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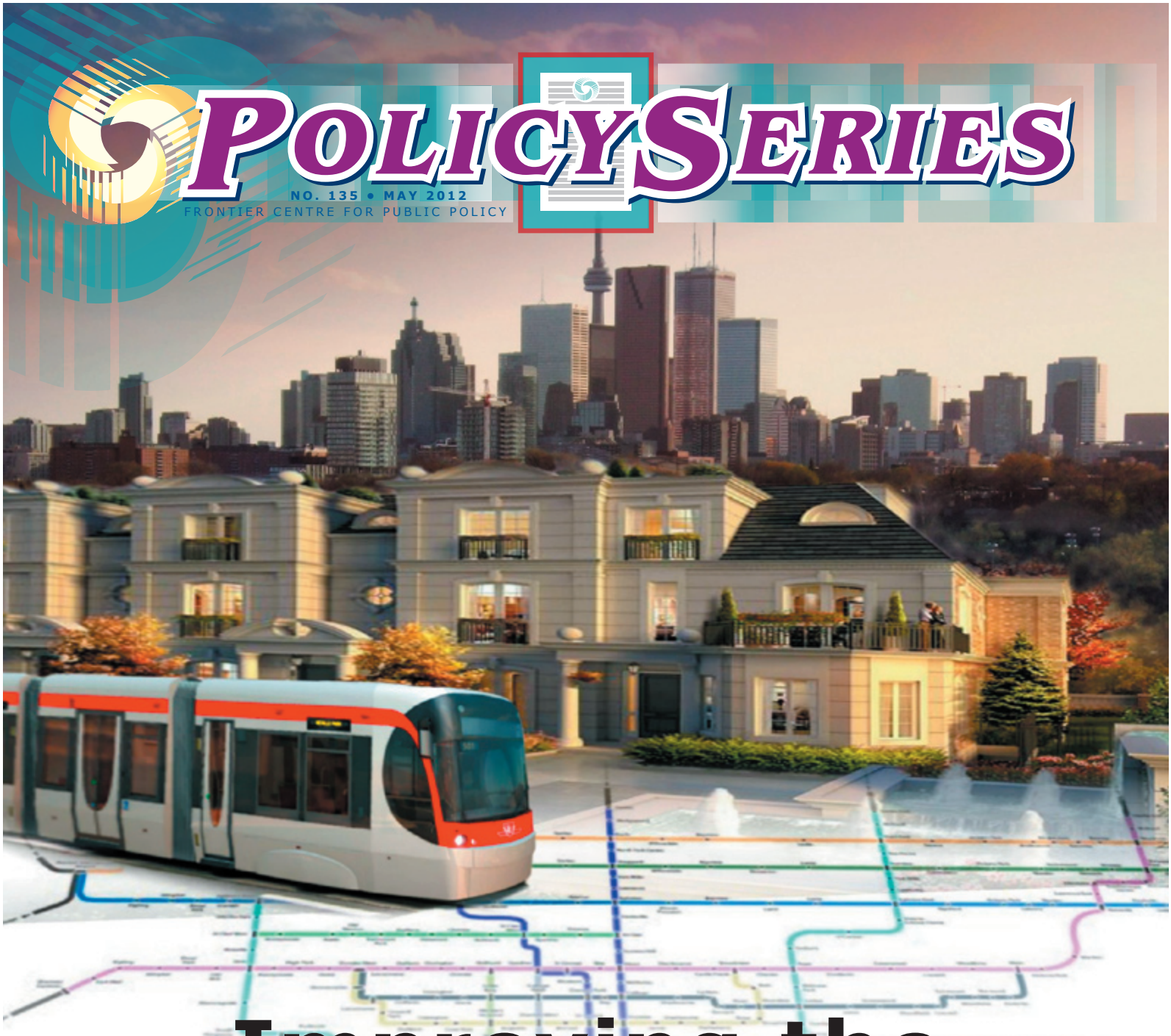

Improving the Competitiveness of Metropolitan Areas

By Wendell Cox

About the author

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Executive Summary

1. A National Transit Strategy

There is much concern about the competitiveness of the nation's metropolitan areas. Particular attention has been directed toward the generally longer commute times of Canadian workers and the diminished competitiveness that occurs as a result. New Democratic Party transport and infrastructure critic Olivia Chow has proposed a National Transit Plan, while organizations such as the Federation of Canadian Municipalities (FCM) and the Canadian Urban Transit Association (CUTA) have called for additional funding for transit to help reduce commute times and improve metropolitan competitiveness. This paper reviews the potential of transit to improve the economies of metropolitan areas and offers recommendations.

2. Metropolitan Competitiveness: The Situation

The Key: Improving Commute Times: Transport Canada has estimated that the costs of congestion in the largest metropolitan areas were as much as $3.27-billion in 2002. These costs were shouldered by households and businesses. The longer average commute (work trip) times drives these congestion costs, which hinder economic growth and competitiveness. Economic research generally concludes that greater economic and employment growth is likely where people can quickly reach their jobs in the metropolitan area.

Canada's Long Commute Times: Consistent with research by the Toronto Board of Trade, new average commute time data from Statistics Canada indicate that the major metropolitan areas (those over 1,000,000 people) generally have longer commute times than high-income metropolitan areas in Europe, the United States and elsewhere. Toronto, Montréal and Vancouver have among the longest commute times among the 109 metropolitan areas for which data are available. Ottawa-Gatineau and Calgary have among the longest commute times of metropolitan areas

TABLE 1

Average One-way Commute Times: Major Canadian Metropolitan Areas Compared with International Major Metropolitan Areas

Metropolitan Area	One-way Commute Time (Min)	Length (Time) of One-way Commute Overall Rank	Population Size Class	Length (Time) of One-way Commute Size Class Rank
Toronto	**33**	**97th out of 109**	**Over 5,000,000**	**11th out of 19**
Montréal	**31**	**90th out of 109**	**2,500,000 - 5,000,000**	**19th out of 23**
Vancouver	**30**	**86th out of 109**	**1,000,000 - 2,500,000**	**60th out of 67**
Ottawa-Gatineau	**27**	**60th out of 109**	**1,000,000 - 2,500,000**	**55th out of 67**
Calgary	**26**	**58th out of 109**	**1,000,000 - 2,500,000**	**50th out of 67**
Edmonton	**23**	**15th out of 109**	**1,000,000 - 2,500,000**	**15th out of 67**

with populations of a similar size. Only Edmonton has an average commute time that is among the shortest overall and is among the shortest in metropolitan areas with similarly sized populations (Table 1).

3. Improving Metropolitan Competitiveness

Much of the campaign to improve commute times assumes that expanded transit would be an effective strategy.

Transit Takes Longer: According to Statistics Canada, average commute times by transit are from 30 per cent longer to nearly double the average automobile commute times in the Toronto, Montréal and Vancouver metropolitan areas. Because of these shorter commute times by car, 58 per cent of car users (drivers and passengers) reach their work locations in under 30 minutes. Only 25 per cent of transit commuters reach work in less than 30 minutes. With commutes by transit taking longer, it is not likely that expanded transit would reduce commute times.

The Geography of Transit: Transit's greatest strength is in providing access to the largest downtown areas. These areas have the greatest job densities (jobs per square kilometre) in their metropolitan areas and are typically well served by frequent, rapid and convenient transit service from throughout the metropolitan area. This combination of high employment density and superior transit service attracts nearly one-half of all downtown commuters to transit in the six metropolitan areas. Because of these factors, transit meets the needs of people who commute to downtown and is thus the rational choice for most of these commuters. However, downtowns contain only a relatively small share (14 per cent) of metropolitan area jobs.

Other areas lack this intense concentration of jobs, yet these areas account for the overwhelming majority of employment in the metropolitan areas. With their much lower employment densities (1/50th of downtown), areas outside the central business district generally lack transit service that is time-competitive with cars. As a result, the proportion of people using transit for the work trip to locations outside downtown is much smaller. For the overwhelming share of work trips to outside the downtown area, driving meets the needs of commuters. Thus, the automobile is the rational choice for most people who commute to locations outside downtown.

Emerging Demographics: Jobs and residences in metropolitan areas continue to disperse to areas outside the urban core. Transit is not well positioned to serve the very areas where job growth is the greatest.

Declining Transit Productivity: At the same time, there are concerns about transit productivity. The Conference Board of Canada has documented a 1.2 per cent annual decline in productivity for two decades. The same analysis found productivity in other transport sectors to be generally improving. Transit costs have risen well in excess of inflation, service levels and ridership. Rising costs seriously limit transit's ability to increase its share of travel in metropolitan areas.

Transit's Robust Funding Growth: Transit subsidies have been growing strongly. According to Transport Canada data, the rate of subsidy growth from

1999 to 2008 was more than 9.4 per cent annually. Over the same period, subsidies grew 83 per cent (adjusted for inflation), which is more than three times the 26 per cent ridership growth rate and 3.5 times the rate of general inflation. Transit's declining productivity and its increasing revenue indicates that cost control should receive more attention than efforts to increase funding receive.

Funding for the Future: Transit's declining productivity and the continuing dispersion of jobs and residences are likely to make any strategy to materially expand its share of urban travel very expensive. If current expenditure trends continue, simply *maintaining* transit's share of the urban travel market would require an increase from $6-billion to $13-billion in 2035 (adjusted for inflation). Increasing transit's share of urban travel by 50 per cent would require an increase to $19-billion.

Policies that Could Make Metropolitan Areas Less Competitive: While the prospects for improving transit commute times are discouraging, some current strategies could increase traffic congestion, *lengthen* commute times and make metropolitan areas less competitive. Compact cities (also called smart growth) policies have been adopted across Canada in an effort to reduce automobile use and increase urban densities. International data indicate that higher densities are associated with greater traffic congestion, and data from U.S. metropolitan areas indicate that commute times are longer where employment densities are higher. Further, higher traffic densities are strongly associated with higher levels of air pollution. Finally, improvements in vehicle technology will make reductions in automobile use to reduce greenhouse gas emissions unnecessary, according to U.S. research by McKinsey & Company and by the Conference Board (US).

Improving Metropolitan Competitiveness: Strategies that reduce commute times can improve metropolitan competitiveness. Expanded telecommuting could help because it eliminates the work trip and thus reduces average commute times. There are also lessons to be learned from the international metropolitan areas that have been more successful in maintaining shorter commutes.

4. Conclusion: Focusing on Shorter Commute Times

Focusing on Objectives: To become more competitive, Canada's metropolitan areas need to improve their average commute times. This requires focusing on strategies that have the highest potential to reduce traffic congestion.

The federal government could assist in this effort by redirecting appropriate funds to research in affordable strategies that can reduce commute times regardless of the mode of travel. Public officials should have access to annual data that indicate the reduction in commuter travel hours that are attributable to each mode of employment access (including telecommuting) together with cost by mode and cost per delay hour. This type of information could inform decisions that reduce commute times.

Residents and businesses in metropolitan areas would be best served by goal-oriented, co-operative research that is objective and squarely directed toward getting people to work faster. The focus should be on what works rather than on preconceived notions of how a city should look or how people should travel.

1. A National Transit Strategy

For some time, there has been an interest on the part of cities and transit agencies to substantially expand the role of the federal government in mass transit. Most recently, Olivia Chow, the New Democratic Party transport and infrastructure critic, introduced a private member's bill that would require the development of a national transit strategy.[1] Among other things, such a strategy would be directed toward the establishment of a "permanent, stable source of funding for transit." Chow also said, "Canada needs to join other G8 and leading industrial nations and adopt a national transit strategy." This initiative is consistent with proposals by organizations such as CUTA and the FCM; however, the private member's bill does not propose additional funding. The campaign stresses the need to reduce traffic congestion as well as the time people spend commuting to work in order to improve metropolitan competitiveness.

This paper reviews the potential of transit to improve the economies of metropolitan areas and offers recommendations.

The Issue: Metropolitan Competitiveness

One of the principal concerns underlying the private member's bill is an interest in improving Canada's competitiveness. This concern is echoed in an analysis by the FCM and the Toronto Board of Trade, both of which have indicated that traffic congestion and long commute times have created a competitive disadvantage for Canada's metropolitan areas.

Traffic congestion is a major impediment to improving competitiveness. According to the FCM, gridlock is the most important factor in determining where businesses locate, and traffic congestion is becoming Toronto's "main competitive disadvantage."[2] According to the FCM, Canada's competitiveness is being slowed down by long commute times.[3]

> Long daily commutes are hurting our economy, environment, and quality of life. It's a national problem requiring a national solution. The most recent estimate in 2006 pegged the cost of traffic delays at more than $5 billion a year, but there is growing evidence that today's cost is much higher. The average Canadian commuter spends the equivalent of 32 working days a year commuting to and from work, facing some of the worst commute times in the developed world.

The FCM continued: "The next step is to sit down with the government and all Parliamentarians to make sure that reducing commute times is a priority..."

The Toronto Board of Trade ranks Toronto as having the worst commute times in a sample of international metropolitan areas.[4] The Board of Trade indicated that Toronto's average commute time ranked 21stout of 21 international metropolitan areas surveyed, well behind Barcelona (#1), Dallas-Fort Worth (#2), and Los Angeles (#5). Montréal had the 20th longest commute time.

2. Metropolitan Competitiveness: The Situation

Longer commute times reduce a metropolitan area's competitiveness, because they impose excess costs on households and businesses by intensifying traffic congestion.

Commute Times and Economic Growth: The concerns about excessive commute times are well placed. Research indicates that urban economies are more productive if residents can reach a larger percentage of the jobs more quickly. For example, research by Rémy Prud'homme and Chang-Woon Lee (1998) has shown that the economic efficiency of metropolitan areas increases as the size of the labour market (number of jobs) accessible to residents in a particular increment of time (such as 30 minutes) increases.[5] Research by Robert Cervero of the University of California found a strong relationship between higher work trip travel speeds and worker productivity.[6]

> … [A]verage commute speed—reflecting the provision of transportation infrastructure—most strongly influenced labor productivity in the San Francisco Bay Area, with an elasticity of around 0.10—every 10 percent increase in commuting speed was associated with a one percent increase in worker output, all else being equal.

A Transport Canada report estimated that traffic congestion causes up to $3.7-billion (2002) in additional costs to people and businesses in the nine largest metropolitan areas.[7]

These studies and other research point to the fact that shorter travel times to a larger share of the jobs in a metropolitan area is associated with larger employment growth and greater economic expansion. As the FCM and the Toronto Board of Trade indicate, the key to achieving this is to reduce commute times, which will also improve traffic conditions for commercial operations as well as other personal travel purposes.

Comparison of Average Commute Times: The most recent Statistics Canada data indicates that one-way work trip travel times in major metropolitan areas are generally longer than those of international competitors.[8] Major Canadian metropolitan areas generally rank in the bottom half among the 109 major high-income metropolitan areas for which data was identified (Table 1).[9] The average one-way commute among Canada's major metropolitan areas is 28.3 minutes, which is 1.7 minutes more than the overall average, 1.7 minutes more than the European average and 3.5 minutes more the U.S. average.

Data for Canada's major metropolitan areas are summarized below (Table 2), with the complete data in Table 7.

- ***Over 5,000,000 Population: Toronto:*** Toronto is tied for the 97th longest commute time, at 33 minutes. Only 11 metropolitan areas out of the 109 have a longer one-way commute. In addition, Toronto ranks in the bottom half of its population category, with the 11th longest commute time out of 19. Its commute time is longer than eight of the nine largest U.S. metropolitan areas, which

include Los Angeles, with its reputation for traffic congestion (27 minutes), and Dallas-Fort Worth (26 minutes), which has an urban population density of less than half that of Toronto, a transit commute share one-tenth as large and a more-dispersed employment pattern. The shortest commute time among the largest metropolitan areas is in Essen (Rhein-Ruhr metropolis, Germany), which is highly decentralized and has perhaps the most intense freeway system in Europe. The longest commutes are in Tokyo and Hong Kong, at 46 minutes.[10]

- ***2,500,000 to 5,000,000 Population: Montréal:*** Montréal is tied for the 90th longest commute time, at 31 minutes. Only 17 metropolitan areas out of 109 have a longer one-way commute. Only four similarly sized metropolitan areas (out of 23) have a longer commute time. Montréal commutes are longer than in most similar sized European metropolitan areas and longer than all similarly sized U.S. metropolitan areas. The shortest commute times in similarly sized metropolitan areas are in Stuttgart, Germany, and Minneapolis-St. Paul (23 minutes), and the longest are in Singapore and Madrid (33 minutes).
- ***1,000,000 to 2,500,000 Population: Vancouver:*** Vancouver is tied for the 86th longest commute time, at 30 minutes. Only 20 metropolitan areas out of 109 have a longer one-way commute. Only five similarly sized metropolitan areas (out of 67) have a longer commute time. The shortest commute time in a similarly sized metropolitan area is in Seville, Spain, at 19 minutes, while the longest are in Stockholm and Prague, at 35 minutes.

TABLE 2

Commute Times: High Income World One-way Commute Time in Minutes (Average)

	Metroplitan Area Population Class*			Commute Time (One-way) in Minutes		
Geography	5,000,000 & Over	2,500,000 to 5,000,000	1,000,000 to 2,500,000	Average	High	Low
Canada	**33.0**	**31.0**	**26.5**	**28.3**	**33.0**	**23.0**
Europe	**31.9**	**26.5**	**25.8**	**26.6**	**37.0**	**19.0**
Japan **	**36.5**			**36.5**	**46.0**	**27.0**
United States	**28.3**	**25.9**	**23.3**	**24.8**	**34.0**	**20.0**
Others						
Hong Kong	**46.0**			**46.0**		
Singapore	**38.0**			**38.0**		
Sydney		**34.0**		**34.0**		
Seoul	**42.0**			**42.0**		
All	**32.8**	**27.0**	**24.6**	**26.6**	**46.0**	**19.0**

Source: Statistics Canada, U.S. American Community Survey, National Institute of Statistics and Economic Studies (France).

* Major metropolitan areas (over 1,000,000 population) for which data was identified.

** For Japan, median commute time, not average (mean). Mean commute time is likely longer due to the influence of very long commutes.

- ***1,000,000 to 2,500,000 Population: Ottawa-Gatineau:*** Ottawa-Gatineau's 27-minute, one-way commute is the 67th longest of 109 metropolitan areas. Ottawa-Gatineau's average commute ranks 55th longest out of the 67 metropolitan areas of similar size.
- ***1,000,000 to 2,500,000 Population: Calgary:*** Calgary's 26-minute, one-way commute is the 58th longest of the 109 metropolitan areas, and it is the 50th longest out of the 67 metropolitan areas of similar size despite spending more per capita on transit than any of the other major metropolitan areas.[11]
- ***1,000,000 to 2,500,000 Population: Edmonton:*** Edmonton's 23-minute, one-way commute is the 15th shortest out of the 109 metropolitan areas and the shortest among the major metropolitan areas of Canada. Edmonton also ranks 15th shortest out of the 67 metropolitan areas in its population class. Edmonton has the lowest level of transit spending among the six major metropolitan areas.[12]

Share of Commuters Reaching Work Under 30 and 45 Minutes: More-detailed data generally indicate that a smaller share of commuters reaches work in under 30 or 45 minutes in Canadian metropolitan areas than in areas (Table 3).[13]

TABLE 3

30-45 minute Commute Shares: Representative Metropolitan Areas

	Work Trip Under 30 Minutes	Work Trip 30 to 45 Minutes	Work Trip Under 45 Minutes
5,000,000 and Over			
Dallas-Fort Worth	**59%**	**24%**	**83%**
Los Angeles	**55%**	**24%**	**79%**
Toronto	**48%**	**25%**	**73%**
Paris	**45%**	**22%**	**67%**
2,500,000 - 5,000,000			
Phoenix	**57%**	**26%**	**83%**
Montréal	**47%**	**27%**	**74%**
1,000,000 - 2,500,000			
Edmonton	**68%**	**20%**	**88%**
Indianapolis	**66%**	**22%**	**88%**
Ottawa-Gatinéau	**65%**	**21%**	**86%**
Tampa-St. Petersburg	**62%**	**22%**	**84%**
Calgary	**54%**	**29%**	**83%**
Vancouver	**55%**	**21%**	**76%**

Source: Statistics Canada, U.S. American Community Survey, National Institute of Statistics and Economic Studies (France).

- ***Over 5,000,000 Population:*** A larger share of Toronto commuters reaches work in under 30 and 45 minutes than in Paris, which is widely reputed to have the most-comprehensive transit system in the Western world. However, a larger percentage of Los Angeles and Dallas-Fort Worth commuters reaches work in less than 30 minutes and less than 45 minutes than in Toronto.
- ***2,500,000 to 5,000,000 Population:*** A smaller share of Montréal commuters reaches work in less than 30 or 45 minutes than in highly decentralized Phoenix, which is an extremely dispersed urban area. As a largely post-World War II metropolitan area, Phoenix has an unusually small central business district for its size.
- ***1,000,000 to 2,500,000 Population:*** A substantially smaller share of Vancouver commuters reaches work in less than 30 or 45 minutes than in Tampa-St. Petersburg or Indianapolis. Ottawa-Gatineau and Calgary are considerably more competitive with these U.S. metropolitan areas. However, a larger share of Edmonton commuters reaches work in under 30 or 45 minutes than in Tampa-St. Petersburg or Indianapolis.

TABLE 4

Comparison of Canadian and U.S. Major Metropolitan Areas: Average One-way Commute Times and Urban Area Density

	Canada Metroplitan Areas		United States: Metropolitan Area Sizes Classes	
Canada	Commute Time (Minutes)	Principal Population Centre Density (Persons/sq-km)	Average Commute Time (Minutes)	Average Principal Population Centre Density (Persons/sq-km)
5,000,000 and Over				
Toronto	**33**	**2,900**	**28**	**1,400**
2,500,000 - 5,000,000				
Montréal	**31**	**2,200**	**26**	**1,200**
1,000,000 - 2,500,000				
Vancouver	**30**	**1,900**	**23**	**1,100**
Ottawa-Gatinéau	**27**	**1,900**		
Calgary	**26**	**1,600**		
Edmonton	**23**	**1,100**		

Density: Principal (largest) population centre (urban area) in each metropolitan area.

Comparison with U.S. Metropolitan Areas: Comparisons with U.S. metropolitan areas are particularly appropriate, since they are the most proximate to and direct competitors of Canadian metropolitan areas. Further, Canadian metropolitan areas have important similarities to U.S. metropolitan areas, which have larger areas of automobile-based suburbanization than Europe or Japan and a general absence of large and exceptionally dense pre-automobile urban cores (Table 4).

- Toronto has a longer average commute time than eight of the nine U.S. metropolitan areas with more than 5,000,000 people. The average commute time in New York is one minute longer than in Toronto.
- Montréal has a longer average commute time than all 11 U.S. metropolitan areas of between 2,500,000 and 5,000,000 people.
- Vancouver, Ottawa-Gatineau and Calgary have longer commute times than all 31 U.S. major metropolitan areas with 1,000,000 to 2,500,000 people.
- Edmonton is a significant exception, with an average commute that is shorter than 17 of the 31 U.S. major metropolitan areas with 1,000,000 to 2,500,000 people. Edmonton's average one-way commute time is the same as that of U.S. metropolitan areas in the same size class. The Edmonton population centre (urban area)[14] also has virtually the same population density as U.S. urban areas in the 1,000,000 to 2,500,000 population category (1,100 per square kilometre).

> Canadian metropolitan areas have important similarities to U.S. metropolitan areas, which have larger areas of automobile-based suburbanization than Europe or Japan...

3. Improving Metropolitan Competitiveness

There is an expectation that transit can play a major role in reducing the commute times that are making metropolitan areas less competitive. For example, FCM has indicated that political leaders[15]

> ... must support concrete targets to stop rising commute times. They need to reinvest more tax dollars—that our communities send to Ottawa—in new buses, subways and commuter rail. They need to sit down with cities and provinces to fill the gaps in our transportation networks.

Further, the Toronto Board of Trade attributes (at least in part) Toronto's long commute times and intense traffic congestion to insufficient transit ridership.[16]

Thus, proponents of a stronger federal transit program generally consider transit as a means by which commute times and traffic congestion can be reduced by attracting large numbers of automobile drivers to transit.[17]

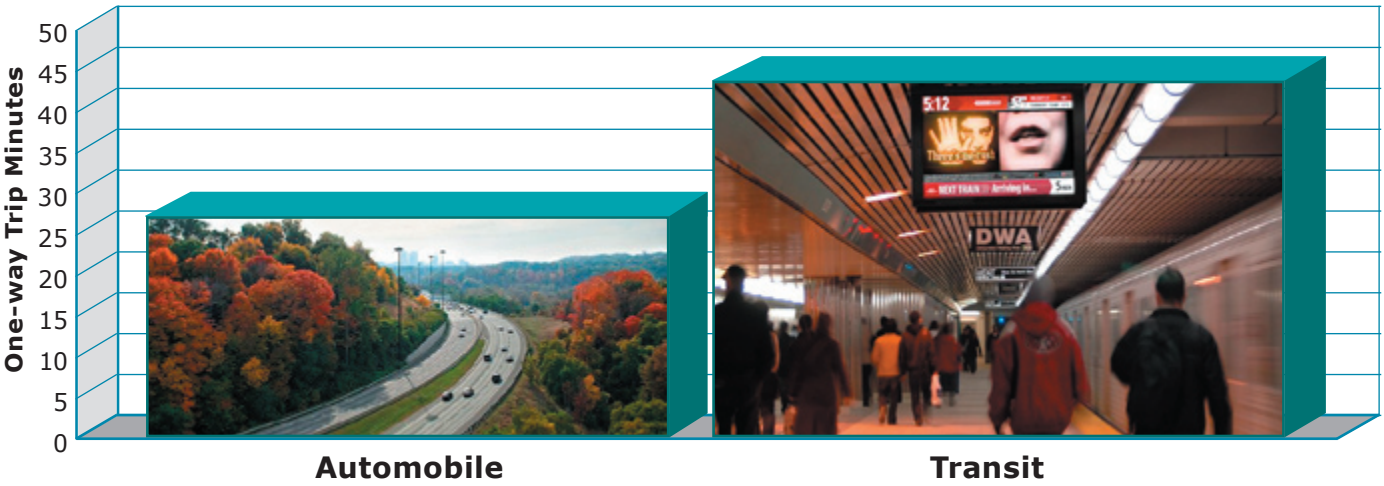
Commuting by Transit Takes Longer

However, transit does not reduce commute times. The principal reason is that there is little transit service that is time-competitive with the automobile to workplaces outside downtown and the inner urban core (see below).

Work trip travel times by transit are considerably longer than by car. The average one-way automobile work trip travel time is 27 minutes in the major metropolitan areas, while the average transit work trip travel time is 44 minutes (Chart 1). On average, a commuter will spend nearly three hours per week more travelling to work by transit than by car. Statistics Canada provides 2010 comparisons for the three largest metropolitan areas.[18]

CHART 1

One-way Commute Time: Transit and Car Major Metropolitan Areas (2010)



Source: Statistics Canada

- In Toronto, commuting by car takes an average of 29 minutes each way (58 minutes round trip). Commuting by transit takes 49 minutes, nearly 70 per cent longer.
- In Montréal, commuting by car takes an average of 30 minutes each way. Commuting by transit takes 39 minutes, 30 per cent longer.
- In Vancouver, commuting by car takes an average of 25 minutes each way. Commuting by transit takes 48 minutes, nearly double the automobile commute time.

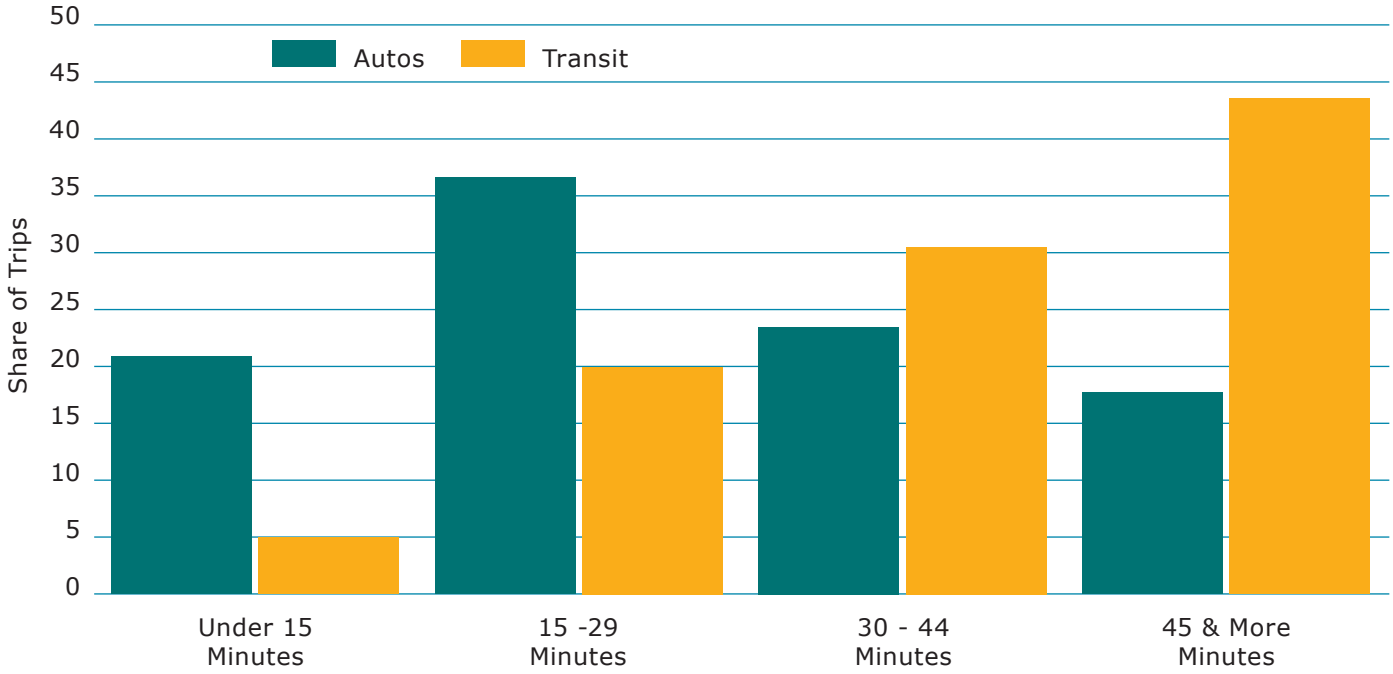
Among the major metropolitan areas, the shortest travel times are overwhelmingly by car.

- 21 per cent of car commuters reach work in less than 15 minutes. Only 5 per cent of transit commuters have a one-way trip of less than 15 minutes.
- Nearly twice as many car commuters (37 per cent) as transit commuters (20 per cent) take between 15 and 29 minutes to get to work.
- Overall, 58 per cent of car commuters reach work in less than 30 minutes, which is more than double the 25 per cent of transit commuters.

Transit dominates the longer commutes. Statistics Canada reports almost one-half (46 per cent) of transit commuters travel 45 minutes or more to work (the longest commute category reported). In contrast, only 18 per cent of car commuters travel 45 minutes or longer to work. Thus, transit commuters are 2.5 times as likely to travel 45 minutes or longer than car commuters are (Chart 2).

CHART 2

Transit and Auto Work Trip Travel Times: Metropolitan Areas Over 1,000,000 (2010)



Source: Statistics Canada

Statistics Canada notes that longer travel times by transit are to be expected.[19] "Since the use of public transit involves walking, waiting and sometimes traffic congestion, it is not surprising that commuting times are generally longer for public transit users."

Because longer work trip travel times tend to slow the economic productivity of a metropolitan area, attracting large numbers of drivers (and carpool riders) from cars to transit would be detrimental to economic performance and metropolitan growth, at least under current conditions.

Transit Cannot Reduce Traffic Congestion

It is often suggested that transit reduces traffic congestion. These claims are frequently based upon unrealistic scenarios in which all transit service is cancelled and people who currently take transit are forced to drive instead. However, there are no such serious proposals. Transit plays a critical role in providing access to downtown areas, and it generally accounts for one-half or more of work trip travel to these areas.

However, transit is usually incapable of reducing traffic congestion levels. This would require attracting drivers from cars in large numbers, and since most downtown commuters are already using transit, the reductions would necessarily have to come from travel to other destinations. Locations outside of downtown, where most employment is located, are far more difficult for transit to serve (see The Geography of Transit section below).

The assumption of reduced traffic congestion where there is greater transit use is generally an invalid assumption, as the data below indicate. In addition, there are erroneous claims. For example, according to the Union international des transports public (UITP), the leading international transit organization based in Brussels, :

> The access time to 500,000 jobs varies from 20/25 minutes in cities with a high modal share of public transport, walking and cycling, such as Munich and Singapore to 55/70 minutes in cities such as Houston or Melbourne which heavily rely on private car.[20]

In fact, the average one-way work trip travel time in Houston is 27 minutes, and nearly 1.4 million jobs are accessed within 30 minutes (This is more than one-half of the employment in the metropolitan area). No data are available for Melbourne. In Singapore, on the other hand, the average work trip travel time is 38 minutes.[21] In Munich, the one-way work trip travel time is 27 minutes despite the fact that Munich has a much smaller population than Houston or Melbourne. The UITP's report also includes a graph that implies that transit travel times are less than by car. In Singapore, which has one of the most highly utilized and comprehensive transit systems in the world, travel by car is considerably faster than travel by transit. The Singapore government has established a goal to improve transit travel times, such that the "... average public transport journey times would be reduced to 1.5 times of that by car by 2020, from the current 1.8 times."[22]

There is only one consistent measure of international traffic congestion, and it is published by INRIX, a traffic reporting company.[23] INRIX estimates the extra time that is necessary for car travel during peak travel periods in U.S. and Western European metropolitan areas. The most recent data indicate a strong relationship between *greater* transit use and *greater* traffic congestion. This may seem counter-intuitive; however, transit use tends to be higher where there are higher population densities and higher core area employment densities. These conditions are also associated with greater traffic congestion.

The most recent data indicate that where transit work trip market shares are above 30 per cent, average peak hour traffic delay is nearly 25 per cent. On the other hand, where transit work trip market shares average under 5 per cent, traffic delays average 7 per cent (Table 5).

TABLE 5 **Transit Work Trip Market Share as a Percentage of Transit, Auto and Motorcycle Travel**

Transit Work Trip Market Share	Excess Peak Hour Travel Time
Over 30%	**24.7%**
20% - 30%	**23.0%**
10% - 20%	**17.6%**
5% - 10%	**16.4%**
0% - 5%	**6.8%**

Source: Derived from Urban Audit (Europe), United States Census Bureau, INRIX, ESDS labour Force Survey, and INSEE (Paris).

The Geography of Transit

Transit has both strengths and weaknesses in the differing geographic areas within major metropolitan areas. Yet, it is often claimed that transit can improve traffic congestion and commute times throughout the metropolitan area. For example, according to the FCM:[24]

> [It] is difficult to imagine such cities as Montréal, Ottawa and Toronto functioning without their transit systems. During the morning peak period, 78% of trips entering Toronto's central business district are by transit.

Transit: About Downtown and the Urban Core: FCM is right in noting the large share of transit commuting into the Toronto central business district (See Appendix B: The Geography of Transit in Toronto). There is no more favourable location for transit commuting than the largest downtown areas. Transit's capabilities elsewhere in the metropolitan area are more modest.

Nearly one-half (48 per cent) of commuters to the central business districts of the major metropolitan areas use transit to get to work.[25] From the perspective of customers, transit's success in capturing its large downtown market share is due to its competitiveness with the automobile. There are two principal elements to this—time and cost.

A large share of trips downtown can be completed in times that are competitive with the automobile. This is because the large number of jobs in such a small geographic area makes it possible for transit to provide rapid and frequent service from throughout the metropolitan area. These services are able to deliver customers to stations that are within convenient walking distance (400 metres) of virtually all downtown jobs. If transfers are required, the high frequency of service minimizes the time lost, the inconvenience and the effects of inclement weather.

Further, the high cost of land that results from the intensive built environment raises the cost of parking to unaffordable levels for most workers. Thus, to downtown, transit also competes well with the automobile in customer costs.

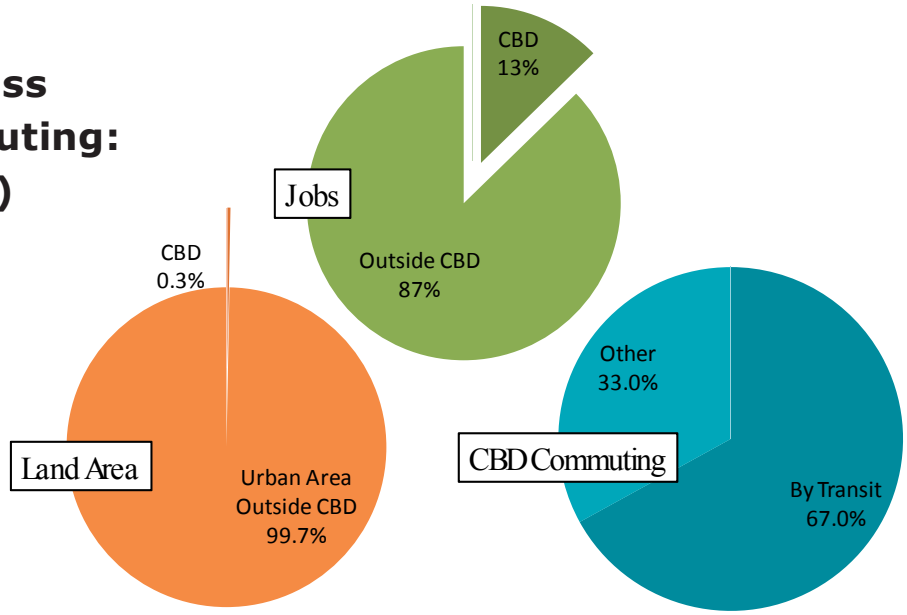
Regional transit systems necessarily focus on the downtown area, which is the one location to which transit is able to provide service from throughout the metropolitan area that is time-competitive with the automobile. Work trip travel to the largest downtowns is transit's greatest strength, because of its ability to move many people to very small areas where so many people work. A related strength of transit is the denser cores[26] adjacent to downtown, where the frequent service makes transit use more attractive.

These advantages are the result of downtown's uniqueness. For example, central business districts cover, on average, just 0.4 per cent of their respective urban areas (built-up area). Downtown Toronto comprises only 6 square kilometres (Chart 3) out of the urban area's 1,750 square kilometres (0.3 per cent), while centreville Montréal covers just 4.5 square kilometres of the urban area's 1,680 square kilometres (0.3 per cent). The density of employment in the six major metropolitan downtown areas is very high, at nearly 38,000 jobs per square kilometre.

The spatial advantages of downtown and the intense level of transit service make it possible for transit to meet the needs of commuters. As a result, transit is the rational choice for most downtown commuters.

CHART 3

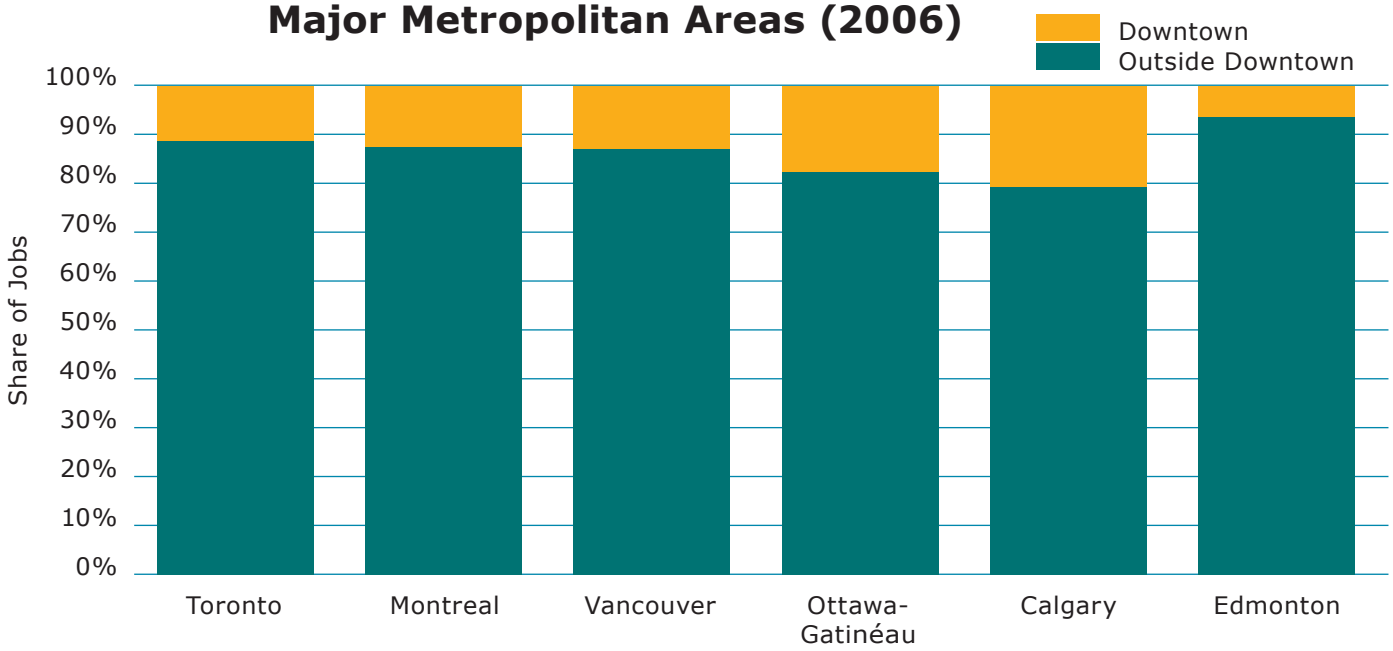
Central Business District Commuting: Toronto (2006)



Transit Outside the Central Business District: The impressiveness of skylines and the focus of transit services can give an impression that downtowns are much more dominant than they are in reality. In fact, only 14 per cent of metropolitan employment is downtown (Chart 4).[27] Employment outside downtown is more than six times that number (86 per cent).

CHART 4

Jobs: Downtown and Outside Downtown Major Metropolitan Areas (2006)



Source: Statistics Canada and Transportation Association of Canada

Employment is much more dispersed outside downtown. Rather than 38,000 jobs per square kilometre, jobs in the urban areas that are outside the central business district are fewer than 750 per square kilometre, which is 1/50th the density of downtown. This lower density makes time-competitive transit far more difficult to provide. Commuters to areas outside downtown do not have the high quality transit service that serves downtown. Service, when it is available at all, is less frequent and requires longer transfer times.

Even secondary (non-downtown) dense centres such as North York (in the Greater Toronto Area) tend to have far fewer jobs than the downtowns. While intense transit service to downtown areas can be justified economically, the cost for similarly intense rapid transit service from throughout the metropolitan area to secondary dense centres would be enormous. Local bus services provide far less access, because they operate more slowly and have more stops.

The largest employment centres outside downtown can be far less dense. For example, it is reported that the area around Toronto Pearson International Airport has the largest number of jobs in the nation[28] (more than 350,000) including more than any downtown area. (A similarly large employment centre surrounds Montréal-Trudeau International Airport.) Yet, the Toronto Pearson International Airport employment area covers over 120 square kilometres, more than 20 times the land area of downtown Toronto.[29]

To provide the downtown level of intense, rapid and frequent service to within walking distance of the jobs in this highly dispersed employment centre would be financially prohibitive. Multiple grade-separated[30] subways or busways would be required throughout the metropolitan area. Providing time-competitive transit service to within walking distance of all employment in an area could equal the cost of providing the present downtown-oriented transit system.

If serving a large, dispersed employment area with time-competitive transit service is daunting, the prospects are even more remote elsewhere. Most of the employment in metropolitan areas is in small office parks, dispersed retail locations and in other areas of much lower density. Time-competitive transit service to these hundreds of thousands of jobs in major metropolitan areas would require grade-separated rapid transit systems radiating from walking distance of each work location to the rest of the metropolitan area. Obviously, the cost of such a system would be exorbitant.

Providing time-competitive transit service to the majority of jobs that are not downtown, not in dense centres, and not in the large but dispersed employment centres would be even more difficult and cost prohibitive.

Longer transfer times can be particularly uncomfortable in inclement weather or during heat spells. The advantages that make transit a rational choice to downtown are generally not available to commuters to areas outside downtown. Attempting to replicate the success of downtown transit outside of the downtown would be exceedingly expensive.

The automobile better meets the needs of most commuters to areas outside the downtown than transit does. As a result, the automobile is the rational choice for most of these commuters, who far outnumber downtown commuters (Table 6, next page).

TABLE 6

Transit in Major Metropolitan Areas: Central Business District (CBD) and Outside CBD Characteristics

	Central Business District (Downtown)	Outside the Central Business District
Share of Jobs (All Employees)	14%	86%
Share of Urban Land Area	0.4%	99.6%
Emloyment Density (per square km)	38,000 Highest employment density in the metropolitan area.	Less than 750 Employment densities vary, but are generally far lower than downtown.
Transit Travel Times	Often time-competitive with the automobile.	Not time-competitive with the for most trips.
Access from Transit Stops to Employment	Virtually all jobs are within walking distance of rail or busway stations that are accessible without transferring from large parts of the metropolitan area. Frequent local connecting transit service.	Most jobs are not within walking distance of a rail or busway stations that have no-transfer service from large parts of the metropolitan area. Local connecting service is generally infrequent or may not exist.
Rapid Transit (Subway, Metro, Commuter Rail, and Busway)	Generally available from throughout the metroplitan area.	Generally little or no rapid transit. Limited service available from local bus routes that stop frequently and operate slowly.
Travel Demand at Employment Location	Very high due to demand caused by large concentration of jobs.	Generally lower, due to more dispersed employment locations.
Auto Commuting Cost	High due to high parking rates (does not consider the cost of transit subsidies).	Lower cost, often free parking.

This dominance of travel to areas outside downtown was described in a British Columbia Ministry of Transportation and Greater Vancouver Transportation Authority report on the Vancouver metropolitan area.[31]

> The predominant suburb-to-downtown commuting that some other cities experience no longer exists in this region, and has not for quite some time. Instead, people travel from everywhere to everywhere. The majority of trips begin and end somewhere in the outer municipalities (either within one outer municipality or in adjacent outer municipalities.

The Transport Association of Canada summarized transit's difficulties outside downtowns and the dense urban cores.[32]

Outside Central Areas, sustainable travel modes—walking, cycling, and transit—have been used for only a small portion of daily trips; they appear to remain unfeasible or not cost- or time-effective compared with automobile use.

Transit's share of commuting declines as distances from downtown increase (Chart 5). This is principally because the concentration of destinations (jobs) that exists downtown does not exist elsewhere in metropolitan areas. This is evident in the three largest metropolitan areas (Toronto, Montréal and Vancouver).

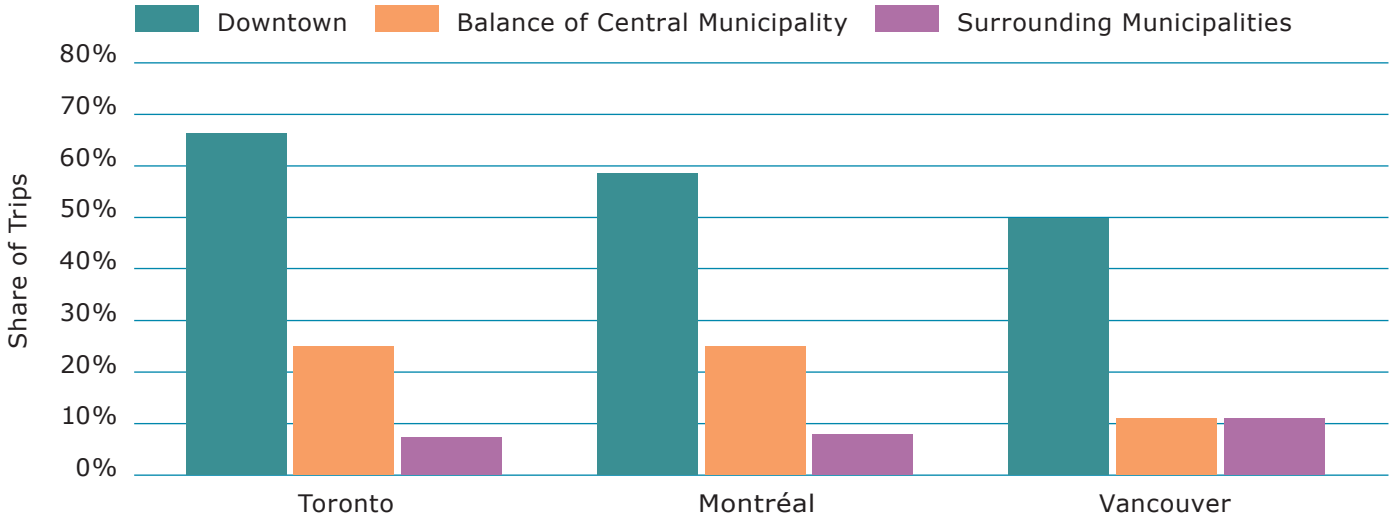
- The average transit market share to downtown jobs is 59 per cent.
- The average transit market share to jobs in the balance of the central municipality is 19 per cent, one-third that of downtown.
- The average transit market share to jobs in surrounding municipalities (suburbs) is 8 per cent, one-seventh that of downtown.

This downtown-oriented geography of transit means that there is little or no potential for reducing traffic congestion to the many jobs outside downtown, and with the large market share of transit to downtown, there is similarly little potential.

"...walking, cycling, and transit—have been used for only a small portion of daily trips; they appear to remain unfeasible or not cost- or time-effective...

CHART 5

Transit Commute Share by Sector: Three Metropolitan Areas (2006)



Source: Statistics canada and Transportation Association of Canada

Transit's Challenging Demographic Future

Demographic trends are making metropolitan areas more difficult for transit to serve, as more of the metropolitan area takes on the characteristics of areas outside downtown, with more dispersed population and employment patterns.

Population Dispersion: The latest census results indicate that the population dispersion is continuing. On average, only 17.3 per cent of the population growth from 2006 to 2011 was in the central municipalities of Toronto, Montréal and Vancouver, with 82.7 per cent in the suburban areas. This is nearly identical to the 17.6 per cent share of growth that occurred in the central municipalities between 2001 and 2006. Preliminary analysis of 2011 census results indicates that the dispersion of population has continued in the six major metropolitan areas since 2006.[33]

Employment Dispersion: Dispersed employment is far more difficult for transit to serve in a manner that is time-competitive with the automobile. Transit's difficulties in serving large but less dense employment centres and more-dispersed locations throughout the metropolitan area are described above.

Among the three largest metropolitan areas, the rate of employment growth in the surrounding areas was more than double that of central municipalities (12.2 per cent compared with 5.9 per cent).[34]

- In the Toronto metropolitan area, 94 per cent of the employment growth was in surrounding areas. The central municipality's share of metropolitan employment growth, 6 per cent, was well below its 2001 share of employment, which was 57 per cent.

- In the Montréal metropolitan area, 70 per cent of the employment growth was in surrounding areas. The central municipality's employment growth, 30 per cent of metropolitan area growth, was approximately one-half of its 2001 share of employment, which was 57 per cent.
- In the Vancouver metropolitan area, 75 per cent of the employment growth was in surrounding areas. The central municipality's employment growth, 25 per cent of metropolitan area growth, was nearly one-third less than its 2001 share of employment, which was 34 per cent.

Projections indicate that future job growth will become even more challenging for transit.

- In the Toronto area, it is projected that by 2036, 80 per cent of the new jobs and 75 per cent of the increased population will be accommodated in parts of the metropolitan area outside Toronto.[35]
- Similar trends are evident in Montréal. According to the Greater Montréal Area Transportation Management Plan:[36]

  > By 2016, … the proportion of trips to Montréal Island in relation to all trips in the Greater Montréal area will decline from 71% to 66%, a reflection of Montréal Island's diminishing demographic weight and growth in certain employment centres outside it.

- For Vancouver, it is projected that 85 per cent of the new jobs and 87 per cent of the new residents added to the metropolitan area by 2041 will be outside Vancouver.

"Poor" Transit Productivity

Productivity trends are a concern in mass transit. In its analysis of productivity in transport sectors, the Conference Board of Canada found " transit has been characterized by poor productivity performance in the last two decades."

The Conference Board report found that productivity had declined, on average, 1.2 per cent annually from 1986 to 2006, and it asked, "Can the productivity challenge be addressed." The Conference Board found generally improved productivity in other transport sectors, and it offered recommendations for improving transit productivity.[37]

The concerns of the Board are confirmed by a review of transit finances between 1985 and 2010 (Figure 6).[38]

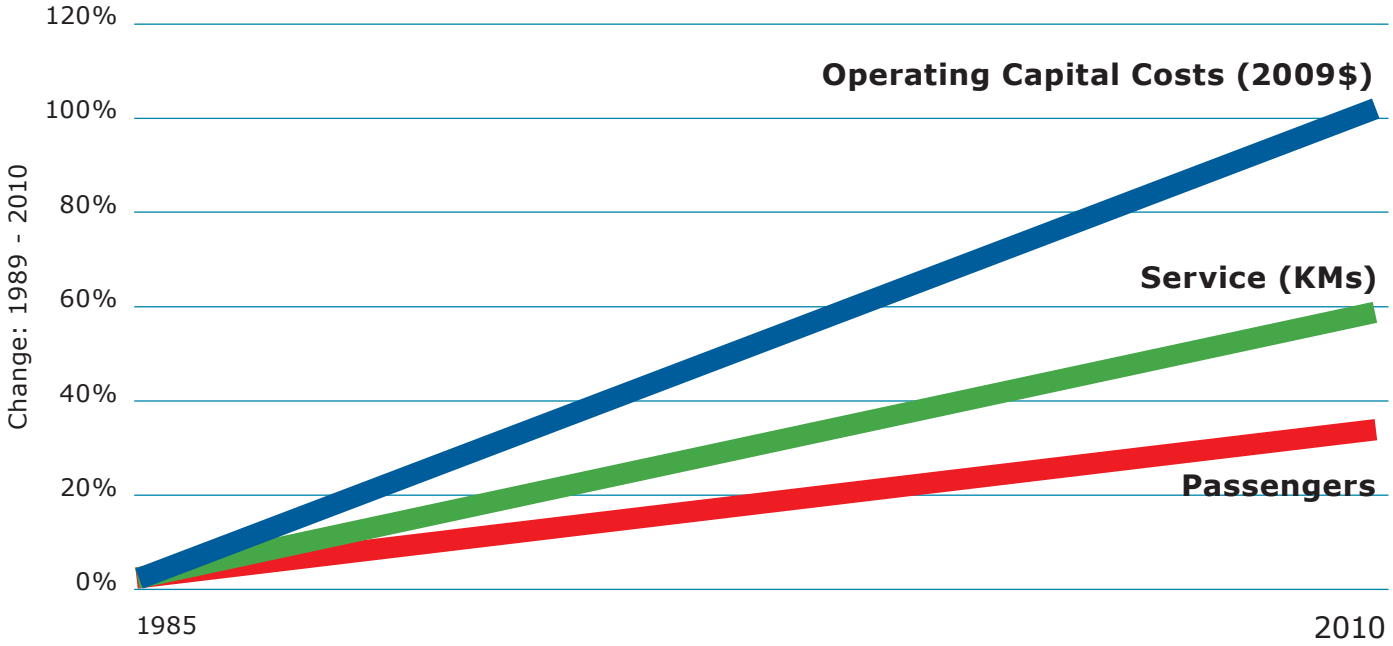
- After adjusting for inflation, transit operating costs rose 101 per cent, three times the increase in passengers and 75 per cent more than the increase in service levels (below).[39]
- Ridership increased 33 per cent.
- Service levels (in kilometres) increased 58 per cent.

It is to be expected that ridership will tend to increase at a lower rate than the amount of service provided, because newer transit routes and services tend to attract fewer passengers than existing services do. At the same time, the higher rate of increase in operating costs compared with service levels is an indication of unit cost increases above inflation (lost productivity).

Opportunities for Improved Productivity: There are also opportunities for substantial productivity improvements in transit. For example, the Conference Board of Canada cited the savings that have occurred in Western Europe and elsewhere through competitive tendering of transit service. Savings from this and other innovations could make it possible to produce higher service levels with future funding and to increase ridership.

CHART 6

National Transit Indicators (1985-2010)
Operating and Capital Costs, Ridership and Service



Source: Estimated from CUTA Data

Robust Transit-funding Growth

At the same time, transit subsidies have been rising rapidly in recent years. According to Transport Canada, subsidies rose 9.4 per cent annually from 1999 to 2008, from $2.6-billion to $5.7-billion.[40] Over the same period, inflation adjusted subsidies rose 83 per cent, more than three times the increase in ridership (27 per cent).[41]

With healthy subsidy growth and rising real costs and subsidies per passenger, transit is not challenged by insufficient funding but by rising costs.

Funding for the Future

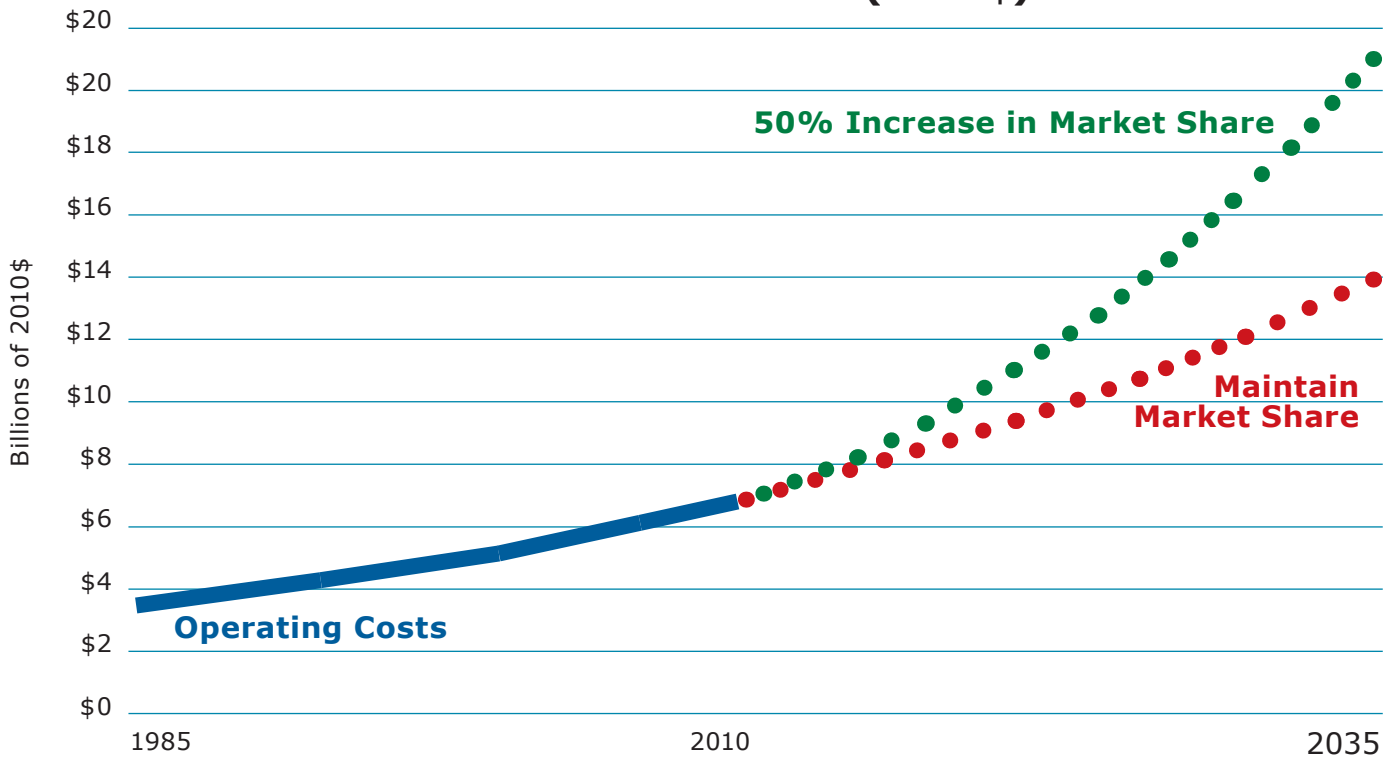
The declining productivity represents another significant challenge to maintaining, much less increasing, transit's share of urban travel.

Based upon population projections,[42] the nation's urban population will increase approximately 32 per cent from 2010 to 2035. Assuming that urban travel remains at 2010 per capita rates, transit would need a 32 per cent increase in ridership to retain its current market share. Assuming the annual operating cost increase rate per passenger from 1985 to 2010, costs would need to rise to $13-billion annually in 2035 (adjusted for inflation) to *maintain* the 2010 share of urban travel compared with the present $6-billion. Materially increasing transit's share of urban travel would be far more expensive. For example, if transit's share of urban travel were to increase by one-half by 2035, annual operating costs would need to rise to approximately $19-billion (Chart 7). The data do not include capital costs, which, based upon the Transport Canada data cited above, appear to be rising strongly.

Finally, even if transit were to increase its share of travel by one-half, it is likely that urban traffic volumes would increase substantially, because the great majority of the increase in travel would be in cars. This would, in all likelihood, increase commute times.

CHART 7

Projected Operating Costs to 2035 Based on 1985-2010 Trends (2010$)



Source: Based upon Cost per Passenger Trend: 1985-2010

Strategies that Could Make Metropolitan Areas Less Competitive

Some present policies could increase traffic congestion and lead to *longer* commutes and less-competitive metropolitan areas. Compact development policies (also variously labelled "smart growth," "growth management" and "liveability") are intended to transfer automobile demand to transit, walking and cycling. Compact development policies also seek to increase urban population densities, in part by severely limiting or even outlawing development on the urban fringe.[43]

Higher population densities are associated with *greater* traffic congestion, because higher densities result in higher travel demand, which necessarily means that automobile and truck travel will increase (intensify) per square kilometre. Any increase in traffic congestion is likely to lead to longer commute times.

International data indicate a strong association *between* more-intense traffic densities and higher population density at the urban area level (Chart 8).[44] Traffic densities are also more intense within portions of metropolitan areas that are denser as indicated by the United States Environmental Protection Agency (EPA) data from more than 422 counties *within* the major metropolitan areas of the United States (Chart 9, pg. 28).

Compact development policies virtually never provide the necessary additional road capacity to maintain previous traffic conditions, much less reduce traffic congestion.

Data from the 2011 census indicate that compact development policies are leading to higher densities in suburban areas that are far from the city centres. Research by Statistics Canada concludes that high density areas that are remote from the core are not likely to reduce automobile use.

> Above 10 kilometres from the city centre, however, the impact of neighbourhood density on automobile use dwindles until it almost vanishes. If the effects of other factors are kept constant, the predicted probability that a person living in a medium- or high-density neighbourhood made all trips by car was not statistically different from that of a person living in a low-density neighbourhood.[45]

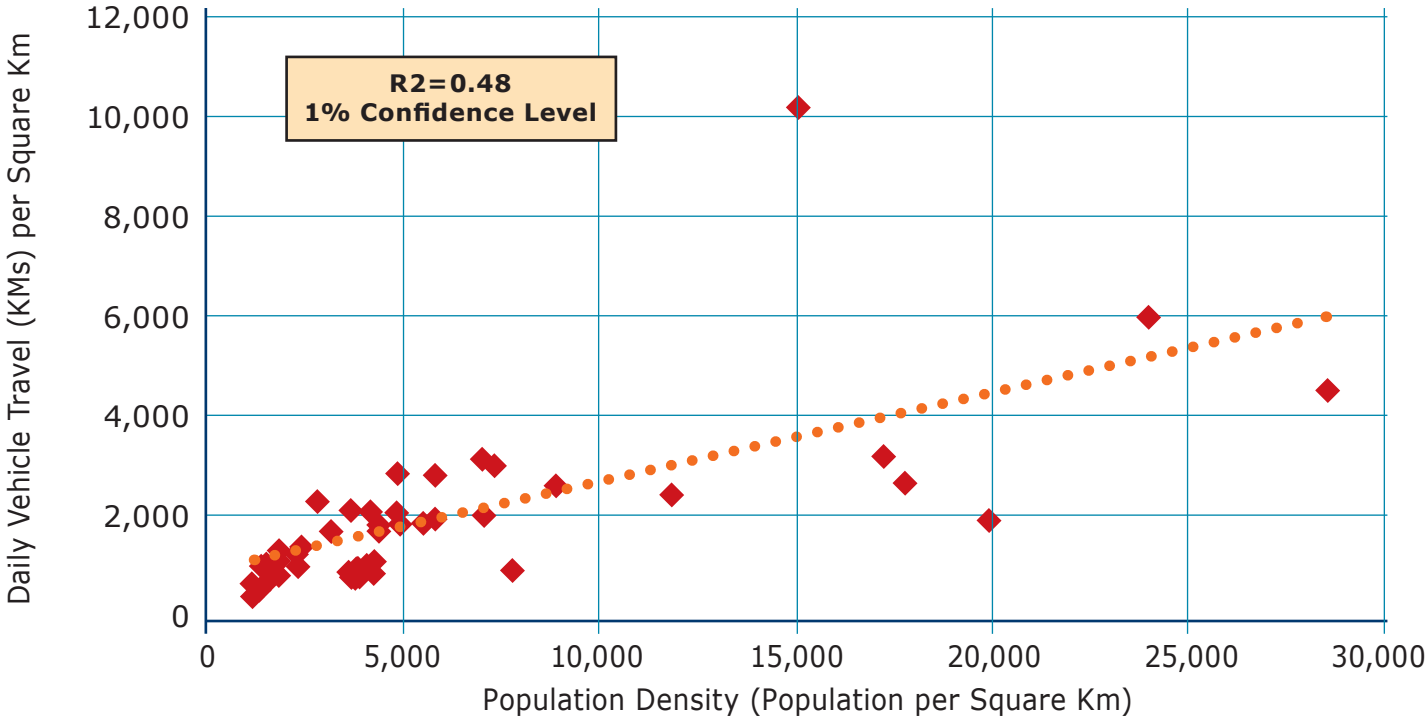
The association is also acknowledged in Sierra Club research[46] with an Internet-based calculator that yields a 61 per cent increase in traffic density for each doubling of population density.[47]

The evidence from the international metropolitan areas (above) generally associates shorter commute times with *lower* population densities and *greater* automobile use, both of which are in direct opposition to the objectives of compact development policies.

Health Impact: Thus, while higher densities are likely to reduce overall driving levels in a metropolitan area, traffic is likely to become more congested overall and in local neighbourhoods. Greater traffic congestion leads to higher air pollution levels at the neighbourhood level and to negative health risks. For example, research published by the American Heart Association indicates "air pollution levels vary significantly in urban areas and that people who live close to highly congested roadways are exposed to greater health risks."[48]

CHART 8

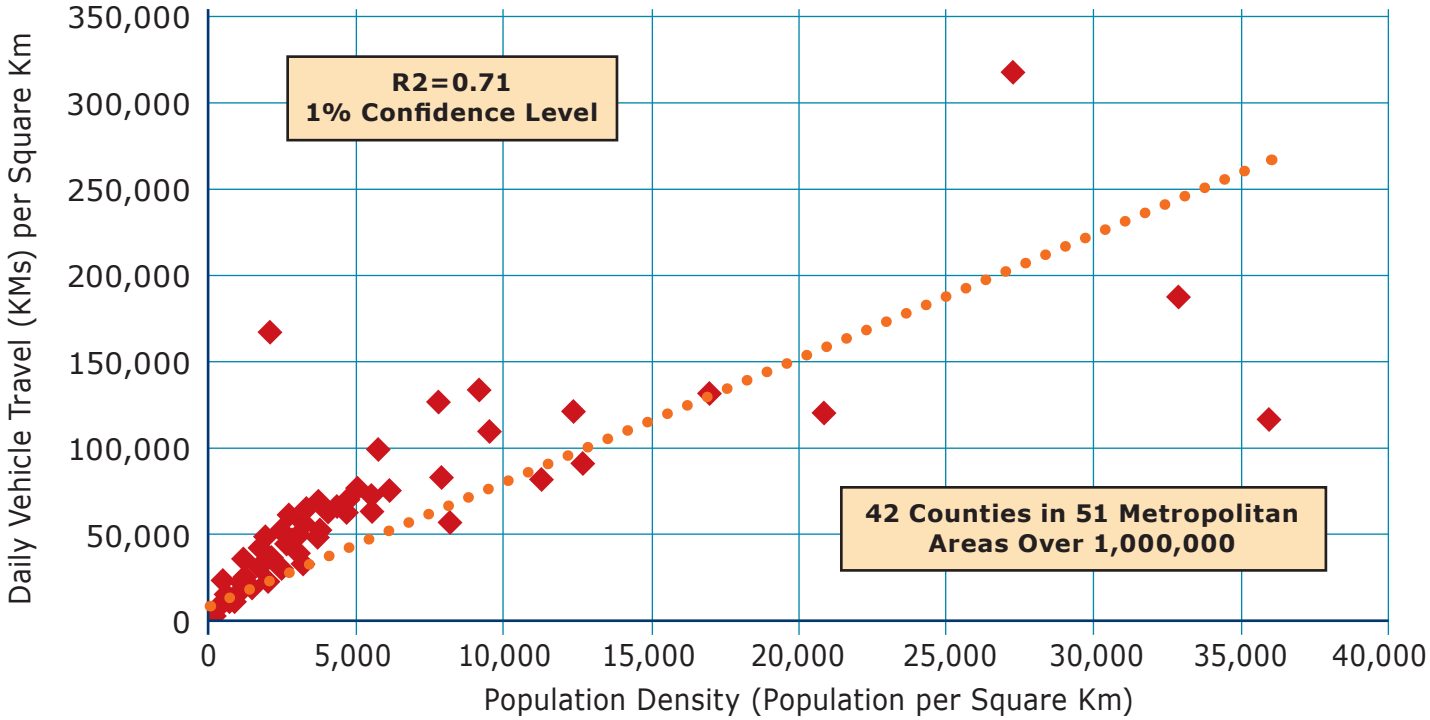
Density and Vehicle-hour Intensity
46 International Urban Areas (1990)[49]



Sources: Data Kenworthy and Laube

CHART 9

Traffic Density and Population Densities
Counties in major U.S. Metropolitan Areas[50]



Sources: Data from U.S. EPA

Greenhouse Gas Emissions: One of the principal rationales for compact development policies is the perceived necessity to reduce automobile use in order to reduce greenhouse gas emissions. Compact development policies may not be necessary to achieve GHG emissions reduction objectives.

- Automobile fuel efficiency standards are being improved. The government recently increased new-car fuel efficiency standards by a quarter,[51] which will reduce future GHG emissions. The United States government is expected to mandate a further 65 per cent improvement for 2025. It seems likely that Canada's future standards will be similar. These improvements would bring substantial reductions in GHG emissions, even as vehicle usage continues to rise.
- According to U.S. research by McKinsey & Company and The Conference Board[52] substantial and cost-effective GHG emissions reductions are possible "while maintaining comparable levels of consumer utility," which was defined as "no change in thermostat settings or appliance use, no downsizing of vehicles, home or commercial space and traveling the same mileage" and no shift to "denser housing." The basis of this research could indicate similar or even more positive results in Canada, since automobile GHG emissions per capita are lower than in the United States.

The compact development objective of reducing driving to reduce GHG emissions can be neutralized, at least in part, by the degradation in vehicle fuel economy that occurs in the more-congested traffic conditions that occur from higher

densities. As the fuel per kilometre consumed increases, GHG emissions rise at the same rate.

This is illustrated in the Transport Canada report on congestion costs,[53] which provides fuel-efficiency[54] data based upon congestion levels. Cars moving at 85 kilometres an hour (km/h) on a freeway produce approximately 35 per cent less GHG emissions than cars in congested conditions at a speed of 30 km/h. Slower, more-congested traffic also emits more GHG on arterial streets. Thus, a freeway with an average speed of 30 km/h, on which there is less driving, could produce more GHG emissions than the 85 km/h freeway. This calculation of speed, congestion and GHG emissions may not have been sufficiently considered in transportation plans.

Finally, economic research has associated compact development policies with a negative impact on metropolitan economies, their competitiveness and the living standards of their households.

- Research in the Netherlands, the United Kingdom and the United States has associated lower than expected economic and employment growth with more-stringent land-use regulation.[55]
- There is also a virtual consensus in the economic research that compact city policies drive house prices up by virtue of creating a shortage of land for housing (just as OPEC-induced oil shortages drive up the price of gasoline).[56] This raises the price of housing, reduces the standard of living and leaves households with less discretionary income to spend on other goods and services. Recent concerns about a housing bubble are at least partially related to the effect of land rationing that compact city policy creates.

Making Metropolitan Areas More Competitive

If metropolitan areas are to become more competitive, they will need to focus on reducing work trip travel times, which will also ease congestion and improve the speed of commercial traffic. Favouring a particular mode of travel, whether transit or automobile, diverts policy-makers from the objective. Metropolitan transportation plans need to prioritize funding to achieve delay-hour reductions[57] at the lowest possible cost regardless of the mode of travel. The cost per reduced delay hour should be a principal tool for evaluating the performance of metropolitan mobility policy. This will reduce travel time and improve competitiveness.

Telecommuting: Moreover, additional attention to working at home would be appropriate, as information technology increasingly makes telecommuting more attractive. Already, working at home accounts for a larger share of work access than does transit for job locations outside the central municipalities of Toronto, Montréal and Vancouver (8.9 per cent versus 7.2 per cent).[58]

Working at home is (along with walking and cycling) the most sustainable method[59] for accessing employment, because it eliminates the work trip and

the attendant GHG emissions, which are produced by both cars and transit.

Working at home has substantial potential for expansion, unlike walking and cycling, which cannot access the entire metropolitan area.[60] Further, because the commute time is reduced to zero minutes, telecommuting reduces average commute times of workers.

Working at home receives little or no public funding, and it would be appropriate to examine the potential for applying incentives, including funding set aside for sustainable transportation,[61] to telecommuting.

Replicating Success: Canada's major metropolitan areas do not have to look far for an example of world-class competitiveness with respect to work trip travel times. Edmonton has one of the shortest work trip travel times of any major metropolitan area for which data is available (above). With a one-way work trip travel time of 23 minutes, Edmonton ranks among the metropolitan areas with the shortest commutes in its 1,000,000 to 2,500,000 population class. Edmonton is in the top quarter of the 109 major metropolitan areas for which data is available.

Yet, Edmonton exhibits characteristics that urban planning seeks to extinguish. Edmonton has the lowest transit work trip market share among the major metropolitan areas. Edmonton spends the least proportionately on transit. Edmonton's population density is the lowest. Edmonton is the least centralized, with only 7 per cent of its employment downtown, one-half that of the major metropolitan area average. The Edmonton population centre (urban area) density is little more than one-third that of Toronto, nearly one-third less than the second least densely populated population centre (Calgary). Yet, Edmonton is the nation's *most competitive* major metropolitan area in terms of the important indicator of work trip travel time. Edmonton demonstrates the importance of outputs (goal orientation, as described below), rather than inputs in metropolitan competitiveness. The goal is not density, transit or centralization, it is minimizing the time that people spend commuting, and thereby facilitating greater economic growth than the metropolitan area would otherwise achieve.

Moreover, Edmonton's performance is competitive with that of U.S. metropolitan areas, which generally have shorter work trip travel times than do international competitors of similar population size.[62] With their lower population densities, more decentralized employment patterns and lower transit ridership, U.S. metropolitan areas of similar size tend to have shorter commute times. At the same time, they represent the principal competition for Canadian metropolitan areas due to their proximity and the increasing integration of the two economies. The factors behind these shorter commute times in Edmonton and in the United States deserve examination.[63]

This is not to suggest that the major metropolitan areas should simply emulate the policies of Edmonton or the U.S. metropolitan areas any more than they should import policies wholesale from Europe or Japan. However, the spatial arrangements and travel patterns that have produced shorter commute times elsewhere deserve at least as much attention as those of metropolitan areas that have longer commute times.

Conclusions

Indeed, as the FCM suggests, government should "make sure reducing commute times is a priority." For that goal to be met, it will be necessary to adopt policies that have shortened the time it takes to get to work. There are instances where this can occur because of new transit investments, but, by and large, the fastest commute is by car. Much of the modern metropolitan area cannot be served by transit that is time-competitive with the automobile. As a result, travel by automobile will remain the rational choice for the vast majority of trips.

Moreover, transit's potential is seriously hampered. Transit expenditures (adjusted for inflation) have risen well in advance of both service levels and ridership. This suggests that transit's principal financial problem is not insufficient funding but insufficient cost control. In this light, there seems little justification for an expansion of the federal role.

A National Transit Cost-Effectiveness Strategy: The focus of transit advocacy would be best shifted from acquiring additional revenue to improving cost-effectiveness. Such initiatives can only be implemented at the provincial levels. If there is to be any national transit plan, this should be the first task.

It would be useful for CUTA (or others) to take the lead in developing an annual performance-monitoring system that reports such indicators as the trend in operating and capital cost per passenger relative to general inflation and the incremental operating and capital cost per new passenger. These indicators and others should be reported at both the national and metropolitan level.

Improving Metropolitan Competitiveness: The Federal Role: All levels of government should co-operate to identify the most promising strategies to reduce commute times and improve metropolitan competitiveness. The federal government could assist in this effort by redirecting some of its transit budget to researching afford-able strategies that can reduce commute times regardless of the mode of travel. Public officials should have access to annual data that indicate the reduction in commuter delay hours attributable to each mode of employment access (including telecommuting) together with cost by mode and cost per delay hour. This type of information could inform decisions that reduce commute times.

Residents and businesses in Canada's metropolitan areas would be best served by goal-oriented co-operative research that is objective and squarely directed toward getting people to their jobs quicker. The focus should be on what works rather than on preconceived notions of how a city should look or how people should travel.

Appendix A: The Transit Market

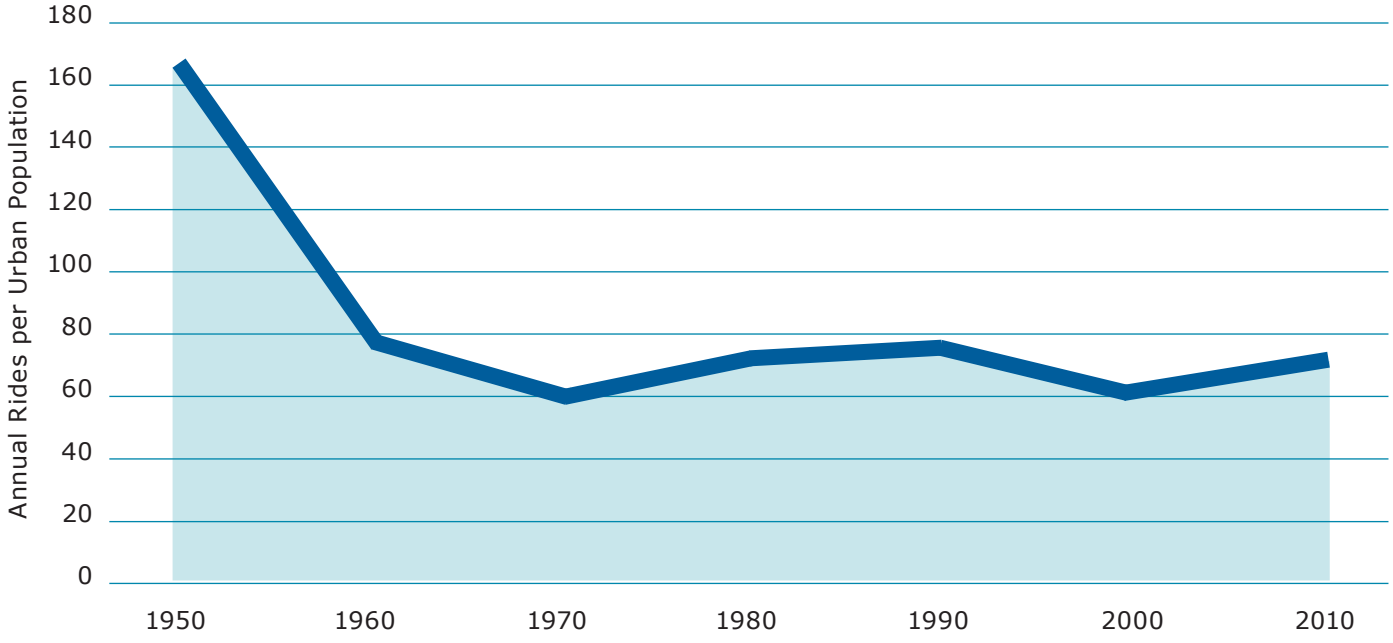
Mass transit use has grown substantially in recent decades. In 2010, total ridership was more than 35 per cent higher than in 1950, though the urban population grew much faster. As a result, there was a 55 percent drop in per capita ridership from 1970 to 2010 (Chart 10).

By the early 1970s, transit was unprofitable and subsidy programs were established to maintain and improve ridership. The result was increased ridership, though not enough to materially increase transit's share of urban travel. Transit ridership per capita has fluctuated since 1970, and in 2010, it was 15 per cent higher.

As automobile use has proliferated, transit's success in improving its 1970 per capita ridership is an important accomplishment. For example, in the United States, transit ridership per capita (urban) dropped more than 20 per cent during the same period despite substantial federal funding that began before 1970 and has continued to grow.

CHART 10

Transit Ridership per Capita 1950-2010
Total Annual Trips per Urban Resident



Source: Based on CUTA ridership data.

At the same time, transit's share of travel in the major metropolitan areas has been generally static. Between 2001 and 2006, the share of employees using transit for the work trip rose from 18.5 per cent to 18.6 per cent, a 0.3 per cent increase in market share.[64] There was a minor reduction in the share of travel by automobile (minus 1.1 per cent); however, trips by automobile increased more than three times that of transit. The share of people working at home increased 6.3 per cent.[65]

The highest transit commuter market shares are in Toronto and Montréal, followed closely by Ottawa-Gatinéau. The lowest transit commute market share is in Edmonton (Table 7).

TABLE 7

Commute Market Shares (2009)
Major Metropolitan Areas Over 1,000,000 Population

Geography	Car Driver	Car Passenger	Transit	Walk or Bicycle	All Other Modes	Work at Home	TOTAL
Calgary	**64.2%**	**7.0%**	**14.5%**	**6.2%**	**1.0%**	**7.1%**	**100%**
Edmonton	**64.2%**	**7.4%**	**9.1%**	**5.9%**	**1.1%**	**6.0%**	**100%**
Montréal	**61.3%**	**4.7%**	**20.1%**	**6.9%**	**0.8%**	**6.2%**	**100%**
Ottawa-Gatinéau	**58.6%**	**7.5%**	**18.2%**	**8.3%**	**0.8%**	**6.6%**	**100%**
Toronto	**59.2%**	**7.0%**	**20.7%**	**5.4%**	**0.9%**	**6.9%**	**100%**
Vancouver	**61.7%**	**6.5%**	**15.1%**	**7.3%**	**1.1%**	**8.4%**	**100%**
Metropolitan Areas Over 1,000,000	**62.6%**	**6.7%**	**16.3%**	**6.7%**	**0.9%**	**6.8%**	**100%**
Canada: National	**66.8%**	**7.1%**	**10.2%**	**7.1%**	**1.1%**	**7.7%**	**100%**

Source: 2006 Census
Includes work at home and excludes people with no fixed place of work (data not collected)[66]

Appendix B: The Geography of Transit in Toronto

There is no better evidence of transit's strength than its role in providing mobility to downtown Toronto. Each of these characteristics combines to make transit the rational choice for commuting to the central business district.

- Downtown Toronto is the largest central business district in the nation, and it has the greatest concentration of high-rise office buildings.
- Downtown Toronto has the greatest employment density of any geographic area of similar size in the nation, at 55,000 per square kilometre (centre-ville de Montréal has an employment density of 53,000).[67]
- Downtown Toronto has by far the most intense level of transit service in the metropolitan area. It is well served with frequent subway trains, commuter trains, buses and streetcars, and many trips are time-competitive with the automobile. Virtually all jobs in the downtown are within walking distance (400 metres) of subway stations (and bus and streetcar stops).
- Downtown Toronto is served by one of North America's largest subway systems.[68] All but one subway line has stations in downtown Toronto, and it (Sheppard) provides convenient connections to downtown via the Yonge Street line. Many trips on the subway are time-competitive with the automobile, because the subway is not slowed by traffic congestion.

- Union Station in downtown Toronto is the focal point of the GO Transit commuter rail system, the largest suburban rail system in the nation. Nearly all (96 per cent) travel on GO Trains begins or ends at Union Station[69] despite the fact that downtown Toronto has only 12 per cent of the metropolitan area's jobs. Many trips on the GO Transit trains are time-competitive with the automobile, because the trains are not slowed by traffic congestion.
- Some trips to nearby work locations outside downtown may require a transfer to the subway or GO Train to local bus or streetcar services. Because of the high transit demand, these services run frequently and little time is lost in transferring between services. These short transfer times make commuting by transit faster and minimize the time that riders must spend in inclement weather.
- The high value of downtown land, which is the result of this intensity of commercial and employment activity, makes parking rates far higher than elsewhere in the metropolitan area. This increases costs for people who drive, which makes the time-competitive transit service more attractive.
- The traffic congestion on major roadways to downtown is substantial, because such a disproportionately large number of vehicles have destinations in such a small area. Despite the high levels of transit service, many downtown workers (albeit a small minority) have schedules or midday travel requirements that make transit an impractical alternative to the automobile. Traffic congestion is also intensified by the fact that a considerable number of trucks and other commercial traffic are focused on downtown, where they service the extraordinarily intense commercial and employment activity.
- The result of this traffic congestion is that even if a commuter is not deterred by the high parking prices, it is not unusual for the home to downtown trip to be as fast or faster by transit as by car.

However, most employment is not downtown. Despite having the tallest buildings and the greatest concentration of tall buildings in metropolitan areas, only 13 per cent of employed persons work downtown.[70] Areas outside downtown account for 87 per cent of employment, more than six times the number of employees downtown.

Other Dense Centres: There are some dense employment centres outside the Toronto central business district, but they are much smaller and do not have the intensity of transit service from around the metropolitan area. For example, in the central municipality of Toronto (as opposed to the metropolitan area), only 14 per cent of employment outside downtown is in dense employment centres (such as North York and Scarborough), 41 per cent is in considerably less dense warehousing, manufacturing and office park areas,[71] while the largest share (45 per cent) is dispersed throughout the city, neither in employment centres nor employment areas. The largest dense centre outside Toronto is North York, which has only 38,000 jobs, less than one-eighth that of downtown. Yet, North York may be the largest dense centre in the nation outside a downtown area.

Toronto Pearson Airport Employment Area: The largest employment areas outside downtown have much lower densities. The Toronto Pearson International Airport employment area surrounds the airport and is reported to be the largest employment centre in Canada.[72] This area has approximately 355,000 employees, compared with the approximately 325,000 in the Toronto central business district. Employment is nearly 10 times that of the high-rise North York centre (38,000).

Yet, the employment patterns in the Toronto Pearson Airport employment area are impractical for transit service that is time-competitive with the automobile. The airport employment area is spread over more than 120 square kilometres, which is more than 20 times the area of downtown Toronto. Its density of employment is less than 3,000 per square kilometre, barely 5 per cent the level of downtown's 55,000.

It is virtually impossible for employees throughout the metropolitan area to reach the airport area on transit that is time-competitive with the automobile. This disadvantage is not easily solved. If grade-separated[73] rapid transit lines (such as a subway or busway) were built across the Toronto Pearson International Airport employment area, only a small percentage of the jobs would be within walking distance (within 400 metres). Walks of up to 8 kilometers could be necessary from stations to employment locations.[74] This compares with the virtually 100 per cent downtown jobs that are accessible by walking from subway stations, etc.

It would take much more for transit to provide service that is time-competitive with the automobile in the lower density employment areas that predominate throughout metropolitan areas. Multiple expensive rapid transit lines would be needed. Each line would need to be connected to other grade-separated rapid transit lines that radiate to all parts of the metropolitan area. As in downtown, a dense mesh of local transit services (bus and streetcar) would be needed from close residential areas. Further, services would need to be at least as frequent as in the downtown to attract automobile drivers. All of this would be costly, and because the density of traffic (riders) would be substantially less than on the services to downtown, much higher operating subsidies would be required to make up for the much smaller fare revenue.

"It is virtually impossible for employees throughout the metropolitan area to reach the airport area on transit that is time-competitive with the automobile.

TABLE 8

High-income Metropolitan Areas Average One-way Commute Times

Country	Metropolitan Area	Average One-way Commute Time (Minutes)	Rank (Shortest to Longest)	Survey Year	Population Size Class: Survey Year
Europe	Valencia, Spain	19	1	2003-2006	1-2.5M
Europe	Bielefeld, Germany	20	2	2003-2006	1-2.5M
Europe	Seville, Spain	20	2	2003-2006	1-2.5M
United States	Buffalo, NY	20	2	2007	1-2.5M
United States	Oklahoma City, OK	20	2	2007	1-2.5M
United States	Rochester, NY	20	2	2007	1-2.5M
United States	Milwaukee, WI	21	7	2007	1-2.5M
United States	Salt Lake City, UT	21	7	2007	1-2.5M
Europe	Toulouse, France	22	9	2003-2006	1-2.5M
United States	Columbus, OH	22	9	2007	1-2.5M
United States	Hartford, CT	22	9	2007	1-2.5M
United States	Kansas City, MO-KS	22	9	2007	1-2.5M
United States	Louisville, KY-IN	22	9	2007	1-2.5M
United States	Virginia Beach, VA-NC	22	9	2007	1-2.5M
Canada	Edmonton, AB	23	15	2010	1-2.5M
Europe	Bremen, Germany	23	15	2003-2006	1-2.5M
Europe	Lyon, France	23	15	1994-1998	1-2.5M
Europe	Newcastle upon Tyne, UK	23	15	1999-2002	1-2.5M
Europe	Nuremberg, Germany	23	15	2003-2006	1-2.5M
Europe	Sheffield, UK	23	15	1999-2002	1-2.5M
Europe	Stuttgart, Germany	23	15	2003-2006	2.5-5M
United States	Cincinnati, OH-KY-IN	23	15	2007	1-2.5M
United States	Cleveland, OH	23	15	2007	1-2.5M
United States	Indianapolis, IN	23	15	2007	1-2.5M
United States	Memphis, TN-MS-AR	23	15	2007	1-2.5M
United States	Minneapolis-St. Paul, MN-WI	23	15	2007	2.5-5M
United States	Portland, OR-WA	23	15	2007	1-2.5M
United States	Providence, RI-MA	23	15	2007	1-2.5M
United States	Raleigh, NC	23	15	2007	1-2.5M
United States	Richmond, VA	23	15	2007	1-2.5M
Europe	Barcelona, Spain	24	31	2003-2006	2.5-5M
Europe	Düsseldorf, Germany	24	31	2003-2006	1-2.5M
Europe	Essen (Rhein-Ruhr), Germany	24	31	2003-2006	5M+
Europe	Hannover, Germany	24	31	2003-2006	1-2.5M
Europe	Copenhagen, Denmark	24	31	1999-2002	1-2.5M

Table 8 Continued

Europe	Liverpool, UK	24	31	1999-2002	1-2.5M
Europe	Turin, Italy	24	31	1999-2002	1-2.5M
United States	Austin, TX	24	31	2007	1-2.5M
United States	Charlotte, NC-SC	24	31	2007	1-2.5M
United States	Las Vegas, NV	24	31	2007	1-2.5M
United States	Pittsburgh, PA	24	31	2007	1-2.5M
United States	San Antonio, TX	24	31	2007	1-2.5M
United States	San Diego, CA	24	31	2007	2.5-5M
United States	San Jose, CA	24	31	2007	1-2.5M
United States	St. Louis, MO-IL	24	31	2007	2.5-5M
United States	Tampa-St. Petersburg, FL	24	31	2007	2.5-5M
Europe	Cologne, Germany	25	47	2003-2006	1-2.5M
Europe	Leeds-Bradford, UK	25	47	1999-2002	1-2.5M
Europe	Naples, Italy	25	47	1999-2002	1-2.5M
Europe	Zurich, Switzerland	25	47	1999-2002	1-2.5M
United States	Birmingham, AL	25	47	2007	1-2.5M
United States	Denver, CO	25	47	2007	1-2.5M
United States	Jacksonville, FL	25	47	2007	1-2.5M
United States	Nashville, TN	25	47	2007	1-2.5M
United States	New Orleans, LA	25	47	2007	1-2.5M
United States	Phoenix, AZ	25	47	2007	2.5-5M
United States	Sacramento, CA	25	47	2007	1-2.5M
Canada	Calgary, AB	26	58	2010	1-2.5M
Europe	Bristol, UK	26	58	1999-2002	1-2.5M
Europe	Frankfurt, Germany	26	58	2003-2006	2.5-5M
Europe	Glasgow, UK	26	58	1999-2002	1-2.5M
Europe	Manchester, UK	26	58	1999-2002	2.5-5M
Europe	Oslo, Norway	26	58	2003-2006	1-2.5M
United States	Dallas-Fort Worth, TX	26	58	2007	5M+
United States	Detroit. MI	26	58	2007	2.5-5M
United States	Orlando, FL	26	58	2007	1-2.5M
Canada	Ottawa-Gatineau, ON-QC	27	67	2010	1-2.5M
Europe	Hamburg, Germany	27	67	2003-2006	2.5-5M
Europe	Milan, Italy	27	67	1999-2002	2.5-5M
Europe	Munich, Germany	27	67	2003-2006	2.5-5M
Europe	Ostrava, Czech Republic	27	67	1999-2002	1-2.5M
Europe	Porto, Portugal	27	67	1999-2002	1-2.5M
Japan	Nagoya	27	67	2008	5M+
United States	Houston, TX	27	67	2007	5M+
United States	Los Angeles, CA	27	67	2007	5M+

Table 8 Continued

United States	Miami, FL	27	67	2007	5M+
United States	Philadelphia, PA-NJ-DE-MD	27	67	2007	5M+
United States	San Francisco-Oakland, CA	27	67	2007	2.5-5M
United States	Seattle, WA	27	67	2007	2.5-5M
Europe	Birmingham, UK	28	80	1999-2002	1-2.5M
Europe	Vienna, Austria	28	80	1989-1993	1-2.5M
United States	Baltimore, MD	28	80	2007	2.5-5M
United States	Boston, MA-NH	28	80	2007	2.5-5M
United States	Atlanta, GA	29	84	2007	5M+
United States	Riverside-San Bernardino, CA	29	84	2007	2.5-5M
Canada	Vancouver, BC	30	86	2010	1-2.5M
Europe	Brussels, Belgium	30	86	1989-1993	1-2.5M
Europe	Rotterdam, Netherlands	30	86	2003-2006	1-2.5M
United States	Chicago, IL-IN-WI	30	86	2007	5M+
Canada	Montréal, QC	31	90	2010	2.5-5M
Europe	Amsterdam, Netherlands	31	90	2003-2006	1-2.5M
Europe	Lisboa, Portugal	31	90	1999-2002	1-2.5M
Europe	Berlin, Germany	32	93	2003-2006	2.5-5M
Europe	Dublin, Ireland	32	93	2003-2006	1-2.5M
Europe	Rome, Italy	32	93	1999-2002	2.5-5M
United States	Washington, DC-VA-MD-WV	32	93	2007	5M+
Canada	Toronto, ON	33	97	2010	5M+
Europe	Madrid, Spain	33	97	2003-2006	5M+
Australia	Sydney, NSW	34	99	2009	2.5-5M
Europe	Paris, France	34	99	2008	5M+
Europe	Praha, Czech Republic	34	99	1999-2002	1-2.5M
United States	New York, NY-NJ-PA	34	99	2007	5M+
Europe	Stockholm, Sweden	35	103	2003-2006	1-2.5M
Japan	Osaka-Kobe-Kyoto	36	104	2010	5M+
Europe	London, UK	37	105	1999-2002	5M+
Singapore	Singapore	38	106	2010	5M+
Korea	Seoul	42	107	1991	5M+
China	Hong Kong	46	108	2002	5M+
Japan	Tokyo	46	108	2010	5M+

Sources: Data from Statistics Canada, Eurostat (latest data available), Transport for New South Wales, the Japanese Statistics Bureau, Hong Kong Transport Department,[75] Statistics Singapore, the United States Census Bureau, American Community Survey, Kenworthy and Laube (1999).

Note: Data from the metropolitan areas of Japan is median rather than mean (average) travel time. Average travel times are likely to be longer, because the large number of commutes over one hour would skew the average commute time higher.

Endnotes

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63. It is possible that such a review would reveal that the shorter work trip travel times are at least as much a result of allowing market forces to operate as they are a result of conscious planning. ←
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Further Reading

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