

## OVERVIEW OF PUBLIC TRANSPORT IN CANADA AND THE UNITED STATES

Presentation to the  
Sixth International Conference on Competition and  
Ownership in Land Passenger Transport  
Cape Town  
September 1999

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### BACKGROUND

As elsewhere in the western world, public transport has been losing market share for decades in Canada and the United States.

**Canada:** Annual passenger journeys per capita were 46.0 in 1997, having declined 54 percent from 99.6 in 1950 (an annual decline of 1.63 percent). The rate of loss has accelerated over the past decade, with an annual loss of 2.15 percent (minus 21.4 percent from 1987 to 1997). Annual Canadian passenger journeys were 1.379 billion (1,379,000,000) in 1997.

**United States:** Annual passenger journeys per capita were 21.6 in 1997, having declined 76.7 percent from 90.9 in 1950 (an annual decline of 3.02 percent).<sup>1</sup> Since 1987, the annual decline has been 1.09 percent, with an overall loss of 10.9 percent. Per capita passenger journeys had peaked at 142 at the end of World War II. Annual US passenger journeys are estimated at approximately 5.7 billion (5,700,000,000), with annual passenger kilometers totaling approximately 40 billion. This represents approximately one percent of US surface transport person kilometers.

### Journey to and from Work

Public transport's most important market potential for reducing automobile traffic congestion is

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<sup>1</sup>Converted from unlinked trips using a national factor of 0.78125 (from the Nationwide Personal Transportation Survey).

during morning and evening peak travel periods, specifically work related journeys.

**Canada:** The 1996 census indicated that 10.1 percent of Canadian workers used public transport to get to work.<sup>2</sup> The highest figure was recorded in the Toronto Census Metropolitan Area (CMA), at 22 percent. Montreal and Ottawa also exceeded 15 percent, while Winnipeg, Vancouver, Calgary and Halifax were above 10 percent (Table #1).

**United States:** The 1990 census indicated that 5.2 percent of US workers used public transport for the work trip. This is down 18 percent from 1980 and 58 percent from 1960.<sup>3</sup> The New York metropolitan area was highest, at nearly 27 percent (Table #2). This was also the highest value in either Canada or the United States. Four other metropolitan areas were between 10 percent and 15 percent (Washington, Chicago, Boston and Philadelphia). From 1980 to 1990, work trip market share dropped in all but two of the 39 metropolitan areas with 1990 populations of more than one million, including all metropolitan areas that built or expanded rail. The greatest such losses were 36 percent in Atlanta and 33 percent in Portland.

### **Ridership:**

**Canada:** The highest annual per capita ridership is in the Montreal Census Metropolitan area (117), while the Toronto CMA ranks second at 107. Ottawa, Vancouver and Winnipeg all have 60 or more annual per capita passenger journeys. Annual per capita passenger journeys have declined in virtually all major urban centers. From 1986 to 1996, annual per capita passenger journeys (Table #3):

- Fell 22 percent, from 150 to 117 in the Montreal Census Metropolitan Area (CMA).
- Fell 25 percent, from 143 to 107 in the Toronto CMA.
- Fell 32 percent, from 120 to 81 in the Ottawa-Hull CMA.
- Fell 36 percent, from 94 to 60 in Winnipeg. This was the largest loss among the urban areas for which data was obtained.
- Fell six percent, from 69 to 64 in the Vancouver CMA.

The smallest loss occurred in the Calgary CMA, where per capita passenger journeys declined less than one percent. Among the metropolitan areas with more than 500,000 population, annual per capita passenger journeys declined 2.36 percent annually.

Overall metropolitan public transport market shares average approximately nine percent, based upon Raab and Kenworthy.<sup>4</sup> The highest share is in Toronto, at 15.0 percent. Montreal is second

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<sup>2</sup>Earlier data not available.

<sup>3</sup>Earlier data not available.

<sup>4</sup>Tamim Raad and Jeff Kenworthy, "The US and Us," *Alternatives Journal*,

at 12.8 percent, while other major metropolitan areas range from 6.2 percent to 9.6 percent.

Public transport ridership is concentrated in the largest metropolitan areas, with approximately two-thirds of ridership in Toronto, Montreal and Vancouver. These areas represent approximately one-third of Canada's population.

**United States:** Directly comparable ridership data is not available in the United States, because the National Transit Database reports "boardings,"<sup>5</sup> rather than passenger journeys. Historically, there have generally been five per capita unlinked trips per each four passenger journeys, but that ratio could vary substantially in different metropolitan areas. If the national boarding to journey ratio (above) is applied to US metropolitan areas, Montreal and Toronto have higher ridership per capita than New York, and all but three of the Canadian urban areas have higher ridership per capita than third ranking San Francisco.

US public transport ridership is also highly concentrated in the largest metropolitan areas. The New York city area accounts for nearly 42 percent of annual passenger kilometers, while representing approximately seven percent of the population. Approximately 75 percent of public transport passenger kilometers are in the seven highest ridership metropolitan areas (New York, Chicago, Los Angeles, San Francisco, Washington-Baltimore, Philadelphia and Boston). These metropolitan areas comprise less than 25 percent of the national population.

The New York metropolitan area has 144 annual boardings per capita, significantly greater than the second ranking Honolulu area, which has 79. Five other metropolitan areas have more than 50 annual per capita boardings (San Francisco, Chicago, Washington-Baltimore and Philadelphia).

From 1980 to 1997, per capita boardings declined in 38 of 49 major US metropolitan areas. The losses were substantial in the metropolitan areas with highest ridership. Annual passenger journeys (Table #4):

- Fell 15 percent in the New York metropolitan area, from 170 to 144.
- Fell more than 30 percent in San Francisco and Chicago.
- Fell 23 percent in Philadelphia, 20 percent in Washington-Baltimore and 11 percent in

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Winter 1998.

<sup>5</sup>The US National Transit Database reports unlinked trips, rather than does not report passenger journey data. This makes it difficult to compare US public transport ridership statistics to international data (including Canadian data). Moreover, it tends to artificially raise ridership figures in metropolitan areas opening new rail systems, because of the increased number of transfers (and thereby, increased number of boardings) that occur when many through passenger trips require one or more additional boardings.

Boston.

By far the largest gain was in Las Vegas, which is the nation's fastest growing metropolitan area and also the only major metropolitan area that did not have a regional public transport system before 1990. Public transport boardings rose at so great a rate that annual per capita boardings increased nearly 225 percent. Las Vegas is the only US system that is fully competitively tendered, and the ridership increases have been obtained by massively increasing service levels. Austin recorded a per capita boarding increase of more than 100 percent over the period, also as a result of substantial service expansion. Nonetheless, annual per capita boardings are only 34 in Las Vegas and 30 in Austin, while overall market shares are 1.1 percent and 0.5 percent, even after these very significant ridership increases. Even so, Las Vegas has the highest per capita ridership of any metropolitan area that experienced an increase between 1980 and 1997. Overall, annual per capita boardings declined 19.4 percent from 1980 to 1997 (minus 1.26 percent annually) and 7.0 percent from 1990 to 1997 (minus 1.03 percent annually) in the major US metropolitan areas.

The highest overall metropolitan public transport market share is in New York, estimated at 9.3 percent. The second highest share is in Honolulu, at 4.6 percent. All other metropolitan areas are below four percent, and the overall average among major metropolitan areas is 2.2 percent, approximately one-fourth the average of major Canadian metropolitan areas.<sup>6</sup> The contrast with Canada is more stark when metropolitan areas of similar size are compared.

- Toronto and Dallas-Fort Worth are of similar size, yet Toronto's public transport work trip market share is nearly 50 times that of Dallas-Fort Worth (15.0 percent compared to 0.3 percent).
- Vancouver is similar in size to Portland, which is considered by many to be the most progressive US public transport metropolitan area.<sup>7</sup> Yet Vancouver's public transport market share is more than four times that of Portland (6.5 percent compared to 1.5 percent).

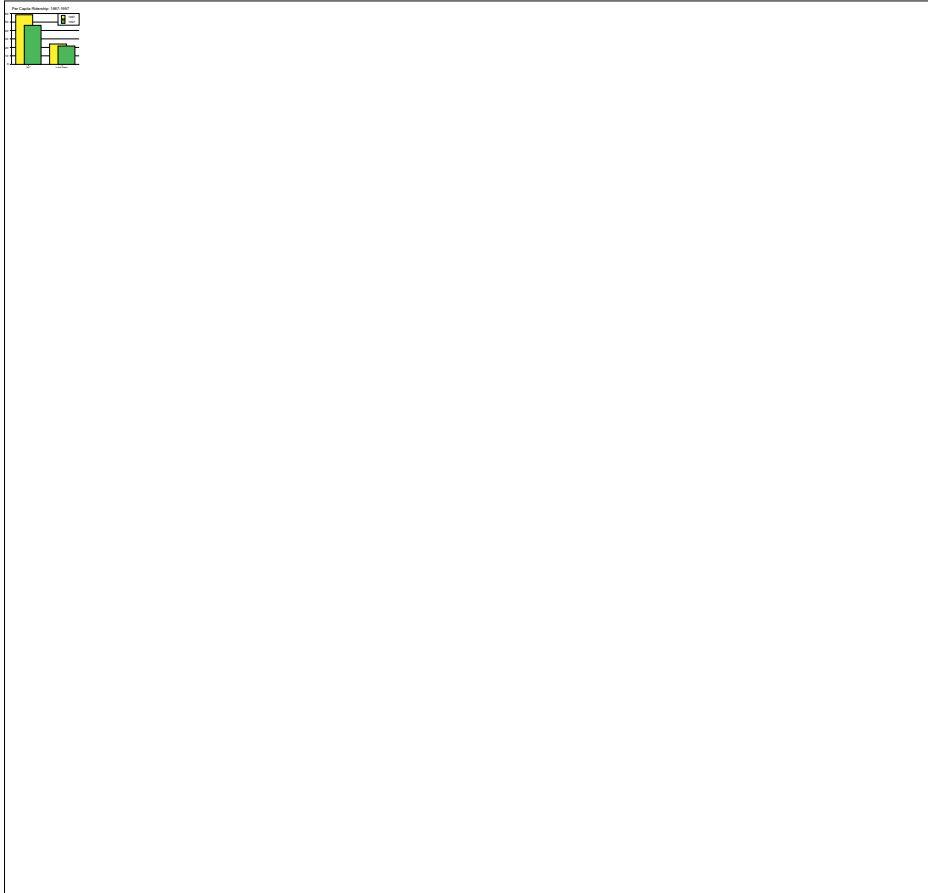
### **Ridership Trends**

While Canadian public transport ridership is generally higher than that of the United States, the recent market share loss has been more pronounced. Canada's decline of 21.4 percent in annual rides per capita over the last decade is approximately double the 10.9 percent US loss (Figure #1).

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<sup>6</sup>Based upon Raab and Kenworthy.

<sup>7</sup>Both Vancouver and Portland are designated as potential "transit metropolitan areas," by Robert Cervero (below).



**Figure 1**

Source: Calculated from Canadian Urban Transport Association data and National Transit Database (US).

## **Funding**

**Canada:** Public transport has been funded by provincial and local governments in Canada. In recent years, some provincial governments have reduced or eliminated their public transport funding programs, which has resulted in increased public assistance from the local level (Alberta, Ontario and Quebec).

**United States:** In the United States, funding is received from all three levels of government: federal (central), state and local. Since the early 1980s, public transport has received 1/5 of any additional petrol user fee revenues raised by the federal government.

## **Service Levels**

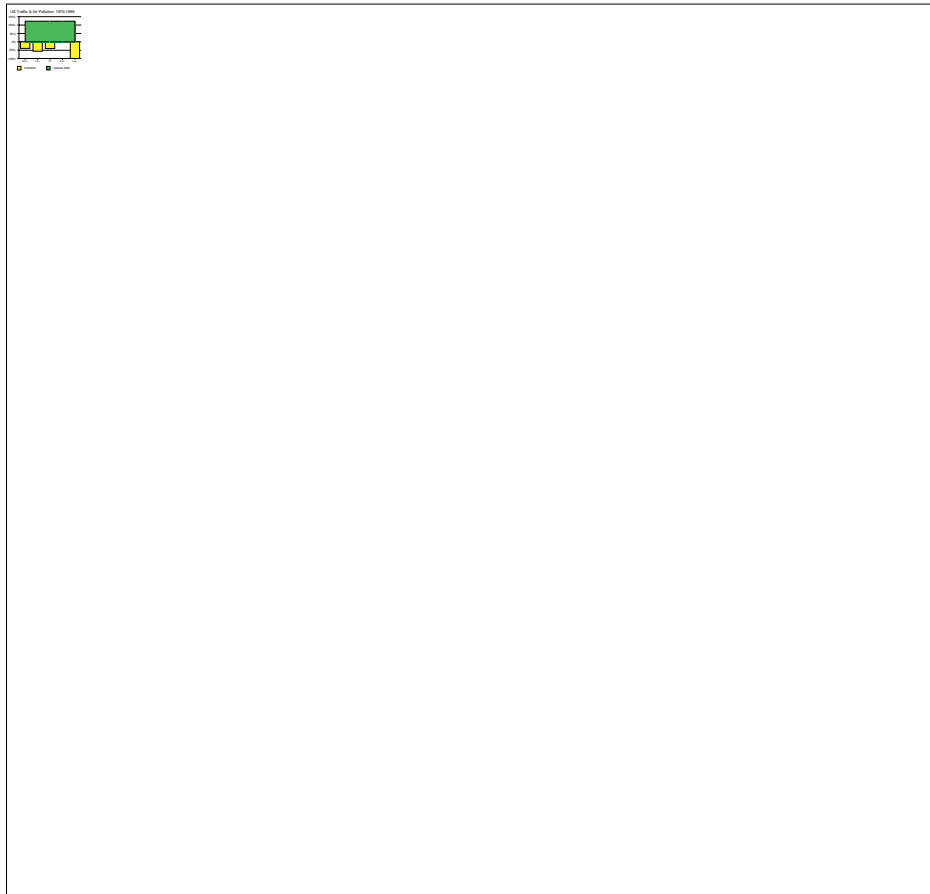
Service levels are higher in Canada, with approximately 27 annual service kilometers per capita, compared to approximately 16 in the United States.

## **DEMAND**

### **Market Segments**

As in other developed nations, public transport serves two primary and distinct market segments in Canada and the United States:

- The transport dependent market, which includes customers who are unable to use automobiles, by virtue of low income or disability. Publicly subsidized service to this market segment tends to be justified by as a social welfare need.
- The discretionary market, which includes customers who use public transport by choice, in preference to automobiles. Publicly subsidized service to this market segment has been justified by objectives to reduce traffic congestion and air pollution.<sup>8</sup> While traffic congestion persists, significant progress has been made in reducing air pollution, and further improvements are expected. Virtually all of this progress is attributable to improved private vehicle technology. As a result, public transport is becoming less important as a strategy for improving air pollution. (Figure #2)



**Figure 2**

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<sup>8</sup>Generally, substantial improvements have been achieved in air pollution, and further improvements are expected. As a result, public transport is becoming less important as a strategy for improving air pollution.

Source: Calculated from US Department of Energy and US Department of Transportation data.

Because automobile ownership continues to expand, the low income transport dependent market is declining. At the same time, the disabled may represent public transport's most promising growth market, as low floor buses replace conventional vehicles, and paratransit (demand responsive) services expand. Unfortunately, service to the disabled is particularly expensive and requires higher subsidies.

### **Residential Suburbanization**

As elsewhere in the developed world,<sup>9</sup> Canada and the United States have been suburbanizing for decades. Suburbanization accelerated after World War II and is, perhaps, the most important reason behind public transport's market share loss. As residences and jobs have moved and been established in the suburbs, a dispersed commuting pattern has emerged, which cannot be as effectively served by public transport as the former more centralized and radial trip patterns before the age of automobile dominance.

The extent of suburbanization is best understood by examining urban areas in which the central city's geographic area has remained relatively constant. These will be referred to as "stable area" cities. In all but perhaps one such major metropolitan area with a stable area central city (Vancouver), all population growth has occurred in the suburbs or in land that was outside the developed area in 1950. The same trends have occurred in virtually all Canadian and US metropolitan areas, but are masked where central city border expansion has occurred.<sup>10</sup>

**Canada:** Among the three Canadian metropolitan areas of over a million population with stable area cities (Table #5), suburbanization is evident over the past 40 years (1956 to 1996). Overall, the central cities have added 23,000 residents, while the suburbs have added 5.5 million. For each new central resident there have been nearly 250 suburban residents.

- The central city of Montreal lost nearly 100,000 residents, while the suburbs gained nearly 1.7 million.

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<sup>9</sup>For example, since 1950 London's population has declined 1.5 million, while the population of the counties bordering the periphery of the Green Belt has risen 4.3 million. The city of Paris has lost 700,000 residents, while the suburbs have also gained 4.3 million.

<sup>10</sup>The following examples illustrate the point.. The population within Portland's 1950 boundaries declined nearly 20 percent by 1990, while annexations increased the city population 25 percent. Seattle's 1950 area population also declined nearly 20 percent, compared to the annexation induced 10 percent increase. Indianapolis and Nashville experienced approximately 40 percent losses within their 1950 boundaries, but annexation produced gains of 70 percent and 180 percent respectively. Source: Analysis of 1990 US Census Bureau data based upon 1950 municipal boundaries.

- The central city of Toronto<sup>11</sup> lost 13,000 residents, while the suburbs added 2.8 million.
- The central city of Vancouver gained 129,000 residents. It appears that Vancouver's growth has been "infill" development, since the city was largely built out by the 1950s. As such, Vancouver is one of only two "stable cities" in Canada and the United States that has had a genuine increase in density.<sup>12</sup> Nonetheless, Vancouver's suburbs have added more than one million residents.

**United States:** Suburbanization has been even more evident in the US, as evidenced by "stable area" central cities (Table #6). Central cities have declined 3.6 million in population from 1950 to 1990. Two central cities, Los Angeles and Miami, have added population. Los Angeles' growth was largely in undeveloped land that had previously been annexed to the city. Miami's infill development was propelled by significant immigration from Caribbean nations. Without these two cities, the stable area cities lost 5.3 million residents. At the same time, suburban growth was 28 million. For each resident lost in the central cities, five were added in the suburbs.

For example:

- The central city of St. Louis lost more than one-half of its population, while the suburbs tripled in size.
- Chicago and Detroit sustained the largest population loss, at more than 800,000.

While these central city population losses are substantial, they are not unique to North America. Paris, London, Copenhagen, Liverpool, and Glasgow are examples of European "stable cities" that have lost more than 20 percent of their population since 1950. In these metropolitan areas, all population growth has occurred in the suburbs.

### **Suburbanization of Employment**

As residences moved to the suburbs, so did employment.

**Canada:** A recent survey of Canadian found that approximately 19 percent of metropolitan employment is in central business districts.<sup>13</sup> The CBD represents 20 percent of employment in metropolitan Montreal. However, the CBD employment share is much smaller in two of the three largest metropolitan areas:

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<sup>11</sup>The city of Toronto ceased to exist in 1997, having been amalgamated into a subregional jurisdiction.

<sup>12</sup>The other stable city with population growth, Los Angeles, accommodated much of its growth on undeveloped land that was within the city limits in 1950.

<sup>13</sup>Tamim Raad and Jeff Kenworthy, "The US and Us," *Alternatives Journal*, Winter 1998.



- 7.6 percent in Toronto.
- 13.4 percent in Vancouver.

Indeed, suburban Toronto is very similar to the typical US suburban area, with large employment complexes (“edge cities”), extensive motorways,<sup>14</sup> high automobile dependency and little discretionary public transport ridership, except to the central city.

**United States:** In the US, formerly dominant central business districts declined markedly in employment market share. By 1990, the average US central business district (CBD) contained 10 percent of metropolitan employment, and in no metropolitan area was CBD employment greater than 20 percent. Public transport has continued to have a significant market share to the largest, older CBD’s, 74 percent in New York, 61 percent in Chicago, 57 percent in Brooklyn (a borough of the city of New York), 50 percent in San Francisco, 49 percent in Boston, 44 percent in Philadelphia, 37 percent in Washington 36 percent in Seattle and 33 percent in Pittsburgh.<sup>15</sup>

In virtually no other area, downtown, suburban office center (“edge city”) or elsewhere does public transport provide 30 percent of work trips, and in most the percentage is well below five percent.<sup>16</sup> Inasmuch as most US urban motorways are six to eight lanes (three or four lanes in each direction), public transport would need a work trip market share of at least 25 to 33 percent to displace a lane of traffic.<sup>17</sup> As a result, public transport makes a perceivable difference in traffic only in the radial corridors feeding a few of the largest central business districts. There are two related reasons for this.

- It is only to the CBD that public transport provides the quick express bus and metro services from throughout the urban area that can compete with automobile travel times (light rail systems are generally 50 percent slower than automobile commutes and attract few automobile drivers as a result).
- It is only in the CBD’s that there is a sufficient population density to justify high levels of public transport service from throughout the urban area. Even the largest suburban employment centers, with employment counts as large as medium sized CBDs,

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<sup>14</sup>Until recently, Toronto’s semi-orbital route, the 12 lane McDonald-Cartier Freeway (Route 401) was the world’s widest motorway. Recently, New York’s New Jersey Turnpike has been expanded to 16 lanes.

<sup>15</sup>Internet: [www.publicpurpose.com/ut-uscbr.htm](http://www.publicpurpose.com/ut-uscbr.htm).

<sup>16</sup>Even suburban office centers with urban rail systems exhibit comparatively small work trip market shares. For example, Walnut Creek, which grew up around a BART station in the San Francisco areas, has a five percent share.

<sup>17</sup>Actually a larger work trip market share would be required, because much of the traffic on radial motorways does not have a central business district destination.

development is so spatially sparse that most offices are not and cannot reasonably be within walking distance of public transport stops or stations.<sup>18</sup> The US experience has demonstrated that people who have automobiles available will generally not travel by public transport if a transfer the express bus or metro to circulator bus (shuttle bus) is necessary. Thus, there is simply no prospect for public transport to materially reduce automobile use in suburban office locations.

**Causes of suburbanization:** Suburban development itself has been driven by two primary factors in both nations.

- Increased affluence, which made automobiles and new suburban housing affordable to more people.
- Falling household size, which 1950 to 1990, fell from 3.37 persons to 2.63 in the United States, (a decline of 22 percent). For any stable area central city to have maintained its population would have required a compensating increase in housing stock.

Another factor has been urban motorway development, which reduced travel times from developing suburban residential locations to the central city, while cutting wide swaths through urban neighborhoods. The conventional wisdom is that Canadian urban areas did not permit construction of urban motorways, which made their suburbanization trends less pronounced than in the United States. However, urban motorways penetrate the central cities of Toronto and Montreal<sup>19</sup> and were built in suburban areas in other urban areas. The large suburban expanses of major Canadian urban areas were, as in the United States, facilitated by development of motorways.

Other factors contributed to suburbanization in the United States, and are likely to have hastened public transport's market share loss:

- Government loan guarantees for suburban home ownership.
- Restrictive planning regulations, zoning regulations and initiatives that destroyed neighborhoods, such as public housing and urban renewal.
- Substandard education in central cities, and court ordered busing of students (for racial balance) away from neighborhood schools in central cities. The period during which mandatory busing was implemented was also the period of greatest flight from the cities to the suburbs (1970s).

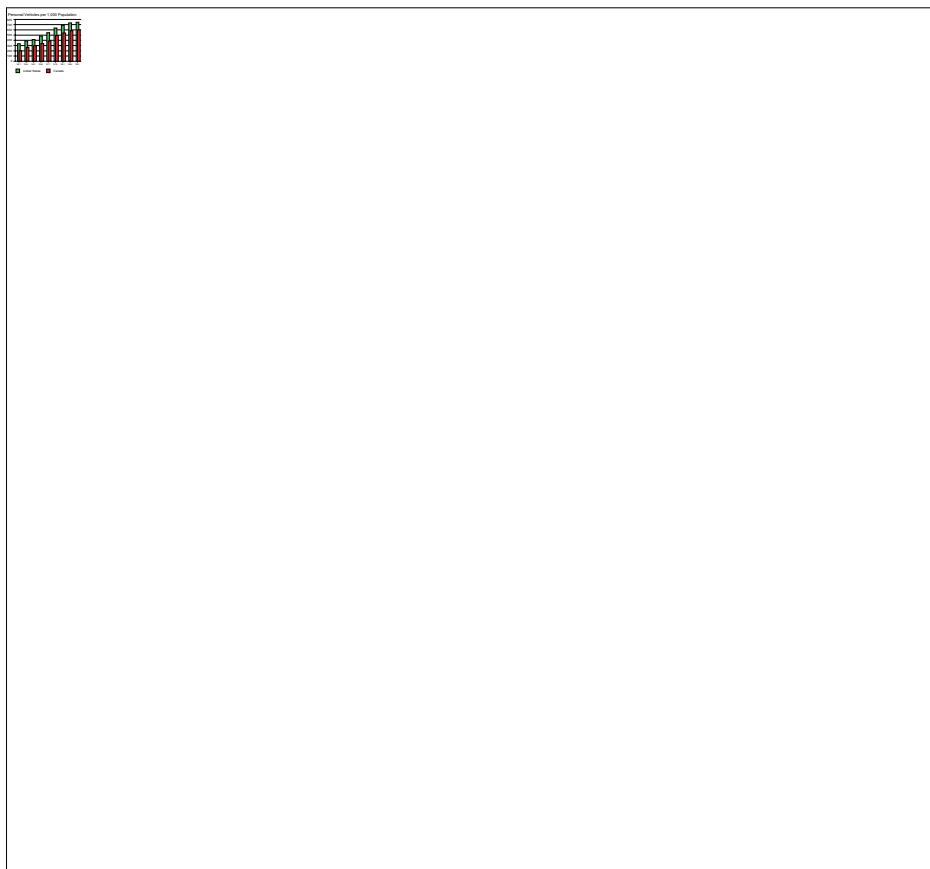
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<sup>18</sup>Generally, discretionary riders will walk no more than 0.4 kilometers to or from public transport.

<sup>19</sup>Montreal has one of the most comprehensive urban motorway systems in North America.

- Higher taxes, higher crime rates, urban disorders, political corruption and substandard public services in central cities.

These factors are at least part of the reason why suburban development has been less rapid in Canada than in the US. Another factor may have contributed to Canada's lower rate of market share loss: Automobile ownership grew more slowly in Canada than in the US, as a result of the fact that Canada trailed the US in relative affluence by some years (Figure #3). Finally, it is sometimes suggested that Canadian public transport ridership has remained at higher levels than in the US because motorways were not built into the central cities. As noted above, motorways were to built to both the Montreal and Toronto central business districts, which are the most highly patronized public transport destinations in Canada. Motorways do not, however, penetrate the urban core of Vancouver.



**Figure 3**

Source: Motor Vehicle Manufacturers Association

## SUPPLY

**Canada:** Since public subsidies began, Canadian public transport unit operating costs<sup>20</sup> have risen well above market rates. From 1970 to 1995:

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<sup>20</sup>Cost per vehicle kilometer or cost per vehicle hour.

- Public transport operating costs per vehicle kilometer have risen 35 percent (1995\$). In inflation adjusted terms, each incremental percentage point in operating expenditure produced 0.59 percent in expanded service --- a welfare loss of 41 percent. Inclusion of capital costs, which are not readily available over the period, would increase the welfare loss.
- Public transport operating costs per passenger rose 97 percent (1995\$).<sup>21</sup>

**United States:** Performance has been less favorable in the United States: From 1970 to 1995:

- US public transport operating costs per vehicle kilometer have risen more than 55 percent (inflation adjusted).<sup>22</sup> In inflation adjusted terms, each incremental percentage point in operating expenditure produced a 0.27 percent in expanded service --- a welfare loss of 73 percent. Inclusion of capital costs, which are not readily available over the period, would increase the welfare loss.
- Public transport operating costs per passenger rose 114 percent (1995\$).<sup>23</sup>
- Public transport operating costs per kilometer have risen at least 120 percent in relation to market costs. Commercial bus (market) costs have declined -- intercity and charter bus costs per kilometer have dropped by 31 percent since 1970.<sup>24</sup>

US cost escalation has been a major contributing factor in ridership losses. In Milwaukee, Los Angeles, San Antonio and Chicago, for example, fare increases necessitated by escalating costs were a primary factor in reducing patronage.<sup>25</sup>

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<sup>21</sup>Calculated from Canadian Urban Transit Association data.

<sup>22</sup>The cost escalation has actually been even greater. In recent years, the National Transit Database has allowed “capitalization” of some costs that were formally reported as operating costs, which understates newer cost information relative to that of previous years. Before this change, public transport costs had escalated to a more than 70 percent inflationary increase from 1970.

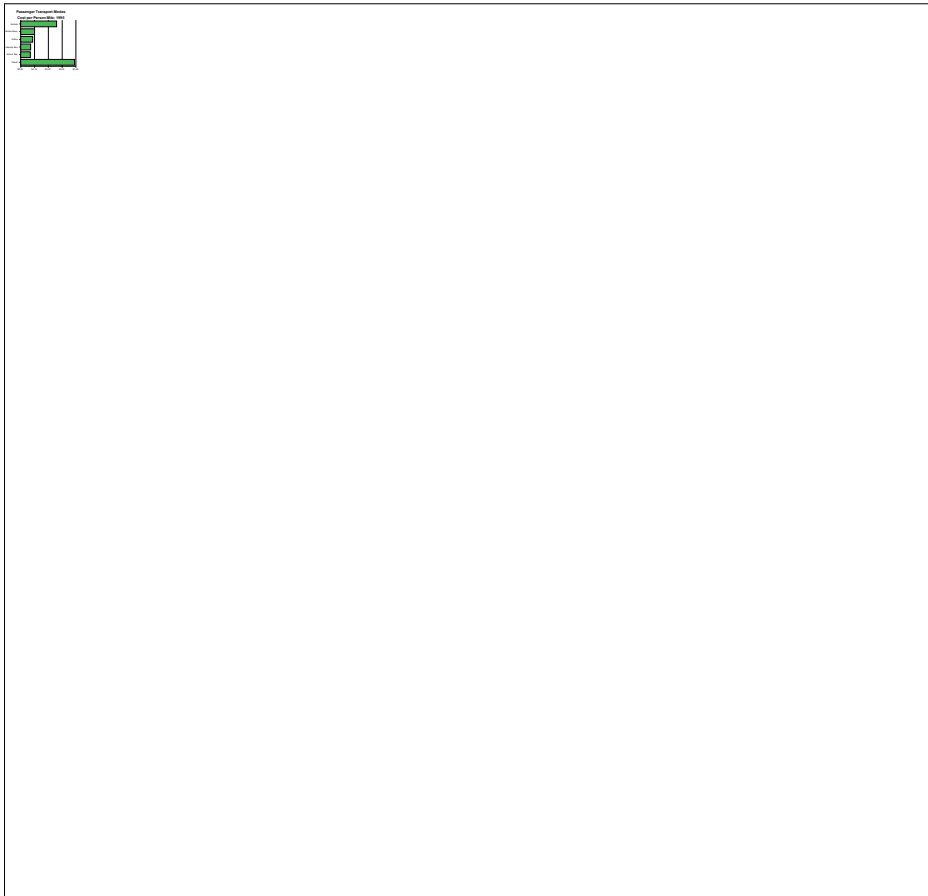
<sup>23</sup>Calculated from American Public Transit Association data.

<sup>24</sup>Intercity and charter bus services were deregulated in the early 1980s, which replaced the previously monopolistic franchise system. This led to significantly lower unit costs. 1992-95 cost per kilometer increase estimated based upon change in average cost per kilometer of the class one carriers.

<sup>25</sup>Wendell Cox and Jean Love, *Rescuing the Chicago Transit Authority*, Metropolitan Transportation Association, 1998, Wendell Cox, *Light Rail in Milwaukee*, Wisconsin Policy Research Institute, 1998, Wendell Cox, *VIA Metropolitan Transit Authority Opportunity Analysis*, Texas Public Policy Foundation, 1997.

**Comparative Productivity:** Overall productivity of the US public transport industry has been substantially less than that of other passenger-transport industries.

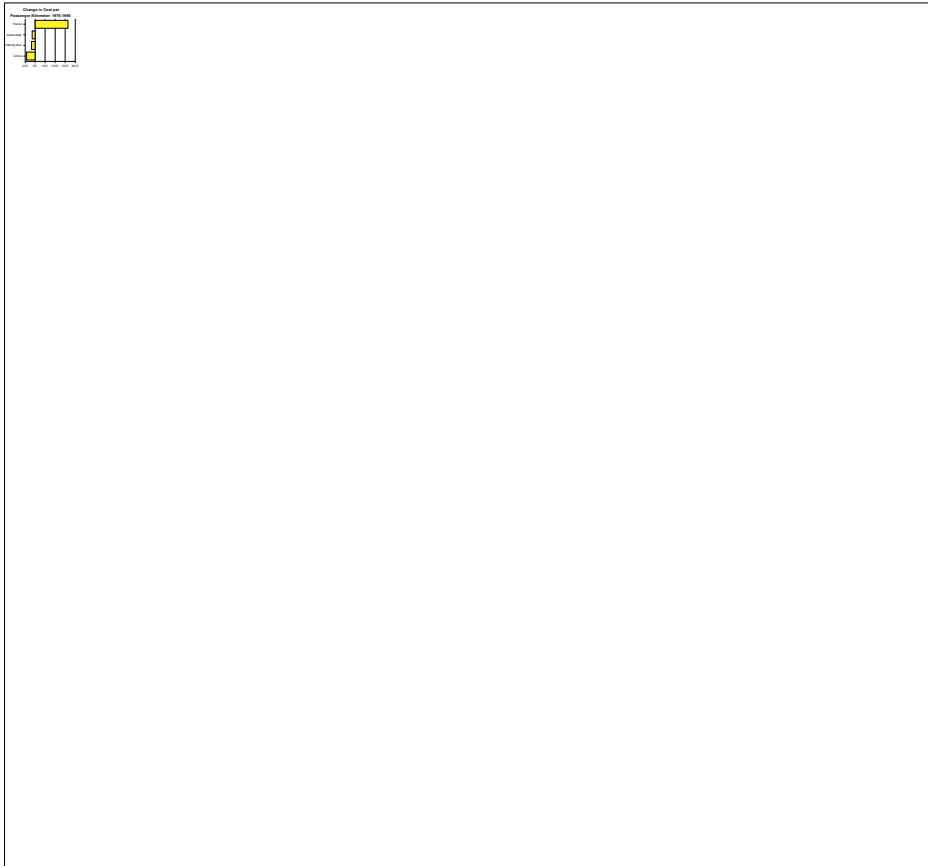
- U.S. public transport costs per passenger kilometer are significantly higher than any other mode -- nearly 50 percent greater than Amtrak (intercity rail), and four to six times that of automobiles (including personal trucks), airlines and intercity (private) buses and school buses (Figure #4).



**Figure 4**

Calculated from National Transit Database and Federal Highway Administration data.

- Public transport's cost escalation has exceeded that of other modes by a substantial margin. From 1970 to 1995, public transport costs per passenger kilometer rose 164 percent (inflation adjusted). This substantial increase compares to an increase of 9 percent at Amtrak (from 1975), and cost reductions for automobiles, intercity buses and airlines (Figure #5). The intercity bus and airline industries were subjected to deregulation, which was a major factor in driving down unit costs.



**Figure 5**

Calculated from U.S. Department of Transportation data.

Even industries not deregulated, however, generally experienced productivity gains over the period, reflecting the overall productivity improvements in the U.S. economy. Such gains, however, were not experienced in public transport.

A principal cause of public transport's cost escalation is the political and monopolistic environment in which it operates. It is a well understood that monopolies tend to have higher costs and higher cost increases than organizations in a competitive environment.<sup>26</sup> In the United States there has been another factor --- federal (central) government policies. Moreover, in both nations public transport trade unions exert considerable control over parliaments local legislatures and public transport governing bodies.

The influence of trade unions has been felt to an even greater extent in the United States. Unlike Canada, the US central government provides operating and capital subsidies to public transport agencies. Since the beginning of the aid program, central government has imposed costly labor protections that are preconditions to funding and which have discouraged innovation. For

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<sup>26</sup>See for example, Robert L. Heilbroner and Lester Thurow, *The Economic Problem* (Englewood Cliffs, NJ: Prentice Hall: 1975), pp. 175-193.

example, employees made redundant by productivity improvements are guaranteed up to six years of severance pay.

The disincentive to innovate has caused transition to a more competitive regime (competitive tendering) to be more gradual in the United States. Less than 10 percent of public transport bus service is now competitively tendered, and average cost savings are 33 percent.<sup>27</sup> Mandatory competitive tendering is limited to Denver, where a 1988 law requiring 20 percent of service to be tendered was expanded to 35 percent in 1999 (cost savings over the first decade exceeded \$100 million).<sup>28</sup> Las Vegas, the nation's fastest growing metropolitan area, has the only public transport system that is fully competitively tendered.

There has been even less progress toward competitive operation in Canada. Competitive tendering is limited to suburban Montreal, suburban Toronto and smaller systems in British Columbia and Saskatchewan.

The higher than competitive costs in Canada and the United States have limited public transport's ability to expand services and to retain market share.

## MAJOR CAPITAL PROJECTS

**United States:** US public transport agencies have demonstrated a strong predilection toward urban rail systems, which are particularly ineffective in serving the more dispersed travel patterns that are pervasive. Public transport authorities and urban planners have routinely recommended construction of urban rail systems to reduce growing traffic congestion. A number of metro and light rail systems have been built, and a number more are under construction or planned.

Those built to date, however, have had no perceivable impact on traffic congestion.

- By far the most successful system has been Washington's Metro, which cost more than \$10 billion to build. It is estimated that the increase in total bus and rail ridership in Washington from 1982 to 1995 reduced traffic volumes by slightly less than one percent.<sup>29</sup> Despite carrying nearly 700,000 week day unlinked trips, since before metro opened, the single-occupancy automobile peak hour market share to the central business district has fallen only 2.3 percent, and has increased 3.8 percent for radially oriented trips crossing the orbital route (Interstate 495). The overwhelming majority of metro's

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<sup>27</sup>Wendell Cox, *US Competitive Tendering: Comprehensive Analysis*, presented to the 6<sup>th</sup> International Conference on Competition and Ownership in Land Passenger Transport (Cape Town), 1999.

<sup>28</sup>Internet: [www.publicpurpose.com/ut-den35%.htm](http://www.publicpurpose.com/ut-den35%.htm)

<sup>29</sup>1982 is the first year for which comprehensive road traffic volume data is available for specific urban areas.

peak trips have been attracted from car pools and buses.<sup>30</sup>

- In all other cities, the impact of new rail systems on traffic volumes has been less than 0.4 percent (Table #7).

On average, the new metro systems carry 40 percent of the passenger volume of a one lane motorway couplet (Figure #6). The new light rail lines average 20 percent of a one lane couplet (Figure #7)<sup>31</sup> The actual impact on traffic congestion, however, is less because most passengers are not former automobile drivers.<sup>32</sup> A recent grand jury investigation in a Los Angeles suburban county concluded with respect to the US light rail experience:

*Unfortunately light rail does not reduce traffic congestion because it attracts few automobile drivers.*<sup>33</sup>

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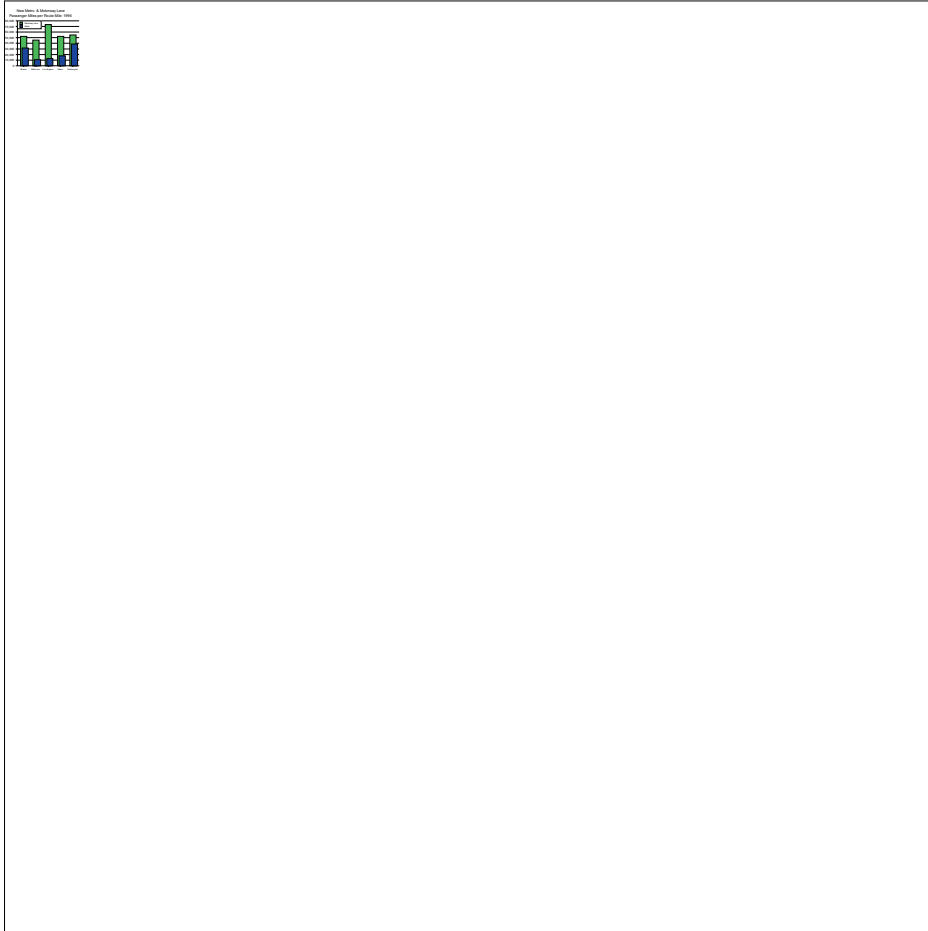
<sup>30</sup>Internet: [www.publicpurpose.com/ut-mrail.htm](http://www.publicpurpose.com/ut-mrail.htm).

<sup>31</sup>Wendell Cox, *The 1999 Texas Transit Opportunity Analysis: Capital Metropolitan Transit Authority (Capital Metro)*, Texas Public Policy Foundation (San Antonio), 1999.

<sup>32</sup>Wendell Cox, *Light Rail in Milwaukee*, Wisconsin Policy Research Institute (Milwaukee), 1998.

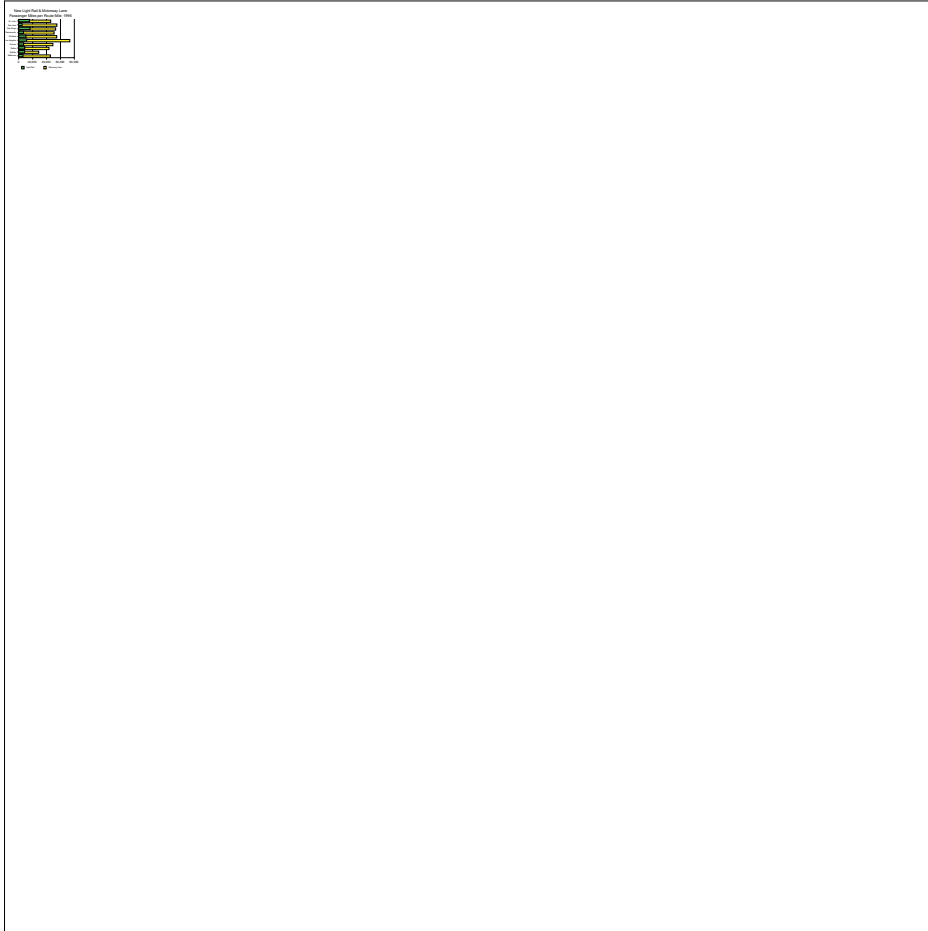
<sup>33</sup>Report of the Orange County Grand Jury, *Orange County Transportation Authority and Light Rail Planning*, 27 May 1999. Available on the Internet at [www.publicpurpose.com/lib-orcorail.htm](http://www.publicpurpose.com/lib-orcorail.htm).





**Figure 6**

Estimated from FHWA, Texas Transportation Institute and National Transit Database information.



**Figure 7**

Estimated from FHWA, Texas Transportation Institute and National Transit Database information.

The costliness of urban rail has limited improvements to a small number of corridors, except in the case of Washington and Atlanta, where multiple rail (metro) corridors have been constructed. By comparison, Harvard's John Kain found that busway systems could be built and operated for one-fifth the cost per passenger kilometer of either light rail or metro systems.<sup>34</sup> Public transport's minuscule market shares in US urban areas might be higher if planners and public officials had chosen more cost effective capital investments.

In capital investment, like operations, much of the impetus for less cost-effective policies is to be found in central government policy. Major capital grants are approved through a Washington process that favors political influence more than transport efficiency and effectiveness. An indication of how far astray from transport efficiency and effectiveness central government

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<sup>34</sup>John Kain, Ross Gittell, Amrita Danieri, Tsur Summerville and Liu Zhi, *Increasing the Productivity of the Nation's Urban Transportation Infrastructure*, United States Department of Transportation Federal Transit Administration, January 1992.

policies can stray is the recent Congressional reservation (earmark) of funding to begin work on a light rail system for Sioux City, Iowa. Sioux City, with a population of 121,000 is the nation's 231<sup>st</sup> largest metropolitan area. Its entire public transport ridership is less than 5,000 unlinked trips daily.<sup>35</sup>

**Canada:** Without central government grants to build rail systems, Canadian urban areas have been more frugal. Vancouver, Calgary and Edmonton have built new systems since 1975 and have experienced rail ridership levels considerably higher than in US urbanized areas of similar size. For example, Calgary's light rail system, operating in a metropolitan area of 750,000, carried 80,000 daily riders in 1996. In contrast, Portland, with a 1.5 million population, carried 30,000. In addition, one city, Ottawa, built a busway system for less than it would have cost to build light rail, and is experiencing one-way peak hour volumes of nearly 10,000, a higher figure at least five times higher than is being achieved by any new US light rail system.

The situation in both the United States and Canada was summarized by David Gunn, who served as general manager of public transport systems in Philadelphia, New York, Washington and Toronto. Commenting on a Toronto metro (subway) project, he said:<sup>36</sup>

*You would never have built the Sheppard subway if the decision was based upon transit principles. The only time you build a subway is when the street is clogged with buses. ... today subways and light rail have become icons of development.*

As funding responsibility is returned to local governments from the provinces, it is likely that Canadian major investment decisions will be more based upon issues of transport efficiency and effectiveness than in the United States, where such considerations are discouraged by the comparatively ready availability funding and the dominance of national politics in local decisionmaking.

## THE PROSPECT

### Funding

**Canada:** Public funding for public transport is likely to grow less quickly in the future in Canada, largely because provincial governments are devolving some of their programs to the local level (noted above). As is typical in public administration, it can be expected that local officials will be more careful with their own money than with provincial money (other people's money).

**United States:** The funding situation is much more positive in the United States. Because public transport receives one-fifth of any new federal petrol user fee revenue, it can be expected that funding will continue to grow. This will benefit public transport employees, managers and

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<sup>35</sup>Estimated from National Transit Database, 1995.

<sup>36</sup>*NovaeResUrbs*, 2 November 1998.

consultants.

But it will provide little benefit to customers and have little impact on market share. The lack of cost controlling competition is likely to ensure a continuing welfare loss, with service levels well below what would be provided at competitive rates. The predilection toward overly costly capital projects will continue to preclude less costly, but more effective alternatives, and ensure that public transport market shares are lower than they might otherwise be.

## **Service**

Unlike virtually the rest of the highly industrialized world, Canada and the United States remain largely committed to a non-competitive service structure that consumes a new funding without producing a corresponding level of new service.

Canada's Westminster-style parliamentary government, especially at the provincial level, however, is structurally capable of producing a rapid conversion to a more competitive structure. With a unified executive and legislative function, a market oriented provincial government could impose competitive tendering with little difficulty.<sup>37</sup> Once such a reform is implemented in one province, others could be expected to follow.

The US governmental structure, with its separation of the executive and legislative functions makes competitive reform far more difficult. State governors and legislatures seek office separately and do not necessarily pursue the same policies, even when the same political party controls both the executive and legislative branches. The federal government public transport trade union provisions make market based reform even more difficult. Progress toward a competitive cost structure is thus likely to be more incremental in the United States.

## **Major Capital Projects**

**Canada:** Because large capital investments in Canada are financed by local or provincial taxpayers, expansion of rail systems is likely to be more related to transport efficiency and effectiveness than in the United States.

**United States:** In the United States, however, the large federal government program will continue to encourage urban areas to build expensive new rail systems. While this will not reduce public transport's market share, it will have little positive impact and will deny market share improvements that might have occurred from more efficient and effective use of the funding. David Luberoff of Harvard's Kennedy School of Government summarized the situation as follows:

*Why are we still investing in mass transit despite 20 years of data showing that rail transit generally does not have significant impacts on either mobility or air quality? ... At*

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<sup>37</sup>This assumes that such a government would have included competitive tendering in its election manifesto.

*some point, however, the rest of the country either says to the few areas that getting the bulk of the transit money, "That's enough" or "We want to build transit lines too." It looks like it's the latter.*<sup>38</sup>

### **Transit Metropolitan Areas?**

Despite the results and trends outlined above, there is a certain optimism with respect to the future of public transport in Canada and the United States. For example, in a recent book Robert Cervero outlines the experiences of a number of "transit metropolitan areas" that he considers to have been particularly successful in providing mobility alternatives to the automobile (such as Stockholm, Copenhagen, Curitiba, Ottawa, Munich and Melbourne). Cervero has suggested that four US metropolitan areas, Houston, Portland, St. Louis, San Diego and Canada's Vancouver, are "following in the footsteps of the world's great transit metropolises."<sup>39</sup> There are two difficulties with this.

- First; some of the cited "transit metropolitan areas" have experienced large public transport market share losses, as automobile use has increased, suggesting that their success has been to slow public transport's decline, rather than to arrest or reverse it (such as Stockholm, Copenhagen and Ottawa).
- Second; the US metropolitan areas have *already* lost virtually all of their market share, with shares in the range of 0.5 percent to 1.5 percent, so that slowing public transport's market share decline would be of no account. Meaningful progress would require a massive switch in travel from the automobile to public transport. That is simply not happening. From 1990 to 1997, the overwhelming majority of travel growth in each of these metropolitan areas was not on public transport, which obtained two percent or less of incremental passenger kilometers (Table #8). There was an increase of more than 175 street and highway person kilometers for each increased public transport passenger kilometer.

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<sup>38</sup>United States Government Accounting Office, *Surface Transportation: Moving into the 21<sup>st</sup> Century*, May 1999.

<sup>39</sup>Robert Cervero, *The Transit Metropolis: A Global Inquiry* (Washington, DC: Island Press), 1998.

With respect to Vancouver, data cited above indicates a six percent market share loss from 1986 to 1996. Recently published 1998 data indicates that ridership has stagnated, which suggests a further market share loss of five percent.<sup>40</sup>

### **Urban Development**

A number of Canadian and US urban areas may seek to increase their population densities to make communities more pedestrian and public transport friendly. These “new urbanist” and so-called “smart growth policies would impose “urban growth boundaries” smaller lot sizes and restrictions on suburban shopping center construction. Such policies envision “transit oriented development” along light rail lines, which would it is theorized would permit public transport to gain substantial market shares at rail stations, even outside the central business districts. But there are problems with this.

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<sup>40</sup>1998 ridership data from the American Public Transit Association. Continuation of 1991 to 1996 population growth rate assumed.

- Even Portland, Oregon, which has become the international model for transit oriented development policies, plans on increasing population densities by 2040 so little that Los Angeles --- the ultimate automobile city --- is today more dense than Portland hopes to become.<sup>41</sup>
- Because of its slow operating speed (less than 30 kilometers per hour), new light rail systems will not provide attractive alternative mobility to automobile users, especially outside central business districts. Average peak hour automobile commuting speeds in the United States now exceed 50 kilometers per hour, and average work trip travel time has *fallen* since 1969, according to Nationwide Personal Transportation Survey data.<sup>42</sup> In the face of falling urban density and expanding urban geography, people have made rational decisions with respect to work and residence locations to control their commute times.

New urbanist policies and transit oriented development could have very localized success, but they will be insufficient to materially alter the automobile orientation of either nation. It is therefore unlikely that public transport market share will be materially impacted. As Anthony Downs, of the center-left Brookings Institution put it:

*... 85 percent of the developed portions of the country that will now exist in 2020 already exist now. Even if radical changes in the form of the to-be-added 15 percent could be achieve, which I don't think is the case, that would not substantially change the patterns already in place today.*<sup>43</sup>

It is to be expected that the following decentralizing trends will continue to make the market for public transport in Canada and the United States at least as challenging in the future as it has been in the past.

- Continually rising affluence.
- Telecommuting and the spreading use of the Internet in employment and shipping.
- Continuing urban development outside the commercial core.

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<sup>41</sup>Despite its reputation as a “compact city,” Portland’s urban development pattern is little different than most other major US metropolitan areas. Its overall density is slightly above average, but it expanded at a lower rate of density during the 1980s than any other major metropolitan area in the western United States. Portland, like Seattle (which has only recently adopted Portland style urban planning policies) has managed to maintain a very attractive urban core, having not experienced the deterioration typical of other US urban areas. There are a number of reasons for this and urban planning is not one of the major factors.

<sup>42</sup>Internet: [www.publicpurpose.com/ut-6995commute.htm](http://www.publicpurpose.com/ut-6995commute.htm).

<sup>43</sup>United States Government Accounting Office, *Surface Transportation: Moving into the 21<sup>st</sup> Century*, May 1999.

- Planning strategies that could encourage more automobile oriented “leap frog” development beyond urban growth boundaries or to smaller metropolitan areas, which will be made more competitive by the transit oriented development planning policies in the larger metropolitan areas . A major contributing factor could be less higher housing prices resulting from circumscribing urban growth.<sup>44</sup>
- Expansion of regional jet service, which will make smaller metropolitan areas more attractive.

### **Assessment**

In general, the prospects for public transport ridership appear to be similar in Canada and the United States.

1. Lack of competitive incentives in both nations will continue to ensure that a considerable portion of any new operating subsidies will be used to finance cost escalation rather than service expansion. This will encourage a continuation of the downward market share trend.
2. The planning and political proclivity toward high cost rail systems will preclude more modest, but broader improvements. This will make it even more difficult to increase market share. This will encourage a continuation of the downward market share trend.
3. Adoption of “transit oriented development” strategies will have little more than very localized impacts. As a result, this trend, if successful, is likely to have virtually no impact on transit market shares.

Because Canada has retained more centralized urban areas and maintained higher public transport market share, it can be expected that per capital ridership will continue to be superior to the US. But the levels of automobile ownership and urban forms of Canada are sufficiently similar to that of the United States that its trend is likely to mirror the US trend, though to a somewhat lesser degree. When the Thredbo XI is convened in 2009, it is likely that public transport market share in Canada and the United States will have continued or even accelerated its rate of decline.

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<sup>44</sup>This is already evident in Portland. In 1990, Portland ranked approximately average in housing affordability among the nation’s metropolitan areas with more than one million residents (Internet: [www.demographia.com/db-hafford90.htm](http://www.demographia.com/db-hafford90.htm)). By 1998, Portland had become the second least affordable housing market among major metropolitan areas (Internet: [www.demographia.com/dm-nahb9804.htm](http://www.demographia.com/dm-nahb9804.htm)).



## TABLES

Rank	Census Metropolitan Area	Market Share
1	Toronto	22.0%
2	Montréal	20.3%
3	Ottawa - Hull	17.1%
4	Winnipeg	14.4%
5	Vancouver	14.3%
6	Calgary	12.6%
7	Halifax	10.9%
8	Victoria	9.9%
9	Québec	9.3%
10	Edmonton	9.0%
11	Hamilton	8.0%
12	London	6.1%
13	Oshawa	5.6%
14	Sherbrooke	5.3%
15	Saskatoon	5.1%
16	Regina	5.0%

Source: Statistics Canada

Earlier data not available.

Rank	Metropolitan Area	1980	1990	Change
1	New York	28.0%	26.6%	-5.0%
2	Washington	14.8%	13.7%	-7.4%
3	Chicago	16.5%	13.7%	-17.0%
4	Boston	11.7%	10.6%	-9.4%
5	Philadelphia	12.5%	10.2%	-18.4%
6	San Francisco	11.2%	9.3%	-17.0%
7	Pittsburgh	11.0%	7.9%	-28.2%
8	Baltimore	10.2%	7.7%	-24.5%
9	New Orleans	10.4%	7.3%	-29.8%
10	Seattle	8.2%	6.3%	-23.2%
11	Portland	8.1%	5.4%	-33.3%
12	Minneapolis	8.6%	5.3%	-38.4%
13	Milwaukee	7.1%	4.9%	-31.0%
14	Atlanta	7.3%	4.7%	-35.6%
15	Buffalo	6.6%	4.7%	-28.8%
16	Los Angeles	5.1%	4.6%	-9.8%
17	Cleveland	7.8%	4.6%	-41.0%
18	Miami	4.9%	4.4%	-10.2%
19	Denver	6.2%	4.2%	-32.3%
20	Houston	3.0%	3.8%	26.7%
21	San Antonio	4.6%	3.7%	-19.6%
22	Cincinnati	5.7%	3.7%	-35.1%
23	Hartford	5.4%	3.7%	-31.5%
24	San Diego	3.3%	3.3%	-0.0%
25	Rochester	5.2%	3.2%	-38.5%
26	St. Louis	5.7%	3.0%	-47.4%

27	Salt Lake City	4.9%	3.0%	-38.8%
28	Columbus	4.2%	2.7%	-35.7%
29	Providence	4.0%	2.6%	-35.0%
30	Detroit	3.7%	2.4%	-34.0%
31	Dallas	3.5%	2.4%	-31.4%
32	Sacramento	3.4%	2.4%	-29.4%
33	Norfolk	4.6%	2.2%	-52.2%
34	Indianapolis	3.2%	2.1%	-34.4%
35	Phoenix	2.0%	2.1%	5.0%
36	Kansas City	3.8%	2.1%	-44.7%
37	Charlotte	2.6%	1.8%	-30.8%
38	Tampa	1.7%	1.5%	-11.8%
39	Orlando	1.7%	1.5%	-11.8%

Source: US Census Bureau

Table #3

Canada: Annual Per Capita Boardings and Market Share by Metropolitan Area

Rank	Metropolitan Area	Year		Change		Market Share: 1990-1 Old
		1986	1996	1986-1996	Annual	
1	Montreal	149.9	116.7	-22.2%	-2.48%	12.8%
2	Toronto	142.8	106.8	-25.2%	-2.87%	15.0%
3	Ottawa-Hull	119.8	81.3	-32.2%	-3.80%	9.4%
4	Calgary	74.1	73.6	-0.6%	-0.06%	6.5%
5	Vancouver	68.5	64.4	-6.0%	-0.62%	6.5%
6	Winnipeg	94.2	60.0	-36.3%	-4.41%	6.2%
7	Quebec	65.3	55.4	-15.3%	-1.64%	NA
8	Halifax	51.6	45.8	-11.3%	-1.19%	NA
9	Edmonton	56.7	44.8	-20.9%	-2.32%	6.8%
10	Hamilton	57.0	44.6	-21.9%	-2.44%	NA
Average		88.0	69.3	-21.2%	-2.36%	

Quebec data is for 1993.

Market share in person kilometers.

Sources: Raad & Kenworthy, Canadian Urban Transport Association and *Janes Urban Transport Systems*

Metropolitan Area	Unlinked Trips per Capita				Change from 1980		Change from 1990		Market Share	
	1980	1990	1997	Rank	1980-97	Rank	1990-7	Rank	1997	Rank
Atlanta	56.2	50.5	47.6	8	-15.3%	17	-5.8%	19	1.428%	14
Austin	13.5	37.9	29.9	18	121.9%	2	-21.0%	41	0.586%	28
Boston-Worcester-Lawrence	67.3	62.5	59.9	6	-11.0%	16	-4.2%	17	2.578%	7
Buffalo-Niagara Falls	29.8	25.5	22.4	22	-24.9%	28	-12.2%	25	0.792%	22
Charlotte-Gastonia-Rock Hill	10.5	10.4	8.5	41	-19.6%	21	-18.7%	36	0.252%	41
Chicago-Gary-Kenosha	99.5	84.6	63.4	4	-36.3%	33	-25.1%	44	3.900%	3
Cincinnati-Hamilton	26.1	19.4	15.3	28	-41.2%	37	-20.9%	40	0.620%	27
Cleveland-Akron	47.4	28.4	25.3	20	-46.7%	40	-10.9%	22	0.971%	18
Columbus	16.1	13.6	12.2	34	-24.5%	27	-10.8%	21	0.433%	36
Dallas-Ft. Worth	15.4	13.8	13.8	31	-10.6%	15	0.2%	14	0.317%	38
Denver-Boulder-Greeley	29.0	28.1	30.7	15	5.8%	11	9.1%	9	1.368%	16
Detroit-Ann Arbor-Flint	27.3	19.4	13.4	32	-51.0%	42	-31.1%	48	0.555%	29
Grand Rapids-Muskegon-Holland	6.2	4.6	3.7	48	-40.2%	35	-20.0%	38	0.138%	47
Greensboro-Winston Salem-High Point	5.9	5.6	4.6	46	-21.7%	24	-16.9%	35	0.077%	49
Hartford	20.9	17.9	15.2	29	-27.0%	29	-15.0%	29	0.528%	30
Honolulu	97.1	87.9	78.9	2	-18.7%	20	-10.3%	20	4.596%	2
Houston-Galveston-Brazoria	15.1	24.4	20.3	25	34.3%	4	-16.8%	34	0.500%	32
Indianapolis	14.0	9.1	6.5	44	-53.7%	44	-28.7%	47	0.179%	44
Jacksonville	22.6	9.7	8.2	42	-63.7%	48	-15.6%	30	0.392%	37
Kansas City	18.3	11.7	8.5	40	-53.3%	43	-27.2%	45	0.172%	45
Las Vegas	10.6	8.6	34.2	14	223.3%	1	295.9%	1	1.060%	17
Los Angeles-Riverside-Orange Co	41.8	36.2	35.3	13	-15.6%	19	-2.6%	16	1.474%	13
Memphis	26.7	13.8	11.5	37	-57.0%	47	-16.6%	33	0.527%	31
Miami-Ft. Lauderdale	32.2	28.7	29.6	19	-8.0%	14	3.2%	13	1.683%	9
Milwaukee	56.1	42.2	44.2	10	-21.1%	23	4.7%	12	0.968%	19
Minneapolis-St. Paul	49.2	27.4	22.2	23	-54.8%	46	-18.9%	37	0.880%	20
Nashville	21.1	8.8	6.0	45	-71.7%	49	-31.7%	49	0.151%	46
New Orleans	82.4	64.0	46.5	9	-43.5%	39	-27.3%	46	1.987%	8
New York-NNJ-Long Island	169.7	143.7	143.6	1	-15.4%	18	-0.1%	15	9.324%	1
Norfolk-Virginia Bch-Newport News	19.2	9.4	10.1	38	-47.4%	41	7.5%	11	0.484%	34
Oklahoma City	3.0	3.7	3.2	49	7.9%	10	-12.4%	26	0.107%	48
Orlando	8.1	6.6	11.7	36	43.8%	3	78.0%	3	0.487%	33
Philadelphia-Wilmington-Atlantic City	69.6	63.1	53.8	7	-22.8%	26	-14.8%	28	2.877%	6

Phoenix-Mesa	9.5	13.9	12.2	33	28.9%	5	-12.0%	24	0.441%	35
Pittsburgh	44.8	36.2	30.6	16	-31.8%	32	-15.6%	31	1.481%	12
Portland-Salem	38.7	34.0	38.3	11	-1.2%	12	12.6%	7	1.499%	11
Providence-Fall River-Warwick	26.3	19.0	14.9	30	-43.3%	38	-21.5%	42	0.699%	23
Raleigh-Durham-Chapel Hill	7.0	4.8	8.7	39	24.5%	7	82.7%	2	0.200%	42
Rochester	26.3	14.3	12.0	35	-54.2%	45	-16.0%	32	0.317%	39
Sacramento-Yolo	15.4	13.8	17.7	27	14.6%	8	28.4%	5	0.879%	21
Salt Lake City-Ogden	21.0	22.1	19.5	26	-7.2%	13	-11.9%	23	0.627%	26
San Antonio	34.5	31.6	25.2	21	-27.0%	30	-20.5%	39	0.688%	24
San Diego	23.7	26.9	30.3	17	27.5%	6	12.6%	8	1.421%	15
San Francisco-Oakland-San Jose	100.3	73.0	69.1	3	-31.1%	31	-5.4%	18	3.337%	4
Seattle-Tacoma-Bremerton	46.9	34.0	36.6	12	-21.9%	25	7.8%	10	1.585%	10
St. Louis	35.4	17.8	21.2	24	-40.2%	36	19.0%	6	0.662%	25
Tampa-St. Petersburg-Clearwater	11.7	9.5	7.2	43	-38.8%	34	-24.8%	43	0.299%	40
Washington-Baltimore	77.4	72.7	62.1	5	-19.8%	22	-14.6%	27	2.940%	5
West Palm Beach-Boca Raton	3.4	2.8	3.9	47	14.2%	9	41.0%	4	0.189%	43
Major Metropolitan	64.5	52.5	48.1		-25.4%		-8.4%		2.166%	
Rest of US	5.1	4.0	4.3		-14.5%		8.0%		0.021%	
United States	36.2	31.4	29.2		-19.4%		-7.0%		0.956%	

Data from US Department of Transportation

Table includes all 48 metropolitan areas with more than one million population in 1997 and one smaller metropolitan area, Honolulu, which is the only smaller metropolitan area with more than 20 annual unlinked boardings per capita.

Market share (person kilometers) estimated using Federal Highway Administration urbanized area traffic data and Nationwide Personal Transportation Survey vehicle occupancy ratios (1995).

Location	Central City(s)			Suburbs			Metropolitan Area		
	1956	1996	Change	1956	1996	Change	1956	1996	Change
Montreal	1,109	1,016	(93)	636	2,311	1,675	1,745	3,327	1,582
Toronto	667	654	(13)	835	3,610	2,775	1,502	4,264	2,762
Vancouver	385	514	129	280	1,318	1,038	665	1,832	1,167
Total	4,117	4,180	23	3,707	9,235	5,488	5,868	11,419	5,511

Source: Statistics Canada

Amounts in thousands

Stable City: municipal boundaries largely unchanged from 1950.

Location	Central City(s)			Suburbs			Metropolitan Area		
	1950	1990	Change	1950	1990	Change	1950	1990	Change
Baltimore	950	736	(214)	212	1,154	942	1,162	1,890	728
Boston	801	574	(227)	1,432	2,201	769	2,233	2,775	542
Buffalo	580	328	(252)	315	626	311	895	954	59
Chicago	3,621	2,783	(838)	1,300	4,009	2,709	4,921	6,792	1,871
Cincinnati	504	364	(140)	309	848	539	813	1,212	399
Cleveland	915	506	(409)	469	1,171	702	1,384	1,677	293
Detroit	1,850	1,028	(822)	902	2,669	1,767	2,752	3,697	945
Los Angeles	1,970	3,485	1,515	2,027	7,917	5,890	3,997	11,402	7,405
Miami	249	359	110	210	1,556	1,346	459	1,915	1,456
Minneapolis-St. Paul	833	640	(193)	154	1,440	1,286	987	2,080	1,093
New Orleans	570	497	(73)	90	543	453	660	1,040	380
New York	7,892	7,322	(570)	4,404	8,722	4,318	12,296	16,044	3,748
Philadelphia	2,072	1,586	(486)	850	2,636	1,786	2,922	4,222	1,300
Pittsburgh	677	370	(307)	856	1,308	452	1,533	1,678	145
San Francisco	1,160	1,096	(64)	862	2,534	1,672	2,022	3,630	1,608
St. Louis	857	397	(460)	544	1,550	1,006	1,401	1,947	546
Washington	802	607	(195)	485	2,756	2,271	1,287	3,363	2,076
Total	26,303	22,678	(3,625)	15,421	43,640	28,219	41,724	66,318	24,594

Source: US Census Bureau

Amounts in thousands

Stable City: municipal boundaries largely unchanged from 1950.

Urban Area	Impact
Atlanta	0.36%
Baltimore	-0.21%
Buffalo	-0.16%
Denver	0.17%

Portland	0.39%
St. Louis	0.05%
Sacramento	0.08%
San Diego	0.12%
San Jose	0.23%
Washington	0.99%
Average	0.13%

Estimated from Federal Highway Administration data and National Transit Database.

Metropolitan Area	Street & Highway (000)	Public Transport (000)	Share of New Travel	Estimated Public Transport Market Share: 1997
Houston	96,993	(64)	-0.07%	0.50%
Portland	37,967	581	1.53%	1.50%
San Diego	12,795	269	2.11%	1.42%
St. Louis	48,556	307	0.63%	0.66%

Estimated from US Department of Transportation data. Assumes weekday public transport passenger kilometers at 1/300th of annual total and metropolitan vehicle occupancy rates as reported in 1995 *Nationwide Personal Transportation Survey*.