Exceeding expectations: The growth of walking in Vancouver and creating a more walkable city in the future through EcoDensity

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Abstract

Walking is the second fastest growing transportation mode in Vancouver, after cycling. In a given day there are over 300,000 walk trips in the city, many of which occur to and within the Downtown Peninsula. In 1997, the City adopted a long-range transportation plan that limited overall road capacity to 1997 levels. This plan emphasized providing more comfortable walking and biking environments, increasing the provision and use of transit, calming traffic in neighbourhoods and maintaining an efficient network for goods movement. The plan also set a combined walking/cycling mode share target for Vancouver and its Downtown of 18% by 2021.

A decade later, the walking mode share alone has reached 17% Vancouver-wide and an astounding 27% for Downtown. At the same time, vehicle trips entering the city and entering our Downtown Core have declined by 10% and 7%, respectively. These changes have occurred during a period of growth when there has been a 23% increase in trips to Vancouver. Car trips to Downtown are now a minority and there are nearly as many walk trips (27%) in our Downtown as there are transit (30%) and vehicle trips (30%). For daily trips only within Downtown, about 70% are by foot.

The tremendous growth in walking in the City's Downtown can largely be attributed to transportation policies and investments that give greater priority to pedestrians, cyclists and transit over the private automobile and some dramatic changes in land use and amenity policies that helped to improve the jobs-population-transportation balance for Downtown.

This paper explores how land use and transportation policy together have made walking the most desirable way of getting the around the Metropolitan Core, provides insights into how we have monitored our progress, reduced automobile dependency and provided policies and investments that have helped walking thrive. This paper will also describe a new City initiative called EcoDensity, which aims to build on some of the successes of our Downtown and reduce the city's 'Ecological Footprint' through high quality densification. The overarching objective of EcoDensity is to improve the ecological performance of our communities while supporting liveability and affordability. Creating highly walkable communities will be critical to the success of EcoDensity.
Melina Scholefield, P. Eng.

Melina Scholefield is an experienced traffic calming, bike and pedestrian facility planner and has a special interest in integrated transportation and land use planning. Her recent projects include developing a long range land use plan to support jobs and economic activity in the city's Metropolitan Core and the City's EcoDensity initiative. Melina is currently the City's Sustainability Group Manager.

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INTRODUCTION

Vancouver British Columbia has consistently been ranked as one of the world's most livable cities. Vancouver's land use planning and transportation system has played a key role in helping achieve this recognition.

Vancouver has a well-established transportation hierarchy that places pedestrians first, then cyclists, then transit users and, finally, motor vehicles. It builds transit and cycling infrastructure, paths, and greenways, and uses urban design and architecture to make it easier and more enjoyable to get around without a car and in particular to walk.

The growth in walking has been significant, and beyond expectations, since the city established its Vancouver Transportation Plan in 1997. The tremendous growth in walking is largely a result of land use and transportation planning that has focused on creating higher density, walkable neighbourhoods and transportation policies and investments that give priority to pedestrians, cyclists, and transit over the private automobile.

This report provides an overview of the Vancouver land use and transportation context, highlights the role of the Vancouver's Metro Core in the walking transportation trends that have been observed and discusses a new City initiative called EcoDensity, which aims to reduce the ecological footprint of Vancouverites by, among other strategies, creating more walkable, less car dependent communities.

VANCOUVER CONTEXT

Vancouver and adjacent municipalities form Canada's 3rd largest metropolitan area. Vancouver itself has a population of 578,000 within Metro Vancouver's population of 2,117,000 (Census, 2006). The Greater Vancouver regional area, Metro Vancouver, is comprised of a total of 21 individual municipalities (see Figure 1).

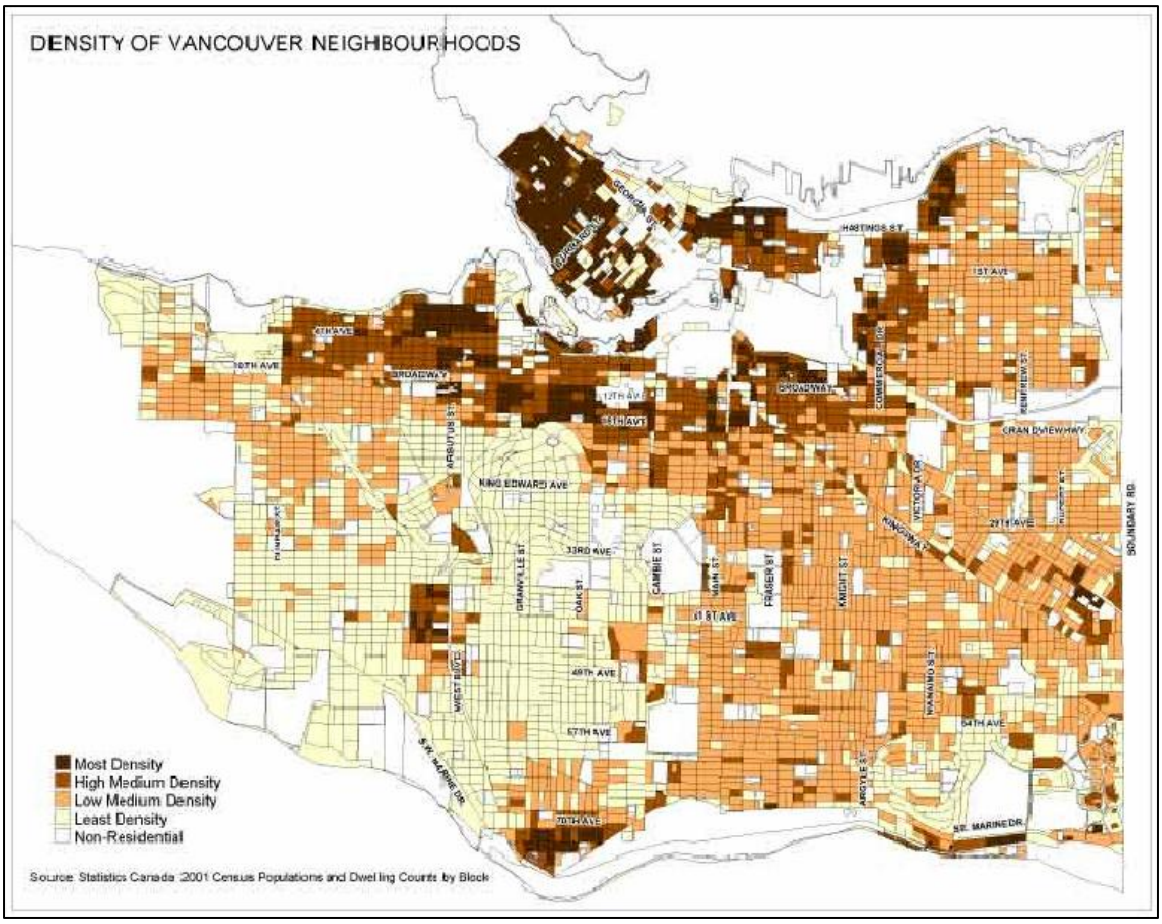
Figure 1 Metro Vancouver

Metro Vancouver provides a number of regional services including land use planning. Its Liveable Region Strategic Plan is closely linked to the region's long range strategic transportation plan, Transport 2021. Together, these two documents have served to guide Vancouver's own land use and transportation plans. Regional transit service, transportation planning and bicycle and road cost-sharing have been provided by TransLink (the Greater Vancouver Transportation Authority) since 1999.

VANCOUVER'S TRANSPORTATION AND LAND USE PLANNING APPROACH

In the 1960's community and political leaders said no to a freeway through the heart of Vancouver. This has had a significant impact on how Vancouver has developed and was key in moving the city away from car dependency.

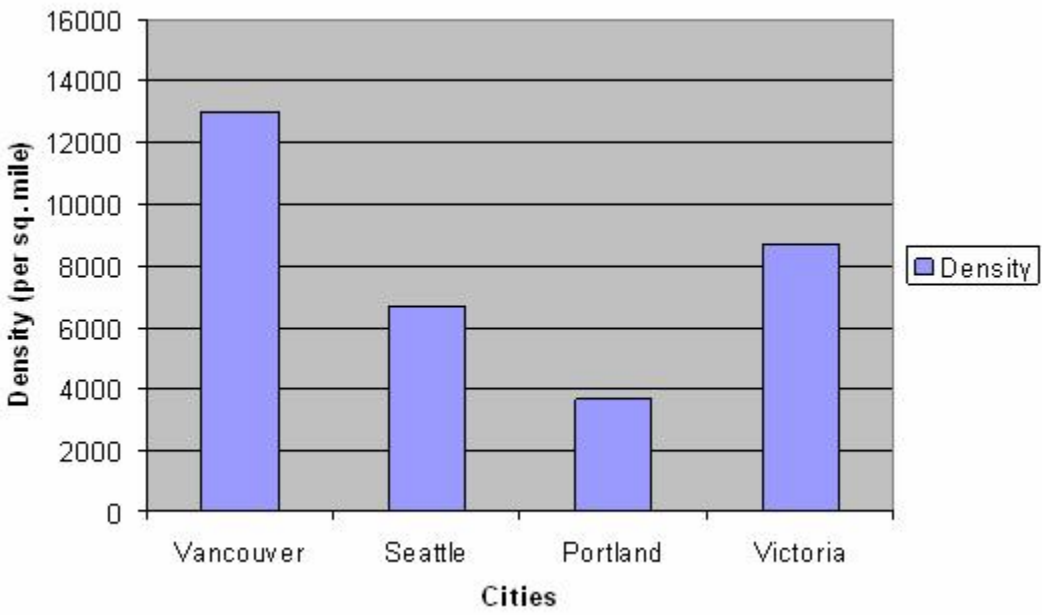
Vancouver's "CityPlan" and "Central Area Plan" planning policies of the 1990s created the foundation for a city of neighbourhoods and compact, mixed-use, highly walkable communities. As shown in Figure 2, the highest density neighbourhoods are located primarily in and near the City's transit-rich job areas of the Downtown and the Metro Core. As shown in Figures 3 and 4, Vancouver has high overall housing density when compared to other west coast cities and our population growth is being accommodated primarily in multi-family type housing.



Source: Statistics Canada Census, 2001

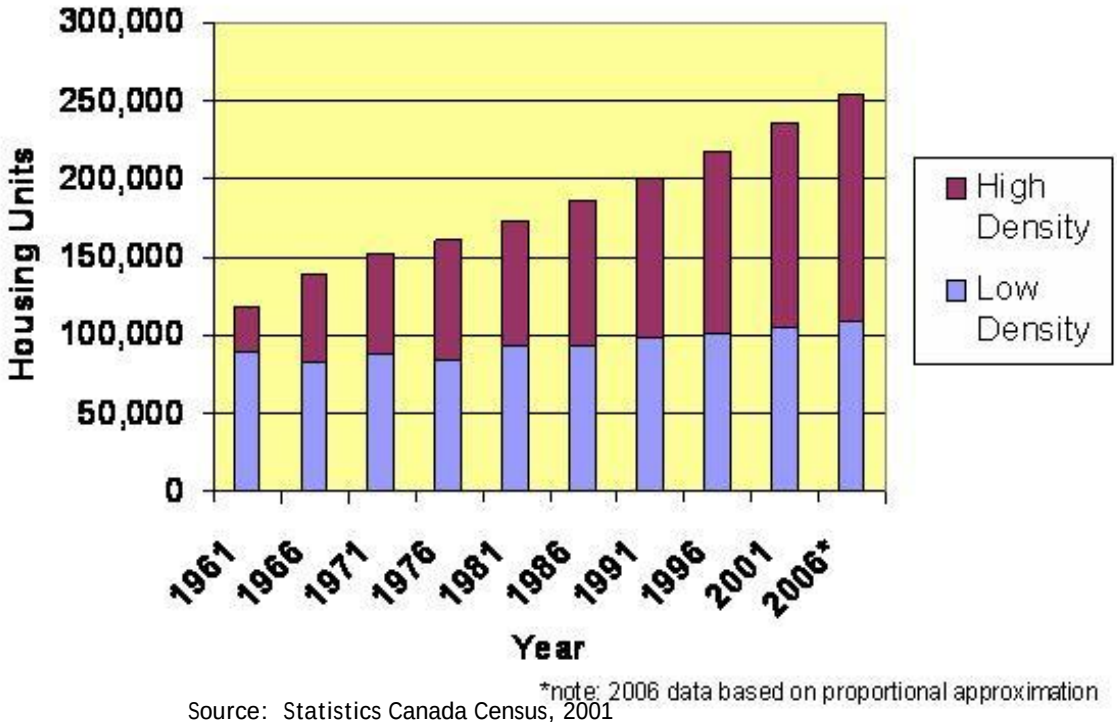
Figure 2 Density of Vancouver neighbourhoods (2001)

Vancouver designs into new developments community amenities such as parks and schools that make compact, high density neighbourhoods attractive to all residents, including families with young kids. Community planning also places importance on having communities with a diverse population mix and income levels. Major developments are typically required to have at least 20% non-market housing. The City also puts limits on the redevelopment of affordable rental stock in a city where affordability is a critical social and transportation issue.



Source: US Census, 2000, Statistics Canada Census, 2001

Figure 3 Vancouver housing density compared to other west coast cities



*note: 2006 data based on proportional approximation

Source: Statistics Canada Census, 2001

Figure 4 Vancouver's housing density mix (1961-2006)

Vancouver's 1997 Transportation Plan set transportation mode share targets for the year 2021, outlined 70 major initiatives, and established transportation policy for the City.

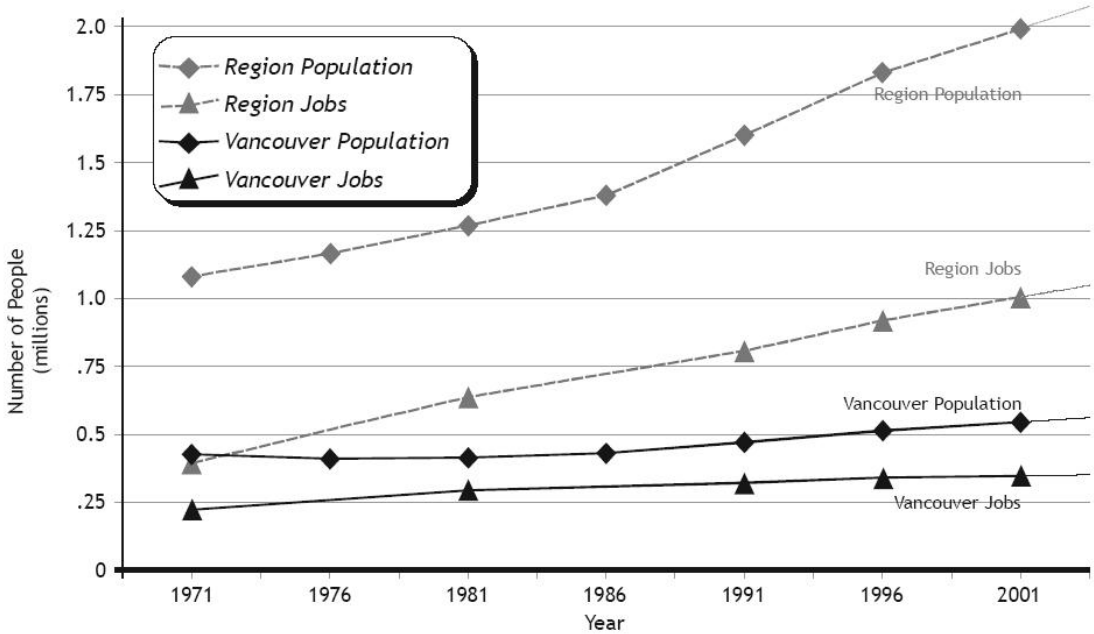
This plan emphasized:

- Limiting overall road capacity to the 1997 level
- Providing more comfortable walking and biking environments
- Increasing the provision and use of transit
- Calming traffic in neighbourhoods, and
- Maintaining an efficient network for goods movement.

The City's 1997 Transportation Plan has been largely implemented. Overall, the City's transportation policies have been successful in achieving the desired results. Many of the mode share targets that were set for 2021 have already been achieved. The following sections provide an overview of job, population and transportation trends.

JOB AND POLLUTION TRENDS IN VANCOUVER AND METRO VANCOUVER

Jobs and population have been increasing steadily in Vancouver over the past thirty years. As shown in Figure 5, the population and job growth rates have been very similar. Since the 1980s, population has grown slightly faster than jobs in the city. Over the same period, population and jobs in the region have also grown, although much more rapidly than in Vancouver. This growth is responding to regional plans to concentrate more people and jobs in the region's suburbs.



Source: Statistics Canada Census, 1971-2001

Figure 5 Population and Job Growth in Vancouver and the Region (1971-2001)

Although the total jobs in the rest of the region are greater than in Vancouver, the city continues to have the single largest job concentration in the region, as shown in Figure 6. The existing concentration of jobs in Vancouver and the fact that jobs are growing in

the city, suggest that Vancouver is likely to continue to be the major job destination in the region for at least the foreseeable future.

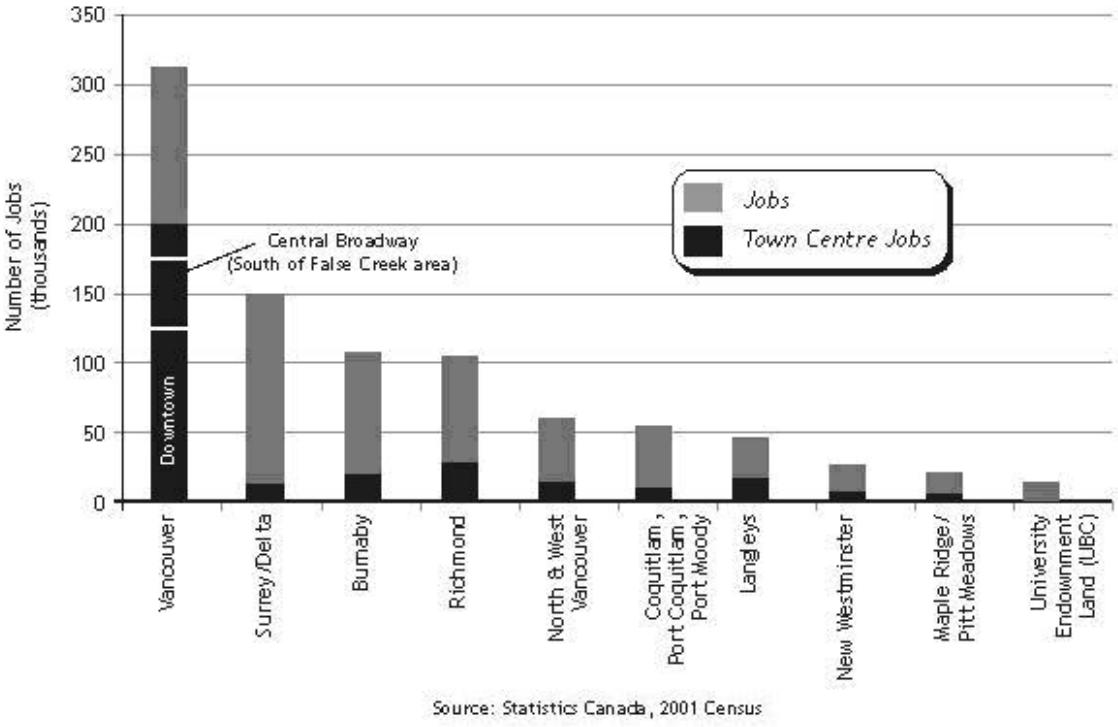


Figure 6 Job distribution the Metro Vancouver

GENERAL TRANSPORTATION TRENDS

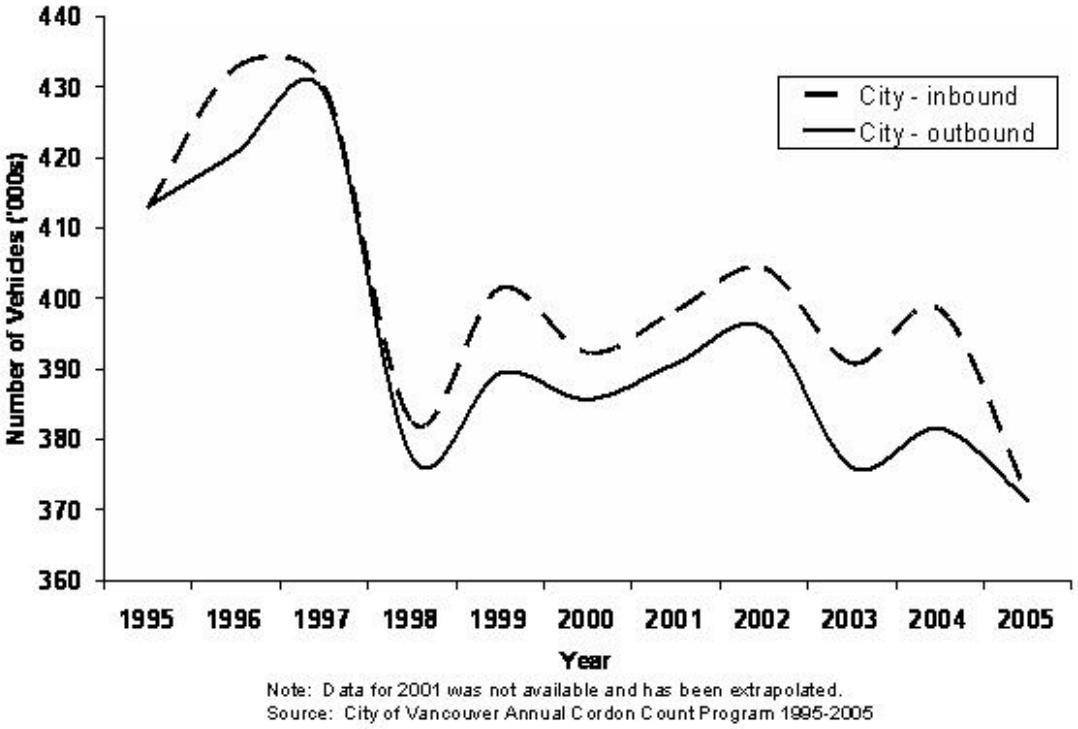
Vancouver's role as a major regional job destination means that it continues to be a net importer of trips. As shown in Figure 7, there are nearly twice as many trips entering Vancouver from the suburbs as there are trips leaving Vancouver to the suburbs during the morning peak period.

Source: Statistics Canada Census, 2001

Figure 7 Trips entering and leaving Vancouver during the AM peak period(7-9am) (2004)

Source: Statistics Canada Census, 2001

Overall, population and employment growth has resulted in a 23% increase in trips to Vancouver over the past decade. However, vehicles entering and leaving the City have actually decreased by 10% over the same period. Similarly, trips to Downtown have increased 22% in ten years, yet vehicles entering and leaving the Downtown have decreased by 7%.



Note: Data for 2001 was not available and has been extrapolated.
Source: City of Vancouver Annual Cordon Count Program 1995-2005

Figure 8 Vehicles entering and leaving Vancouver in a 24-hr period (1995-2005)

The decline in vehicle trips into Vancouver from other parts of the region can be attributed to fact that many of the city's and region's jobs are concentrated in the Metro Core, and in Downtown in particular, and that these areas are well-served by a range of transit services from heavy rail (the West Coast Express), light rail (the SkyTrain Expo and Millennium Lines) and transit bus services. In addition, the parking supply Downtown has remained about constant over the past twenty years and the road capacity into the city has generally remained unchanged.

At the same time, Vancouver residents have also become less car-dependent. As shown in Table 1, in the nine year period from 1993 to 2002, the average distance driven by Vancouver registered vehicles declined 29%.

The mixed use, compact communities that are well-connected to the transit network are also increasingly becoming less car-dependent. Across the city, about 11% of households are car-free. In the Downtown, about 40% of households are car-free and in several of our key transit hub areas outside of the Downtown, about 22% of households are car-free.

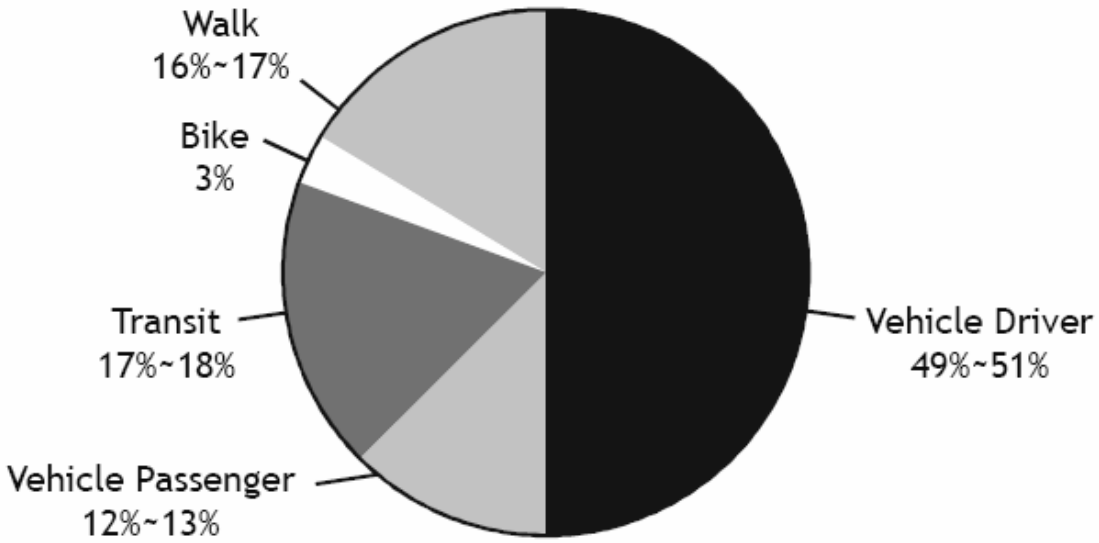
Table 1 Average annual distance traveled by Vancouver residents

Year	*Average Distance Driven Per Year (Vancouver registered vehicles)*
1993	20,700 km
2002	14,800 km
Change	-29%

Source: AirCare odometer statistics for Vancouver registered vehicles, 1993 and 2002

Vancouver's Mode Share

As in most other major cities in North America and the region, single occupant vehicle trips continue to be the dominant mode of transportation in Vancouver. What helps set Vancouver apart from other cities, however, is the relatively high percentage of walking and transit trips. Figure 9 shows the mode share distribution for Vancouver.



Source: TransLink Trip Diary, 2004

Figure 9 Trips to and within Vancouver (2004)

Vancouver Driving Mode – 50%

The share of driver trips to and within Vancouver is about the same as it was a decade ago. A major mode shift away from the car is likely constrained by the available transit service. In 2004, TransLink conducted a major survey of transit capacity in the region. Many of Vancouver's corridors were identified as operating at or near capacity. Transit capacity constraints along the Broadway Corridor and along sections of the Expo SkyTrain Line, in particular, are a significant concern in Vancouver.

At the same time, a mode share of 50%, city-wide, is relatively low. Parking policies and efforts to plan for neighbourhood centres throughout the city have contributed to this mode share.

Over many years, Vancouver has aimed to push the boundaries of parking requirements to lower and lower levels, and in many case assuming that on street parking will be needed to meet the demand. Vancouver's current parking policy, adopted in May 2007, has essentially reduced our non-Downtown multi-family parking requirements by 25% to 30%. The current standards set a requirement that is below observed demand and is consistent with the parking requirements formerly used only in high transit use areas of the city. In the Downtown, parking policies are based on the premise that there will be no net increase in vehicles entering the Downtown over time.

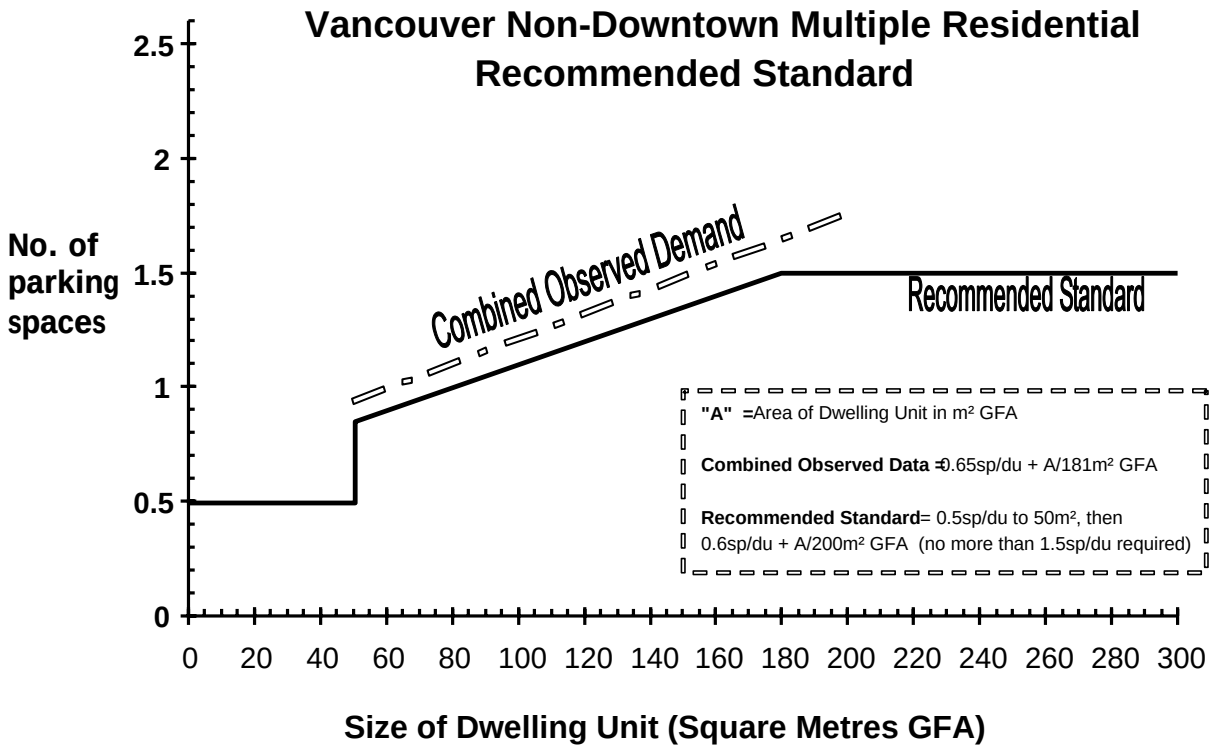


Figure 10 Vancouver non-Downtown multiple residential parking standard

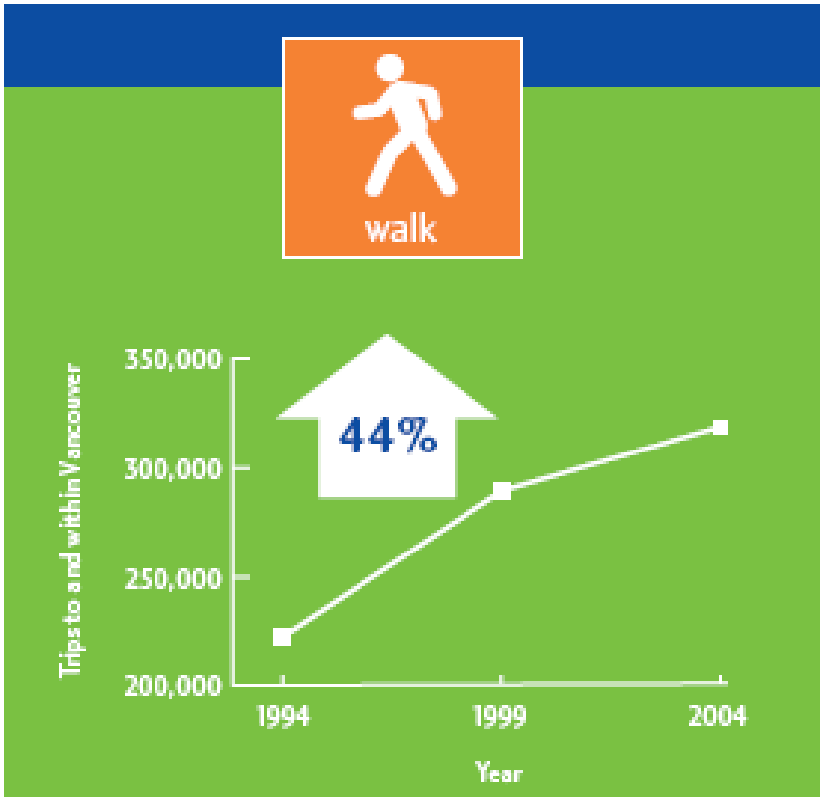
Vancouver Carpooling Mode – 13%

Passenger trips have declined since 1994, a trend that is also occurring in the rest of the region. The decline in carpooling may be a result of the increasingly complex and dispersed nature of trip-making behaviour in the region, which make trips less conducive to carpooling. The decline in carpooling trips is likely contributing to the increase in both car and transit trips. Improvements in the past decade to the frequency, flexibility and accessibility of transit services have also helped to make it an attractive alternative to carpooling.

Vancouver Transit Mode – 18%
Vancouver's transit mode share has remained relatively stable over the past decade, although the number of transit riders has increased with the overall growth in trips. Some areas such as the South of False Creek area and UBC have experienced dramatic increases in transit use corresponding with increases in transit service and the implementation of the Universal Pass (U-Pass) system for university students.

Vancouver Biking Mode – 3%
Although cycling represents a small portion of overall trips, it has doubled its mode share in the past decade as the cycling network has expanded to nearly double what it was a decade ago. The number of cycling trips in Vancouver has doubled in the same period the City doubled the size of the bikeway network. Cycling is the fastest growing mode in the City. The volume of cycling trips has increased by over 180 percent in the past decade. It is expected that cycling will continue to increase as new cycling facilities are completed in the Downtown and throughout the city and region. In the morning peak period there are some 2,700 bike trips into the Downtown alone and on an average day there are over 50,000 bike trips to Vancouver destinations.

Vancouver Walking Mode – 17%
Both the share and number of walking trips has increased in the past decade. The mode share of walking trips has increased by 2 to 3 percent since 1994, which represents a 44 percent increase in the number of walking trips. Walking is the second fastest growing mode in the City, after cycling.



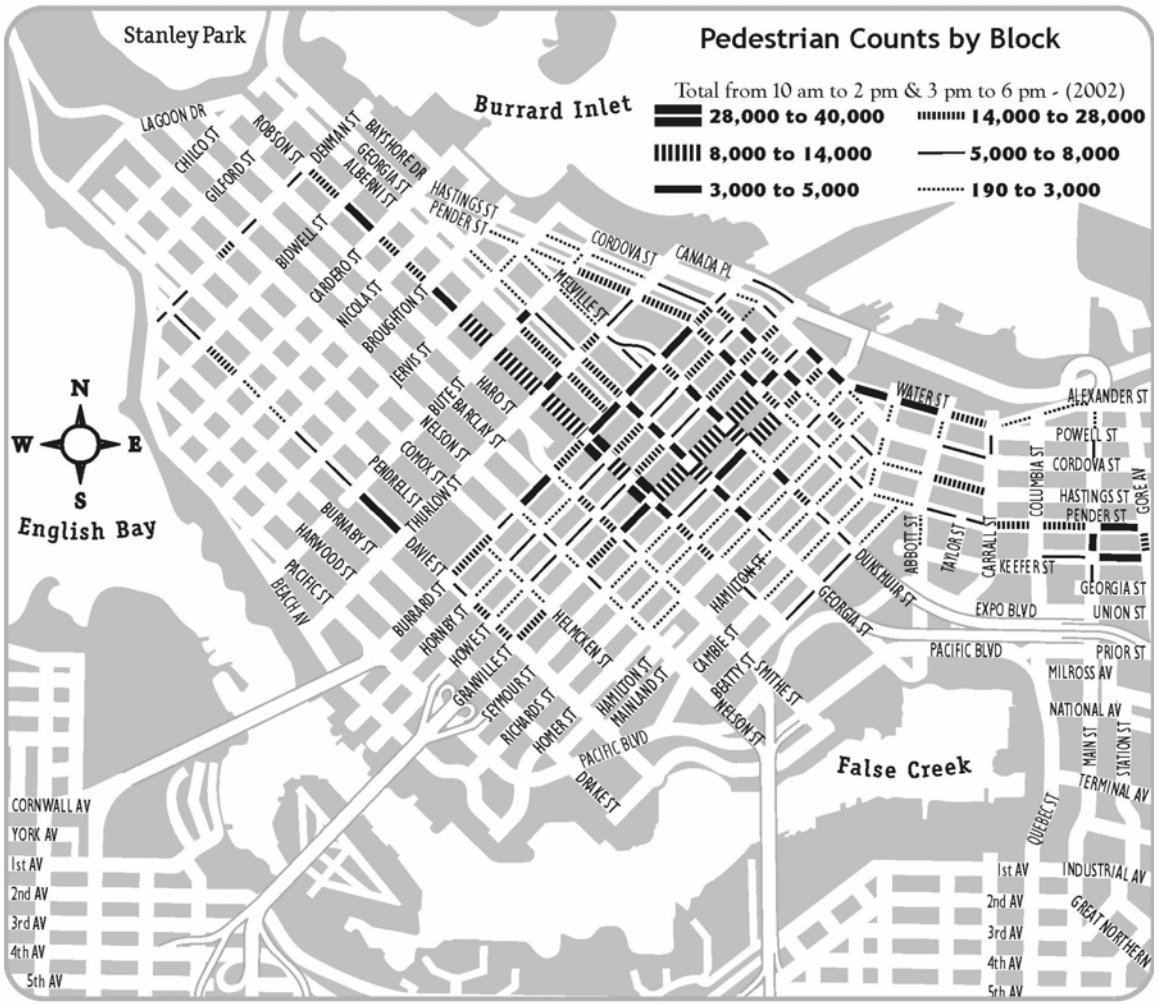
Source: TransLink Trip Diary, 2004

Figure 11 Change in walk trips to and within Vancouver (1994-2004)

As part of the 2002 Pedestrian Study, pedestrian volume counts were carried out on Downtown commercial streets and in Business Improvement Areas and Neighbourhood Centres outside of the Downtown. A total of approximately 250 blocks (including both sides of the street) were counted on weekdays between the hours of 10 am and 6 pm. During the count period, there were typically two peak hours for pedestrian volumes, one near noon and the other near 4 pm to 5 pm. Pedestrian volumes on a number of Downtown streets are shown in Figure 12.

Since the last pedestrian study in 1991, there has been a significant increase in pedestrian activity. On approximately 100 blocks, pedestrian volume during the day increased by over 100,000 people. The average annual rate of growth from 1991 to 2002 is almost triple the annual rate of growth that occurred in the previous study period from 1977 to 1991. These results help verify Trip Diary results, which also show a significant increase in walking for Vancouver between 1994 and 1999.

On several of the busiest streets Downtown, the number of pedestrians exceeded the number of people being moved by automobile, during the peak pedestrian hour. Examples include Robson east of Burrard, Dunsmuir east of Granville, and Georgia east of Granville. In general, the busiest pedestrian streets outside of Downtown had lower volumes than the busiest streets in Downtown.

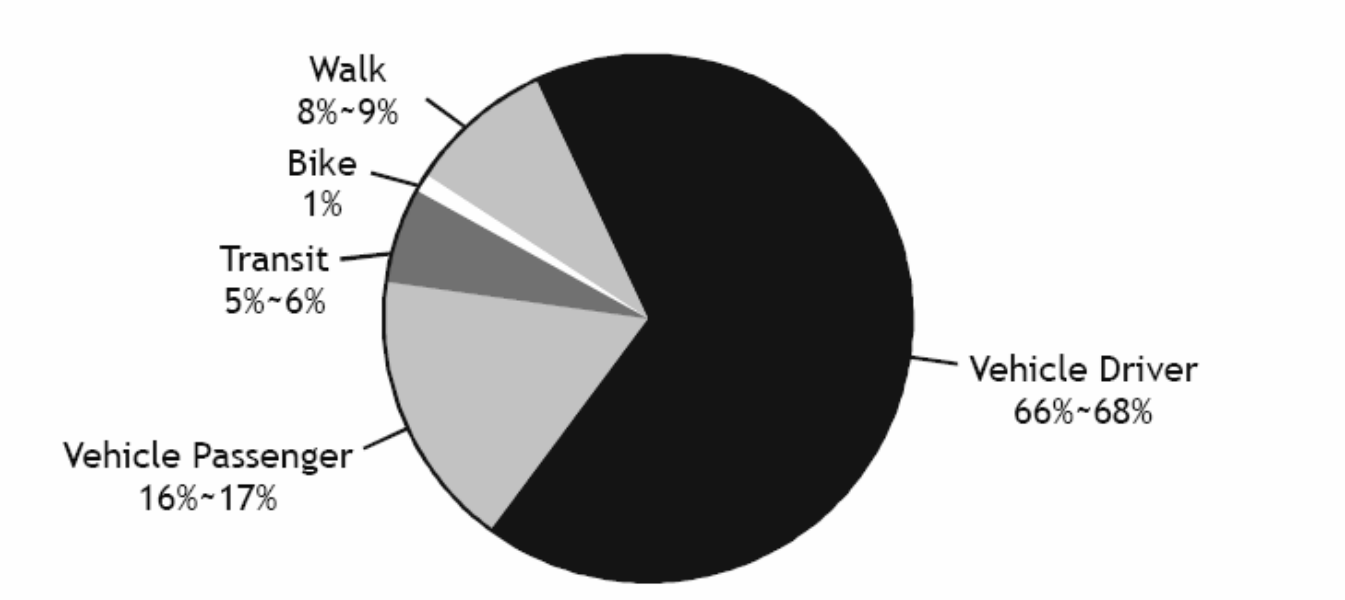


Source: City of Vancouver Pedestrian Study, 2002

Figure 12 Summary of Downtown pedestrian volumes from 10 am to 6 pm (2002)

Vancouver Modes Compared to Rest of Region

There is considerably more driving in the rest of the region. As shown in Figure 13, about two thirds of trips for the rest of the region are by driving. Vancouver also exhibits correspondingly higher transit mode shares (17-18% versus 5-6% for the rest of the region) and walking mode shares (16-17% versus 8-9% for the rest of the region). About half of all transit trips in the region are to Vancouver destinations.

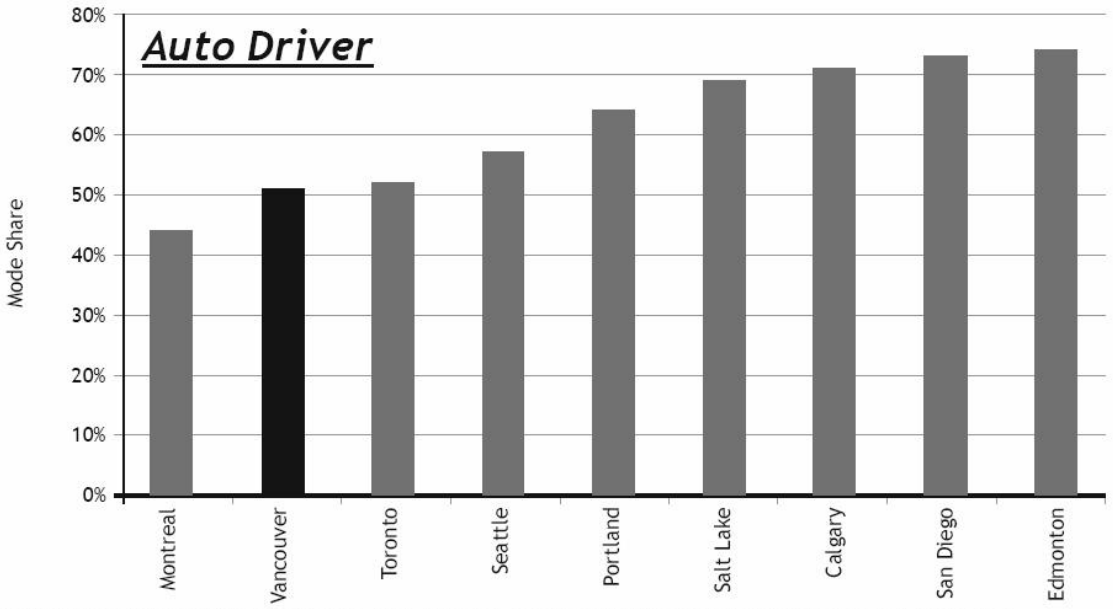


Source: TransLink Trip Diary, 2004

Figure 13 Trips to and within the rest of Metro Vancouver (excluding Vancouver & UBC) in a 24-hour period (2004)

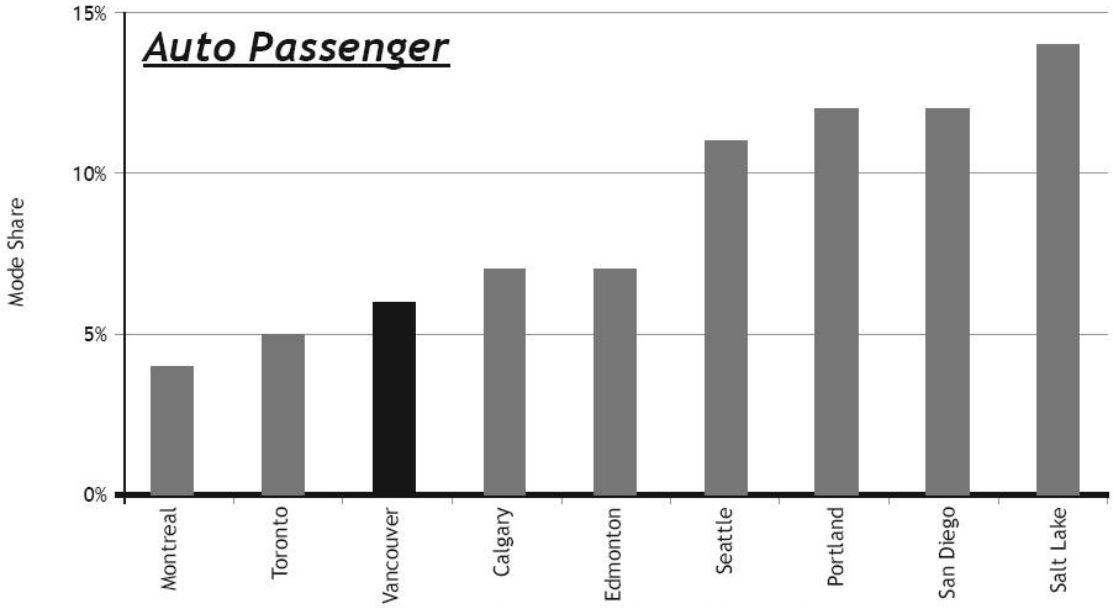
Vancouver Journey-to-Work Mode Shares Compared to other North American Cities

For trips to work, Vancouver and its Metro Core in particular, distinguishes itself from other major Canadian and US cities along the West Coast by the relatively low auto mode share and the high share of people walking and taking transit to work. Vancouver has the highest percentage of people walking to work (13 percent). Apart from Montreal, all other Canadian and US cities in this comparison have about half of Vancouver's walking mode share. Vancouver journey-to-work driver, carpool, transit and walk mode shares compared to other major Cities are shown in Figure 14, Figure 15, Figure 16, and Figure 17.



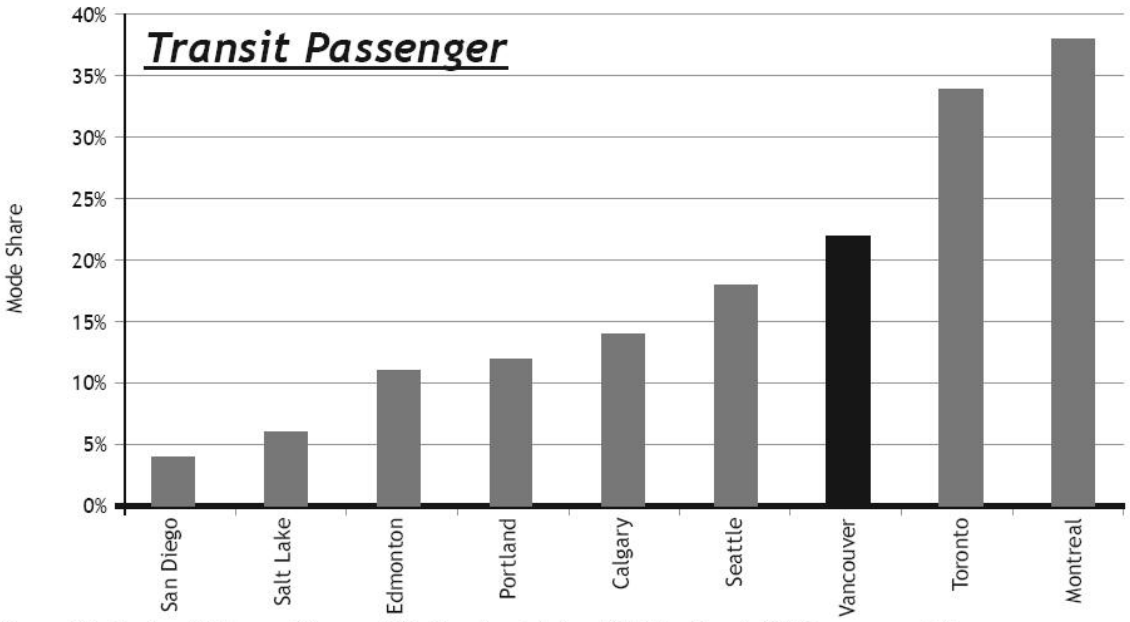
Source: US data from US Bureau of Census, 2000. Canadian data from Statistics Canada 2001 Census, except Vancouver, which is based on the 1996 Census. The 2001 Census data for Vancouver is not accurate due to a bus strike during the Census collection period.

Figure 14 Comparison of auto driver mode share for journey-to-work trips originating in Vancouver and other Canadian and US cities



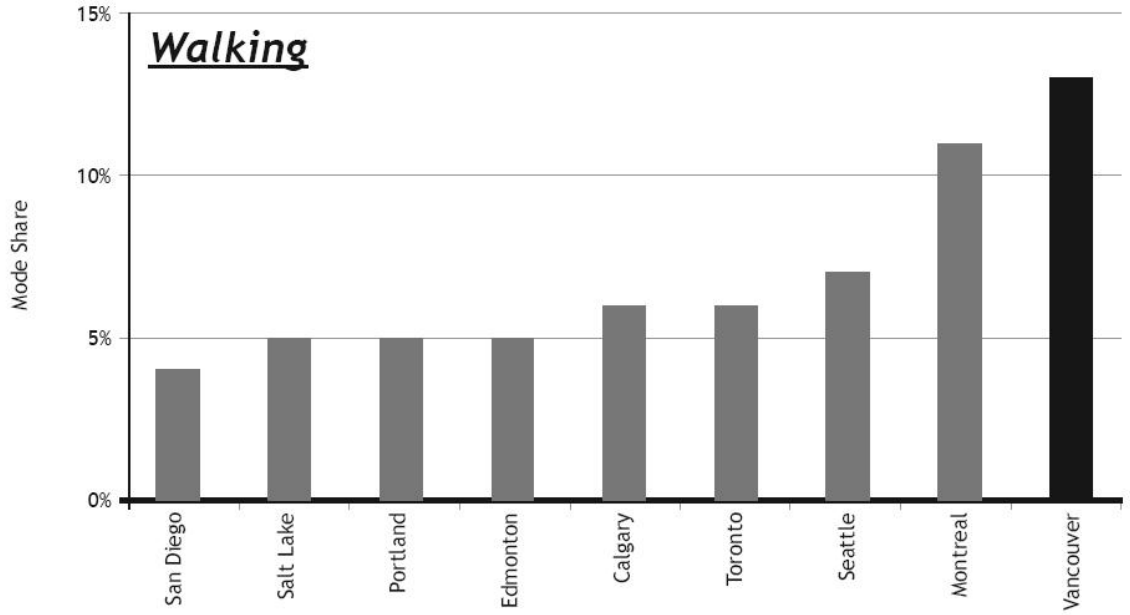
Source: US data from US Bureau of Census, 2000. Canadian data from Statistics Canada 2001 Census, except Vancouver, which is based on the 1996 Census. The 2001 Census data for Vancouver is not accurate due to a bus strike during the Census collection period.

Figure 15 Comparison of auto passenger mode share for journey-to-work trips originating in Vancouver and other Canadian and US cities



Source: US data from US Bureau of Census, 2000. Canadian data from Statistics Canada 2001 Census, except Vancouver, which is based on the 1996 Census. The 2001 Census data for Vancouver is not accurate due to a bus strike during the Census collection period.

Figure 16 Comparison of transit mode share for journey-to-work trips originating in Vancouver and other Canadian and US cities



Source: US data from US Bureau of Census, 2000. Canadian data from Statistics Canada 2001 Census, except Vancouver, which is based on the 1996 Census. The 2001 Census data for Vancouver is not accurate due to a bus strike during the Census collection period.

Figure 17 Comparison of walk mode share for journey-to-work trips originating in Vancouver and other Canadian and US cities

THE GROWTH OF WALKING IN VANCOUVER'S METRO CORE AND DOWNTOWN

Vancouver's Metro Core, shown in Figure 7, is a hub of activity within the City. Two thirds of the city's jobs (200,000 jobs in 2001) are located in this area and about one quarter of the City's population (135,000 people in 2001). The Metro Core consists of three sub-areas, the Downtown Peninsula, the South of False Creek Area and the Eastern Core.

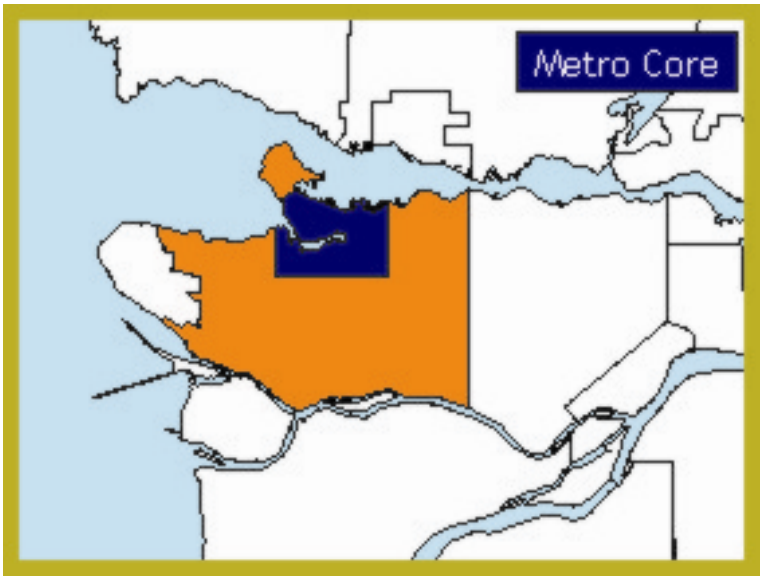


Figure 18 Vancouver Metro Core

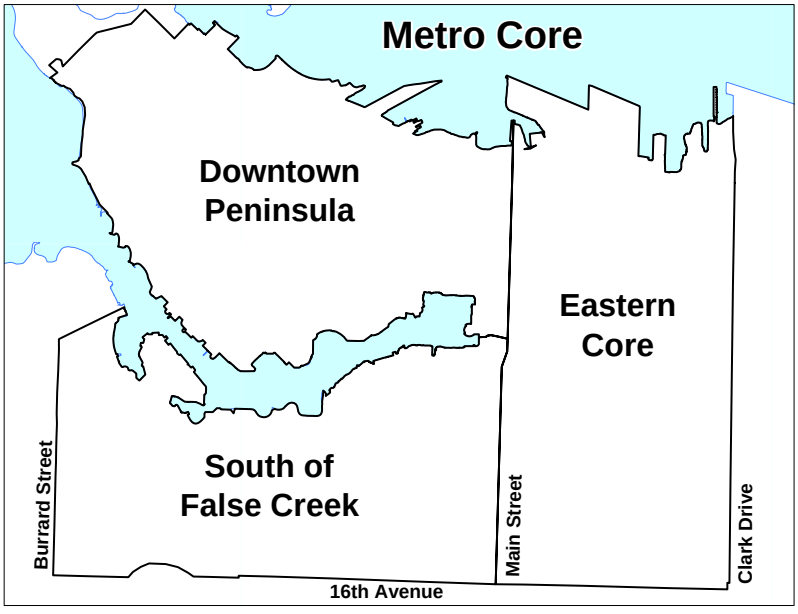
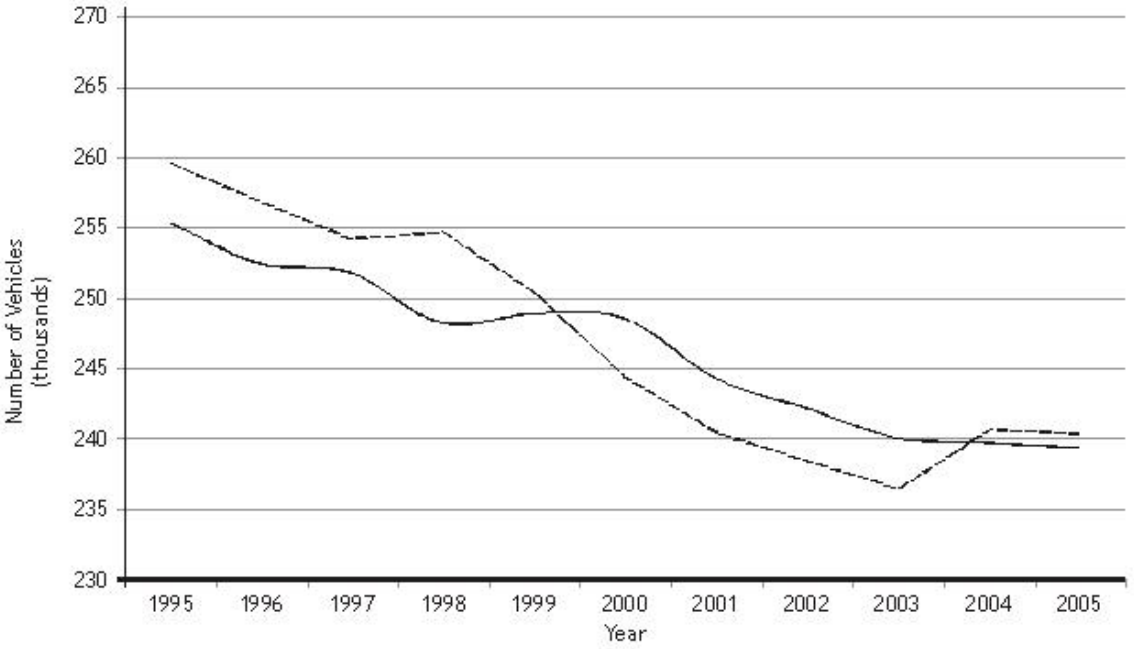


Figure 19 Vancouver Metro Core sub-areas

WALKING IN THE DOWNTOWN

Vancouver's Downtown has experienced dramatic growth in residents and continued growth in jobs, creating an efficient, high-density, mixed-use centre. Walking in the Metro Core and in Downtown in particular has thrived. The rise in popularity of walking has coincided with the City's "Living First" land use strategy for the Downtown peninsula, which has brought over 30,000 new residents into its Downtown in the past decade years. The residential densities in Downtown Vancouver are now some of the highest in North America and are comparable to those found in Manhatten, New York. There are approximately 88,000 residents living Downtown and this number is expected to grow to 120,000 by 2021 and 128,000 by 2031.

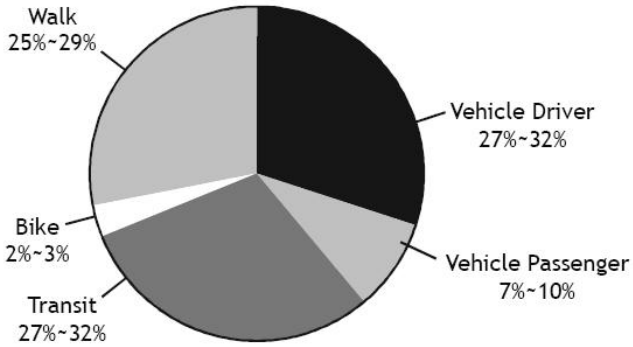
Trips to Downtown have increased 22% in ten years, yet vehicles entering and leaving the Downtown have decreased by 7% (see Figure 20). New trips to Downtown have been by transit, cycling and walking. In particular, walking has become the fastest growing and most important way of getting around the Downtown.



Note: Reliable data for 2001,2002 and 2004 (outbound) was not available and has been extrapolated.
Source: City of Vancouver Annual Cordon Count

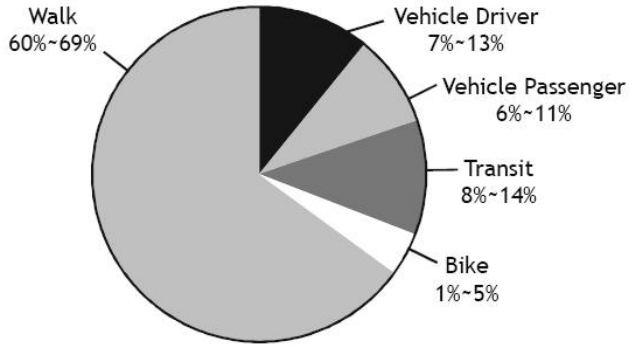
Figure 20 Vehicles entering/leaving the Central Business District (CBD) in a 24 hr period (2004)

As shown in Figure 21, about 27% of trips over a 24-hour period to and within the Downtown are made by walking. In terms of trips only within the Downtown, the walking mode share is a remarkable 64% of all trips (see Figure 22). The high level of walking Downtown has contributed to a driver mode share of about 30% which is already below the 2021 target of 36%. The walking mode share is nearly the same as the car and transit mode share at 27%. The walking mode share exceeded a combined walking and cycling mode share target of 18% by 2021.



Source: TranLink Trip Diary, 2004

Figure 21 Trips to and within Downtown in a 24-hour period (2004)

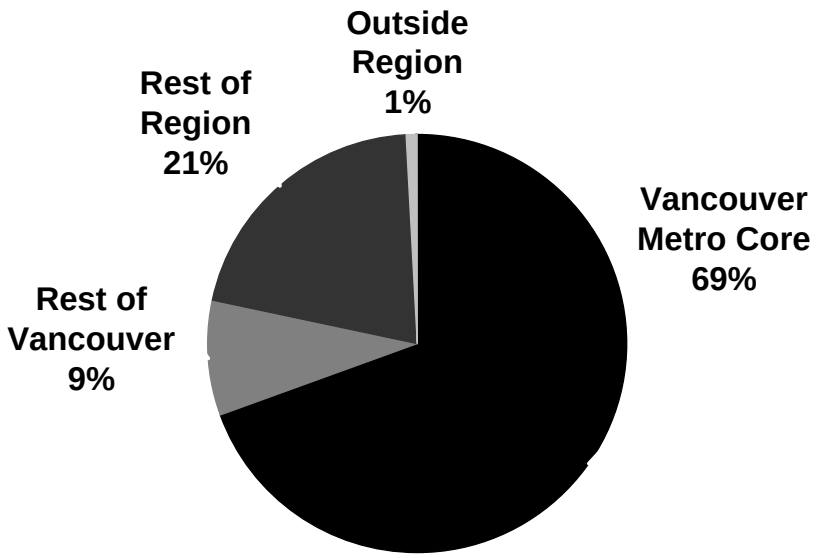


Source: TranLink Trip Diary, 2004

Figure 22 Trips only within Downtown in a 24-hour period (2004)

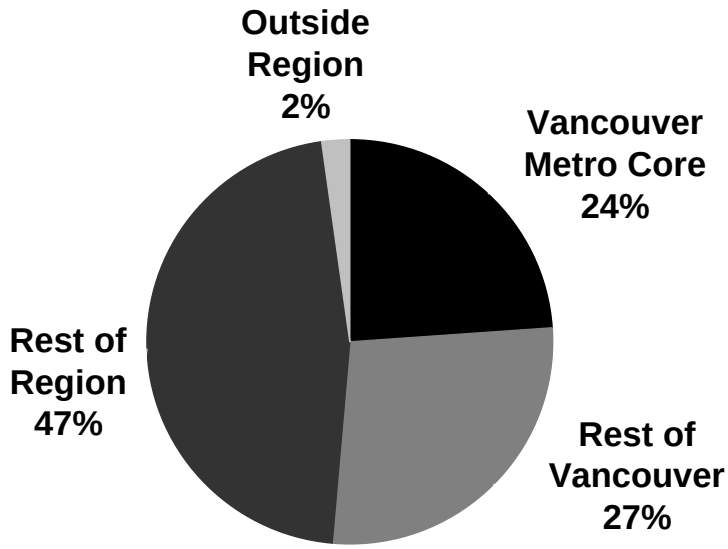
The high level of walking in the Downtown is facilitated by the fact that so many Downtown residents live, work and play in the Metro Core. As shown in Figure 23, Downtown residents, in particular, have a high propensity to live and work Downtown. While approximately 50% of Downtown residents work Downtown, 69% work within the Metro Core, a compact geographic area that is very accessible by foot or by bike. As shown in Figure 24, about one quarter of all Downtown jobs are held by Downtown residents.

Many critics have expressed concern that the concentration of residents Downtown will result in a 'reverse commute' problem that simply has not materialized. The anticipated growth of jobs in Downtown and the rest of the Metro Core is expected to continue to provide local jobs for Downtown and Metro Core residents.



Source: Statistics Canada Census, 2001

Figure 23 Downtown residents' place of work (2001)



Source: Statistics Canada Census, 2001

Figure 24 Downtown workers' place of residence (2001)

ECODENSITY AND CREATING A MORE WALKABLE CITY

With its city-wide “EcoDensity” initiative, Vancouver is tackling the most difficult aspect of urban sustainability – density. Vancouver is promoting strategic, well-designed densification that incorporates green buildings, urban agriculture, neighbourhood amenities, and affordability targets. Ideas range from higher and greener density around transit stations to coach-houses and units above lane-garages in single family blocks. It is showing how density done well has a "magic" that reduces our footprint from how we live, how we get around, and how we meet our needs.

The EcoDensity Initiative recognizes that although Vancouver has long enjoyed the status as one of the world’s most livable cities, it also has a large ecological footprint. If everyone lived as Vancouverites do, it would take four planets to sustain the world’s population.

Three important challenges facing Vancouver are noted as being:

- How to continue to grow in a way that is sustainable and reduces the city’s ecological footprint;
- How to grow in a way that maintains our livability, and
- How to grow in a way that improves opportunities to create more affordable types of housing.

EcoDensity is an important part of the City of Vancouver’s response to these challenges. Past planning efforts in Vancouver has placed a significant emphasis on liveability. This initiative will place a new lens on our planning work, one that uses environmental sustainability as a primary consideration or driver in our decision-making.

Single-family dwellings still take up half of the land area in Vancouver. In fact, only 11 percent of the city’s land area is currently used for multiple-unit dwellings. Consequently, EcoDensity will explore increasing density in a variety of contexts across the city. The key will be to support density that is high quality, attractive, more energy efficient, and respects neighbourhood character, while lowering the City’s ecological footprint.

One of the major products of the EcoDensity initiative will be a new structure plan for the city that links density and the pattern of the city with our efforts to reduce our ecological footprint. Creating communities that further reduce auto dependency and that make walking and cycling the most desirable way of getting around will be key to this process. One of the ideas being contemplated for the structure plan is the idea of the 5-minute city, a city where within a five minute walk, you can access local parks, transit, shops and services or other community gathering spaces. The entire premise of a 5 minute city is that walking is a primary mode of transportation. Many other ideas will be explored and staff will be working with the community to challenge how we have built communities in the past in order to create a city where citizens can have a lower ecological footprint.

CONCLUSIONS

Much of the change Vancouver has experienced in terms of its transportation trends are a result of planning policies that have been implemented over the past twenty years. In fact, it is quite amazing how dramatic the shift in transportation trends in an area such as the Downtown, in as little as a decade. Of course, critical to the success of the land use

policies is complimentary transportation policies. Policies that have prioritized pedestrians, cyclists and transit over the private automobile and infrastructure development that has limited overall vehicle capacity while encouraging transit and walking have helped reduce dependency on the single occupant vehicle. Land use and transportation planning in Vancouver's Downtown is evidence that compact, complete communities, with higher densities and high amenities are key to exceeding expectations for walking as a mode of transportation.