Diego	36	46	↑	100.9	99.9	↓
Los Angeles	37	47	↑	101.4	100.8	↓
Seattle	33	48	↑	100.1	100.8	↑
Boston	34	49	↑	100.8	101.2	↑
San Francisco	42	50	↑	104.1	104.5	↑
New York	40	51	↑	102.0	104.7	↑

■ = North American cities

Notes:

- The 100 index corresponds to the average costs of the four largest metropolitan areas in the US, i.e., New York, Los Angeles, Chicago and Dallas.
- This index covers most of the major metropolitan areas in 10 countries, i.e., Australia, Canada, France, Germany, Italy, Japan, Mexico, the Netherlands, the United Kingdom and the US.

Source: KPMG, *Competitive Alternatives*, 2010 and 2016. Processing: CMM, 2016.

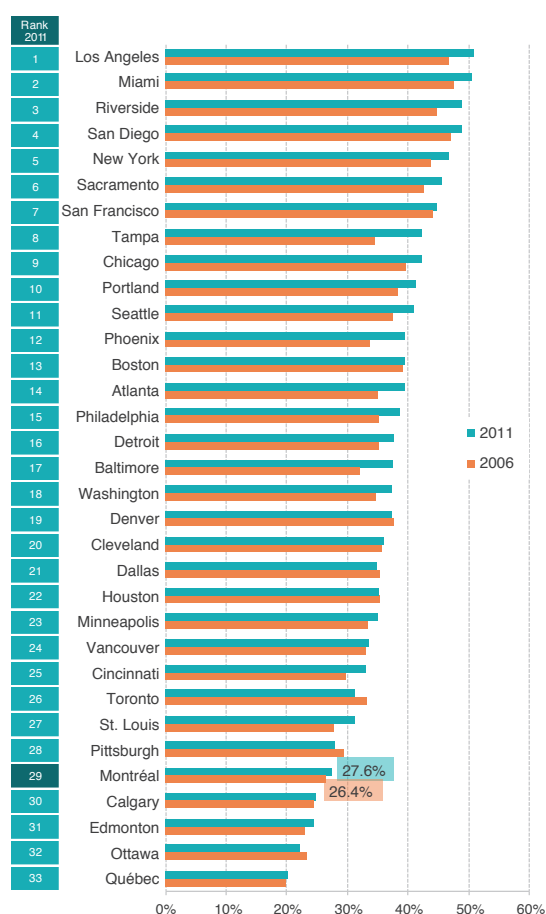
¹⁰ These 10 countries are Germany, Australia, Canada, the US, France, Italy, Japan, Mexico, the Netherlands and the United Kingdom.

¹¹ KPMG's *Competitive Alternatives 2016* study measures and analyses the impact of 26 key cost components across seven business-to-business service segments and 12 significant manufacturing sectors.

Regarding housing — the main source of household spending — Greater Montréal is among the most affordable North American metropolitan areas relative to household income. In 2011, the share of households (owners and tenants) spending 30% or more of their gross income on housing was among the lowest in North America (27.6%). Only four metropolitan areas, all Canadian, had a housing market that was more affordable relative to household income: Calgary, Edmonton, Ottawa and Québec.¹²

¹² More specific Canadian data on affordability and access to property are provided on page 84.

FIGURE 36. Proportion of households spending 30% or more of their gross income on housing, metropolitan areas, 2006 and 2011



Sources: Statistics Canada, 2006 Census of Population and 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2006 and 2011. Processing: CMM, 2015.

The Mercer Cost of Living Index, which ranks the cost of living in 211 cities on six continents, also shows that the cost of living in the Montréal metropolitan area is one of the lowest in North America. This index is based on the cost of more than 200 goods and services, such as housing, transportation, food, clothing and leisure.

In 2015, among the 22 North American metropolitan cities included in the Mercer rankings, only Calgary and Ottawa had a lower cost of living than Montréal.

TABLE 5. Mercer Cost of Living Index, North American cities, 2009 and 2015

2015 rank (out of 207 world cities)	2009 rank (out of 143 world cities)	North American cities
16	8	New York
36	23	Los Angeles
37	34	San Francisco
42	50	Chicago
50	66	Washington, D.C.
56	45	Miami
64	60	Boston
77	-	Dallas
92	63	Houston
103	75	Atlanta
106	84	Seattle
115	-	Minneapolis
119	93	Vancouver
122	114	Detroit
126	85	Toronto
130	117	Pittsburgh
130	99	St. Louis
133	97	Cleveland
135	109	Portland
140	103	Montréal
146	89	Calgary
162	121	Ottawa

Note: The 2015 index is based on 207 cities versus 143 for the 2009 index. These cities are spread across six continents. In Canada, Edmonton and Québec are not included in this ranking.

Source: Mercer, 2009-2015 Cost of Living Rankings. Processing: CMM, 2016

3.5 Quality of life indices

QUALITY OF LIFE: ONE OF GREATER MONTRÉAL'S STRENGTHS

Montréal is recognized for its quality of life not only in North America but also around the globe. The factors most often cited in rankings that make Montréal a great city to live in are its multicultural aspects, multiple artistic and cultural events, good infrastructure, especially public transit, and low crime rate.

One of the best-known quality-of-life rankings in the world is the Mercer Quality of Life Index, which ranks Montréal 23rd among the cities with the best quality of life in the world and fourth in North America, behind the Canadian cities of Ottawa, Toronto and Vancouver. The Economist Intelligence Unit's annual Global Liveability Ranking places Montréal 14th in the world and fourth in North America behind Calgary, Toronto and Vancouver.

TABLE 6. Mercer Quality of Life Index, 2006 and 2016

Top 30		Cities
2016	2006	
1	4	Vienna
2	1	Zurich
3	5	Auckland
4	8	Munich
5	3	Vancouver
6	6	Dusseldorf
7	7	Frankfort
8	2	Geneva
9	11	Copenhagen
10	9	Sydney
11	13	Amsterdam
12	12	Wellington
13	16	Berlin
14	9	Bern
15	15	Toronto
15	17	Melbourne
17	18	Ottawa
18	26	Hamburg
19	18	Luxembourg
19	20	Stockholm
21	14	Brussels
21	21	Perth
23	22	Montréal
24	23	Nuremberg
26	34	Singapore
27	29	Adelaide
28	28	San Francisco
28	-	Canberra
Top 40		North American Cities
32	25	Calgary
34	36	Boston
Top 50		North American Cities
43	41	Chicago
44	46	New York
46	47	Seattle
49	55	Los Angeles

■ = North American cities

Note: The Mercer index is based on a selection of 230 cities.

Source: Mercer, *Quality of Living Survey*, 2006 and 2015.

Processing: CMM, 2016.

TABLE 7. EIU Global Liveability Ranking, 2010 and 2015

2015	Top 30	2010	Cities
1		3	Melbourne
2		2	Vienna
3		1	Vancouver
4		4	Toronto
5		8	Adelaide
5		5	Calgary
7		7	Sydney
8		8	Perth
9		10	Auckland
10		6	Helsinki
10		11	Zurich
12		12	Geneva
13		14	Hamburg
14		16	Montréal
15		18	Frankfort
15		18	Tokyo
17		12	Osaka
18		21	Brisbane
19		30	Honolulu
20		22	Berlin
21		23	Wellington
22		20	Copenhagen
23		24	Oslo
24		14	Stockholm
24		25	Luxembourg
26		26	Amsterdam
27		27	Brussels
28		28	Munich
29		16	Paris
30		34	Lyon
Top 40		North American Cities	
31		35	Washington, D.C.
33		37	Atlanta
33		32	Chicago
36		41	Boston
37		37	Miami
39		29	Pittsburgh
40		44	Cleveland
40		41	Minneapolis
Top 50		North American Cities	
46		45	Seattle
49		52	San Francisco

■ = North American cities

Note: The EIU index is based on a selection of 140 cities.

Source: The Economist Intelligence Unit, *Global Liveability Ranking*, 2010 and 2015. Processing: CMM, 2016.

VIOLENT CRIME RATE AMONG THE LOWEST IN MAJOR NORTH AMERICAN METROPOLITAN AREAS

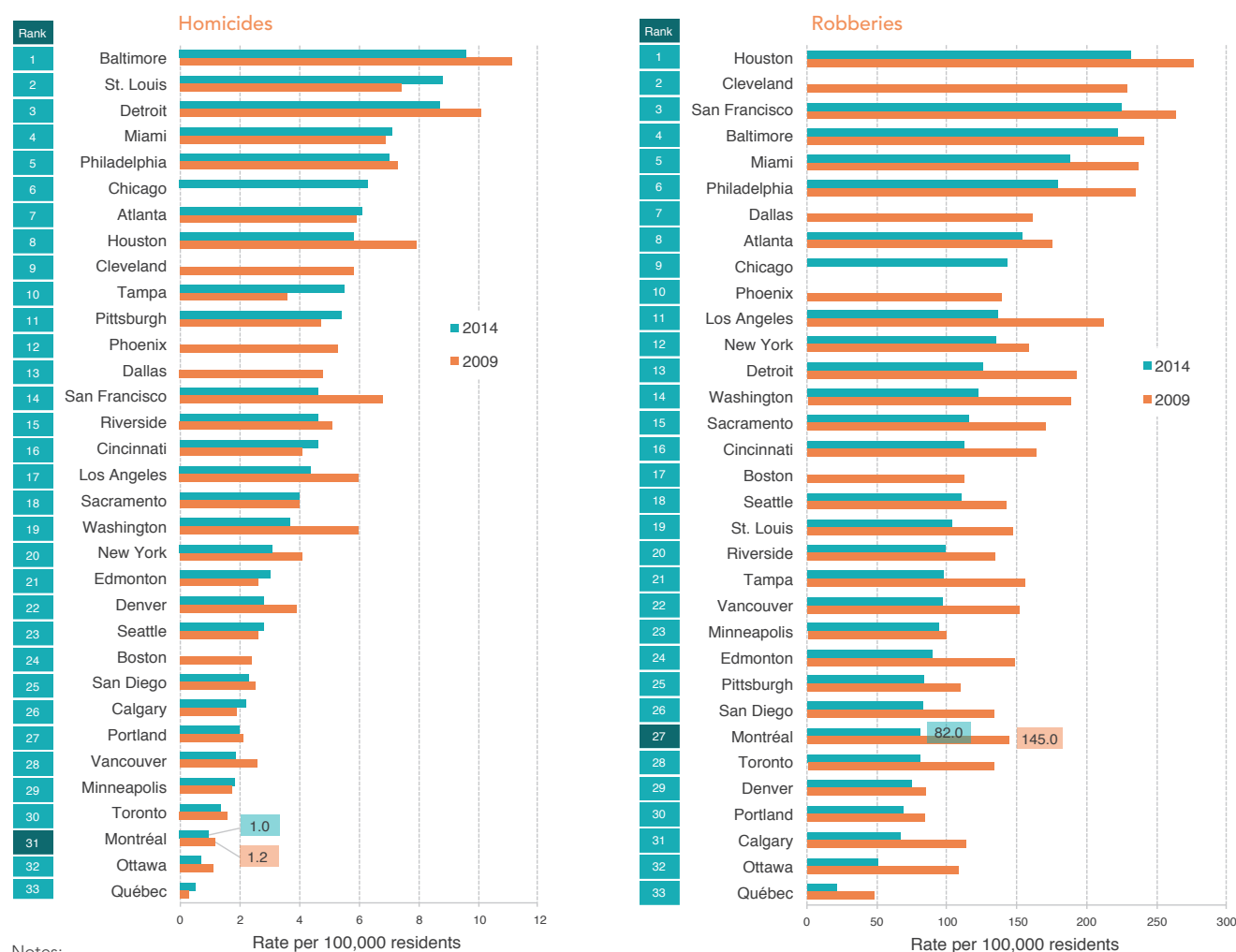
The degree of urban safety is one of the key factors that affect the quality of life and attractiveness of large cities and metropolitan areas, and it is pivotal for many quality of life indices. In Canada, with lower income inequality and fewer firearms in circulation, the crime rate is not as high as in the US.

Consequently, Greater Montréal, along with the Ottawa and Québec metropolitan areas, has the lowest homicide rate of the major North American metropolitan areas. As for robberies, another crime

category on which Canada and the US can be compared, Greater Montréal ranks seventh out of the North American metropolitan areas with the lowest rate per 100,000 residents.

In general, violent crimes are declining in major North American metropolitan areas. In Greater Montréal, between 2009 and 2014, the robbery rate fell from 145 to 82 per 100,000 residents and the homicide rate dropped from 1.2 to 1.0 per 100,000 residents.

FIGURE 37. Homicides and robberies, rate per 100,000 residents, metropolitan areas, 2009 and 2014



Notes:

- For Greater Montréal, the data are at the CMA level.
- For Ottawa, the data only cover the Ontario part of the Ottawa-Gatineau CMA.
- In Canada and in the US, a robbery is defined as a theft that includes violence or a threat of violence.

Sources: Statistics Canada, *Police-reported crime statistics in Canada*, 2009 and 2014; Federal Bureau of Investigation, *Crime in the United States*, 2009 and 2014. Processing: CMM, 2015.

4.



LAND USE



4.1	Urban areas and density	62
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4.3	Periurban and urban agriculture	74

4.1 Urban areas and density

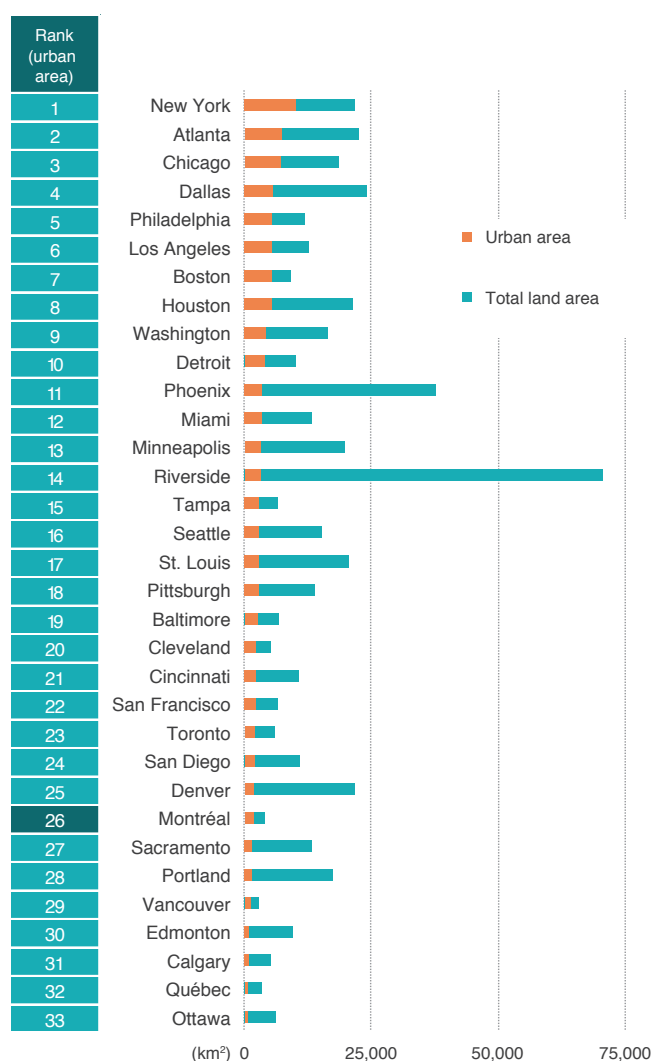
ONE OF THE MOST COMPACT URBAN AREAS IN NORTH AMERICA

With a land area of 3,837 square kilometres, Greater Montréal is one of the smallest of the benchmarking metropolitan areas. In general, Canadian metropolitan areas, as defined by Statistics Canada, are smaller in comparison to US metropolitan areas, as defined by the Office of Management and Budget (OMB). This can be explained, in particular, by the method used to determine metropolitan area boundaries in both countries. In Canada, municipalities are the base land units used to define metropolitan areas, whereas in the US, these units are counties, which generally have much larger surface areas than Canadian municipalities.

In many North American metropolitan areas, only a relatively small portion of land can be qualified as urban. The rest is usually covered by agricultural land or natural spaces.

In Greater Montréal, the urban area is relatively compact compared to most major North American metropolitan areas. While it is the 16th most populous metropolitan area in North America, it ranks 26th for the size of its urbanized land, making it one of the densest metropolitan areas in North America.

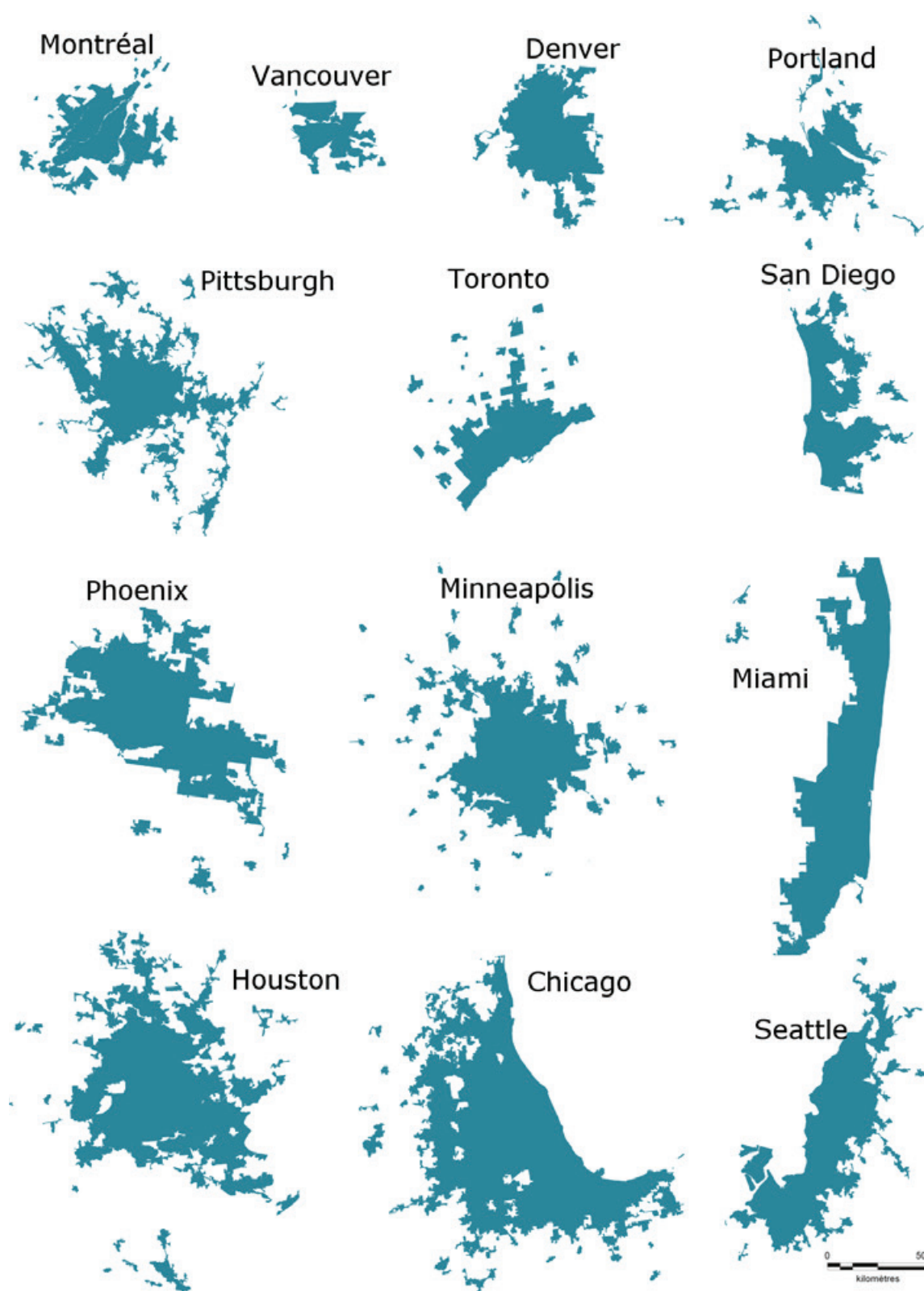
FIGURE 38. Total land area and urban area* (km²), metropolitan areas



*The urban areas (km²) shown in this figure are defined by Statistics Canada and the US Census Bureau using statistical criteria. Urban areas are defined similarly in Canada and the US. In Canada, urban areas correspond to "population centres" defined by Statistics Canada as dissemination block groups with at least 400 inhabitants per square kilometre. In the United States, they correspond to "urban areas" defined by the US Census Bureau as census block groups of 390 inhabitants per square kilometre with a total population of at least 50,000. In some cases, urban areas may include agricultural or forested land.

Sources: Statistics Canada, 2011 Census of Population; US Census Bureau, Census 2010. Processing: CMM, 2016.

MAP 6. Urban areas of some of the major North American metropolitan areas as defined by Statistics Canada and the US Census Bureau



Note: In Canada, as in the US, urban areas as defined by statistics bodies may include certain agricultural or forested areas.

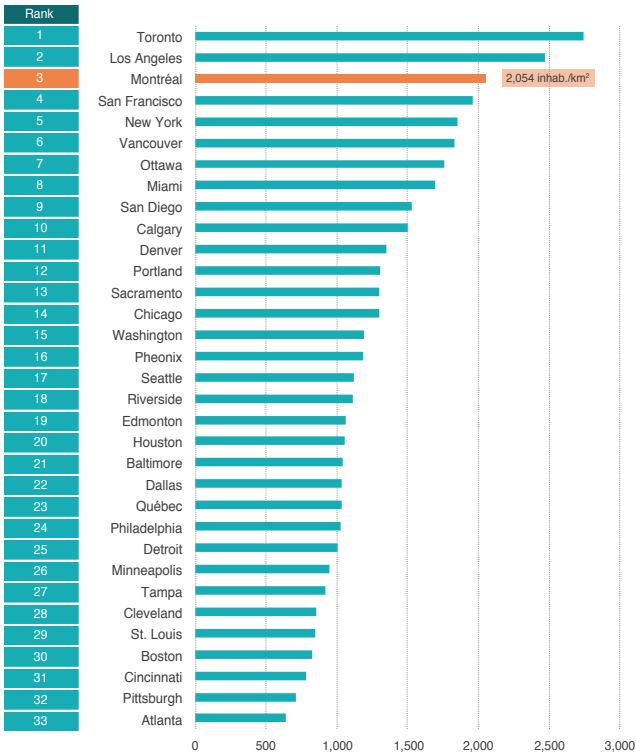
Sources: Statistics Canada, 2011 Census; US Census Bureau, US Census 2010. Processing: CMM, 2016.

3RD NORTH AMERICAN METROPOLITAN AREA IN TERMS OF POPULATION DENSITY

Among the major North American metropolitan areas, Greater Montréal ranks third in terms of population density of the urban area (see definition of urban area under Figure 38), after Toronto and Los Angeles.

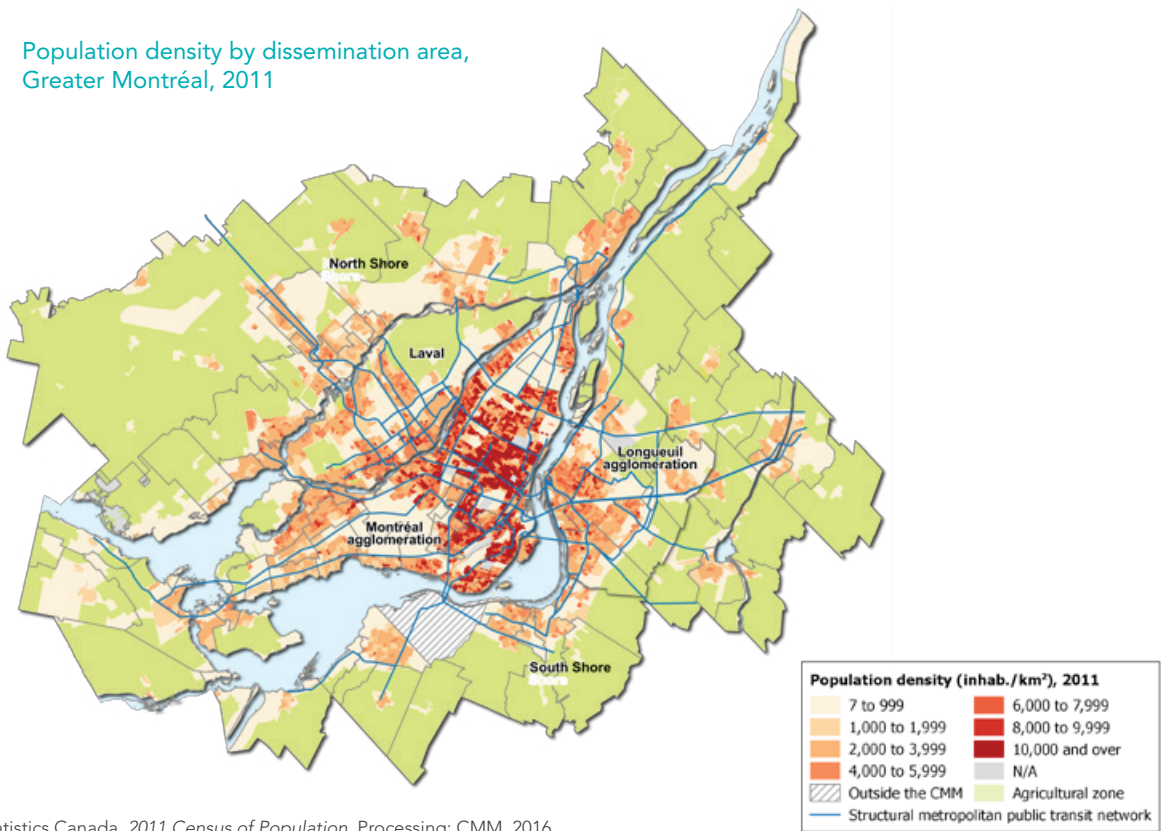
A large proportion of Greater Montréal's population lives in dense neighbourhoods located in the centre of the metropolitan area, where there is a high concentration of duplex and triplex row housing.

FIGURE 39. Population density in the urban area (inhabitants per km²), metropolitan areas



Sources: Statistics Canada, 2011 Census of Population; US Census Bureau, US Census 2010. Processing: CMM, 2016.

MAP 7. Population density by dissemination area, Greater Montréal, 2011



Sources: Statistics Canada, 2011 Census of Population. Processing: CMM, 2016.

SHARP DECLINE IN DENSITY BETWEEN 1971 AND 1991...

Even though Greater Montréal is one of the densest metropolitan areas in North America, historical data compiled by Statistics Canada shows that population density decreased significantly in the area between 1971 and 1991.

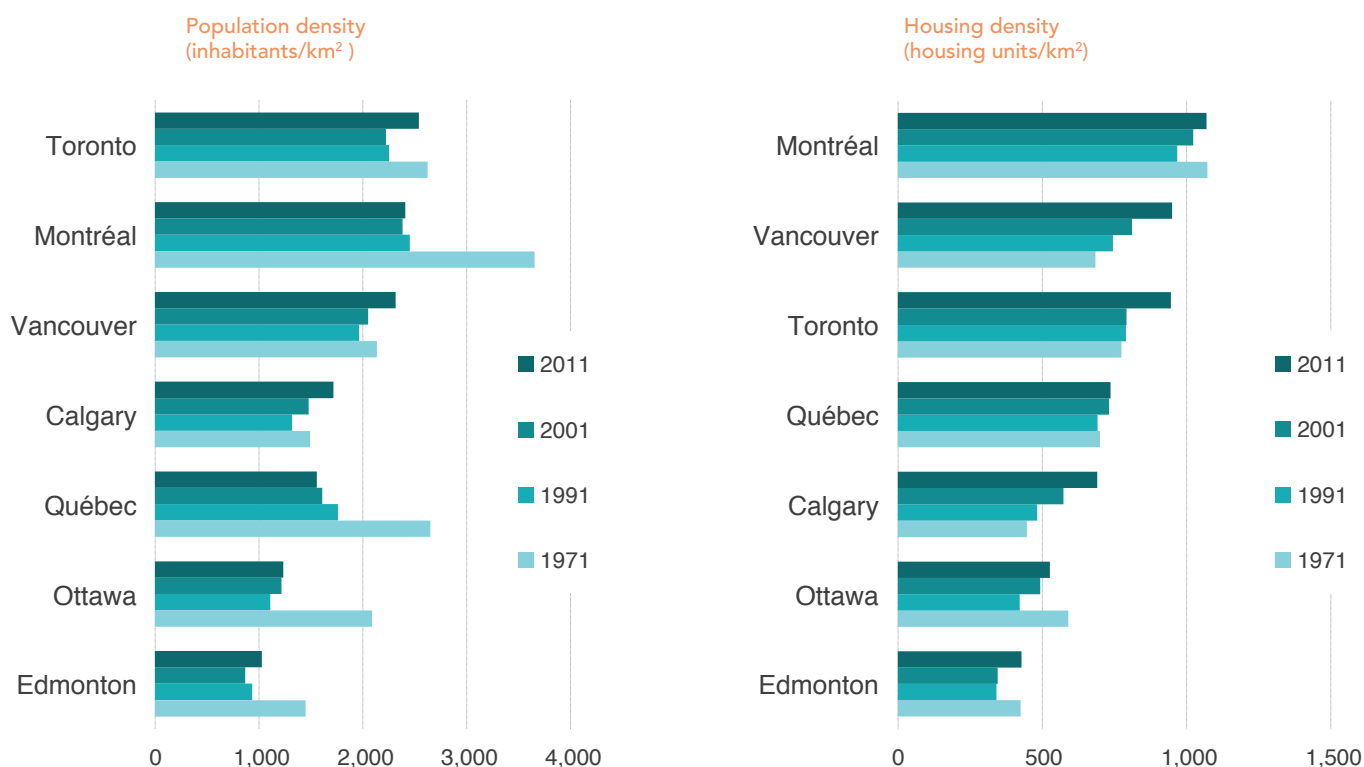
During this time, the population density of the built-up area of the Montréal CMA decreased from 3,654 inhab./km² to 2,452 inhab./km². This period was marked by a population loss of 183,000 inhabitants on the Island of Montréal and by demographic growth driven entirely by suburban development. The decrease in density between 1971 and 1991 affected all Canadian metropolitan areas to varying degrees. One of the contributing factors was the sudden drop in the size of households. Between 1971 and 1991, the average size of households

in Canada declined from 3.5 to 2.7 people. The proportion of one-person households increased from 13% to 23% of all households, while the number of households with four people or more fell from 44% to 28%.¹³

Housing density in Greater Montréal remained much more stable than population density. Housing density decreased between 1971 and 1991, with the increased development of single-detached houses, to then rise between 1991 and 2011.

¹³ Statistics Canada (2015). "The shift to smaller households over the past century, 1941 to 2011" <http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=11-630-X2015008&ObjType=46&lang=en&limit=0>

FIGURE 40. Population and housing units per km² of built-up area, major Canadian CMAs, 1971-2011



Note: For Greater Montréal, the data are at the CMA level.

Source: Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016. Processing: CMM, 2016.

... BUT OPTIMIZED RESIDENTIAL DEVELOPMENT IN RECENT YEARS

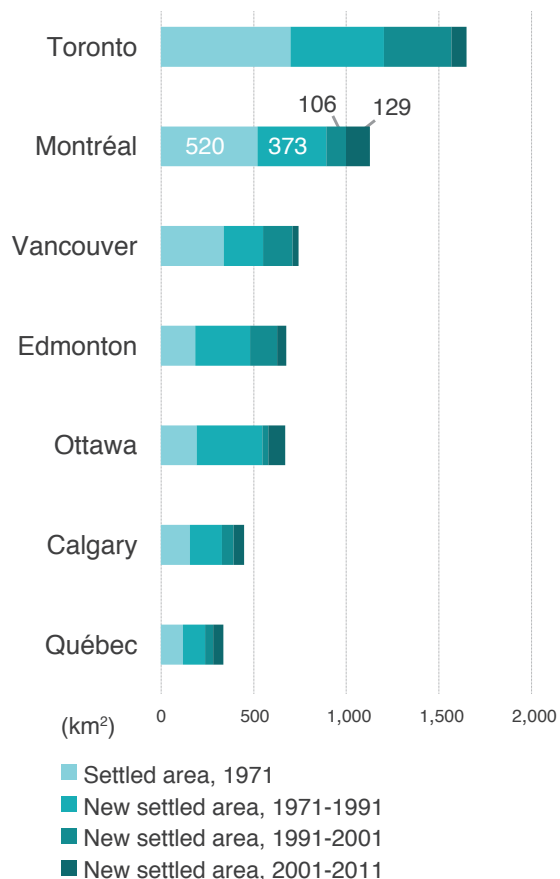
Housing density in Greater Montréal progressively increased between 1991 and 2011 due to the optimization of land use for residential purposes.¹⁴

Between 1971 and 1991, some 1,196 housing units were added in the metropolitan area for each new square kilometre of settled area (+373 km²), while, between 2001 and 2011, 1,836 housing units were added for each new square kilometre of settled area (+129 km²).

The optimization of land use for residential purposes in Greater Montréal from 2001 to 2011 was not as significant, however, as in the metropolitan areas of Calgary, Edmonton, Vancouver and Toronto. In these last two regions, more than 5,000 housing units were added for each new square kilometre of settled area between 2001 and 2011.

But density has continued to increase in Greater Montréal since 2011, especially with market share gains for high-density residential products (see p. 82), significant residential redevelopment in Montréal's central neighbourhoods,¹⁵ and the implementation of the *Metropolitan Land Use and Development Plan* (*Plan métropolitain d'aménagement et de développement* or PMAD) in 2012.

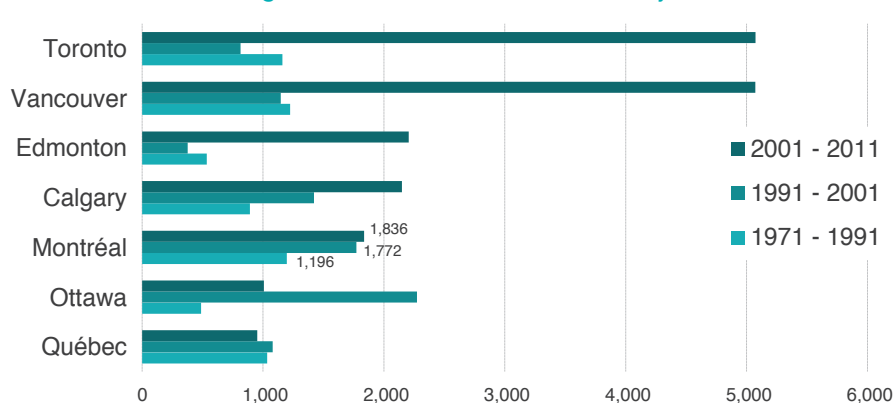
FIGURE 41. Settled area (km²), major Canadian CMAs, 1971-2011



Note: The settled area corresponds to the built-up area, not including roads.

Source: Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016. Processing: CMM, 2016.

FIGURE 42. New housing for each new km² of settled area, major Canadian CMAs, 1971-2011



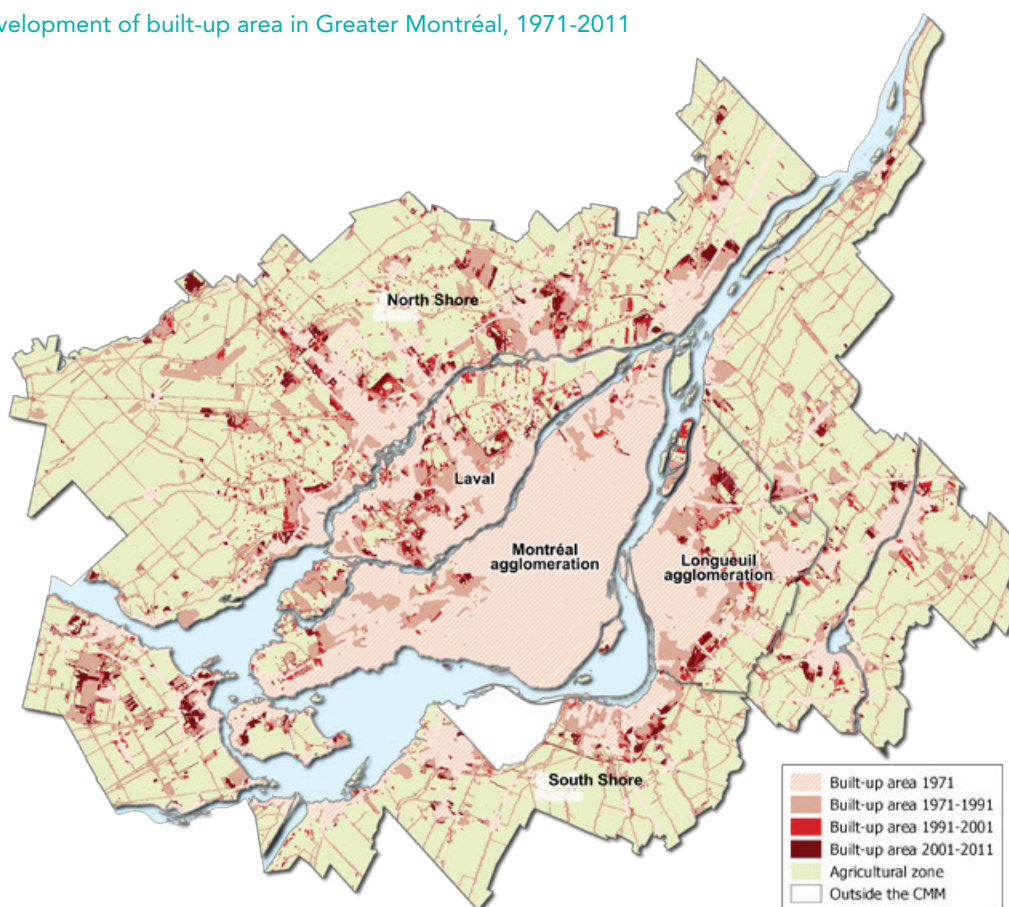
Note: The settled area corresponds to the built-up area, not including roads.

Source: Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016. Processing: CMM, 2016.

¹⁴ For more information on land use and urban sprawl, see: Commissariat général au développement durable (2012). "Urbanisation et consommation de l'espace, une question de mesure." http://www.developpement-durable.gouv.fr/IMG/pdf/Revue_CGDD_etallement_urbain.pdf

¹⁵ For more information on densification of Greater Montréal, see: CMM (2015) "Rapport de monitoring du PMAD, édition 2015." http://cmm.qc.ca/fileadmin/user_upload/documents/20150618_rapport-du-monitoring-pmad-2015-sommaire.pdf

MAP 8. Development of built-up area in Greater Montréal, 1971-2011



Source: Statistics Canada, Environment, Energy and Transportation Statistics Division, 2016. Processing: CMM, 2016.

BOX 2.

METROPOLITAN LAND USE AND DEVELOPMENT PLAN (PMAD)

Adopted by the CMM Council on December 8, 2011, Greater Montréal's first *Metropolitan Land Use and Development Plan* (*Plan métropolitain d'aménagement et de développement* or PMAD) came into force on March 12, 2012, following approval by the Government of Québec. The PMAD was adopted further to a major public consultation held in the fall of 2011 with citizens, community groups, organizations, local municipalities and regional county municipalities of Greater Montréal.

The PMAD is the CMM's flagship plan. It acts on elements that will help structure the metropolitan area's urbanization process to make it more attractive and competitive from a sustainable development perspective. In particular, the plan underlines the importance of proper management of urbanization, focuses on integrated land use and transportation planning, and promotes the protection and enhancement of natural areas to ensure the attractiveness and competitiveness of Greater Montréal. The PMAD proposes three major priorities related to land use, transportation and environment, which are divided into 15 objectives and 33 criteria.

Metropolitan Land Use and Development Plan (PMAD):

http://cmm.qc.ca/fileadmin/user_upload/pmad2012/documentation/20120530_PMAD.pdf

4.2 Industrial, commercial and office spaces

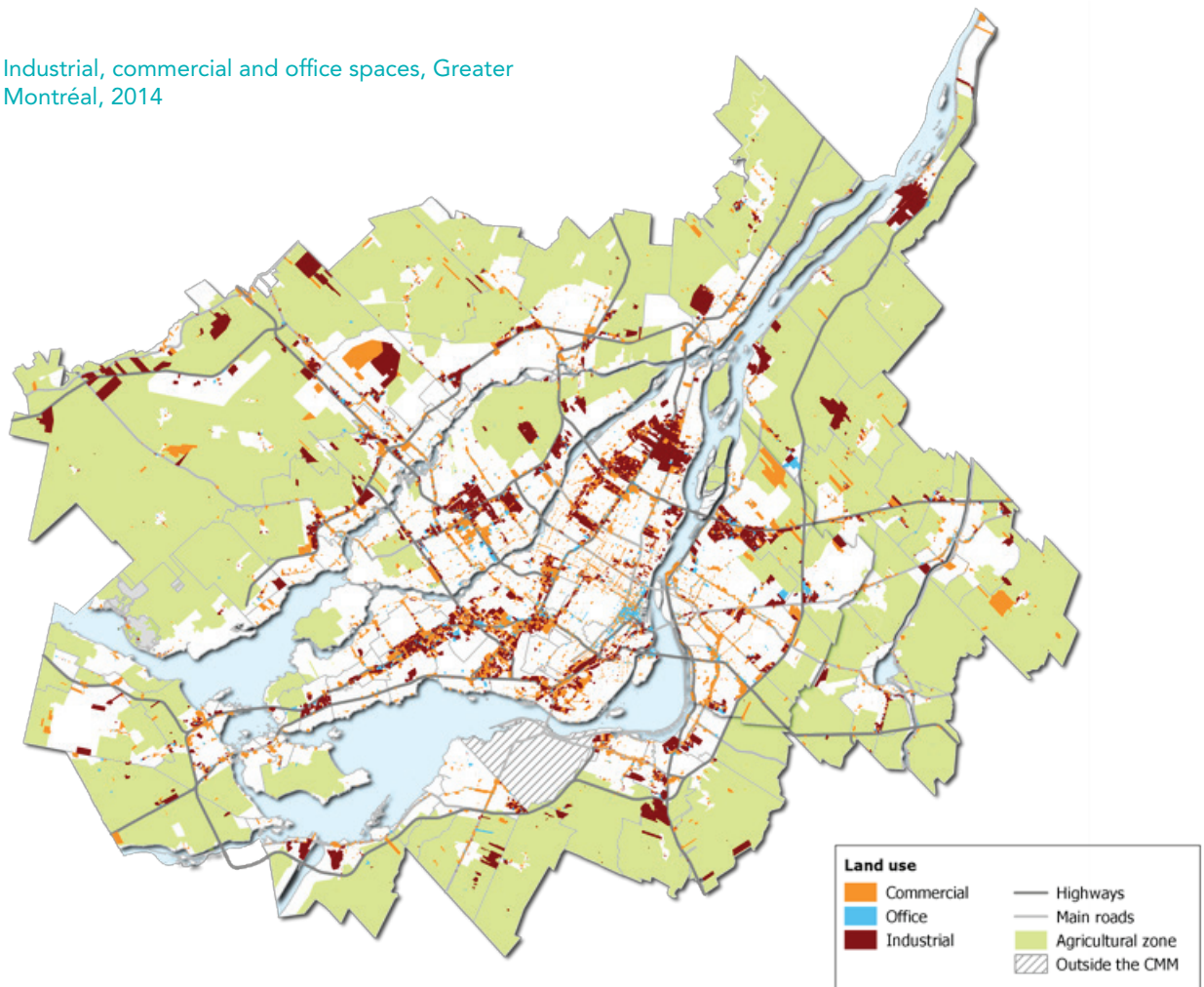
ALMOST 9% OF GREATER MONTRÉAL'S LAND AREA IS MADE UP OF INDUSTRIAL, COMMERCIAL AND OFFICE SPACES

Industrial, commercial and office spaces make up, along with residential spaces, most of the built-up areas of metropolitan areas.

In Greater Montréal, according to the 2014 property assessment roll, 3.6% of its land territory was made up of industrial spaces, 4.8% of commercial spaces and 0.4% of office spaces.

These spaces are at the core of economic activities in metropolitan areas. The balance between supply and demand for these types of spaces is a key factor for economic development and an indicator of optimal land use.

MAP 9. Industrial, commercial and office spaces, Greater Montréal, 2014

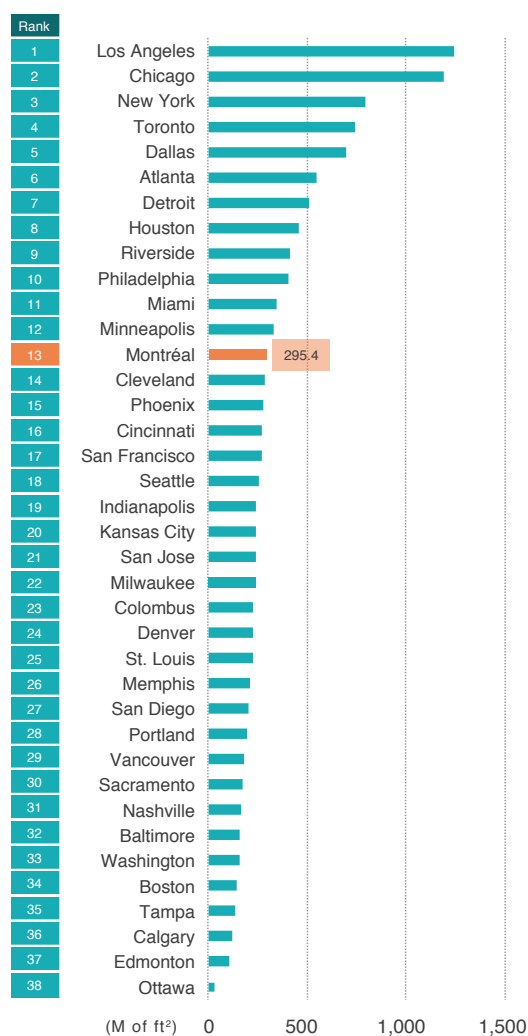


13TH LARGEST AREA IN TERMS OF INDUSTRIAL SPACE

In 2013, according to data published by CBRE, Greater Montréal was the 13th largest metropolitan area in North America in terms of industrial space, with 295.4 million square feet (including only industrial buildings of 20,000 square feet or more).

In 2015, although data were not yet available for all metropolitan areas, the surface area of industrial spaces in Greater Montréal had reached 300.4 million square feet.

FIGURE 43. Industrial buildings (M of ft²), metropolitan areas, 2013



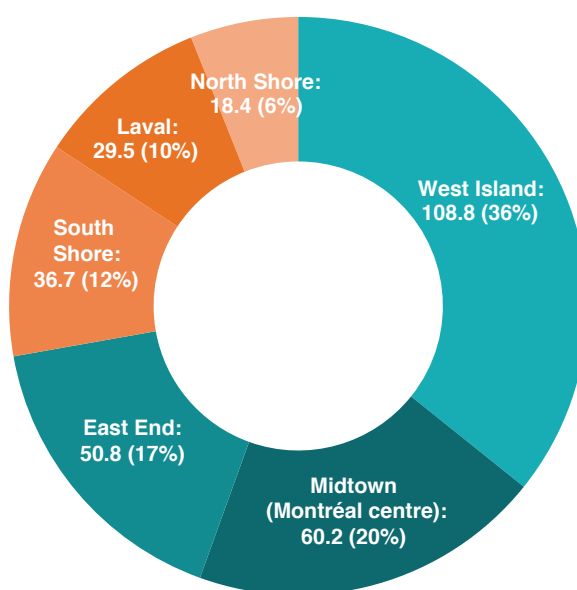
Notes:

- Includes industrial buildings of 20,000 ft² or more.
- In the US, certain metropolitan areas with populations smaller than two million people have significant industrial markets and were included in this graphic. They are the metropolitan areas of Indianapolis, Kansas City, San Jose, Milwaukee, Columbus, Memphis and Nashville.

Source: CBRE Research, Q3 2013. Processing: CMM, 2016.

According to CBRE data, the West Island (in the Montréal agglomeration) had the highest proportion of industrial buildings in Greater Montréal (36%), followed by Midtown or the central area of the city of Montréal (20%), the East End (17%), the South Shore (Longueuil agglomeration) (12%), Laval (10%) and the North Shore (6%).

FIGURE 44. Industrial buildings (M of ft²), Greater Montréal submarkets, 2015



Notes:

- Includes industrial buildings of 20,000 ft² or more.
- CBRE's data are based on the availability rate of industrial spaces in Greater Montréal's six submarkets: East End (Island of Montréal, east of Pie-IX), the West Island (including Vaudreuil-Dorion), Midtown (corresponds approximately to the portion of the Island of Montréal between Highway 15 and Pie-IX Boulevard, as well as Verdun, LaSalle, Côte Saint-Luc and Notre-Dame-de-Grâce), Laval, North Shore (corresponds to the main urban areas of the North Shore) and South Shore (corresponds to the Longueuil agglomeration).

Source: CBRE Research, Q3 2015. Processing: CMM, 2016.

INDUSTRIAL AVAILABILITY RATES BETWEEN 4% AND 9% DEPENDING ON GEOGRAPHIC SECTOR

The industrial availability rate is one of the key indicators used to measure the alignment between the supply and demand of industrial spaces in a given market.

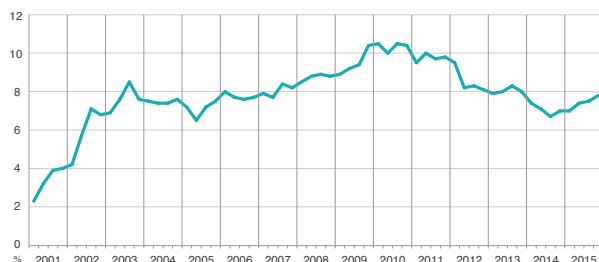
In 2015, the industrial availability rate in Greater Montréal was 7.8% in the fourth quarter, which was above the Canadian average (5.6%) but below the US average (9.4%).

Compared to 2010, a year marked by the US economic crisis, the industrial availability rate has dropped in most North American metropolitan areas. This was the case in Greater Montréal, where 10.4% of industrial spaces were vacant in the fourth quarter of 2010, compared to 7.8% in the fourth quarter of 2015.

In the past 15 years, the industrial availability rate in Greater Montréal has generally varied between 6% and 9%. The area, however, experienced a period of extremely low availability rates (below 5%) in 2001 and 2002, and a few quarters with rates at around 10%, from 2009 to 2011.

Since the last quarter of 2012, in Greater Montréal's submarkets, the western and eastern parts of the Island of Montréal have had the highest availability rates, generally between 8% and 10%.

FIGURE 46. Industrial availability rates in Greater Montréal (%), 2001-2015



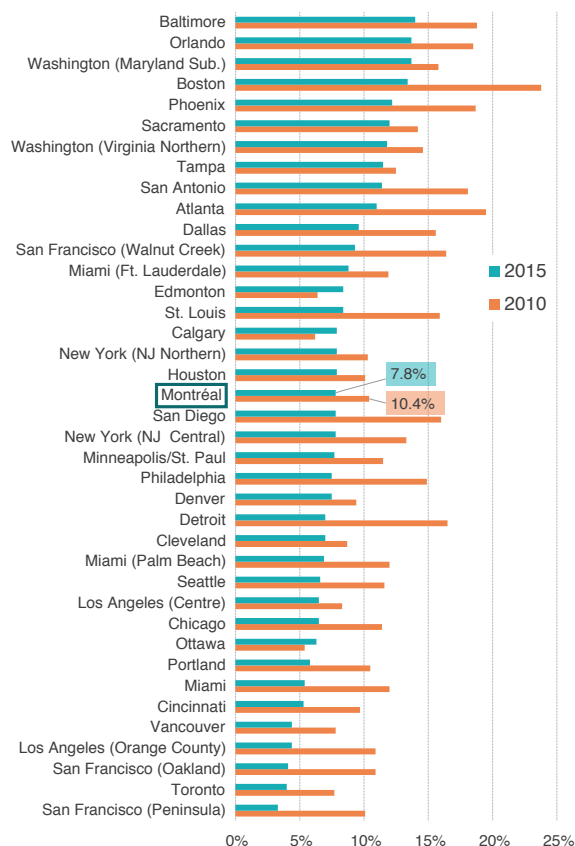
Note: Includes industrial buildings of 20,000 ft² or more.

Source: CBRE Research, Q1 2001 to Q4 2015. Processing: CMM, 2016.

In 2015, however, the North Shore had the highest availability rate, after the West Island, with close to 9%.

Conversely, the lowest rates since 2012 have been in the centre of the Island of Montréal (between 4% and 6%).

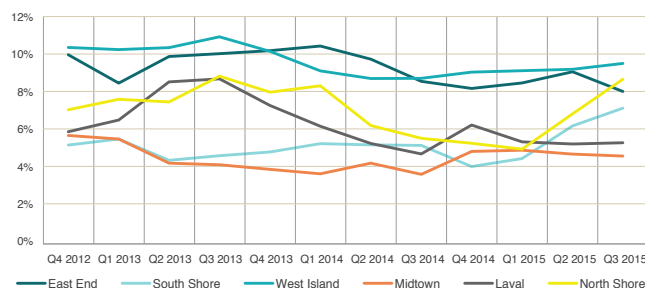
FIGURE 45. Industrial availability rates (%), metropolitan areas or intrametropolitan subareas, 2010 and 2015



Note: Includes industrial buildings of 20,000 ft² or more.

Source: CBRE Research, Q4 2015 and Q4 2010. Processing: CMM, 2016.

FIGURE 47. Industrial availability rates (%), Greater Montréal submarkets, 2012-2015



Note: Includes industrial buildings of 20,000 ft² or more.

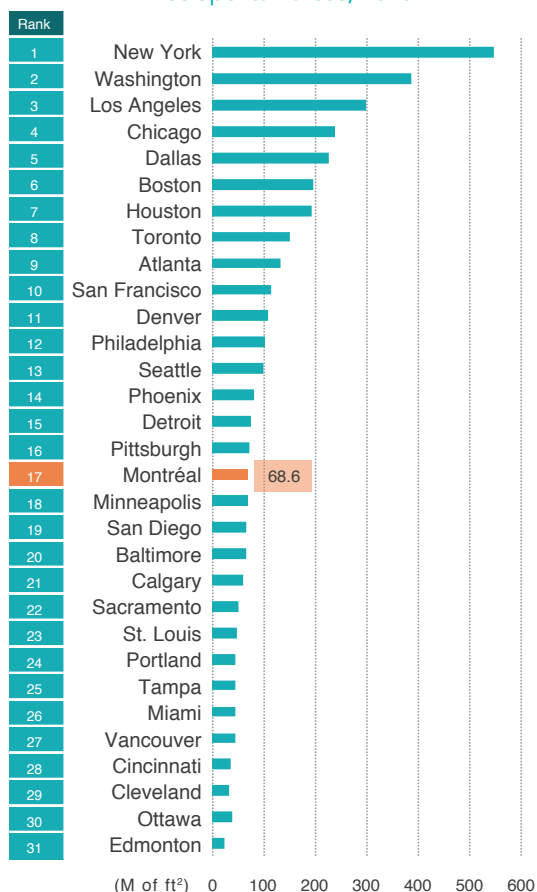
Source: Figure taken from CBRE Research, Q3 2015.

17TH LARGEST AREA IN TERMS OF OFFICE SPACE

In 2013, according to data published by CBRE, Greater Montréal was the 17th largest metropolitan area in North America in terms of office space, with 68.6 million square feet. In 2015, although data were not yet available for all metropolitan areas, the surface area of office spaces in Greater Montréal had reached 72.3 million square feet, with 61% in downtown Montréal. In Canadian metropolitan areas, downtown cores generally account for a little more than half of office spaces.

Close to 2.2 million square feet of office space are under construction in the Montréal area, representing close to 3% of the total office space currently available. Although several projects have recently been completed in downtown Montréal — such as the Deloitte Tower in 2015 — around two thirds of the office spaces currently being built are located outside downtown Montréal. These projects include the SSQ tower in Longueuil, the ABB and Green Cross sites, as well as the Saint-Laurent campus by Montoni. In the downtown area, L'Avenue, a mixed-used building, is scheduled to be delivered in early 2017.

FIGURE 48. Office spaces (M of ft²), metropolitan areas, 2013



Source: CBRE Research, Q3 2013. Processing: CMM, 2016.

FIGURE 49. Office spaces (M of ft²), downtown and suburban, Canadian metropolitan areas, 2015

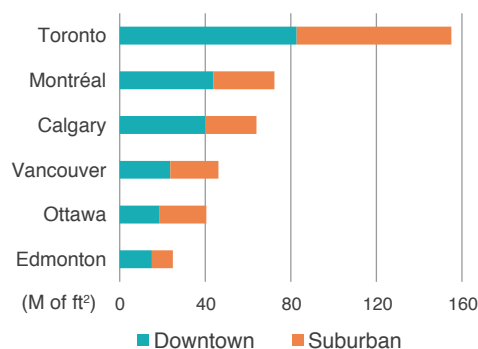
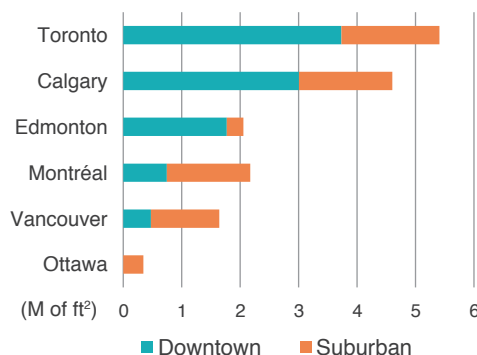


FIGURE 50. Office spaces under construction (M of ft²), downtown and suburban, Canadian metropolitan areas, 2015



Source: CBRE Research, Q4 2015. Processing: CMM, 2016.

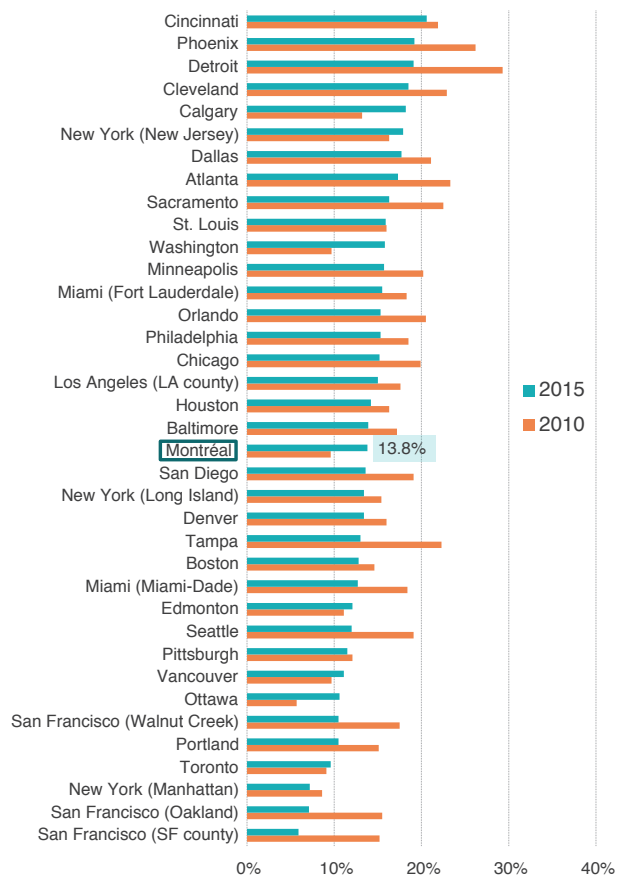
OFFICE VACANCY RATES ON THE RISE BUT WITHIN NORTH AMERICAN AVERAGES

In the fourth quarter of 2015, the office vacancy rate in Greater Montréal was at 13.8%, a rate similar to the Canadian (12.2%) and US (13.2%) average.

Compared to five years earlier, in 2010, the office vacancy rate decreased in most US metropolitan areas, while it increased in Canadian areas. This was especially the case in the Montréal metropolitan area, where 9.6% of office spaces were available in the fourth quarter of 2010, compared to 13.8% in the fourth quarter of 2015.

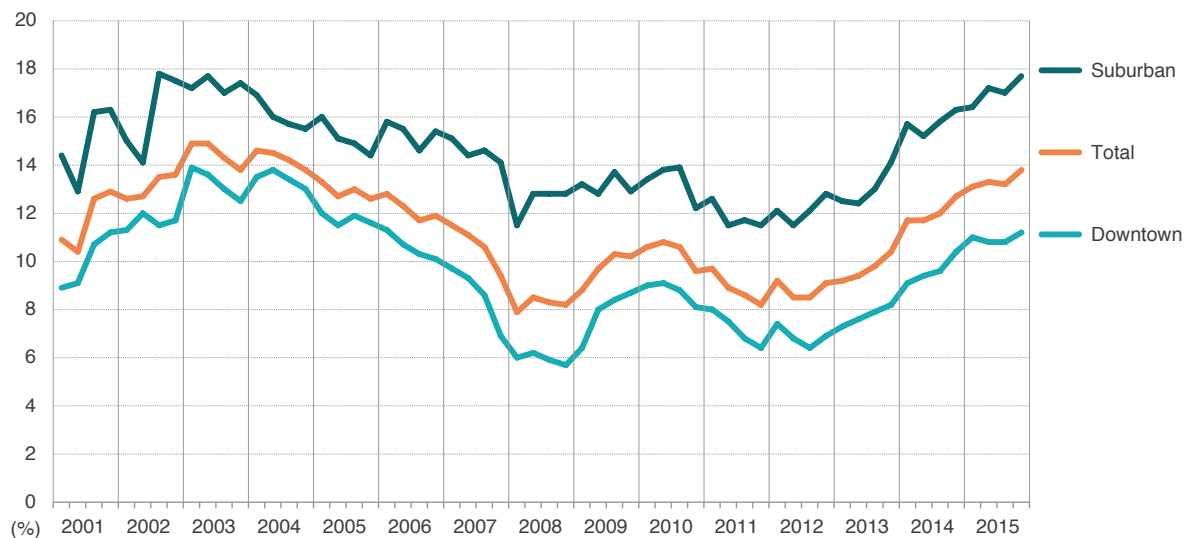
In Greater Montréal, some of the factors that could explain the increase in the office vacancy rate are the high volume of office space construction since 2013 combined with the conversion of former industrial buildings into loft-style office spaces.

FIGURE 51. Office vacancy rates, metropolitan areas or intrametropolitan subareas, 2010 and 2015



Source: CBRE Research, Q4 2010 and Q4 2015. Processing: CMM, 2016.

FIGURE 52. Office vacancy rates in Greater Montréal, downtown and suburban, 2001 to 2015



Source: CBRE Research. Processing: CMM, 2016.

SHOPPING CENTRES' MARKET IN BALANCE

According to CBRE's most recently published data on rental spaces in shopping centres, the vacancy rate for this type of space¹⁶ was 5% in Greater Montréal¹⁷ during the second half of 2015. A vacancy rate of 5% corresponds to the equilibrium rate generally accepted for the occupation of commercial space.

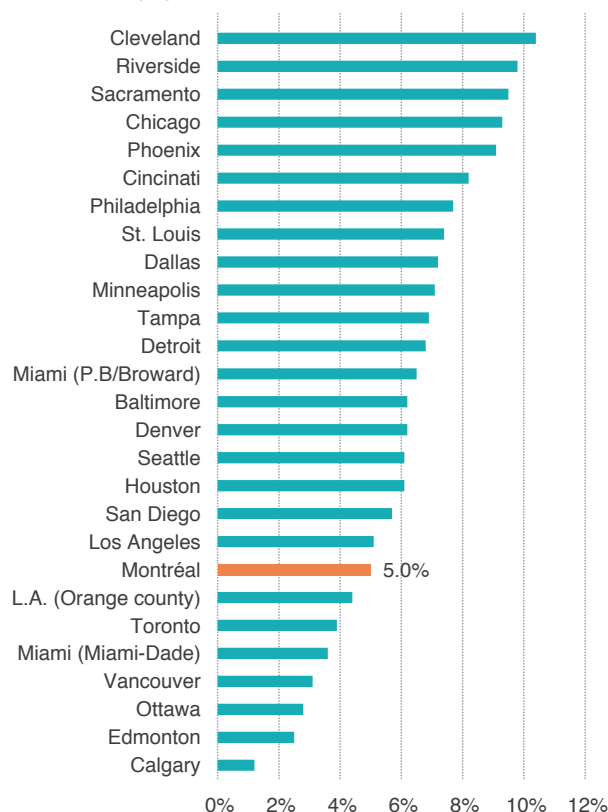
Greater Montréal has one of the lowest vacancy rates among the North American metropolitan areas for which data are available, but its rate is still higher than the rates of other Canadian metropolitan areas.

Data available for Canadian metropolitan areas show that vacancy rates vary depending on shopping centre types. In Greater Montréal, however, discrepancies in vacancy rates based on shopping centre types are relatively low compared to most other Canadian metropolitan areas.

In 2015, the vacancy rate was lowest in power centres, at 3.6%, while it was 4.9% for regional shopping centres and 5.3% for neighbourhood or strip centres.

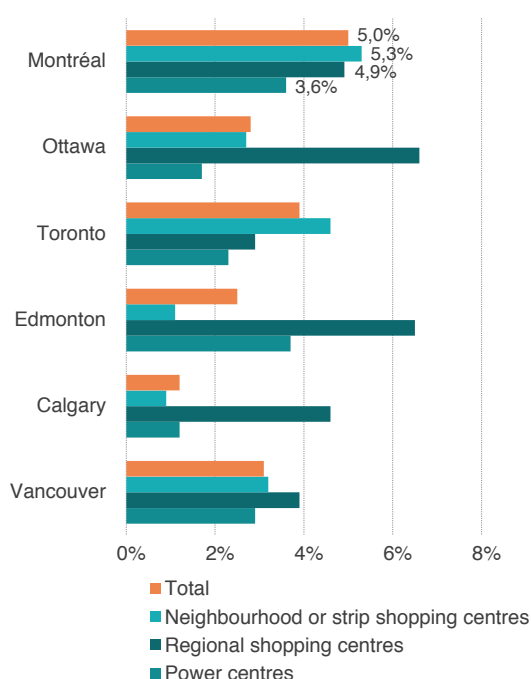
In addition to shopping centres, Greater Montréal has a number of commercial arteries that are important and vital to the metropolitan area's quality of life and development. In the city of Montréal, businesses from 14 main commercial arteries and three commercial districts (Vieux-Montréal, Destination centre-ville and Quartier du canal) are represented by business development corporations (BDCs).¹⁸

FIGURE 53. Retail vacancy rates (%), metropolitan areas, 2015



Source: CBRE Research, 2015 (Q2 or Q4 according to data available per area).
Processing: CMM, 2016.

FIGURE 54. Retail vacancy rates, by type of shopping centre (%), Canadian metropolitan areas, 2015



Source: CBRE Research, Q2 2015. Processing: CMM, 2016.

¹⁶ CBRE data on Greater Montréal cover 180 properties belonging to real estate investment trusts (REIT) and real estate operating companies (REOC) and include a total of 18.5 million square feet of gross leasable area.

¹⁷ The territory covered by the CBRE's study on Greater Montréal does not include the South Shore, with the exception of the city of Vaudreuil-Dorion.

¹⁸ Website of the Association des sociétés de développement commercial de Montréal.

4.3 Periurban and urban agriculture

CLOSE TO 58% OF LAND AREA COVERED BY AGRICULTURAL ZONE

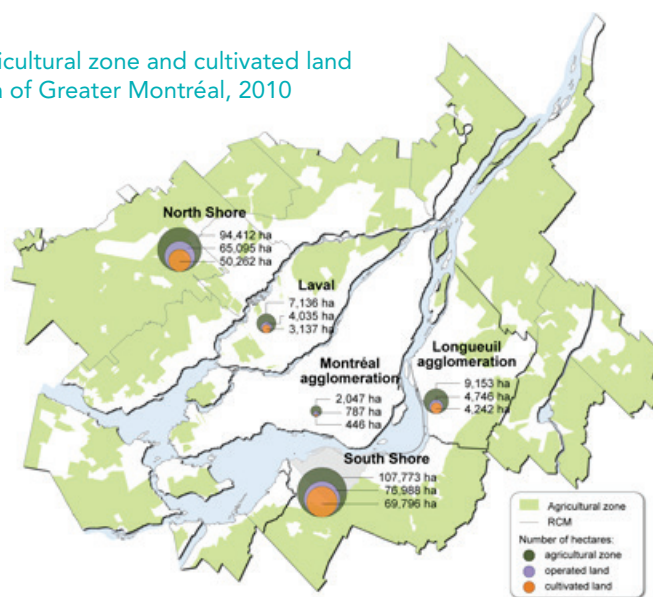
In periurban areas of major North American metropolitan areas, agricultural land often makes up a significant portion of the territory. The vitality of agriculture in many of these areas is often explained by soil quality as well as the presence of a number of businesses related to the agri-food industry and access to a broad consumer base.

In Greater Montréal, cultivated land is part of the agricultural zone protected by the *Act Respecting the Preservation of Agricultural Land and Agricultural Activities*. This zone covers an area of 220,373 hectares, or close to 58% of Greater Montréal's total land area, of which a little over 130,000 hectares is being cultivated or used as pastureland. The rest of the agricultural

zone is mainly covered by forests, wetlands, housing, buildings, infrastructure (roads, electrical transmission lines, etc.), and idle land. According to the most recent estimates from summer 2015, idle land, or abandoned agricultural land, covers more than 6,300 hectares, or 3% of the protected agricultural zone.

With barely 3.5% of Québec's total protected agricultural zone, the Montréal metropolitan area generates 13.6% of the province's agricultural GDP. Agriculture is also the first link in the chain of an important metropolitan agri-food industry, which generates 238,300 jobs, representing 46% of agri-food jobs in Québec and 12% of total jobs in Greater Montréal.

MAP 10. Agricultural zone and cultivated land area of Greater Montréal, 2010



Sources: CPTAQ, 2014 Annual Report; MAPAQ, *Enregistrement des exploitations agricoles du Québec*, 2004 (January 2005 update) and 2010 (July 2012 update).

TABLE 8. Some agriculture indicators in Greater Montréal

Agricultural zone area, 2015			Gross GDP at basic prices for the agricultural and livestock industry, 2013		Jobs in the agri-food industry, 2014						
ha	% of metropolitan land area	% of Québec agricultural zone	\$M	% of Québec GDP for this industry	Crop and animal production, hunting and fishing	Food and beverage wholesaler-distributors	Food and beverage production	Food stores	Food and beverage services	Total	% of jobs in Québec agri-food industry
220,373	57.6%	3.5%	523.5	13.6%	7,100	13,700	36,000	65,900	115,600	238,300	45.7%

Sources: CPTAQ, 2015 Annual Report; Institut de la statistique de Québec, *Produit intérieur brut aux prix de base 2007-2013*; Statistics Canada, *Labour Force Survey (LFS)*, 2014. Processing: CMM, 2016.

6TH NORTH AMERICAN METROPOLITAN AREA WITH THE HIGHEST PROPORTION OF CULTIVATED LAND

Located on the fertile plain of the St. Lawrence River, Greater Montréal is the sixth North American metropolitan area with the highest proportion of cultivated land on its territory. Greater Montréal's land area is 33.5% cultivated land, which represents 128,469 hectares (not including pastureland).¹⁹

One of the characteristics of Greater Montréal's farm lands is that they are made up of a high proportion (84%) of cultivated land — used mainly for growing grains and oilseeds — and a low percentage of pastureland and land serving other uses, such as logging.

This is also the case in other areas, such as Chicago, Miami, Minneapolis, Detroit, Toronto and St. Louis, where cultivated land makes up more than 75% of farm land.

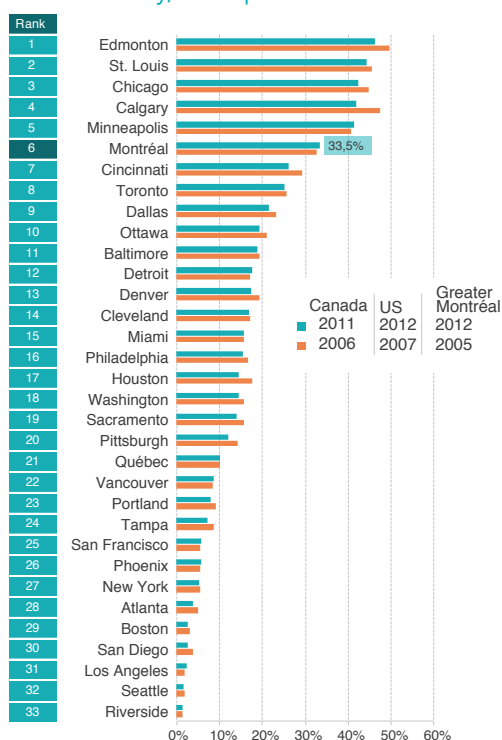
In many other regions, including the southern US, pastureland covers most of the farm land. In some metropolitan areas, such as Boston, New York, Atlanta and Québec, large proportions of farm land also include forested areas.

Urban development is putting great pressure on metropolitan agricultural land. In most North American metropolitan areas, the area of cultivated land has shrunk in the past few years. This is not the case, however, in Greater Montréal where the proportion of cultivated land of the total land area went from 32.7% in 2005 to 33.5% in 2012.²⁰

¹⁹ If pastureland is included, this percentage increases to 34.1% for a total 130,882 hectares in 2012.

²⁰ As for the proportion of cultivated land or pastureland, it increased from 33.4% in 2005 to 34.1% in 2012.

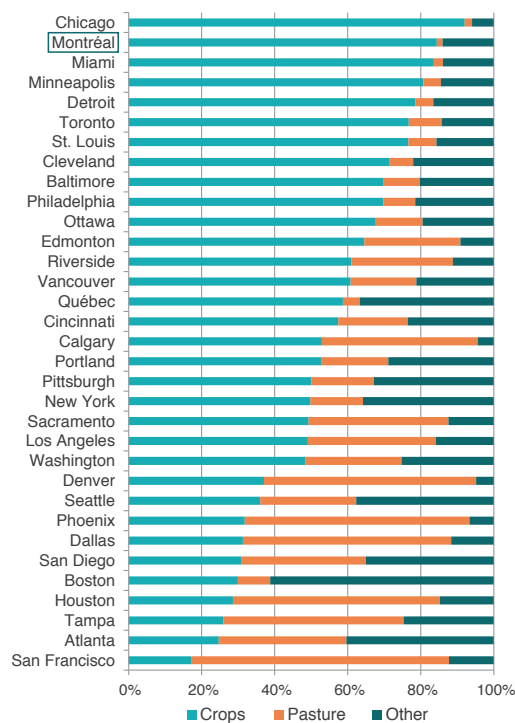
FIGURE 55. Percentage of cultivated land* on total land territory, metropolitan areas



* Not including pastureland

Sources: USDA, *Census of agriculture*, 2012 and 2007; Statistics Canada, *Census of Agriculture*, 2006 and 2011; MAPAQ, *Enregistrement des exploitations agricoles du Québec*, 2004 (January 2005 update) and 2010 (July 2012 update). Processing: CMM, 2016.

FIGURE 56. Use of farm land, metropolitan areas (Greater Montréal and US: 2012; rest of Canada: 2011)

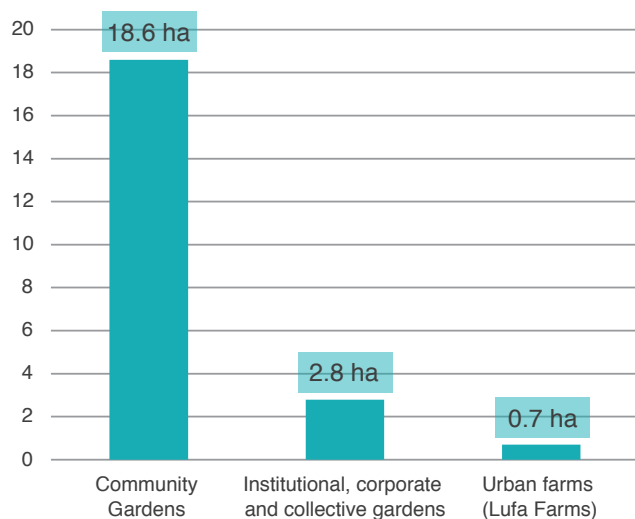


URBAN AGRICULTURE: CREATING NEW AGRICULTURAL SPACES

Urban agriculture, which involves growing food or raising animals in cities, is different from rural or periurban agriculture as it is generally practiced on small plots of land. The purpose of urban agriculture is often to produce complementary sources of food, frequently using technology that is less mechanized than rural or periurban agriculture.

According to the most recent data published jointly by Laboratoire sur l'agriculture urbaine (AU/LAB) and Collectif de recherche en aménagement paysager et agriculture urbaine durable (CRAPAUD), Greater Montréal has more than 20 hectares of urban agriculture projects, such as community, collective, institutional and corporate gardens.

FIGURE 57. Urban agriculture projects (ha) in Greater Montréal, 2016



Note: Periurban agricultural projects in the agricultural zone of the West Island of Montréal are not included in this graph.

Source: Laboratoire sur l'agriculture urbaine (AU/LAB) and Collectif de recherche en aménagement paysager et agriculture urbaine durable (CRAPAUD), "Agriculture urbaine MTL," Lufa Farms.

The city of Montréal has the most urban agriculture projects in the metropolitan area. It has a long tradition of urban agriculture, which started when it adopted a municipal community garden program in 1975. Today there are 95 community gardens cared for by more than 12,000 gardeners. Since 2002, the boroughs have been responsible for the management of the community gardens. The city of

Montréal also has more than 70 collective gardens that are supported by the city and paramunicipal organizations. These gardens are generally created by community organizations, schools or tenant associations. Unlike community gardens, which are made up of small plots tended separately by individuals or families, collective gardens are a single plot of land cared for by a group of members.

Elsewhere in Greater Montréal, AU/LAB in partnership with CRAPAUD have established 12 collective and community gardens in Laval, four in Longueuil and one in Brossard using their platform called "Agriculture urbaine Mtl."

Another aspect of urban agriculture involves implementing commercial projects that aim to create short food supply chains, reduce greenhouse gases produced by food transportation and mitigate the urban heat island effect.

Growing food on roofs is one of many innovative commercial urban agriculture practices. This type of agriculture enhances unused space to create productive growing areas. Lufa Farms, in the Montréal metropolitan area, created the first commercial rooftop greenhouse in the world. Established in 2009, Lufa Farms now has two rooftop greenhouses, one in the borough of Ahuntsic, in Montréal, and the other in Laval.

In the past few years, urban greenhouses and other commercial urban agriculture projects have started emerging in many major North American cities.

BOX 3.

2016-2020 METROPOLITAN ACTION PLAN FOR DEVELOPMENT OF LAND AND AGRICULTURAL ACTIVITIES

Given the importance of agriculture and agri-food activities in the metropolitan area, the PMAD encourages RCMs and agglomerations in Greater Montréal to create regional tools to develop and promote the agricultural zone.

An action plan was developed with the key stakeholders to provide the RCMs and agglomerations with support and explore ideas for the entire metropolitan agricultural land area.

The flagship action of the plan is the implementation of a metropolitan agricultural land bank, which is expected to build relationships between people wishing to acquire land and land owners. The purpose of this is to establish or consolidate new agricultural businesses, while contributing to achieving the PMAD's objective of increasing the overall area of cultivated land in Greater Montréal by 6%.

In addition, discussions during the plan's development covered other themes, such as innovation, sustainable development of agricultural land, recognition for multifunctionality in agriculture, as well as protection of forests and corridors of metropolitan interest located in agricultural zones. Actions toward these matters will be taken in the next few years.

Plan d'action métropolitain de mise en valeur du territoire et des activités agricoles 2016-2020:
http://cmm.qc.ca/fileadmin/user_upload/documents/20160225_PAMAA_2016-2020.pdf

5.



HOUSING AND RESIDENTIAL DEVELOPMENT



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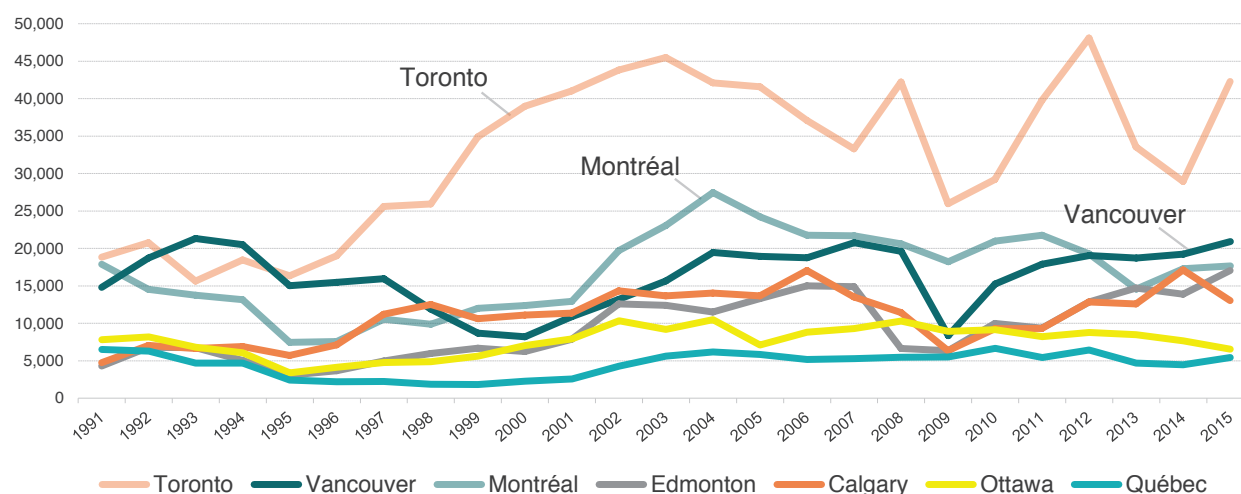
5.1 Housing starts

ANNUAL AVERAGE OF 20,100 NEW HOUSING UNITS IN THE PAST 15 YEARS

From the mid-1990s to the mid-2000s, Greater Montréal underwent strong growth in terms of housing starts, reaching a peak of some 27,400 starts in 2004. However, their number has decreased steadily ever since. In 2015, 17,640 starts were reported in the area.

An average of 20,100 new dwellings were constructed in Greater Montréal since 2001, as opposed to 38,200 in the Toronto metropolitan area, 17,100 in the Vancouver area, 12,600 in the Calgary area, 11,900 in the Edmonton area, 8,700 in the Ottawa area and 5,300 in the Québec area.

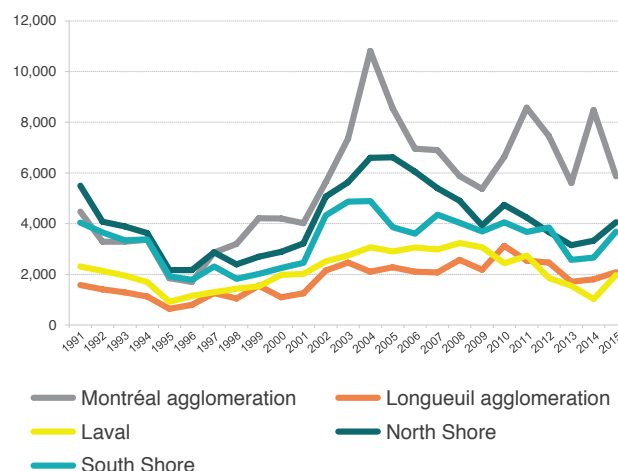
FIGURE 58. Housing starts, major Canadian metropolitan areas, 1991-2015



Source: Canada Mortgage and Housing Corporation (CMHC), *Starts and Completions Survey*, 1991-2015. Processing: CMM, 2016.

Since 2001, 34.6% of new dwellings in Greater Montréal have been built in the Montréal agglomeration, as opposed to 23.4% on the North Shore, 18.8% on the South Shore, 12.3% in Laval and 10.9% in the Longueuil agglomeration.

FIGURE 59. Housing starts, Greater Montréal's five geographic sectors, 1991-2015



Source: CMHC, *Starts and Completions Survey*, 1991-2015. Processing: CMM, 2016.

5.2 Housing types

THE AREA WITH THE LOWEST PROPORTION OF SINGLE-DETACHED HOUSES

Demographic density is more pronounced in Greater Montréal than in most other major North American metropolitan areas (see p. 64). This can largely be explained by the high percentage of housing in multiple-dwelling buildings.

In fact, Greater Montréal features the highest proportion of households living in apartments (59.2%) and, conversely, the lowest percentage of households in single-detached houses (31.9%). Some 8.6% of households live in semi-detached or row houses.

Greater Montréal housing in multiple-dwelling buildings consists primarily (85.6%) of apartments in small buildings less than five-storeys high, and most of them (72.7%) are occupied on a rental basis. Two thirds (69%) were built before 1981.

The apartments are concentrated primarily in the centre of the area, i.e., in the Montréal agglomeration and, to a lesser extent, in the Longueuil agglomeration and in Laval.

FIGURE 60. Breakdown by type of private dwelling, Greater Montréal's five geographic sectors, 2011

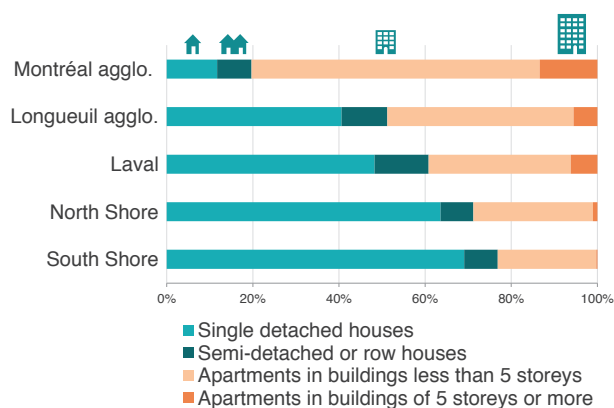
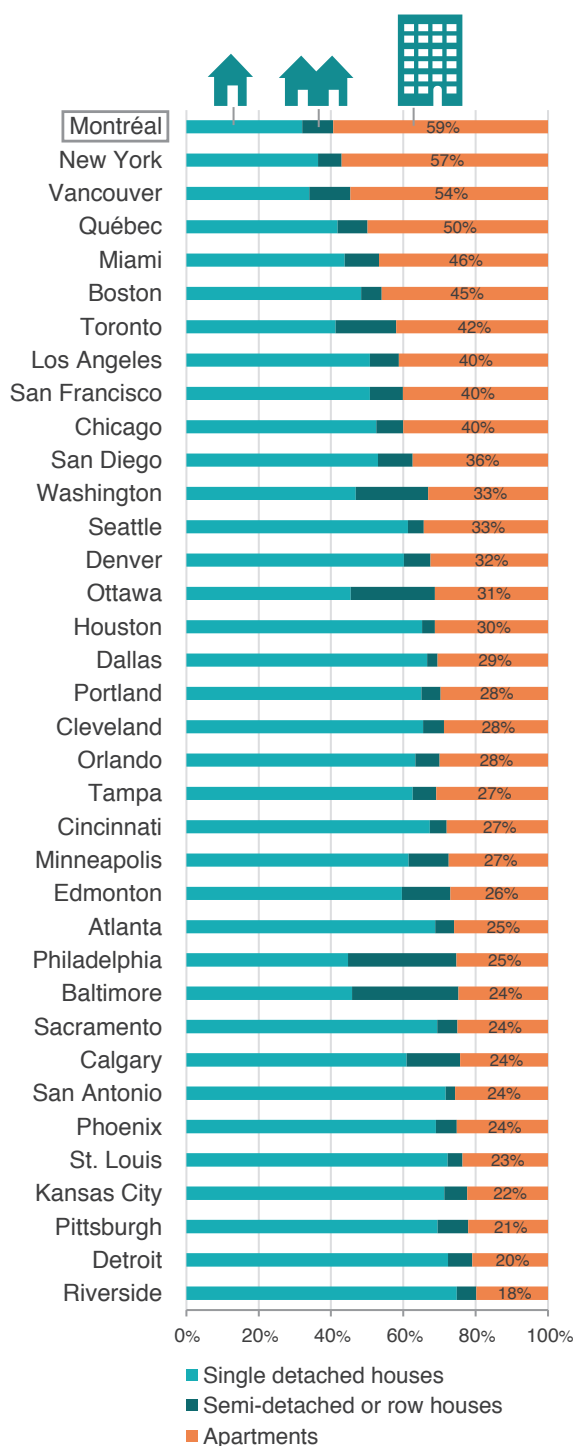


FIGURE 61. Breakdown of occupied private dwellings by housing type, metropolitan areas, 2011



MARKET SHARE GAINS FOR HIGH-DENSITY RESIDENTIAL PRODUCTS IN ALL GREATER MONTRÉAL GEOGRAPHIC SECTORS...

After a period of more than 30 years during which residential development in Greater Montréal consisted principally of single-detached houses, the residential construction market went through a quick transformation starting in 2000 and shifted toward higher-density housing. As a result, the market share represented by apartments, notably condominiums but also rental units (see Figure 70, p. 86), increased substantially from 36.7% of all housing starts in 2000 to 80.2% in 2014.

The increase in the market share of housing starts for apartments was observed in not only the centre of the area but also in each of the five sectors of Greater Montréal, particularly the North and South Shores, and Laval. In 2015, apartments were clearly leading the real estate market in all five sectors.

FIGURE 62. Market share of housing starts by housing type, Greater Montréal and its five sectors



Source: CMHC, *Starts and Completions Survey*, 1991-2015. Processing: CMM, 2016.

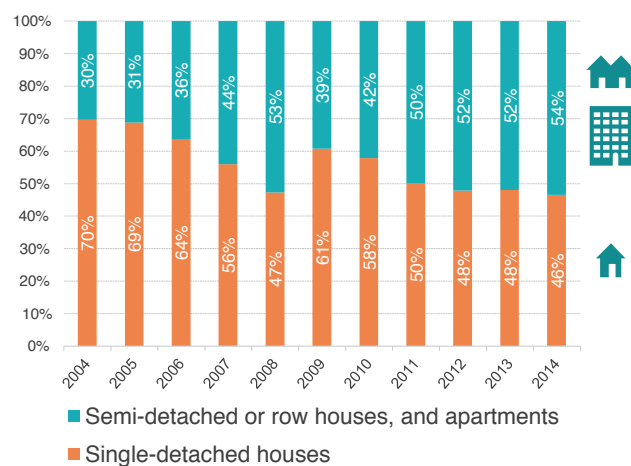
...AND IN ALL MAJOR NORTH AMERICAN METROPOLITAN AREAS

The trend in favour of building denser housing is not exclusive to Greater Montréal. In fact, although the metropolitan area's landscape is mainly composed of single-detached houses (see Figure 61), the last few years have seen an increasing market share of medium- and high-density housing (i.e., apartments and semi-detached or row houses) in almost all North American metropolitan areas.

In 2014, in 17 of 33 metropolitan areas that were studied, over half of building permits issued were for medium- and high-density housing construction. Only 10 years earlier, this was the case for only New York and five other areas, all in Canada.

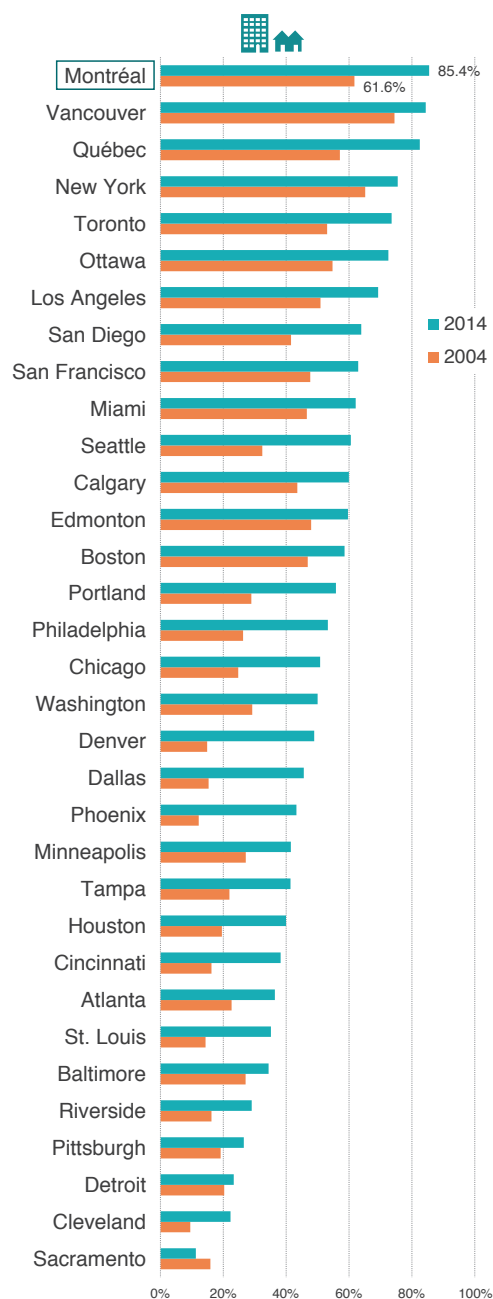
On average, when it comes to all of the major Canadian and US metropolitan areas, a little more than half (54%) of dwellings authorized in 2014 were for medium- or high-density housing. Ten years earlier, in 2004, the corresponding figure was less than a third (30%). It should be noted, however, that in 2009, in the wake of the real estate market crash in the US and some parts of Canada, residential construction, especially of apartments in multiple-dwelling buildings, decreased drastically. The percentage of permits issued for this type of housing dropped as a result, although it did pick up again as of 2010.

FIGURE 63. Market share of home building permits by housing type, major North American metropolitan areas, 2004 to 2014



Sources: Statistics Canada, *Building Permits Survey*, US Census Bureau, *Construction building Permits*. Processing: CMM, 2015.

FIGURE 64. Market share of home building permits issued for medium- and high-density housing,* metropolitan areas, 2004 and 2014



*Apartments, or semi-detached or row houses.

Sources: Statistics Canada, *Building Permits Survey*, US Census Bureau, *Construction building Permits*. Processing: CMM, 2015.

5.3 Homeownership affordability

3RD CANADIAN METROPOLITAN AREA WITH THE MOST LIMITED HOMEOWNERSHIP AFFORDABILITY

The increase in the proportion of one-person households, as well as the aging of the population (see pages 34-36 and 43), are influential trends in favour of more compact housing. Since the beginning of the 2000s, the increase in residential density in Greater Montréal has also coincided with a decrease in homeownership affordability, which favours the construction of condominium properties, as they are less expensive than single-detached houses.

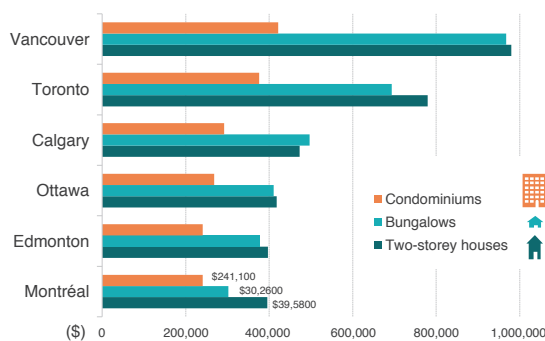
Although housing prices in Greater Montréal remain the lowest among major Canadian metropolitan areas, the *RBC Housing Affordability Measure*, which captures the proportion of the median pre-tax household income required to service the cost (including mortgage payments, property taxes and public utilities) of owning a specific category of dwelling, shows that Greater

Montréal is the third least favourable market in terms of affordability for prospective buyers, after Vancouver and Toronto.²¹ In fact, these three areas are where homeownership affordability has deteriorated the most since the turn of the century.

In Greater Montréal, the homeownership affordability of both single-detached houses and condominiums declined quickly from the beginning of the 2000s until the financial crisis in the fall of 2008. A period of tumult followed, but affordability started to improve in 2014, when real estate prices began to stabilize and mortgage rates hit historic lows.

²¹ Another affordability index recognized in Canada is the Desjardins Affordability Index (DAI). Although this index does not report data broken down by type of dwelling, it also rates Greater Montréal as the third Canadian market in terms of limited homeownership affordability, again after Vancouver and Toronto.

FIGURE 65. Current prices for different types of dwelling, Canadian metropolitan areas, 2015



Note: No data available for the Québec area.

FIGURE 66. Ownership costs as % of median household income, Canadian metropolitan areas, 2015

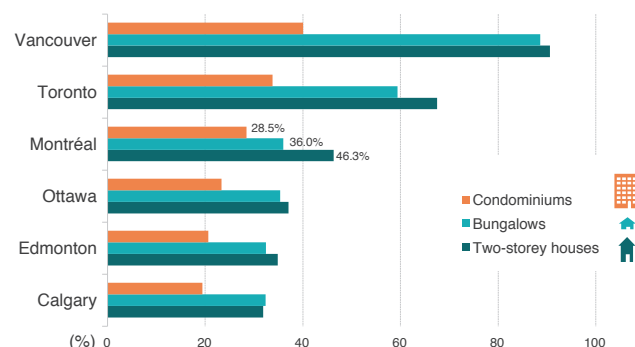
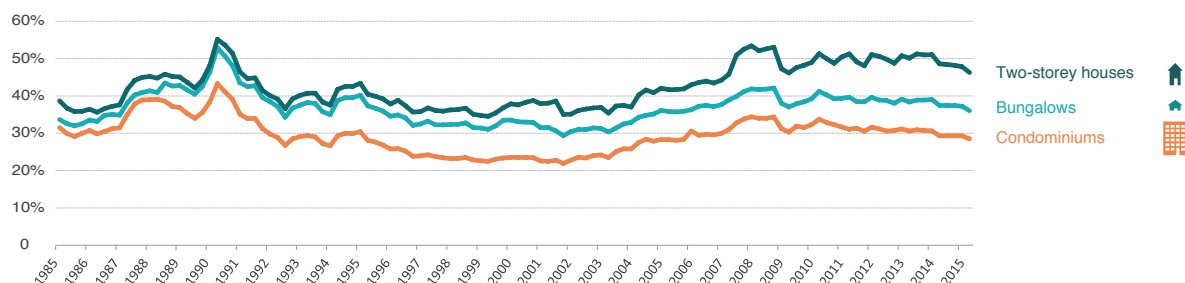


FIGURE 67. Ownership costs as % of median household income, Greater Montréal, 1985-2015



Source: RBC, Housing Affordability Measure. Processing: CMM, 2016.

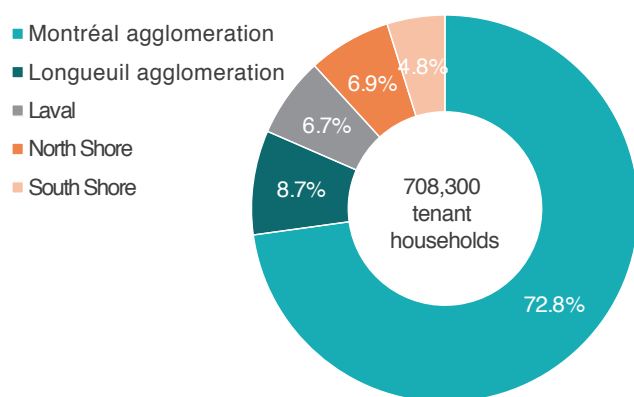
5.4 Rental housing and social and affordable housing

5TH NORTH AMERICAN METROPOLITAN AREA IN TERMS OF PROPORTION OF TENANT HOUSEHOLDS

One of the particularities of the Greater Montréal housing market is its great supply of rental housing. Close to half (45.3%) of the 1,565,000 occupied private dwellings are rental housing for the most part (75.2%) built before 1981. Among North American metropolitan areas, Greater Montréal ranks fifth in terms of the proportion of tenant households, coming after the areas of San Francisco, San Diego, New York and Los Angeles.

At the intrametropolitan level, 72.8% of tenant households of Greater Montréal are in the Montréal agglomeration, 8.7% in the Longueuil agglomeration, 6.9% on the North Shore, 6.7% in Laval and 4.8% on the South Shore.

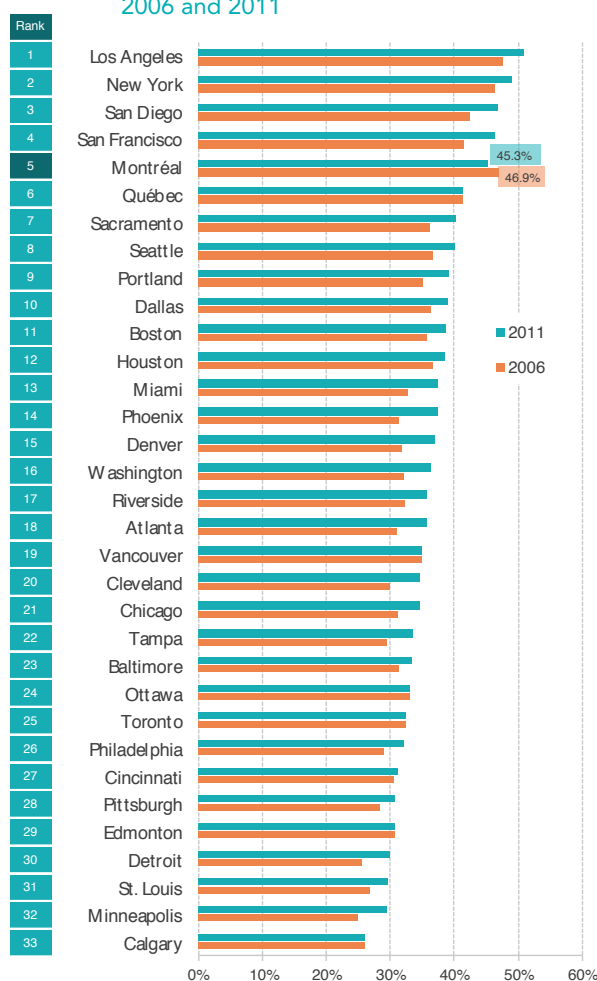
FIGURE 68. Breakdown of tenant households in Greater Montréal, 2011



Source: Statistics Canada, 2011 National Household Survey (NHS).
Processing: CMM, 2015.

Although the number of tenant households in the area remains high, the percentage of total households that they represent has decreased since the turn of the millennium, dropping from 49.9% to 45.3% between 2001 and 2011. Over the most recent period, 2006-2011, when several North American metropolitan areas were hit head-on by the economic crisis, Greater Montréal was the only area where the percentage of tenant households actually decreased.

FIGURE 69. Proportion of private households living in rental housing, metropolitan areas, 2006 and 2011



Sources: Statistics Canada, 2006 Census of Population and 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2006 and 2011. Processing: CMM, 2015.

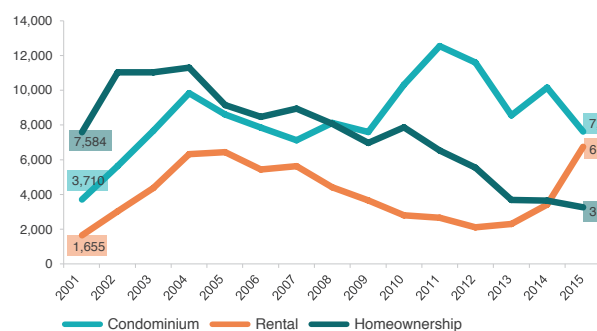
INCREASE IN CONSTRUCTION OF RENTAL HOUSING UNITS SINCE 2013

Following a decrease between 2006 and 2012, the rental housing starts in Greater Montréal took an upswing in 2013. Over the last five years, it has been estimated that seniors' private residences and affordable subsidized housing have accounted for close to 75% of new rental housing.²²

Although rental housing is heavily concentrated in the Montréal agglomeration (72.8%), new rental housing is spread out over the entire territory. Of the 12,472 rental housing starts in Greater Montréal since 2013, 34% are in the Montréal agglomeration, 22% on the North Shore, 18% on the South Shore, 13% in the Longueuil agglomeration and 12.4% in Laval.

²² CMM (2016). "Logements locatifs : hausse du taux d'inoccupation et des mises en chantier dans le Grand Montréal," *Perspective Grand Montréal*, No. 30, 8 p. http://cmm.qc.ca/fileadmin/user_upload/periodique/30_Perspective.pdf

FIGURE 70. Housing starts by target market, Greater Montréal, 2001 to 2015



Source: CMHC, *Starts and Completions Survey*, 2001-2015.
Processing: CMM, 2016.

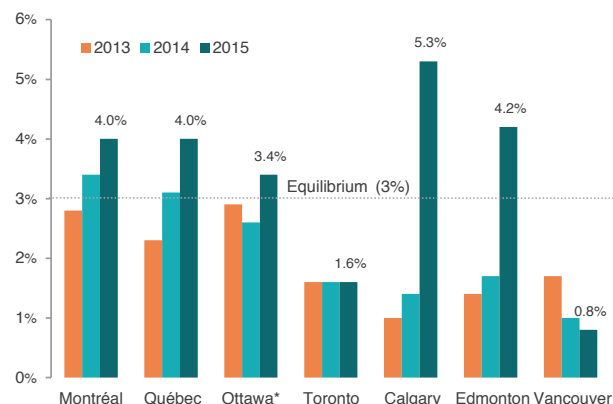
THE RENTAL HOUSING VACANCY RATE ROSE TO 4% FOR THE FIRST TIME SINCE THE END OF THE 1990s

The vacancy rate for rental housing, one of the key indicators of the rental housing needs analysis, rose to 4% in Greater Montréal in 2015, which is somewhat higher than the generally recognized market balance rate of 3%. In 2015, among major Canadian metropolitan areas, only Toronto and Vancouver had vacancy rates below the equilibrium threshold of 3%.

In contrast, within the metropolitan area itself, there have been recurring rental housing shortages in certain parts of the North Shore and Laval.²³

²³ CMM, *loc. cit.*

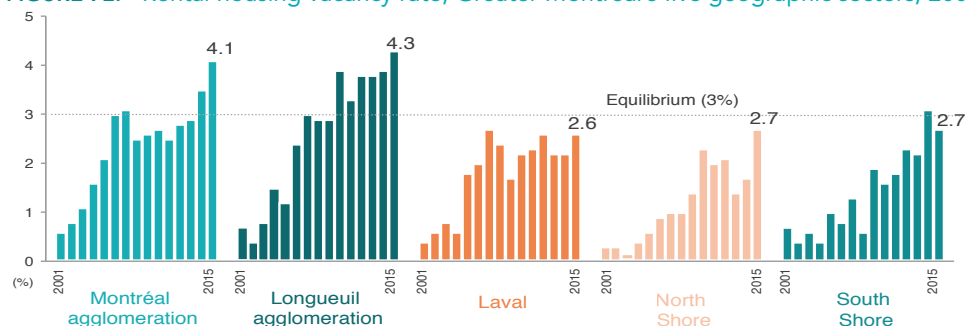
FIGURE 71. Rental housing vacancy rate, major North American metropolitan areas, 2013 to 2015



* Only the Ontarian portion of Ottawa-Gatineau CMA is considered here.

Source: CMHC, *Rental Market Survey*, October 2001 to October 2015.
Processing: CMM, 2016.

FIGURE 72. Rental housing vacancy rate, Greater Montréal's five geographic sectors, 2001 to 2015



Source: CMHC, *Starts and Completions Survey*, 2001-2015, special compilation.
Processing: CMM, 2016.

CLOSE TO 230,000 TENANT HOUSEHOLDS EXPERIENCE HOUSING AFFORDABILITY PROBLEMS

For most households, the cost of housing is their greatest expense item. In the case of low-income households, most of which are tenants, the high ratio of housing expense to income can seriously impact quality of life. According to the Canada Mortgage and Housing Corporation (CMHC), a tenant household should not spend more than 30% of its gross income on housing. In 2011, 277,400 Greater Montréal tenant households, i.e., one out of three, were spending more than 30% of their gross income on housing,²⁴ and, of these households, 228,100 were considered low-income.²⁵

Between 2006 and 2011, the number of tenant households spending more than 30% of their total income on housing increased by 16,600 households, 14,400 of which were considered low-income.

Among the 228,100 low-income tenant households experiencing housing affordability problems, over half (i.e., 135,530 households) spend more than 50% of their income on rent.

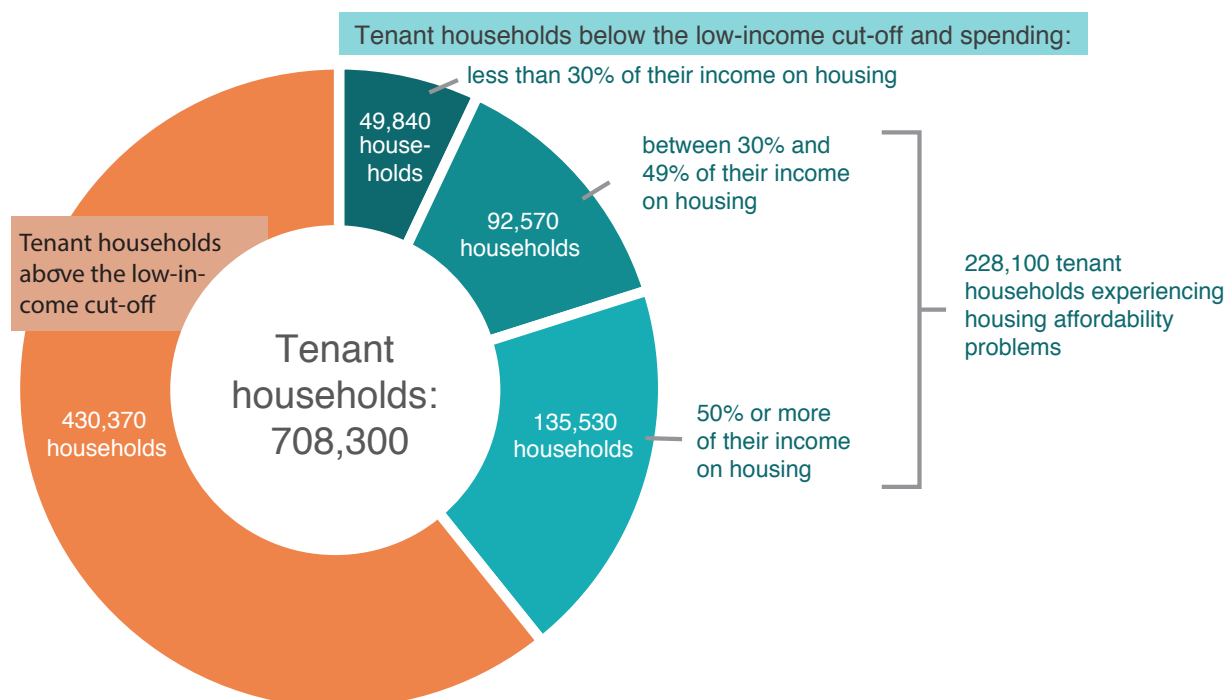
People living alone, young or elderly people, and recent immigrants are the household categories most likely to have housing affordability problems.²⁶

²⁴ Housing costs include rent, electricity, heating, utilities, etc.

²⁵ Montréal households that are considered to be of low-income are those whose earnings total 50% or less of the median household income in the CMM.

²⁶ For further details concerning households experiencing rental housing affordability problems, by type of household, consult the CMM's *Plan d'action métropolitain pour le logement social et abordable (PAMLSA)*, 2015-2020: <http://cmm.qc.ca/champs-intervention/logement-social/plans-en-logement-social/plan-action-logement-social/>.

FIGURE 73. Housing affordability of tenant households in Greater Montréal, 2011



Note: Households considered to be low-income here are those whose earnings total 50% or less of the median household income in the CMM.

Source: Statistics Canada, 2011 National Household Survey (NHS). Processing: CMM, 2016.

LOWER PROPORTION OF SUBSIDIZED HOUSING IN GREATER MONTRÉAL THAN IN OTHER METROPOLITAN AREAS IN CANADA

Housing is considered “social” if the rent is set on the basis of the occupying household’s income, while it is qualified as “affordable” if the rent amounts to less than the market’s median value and benefits from a government assistance program.

In Greater Montréal, the most recent data compiled by the CMM²⁷ show that more than half (55.7%) of social and affordable housing units consist more specifically of low-rent public housing (30,485 units) and dwellings whose households qualify for the Rent Supplement Program (RSP) (10,906 units). As for affordable housing units, they are mainly dwellings overseen by housing cooperatives and non-profit organizations (NPO) stemming from former programs operated by the CMHC and the Société d’habitation du Québec (SHQ) (24,813 units, 22,746 of which do not qualify for the RSP), and, since 1997, housing units made available through Accèslogis Québec (9,978 units, 6,136 of

which do not qualify for the RSP), and housing units made available through the Logement abordable Québec (LAQ) program (4,101 units).

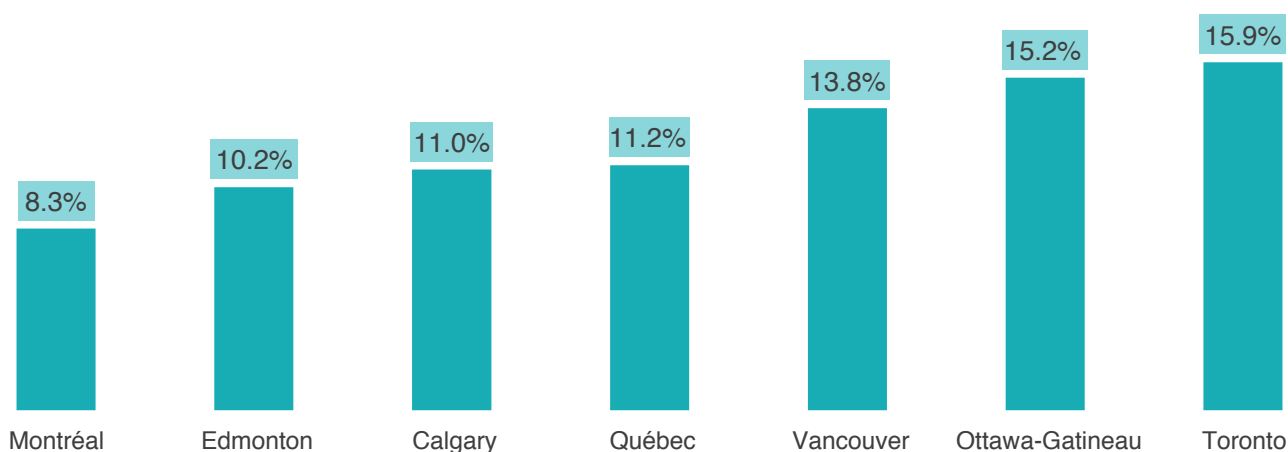
Social and affordable housing units²⁷ are concentrated in the Montréal agglomeration (79.9%), where 72.8% of the area’s tenant households live.

In Canada, the data from Statistics Canada’s *National Household Survey* (NHS) allow a comparison of the metropolitan areas in terms of percentage of tenant households living in subsidized housing. Subsidized (or indexed-rent) housing, as defined by Statistics Canada, includes rent geared to income, social housing, non-profit housing, low-rent public housing and housing units whose tenants qualify for government housing assistance, rent supplements or housing allowances.

Of Canada’s major metropolitan areas, Greater Montréal has the lowest proportion of tenant households with access to subsidized housing (8.3%), far behind the metropolitan areas of Vancouver (13.8%), Ottawa-Gatineau (15.2%) and Toronto (15.9%).

²⁷ For further details, see: CMM (2014). “Offre et besoins en logements sociaux et abordables dans le Grand Montréal.” *Les Cahiers métropolitains*, No. 3: http://cmm.qc.ca/fileadmin/user_upload/periodique/cahiersMetropolitains_no03.pdf

FIGURE 74. Proportion of tenant households living in subsidized housing, Canada’s largest CMAs, 2011



Source: Statistics Canada, 2011 *National Household Survey* (NHS). Processing: CMM, 2016.

BOX 4

2015-2020 METROPOLITAN ACTION PLAN FOR SOCIAL AND AFFORDABLE HOUSING

Following in the footsteps of the *Metropolitan Action Plan for Social and Affordable Housing, 2009-2013* (*Plan d'action métropolitain pour le logement social et abordable* or PAMLSA), the 2015-2020 edition of PAMLSA has set several objectives aimed at improving the living conditions of Greater Montréal residents experiencing difficulty finding housing. Certain actions involving program financing are at the very core of the CMM interventions and have been renewed. It should be noted that the CMM invests close to \$45 million a year in social housing.

Moreover, in keeping with this changing environment, the CMM has proposed new focus areas. For example, the CMM considers reimbursement of not only renovation work on low-rent public housing stock but also, under certain conditions, any reconditioning work carried out on some severely blighted low-rent public housing complexes. Other actions being considered are the measures that will need to be taken when operating agreements with the Canada Mortgage and Housing Corporation (CMHC) reach their expiration date.

This plan was meticulously developed to foster more synergy with the *Metropolitan Land Use and Development Plan* (*Plan métropolitain d'aménagement et de développement* or PMAD), notably by promoting sustainability and inclusion of new social housing projects in transit-oriented development (TOD) zones and along public transit corridors. To do so, the PAMLSA has proposed a three-part strategy designed to develop a better understanding of the dynamics involved, to raise public awareness by publishing guides, organizing workshops, sponsoring projects and so on, and to explore the possibility of the CMM financially supporting projects intended to preserve and develop social and affordable housing in these sectors.

Plan d'action métropolitain pour le logement social et abordable (PAMLSA), 2015-2020: http://cmm.qc.ca/fileadmin/user_upload/documents/20150618_pamlsa-2015-2020.pdf

5.5 Residential development in TOD zones

GREATER MONTRÉAL AMONG THE METROPOLITAN AREAS WITH THE HIGHEST PERCENTAGE OF HOUSEHOLDS IN TOD ZONES

Everywhere in North America, local or metropolitan planning and development strategies and tools have been set up to foster urban development in proximity to existing or planned high-capacity mass-transit stations such as train, subway or light-rail transit (LRT) stations. This type of development, dubbed “Transit-Oriented Development,” or TOD, targets the development of medium- to high-density mixed neighbourhoods featuring both mixed uses and social diversity and expressly favouring public transit and the use of active transportation (see box on p. 93).

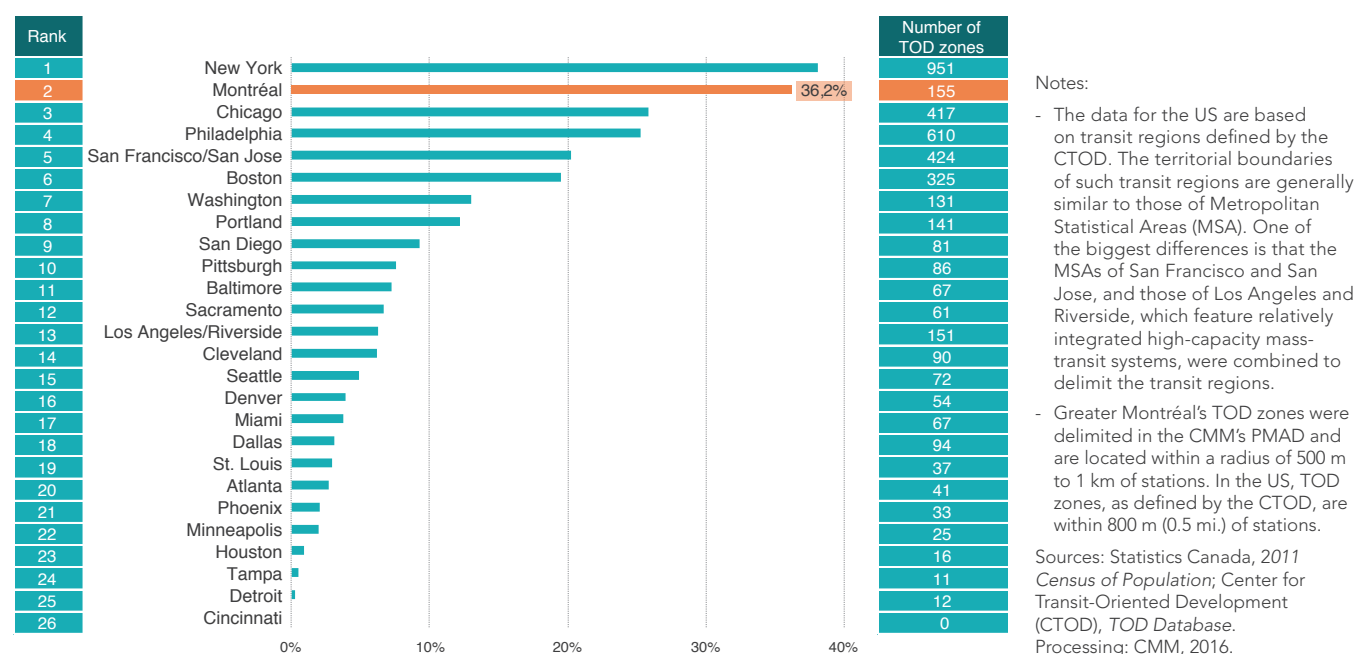
Data compiled by the CMM and the Center for Transit-Oriented Development (CTOD) emphasize the importance, in terms of sheer numbers and demographic weight, of neighbourhoods located near high-capacity public transit stations in Greater Montréal and in major US metropolitan areas. The resulting figures also highlight certain

characteristics of these neighbourhoods, which will be referred to here as TOD zones.²⁸

One of the findings is that the proportion of households living in TOD zones is greater in metropolitan Montréal (36.2% across 155 TOD zones) than in US metropolitan areas, with the exception of New York (38.1% across 951 TOD zones). The other US areas with the highest percentage of households living in TOD zones are Chicago (25.8% in 417 TOD zones), Philadelphia (25.2% in 610 TOD zones), San Francisco/San Jose (20.2% in 424 TOD zones) and Boston (19.5% in 325 TOD zones).

²⁸ The areas we designate here as TOD zones are neighbourhoods in proximity to high-capacity mass-transit stations. These may include neighbourhoods that were not strictly developed on the basis of TOD principles specifically targeting mixed use (social and functional), density and ease of use of active transportation. Further details concerning TOD development principles are available in the following document: CMM 2011 “Guide d’aménagement pour les aires de TOD”: http://cmm.qc.ca/fileadmin/user_upload/pmad2011/documentation/20111004_guideAiresTOD.pdf

FIGURE 75. Proportion of households living in TOD zones (2011 for Greater Montréal and 2010 for the US)



BETWEEN 2001 AND 2011, 23.9% OF HOUSEHOLD GROWTH IN GREATER MONTRÉAL TOOK PLACE IN TOD ZONES

During the decade starting in 2000, only four of the areas studied concentrated 20% or more of their household growth in TOD zones. They were New York (34.4%), San Francisco/San Jose (31.2%), Montréal (23.9%) and Boston (20%).

Although the development taking place in many TOD zones had been planned for several years, even decades, without being subjected to integrated planning based on all TOD principles, the TOD zones that developed did so in a generally compact manner that favours sustainable transportation. The data collected show that both population density and the modal share of sustainable transportation (walking, cycling or public transit) are systematically greater in TOD zones than in the whole urbanized metropolitan area.

Moreover, rental housing, which is an indicator of the social diversity of neighbourhoods, is generally found in great concentrations near high-capacity mass-transit stations, more so than throughout the metropolitan area. In Greater Montréal, 61.7% of households living in TOD zones are tenants, as opposed to 45.3% in the overall territory. However, although the proportion of tenant households remains fairly high in TOD zones all over North America, a number of studies have shown that neighbourhoods in proximity to high-capacity mass-transit stations were particularly affected by gentrification.²⁹

FIGURE 76. Metropolitan area's share of household growth concentrated in TOD zones
(2001-2011 for Greater Montréal and 2000-2010 for the US)

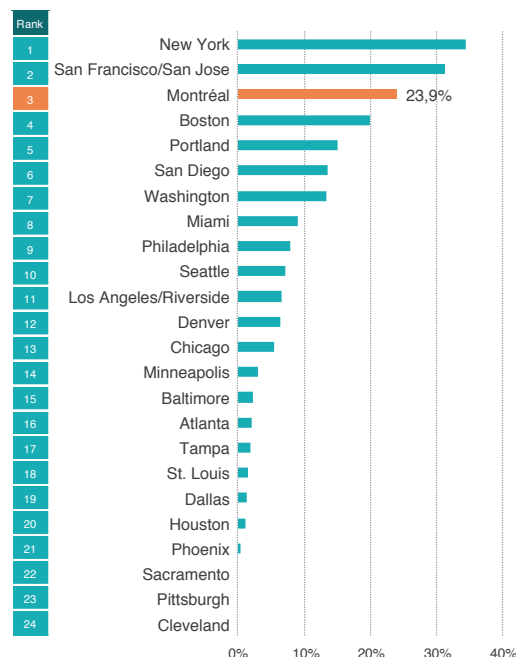
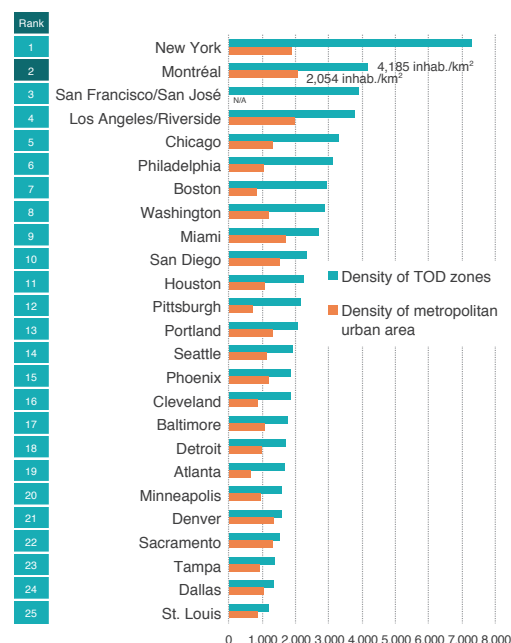


FIGURE 77. Population density (inhabitants per km²), TOD zones and metropolitan urban area as a whole*
(2011 for Greater Montréal and 2010 for the US)



* The term "urban area" in the US regions is as defined by the US Census. In Greater Montréal, it corresponds to the "population centres" as defined by Statistics Canada (for further details, see Figure 38 note on p. 62).

Sources: Statistics Canada, 2001 Census of Population and 2011 National Household Survey (NHS); Center for Transit-Oriented Development (CTOD), TOD Database. Processing: CMM, 2016.

²⁹ On this matter, see in particular Pollack et al. (2010). "Maintaining Diversity In America's Transit-Rich Neighborhoods: Tools for Equitable Neighborhood Change": http://www.northeastern.edu/dukakiscenter/wp-content/uploads/2011/12/TRN_Equity_final.pdf; Jones (2015). "Transit-Oriented Development and Gentrification in Metro Vancouver's Low-Income Skytrain Corridor": <http://neighbourhoodchange.ca/documents/2015/07/vancouver-skytrain-corridor.pdf>; or Grube-Cavers and Patterson (2013). "Urban rapid rail transit and gentrification in Canadian metropolitan areas – A survival analysis approach": <https://www.cirrelt.ca/Documentstravail/Cirrelt-2013-06.pdf>

FIGURE 78. Share of commuting by public transit, TOD zones and metropolitan area as a whole
(2011 for Greater Montréal and 2010 for the US)

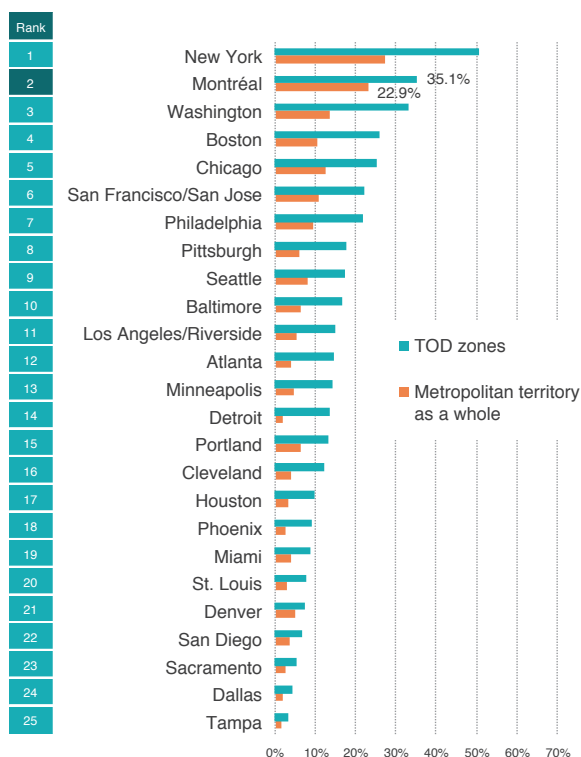


FIGURE 79. Share of commuting via active transport, TOD zones and metropolitan area as a whole
(2011 for Greater Montréal and 2010 for the US)

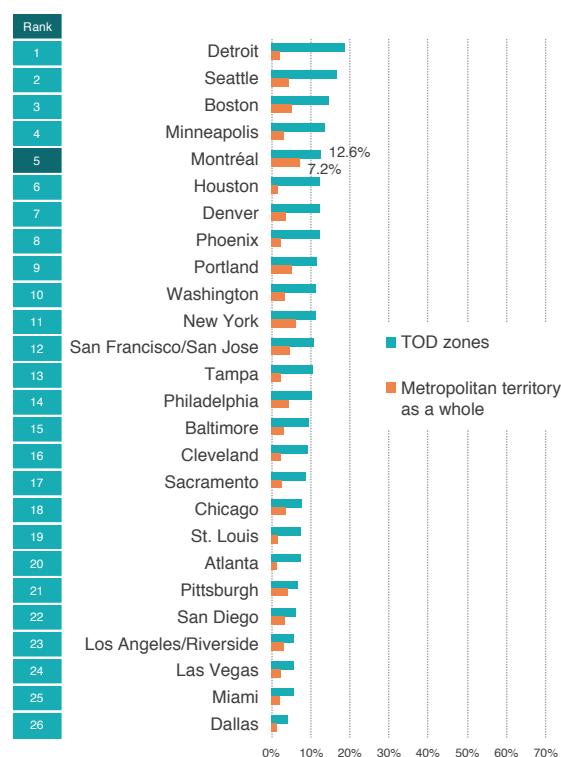
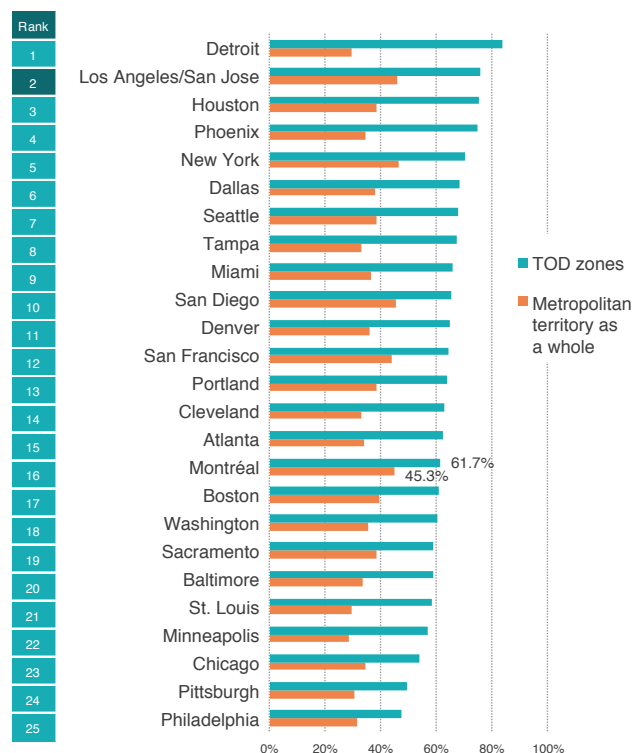
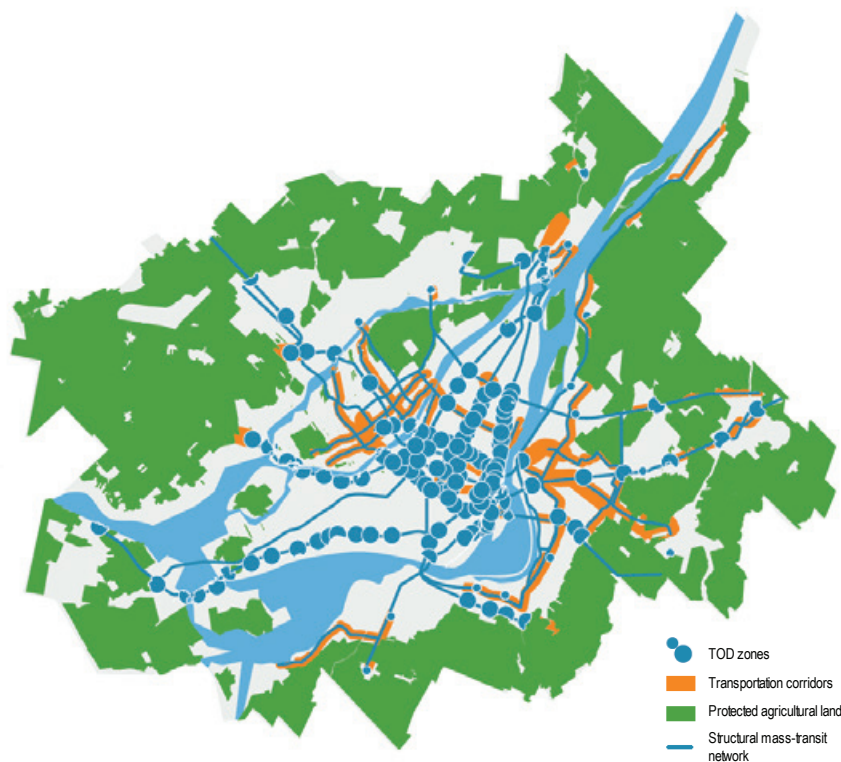


FIGURE 80. Proportion of tenant households, TOD zones and metropolitan area as a whole
(2011 for Greater Montréal and 2010 for the US)



Note: For the US, the data have been compiled on the basis of "transit regions" as defined by the CTOD. The territorial boundaries of transit regions are generally similar to those of "metropolitan statistical areas" (MSA). Among the more salient differences, the MSAs of San Francisco/San Jose and Los Angeles/Riverside, which have more or less integrated their high-capacity mass-transit networks, were combined into single transit regions.

Sources: Statistics Canada, 2011 Census of Population and 2011 National Household Survey (NHS); Center for Transit-Oriented Development (CTOD), TOD Database; US Census Bureau. Processing: CMM, 2016.

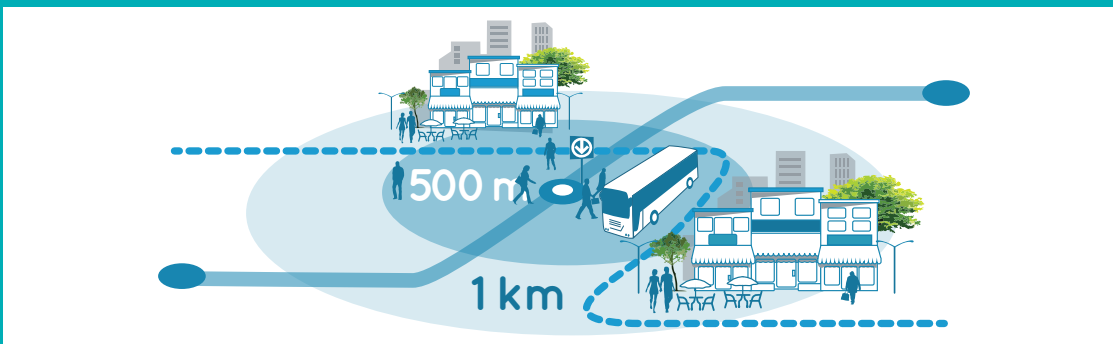


BOX 5

SUMMARY OF BENEFITS OF CREATING TOD NEIGHBOURHOODS

The creation of TOD neighbourhoods helps improve urban quality of life and simultaneously furthers many objectives:

- Increase the number of households and jobs located in the structural mass-transit network's area of influence to improve job accessibility for an increased number of workers.
- Increase accessibility to local services via public and active transportation.
- Reduce greenhouse gas emissions, notably by reducing the spatial mismatch between housing and areas of human activity as well as reducing traffic congestion.
- Optimize public spending, both provincial and municipal.
- Increase property values and better respond to diversified housing needs.
- Improve public health by reducing automobile dependency and promoting active transportation (cycling, walking).
- Reduce the impact of a growing urban footprint on natural and agricultural environments.



METROPOLITAN FINANCIAL ASSISTANCE PROGRAMS FOR INNOVATIVE TOD PROJECT DESIGN

In May of 2012, the CMM committed to providing financial assistance for the design of innovative TOD-type projects. The funding is to be equally shared with the Government of Québec via the *Fonds d'initiative et de rayonnement de la métropole* (FIRM). The program currently oversees six projects, with some \$100,000 in funding going to each of them.

In February 2013, following the implementation of the *Stratégie immobilière pour la région métropolitaine de Montréal*, the CMM Council also adopted, under the *Fonds de développement métropolitain*, the *Programme d'aide financière à la conception de l'aménagement d'aires TOD* (TOD Program) and advanced \$1 million toward its start-up. In the winter and spring of 2015, the CMM's Executive Committee decided to grant financial aid of up to \$100,000 to each of the eleven projects selected.

A total of \$1.7 million will be available to 17 innovative projects being developed in 14 Greater Montréal municipalities. This initiative commits stakeholders to:

- Conduct studies or detailed planning of TOD zones as an integral part of an inclusive, open-ended project;
- Apply the principles listed in Criterion 1.1.3 of the PMAD on the development of TOD zones in the course of their demonstration projects, with a view to exceeding PMAD expectations;
- Work in tandem with the CMM and its key partners, notably the government, the *Agence métropolitaine de transport* (AMT), the transit operating authorities and the RCM in a bid to optimize the application of these principles.

For further details, see: <http://cmm.qc.ca/champs-intervention/amenagement/programmes-et-reglements-en-amenagement/aide-financiere-a-la-conception-de-projets-novateurs-tod/>

5.6 Residential spaces available and development horizon

ENOUGH VACANT SPACES OR SPACES SLATED FOR REDEVELOPMENT TO HOST ANTICIPATED HOUSEHOLD GROWTH THROUGH 2031

The latest estimates correlating new household projections and the host capacity in Greater Montréal (Figure 81) show that each of the area's five major sectors have enough residential spaces that are vacant or slated for redevelopment to host the 221,000 new households expected between now and 2031 (see p. 41).

These estimates show that if the gross residential density of housing built in coming years remains at the level recorded between 2010 and 2013,³⁰ Greater Montréal would be able to host close to 300,000 new households if only vacant residential spaces are considered, and some 500,000 if spaces slated for redevelopment are considered as well.³¹

Spaces slated for redevelopment are lots already built on, which are meant for residential or mixed redevelopment. Although not technically vacant, such lots increase the amount of residential spaces available by virtue of their redevelopment potential.

A number of targeted estimates carried out on Greater Montréal's 155 TOD zones and based on density thresholds prescribed by the PMAD have shown that the housing capacity around high-capacity mass-transit stations was 128,300 households in 2014. As a reminder, the PMAD is expecting to concentrate 40% of household growth in Greater Montréal TOD zones between 2011 and 2031.

³⁰ The overall gross residential density (both in and out of TOD zones) observed for units built between 2010 and 2013, and considered in the housing capacity estimates, was 117 units per hectare for the Montréal agglomeration, 28 for the Longueuil agglomeration, 39 for Laval and 22 for both the South and North Shores. Given the minimum density thresholds prescribed by the *Metropolitan Land Use and Development Plan (Plan métropolitain d'aménagement et de développement or PMAD)* that came in effect in 2012, residential densities are expected to rise above 2010–2013 levels over the next few years. Any increase in this density will have the effect of increasing the hosting capacity.

³¹ The estimate of the hosting capacity of residential/mixed redevelopment spaces is based on the assumption that 50% of such spaces can be used for residential purposes.

FIGURE 81. Development horizon according to estimated hosting capacity and projected new households, Greater Montréal and its five geographic sectors, 2016-2031



Sources: CMM, *Superficie des espaces vacants et superficie des espaces à redévelopper*; MAMOT, 2011 to 2014 valuation rolls; Institut de la statistique du Québec, *Perspectives démographiques*, édition 2014. Processing: CMM, 2015.



TRANSPORTATION



6.1 Public transit and automobile use	100
6.2 Active transportation.....	106
6.3 Transportation of goods	113

6.1 Public transit and automobile use

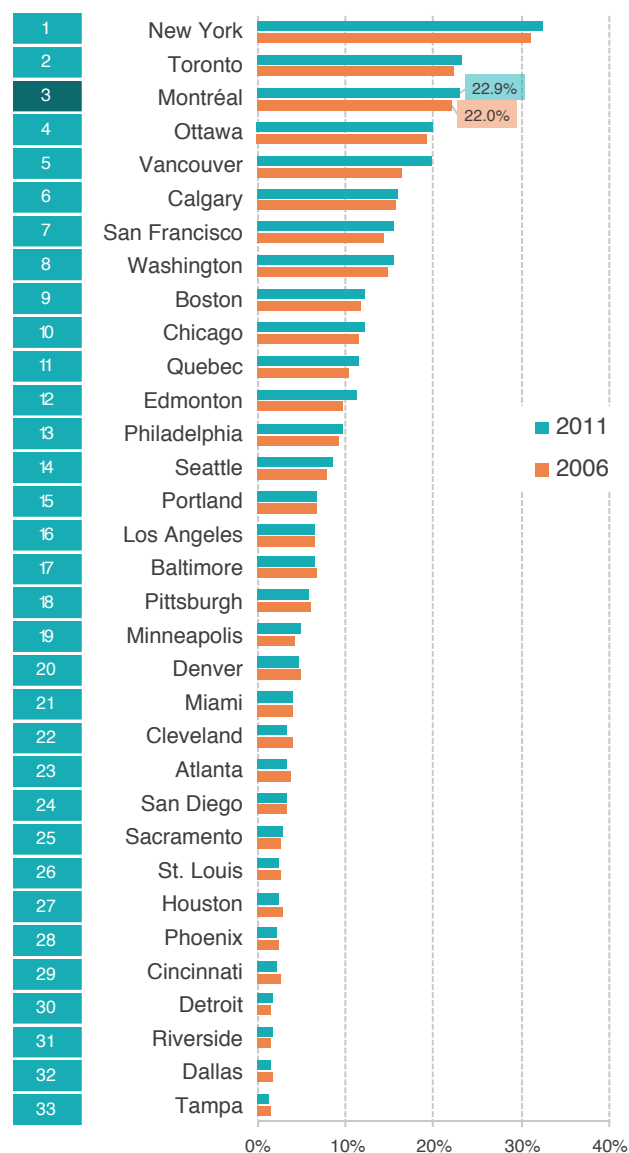
NORTH AMERICA'S THIRD-HIGHEST PERCENTAGE OF COMMUTERS USING PUBLIC TRANSIT

Implementing measures and facilities to increase the use of public transit and active transportation is an integral part of the metropolitan area's main strategies to reduce greenhouse gas (GHG) emissions.

In 2011, the car was still the primary mode of transportation for commuting to and from work in all North America's major metropolitan areas. Canadian metropolitan areas, however, boast higher modal shares of public transit than most of their US counterparts. At 22.9%, Greater Montréal stands out with its high modal share of public transit commuting and ranks third in North America, behind New York (31.1%) and Toronto (23.3%).

From 2006 to 2011, the proportion of workers commuting by public transit has increased in Greater Montréal, as in a dozen other metropolitan areas where public transit use is most common. Conversely, in areas where public transit is less commonly used, the modal share of public transit has decreased. This was most notably the case in Cleveland, Atlanta, St. Louis, Houston and Phoenix.

FIGURE 82. Proportion of commuters primarily using public transit, metropolitan areas, 2006 and 2011.



Sources: Statistics Canada, 2006 Census of Population and 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2006 and 2011. Processing: CMM, 2016.

MONTRÉAL: 4TH BEST-SERVED METROPOLITAN AREA IN TERMS OF PUBLIC TRANSIT

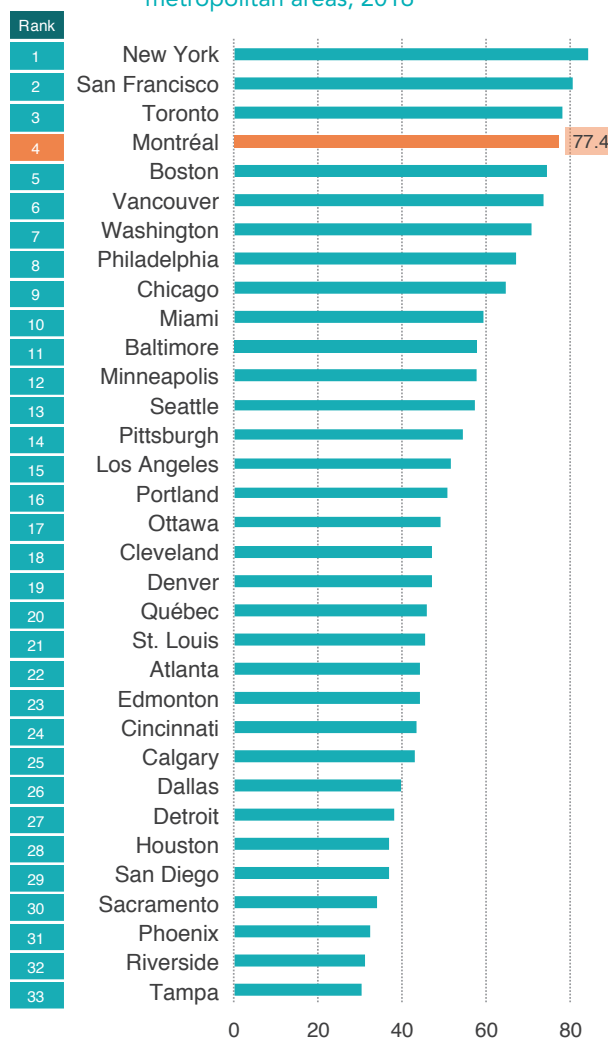
Spatial accessibility to reliable public transit services is one of the key factors promoting their use. Using a set of criteria, the Transit Score — a composite index developed by Walk Score — measures the level of accessibility and the quality of public transit services in some of North America's major cities.

With a Transit Score of 77.4, Montréal ranks fourth in North America in terms of accessibility to public transit, behind New York (84.1), San Francisco (80.4) and Toronto (78.1).

It should be noted that the nine metropolitan areas with the highest Transit Scores are also among those with the highest proportion of commuting by public transit (Figure 82).

Transit Score index	
90–100	Transit user's paradise
70–89	Excellent accessibility to public transit Most commutes can be done by public transit
50–69	Good accessibility to public transit Many nearby public transit options
25–49	Car-dependent Few nearby public transit options
0–24	Highly car-dependent Almost all daily errands need to be done by car

FIGURE 83. Transit Score Index, North American metropolitan areas, 2016



Source: Walk Score®, Transit Score, June 2016. Processing: CMM, 2016.

TRANSIT SCORE METHODOLOGY

1) Calculating the Raw Transit Score

The values of all public transit routes in proximity to a certain point are added together. The value of a route is determined by the service level (weekly frequency) multiplied by the mode weight assigned to the mode of transportation involved (i.e., 2 for rail transportation, 1.5 for ferries, cable cars or other, and 1 for buses) multiplied by a factor reflecting the distance to the nearest stop.

2) Normalizing Scores from 0 to 100

The scores are then normalized from 0 to 100. The scale is logarithmic as the data vary considerably from one city to the next and the effects of this variance are not linear. For example, the impact of adding a single bus line in a small city may be greater than the addition of ten lines in New York. The value of 100 is based on the scores obtained for the city centres of San Francisco, Chicago, Boston, Portland and Washington, D.C.

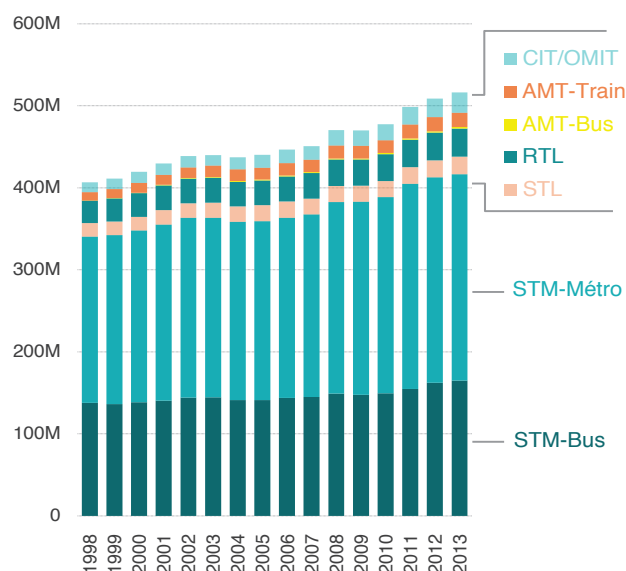
Source: Walkscore.com

MONTREAL'S SUBURBS: 4TH HIGHEST SCORE FOR PUBLIC TRANSIT USE

As compared to the central cities of metropolitan areas, the suburbs typically have population and employment densities that are less favourable to the implementation of major public transit services. In the suburbs, which usually account for more than half of metropolitan populations (see p. 29), the modal shares of public transit commuting rarely exceed 10%.

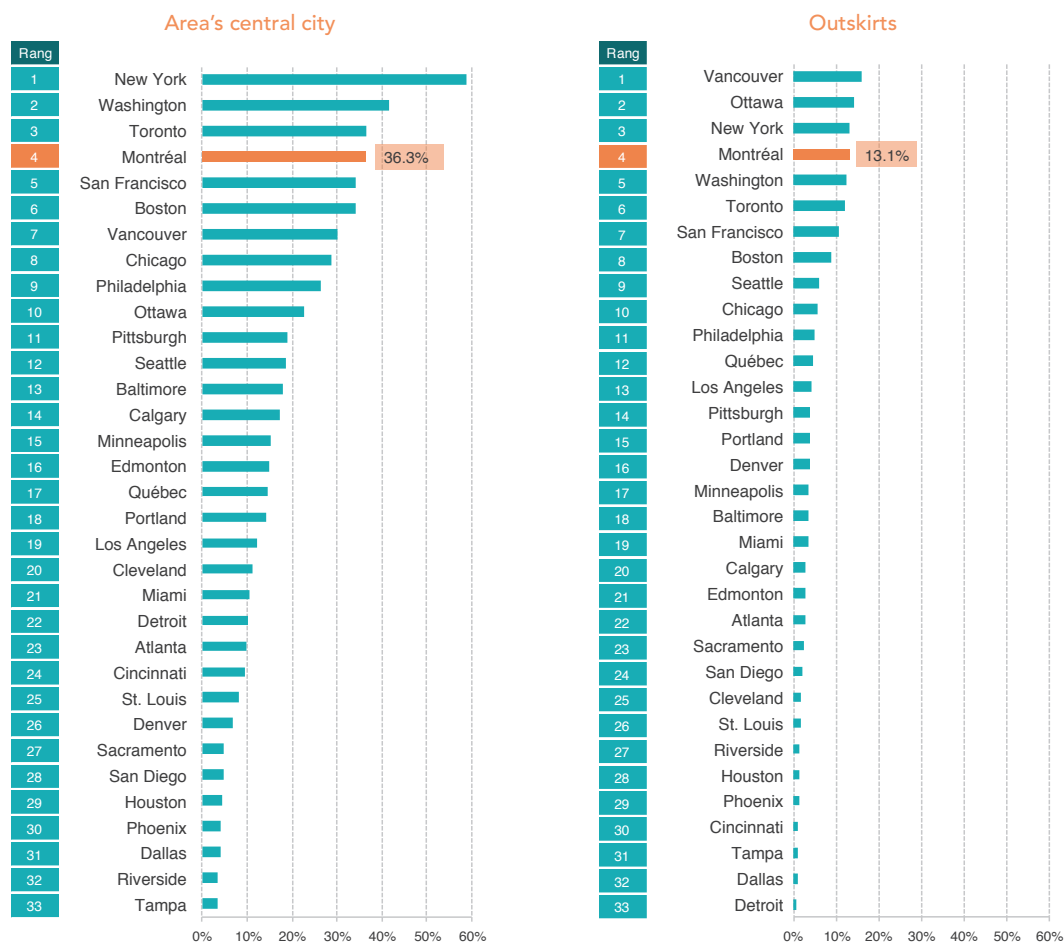
By comparison, in larger cities like New York, Washington, D.C., Toronto, San Francisco, Boston or Montréal, all of which have a subway system, more than a third of work commutes are by public transit.

FIGURE 84. Annual ridership (in millions of trips) of Greater Montréal's public transit networks, 1998–2014



Source: Agence métropolitaine de transport. Processing: CMM, 2016.

FIGURE 85. Proportion of commuters primarily using public transit by place of residence (metropolitan area's central city versus outskirts), 2011



Sources: Statistics Canada, 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2011. Processing: CMM, 2016.

In Greater Montréal, outside the city of Montréal, the modal share of public transit commuting is 13.1%, which is the fourth highest in North American suburbs. The mass-transit services are provided by the *Réseau de transport de Longueuil* (RTL), the *Société de transport de Laval* (STL), the commuter train network operated by the *Agence métropolitaine de transport* (AMT), nine intermunicipal boards of transport (*conseils intermunicipaux de transport* or CIT), one regional public transport board (*Conseil régional de transport* (CRT) de Lanaudière), one municipal and intermunicipal transport agency (*Organisme municipal et intermunicipal de transport* (OMIT) Sainte-Julie) and the STM metro network, for Longueuil and Laval.³²

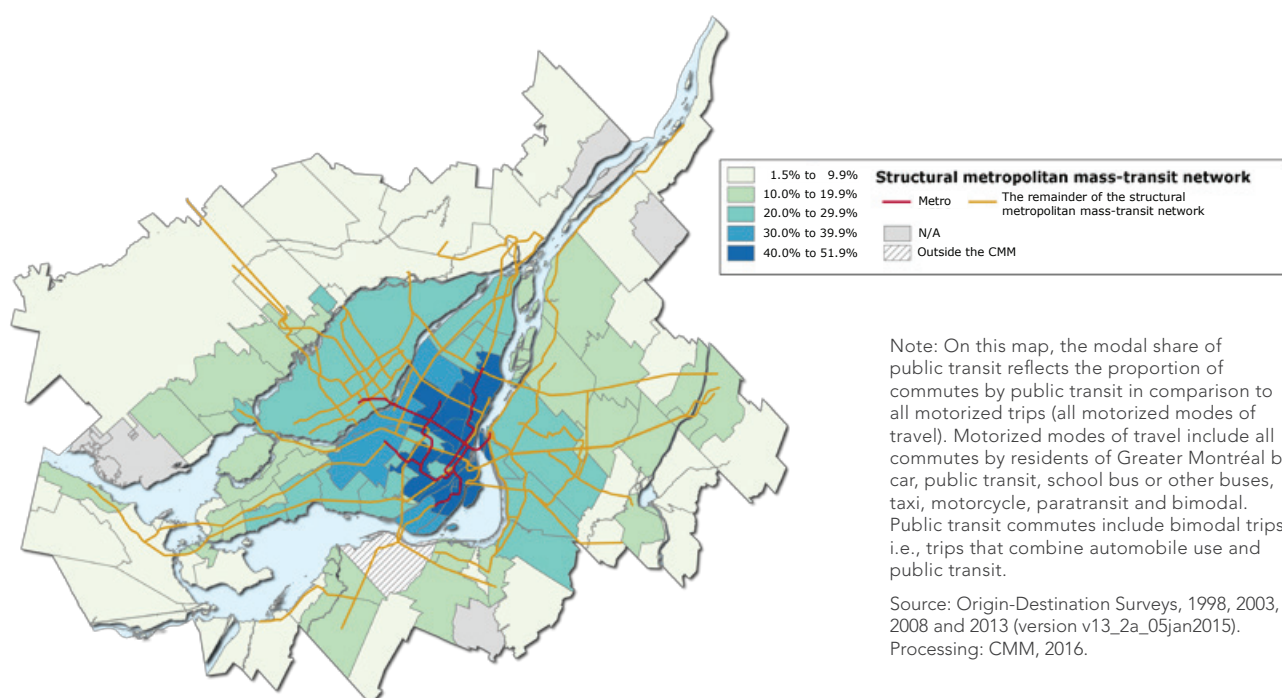
While commuting data issued by Statistics Canada and outlined in the previous pages allow for comparisons between different North American

areas with respect to commuting, the data provided by the five-year Origin-Destination Surveys in the Montréal area have the advantage of covering the entire range of trip purposes — work, but also school, shopping and leisure activities. These figures show that within the city of Montréal, there are several central neighbourhoods characterized by a high residential density and well served by mass-transit services, particularly the metro network, which have modal shares of public transit for commuting (for all reasons) exceeding 40% during morning rush hour. Scoring very high in this respect are the boroughs of Plateau-Mont-Royal (52%), Villeray–Saint-Michel–Parc-Extension (49%), Verdun (46%), Ville-Marie (43%), Rosemont–La Petite-Patrie (43%), Côte-des-Neiges–Notre-Dame-de-Grâce (43%), Mercier–Hochelaga-Maisonneuve (43%) and the Sud-Ouest (42%).

Outside the Island of Montréal, there are some municipalities with a modal share of public transit varying from 20% to 30%. This is the case for Saint-Lambert (29%), Brossard (28%), Longueuil (24%), Deux-Montagnes (23%), Lorraine (21%) and Laval (21%).

³² Under the Act to modify the organization and governance of shared transportation in the Montréal metropolitan region passed in May 2016, the AMT will be abolished and replaced by the *Autorité régionale de transport métropolitain* (ARTM), which will manage the planning and pricing aspects, and the *Réseau de transport métropolitain* (RTM). This latter agency will also replace the area's CITs, OMIT and CRT and operate the commuter trains and buses on the North and South Shores.

MAP 12. Modal share of public transit (all purposes) during morning peak hours (6 to 9 a.m.) by trip origin, Greater Montréal municipalities and Montréal boroughs, 2013.



SLIGHT DECREASE IN MODAL SHARE OF PUBLIC TRANSIT BETWEEN 2008 AND 2013

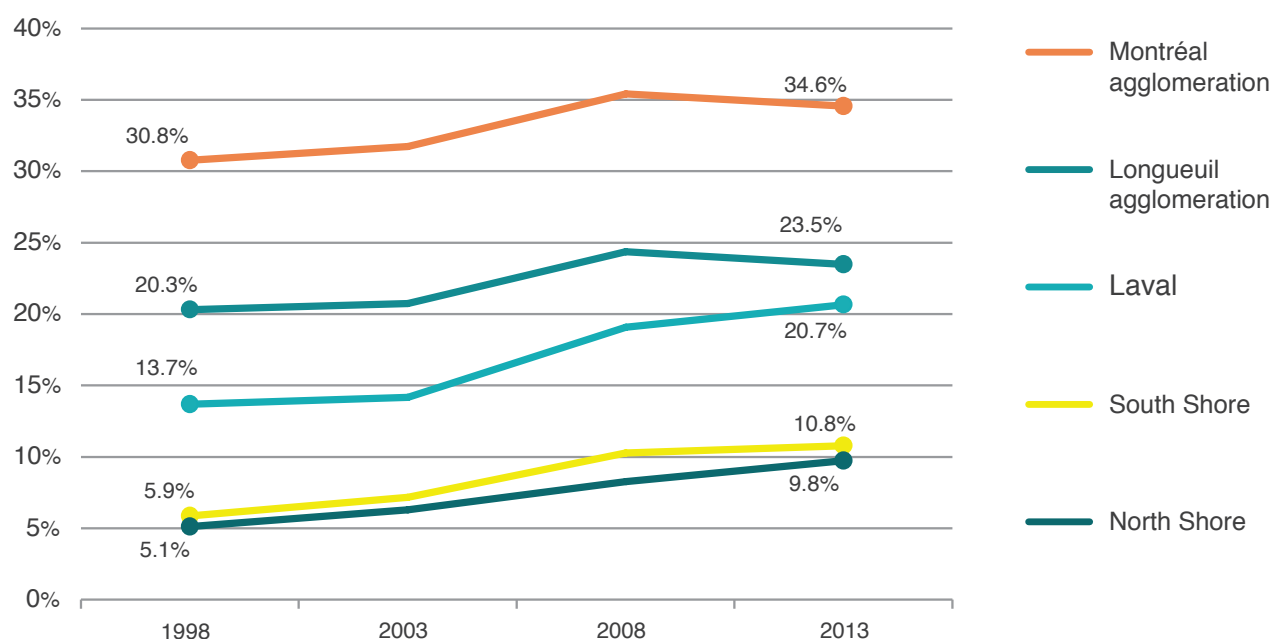
Although public transit ridership increased over the last few years in the area, the proportion of commutes by public transit for all reasons combined (work, school, shopping and leisure) decreased slightly between 2008 and 2013, from 25% to 24.7%.

At the level of Greater Montréal's geographic sectors, the modal share of public transit has increased in Laval, the North Shore and the South

Shore. This can be explained by the enhancement of services, notably the extension of the metro into Laval, as well as by the addition of service on the commuter train lines, bus services and incentive parking spots in these sectors.

However, the modal share of public transit decreased in Montréal and Longueuil agglomerations between 2008 and 2013.

FIGURE 86. Modal share of public transit for motorized trips (all purposes) during morning peak hours (6 to 9 a.m.) by trip origin, 1998–2013



Note: On this figure, the modal share of public transit reflects the proportion of commutes by public transit in comparison to all motorized trips (all motorized modes of travel). Motorized modes of travel include all commutes by residents of Greater Montréal by car, public transit, school bus or other buses, taxi, motorcycle, paratransit and bimodal trips. Public transit commutes include bimodal, i.e., trips that combine automobile use and public transit.

Source: Origin-Destination Surveys, 1998, 2003, 2008 and 2013 (version v13_2a_05jan2015). Processing: CMM, 2016.

9TH MOST CONGESTED AREA IN NORTH AMERICA AND INCREASE IN THE MOTORIZATION RATE BETWEEN 2009 AND 2013

While car commuting in the area dropped between 2003 and 2008, the subsequent period, 2008 to 2013, was characterized with a substantial upswing in this mode of transportation. During morning rush hour, for example, car commuting increased 14.4%, as opposed to 8.6% for public transit commutes.

At the same time, the number of cars in the area continued to grow faster than the population. The motorization rate, i.e., the number of motor vehicles per inhabitant, increased in each of Greater Montréal's five geographic sectors.

The latest studies from the *Ministère des Transports du Québec* estimated the cost of traffic congestion in Greater Montréal to be \$1.9 billion (in 2008).

In 2016, according to the TomTom Traffic Index, which measures the amount of time spent in traffic for all car commutes and compares it to the time it takes to commute in free-flow situations (when there's no congestion), the Montréal area ranked ninth-most-congested among all of the benchmarking areas.³³ According to the same index, the average car commuting time in the Montréal area is 26% longer than it would be in a free-flow situation.³⁴

FIGURE 87. Number of commutes by Greater Montréal residents during morning peak hours (6 to 9 a.m.) by motorized mode of travel, 1998–2013

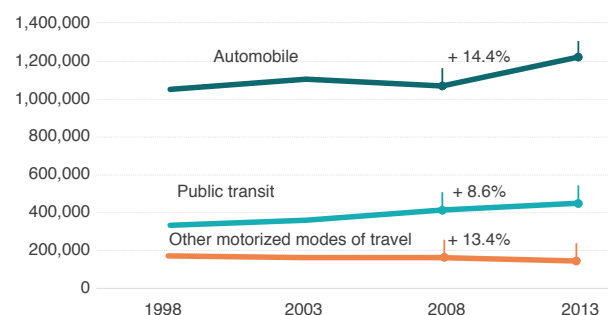
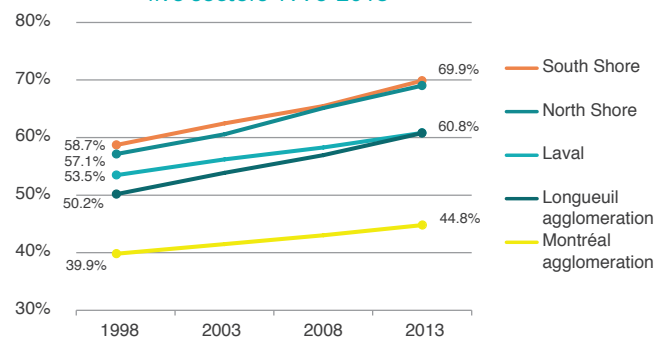
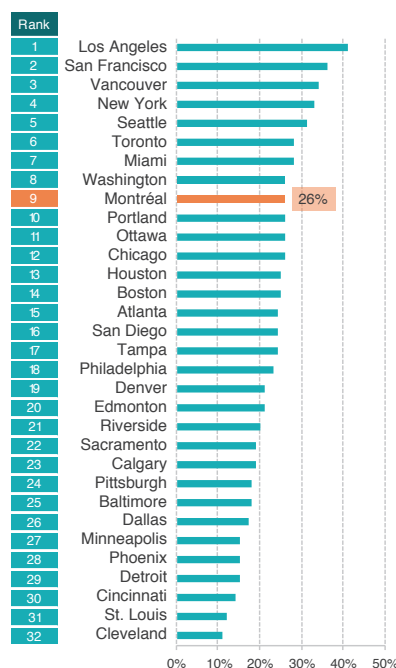


FIGURE 88. Motorization rate in Greater Montréal and its five sectors 1998–2013



Source: Origin-Destination Surveys, 1998, 2003, 2008 and 2013 (version v13_2a_05jan2015). Processing: CMM, 2016

FIGURE 89. TomTom Traffic Index, metropolitan areas, 2016



Source: TomTom, *TomTom Traffic Index 2016*. Processing: CMM, 2016.

³³ For further details on the TomTom Traffic Index, see: https://www.tomtom.com/en_ca/trafficindex/about

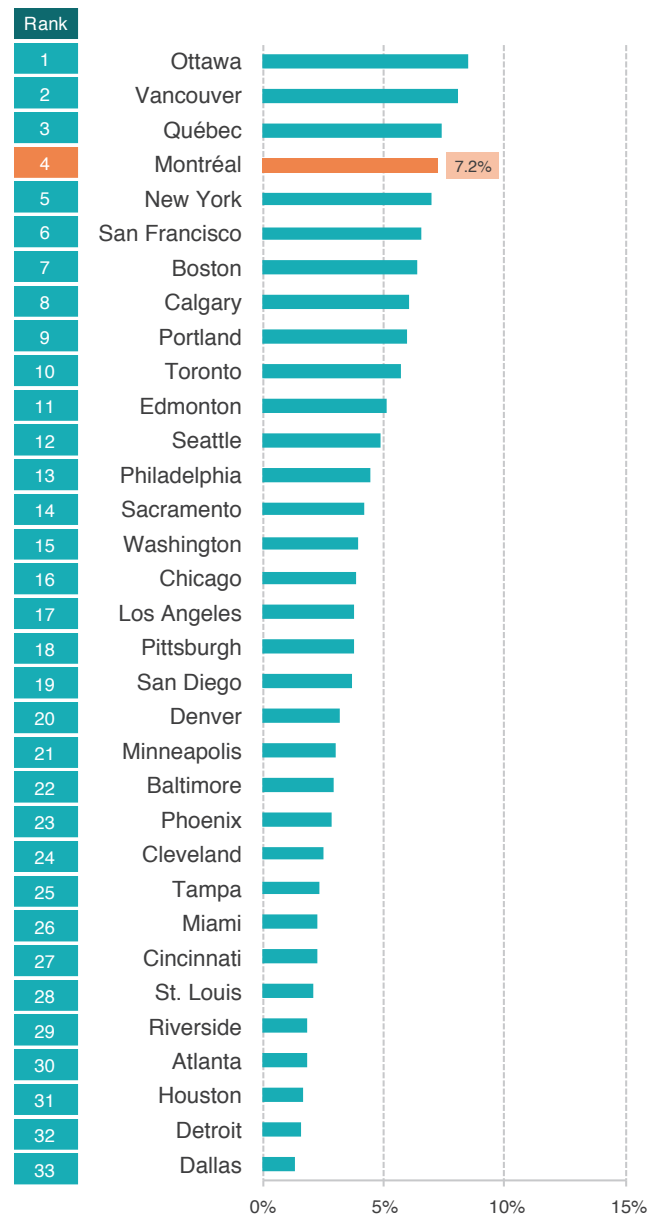
³⁴ Note that a greater traffic congestion index does not necessarily mean longer car commuting times. In more spread-out areas, commuting times may in fact be longer despite a lower traffic congestion index. For further details on commuting times in US metropolitan areas, see: US Census Bureau (2011): "Commuting in the United States: 2009": <http://www.census.gov/prod/2011pubs/acs-15.pdf>

6.2 Active transportation

4TH AREA WITH MOST COMMUTERS USING ACTIVE TRANSPORTATION

As with the modal share of public transit, Canada's major metropolitan areas stand out from their US counterparts by the fact that a greater proportion of workers mainly use active transportation (walking or cycling) to commute to work. In fact, among the 33 North American benchmarking areas, Canadian areas rank among the top four for this type of trip: Ottawa (8.5%), Vancouver (8.1%), Québec (7.5%) and Montréal (7.2%).

FIGURE 90. Proportion of commuters primarily using active transportation, metropolitan regions, 2011



Note: For Canadian metropolitan areas, the data specifically cover the week from May 1 to 7, 2011.

Sources: Statistics Canada, 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2011. Processing: CMM, 2016.

There is generally a higher population density and a greater mix of functions in the central cities of metropolitan areas than in the surrounding sectors. Both of these factors work in favour of active transportation. In the city of Montréal, as in the central cities of all benchmarking areas, the modal share of active transportation commuting is higher than in the rest of the area.

The city of Montréal ranks ninth among major North American cities for its percentage of commuting by active transportation, whereas the areas' suburbs, i.e., Greater Montréal outside the central city, rank fifth among North American suburbs.

Between 2006 and 2011, the proportion of commuting by active transportation increased from 11% to 11.7% in the city of Montréal, but decreased in the rest of the area, dropping from 4.5% to 3.9%.

FIGURE 91. Proportion of commuters primarily using active transportation by place of residence (metropolitan area's central city versus outskirts), 2006 and 2011



Sources: Statistics Canada, 2006 Census of Population and 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2006 and 2011. Processing: CMM, 2016.

MONTREAL: 11TH MOST PEDESTRIAN-FRIENDLY METROPOLITAN AREA IN NORTH AMERICA

By fostering less intensive use of automobiles, neighbourhoods and towns that encourage walking are having positive impacts on both the environment and public health.

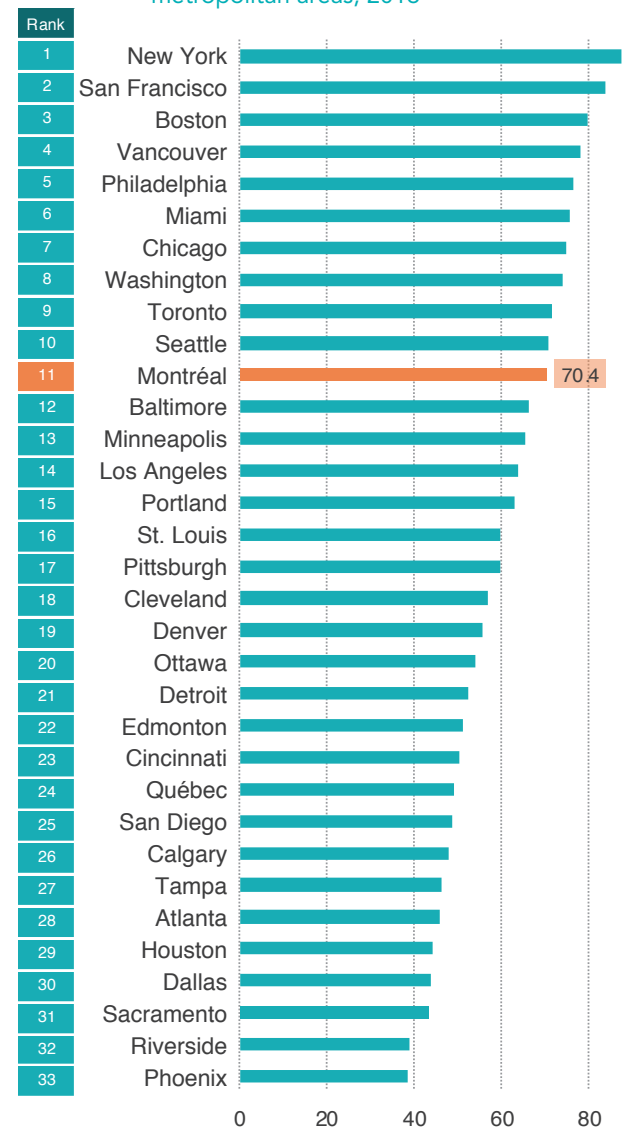
The main factors that promote walking include the proximity of housing to certain retail and service businesses (grocery stores, restaurants, retail stores, coffee shops, banks, parks, libraries and leisure centres) along with urban design that favours connectivity of streets and access to sidewalks.

Walk Score is a recognized index that classifies cities on the basis of how easy it is for residents to do their daily errands on foot, without having to use their car.

Among the major North American cities, Montréal ranks 11th in terms of pedestrian accessibility, with a Walk Score of 70.4.

Walk Score index	
90–100	“Walker’s paradise”
Daily errands do not require a car	
70–89	Very walkable
Most errands can be done on foot	
50–69	Somewhat walkable
Some errands can be accomplished on foot	
25–49	Car-dependent
Only few errands can be done on foot	
0–24	Highly car-dependent
Almost all daily errands require a car	

FIGURE 92. Walk Score index, North American metropolitan areas, 2016



Source: Walk Score®, February 2016. Processing: CMM, 2016.

WALK SCORE METHODOLOGY

In order to assess the walkability of a locality, the Walk Score measures the walkability between addresses and a collective of amenities or services (grocery and retail stores, restaurants, cafés, banks, parks, schools, libraries and leisure centres). Points are awarded based on distance to amenities for each category. Amenities located less than five minutes' walk (0.25 mi. or 0.40 km) get the most points, and no points are awarded for those located more than 30 minutes away. Certain categories, like grocery stores and restaurants, are given a higher weighting as they are associated with more trips on foot.

The Walk Score index also measures pedestrian friendliness by analysing population density, block length and intersection density.

Source: Walkscore.com

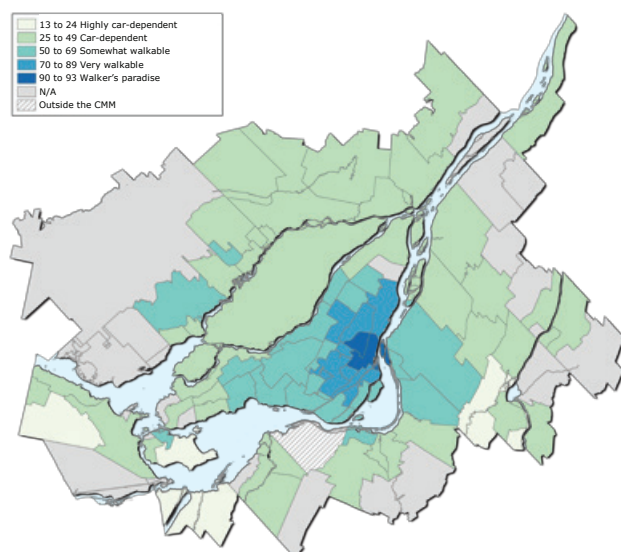
Across Greater Montréal municipalities and Montréal boroughs, there are major variations in terms of pedestrian accessibility. On the Island of Montréal, for example, most of the central municipalities and boroughs can be qualified as very walkable. The boroughs of Plateau Mont-Royal and Ville-Marie can in fact be qualified as a “walker’s paradise” according to Walk Score terminology, with scores of 93 and 91 respectively.

On the eastern and western extremities of the Island, as well as in Laval and the North and South

Shores, residents generally need to use their cars for their daily errands. Outside the Island of Montréal, seven municipalities are “somewhat walkable” for daily errands as per the Walk Score. These are the towns of Sainte-Thérèse (63), Saint-Lambert (59), Longueuil (56), Brossard (52), Île-Perrot (51), Saint-Eustache (51) and Sainte-Catherine (50).

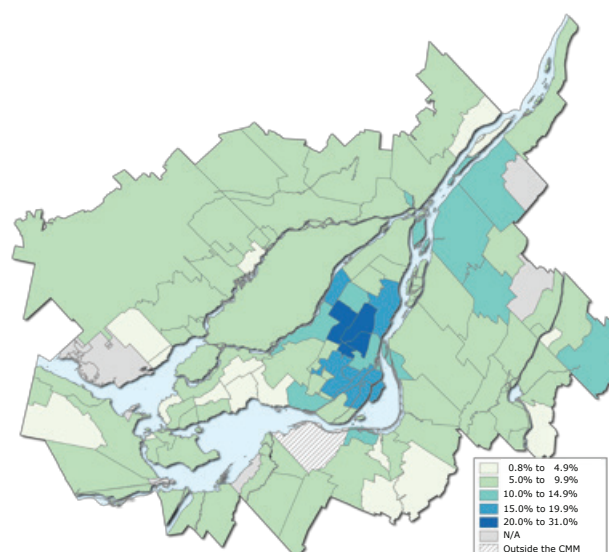
Overall, the central neighbourhoods of the Island of Montréal are where the Walk Scores are relatively high and where the modal share of walking is the highest (maps 13 and 14).

MAP 13. Walk Scores for Greater Montréal municipalities and Montréal boroughs, 2016



Source: Walk Score®, February 2016. Processing: CMM, 2016.

MAP 14. Walking modal share (all purposes), Greater Montréal municipalities and Montréal boroughs, over 24 hours, 2013



Trip origin	Trips made by walking			
	2008	2013	Variation (%)	Modal share 2013
Montréal agglomeration	621,274	665,239	7.1	14.5%
Longueuil agglomeration	66,396	63,822	-3.9	7.4%
Laval	41,813	45,487	8.8	5.7%
North Shore	69,593	65,490	-5.9	6.5%
South Shore	58,922	60,044	1.9	7.3%
Total	857,998	900,082	4.9	11.1%

Source: Origin-Destination Surveys, 2008 and 2013 (version v13_2a_05jan2015). Processing: CMM, 2016.

MONTREAL: 2ND MOST BIKE-FRIENDLY METROPOLITAN AREA IN NORTH AMERICA

According to the latest index of Copenhagenize Design Company, Montréal is among the 20 most bike-friendly cities in a sample of 122 major cities worldwide with over 600,000 people. This rating is based on 13 parameters, including bicycle infrastructure, modal share for bicycles, perception of safety, social acceptance and the availability of a bike-share program.

In North America as a whole, the city of Montréal ranks as the second-most bike-friendly, after Minneapolis. The city boasts a bicycle network of over 730 kilometres, a self-service bicycle system with 460 BIXI stations, 5,200 BIXIs as well as a bicycle parking network.

Although European cities still dominate this index, several North American cities have improved their ranking. This is the case not only for Minneapolis, but also for New York, San Francisco, Portland and Washington, D.C., which now rank among the world's 30 most bike-friendly cities, as well as Chicago and Philadelphia, which have made it into the top 40.

TABLE 9. Copenhagenize Index, 2013 and 2015

Rank 2015	Rank 2013	City
1	2	Copenhagen
2	1	Amsterdam
3	3	Utrecht
4	-	Strasbourg
5	8	Eindhoven
6	9	Malmö
7	6	Nantes
8	5	Bordeaux
9	7	Antwerp
10	4	Seville
11	17	Barcelona
12	10	Berlin
13	-	Ljubljana
14	-	Buenos Aires
15	11	Dublin
16	-	Vienna
17	19	Paris
18	-	Minneapolis
19	20	Hamburg
20	14	Montréal
		North American cities
Top 30		New York
		San Francisco
		Portland
		Washington D.C.
		North American cities
Top 40		Chicago
		Philadelphia

Source: Copenhagenize Index, 2013 and 2015. Processing: CMM, 2016.

6TH IN TERMS OF CYCLING COMMUTING RATE

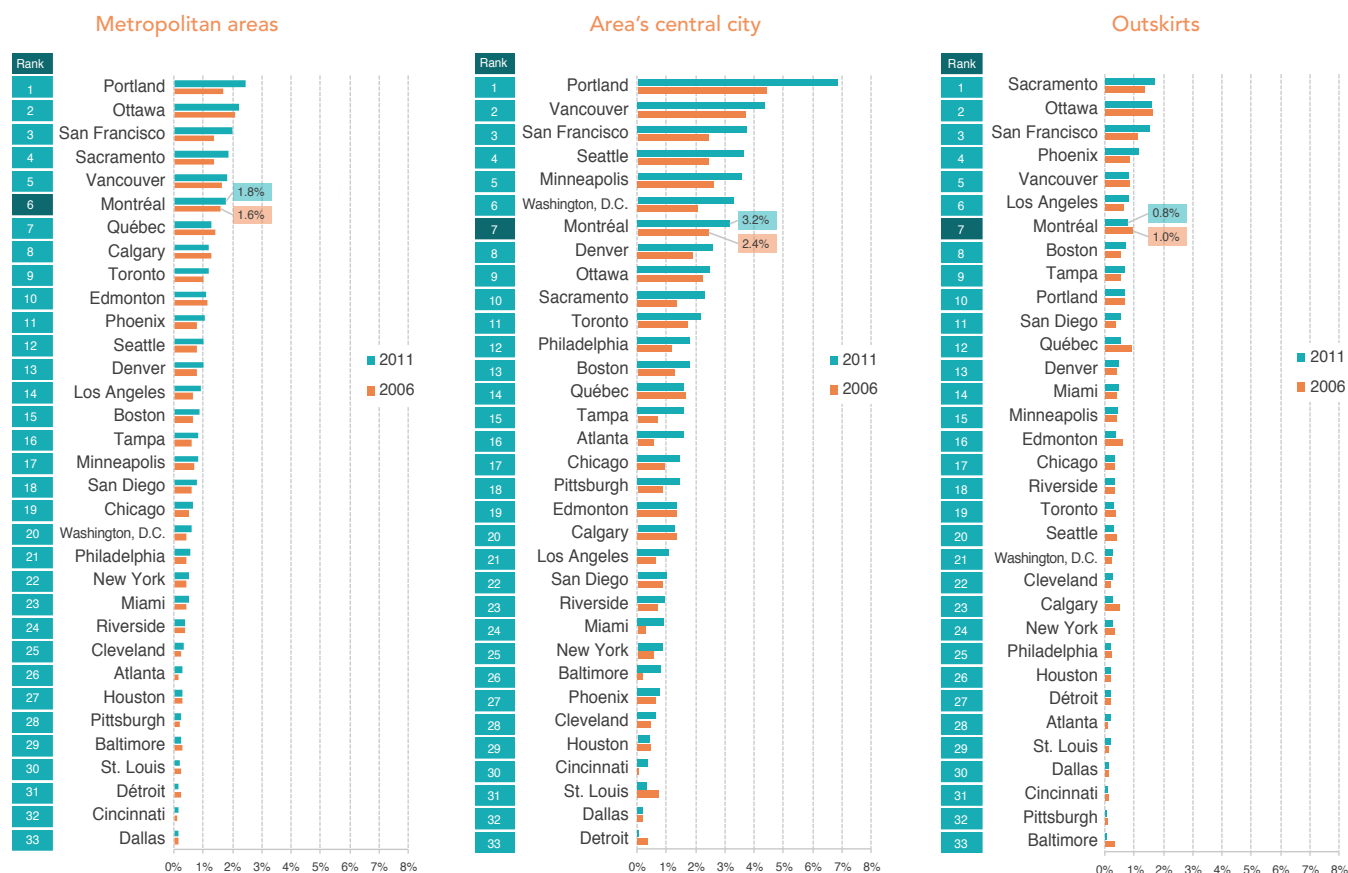
In 2011, 1.8% of Greater Montréal commuters used a bicycle as their chief mode of transport for getting to work. This statistic ranks Greater Montréal sixth among North American metropolitan areas in terms of commuting by bike.

Between 2006 and 2011, the proportion of commuters mainly using bicycles increased steadily in the vast majority of North American areas. At the intrametropolitan level, however, this increase is most noticeable in the central cities. The phenomenon is probably related to the development, since 2007, of many self-service bicycle systems across North America, especially

in central neighbourhoods.³⁵ Outside the central cities, however, the use of bicycles for commuting is generally dwindling. This is notably the case for Greater Montréal, where between 2006 and 2011, the percentage of bicycle commuting to work increased from 2.4% to 3.2% in the city of Montréal, but actually decreased from 1.0% to 0.8% outside the city.

³⁵ For further details on the implementation of self-service bicycle systems in North America, please refer to the Mineta Transportation Institute's 2014 study: "Public Bikeshearing in North America During a Period of Rapid Expansion: Understanding Business Models, Industry Trends and User Impacts." <http://transweb.sjsu.edu/PDFs/research/1131-public-bikeshearing-business-models-trends-impacts.pdf>

FIGURE 93. Proportion of commuters using the bicycle as their chief mode of transportation by place of residence, 2006 and 2011.



Note: For Canadian metropolitan areas, the data specifically cover the week of May 1 to 7, 2011.

Sources: Statistics Canada, 2006 Census of Population and 2011 National Household Survey (NHS); US Census Bureau, American Community Survey (ACS), 2006 and 2011. Processing: CMM, 2016.

SHARP INCREASE IN BICYCLE USE IN THE CENTRE OF THE AREA

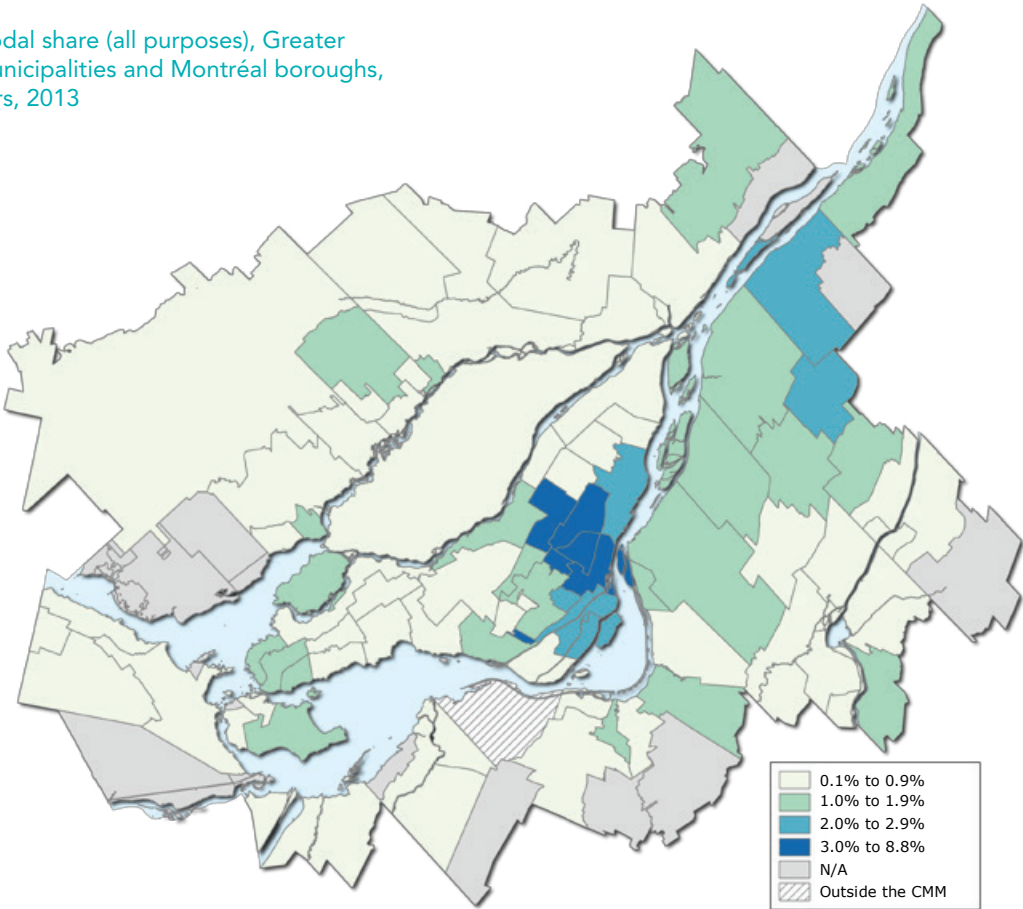
Map 15 illustrates the data collected in the latest Origin-Destination Survey and the proportion of all trips (whether for work, school, shopping or leisure) made by bicycle in the municipalities of Greater Montréal and the boroughs of the city of Montréal.

The map shows that the vast majority of territories with modal share of cycling of more than 2% are in the middle of the Island of Montréal. Five boroughs and one municipality belonging to the Montréal agglomeration boast modal shares of cycling above the 3% mark: the Plateau-Mont-Royal (8.8%),

Rosemont–La Petite Patrie (5.4%), Outremont (3.9%), Montréal-Ouest (3.9%), Ville-Marie (3.5%) and Villeray–Saint-Michel–Parc-Extension (3.4%).

Between 2008 and 2013, in all five of Greater Montréal’s geographical sectors, the number of bicycle commutes (all purposes) increased by 53.3% in the Montréal agglomeration, by 16.5% in Laval and by 3.3% in the Longueuil agglomeration. However, bicycle commutes decreased by 25.1% on the South Shore and by 16.1% on the North Shore.

MAP 15. Bicycling modal share (all purposes), Greater Montréal municipalities and Montréal boroughs, over 24 hours, 2013



Trip origin	Trips made by bicycle (all purposes) 24 hours			Modal share	
	2008	2013	Variation (%)	2008	2013
Montréal agglomeration	75,675	116,001	53.3	1.8%	2.5%
Longueuil agglomeration	9,537	9,852	3.3	1.2%	1.1%
Laval	3,714	4,327	16.5	0.5%	0.5%
North Shore	8,501	7,136	-16.1	1.0%	0.7%
South Shore	8,648	6,476	-25.1	1.2%	0.8%
Total	106,076	143,791	35.6	1.5%	1.8%

Source: Origin-Destination Surveys, 2008 and 2013 (version v13_2a_05jan2015). Processing: CMM, 2016.

6.3 Transportation of goods

2ND LARGEST PORT IN THE NORTHEAST

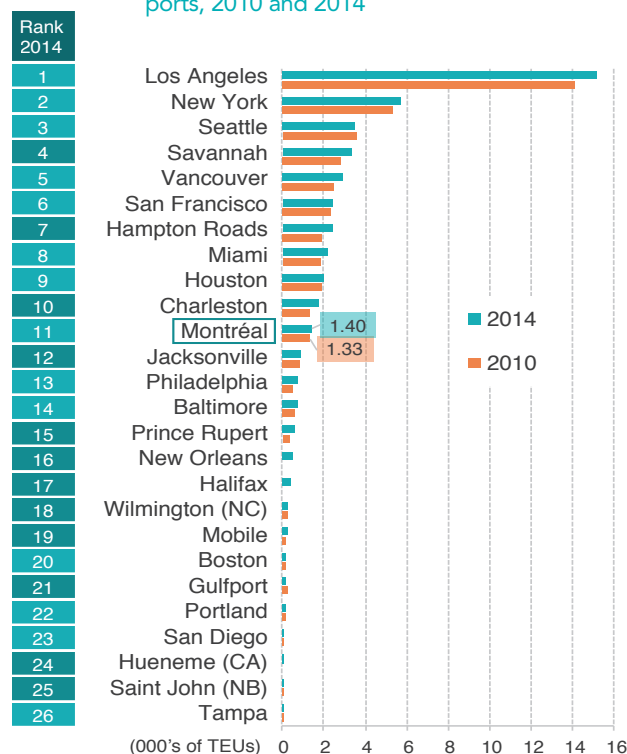
Thanks to its transportation infrastructure and ideal geographic location within northeastern North America, Greater Montréal is a freight-transportation hub. The area has a number of intermodal infrastructures allowing it to make the interface between different types of transportation, whether by sea, rail, road or air.

The Port of Montréal, strategically positioned deep into the continent and boasting sophisticated intermodal capabilities, is one of the main North American gateways for freight coming from Europe. It is the second-largest port for container traffic in the northeast of the continent, after the port of New York and New Jersey. In 2015, containers adding up to 1.45 million twenty-foot equivalent units (TEUs) transited through the port of Montréal (+15.3% since 2005), for a total of 13.1 million metric tonnes of merchandise (+17.6% since 2005). Added to that were 18.9 metric tonnes of bulk cargo or non-containerized merchandise (+36.6% since 2005).³⁶

Among the main products transiting through the Port of Montréal are petroleum products (gasoline, fuel, crude oil and diesel oil), grains and cereals, food products, iron ore, forest products and a huge variety of containerized goods.

Thanks to the Port's internal rail system, goods can be forwarded to the two rail networks serving the area (Canadian National and Canadian Pacific). There is also a private road within port limits which serves the terminals and provides a link to the local road system.

FIGURE 94. Containerized freight, in millions of twenty-foot equivalent units (TEUs), major Canadian and US ports, 2010 and 2014

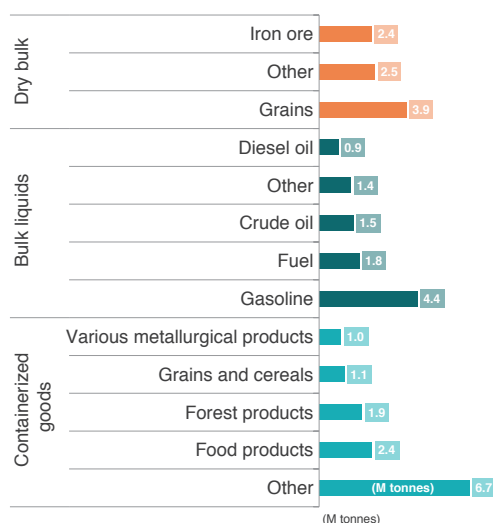


■ = Metropolitan areas of less than 2 million inhabitants

Note: This rating considers all container ports found within a single metropolitan area.

Source: American Association of Port Authorities. *North American Port Container Traffic*. Processing: CMM, 2016.

FIGURE 95. Main containerized goods or bulk cargo transiting through the Port of Montréal, in millions of metric tonnes, 2015



Source: Port de Montréal, 2015. Processing: CMM, 2016.

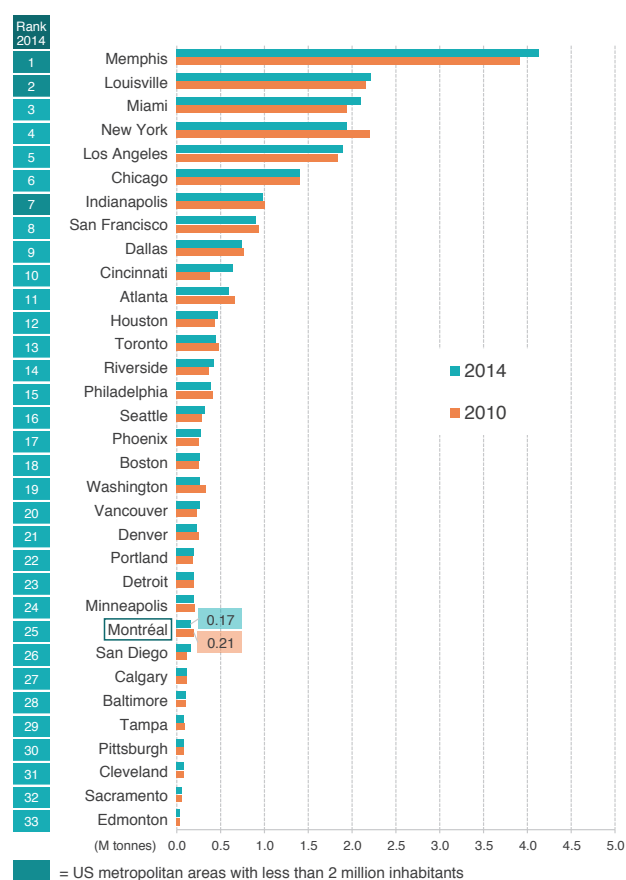
³⁶Source: Port de Montréal.

The area also boasts other significant intermodal transportation centres that interconnect southern Ontario, the US Midwest, the metropolitan areas of Boston and New York, and the Maritime provinces. These facilities include the intermodal terminals of Côte-Saint-Luc and Taschereau, as well as the cargo zones of Pierre Elliott Trudeau and Montréal-Mirabel international airports.

The highway system is another central factor in Greater Montréal's intermodality. It features close to 1,600 kilometres of roadway. The flow of heavy truck traffic is concentrated mostly along the Québec/Toronto corridor, with the highest density found between Drummondville and Cornwall. The movement of a wide variety of manufactured goods, as well as food and forest products, accounts for some 42% of the freight originating or ending up in the Montréal area, versus roughly a third of transits by empty trucks.³⁷

³⁷ For further details about freight transportation in the Greater Montréal area, please refer to CPCS (2013) "Étude multimodale du transport des marchandises au Québec en appui aux plans territoriaux de mobilité durable", Bloc 3, Volume 4: <http://www.cargo-montreal.ca/wp-content/uploads/2015/08/Bloc-3-Volume-4.pdf>

FIGURE 96. Goods loaded and unloaded, in millions of metric tonnes, major Canadian and US airports, 2010 and 2014.



Note: This rating considers all international airports found within a single metropolitan area.

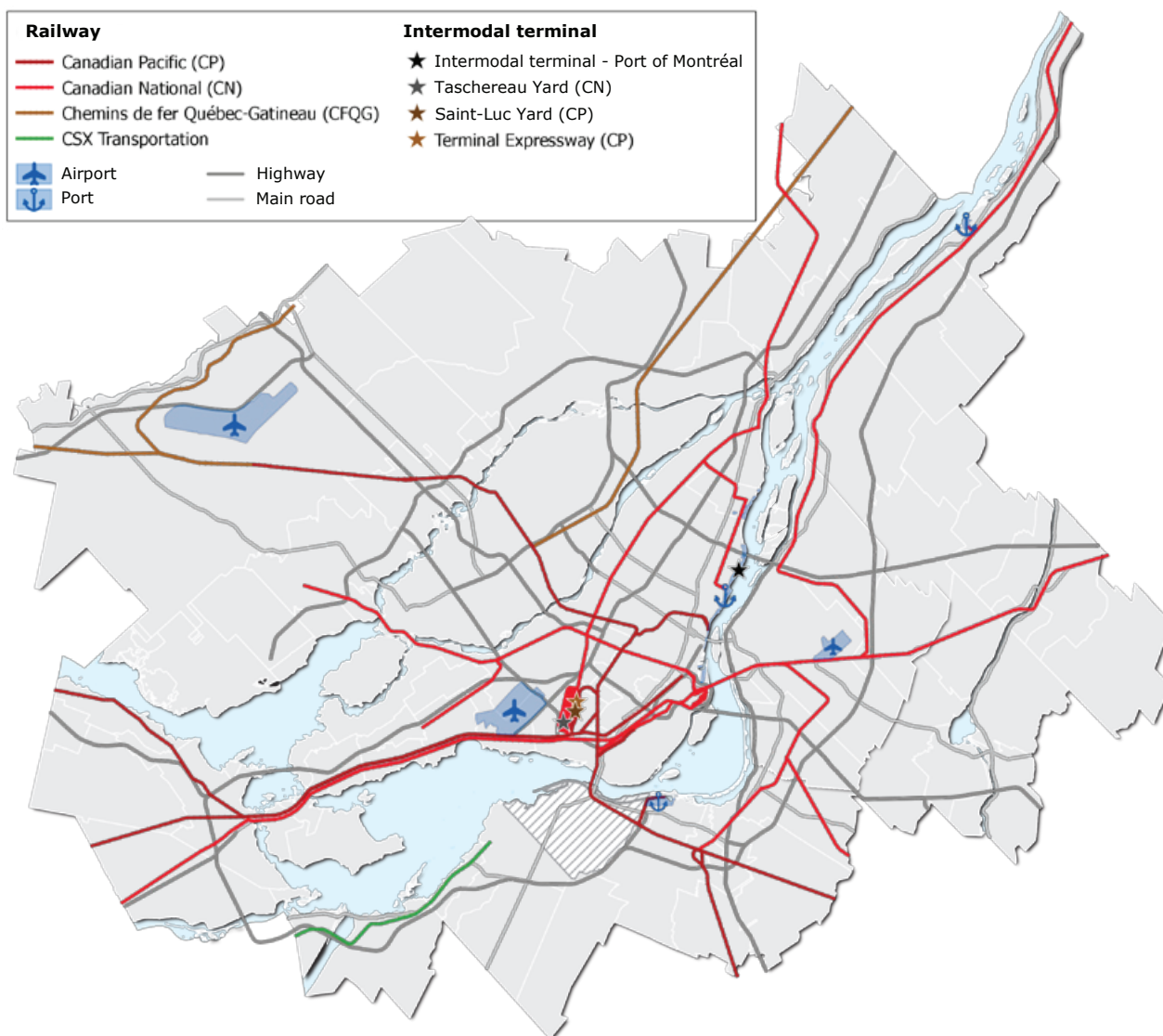
Sources: The Airports Council International – North America (ACI-NA) and websites relating to smaller airports. Processing: CMM, 2016.

MAP 16. The flow of intercity trucking in the Montréal census metropolitan area (CMA) territorial market, one week in the fall of 2006-2007



Source: CPCS (2013). Étude multimodale du transport des marchandises au Québec en appui aux plans territoriaux de mobilité durable.

MAP 17. Main infrastructures tied to freight transportation, Greater Montréal, 2016



Source: CMM, 2016.

7.



ENVIRONMENT



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7.1 Forest cover

LIMITED FOREST COVER COMPARED WITH OTHER MAJOR NORTH AMERICAN METROPOLITAN AREAS

The presence of trees and wooded areas in cities and large metropolitan areas has a variety of major benefits, including a positive impact on air quality, rainwater management and biodiversity preservation. Thanks to the shade they provide, trees also generate electricity savings and reduce heat islands.

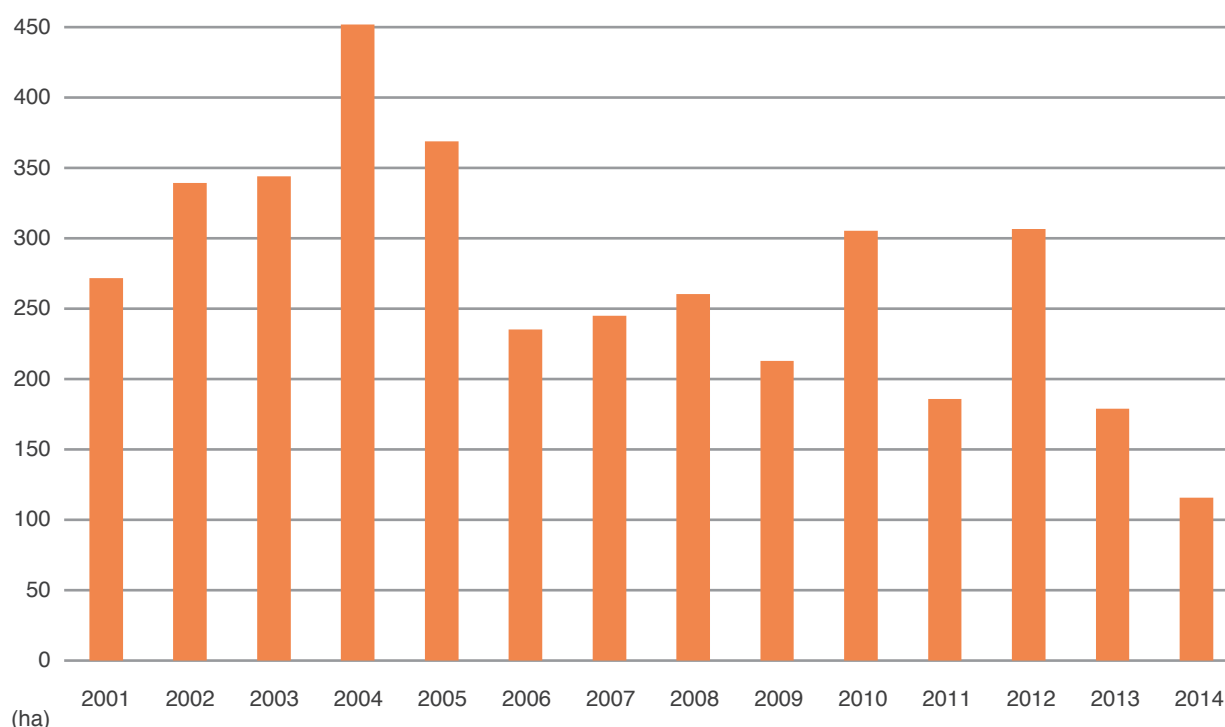
Data published by Global Forest Watch and compiled for the CMM at the North American metropolitan areas level by the World Resources Institute show that in 2014, forest cover totalled

88,325 hectares, i.e., approximately 23% of the total land area of Greater Montréal.³⁸

The same data also show that the area lost 3,819 hectares of forest cover between 2001 and 2014, compared with the addition of 221 hectares (plant succession and reforestation) for the period 2001-2012.

³⁸ The forest cover data released by Global Forest Watch were gathered by means of Landsat images covering the period from 2000 to 2014, with a resolution of 30 metres per pixel. Each pixel is considered as forest cover if more than 30% of it is covered by trees 5 metres high or taller. This method is different from that used by the CMM for the 2009 period, which was aimed at identifying only wooded areas covering 0.5 hectares or more. These areas accounted for 19.2% of the Greater Montréal land area.

FIGURE 97. Loss of forest cover in Greater Montréal, 2001-2014



Loss of forest cover, 2001-2014: **3,819 ha**

Increase in forest cover, 2001-2012: **221 ha**

Note: Given variations between the methodology used to calculate forest cover losses and that used to calculate increases in forest cover, the "net" loss cannot be calculated by subtracting forest cover gains from losses.

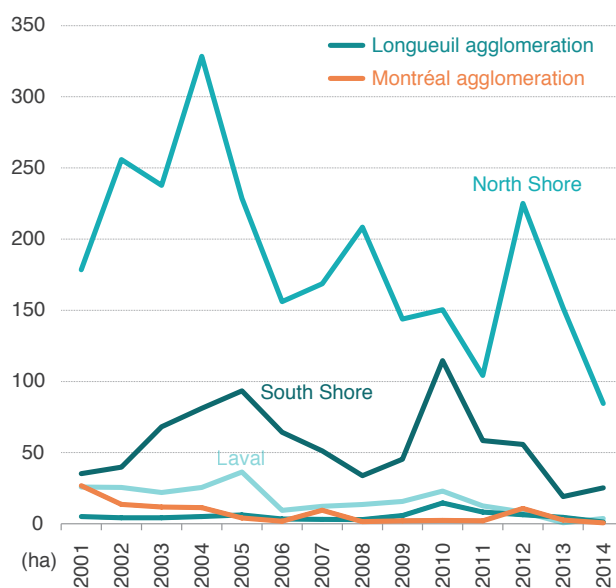
Source: Hansen/UMD/Google/USGS/NASA. Special compilation prepared by the World Resources Institute. Processing: CMM, 2016.

Forest cover in the five geographical sectors of Greater Montréal was broken down as follows: 45.1% in the North Shore, 36.5% in the South Shore, 6.7% in the agglomerations of Montréal and Longueuil, respectively, and 5.1% in Laval.

Loss of forest cover was especially substantial in the North Shore, which accounted for 68.7% of Greater Montréal's total loss between 2001 and 2014. After the Montréal agglomeration, the North Shore was also the sector that chalked up the highest demographic growth during the period in question, welcoming 26% of the metropolitan area's population growth.

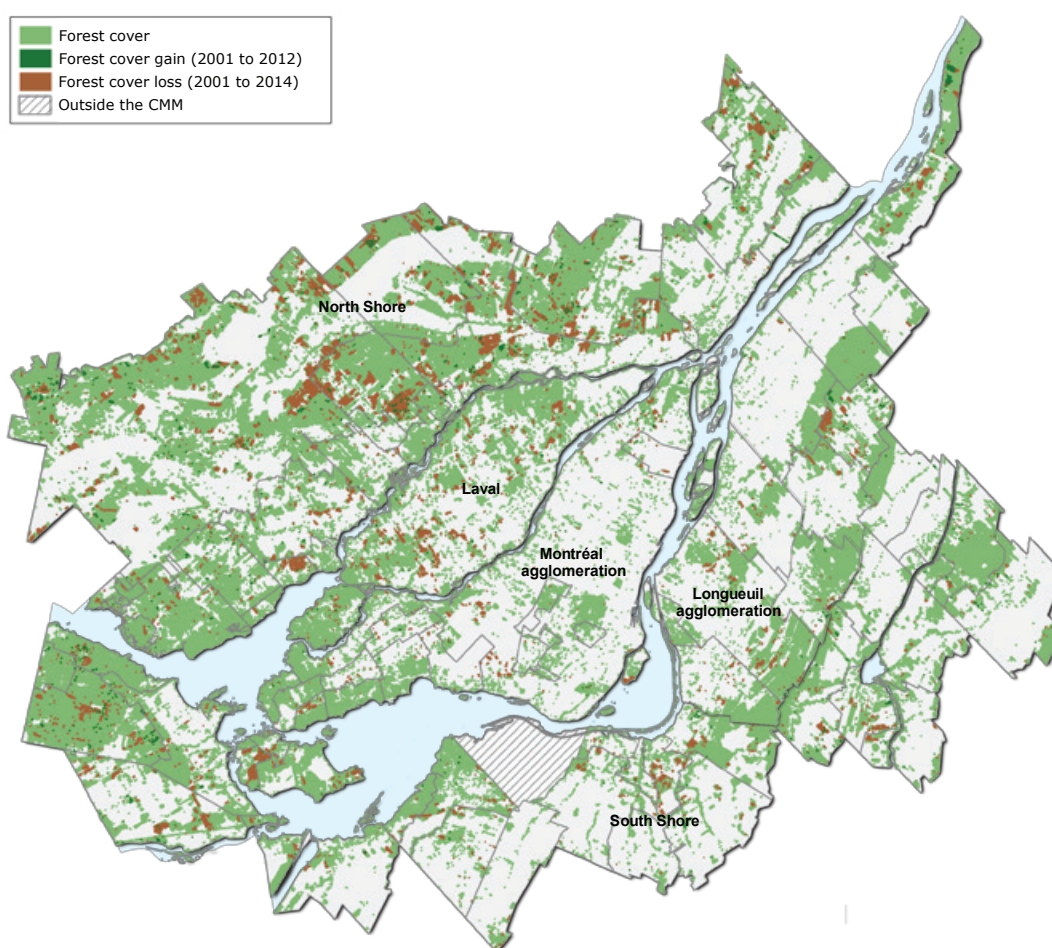
The South Shore accounted for 20.6% of losses, compared with 6.1% for Laval, 2.7% for the Montréal agglomeration and 2% for the Longueuil agglomeration.

FIGURE 98. Loss of forest cover (ha) between 2001 and 2014, Greater Montréal's five geographic sectors



Source: Hansen/UMD/Google/USGS/NASA. Special compilation prepared by the World Resources Institute. Processing: CMM, 2016.

MAP 18. Changes in forest cover in Greater Montréal, 2001-2014



Source: Hansen/UMD/Google/USGS/Nasa. Special compilation prepared by the World Resources Institute. Map prepared by the CMM, 2016.

14TH AMONG METROPOLITAN AREAS HAVING LOST THE MOST FOREST COVER SINCE THE START OF THE 2000s

With 23.2% of its territory covered by forest, Greater Montréal is ranked 24th among North American metropolitan areas in terms of percentage of forest cover.

While the outskirts of the Seattle, Boston, Québec, Portland and New York metropolitan areas are mainly forested, much of Greater Montréal's periurban area is devoted to agriculture (see p. 74), given the quality of the soil. To a large extent, this explains Greater Montréal's low percentage of forest cover compared with other North American metropolitan areas.

A number of other areas with large amounts of agricultural land also have a low percentage of

forest cover. Such is the case for Minneapolis, Edmonton, Calgary and Chicago areas, where the proportion of forest cover is less than 25%.

Since the turn of the millennium, urban development has had an impact on forest cover in all North American metropolitan areas, and Greater Montréal is no exception. Greater Montréal lost 4.1% of its forest cover between 2001 and 2014; this makes it the 14th metropolitan area in terms of decrease in percentage of forest cover since the start of the 2000s. Compared with losses, gains in forest cover have been relatively limited (0.2% between 2001 and 2012).

FIGURE 99. Portion of land area with forest cover, metropolitan areas, 2014

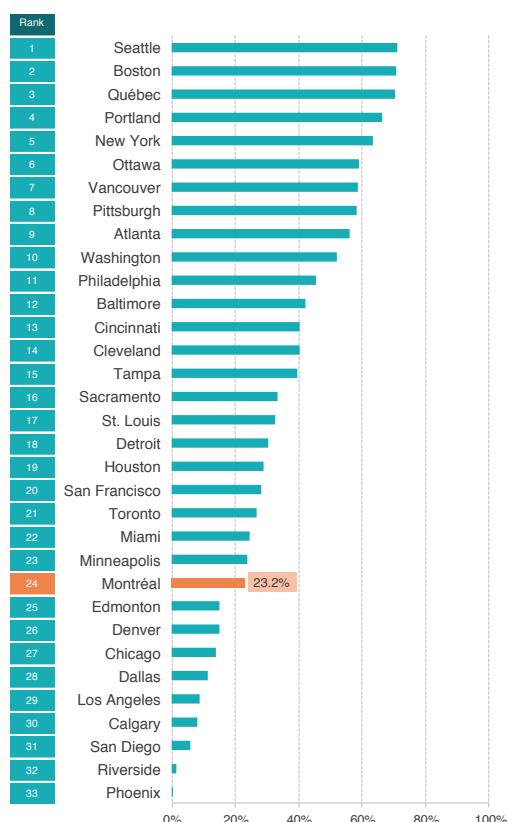
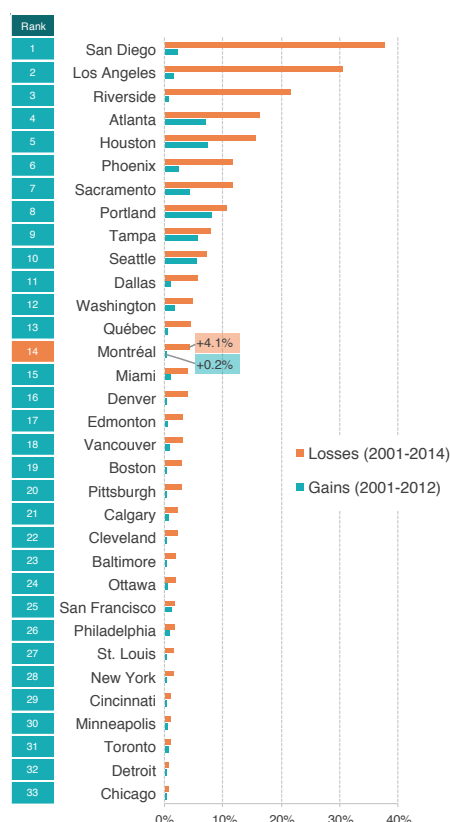


FIGURE 100. Variations in forest cover (%), metropolitan areas, 2001-2014



BOX 7

2014-2024 METROPOLITAN STRATEGY TO COMBAT THE EMERALD ASH BORER AND METROPOLITAN REFORESTATION PLAN

On September 18, 2014, the CMM adopted the *Stratégie métropolitaine de lutte contre l'agrile du frêne 2014-2024*, reflecting the commitment of the Greater Montréal municipalities to combat the emerald ash borer. The strategy is aimed at ensuring metropolitan coordination complementary to the municipalities' efforts.

The specific goals of the strategy are as follows:

- deploy pan-metropolitan efforts to slow progress of the emerald ash borer and manage the impacts of the infestation;
- improve urban forest resilience in order to withstand other epidemics and disasters.

One of the main measures included in the strategy consists in the adoption by all of the Greater Montréal municipalities of a local action plan to combat the emerald ash borer. Among other aspects, the strategy focuses on raising awareness, and mobilizing and supporting the municipalities.

Emerald ash borers kill a large number of ash trees. At the same time as many CMM municipalities are trying to increase tree cover in their territories, the infestation reduces the presence of urban trees.

The anti-emerald ash borer strategy also provides for the development of a metropolitan reforestation plan aligned with the strategy's number-two focus of improving urban forest resilience in order to withstand other epidemics and disasters. The plan is part of a context that goes beyond the single issue of the emerald ash borer's impact on the metropolitan area. The metropolitan reforestation plan will therefore have the twofold objective of mitigating the loss of ash trees in Greater Montréal due to the emerald ash borer, and contributing to the Metropolitan Land Use and Development Plan target of a 30% increase in Greater Montréal's forest cover.

Currently on the drawing board, the reforestation plan will include measures and funding to attenuate the loss of ash trees, and consolidate and contribute to connections between natural environments of interest.

Stratégie métropolitaine de lutte contre l'agrile du frêne 2014-2024:

http://cmm.qc.ca/fileadmin/user_upload/documents/20140918_agrileFreneFaitsSaillantsStrategie.pdf

7.2 Blue spaces

12% OF THE TERRITORY COVERED BY WATER BODIES

With a water system comprising over 1,800 kilometres of shores, numerous water bodies and a large number of islands, Greater Montréal stands out from other North American metropolitan areas. The heart of the area is a huge archipelago including the Island of Montréal and Île Jésus (the metropolitan area's two largest islands), along with mid-sized islands such as Île Perrot, Île des Sœurs, Île Bizard and Île Charron, and countless small islands in the St. Lawrence River, Rivière des Prairies and Rivière des Mille-Îles. Other major watercourses in the area include the Richelieu, Des Outaouais, Châteauguay and L'Assomption rivers.

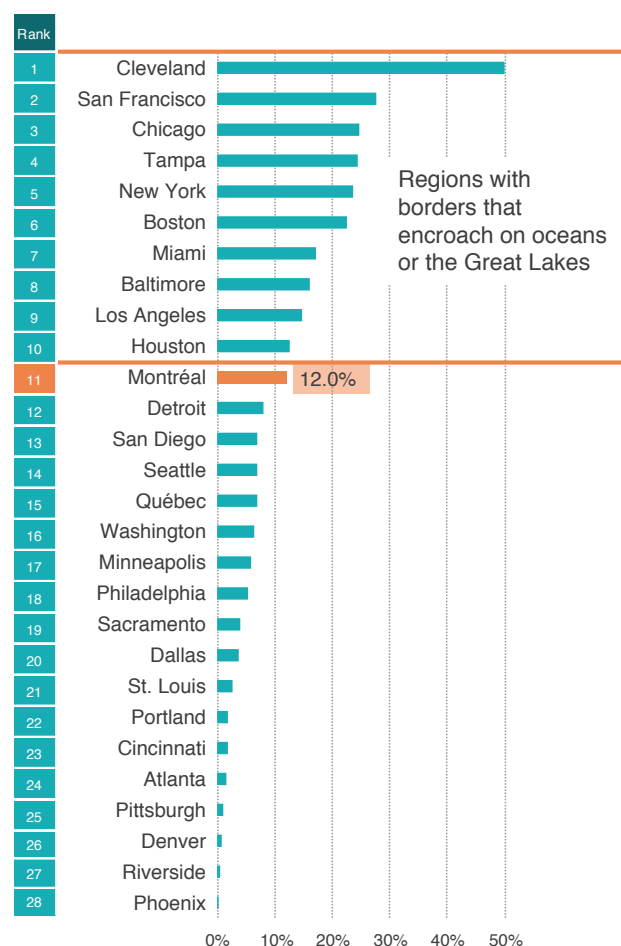
All told, water bodies cover 12% of the total territory of Greater Montréal. Excluding coastal metropolitan areas with borders encroaching on oceans and the Great Lakes, Greater Montréal is the North American metropolitan area with the largest proportion of aquatic territory.

Regarding the suitability of water along the shores for activities involving direct contact with water such as swimming, the Montréal agglomeration and Laval have monitoring programs to determine the sectors suitable for this type of activity.³⁹

In 2014, during the 20 summer weeks covered by the shoreline program on the Island of Montréal, 61% of the sites sampled (59 out of 86 sites) were suitable for activities involving direct contact with water (Figure 102). The percentage for the 2014 season was thus comparable with the average for the period from 1999 to 2014 (60%). All of the sites around Île Bizard were suitable for swimming, compared with 79% for Bassin de La Prairie, 64% for Lac Saint-Louis, 53% for sites along the St. Lawrence River and 47% for sites along Rivière des Prairies (Figure 102).

In Laval (Figure 102), over the nine summer weeks covered by the sampling program, 19% of the sites on the shore of Rivière des Mille-Îles (3 out of 16 sites) were suitable for activities involving direct contact with water. Along the Laval shore of Rivière des Prairies, the proportion was 50% (8 out of 16 sites).

FIGURE 101. Proportion of territory covered by water bodies, metropolitan areas, 2015

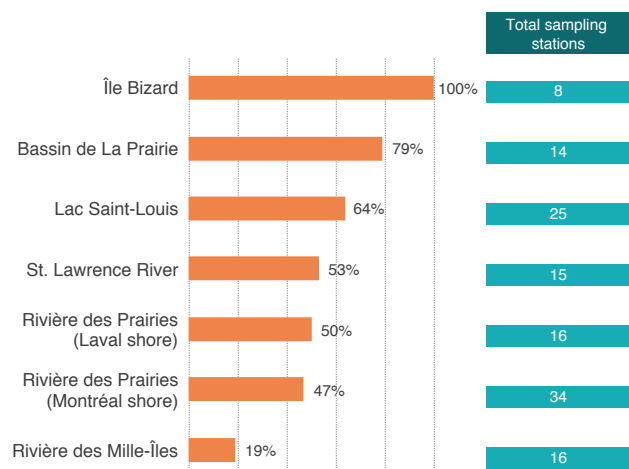


Note: Data are unavailable for Canadian metropolitan areas other than Montréal and Québec (CMQ).

Sources: CMM, CMQ, MAMOT, US Census, TIGERweb Nation-Based Data Files. Processing: CMM, 2016.

³⁹ In the city of Montréal, the monitoring is carried out by the Réseau de suivi du milieu aquatique (RSMA). In Laval, the water sampling campaign along the shores of Île Jésus is conducted by the City of Laval, in partnership with the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC) and the organization Éco-Nature.

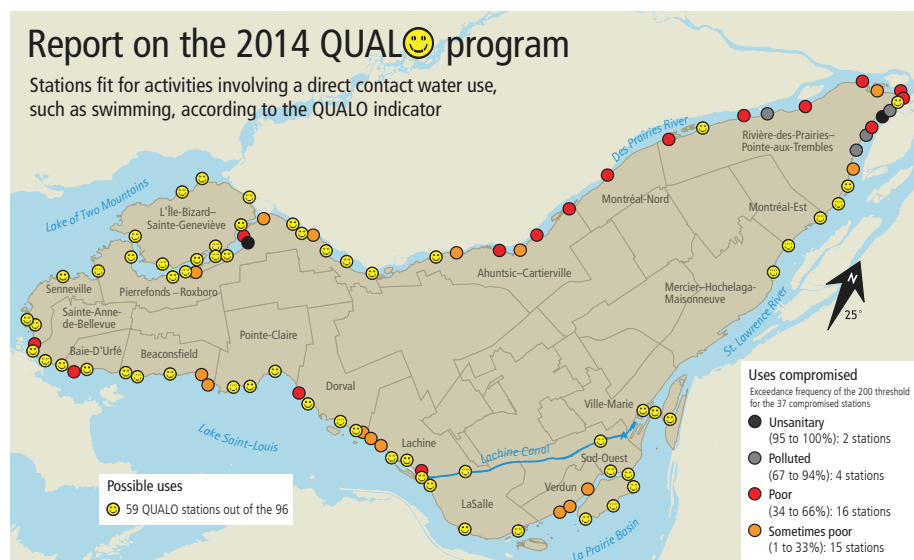
FIGURE 102. Proportion of City of Montréal and City of Laval sampling stations where the water is suitable for activities involving direct contact with water, main water bodies, 2014 (Montréal) and 2015 (Laval)



Note: The results for the sampling stations in Laval along Rivière des Mille-Îles were calculated using the 2015 shore sampling campaign data provided by the City of Laval, applying the MDDELCC criterion for bathing water. The same criterion is used by RSMA's QUALO program, which covers the Montréal agglomeration shores.

Sources: City of Montréal, 2014 *Environmental Assessment Report: Portrait of the Quality of Montréal's Water Bodies*, and City of Laval, *Campagne d'échantillonnage en rive 2015*. Processing: CMM, 2016.

MAP 19. Quality of water for activities involving direct contact with water along the shores of the Montréal agglomeration, 2014



Source: Map taken from 2014 *Environmental Assessment Report: Portrait of the Quality of Montréal's Water Bodies*, City of Montréal, Service de l'environnement.

MDDELCC WATER QUALITY CRITERION FOR PROTECTING RECREATIONAL ACTIVITIES

The bathing water quality criterion currently applicable in Québec is as follows (MDDELCC, 2013): The geometrical mean of a minimum of six samples taken during the same sampling must not exceed 200 fecal coliforms (colony-forming units – CFUs), with a maximum of 10% of samples higher than 400 CFUs/100 ml. If fewer than 10 samples are taken, only one sample may exceed 400 CFUs/100 ml.

The same criterion is used by RSMA's QUALO program, which covers the shores of the Montréal agglomeration.

For more details about the bathing water quality criteria applicable in Québec, elsewhere in Canada and around the world, see the following publication: MDDELCC (2010), *La gestion des eaux de baignade, Un monde de différences!*

<http://www.mddelcc.gouv.qc.ca/eau/recreative/VECTEUR-mai2010-DBrouillette.pdf>

7.3 Protected areas

9TH NORTH AMERICAN METROPOLITAN AREA WITH THE HIGHEST PROPORTION OF PROTECTED AREAS ON ITS TERRITORY

According to the most recent data released by the United Nations Environment Programme (UNEP) in partnership with the International Union for Conservation of Nature (IUCN), protected areas cover approximately 15.4% of the world's terrestrial and inland water areas and 3.4% of the global ocean area. They store 15% of the global terrestrial carbon stock and, among other things, help reduce deforestation and habitat and species loss, and can provide spaces for privileged contact with natural environments.⁴⁰

The IUCN, which defines protected areas as “a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values,” has established an internationally recognized system of criteria for identifying and classifying protected areas.

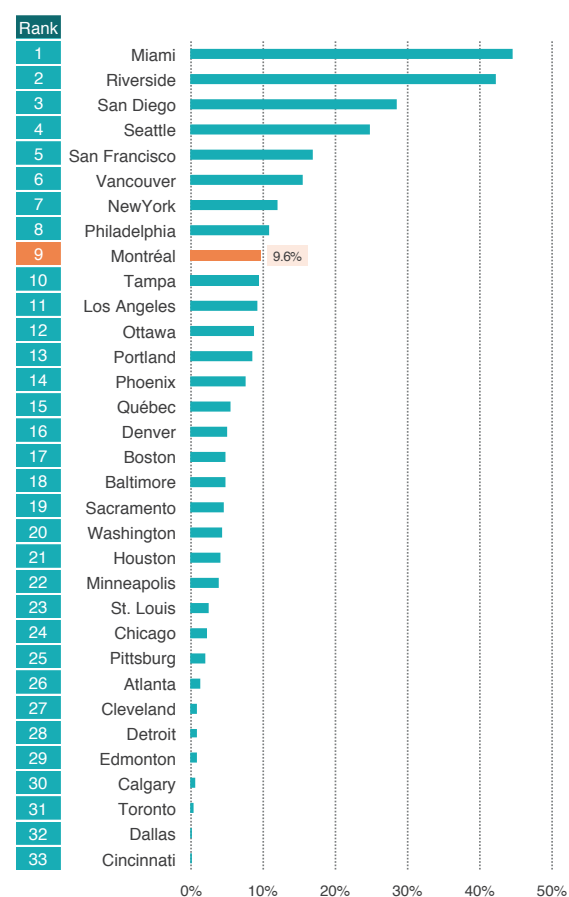
A substantial percentage of the territory of North American metropolitan areas is urbanized or devoted to agriculture, and the proportion of territory devoted to protected areas recognized by the IUCN is generally limited, seldom exceeding 10%.

This is shown by a georeferenced analysis of the World Database on Protected Areas, an IUCN/ UNEP joint project aimed at creating a database for monitoring international protected area targets.⁴¹

Greater Montréal is ranked ninth among North American metropolitan areas in terms of the

percentage of its territory devoted to protected areas (9.6%). The metropolitan areas with the largest proportions of protected areas include Miami, with close to half of its territory located in the Everglades protected areas, Riverside and San Diego, where the protected areas are located mainly in desert environments, and Seattle, where the protected areas are primarily in the Rocky Mountains.

FIGURE 103. Proportion of metropolitan territory designated as protected areas (terrestrial and aquatic)*, 2014



* Not including protected marine areas (protected areas located in the ocean). In the case of coastal metropolitan areas, the size of terrestrial and inland water protected areas is reported for the total area outside oceans and the Great Lakes. No protected areas are reported for the parts of metropolitan areas located in the Great Lakes.

Sources: CMM, based on the *World Database on Protected Areas* (UNEP/ IUCN), and MDDELCC, *Registre des aires protégées*. Processing: CMM, 2016.

⁴⁰ For details, see UNEP, *Protected Planet, Report 2014*.

http://wdpa.s3.amazonaws.com/WPC2014/protected_planet_report.pdf

⁴¹ Aichi biodiversity target No. 11, set forth in the Strategic Plan for Biodiversity 2011-2020, reads as follows: “By 2020, at least 17 percent of terrestrial and inland water, and 10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.” The CMM has adopted the Aichi target of protecting 17% of terrestrial and inland water areas, in its Metropolitan Land Use and Development Plan.

9.6% OF GREATER MONTRÉAL'S TERRITORY IS PROTECTED AREA

In Québec, under the *Natural Heritage Conservation Act*, the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC) is responsible for keeping and updating a register of protected areas. To do so, it has to take into account the categories recognized by the IUCN. Greater Montréal's protected areas entered in the register include three Québec national parks (Parc national d'Oka, Parc national des Îles-de-Boucherville and Parc national du Mont-Saint-Bruno), a number of nature reserves, wildlife reserves and natural voluntary conservation environments, and close to a dozen other types of protected areas.

In 2014, protected areas in Greater Montréal covered 41,956 hectares, equivalent to 9.6% of the combined aquatic and terrestrial territory (61.7% of the aquatic territory and 2.5% of the terrestrial territory).

Some 32,323 hectares of protected areas were aquatic (77%) in 2014, and 9,632 hectares were terrestrial (23%). Compared with 2012, there was a decrease in aquatic protected areas (- 179 hectares), but an increase in terrestrial protected areas (+ 446 hectares).

MAP 20. Protected areas in Greater Montréal recognized by the IUCN, 2014

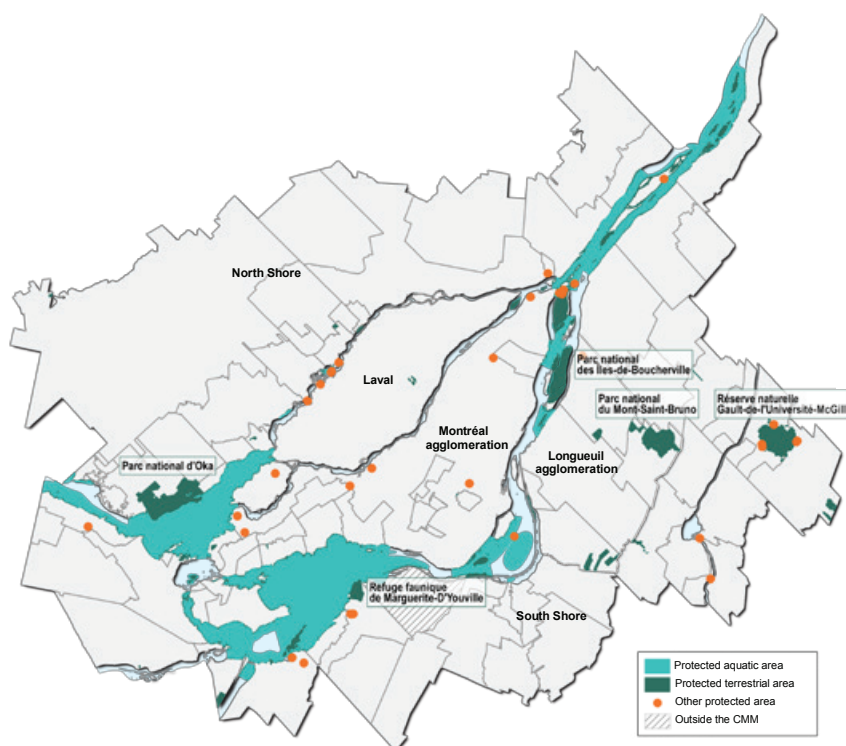


FIGURE 104. Proportion of aquatic territory, terrestrial territory and total territory designated as protected areas, Greater Montréal, 2014

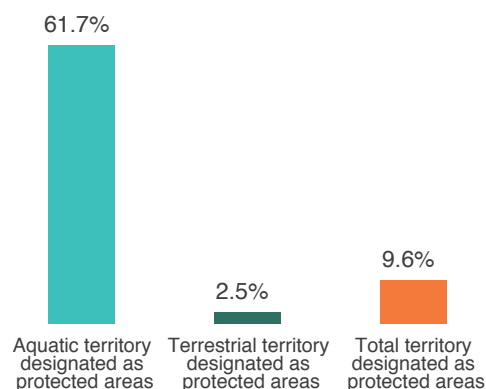
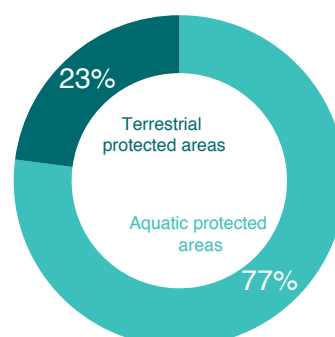


FIGURE 105. Terrestrial/aquatic breakdown of protected areas in Greater Montréal, 2014



ACTION PLAN FOR PROTECTING AND ENHANCING NATURAL ENVIRONMENTS

Under the heading of the environment, the *Metropolitan Land Use and Development Plan* (*Plan métropolitain d'aménagement et de développement* or PMAD) focuses on a metropolitan area where the environment is protected and enhanced. To this end, the objectives set forth in the PMAD include protecting 17% of the territory and deploying a "Green and Blue Network" designed to protect the area's natural capital, promote access and make this natural heritage a symbol of the metropolitan identity.

As part of the application of the PMAD, the municipalities that make up the CMM adopted a joint approach leading to the creation of a mayors' roundtable focusing on protection and enhancement of Greater Montréal's natural environments. The roundtable was created during a mayors' forum on the same issue, held on May 12, 2015. The municipalities thus created a platform for dialogue on the best practices and available tools for supporting the creation of the Green and Blue Network.

On the heels of the forum, the CMM executive committee asked the Commission de l'environnement to propose an action plan to protect and enhance natural environments within the CMM. This assignment was aligned with the desire to identify all of the measures that could be implemented to reach the PMAD environmental objectives.

Since then, research and analyses have been undertaken to support the work of the Commission de l'environnement. A number of activities are planned in order to implement the metropolitan action plan and mobilize stakeholders (decision-makers, researchers, professionals, civil society) with regard to the importance of meeting the target of protecting 17% of the Greater Montréal's territory, increasing forest cover by 30% and adopting the necessary measures to achieve these goals.

7.4 Air quality

In 2014, Environment Canada released a study comparing air quality in various North American and European metropolitan areas for which data were available.

The study presents the average concentration measured in 2011 of four of the main air pollutants, namely fine particles (fine particulate matter – $PM_{2.5}$), ozone (O_3), sulphur dioxide (SO_2) and nitrogen dioxide (NO_2). (See p. 128 for details about these pollutants.)

Annual concentrations of $PM_{2.5}$ were lower in Montréal than in most of the benchmarking

metropolitan areas in the United States and Europe. In Canada, however, only Calgary surpassed Montréal in terms of $PM_{2.5}$ concentrations.

Montréal also had relatively low concentrations of O_3 , SO_2 and NO_2 compared with the other benchmarking metropolitan areas. In North America, only Seattle and Vancouver had lower O_3 concentrations, and only Vancouver and Ottawa had lower SO_2 concentrations. As for NO_2 , concentrations in Montréal were lower than those observed in all of the European metropolitan areas, but higher than in the Milwaukee, Pittsburgh, Vancouver, Houston and Ottawa areas.

FIGURE 106. Average annual concentrations of fine particles ($PM_{2.5}$), ozone (O_3), sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) for selected North American and European urban areas, 2011



Note: The indicators for concentrations of fine particles ($PM_{2.5}$), sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) are based on the annual average of daily 24-hour average concentrations. The ozone (O_3) indicator is based on the annual average of the daily maximum 8-hour average concentrations.

Source: Environment Canada (2014), *International Comparison of Urban Air Quality*. Processing: CMM, 2016.

FINE PARTICLES (PM_{2.5})

Fine particles (PM_{2.5}, also called fine particulate matter) are minute solid particles and tiny liquid droplets that remain suspended in the air. They are emitted directly to the atmosphere by cars, trucks, home firewood-burning activities, industry, forest fires and waste burning. They can also form in the air as a result of reactions involving pollutants such as sulphur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOCs) and ammonia (NH₃). Along with ground-level ozone (O₃), PM_{2.5} is one of the two major components of smog. When inhaled deeply into the lungs, even small amounts of PM_{2.5} can cause serious health problems (e.g., cardiovascular and respiratory diseases). PM_{2.5} can adversely affect vegetation and structures, contribute to haze and reduce visibility.

OZONE (O₃)

Ozone (O₃) in the upper atmosphere (10 to 50 km above the Earth's surface) protects the Earth from the sun's harmful ultraviolet radiation. In the lower part of the atmosphere and at ground level, O₃ is harmful to human health. It can cause breathing problems, reduce lung function and worsen asthma and other lung diseases. Ozone is not directly emitted, but is formed in the lower atmosphere when precursor gases such as nitrogen oxides (NO_x) and volatile organic compounds (VOCs) react in sunlight. Ground-level O₃ is one of two major components of summertime smog, the other being fine particulate matter (PM_{2.5}). Ground-level O₃ can damage vegetation and materials such as rubber.

SULPHUR DIOXIDE (SO₂)

Sulphur dioxide (SO₂) is a gas emitted when a fuel or raw material containing sulphur is burned or used in industrial processes, such as metal ore smelting. The major sources of SO_x emissions in Canada are the combustion of fuel for electricity generation and heating, and processes in both the non-ferrous smelting and refining industry, and the oil and gas industry. Sulphur dioxide emissions contribute to acid deposition and are a major precursor to fine particulate matter (PM_{2.5}). High concentrations of SO₂ can adversely affect the respiratory systems of humans and animals and can damage vegetation.

NITROGEN DIOXIDE (NO₂)

Nitrogen dioxide (NO₂) belongs to a group of nitrogen-containing substances called nitrogen oxides (NO_x). Nitrogen oxides are emitted to the atmosphere from high-temperature combustion processes such as car engines, power plants and industrial processes. Although the majority of the emitted NO_x is nitric oxide (NO), once in the air NO reacts with volatile organic compounds and ozone to form NO₂. The major sources of NO_x in Canada are on-road and off-road vehicles, the oil and gas industry, and the use of fuel for electricity generation and heating. Nitrogen dioxide plays an important role in the formation of ozone (O₃) in the atmosphere. It is a precursor to fine particulate matter (PM_{2.5}), and contributes to acid deposition and eutrophication. NO₂ also has adverse health effects: it can irritate the lungs, decrease lung function, and increase susceptibility to allergens for people with asthma.

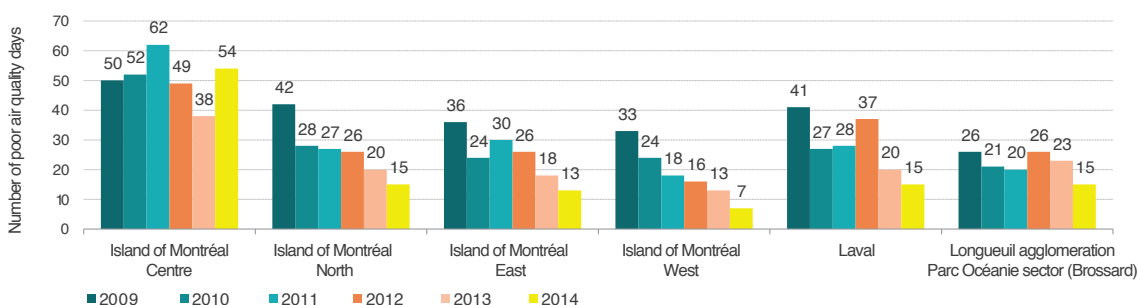
Source: Environment and Climate Change Canada (2016), *Canadian Environmental Sustainability Indicators – Air Quality*.

DECREASE IN NUMBER OF POOR AIR QUALITY DAYS BETWEEN 2009 AND 2014

In partnership with the city of Montréal's Réseau de surveillance de la qualité de l'air (RSQA), the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC) publishes data on the number of days during which the Air Quality Index (AQI) was rated "Good," "Acceptable" or "Poor" for the Island of Montréal (subdivided into four subregions), Laval and the Longueuil agglomeration.

A day is qualified as being a poor air quality day when average fine particle ($PM_{2.5}$) concentrations exceed 35 micrograms per cubic metre ($35 \mu g/m^3$) for at least three hours, or a day when the average ozone concentration for one hour exceeds 82 parts per billion (ppb) at least one sampling station in the meteorological region (or subregion in the case of the Island of Montréal). Poor air quality days include smog days when high concentrations of $PM_{2.5}$ are measured at a large proportion of the sampling stations in the region in question.⁴²

FIGURE 108. Number of days of the year with poor air quality, meteorological regions of Greater Montréal, 2009 to 2014



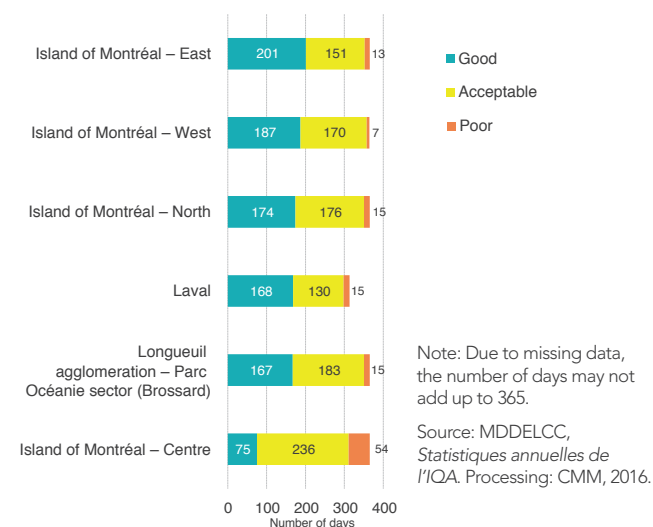
Source: MDDELCC, *Statistiques annuelles de l'IQA*. Processing: CMM, 2016.

⁴² For the city of Montréal's Réseau de surveillance de la qualité de l'air (RSQA), to be qualified as a smog day, strong concentrations must be measured over at least 75% of the territory of the Montréal agglomeration. Smog days generally result in high concentrations of fine particles over a 24-hour period and sometimes longer.

The highest annual number of poor air quality days is in the central sector of the Island of Montréal. Between 2009 and 2014, this number ranged from 38 to 62 days. It should be noted that poor air quality days in this sector are due mainly to the presence of a smoke plume during meal times caused by a wood-fired oven in a pizzeria close to one of the sampling stations.⁴³

In the other sectors, generally speaking, there has been a slow decrease since 2009 in the number of poor air quality days.

FIGURE 107. Air Quality Index ratings, number of days of the year, meteorological regions of Greater Montréal, 2014



Note: Due to missing data, the number of days may not add up to 365.

Source: MDDELCC, *Statistiques annuelles de l'IQA*. Processing: CMM, 2016.

⁴³ According to the 2014 *Environmental Assessment Report: Air Quality in Montréal*, "When a local event occurs, such as a smoke plume from a pizza oven or fireworks, it's the whole day that is categorized as 'poor', despite the fact that only a few hours of that day may have been impacted by strong concentrations of fine particles." For details, see the following publication: City of Montréal (2015), *2014 Environmental Assessment Report: Air Quality in Montréal*, Service de l'environnement. http://ville.montreal.qc.ca/pls/portal/docs/PAGE/ENVIRO_FR/MEDIA/DOCUMENTS/RSQA_BILAN2014_EN.PDF

TRANSPORTATION AND RESIDENTIAL WOOD HEATING: TWO MAIN SOURCES OF FINE PARTICLE EMISSIONS

Fine particles ($PM_{2.5}$) are the main pollutants associated with poor air quality and smog in the Montréal area.

Although no data on the relative weight of sources of $PM_{2.5}$ emissions are available for Greater Montréal as a whole, the city of Montréal's Réseau de surveillance de la qualité de l'air (RSQA) has compiled data for the Montréal agglomeration.

These data show that commercial use of wood-burning ovens by pizzerias and bagel bakeries accounts for 3% of fine particle emissions in the agglomeration. Another 13% of emissions comes from industrial sources. The two main sources of fine particle emissions are residential wood heating, responsible for 39% of emissions, and transportation, responsible for 45% of fine particle emissions in the Montréal agglomeration.

Regarding fine particle concentrations in the atmosphere of the Montréal agglomeration, the three-year average of the average annual

concentrations of $PM_{2.5}$ was $9.6 \mu\text{g}/\text{m}^3$ for the period 2012-2014, i.e., below the threshold of $10 \mu\text{g}/\text{m}^3$ for 2015 under the Canadian Ambient Air Quality Standards (CAAQS). The situation is improving, as there has been a gradual decrease in fine particle concentrations in the air since 2009-2011 (Figure 110).

To reduce fine particle concentrations below the standard of $8.8 \mu\text{g}/\text{m}^3$ set for 2020, major efforts will be required, in particular with regard to reducing $PM_{2.5}$ emissions generated by transportation and wood heating⁴⁴, the two main sources of $PM_{2.5}$ emissions in the Montréal agglomeration.

⁴⁴ It is important to note that under the By-law concerning solid-fuel-burning devices and fireplaces, in force in Montréal's 19 boroughs since August 24, 2015, anyone who has a solid-fuel-burning device or fireplace must:

- stop using it during smog warnings;
- declare it to the City of Montréal within 120 days following the adoption of the by-law;
- stop using it by October 1, 2018, unless the Environmental Protection Agency (EPA) has recognized that it does not emit more than 2.5 g/h of fine particles into the atmosphere.

FIGURE 109. Breakdown of fine particle emissions ($PM_{2.5}$), Montréal agglomeration

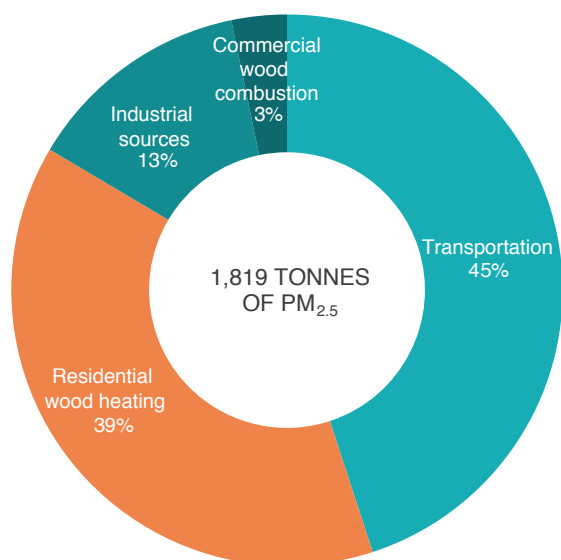
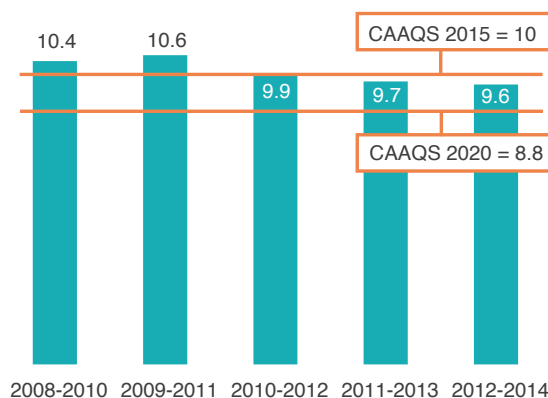


FIGURE 110. Three-year averages of the average annual concentrations of fine particles ($PM_{2.5}$), in $\mu\text{g}/\text{m}^3$, Montréal agglomeration



7.5 Residual materials management

CLOSE TO 60% OF RECYCLABLE MATERIALS ARE RECOVERED

In 2012, residents of Greater Montréal disposed of over 640,000 tonnes of recyclable printed matter, containers and packaging. Some 375,000 tonnes (59%) of recyclable materials were recovered, mainly by selective collection services, but also via the public deposit system for beer and soft drink bottles and cans. The remaining 265,000 tonnes of recyclable materials were sent to landfill in 2012.

Selective collection of recyclable materials is now available to residents of all Greater Montréal municipalities.

Already significantly present across most of the territory in 2006, selective collection has expanded rapidly. Average unit yields have risen substantially thanks to changes such as the replacement of household equipment (in some sectors, small recycling bins have been replaced by rolling bins with a larger capacity) and co-mingling (no pre-sorting of recyclable materials deposited in bins).

FIGURE 111. Recyclable materials recovery rate in Greater Montréal (selective collection and public deposit system), 2006 and 2012

2006: 268,041 tonnes



46% recovery rate

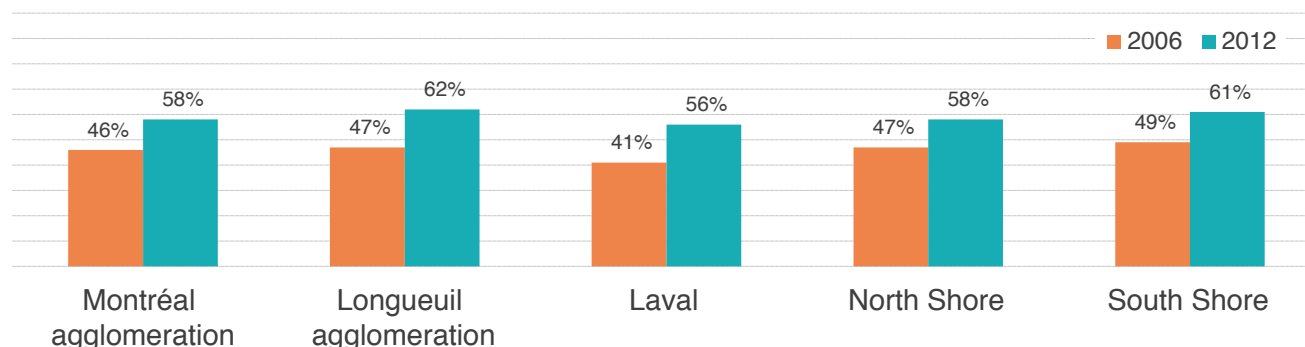
2012: 375,383 tonnes



59% recovery rate

Source: CMM, Tableau de bord du PMGMR.

FIGURE 112. Recyclable materials recovery rate, Greater Montréal's five geographic sectors, 2006 and 2012



Source: CMM, Tableau de bord du PMGMR.

FOOD WASTE RECLAMATION: CLOSE TO 10% OF HOUSEHOLDS HAVE CURBSIDE COLLECTION

In 2012, Greater Montréal municipalities collected close to 800,000 tonnes of organic matter (green waste and food waste).⁴⁵ Approximately 700,000 tonnes of this organic matter was mixed with household waste, and close to 100,000 tonnes was sent for organic reclamation, essentially through composting.

Seasonal curbside collection of green waste is already available throughout the metropolitan area. In addition to curbside collection, a network of ecocentres currently enables 93.5% of the population to dispose of green waste.

The main challenge with regard to organic waste now consists in implementing food waste recovery programs and ensuring that the population takes part.

The metropolitan area is awaiting the creation of new treatment facilities for food waste reclamation.⁴⁶ In the meantime, a number of municipalities have already implemented collection systems for this type of waste.

⁴⁵ As well as almost 400,000 tonnes of municipal sewage sludge and undetermined volumes of agri-food waste and other organic materials generated by the industrial, commercial and institutional sector (no precise data available, but estimated by the CMM at 500,000 tonnes).

⁴⁶ Nine new biomethanation and composting centres are planned by Greater Montréal municipalities for the period 2016-2022, in four of the five sectors of Greater Montréal. The facilities will process mainly household waste (food waste, green waste and related waste).

TABLE 10. Collection of food waste in Greater Montréal, December 2014

Sector	Municipality, borough, neighbourhood	Start	Number of dwellings served by food waste collection	Food waste and green waste collection
Montréal agglomeration	Côte Saint-Luc	2008	5,000 dwellings	Separate
	Pointe-Claire	2008	6,000 dwellings	Combined
	Westmount	2008	4,662 dwellings	Separate
	Le Plateau Mont-Royal	2008	5,350 dwellings	Separate
	Rosemont-La Petite-Patrie	2010	53,226 dwellings	Separate
	Verdun	2011	5,300 dwellings	Separate
	Dorval	2011	4,846 dwellings	Combined
	Dollard Des Ormeaux	2012	12,966 dwellings	Combined
	Kirkland	2012	6,200 dwellings	Combined
	Outremont	2012	1,922 dwellings	Separate
	Le Sud-Ouest	2013	14,000 dwellings	Separate
	Villeray–St-Michel–Parc Extension	2013	8,020 dwellings	Separate
	Sainte Anne de Bellevue	2013	1,585 dwellings	Combined
	Senneville	2013	364 dwellings	Combined
	Mercier–Hochelaga-Maisonneuve	2014	3,225 dwellings	Separate
	Rivière-des-Prairies – Pointe-aux-Trembles	2014	5,000 dwellings	Separate
	Montréal-Ouest	2014	1,976 dwellings	Combined
	Mont-Royal	2014	500 dwellings	Combined
Longueuil agglomeration	None	-	None	-
Laval	Champfleury, Laval-des-Rapides and Chomedey	1996	6,750 dwellings	Combined
North Shore	Saint-Sulpice	2008	1,512 dwellings	Combined
	Charlemagne	2008	3,129 dwellings	Combined
	Saint-Placide	2008	720 dwellings	Combined
	Terrebonne	2013	1,050 dwellings	Combined
South Shore	Saint-Mathieu	2008	876 dwellings	Combined
	Saint-Isidore	2008	1,020 dwellings	Combined
Total (CMM)	26 municipalities, boroughs and neighbourhoods	-	155,199 dwellings	-

Source: CMM, *Collecte et valorisation des matières organiques* (specification sheet prepared as part of the proposed Metropolitan Residual Materials Management Plan for 2015-2020).

In this way, between December 2012 and December 2014, the number of dwellings served by food waste collection almost doubled in the metropolitan area, increasing from 81,775 to 155,199 dwellings. The proportion of households served by this type of collection thus grew from 5.2% to 9.5% over a two-year period.

As of December 2014, 90.3% of the households served by food waste collection were in the Montréal agglomeration, 4.3% were in Laval, 4.1% were on the North Shore and 1.2% were on the South Shore.

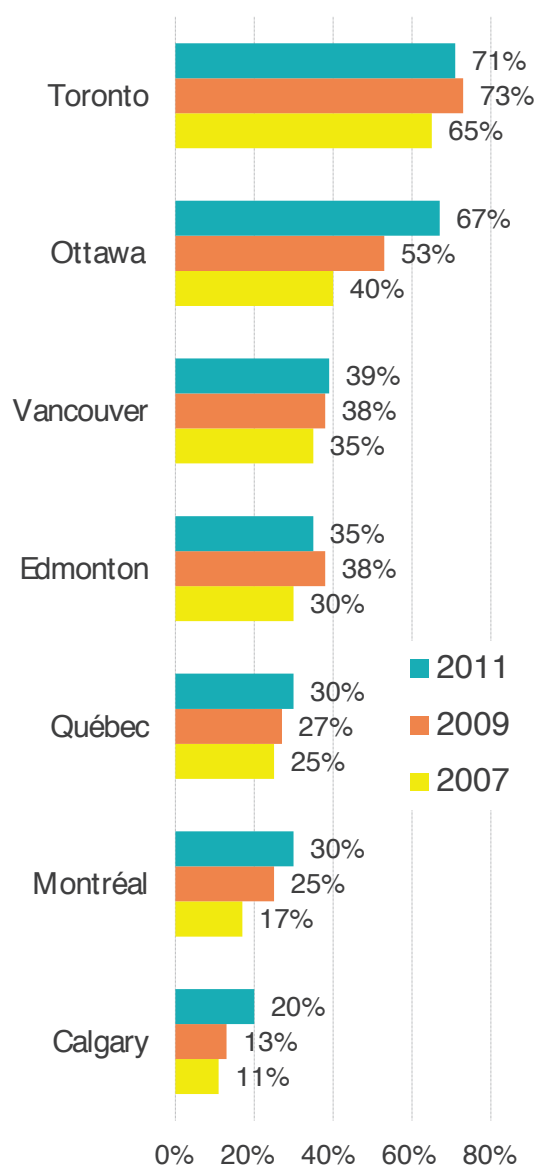
Sixteen of the 26 Greater Montréal territories (municipalities, boroughs and neighbourhoods) with food waste collection programs (Table 10) offer combined collection of food waste and green waste.

According to Statistics Canada's *Households and the Environment Survey*, when it comes to households' composting practices, the Montréal census metropolitan area (CMA) trailed somewhat behind other Canadian CMAs in 2011.

The 2011 data show indeed that the proportion of households in the Montréal CMA that participated in food waste or green waste composting activities through curbside collection was lower than in the Edmonton, Vancouver, Ottawa and Toronto CMAs.

There was nevertheless a sharp rise in this proportion between 2007 and 2011, from 17% to 30%. Given the increase in collection services in recent years, especially food waste collection (see Table 10), one can assume that the proportion of households that participate in composting in the area has grown significantly since 2011.

FIGURE 113. Proportion of households that participate in composting activities (food waste and/or green waste) through curbside collection, main census metropolitan areas, 2007-2011



Source: Statistics Canada, *Households and the Environment Survey*, 2007 to 2011.
Processing: CMM, 2016.

2015-2020 METROPOLITAN RESIDUAL MATERIALS MANAGEMENT PLAN

As part of its environmental mandate, the CMM must adopt and maintain a residual materials management plan. The first *Plan métropolitain de gestion des matières résiduelles* (PMGMR) came into effect in 2006. Since then, the Government of Québec has reviewed its Québec Residual Materials Management Policy (Order in Council 100-2011) and adopted an action plan for the period 2011-2015. The proposed PMGMR for 2015-2020 complements the government's goals and strategies while also addressing challenges of metropolitan importance.

Although the plan provides for optimization of efforts and an increase in the collection of recyclable materials, the coming years will focus primarily on meeting organic waste reclamation objectives. Funded by the Quebec and Canadian governments, biomethanation and composting facilities are currently in the planning phase. As the deployment of organic waste processing facilities is scheduled for completion by the year 2022, the CMM has to get ready to meet the targets for 2020 to 2025.

The PMGMR covers the 82 municipalities located within the CMM as well as the municipalities of Saint-Placide and L'Épiphanie (Town and Parish).

Projet de Plan métropolitain de gestion des matières résiduelles (PMGMR), 2015-2020:
http://cmm.qc.ca/fileadmin/user_upload/documents/20160428_projetPmgmr-2015-2020.pdf

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Much of the data provided in the figures in the Portrait may be viewed and downloaded by visiting the [Grand Montréal en statistiques](#) and [Comparaisons nord-américaines](#) sections of [Observatoire Grand Montréal](#).

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Notes

Notes

How well do you know your Greater Montréal?



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The Communauté métropolitaine de Montréal invites you to visit **Observatoire Grand Montréal**, an interactive website designed to help you become more familiar with your region and its 82 municipalities.

<http://cmm.qc.ca/donnees-et-territoire/observatoire-grand-montreal>



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