Sprawl in Canada and the United States

By

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Abstract

The purpose of this thesis is to ascertain (1) whether suburban sprawl is as widespread in Canadian metropolitan areas as in their American counterparts, and (2) whether Canadian government policies, and in particular Canadian municipal land use and transportation policies, encourage sprawl. The thesis concludes that sprawl is less widespread in two respects. First, Canadian central cities have not declined to the same extent as American central cities. Second, urban and suburban Canadians are less dependent on automobiles than are Americans. The thesis goes on to point out that in Canada, as in the United States, government land use and transportation policies often encourage sprawl.

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Introduction

The purpose of this thesis is to ascertain (1) whether suburban sprawl (as defined below) is as widespread in Canadian metropolitan areas as in their American counterparts, and (2) whether Canadian government policies, and in particular Canadian municipal land use and transportation policies, encourage sprawl.

In Part I of the thesis, I define sprawl and explain why sprawl is controversial. In Part II, I propose two ways of measuring sprawl consistent with my definition, and show that Canadian metropolitan areas are in fact somewhat less sprawling than most of their American counterparts. In Part III, I show that in Canada, as in the United States, government regulation and highway spending favor sprawl. In particular, I note that in both nations, highway spending at all levels of government facilitates suburban development, and that municipal zoning regulations, by limiting density and forcing landowners to build parking lots, encourage driving and discourage walking and transit ridership. And throughout Part III, I suggest that governments can limit sprawl by reversing such policies: that is, by limiting highway spending and government regulation of land use.

I. Defining Sprawl

Commentators have defined the term “sprawl” in a variety of ways – but perhaps the best definition of sprawl is one relevant to the perceived disadvantages of sprawl. So after outlining some of the major concerns about sprawl, I shall create a definition relevant to this paper.

A. *Why is Sprawl Controversial?*

Many environmentalists (as well as some other commentators) oppose sprawl on a variety of grounds.¹ They assert that the movement of people from city to suburb drains core cities of economic health² and that when once-rural areas turn into suburbs, those areas' stock of farmland and wildlife habitat is destroyed.³ In addition, sprawl critics are concerned about the automobile dependence of suburbia. They point out that because most suburbs are less compact than cities, suburbanites often live so far from shops, jobs and public transit that they cannot walk or take public transit to those destinations.⁴ And as people move to environments where driving is mandatory, societal vehicle mileage increases,⁵ thus leading to increased traffic congestion,⁶ air pollution and greenhouse gas emissions.⁷

Sprawl has less technical side effects as well. Where people need a car to reach most jobs or other destinations, people too young, old, poor or disabled to drive are effectively shut out of civic life.⁸ And residents of places where walking is unpleasant or dangerous are likely to get less exercise (and thus be in worse health) than might otherwise be the case.⁹ Finally, some commentators have addressed less tangible effects

¹ See Oliver Gillham, *The Limitless City* (Washington: Island Press, 2002) at 74 (leading critics of sprawl include environmentalists, inner-city advocacy groups, historic preservation advocates, and public transit advocates).

² Id. ("Center-city mayors ...generally hold that sprawl has negatively effected the nation's core cities and continues to drain them of vitality and economic health.")

³ Id. at 75.

⁴ Id. at 11 (in many suburbs, "basic errands are generally too far [from each other] to walk [and] origins and destinations [] are too dispersed for any form of mass transit to make sense.").

⁵ Id. ("Between 1980 and 1997, total annual vehicle miles traveled (VMT) in the [United States] increased by 68 percent.")

⁶ Id. (as VMT increased, "the average annual delay experienced by individual drivers increased by 150 percent.")

⁷ Id. at 76.

⁸ See Michael Lewyn, "New Urbanist Zoning for Dummies" (2006) 58 Ala. L. Rev. 257 at 258 n. 11 (describing non-environmentalist critiques of sprawl in more detail).

⁹ Id. at 259 & n. 15.

of automobile-dependent development, asserting that sprawl is simply “ugly, [producing] nothing in the public realm worthy of aesthetic contemplation.”¹⁰

In response, defenders of the status quo invoke the free market, asserting that “suburbanization and automobile dominance are the result of free-market choices and should be allowed to continue without government regulation.”¹¹ They argue that because sprawl in some form exists in all industrialized countries, sprawl is an inevitable result of freedom and affluence, and is thus essentially unstoppable.¹²

B. What is Sprawl?

There are many definitions of sprawl.¹³ But as suggested above, most anti-sprawl arguments relate to:

1. **Where** land is developed- that is, in newly developing suburbs as opposed to cities and older suburbs;
2. **How** land is developed- in ways that require residents of sprawling areas to get around by automobile rather than by using public transit, their feet or bicycles.

It logically follows that any useful definition of sprawl should relate to these two factors. So for the purposes of this paper I define sprawl as follows: development of land that is (1) far from traditional city cores and/or (2) is oriented towards automobiles rather than other forms of transportation. Thus, a region is most “sprawling” if its traditional central city is in decline and if nearly all of its residents commute by automobile, and is

¹⁰ Id. at 259 (citation omitted).

¹¹ Gillham, *supra* note 1, at 75.

¹² See Robert Bruegmann, *Sprawl: A Compact History* (Chicago: University of Chicago Press, 2006) at 10 (sprawl a “predictable result of increasing wealth”), 169-219 (describing failure of numerous attempts to limit sprawl).

¹³ Gillham, *supra* note 1, at 4 (citing numerous definitions).

“least” sprawling if its central city is growing and if many of its residents commute by public transit or other non-automotive means.

II. Canada and the United States: Brothers in Sprawl?

Based on the definition above, it is certainly possible to compare Canadian regions with their American counterparts. First, the “where” element of sprawl can be compared by examining whether Canada’s urban cores have grown or shrank compared to their American counterparts. Second, the “how” element of sprawl can be compared by examining whether Canadian cities are as automobile-dependent as their American counterparts. Each of these issues will be addressed in turn.

A. *Where We Grow: Comparing American and Canadian Cities*

1. The Decline of American Cities

As noted above, one index of sprawl is inner-city decline: in sprawling metropolitan areas, cities decline, while in less sprawling regions, cities get a share of regional growth.

TABLE 1: Population trends: ten American cities with largest 1950 populations (population in thousands)¹⁴

	1950	1970	2000	Percent gain or loss	Percent gain or loss
	Pop.	pop.	pop.	1950-2000	1970-2000
New York	7891	7895	8008	+1	+1

¹⁴ See William A. McGeeveran Jr., ed., *The World Almanac and Book of Facts* (New York: World Almanac Books, 2003) at 403 (hereinafter “Almanac”); U.S. Bureau of the Census, *Statistical Abstract of the United States* (Washington: Government Printing Office, 1953) at 22-25 (hereinafter “1953 Abstract”); U.S. Bureau of the Census, *Statistical Abstract of the United States: 1973* (Washington: Government Printing Office, 1973) at 22-24. I note that these cities are fairly typical. When areas added in post-1950 annexations is excluded, the population of all central cities with over 50,000 people declined by 17% between 1950 and 1990. See Nathaniel Baum-Snow, Did Highways Cause Suburbanization?, online: http://www.econ.brown.edu/fac/Nathaniel_Baum-Snow/hwy-sub.pdf.

Chicago	3620	3367	2896	-20	-14
Philadelphia	2071	1949	1517	-27	-22
Los Angeles	1970	2816	3694	+87	+32
Detroit	1849	1511	951	-48	-37
Baltimore	949	906	651	-31	-28
Cleveland	914	751	478	-47	-36
St. Louis	856	622	348	-59	-44
Washington	802	757	572	-29	-24
Boston	801	641	589	-26	-8

Table 1 reveals that older American cities collapsed in the second half of the 20th century; eight of the ten largest cities lost population during that period, and one experienced miniscule population gains (New York). The only growing city, Los Angeles, had a significant amount of undeveloped land within its limits, and was thus able to sprawl without losing population.¹⁵

It could be argued that the decline of these cities reflects regional economic decline, rather than sprawl. But the surrounding suburbs of all ten cities grew in the late 20th century, as Table 2 shows:

TABLE 2: Population trends: Metropolitan Area Populations of ten American cities with largest 1950 populations (in thousands): 1950 and 2000¹⁶

	1950	2000
--	------	------

¹⁵ See David Rusk, *Inside Game/Outside Game* (Washington: Brookings Institution Press, 1999) at 131-32 (a city can absorb new development within city limits only if it “had vast amounts of undeveloped land within existing city limits [as Los Angeles did around 1950].”)

¹⁶ See 1953 Abstract, *supra* note 14, at 20-21; U.S. Bureau of the Census, *Statistical Abstract of the United States: 2003* (Washington: Government Printing Office, 2003), at 29-31 (hereinafter “2003 Abstract”). I chose 1950 as a baseline because most of the cities listed gained population before 1950, a fact indicating that sprawl had not yet begun to significantly accelerate until after that point. See 1953 Abstract, *supra* note 14, at 20-21.

New York	12,911	18,323
Chicago	5495	9098
Los Angeles	4367	12,366
Detroit	3016	4453
Baltimore	1337	2553
Cleveland	1465	2148
St. Louis	1681	2699
Washington	1464	4796
Boston	2369	4391

Even in the slowest-growing regions, population expanded: for example, in Detroit and Cleveland the core-city population declined by nearly half between 1950 and 2000, while the regional population expanded by almost half.¹⁷ Thus, it cannot plausibly be argued that sprawl is simply a result of regional decline.

Admittedly, some American cities gained population: in fact, five cities (Houston, Phoenix, San Diego, Dallas and San Antonio) that had fewer than 600,000 people in 1950 had over a million in 2000.¹⁸ However, population-gaining cities were generally elastic cities: that is, cities that annexed vast amounts of territory, and thus were able to accommodate sprawl within existing city limits.¹⁹ Thus, it appears that American cities declined in the late 20th century unless they were able to annex their suburbs.

¹⁷ See Tables 1 and 2 supra. This means that suburban population increased by far more than half, because the statistics in Table 2 include the central city. For example, if central city population is subtracted from the regional totals in Table 2, it becomes apparent that the population of suburban Detroit increased from about 1.1 million to 3.5 million.

¹⁸ See Almanac, supra note 14, at 503.

¹⁹ See Rusk, supra note 15, at 133 (most “elastic” cities generally gained population, while least elastic cities declined); David Rusk, *Cities Without Suburbs*, (Washington: Woodrow Wilson Center Press, 2003) at 140-41 (grading cities on five-point scale from “zero elastic” to “hyperelastic”; Phoenix, San Diego, Houston and San Antonio all hyperelastic, while Dallas in second most elastic “high elastic” category).

2. How Canada Compares

At first glance, Canadian cities appear to have been far more successful than their American counterparts. Table 3 shows population trends in Canadian cities, in order of 1951 population:²⁰

TABLE 3: Population trends: ten Canadian cities with largest 1951 populations (in thousands):²¹

	1951	1971	2001
Montreal	1021	1214	1039
Toronto	675	712	2481
Vancouver	344	426	545
Winnipeg	235	246	619
Hamilton	208	309	490
Ottawa	202	302	774
Quebec City	164	186	169
Edmonton	159	438	666
Calgary	152	403	878
Windsor	120	203	208

²⁰ While the U.S. takes census data in even-numbered years once a decade, Canada takes its census in odd-numbered years. So I have used Canadian 1951 census statistics to correspond to 1950 American census statistics, and Canadian 2001 census statistics to correspond to 2000 American census statistics.

²¹ See Statistics Canada, *Census of Canada, 1951*, online:

<http://www.chass.utoronto.ca/datalib/cc51/census51.htm#nation> (Table 3) (“1951 Census”); Statistics Canada, *Population and Dwelling Counts, for Canada and Census Subdivisions (Municipalities) With 5,000-Plus Populations, 2001 and 1996*, online:

<http://www12.statcan.ca/english/census01/products/standard/popdwell/Table-CSD-N5.cfm> (“2001 Census”). 1971 Statistics are not available online, but are available at Statistics Canada, *Geography, Land Area, And Density of Special Units, 1971 Census, Catalog 98-701* (Ottawa: Statistics Canada, 1974) at 2-14, 19, 24, 28, 31, 34, 43, 45 (“1971 Population and Dwelling”)

At first glance, Canadian cities appear to be far healthier than American cities: every single one of the cities that were among Canada's ten largest in 1950 gained population in recent decades. But many of these cities were highly elastic: that is, they accommodated sprawl by artificially expanding their boundaries to annex suburbs.²² For example, the Toronto of 1951 encompassed 34 square miles, while the Toronto of 2001 encompassed 629 square kilometers²³ (or about 245 square miles).²⁴ Similarly, Calgary expanded from 39 square miles to 270 square miles.²⁵ Because most major Canadian cities have annexed large amounts of rural or suburban territory,²⁶ merely looking at urban population growth understates Canadian sprawl.

There is a way to make Canadian city populations comparable to those of inelastic U.S. cities: by comparing only those areas within 1951 city limits to American cities. For three of Canada's largest cities, I was able to ascertain which of the city's current census tracts were part of the 1951 city.²⁷

²² See Peter J. Smith, "Suburbs", in Trudi Bunting and Pierre Filion, eds., *Canadian Cities in Transition* (Don Mills: Oxford University Press, 2000) 303 at 314 (discussing numerous examples of city/suburb amalgamation).

²³ 1951 Census, supra note 21; 2001 Census, supra. note 21. See also Smith, supra note 22, at 314 (noting that Toronto annexed its innermost ring of suburbs in 1998).

²⁴ One square kilometer is equivalent to roughly 0.38 square miles. See *Re Morley*, 1987 CarswellNS 560 at para. 5 [1987] (9.9 square kilometers equal to 3.8 square miles).

²⁵ 1951 Census, supra note 21.; 2001 Census, supra note 21; supra note 24.

²⁶ The only inelastic large Canadian city is Vancouver, which encompassed 43.7 square miles in 1951 and 44.2 in 2001. By contrast, square mileage totals for the other large cities was as follows: Toronto, 34.9 in 1951 to 243 in 2001; Calgary, 39.6 in 1951 and 271 in 2001, Windsor, 14.8 in 1951 and 46.5 in 2001; Quebec City, 8.9 in 1951 and 35.8 in 2001; Montreal, 50.4 in 1951 and 71.7 in 2001; Edmonton, 40.5 in 1951 and 264 in 2001; Hamilton, 21.9 in 1951 and 431.3 in 2001; Ottawa, 42.5 in 1951 and 1072.8 in 2001; Winnipeg, 25 in 1951 and 179.5 in 2001. 1951 Census, supra note 21; 2001 Census, supra note 21.; supra note 24.

²⁷ These three cities did not annex any territory between 1951 and 1971. See 1971 Population and Dwelling, supra note 21, at 2- 28, 31, 45 (listing land area for these cities, and showing that cities' land area was nearly identical to its 1971 land area). Thus, I was able to ascertain which areas were part of the city in both 1951 and 1971. And I was able to ascertain the 2001 population for those census tracts, because Canada lists its 1971 tracts in recent censuses. Specifically, if a Canadian city had 140 tracts numbered 1-140 in 1971, and 200 tracts numbered 1-200 in 1971, tracts 1-140 were the same tracts listed in 1971, and tracts 141-200 were annexed thereafter. See Statistics Canada, *Profile of Census Tracts in Calgary*, Cat. No. 95-243 XPB (Ottawa, Statistics Canada, 1974) at 1 ("For the 1971 census, the census tract numbering

TABLE 4: Population trends in large Canadian cities, 1951-2001 (in thousands)

(excluding census tracts²⁸ annexed after 1951)

	1951	1971	2001 ²⁹
Toronto	675	712	676
Vancouver	344	426	538
Ottawa	202	302	337

Table 4 shows that none of the three cities listed suffered from anything resembling the precipitous population loss suffered by American cities. One city (Toronto) essentially stagnated, and two (Ottawa and Vancouver) grew.

And because 1971 census tracts, unlike 1951 census tracts, are essentially comparable to 2001 tracts,³⁰ I was able to ascertain the 2001 populations of the neighborhoods within Canadian cities' 1971 limits, thus allowing me to disregard the effects of post-1971 annexations.

TABLE 5: Population trends in selected Canadian cities, 1971-2001 (in thousands)

(excluding census tracts annexed after 1971).³¹

	1971	2001	Population increase/decline
Toronto	712	676	-5
Vancouver	426	538	+26

system was completely revised, *and a uniform system to allow for comparability with future censuses was adopted.*") (emphasis added)

²⁸ Census tracts "are small neighborhood-like areas into which metropolitan areas have been divided [by census agencies] for data reporting and analysis purposes." Robert A. Murdie and Carolos Teixeira, "The City As Social Space" in Bunting and Filion, *supra* note 22, at 198, 219-20 n. 2.

²⁹ Data for all three cities are the same as in Table 3 above. I obtained 2001 data by reviewing a printout generally supplied by Laine Ruus of the University of Toronto library (available upon request) (hereinafter "Population Printout").

³⁰ See *supra* note 27 (explaining how I was able to exclude tracts added to these cities after 1971).

³¹ See 1971 Population and Dwelling, *supra*. note 21 (data for 1971); Population Printout, *supra*.note 29 (2001 data).

Ottawa	302	337	+12
Windsor	203	208	+2
Winnipeg	246	206	-16
Calgary	403	878	+118
Edmonton	438	633	+44
Hamilton	309	331	+7
Montreal	1214	990	-18
Quebec City	186	159	-14

Table 5 shows a mixed picture: some cities continued to grow rapidly within their 1971 borders.³² But even the weakest cities experienced nothing like American levels of depopulation: while Montreal and Quebec City lost 18 and 14 percent of their population respectively between 1971 and 2001, St. Louis had lost 44 percent of its 1970 population by 2000,³³ and Cleveland and Detroit had lost over 30 percent.³⁴

³² Although in at least one case, the city's growth is partially due to the existence of undeveloped land within its borders. See Donna L. Erickson, "The relationship of historic city form and contemporary greenway implementation: a comparison of Milwaukee, Wisconsin (USA) and Ottawa, Ontario (Canada)", (2004), 68 *Landscape and Urban Planning* 199 at 215 (because Ottawa has annexed much rural territory, area within city limits is now "90% rural").

³³ See Table 1, *supra*.

³⁴ Id. On the other hand, I note that one study showed that census tracts dominated by pre-1946 structures have lost population everywhere but Vancouver. See Trudi Bunting, Pierre Fillion, & Heath Priston, "Changing Patterns of Residential Centrality: Population and Household Shift in Large Canadian CMAs, 1971-96" (2000) 44 *Cahiers de Geographie du Quebec* 341, 351 (also available online at <http://www.erudit.org/revue/cgq/2000/v44/n123/022925ar.pdf>). This study showed 1971-96 population losses ranging from 1 percent (in Calgary) to 35 percent (in Quebec City) for these older neighborhoods. Id. However, this study does not eliminate the differences between American and Canadian cities, for two reasons. First, this statistic is not comparable to American city statistics, because even the most rapidly declining cities have many neighborhoods dominated by post-1946 housing. See Oviatt Library, *Finding Census Tract Data on the Internet*, online: <http://library.csun.edu/mfinley/census90.html> (directions for finding data); U.S. Census Bureau, *Detailed Tables, American Factfinder, Table H35*; online: http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&lang=en&ts=281376275609 (in 29 of 113 St. Louis census tracts, median housing unit built after 1946). Second, the study at issue showed that pre-1946 census tracts actually **gained** households in most Canadian cities, thus suggesting that any population loss is a function of declining household size rather than urban decay. By contrast, household size data suggests that older American cities have lost households as well as people. For example, the number of households in St. Louis declined from 215,479 in 1970 to 147,286 in 2000,

Thus, Canadian cities, as a group, tend to be better off than American central cities. This does not mean that there was no suburban growth in Canada: even where central cities have grown, suburbs have grown faster.³⁵ But there **has** been central city growth, to a greater extent than in the United States. And even Canada's most sluggish central cities have not weathered suburbanization as poorly as many older American cities.³⁶

B. How We Grow: Comparing American to Canadian Cities

from 248,280 to 190,725 in Cleveland, and from 497,753 to 336,482 in Detroit. See U.S. Census, *Census of Population and Housing, 1970 Census*, online:

http://www.census.gov/prod/www/abs/decennial/1970cenpophouse_phc1.htm (click links within documents to find census tract data for individual cities, then go to Table P-1 and look for number of heads of households); U.S. Census Bureau, *American Fact Finder*, online:

http://www.factfinder.census.gov/home/saff/main.html?_lang=en (to find data for individual cities, go to "Get A Fact Sheet For Your Community" link, and type in city and state for which data sought; to find number of households in a city, click on "2000" link, then "Show More" Economic Characteristics link; number of households is first statistic in bold below "Income in 1999").

³⁵See Bunting and Filion, *supra* note 22, at 354 (Montreal's suburbs grew by 26 percent between 1971 and 1996, and other major Canadian cities' suburbs grew even more rapidly). See also Andrew Heinsz, *Ten Things To Know About Canadian Metropolitan Areas: A synthesis of Statistics Canada's Trends and Conditions in Census Metropolitan Areas Series*, at 25, online:<http://dsp-psd.pwgsc.gc.ca/Collection/Statcan/89-613-MIE/89-613-MIE2005009.pdf> (during 1990s, cities within 5 kilometers of city centre gained population, but even where this was so, rest of metropolitan area grew more rapidly).

³⁶Because of the difficulty of finding data on changes within city limits, I have not been able to assemble a comprehensive selection of data from major European cities. But based on my limited research, it seems that European central cities, like U.S. cities, tended to lose population in the late 20th century. See Denise Pumain, "Urban Sprawl: Is There A French Case?" in Harry W. Richardson and Chang-Hae Christine Bae, eds., *Urban Sprawl in Western Europe and the United States* (Burlington: Ashgate Publishing, 2004) at 137, 144 (French central cities typically gained population between 1968 and 1975, lost population between 1975 and 1990, and gained population again during 1990s); Jean-Marie Huriot, "Concentration and Dispersal of Employment in French Cities" in Richardson and Bae, *supra*. at 159, 164 (Paris had 2.8 million inhabitants in 1960 and only 2.1 million in 2000); Oriol Nello, Urban dynamics, public policies and governance in the metropolitan region of Barcelona, Tim Marshall, ed., *Transforming Barcelona*, at 27, 29-31 (London: Routledge, 2004) (city of Barcelona grew in 1960s and 1970s, but has lost almost 250,000 inhabitants in 1980s and 1990s; most other major Spanish cities have also lost people); Maarten Loopmans, Sarah Luyten and Christian Kesteloot, "Urban Policies in Belgium: A Puff Pastry With A Bitter-Sweet After-Taste?" in Leo Van Den Berg, Erik Braun & Jan Van Den Meer, eds., *National Policy Responses to Urban Challenges in Europe* (Burlington: Ashgate Publishing, 2007) at 79, 104 (between 1970 and 2003, Brussels population declined from 1.07 million to 0.99 million); Christian Wichmann Matthiessen, Denmark's National Urban Showcase: The Oresund Area Regional Development, at 105, 124 in Van Den Berg, Braun & Van Den Meer, *supra*. (Copenhagen population declined from 1.45 million in 1970 to 1.33 million in 1990, but has rebounded to 1.39 million from 1990 to 2001. But see Michael Lewyn, "Sprawl in Europe and America" (2009) 46 San Diego L. Rev. 85 at 95 (most European cities rebounded in 1990s and 2000s).

The term “sprawl” can also refer to **how** urban areas grow: automobile-oriented development as opposed to transit and pedestrian-oriented development. And because many of the alleged disadvantages of sprawl are related to the growth of automobile traffic, such a definition of sprawl may be more useful than one focused solely on neighborhood change. The most sprawling regions are oriented around the automobile, while less sprawling regions accommodate nondrivers as well as drivers.

Table 6 compares Canadian commuting patterns with those of the United States.

TABLE 6: Usual mode of transport for work commute, by percentage and nation³⁷

	Driving	Public Transit	Walking	Bicycling/other
U.S.	89.6	6.1	2.6	1.7
Canada	77.4	14.8	5.7	2.1

As Table 6 shows, Canadians are more likely than not to drive to work- but are significantly more likely to commute via public transit than Americans. However, Canadians are still more automobile-dependent than Europeans: while $\frac{3}{4}$ of Canadian trips are taken by car, only 42% of Danish trips, 44% of Dutch trips, 46% of Swiss trips, 49% of German trips, 56% of French trips, and 65% of British trips involve cars or trucks.³⁸

Another way to compare Canadian and American regions is to look at individual large cities or metropolitan areas. Table 7 shows the difference:

³⁷ See Kim England and John Mercer, “Canadian Cities in Continental Context: Global and Continental Perspectives on Canadian Urban Development” in Bunting and Filion, *supra* note 22, at 24, 30. (U.S. and Canadian statistics).

³⁸ See Lewyn, *supra* note 36, at 91.

TABLE 7 Usual mode of transport for work commute, by percentage, Canadian and U.S. metropolitan areas³⁹

	Driving	Public Transit	Walking/Bicycling/Other	
Largest ⁴⁰ Canadian metro areas				
Toronto	71.1	22.2	4.8	1.9
Montreal	70.4	21.4	5.7	2.5
Calgary	76.6	15.6	5.4	2.7
Ottawa	70.7	19.4	6.8	3.1
Edmonton	82.8	9.7	5.1	2.3
Winnipeg	78.7	13.0	5.8	2.5
Vancouver	74.4	16.5	6.3	2.8
Largest American metro areas				
Chicago	81.5	11.0	3.1	1.0
Dallas	92.8	1.8	1.5	1.0
Houston	91.2	3.3	1.6	1.3
Los Angeles	87.6	4.7	2.6	1.6
New York	65.7	24.9	5.6	0.9
Philadelphia	83.6	8.7	3.9	1.0
Phoenix	90.1	3.3	2.2	2.2

³⁹ For American data, go to U.S. Census Bureau, *Statistical Abstract of the United States: 2004-05* (Washington: Government Printing Office, 2004-05), at 695 ("2004-05 Abstract"). For Canadian data, go to Statistics Canada, *Commuting Patterns and Place of Work of Canadians, 2006 Census*, Catalog No. 97-561-X at 27-29, 31 (online at <http://www12.statcan.ca/english/census06/analysis/pow/pdf/97-561-XIE2006001.pdf>) ("2006 Commuting Patterns"). I note that U.S. totals do not add up to 100 percent because the U.S. census adds the "worked at home" category, which is not in the Canadian census.

⁴⁰ For the purposes of this table and those below, I have chosen to focus on the Canadian regions with over 300,000 core city commuters, and the North American regions with over 500,000 such commuters. See 2004-05 Abstract, *supra* note 39, at 695 (listing number of core city commuters in table); 2006 Commuting Patterns, *supra* note 39, at 36 (doing the same for Canadian cities).

San Diego	86.9	3.4	3.4	1.9
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With the exception of New York, American metro areas tend to be far more car-dependent than their Canadian counterparts. The American region with the second highest transit ridership (Chicago) has lower ridership than six of Canada's seven largest regions. The Canadian region with the lowest ridership (Edmonton) still has higher ridership than six of the eight American regions listed. Moreover, Canadian transit ridership, after declining for some years,⁴¹ actually rose faster than driving in the late 1990s and early 2000s.⁴²

Table 8 compares Toronto and Montreal (Canada's two least vehicle-dependent regions) with selected European metropolitan areas.

TABLE 8 Canada and Europe compared: percentage of journeys to work by car, selected metropolitan areas⁴³

Toronto 71

Montreal 71

Brussels 62

⁴¹ See Parsons Brinckerhoff Quade & Douglas, Inc. and John Pucher, *Consequences of the Interstate Highway System for Transit: Summary of Findings*, at 41, online: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_42.pdf (Canadian transit boardings declined by over one-third between 1950 and 1960, rose from 1960 to 1990, and declined again in early 1990s); Edmund P. Fowler and Jack Layton, "Transportation Policy in Canadian Cities", in David Siegel and Edmund P. Fowler, eds., *Urban Policy Issues: Canadian Perspectives*, at 108, 112 (New York: Oxford University Press, 2001) (chart showing that from 1950 to 1975, per capita transit ridership consistently declined, i.e. that transit use rose, if at all, more slowly than population).

⁴² See 2006 Commuting Patterns, supra note 39, at 28-29 (in most Canadian metropolitan areas, percentage of workers using public transit rose between 1996 and 2006; for example, transit "market share" rose from 12.6% of commuters to 15.6% in Calgary, 9% to 9.7% in Edmonton, 14.3% to 16.5% in Vancouver, 17.2% to 19.4% in Ottawa, 22.0% to 22.2% in Toronto, 20.2% to 21.4% in Montreal, 8.0% to 8.7% in Hamilton, and 9.2% to 10.2% in Quebec City; among metropolitan areas listed in Table 7 above, transit market share declined only in Winnipeg).

⁴³ Canadian statistics are from Table 7 supra. European statistics are from Urban Audit, *City Profiles*, online: <http://www.urbanaudit.org/CityProfiles.aspx> (to find statistics for individual city, select nation and city; "Transport and Travel" is last listing in "City and LUZ Level" set of tables, and LUZ (Larger Urban Zone) listed on right side of page).

Copenhagen 52

Berlin 53

Madrid 54

Rome 60

Amsterdam 51

Stockholm 48

Zurich 45

As Table 8 shows, most of Canada occupies a kind of middle ground between the United States and Europe: more car-dominated than large European cities, but less so than most American regions.

Because Tables 7 and 8 compare urban regions as a whole, they may include semi-rural suburbs with minimal or no transit service. Table 9, by contrast, focuses on areas within central city limits.

TABLE 9 Percentage of commuters driving to work, major Canadian, U.S. and European cities⁴⁴

Canadian cities

Toronto 56

Vancouver 56

Montreal 58

⁴⁴ For American data, go to 2004-05 Abstract, supra note 39, at 695. For Canadian data, go to 2006 Commuting Patterns, supra note 39, at 36. For European cities, go to City Profiles, supra note 43. For this table, I have chosen to list only the percentage of commuters driving so that I could place European and American cities in the same table, since I do not have transit statistics listing every mode of transport for European cities. Cf. Robert Dunphy, *Developing Around Transit: Strategies and Solutions That Work* (Washington: Urban Land Institute, 2005) at 17 (table showing transit ridership for various Canadian and American cities and metro areas; showing that regional ridership higher in Canada than for all American regions but New York, central city ridership higher in Toronto and Montreal than for all American cities but New York, and ridership in Ottawa, Vancouver, Calgary and Edmonton higher than in majority of American cities).

Ottawa	69
Calgary	74
Winnipeg	78
Edmonton	79
American cities	
New York	32
Philadelphia	62
Chicago	64
Los Angeles	80
San Diego	86
Houston	87
Dallas	88
Phoenix	89
European cities	
Zurich	24
Copenhagen	26
Stockholm	33
Amsterdam	41
Berlin	44
Madrid	47
Brussels	53
Rome	57

Table 9 shows that central city commuting patterns follow the same outline as regionwide commuting. In several of America's large cities, over 80% of commuters drive to work, while this is not true for any of Canada's largest cities. On the other hand, Canadian cities are certainly more car-oriented than European cities: while a majority of commuters drive to work in every single Canadian city, this is not the case in most European cities.⁴⁵

Other means of measurement show similar results. For example, one study showed that in 1991, the average person uses public transit between 69 and 154 times in the largest Canadian regions⁴⁶ - far more than in Phoenix (9 rides/person) but far less than in Vienna (313 rides/person) or Tokyo (472 rides/person).

In sum, Canadian transportation patterns differ quite significantly from those of the United States: while American cities are often so sprawling that the overwhelming majority of commuters drive to work, this is far less true in Canada. On the other hand, Canadians do drive more than Europeans.

III. How Government Causes Sprawl in Canada as well as the United States

It has been argued that the existence of some sprawl-like development outside the United States is proof that sprawl is inevitable in a market economy. For example, Robert Bruegmann, a proponent of this "Inevitability Theory" argues that even in Europe (which, as noted above, is less automobile-dependent than the United States and

⁴⁵ It could be argued that this difference is due to Canadian cities' annexation of significant amounts of auto-oriented suburban territory. See *supra* notes 24-26 and accompanying text (describing annexations). But even Vancouver, Canada's most inelastic large city, see *supra* note 26, has an automobile "market share" of 56%, larger than most major European cities. See Table 9 *supra*.

⁴⁶ See Layton and Fowler, *supra* note 41 at 114-15 (yearly transit rides per person are 128 for metro Toronto, 154 for metro Montreal, 94 for Vancouver, 69 for Calgary, 133 for Ottawa, and 87 for Winnipeg).

Canada)⁴⁷ affluent households have sought to move away from central cities since the days of the Roman Empire,⁴⁸ and modern affluence is moving Europe towards ever-greater suburbanization.⁴⁹

Similarly, Peter Gordon and Bumsoo Lee argue that the existence of some suburban growth in Canada suggests that sprawl is an inevitable result of the free market. These commentators reason as follows:

Premise: Canadian land use regulation is more restrictive than that of the United States (thus discouraging suburban development),⁵⁰ and Canadian gasoline prices are higher (thus discouraging driving);⁵¹

Premise: Nevertheless, Canada is similar to the United States in many ways: although its cities have grown, its suburbs have grown faster,⁵² most Canadians drive to work,⁵³ and transit ridership fell during the 1980s and early 1990s.⁵⁴

⁴⁷ See Tables 8-9 supra.

⁴⁸ See Brueggemann, supra note 12, at 23-24.

⁴⁹ Id. at 10-11, 73-78, 201-02 (describing suburbanization in Europe). See also Randal O'Toole, *The Best-Laid Plans* at 109 (Washington: Cato Institute, 2007) ("European cities are looking more American every year"). But see Lewyn, supra note 36, at 90-101 (rejecting theory, based on differences between Europe and United States, recent resurgence of European urban cores, and recent growth in European mass transit ridership).

⁵⁰ Peter Gordon and Bumsoo Lee, *Settlement Patterns in the U.S. and Canada: Similarities and Differences- Policies or Preferences?*, at 2, online: <http://www-rcf.usc.edu/~pgordon/pdf/USCanada082903.pdf> ("Local government land use planning in Canada is much more potent than in the U.S.")

⁵¹ Id. Gordon and Lee also suggest that Canadian tax policy favors homeownership less than American tax policy. Id. ("The less centralized Canadian tax system obviates the importance of federal tax policy [favoring] home ownership.") But since Canadians are in fact as likely to own homes as Americans, this difference is not even relevant to home ownership, let alone sprawl. See Michael Babad, "Three Stats You Just Can't Be Without On A Saturday: The Week in Economics", *The Globe and Mail*, (7 June 2008) B15 (68.4 percent of Canadian households own houses as opposed to 67.9 percent of Americans).

⁵² Gordon & Lee, supra note 50, at 8 ("the suburbs of Canada's major cities added more people than the central cities...")

⁵³ Id. at 10.

⁵⁴ Id. at 9 (during 1987-97, Canadian per capita transit ridership fell). As noted above, this data is obsolete. See supra note 42 and accompanying text (describing rise in Canadian transit ridership over the past decade).

Conclusion: if even Canada's policies are insufficient to prevent sprawl, sprawl must be a result of consumer preferences as expressed in the free market.⁵⁵

But this chain of logic includes an implicit assumption: that Canada's allegedly anti-sprawl public policies are not counterbalanced by pro-sprawl public policies. As will be shown below, this argument is not necessarily supported by the facts. In fact, Canadian government policies support sprawl in a wide variety of ways:⁵⁶ both through transportation and zoning policies that encourage migration to suburbia, and through zoning and land use policies that make suburban development more automobile-dependent than might be the case in a truly free market.

A. *Where We Grow: Creating Sprawl Through Highways And Zoning*

In both Canada and the United States, government builds highways from city to suburb, and enacts land use regulations that limit density. Both policies encourage migration from city to suburb.

1. Highways

Like American government,⁵⁷ Canadian government supports highways more generously than public transit: in 2007, all levels of Canadian government spent \$20.8

⁵⁵ Id. at 2 (suburban development outside the United States evidence that "many people's preferences regarding residential lifestyles are fairly clear and strong enough to overcome the various policies designed to overcome them.")

⁵⁶ This is not to say, of course, that government policy is the only cause of sprawl. However, a comprehensive assessment of the causes of sprawl, and of the causes of differences between the United States and Canada, is beyond the scope of this paper. Moreover, such an assessment would be unlikely to yield a clear conclusion, since there is no obvious way to weigh the impact of individual factors.

⁵⁷ See Sam Schwartz, Gerard Soffian, Jee Mee Kim, & Annie Weinstock, "A Comprehensive Transportation Policy for the 21st Century: A Case Study of Congestion Pricing in New York City" (2008), 17 N.Y.U. Envtl. L.J. 580 at 587 (from 2005 to 2009, federal government spent \$201 billion on highways and \$46 billion on transit); U.S. Census Bureau, State and Local Governments- Expenditures for Public Works: 2000 to 2006, online: <http://www.census.gov/compendia/statab/2010/tables/10s0426.pdf> (in 2006, American state and local governments spent \$135 billion on roads and \$46 billion on transit).

billion on highways and \$4.4 billion on public transit.⁵⁸ In fact, Canada actually has more highways per capita than the United States.⁵⁹ The discussion below will show how highway policy has varied among Canadian cities, and suggest some policy consequences of these differences.

a) A Canadian Comparison: Toronto vs. Vancouver

The province of Ontario has subsidized suburban road construction since 1927, when the province paid 40 percent of the cost of road construction and 20 percent of the cost of road maintenance.⁶⁰ In addition, the province required the city of Toronto to help pay for suburban roads, on the ground that the city generated traffic that led to suburbia.⁶¹

In 1942, the city of Toronto created the Toronto City Planning Board,⁶² which adopted a plan proposing six new expressways.⁶³ The Toronto City Council formally endorsed the plan in 1944,⁶⁴ and many of these highways were in fact built. Toronto's Highway 400⁶⁵ was open by 1959⁶⁶ as was Highway 401.⁶⁷ These new highways made it easier for suburban commuters to access downtown, thus encouraging additional suburban development.⁶⁸ As a result, the new highways soon became crammed with

⁵⁸ Transport Canada, Table G5, *Transport Expenditure and Revenues by Mode and Levels of Government, 1999/2000 to 2008/2009*, online: <http://www.tc.gc.ca/policy/report/aca/anre2008/add/table-g5.html>

⁵⁹ See Gordon and Lee, *supra* note 50, at 7.

⁶⁰ See John Sewell, *The Shape of the Suburbs: Understanding Toronto's Sprawl* (Toronto: University of Toronto Press, 2009) at 14.

⁶¹ *Id.*

⁶² *Id.* at 30.

⁶³ *Id.* at 33.

⁶⁴ *Id.* at 34.

⁶⁵ *Id.* at 63.

⁶⁶ *Id.* at 64 (highway "recently opened" by 1959).

⁶⁷ *Id.* at 63.

⁶⁸ *Id.* at 64 ("new highways signaled that the fringes could now easily access downtown, and development proceeded accordingly").

suburban commuters. For example, Highway 401 was planned to accommodate 35,000 vehicles per day- but by 1961, it was used by 70,000 vehicles per day.⁶⁹

Nevertheless, Ontario's provincial government⁷⁰ continued to build highways into the hinterlands beyond Toronto. The Don Valley Parkway opened in the 1960s,⁷¹ and a decade later was extended into Toronto's northern suburbs as Highway 404.⁷² Highway 427, west of the city,⁷³ opened in 1972.⁷⁴ The province built Highway 410 to Brampton (a city northwest of Toronto)⁷⁵ during the 1980s,⁷⁶ as well as Highway 407, also north of the city.⁷⁷

These highways appear to have attracted commercial as well as residential development to suburbs served by those highways. For example, three of Toronto's major employment clusters are along its numbered highways: one along 401, one along 427, and one at the junction of 401 and 404.⁷⁸ These three clusters alone have attracted over 100,000 jobs.⁷⁹

Moreover, the experience of Vancouver may suggest that a city that is more reluctant to build expressways will be more prosperous and populous than one that builds

⁶⁹Id. at 67.

⁷⁰In Canada, provinces are primarily responsible for highway finance. *Id.* at 63 ("roads constituted the largest source of provincial spending" in the 1950s), 70 ("the expressway system that the province had built was its key planning tool.")

⁷¹Id., at 67.

⁷²Id.

⁷³Id.

⁷⁴Id. at 70.

⁷⁵See Allison Jones, "Lightning strike leaves two young boys clinging to life", *The [Guelph] Mercury* (13 August 2009) A6, 2009 WLNR 15749851 (Brampton "45 kilometres northwest of Toronto"). 45 kilometres is roughly comparable to 25-30 miles. See Goh Yihan, "Tort Law in the Face of Land Scarcity in Singapore," (2009) 26 *Ariz. J. of Int'l and Comp. L.* 335 at 339 (42 kilometres equal to 26 miles).

⁷⁶See Sewell, *supra* note 60, at 70.

⁷⁷Id. at 57, 72.

⁷⁸See Andrew Heisz and Sebastien LaRochelle-Cote, *Work and Commuting in Census Metropolitan Areas, 1996-2001*, at 26, 34, online: <http://dsp-psd.pwgsc.gc.ca/Collection/Statcan/89-613-MIE/89-613-MIE2005007.pdf> (listing eight clusters, and identifying three of them with highways).

⁷⁹Id. at 34 (adding up figures listed in table).

highways to the hinterlands. Vancouver has never developed a regional freeway network,⁸⁰ has no expressways running through its downtown,⁸¹ and has also avoided widening downtown streets to accommodate suburban commuters.⁸² The population within Vancouver's 1950 city limits has grown by over 50% since 1950, while Toronto's traditional urban core (that is, the portion of the city lying within its 1950 limits) has stagnated.⁸³ Moreover, Vancouver's growth has not been limited to the city's outer edges: the population of downtown Vancouver increased from 40,000 in the mid-1980s to 70,000 in 2003.⁸⁴

b) Policy Consequences

If highways encourage people to move to suburbia, it seems that a region that wishes to limit sprawl and prevent depopulation of its existing neighborhoods will stop building city-to-suburb highways, or at a minimum keep limited-access highways out of its urban core (as Vancouver has done).

Some commentators suggest, however, that the apparent causal relationship between highways and sprawl is purely coincidental, because consumers would naturally prefer the extra living space and cheaper land of suburbia regardless of convenience.⁸⁵ But this argument proves too much: if transportation facilities did not affect where people lived, every suburb would be as popular as it is today even if it was accessible only

⁸⁰ See Lance Berelowitz, *Dream City* (Vancouver: Douglas & McIntyre, 2005) at 80 ("Unlike most North American cities, Vancouver has never developed a comprehensive regional freeway network.")

⁸¹ See Maria Saporta, "The Road Not Taken In Growth", *[Atlanta] Journal and Constitution*, (28 May 2007), B3, 2007 WLNR 9980127 (Vancouver "the only North American city of any consequence without an interstate [highway] at its core.")

⁸² See Berelowitz, *supra* note 80, at 219 (city has adopted policy of "not building additional bridges or traffic lanes" downtown).

⁸³ See Table 4 *supra*.

⁸⁴ See Berelowitz, *supra* note 80, at 218.

⁸⁵ See Gordon and Lee, *supra* note 50, at 2 (making argument). Cf. Bruegmann, *supra* note 12, at 10-11 (suggesting that sprawl a result of increased affluence), 108 (highways may have even helped cities by making them easier to reach).

through two-lane dirt roads- obviously an absurd result. Moreover, surveys of homeowners show that many homeowners prefer locations with highway access-⁸⁶ which means that in the absence of such access, many suburbs would be less popular with homeowners.

Data as well as common sense supports the view that highways depopulate cities. Nathaniel Baum-Snow of Brown University recently sought to measure the relationship between limited-access highways and urban decline. By comparing highway construction and population decline in a number of American metropolitan areas, he concluded, even after controlling for regional size and income,⁸⁷ that “each new highway causes constant geography central city population to decline by about 18 percent, all else equal.”⁸⁸ Had the U.S. interstate highway system not been built, American central city population would have grown by 8 percent rather than declining by 17 percent.⁸⁹ Moreover, the location of highways accurately predicts the location of suburbanization: suburbs built near highways had higher population growth in the late 20th century than other suburbs and neighborhoods.⁹⁰ For example, Baum-Snow notes that after Austin, Texas built a north-south highway (Interstate 35) in 1950s, “nearly all of the new

⁸⁶ See Ralph Bivins, “Las Vegas To Get Metropolis Condo Transplant”, *[Houston] Chronicle* (30 March 2003) 8, 2003 WLNR 16439507 (“The most important characteristic of a housing community is convenient highway access, according to a recent survey of home buyers. Forty-four percent of buyers surveyed ranked highways as a very important characteristic, said the survey conducted by the National Association of Home Builders.”). Cf. Baum-Snow, *supra* note 14, at 2 (estimating that each new limited-access highway, other factors being equal, causes central city population to decline by 18 percent).

⁸⁷ See Baum-Snow, *supra* note 14, at 12.

⁸⁸ *Id.* at 2.

⁸⁹ *Id.*

⁹⁰ *Id.* at 11 (“portions of [American metropolitan areas] near highways built between 1970 and 1990 had faster population growth than other areas.”)

residential development between 1950 and 1990 occurred along the north-south highway and not in the east-west direction.”⁹¹

It could also be argued that regardless of highways’ impact on sprawl, governments should build highways in order to relieve regional traffic congestion. But if, as suggested above, a city-to-suburb highway encourages commuters to move to suburbs along that road, the highway will make those suburbs more congested- thus merely relocating, rather than reducing, congestion.⁹²

In sum, more highways mean more sprawl, and fewer highways mean less sprawl. So a city or province that wants less sprawl and less core-city depopulation should build fewer highways.

2. How Zoning Depopulates Cities

In both Canada⁹³ and the United States,⁹⁴ cities limit residential and commercial density through a wide variety of techniques, such as minimum lot size requirements⁹⁵ and minimum parking requirements.⁹⁶ By limiting the supply of land available for residential and commercial development, these regulations reduce population and employment within central cities.

⁹¹ Id. at 10.

⁹² See Michael Lewyn, “Suburban Sprawl: Not Just An Environmental Issue”, (2000) 84 Marq. L. Rev. 301, at 367-70 (making point, and noting that the American metropolitan areas that had built the most roads had not always been the most successful in limiting traffic congestion). I refer to “city-to-suburb” highways because a road linking two suburbs may not always accelerate sprawl. For example, if both suburbs are already-developed inner suburbs, the highway might not affect development of outer suburbs.

⁹³ See Part III-A-2(c) supra. (describing examples of Canadian anti-density zoning).

⁹⁴ See Richard Briffault, “Smart Growth and American Land Use Law”, (2002) 21 St. Louis U. Pub. L. Rev. 253 at 253 (“Hallmarks of American land use law ...[include] reducing population density”).

⁹⁵ Edward H. Ziegler, Jr., Arden H. Rathkopf, and Darren A. Rathkopf, *Rathkopf's The Law of Zoning and Planning*, vol. 2 (Eagan: West Group Publishing, 2009) § 21:66 (in the United States, “Zoning and subdivision ordinances typically require minimum lot sizes”); Howard M. Epstein, “Subsidiarity at Work — The Legal Context for Sustainability Initiatives at the Local Government Level: How an environmental agenda could be advanced by Canadian municipalities”, (2009), 63 M.P.L.R. (4th) 56, 104 (In Canada, “major aspects of modern zoning extend to height and angle controls, setbacks from property lines, *lot dimensions*, location of buildings on lots, density and floor area ratio controls”)...

⁹⁶ See infra Part III-A-2(b) infra. (describing effects of minimum parking requirements).

a) Limiting residential density

Canadian cities typically regulate residential density in a variety of ways. For example, slow-growing⁹⁷ Hamilton, Ontario limits density in its residential zones⁹⁸ through minimum lot sizes and height restrictions. In its “suburban residential zone”, the minimum lot size is just over 5800 square feet,⁹⁹ or roughly one-seventh of an acre.¹⁰⁰ In Hamilton’s most compact single-family zone (its “small lot single family dwelling” zone)¹⁰¹ the minimum lot size is 278 square meters¹⁰² (or 2991 square feet).¹⁰³ Even in its “High Density Multiple Dwelling”¹⁰⁴ zone, the city limits density by prohibiting buildings taller than 18 stories,¹⁰⁵ and by requiring buildings to set aside space for front and rear yards,¹⁰⁶ as well as other landscaping comprising 40 percent of the total building area.¹⁰⁷ Such anti-density regulations exist even in cities more compact than Hamilton: for example, Toronto (one of Canada’s more compact cities)¹⁰⁸ has a zone in which homebuilders are limited to building 20 dwelling units per hectare,¹⁰⁹ or 8 per acre.¹¹⁰

⁹⁷ See Table 5, *supra*. (census tracts that were part of city in 1971 increased in population by only 7% between 1971 and 2001).

⁹⁸ See generally City of Hamilton, By-Law No. 6593, *The Zoning By-Law of the City of Hamilton*, Secs. 8-11, online at <http://www.hamilton.ca/CityDepartments/PlanningEcDev/FormerZoningByLaws/By-LawNo6593.htm> (listing numerous residential districts) (“Hamilton Zoning”).

⁹⁹ *Id.*, sec. 8B(4) (minimum lot size of 5812.7 square feet).

¹⁰⁰ Arthur Allen Leff, “The Leff Dictionary of Law: A Fragment” (1985) 94 Yale L.J. 1855 at 1905 (defining one acre as containing 43,560 square feet).

¹⁰¹ Hamilton Zoning at sec. 9A.

¹⁰² *Id.*, sec. 9A(2)©(2).

¹⁰³ One square meter is 10.76 square feet. See Goh Yiyan, “Tort Law In The Face of Land Scarcity in Singapore”, (2009), 26 *Ariz. J. Int’l & Comparative L.* 335, at 343. Thus, 278 square meters is 2991 square feet.

¹⁰⁴ Hamilton Zoning at sec. 11C.

¹⁰⁵ *Id.*, sec.. 11C (1)(1a) ©.

¹⁰⁶ *Id.*, sec. 11C (2).

¹⁰⁷ *Id.*, sec. 11C (5).

¹⁰⁸ See *infra* Table 11 (among Canada’s largest cities, only Montreal is more dense).

¹⁰⁹ *2081679 Ontario Ltd. v. Toronto*, 2007 CarswellOnt 8107 [2007] (rejecting rezoning to higher density).

¹¹⁰ A hectare is roughly 2.5 acres. See Robert DeLay, “Our Post-Kyoto Climate Change Framework: Open-Market Carbon Ranching As Smart Development” (2008) 17 *Penn St. Envtl. L. Rev.* 55 at 73. Thus, 20 units per hectare equals 8 units per 2.5 acres, or 8 units per acre.

By limiting the number of houses or apartments that can be built on a tract of land, a city reduces the amount of dwelling units available, and thus increases the price of the remaining units.¹¹¹ And if people cannot find places to live in the city neighborhoods they prefer, they will find cheaper or more abundant housing in suburbs. Thus, zoning that limits the supply of city housing reduces urban, and increases suburban, population.

There is no way of knowing how populous Canadian cities would be in the absence of anti-density zoning. However, the example of Vancouver suggests that a city that accommodates intown development can grow.¹¹² Throughout the past half century, Vancouver has:

*upzoned existing neighborhoods to allow higher densities;¹¹³

*allowed the conversion of commercial lands to residential use,¹¹⁴ especially in downtown Vancouver;¹¹⁵ and

*created a zone in which up to three floors of housing may be built on top of shops.¹¹⁶

¹¹¹ Cf. Anup Milani, “Valuing Laws As Local Amenities”, (2008) 121 Harv. L. Rev. 1273 at 1293-94 (laws that constrict housing supply raise land prices, and sometimes are even designed to achieve that goal).

¹¹² This is not to say that Vancouver has abolished zoning. See Berelowitz, supra note 80, at 157 (complaining that land uses in Vancouver still “over-rigidly separated.”) But clearly, Vancouver has taken some steps to limit the anti-growth effects of land use regulation. See infra notes 113-16 and accompanying text (describing examples).

¹¹³ Berelowitz, supra note 80, at 119 (in Collingwood Village neighborhood, “a major upzoning to higher density housing and commercial uses has taken place.”), 120 (rezoning occurred in 1993), 174 (in West End of Vancouver, city “encouraged urban growth by [increasing] ...the maximum permitted floor area divided by the total site area”). See also John Punter, *The Vancouver Achievement* (Vancouver: UBC Press, 2003) at 18 (1956 Vancouver zoning bylaw allowed city to “relax certain zoning regulations” in West End, thus allowing developers to demolish existing housing in favor of high-rises; as a result, population of city’s West End neighborhood doubled between 1951 and mid-1970s).

¹¹⁴ Berelowitz, supra note 80, at 218 (One “major trend in the use of zoning ...is the conversion of commercial lands to residential use.”)

¹¹⁵ See Punter, supra note 113, at 63 (“in a departure from previous policy [city’s 1975 plan] both permitted and encouraged well-designed residential development throughout downtown.”)

¹¹⁶ Berelowitz, supra note 80, at 119.

As noted above, Vancouver's population has increased by over 50% since 1950, despite the fact that the city is essentially trapped within its 1951 city limits.¹¹⁷ Since 1971 alone, the number of dwelling units in the city has increased by 50 percent.¹¹⁸ Thus, Vancouver's strategy has apparently limited the dispersion of population to suburbs.

b) Limiting Density Through Minimum Parking Requirements

In both Canada and the United States, most municipalities require apartment complexes and commercial landowners to provide their tenants and visitors with off-street parking.¹¹⁹ For example, Hamilton requires the owners of multifamily dwellings to provide 1.25 parking spaces per dwelling unit.¹²⁰ Hamilton's requirements for commercial users are rather complex: in addition to listing requirements for seven different commercial uses,¹²¹ the city's code provides that shops not falling into any of the seven categories provide one space for every 31 meters of floor area for the amount of floor area between 450 square meters and 3700 square meters, one space for every 17 meters of floor area between 3700 square meters and 12,800 square meters, and one space for every 20 meters of floor area beyond that point.¹²² Windsor, Ontario has

¹¹⁷ See supra note 26 and accompanying text.

¹¹⁸ Punter, supra note 113, at 347 ("Seventy thousand dwelling units have been added to the [city of Vancouver's housing] stock since 1971, which represents an increase of nearly 50 percent").

¹¹⁹ See Stuart Donovan & David Seymour, "Parking Requirements Come With A High Price", *[Guelph] Mercury* (7 July 1997) 61, 2009 WLNR 12980999 (In Canada, "Municipal regulations typically require that urban developments provide on-site parking"); Donald C. Shoup, *The High Cost of Free Parking* (Chicago: Planners Press, 2005) at 22, 25 (similarly, minimum parking requirements "virtually universal" in the United States).

¹²⁰ See Hamilton Zoning at sec. 18A, Table 1 subsec.(1g) (stating general rule, and noting exceptions for certain neighborhoods).

¹²¹ Id., sec. 18A, Table 1, sec. 4.

¹²² Id., Id., sec. 18A, Table 1, sec. 4(i).

enacted residential parking regulations similar to those of Hamilton,¹²³ and its commercial parking regulations are somewhat less confusing: retail stores must provide one space per 22.5 square meters of floor area¹²⁴ (or 4.4 spaces per 100 square meters) and most offices must provide one space per 45.5 square meters¹²⁵ (or 2.2 per 100 square meters). Even larger cities mandate off-street parking: for example, Ottawa requires retail stores to provide 2.8 parking spaces per 100 square meters.¹²⁶

Land that is used for parking lots cannot be used for housing or commerce. Thus, minimum parking requirements artificially reduce the amount of apartments and businesses within cities. For example, in 1961, Oakland, California required apartment buildings to build one parking space per dwelling unit.¹²⁷ Within three years of this ordinance, the number of apartments per acre in Oakland had decreased by thirty percent.¹²⁸

This result is probably fairly typical. The average Canadian one bedroom apartment includes 700-800 square feet of space.¹²⁹ If a landlord has 80,000 square feet of land, and uses all of it for housing, it can build 100 (80,000/800) 800-square foot apartments. But if the same landlord has to build 1.25 parking spaces for every unit, it obviously cannot build 100 apartments; in fact, because the average parking space

¹²³ See City of Windsor, By-Law No. 8600, *Zoning By-Law 8600*, Sec. 24(3)(a)(ii) (requiring one parking space per 1.25 units in a variety of multifamily dwelling types) (online at <http://www.citywindsor.ca/DisplayAttach.asp?AttachID=16465>)

¹²⁴ Id., sec. 24 (3)©(iii).

¹²⁵ Id., sec. 24 (3)©(v).

¹²⁶ See *Kanata Research Park Corp.*, 2009 CarswellOnt 5884 [2009], at Attachment A.

¹²⁷ Shoup, *supra* note 119, at 143.

¹²⁸ Id. at 144.

¹²⁹ See Ian MacNeill, *Real freedom: RV retirement*, online: <http://www.50plus.com/Travel/BrowseAllArticles/index.cfm?documentID=6072> (“the average one-bedroom apartment runs anywhere from 700 to 800 square feet”)

includes 350 square feet of space,¹³⁰ it must either purchase additional land, build smaller apartments, or build only about 64 apartments.¹³¹ Thus, a 1.25-space-per-unit rule reduces density by 36 percent (from 100 apartments to 64 apartments on the same land).

In the newest suburbs, minimum parking requirements are unlikely to significantly reduce economic activity, because land for parking is cheap and plentiful;¹³² a landowner who wants to build a shopping center or a business in a rural area can easily buy a little more undeveloped land to make up for land eaten up by parking. But in already-developed areas, a landowner may be hemmed in by other landowners, and thus be unable to build housing or businesses without violating minimum parking requirements.

For example, in the American case of *Milburn Courtyard Associates v. Planning Board of Township of Milburn*,¹³³ an entrepreneur proposed to establish a restaurant in a downtown¹³⁴ district which (according to the city's official plan) "has emphasis on pedestrian scale retail business."¹³⁵ The applicant's site contained only one parking spot – but the city's parking ordinance required the applicant to build twelve parking spots, even though the downtown contained numerous public parking lots.¹³⁶ A New Jersey

¹³⁰ Robert Cervero and David Alan Aschauer, *Economic Impact Analysis of Transit Investments: Guidebook for Practitioners*, (Washington: Transportation Research Board, 1998), at 3-4.

¹³¹ Or more precisely, somewhere between 64 and 65. If he builds 64 apartments, he can devote 51,200 square feet to apartments (64 x 800) and 28,000 square feet to parking (because he must build 80 parking spaces, and 80 x 350=2800) and have 800 unbuildable square feet left over. On the other hand, he cannot build 65 units without purchasing 700 square feet additional land, because 65 x 1.25 = 81.25, which means he must build 82 350-square-foot spaces (28,700 square feet) for his 65 units (which take up 52,000 square feet).

¹³² See Roberta F. Mann, "On The Road Again: How Tax Policy Drives Transportation Choice"(2005), 24 Va. Tax. L. Rev. 587, at 635 (parking spaces more expensive in cities than in suburbs); Ryan McGreal, "Downtown is for living, not driving", *[Hamilton] Spectator* (30 March 2007) A13, 2007 WLNR 5997477 ("Only cheap, abundant, unbounded land lets the suburbs keep expanding").

¹³³ 2006 WL 1413698 (N.J.Super.L. 2006).

¹³⁴ Id. at *1-2 (describing application, and noting that neighbourhood was zoned "Downtown Center").

¹³⁵ Id. at *4.

¹³⁶ Id. at *2.

court held that the restaurant could not be established without a zoning variance.¹³⁷ Thus (assuming no variance was granted) the would-be restaurant owner in *Milburn* would have had to purchase enough land for a dozen parking spots- a task that might be more difficult in a downtown surrounded by existing buildings than in a more suburban area with more undeveloped land. It follows that minimum parking requirements encourage would-be builders to move from built-out urban areas to developing areas with a more abundant supply of land.¹³⁸

c) Policy Consequences

As explained in the preceding paragraphs, government regulations that limit density within cities, whether directly through lot size regulation or indirectly through parking regulations, limit the amount of new commerce and housing and thus encourage developers to move to suburbia in search of more abundant land. Thus, a city that wishes to have a growing core should deregulate density, eliminating (or at least reducing the severity of) density restrictions and minimum parking requirements. Conversely, a city that wishes to decentralize or avoid growth should regulate density aggressively, thus forcing developers into suburbia.

Bruegmann argues that such regulations have little effect on urban growth, asserting that zoning has changed to meet market realities-¹³⁹ in other words, that developers who wish to build more compactly will usually get municipal permission to do so.

¹³⁷ *Id.* at *15. It is unknown whether a variance was ultimately granted.

¹³⁸ I note that in addition to preventing the formation of new businesses in already-developed areas, minimum parking requirements may also prevent expansion of existing businesses. See, e.g. *Scampoli v. Zoning Bd. Of Review Of Town of North Providence*, 2005 WL 1433736 (R.I. Super.) (barring expansion of existing medical office due to parking requirements).

¹³⁹ See Bruegmann, *supra* note 12, at 106.

But a 2001 study by the Urban Land Institute, an American developers' organization, suggests otherwise.¹⁴⁰ The survey asked developers to list significant barriers to compact development.¹⁴¹ 78% of developers listed government regulation as an obstacle, and 60% listed neighborhood opposition.¹⁴² By contrast, only 26% listed insufficient market interest.¹⁴³ Developers were also asked whether they would build more compactly if government regulations were less restrictive; about two-thirds of developers responded that they would build more compactly in urban areas.¹⁴⁴ Thus, developers themselves believe that in the absence of government regulation, they would build more housing and commercial structures in urban areas.

It could be argued that the ill effects of anti-density regulation are outweighed by their positive effect on congestion. According to this argument, higher density packs more people, and thus more cars, into smaller spaces, thus making a city's roads more congested and polluted, and making the city a less desirable place to live.¹⁴⁵

But by definition, residents of lower-density areas live further away from any given destination, which means that they are less likely to live within walking distance of those destinations¹⁴⁶ - which in turn makes them more likely to drive to those destinations, thus increasing rather than reducing automobile traffic.

So perhaps it should not be surprising that the correlation between density and congestion is a fairly weak one: as American urban areas have become less dense, no

¹⁴⁰ See Jonathan Levine, *Zoned Out: Regulation, Markets and Choices in Transportation and Metropolitan Land-Use* (Washington, Resources for the Future: 2006).

¹⁴¹ *Id.* at 127, 129 (survey used term "alternative development" but that term defined in survey as development that was more compact and pedestrian-friendly than existing development).

¹⁴² *Id.* at 129.

¹⁴³ *Id.*

¹⁴⁴ *Id.* at 131. An even higher percentage responded that in the absence of government regulation, they would build more compactly in inner suburbs. *Id.*

¹⁴⁵ See Gillham, *supra* note 1, at 114 (describing argument that density breeds congestion).

¹⁴⁶ See *infra* part III-B-1(b) (addressing relationship between density and driving in more detail).

corresponding reduction in congestion has occurred. Among the United States' largest urban areas, the average regional density per square mile decreased from 3296 people per square mile to 2820 between 1982 and 2007, while the average number of hours lost to congestion increased from 21 per person to 51.¹⁴⁷ Moreover, the areas that have experienced the greatest reductions in density have not experienced lower levels of congestion. For example, in metropolitan Philadelphia, density per square mile declined by 43 percent between 1982 and 2007: from 4083 people per square mile to 2329 people per square mile.¹⁴⁸ Yet traffic congestion, measured by the number of hours lost to congestion per peak-period traveler, increased from 16 hours per traveler in 1982 to 38 in 2007.¹⁴⁹

Table 10 below lists density and congestion data for the largest American urban areas.

TABLE 10 Density and congestion in the fourteen largest U.S. urban areas

Hours lost to congestion		
	Per traveler ¹⁵⁰	regional density per square mile ¹⁵¹
Los Angeles	70	5664
Washington	62	3305
Atlanta	57	1444
Houston	56	1987

¹⁴⁷ See Texas Transportation Institute, *The Mobility Data for Very Large Urban Areas – Average*, at 1-5, online: http://mobility.tamu.edu/ums/congestion_data/tables/very_large_urban_areas.pdf .

¹⁴⁸ See Texas Transportation Institute, Performance Measure Summary - Philadelphia PA-NJ-DE-MD at 2-6, online: http://mobility.tamu.edu/ums/congestion_data/tables/philadelphia.pdf .

¹⁴⁹ Id.

¹⁵⁰ Texas Transportation Institute, *Congestion Trends-Wasted Hours (Annual Delay per Traveler, 1982 to 2007)*, online: http://mobility.tamu.edu/ums/congestion_data/tables/national/table_4.pdf

¹⁵¹ See Texas Transportation Institute, *Congestion Data for Your City*, online: http://mobility.tamu.edu/ums/congestion_data/ (to find data for individual cities, click on regional and local links; most recent density statistics typically on second page of each region's datasheet).

San Francisco	55	3246
Dallas	53	1933
Detroit	52	2813
Miami	47	3217
New York	44	3789
Phoenix	44	2940
Boston	43	1863
Seattle	43	2451
Chicago	41	2398
Philadelphia	38	2329
14-region average	50	2820

This table suggests that the correlation between density and congestion, if any, is fairly weak. Although the most congested region (Los Angeles) is the most dense, the least dense region (Atlanta) has the third highest level of congestion. Of the four regions with under 2000 people per square mile (Atlanta, Boston, Dallas, and Houston), three (Atlanta, Dallas and Houston) have above-average levels of congestion.¹⁵²

Moreover, compact development has positive side effects that may at least partially outweigh any possible increased congestion. A recent study sponsored by the

¹⁵² And the apparent exception of Los Angeles actually supports the view that automobile-dependent cities are more congested: Los Angeles is, as noted above, is more automobile-dependent than less compact regions such as Chicago and Philadelphia, perhaps because its central city (as opposed to the broader urbanized areas listed in Table 10, which include suburbia) is far less dense than that of those cities. See Table 11 *infra*. (noting that transit ridership lower in Los Angeles than in Chicago or Philadelphia, while area within city limits is in fact less dense). Cf. Michael Lewyn, “You Can Have It All: Less Sprawl and Property Rights Too”, (2007) 80 Temp. L. Rev. 1093, at 1111-13 (suggesting that Los Angeles street design and parking regulations may also be responsible for Los Angeles’s high rate of automobile travel).

U.S. Department of Energy¹⁵³ suggests that compact, transit-oriented development reduces greenhouse gas emissions. In particular, the study found that:

*Doubling residential density, standing alone, reduces household vehicle miles traveled by 5-12 percent.¹⁵⁴ If increased density was accompanied by improved public transit and other supportive land use policies, household driving could be reduced by as much as 25 percent.¹⁵⁵

*These reductions in driving would, in turn, reduce pollution. If 75 percent of new and replacement housing was at double the density of existing housing, and residents of those communities drove 25 percent fewer miles, U.S. greenhouse gas emissions could be reduced by 8-11 percent by 2050.¹⁵⁶ Smaller reductions in driving would lead to more modest reductions in emissions.¹⁵⁷

Similarly, Harvard economist Edward Glaeser and UCLA economist Matthew Kahn recently conducted a study finding that low-density, automobile-oriented regions emitted more greenhouse gases from transportation than more pedestrian- and transit-oriented regions.¹⁵⁸ For example, New York City, the region with the highest use of public transit,¹⁵⁹ emitted only 19,524 pounds of carbon dioxide (a major greenhouse

¹⁵³ See Transportation Research Board, *Driving And The Built Environment* (Washington: National Academy of Sciences 2009) at ii-iii (describing authors and sponsorship) (available online at http://www.nap.edu/catalog.php?record_id=12747#toc).

¹⁵⁴ *Id.* at 2.

¹⁵⁵ *Id.* at 2-3. See also *id.* at 31-66 (describing relationship between density and vehicle miles traveled in more detail).

¹⁵⁶ *Id.* at 4.

¹⁵⁷ *Id.*

¹⁵⁸ See Edward L. Glaeser and Matthew Kahn, *The Greenness of Cities*, at 1, available at http://www.hks.harvard.edu/rappaport/downloads/policybriefs/greencities_final.pdf (visited April 15, 2010) (“low-density development ... is associated with far more carbon dioxide emissions than higher-density construction”).

¹⁵⁹ *Id.* at 5.

gas¹⁶⁰, also known as “CO2”) per household from automobiles and transit users combined,¹⁶¹ the lowest amount among ten metropolitan areas studied. By contrast, several lower-density regions emitted over 25,000 pounds of transportation-related CO2 per household.¹⁶²

Moreover, suburbs, which tend to be less compact and more automobile-oriented,¹⁶³ have significantly higher per-household CO2 emissions from transportation. For example, New York’s suburban households emitted over 3800 more pounds of transportation-related CO2 per household than did city residents.¹⁶⁴ Thus, it seems possible that the alleged congestion-related benefits of low-density development may be offset by the environmental harm caused by greenhouse gas emissions.

B. How We Grow: Land Use Regulation

In addition to encouraging suburban development, Canadian governments have made those suburbs unnecessarily automobile-dependent through a wide variety of municipal land use laws, including regulations requiring (1) single-use, low-density development, (2) that large amounts of land be set aside for off-street parking, and (3) construction of wide streets.

Because of the large number of suburbs in both Canada and the United States, there is no way to compare all Canadian suburbs to all American suburbs. Accordingly, I

¹⁶⁰ See *Massachusetts v. EPA*, 549 US 497, 504-05 (2007) (carbon dioxide a major greenhouse gas). I note, however, that because greenhouse gases have a global effect, the contribution of any one nation’s policies is not enormous. *Id.* at 535, 543-44 (Roberts, J. dissenting) (American vehicles alone responsible for 4 percent of greenhouse emissions).

¹⁶¹ See Glaeser and Kahn, *supra* note 158, at 5.

¹⁶² *Id.*

¹⁶³ *Id.* at 8.

¹⁶⁴ *Id.* (suburbanites emitted 6172 more pounds of automobile-related emissions per household than city residents; however, this gap was partially offset by city residents’ generation of 2367 more pounds of public transit-related emissions per household). New York suburbanites emitted more home heating emissions than city residents as well; however, this was not the case in all metropolitan areas studied. *Id.*

have chosen to compare several suburbs with easily accessible zoning codes: one inner suburb and one outer suburb of Toronto, and one inner suburb and one outer suburb of Atlanta, Georgia.

1. Low Density, Single-Use Zoning

a) For Example...

Canadian suburban zoning codes typically favor low-density development, in which homes are separated from shops and employers.¹⁶⁵ For the purposes of this paper, I focus primarily on two suburbs whose zoning codes are online: Mississauga, a rapidly growing inner ring Toronto suburb,¹⁶⁶ and Burlington, an outer suburb 40 miles from Toronto.¹⁶⁷

Mississauga requires homes in one of its residential zones to take up 3500 square meters,¹⁶⁸ or 37,660 square feet-¹⁶⁹ about 1.15 homes per acre.¹⁷⁰ Mississauga's other

¹⁶⁵ See Martine August, "Social mix and Canadian public housing redevelopment: experiences in Toronto", (2008) 17 Canadian J. Urb. Research 82, 2008 WLNR 26067898 (post-war suburb construction in Canada was largely homogeneous, featuring low densities, open spaces, car-oriented transportation systems, and segregated land uses ... [and] zoning codes and land-use plans of the post-war era formalized this type of urban landscape") (page numbers unavailable). Cf. "Visionary Answer to Urban Sprawl", [*Toronto*] *Star* (17 June 2006) F6, 2006 WLNR 10481883 ("the trendy Annex neighbourhood in Toronto now holds about 150 people and jobs per hectare while a traditional sprawling suburban area has about 30.)

¹⁶⁶ See Gordon Brunskill, "Moscato Drawing on World Cup Experience", [*State College*] *Centre Daily Times* (14 November 2003), 1B, 2003 WLNR 16289999 (Mississauga "a suburb west of Toronto"); 2001 Census, *supra*. (population increased by 12.6 percent between 1996 and 2001, while central city population increased by only 4 percent); Andy Holloway, *Canada's Best Cities: Toronto vs. Mississauga*, Canadian Business Online, online:

http://www.canadianbusiness.com/managing/article.jsp?content=20050926_71075_71075 (suggesting that Mississauga taking business away from Toronto). I refer to Mississauga as an "inner ring" suburb because it borders Toronto. See W.D. Lighthall, "Project convenient to two cities", [*Toronto*] *Star* (18 February 2006), 9, 2006 WLNR 4733132 (noting that condo project "near Toronto's border with Mississauga").

¹⁶⁷ See Geoffrey York, "Before Madonna's babies, there was Idah", [*Toronto*] *Globe & Mail*, (22 June 2009), A1, 2009 WLNR 11895708 (Burlington "an outer suburb of Toronto"); Holly J. Wagner, "True North", *Customer Interface*, (1 March 2001), 42, 2001 WLNR 2838569 (Burlington 40 miles southwest of Toronto).

¹⁶⁸ City of Mississauga, By-Law No. 0225-2007, *Mississauga Zoning By-Law*, Sec. 4.2.2.6.1 (online at <http://www6.mississauga.ca/online/maps/planbldg/ZoneBylaw/DZBR1/Part%204%20-%20R01.pdf>) (setting guidelines for R1-6 zone, one of forty-seven R1 "detached dwelling" zones) (hereinafter "Mississauga By-Law").

¹⁶⁹ See Yiyan, *supra* note 103, at 343.

¹⁷⁰ See Leff, *supra* note 100, at 1905.

major “detached dwelling zones” mandate minimum lot sizes ranging from 750 meters¹⁷¹ (or roughly 5 units per acre)¹⁷² to 295 meters¹⁷³ (or roughly 13 units per acre).¹⁷⁴ All of these zones are “single use” zones: that is, single-family homes is the only permissible land use.¹⁷⁵

Similarly, in Burlington, houses in the city’s least dense zone must consume at least 2000 square meters, or about half an acre, of land.¹⁷⁶ Burlington’s other single-family home zones have maximum densities ranging from half an acre to ten homes per acre,¹⁷⁷ and are also single-use.¹⁷⁸

The commercial zones of these cities are also single-use: for example, Mississauga does not list residences (even multifamily residences) as a permitted use either in that city’s office zone,¹⁷⁹ or in four of the city’s five commercial zones.¹⁸⁰ Burlington’s zoning code is somewhat more permissive in this respect: although the city

¹⁷¹ See Mississauga By-Law, Table 4.2.1 (R1 minimum lot area, except for corner lots) (“Mississauga By-Law”).

¹⁷² As noted above, a square meter is 10.76 square feet, supra note 103, which means that 750 meters equals 8070 square feet, or just under 1/5 of an acre. See Leff, supra note 100 at 1905 (defining acre size).

¹⁷³ See Mississauga By-Law, Table 4.2.1 (R5 minimum lot area, except for corner lots).

¹⁷⁴ As noted above, a square meter is 10.76 square feet, supra note 103, which means that 295 meters equals 3174 square feet, or just under 1/13 of an acre. See Leff, supra note 100, at 1905 (defining acre size).

¹⁷⁵ See Mississauga By-Law, Table 4.2.1.

¹⁷⁶ See City of Burlington, By-Law No. 2020, *Zoning Bylaw 2020 As Amended*, Part 2- Residential Zones, Table 6.1 (online at <http://cms.burlington.ca/AssetFactory.aspx?did=10512>) (2000 meter requirement in R5 “cluster home” zone) (“Burlington By-Law”). As noted above, a meter is 10.76 square feet, so 2000 square meters equals 21,520 square feet, or just under half an acre. Because an acre contains 43,560 square feet, Leff, supra note 100, at 1905, 19,906 square feet is .49 acres).

¹⁷⁷ Burlington’s R1.1 zone requires 1850 square meter (or 19,906 square foot) lots, while its R3.3 and R3.4 zones allow lots as small as 400 square meters (or 4304 square feet). See Burlington By-Law, Table 6.1 ; supra notes 91, 94 (translating square meters into square feet, and square feet into acres).

¹⁷⁸ See Burlington By-Law, Table 2.3.1 (detached dwelling, along with accessory dwelling unit, only uses allowed in R1, R2 and R3 zones, and only cluster home allowed in R5 zone).

¹⁷⁹ See Mississauga By-Law, Table 5.2.1 (online at <http://www6.mississauga.ca/online/planbldg/ZoneBylaw/DZBR1/Part%205.pdf>)

¹⁸⁰ Id., Table 6.2.1 (online at <http://www6.mississauga.ca/online/planbldg/ZoneBylaw/DZBR1/Part%206%20-%20Com%20General%20Provisions.pdf>)

does not allow apartment buildings in the majority of commercial zones, it does allow residential units on the second and third floors of most commercial buildings.¹⁸¹

b) The Results of Low Density

Anti-density regulations make suburbs automobile-dependent by reducing both transit use and walking. As a general rule, a neighborhood must have at least seven to fifteen dwelling units per acre to support significant transit ridership, because only such compact neighborhoods have large numbers of people living within walking distance of a bus or train stop.¹⁸² In areas with lower density, very few people will live within a short walk of a bus or train stop, and transit ridership will therefore be low,¹⁸³ which in turn means that transit agencies will be inclined not to serve such areas.¹⁸⁴ Thus, antidensity regulations effectively reduce transit service.

Table 11 illustrates the relationship between density and driving in North American cities.

TABLE 11 Percent of commuters driving to work and population density¹⁸⁵

	Percent driving	Population per square mile
Toronto	56	10,211
Vancouver	56	12,345

¹⁸¹ See Burlington By-Laws, Table 4.2.1. In addition, Burlington has numerous “mixed use” zones. *Id.*, Parts 5-7.

¹⁸² See Robert H. Freilich, “The Land Use Implications of Transit-Oriented Development: Controlling the Demand Side of Transportation Congestion and Urban Sprawl”, (2009), 30 *Urb. Law.* 547 at 552 & n. 18 (because commuters generally will not walk more than quarter mile to transit station, “residential densities of at least 7-15 dwelling units per acre are needed in order to encourage the utilization of public transit”).

¹⁸³ *Id.* at 552 (citing studies).

¹⁸⁴ Cf. Ron Scherer, “N.Y. Aside, Big Problems in US Mass Transit”, *Christian Science Monitor*, (18 December 2002) at 2, 2002 WLNR 1560177 (noting that during 2001-02 recession, reduced transit system ridership led to reduced transit system revenue, which led to service cutbacks).

¹⁸⁵ Commuting statistics are from Table 9, *supra*. Canadian density statistics are based on population data at Table 3, *supra*, and on municipal square mileage in note 36 *supra*. U.S. Census statistics are based on 2000 population estimates and municipal square mileage data found at 2004-05 Abstract, *supra* note 39, at 29-32.

Montreal	58	14,498
Ottawa	69	721
Calgary	74	3244
Winnipeg	78	3451
Edmonton	79	2523
American cities		
New York	32	26,403
Chicago	64	12,752
Philadelphia	62	11,236
Los Angeles	80	7876
Dallas	88	3471
Houston	87	3372
Phoenix	89	2922
San Diego	86	3771

Table 11 shows a significant (if imperfect) correlation between driving and density. The most densely populated major city, New York, has lower car use than any of the other cities listed in either country. The three Canadian cities with 10,000-15,000 people per square mile (Toronto, Montreal and Vancouver) all have similar levels of car use (between 56-58 percent of commuters), and the two American cities with similar density are only slightly more automobile-oriented.

By contrast, Canada's low density cities (with the exception of Ottawa, which contains unusually large amounts of undeveloped land, and thus seems to have a lower

population density than its urban neighborhoods in fact have)¹⁸⁶ have lower transit ridership: Edmonton, Ottawa and Calgary all have roughly similar population densities (2000-4000 people per square mile) and all have car commuting rates in the 74-79 percent range.¹⁸⁷ The least dense American cities (Dallas, Houston, Phoenix and San Diego) are even more automobile-dependent.

Low-density zoning inconveniences pedestrians as well as transit riders, because such zoning reduces the number of people who can live within walking distance of any given destination. For example, imagine two neighborhoods near a grocery store: one with 20 residences per acre and another with 2 houses per acre. Because there are 640 acres in a square mile,¹⁸⁸ 12,800 (640 x 20) households in the more compact neighborhood will live within a one-mile (or about thirty-minute)¹⁸⁹ walk of the store, and one-fourth as many households (or 3200 households) will live within a quarter-mile (or about 7.5-minute) walk of the store. By contrast, in the more thinly populated area, only 1280 (640 x 2) households will live within a one-mile walk of the store, and only 320 will live within a quarter-mile walk of the store. Thus, more people can comfortably walk to stores in the more compact neighborhood.

Because both logic and data support the view that people can most easily walk to public transit, jobs and shops in relatively compact areas, anti-density zoning regulations make suburbia less walkable and more automobile-dependent.

¹⁸⁶ See Erickson, *supra* note 32, at 215 (because city has annexed much rural territory, area within city limits is now “90% rural”).

¹⁸⁷ As does Los Angeles, which is more compact than those cities. However, Los Angeles may be unique due to its unusually restrictive street design regulations. Cf. Lewyn, *supra* note 152, at 1111-13 (suggesting that Los Angeles’ combination of relatively high density and low transit ridership may be a result of street design rules that make walking uncomfortable).

¹⁸⁸ Leff, *supra* note 100, at 1905.

¹⁸⁹ See Editorial, A Christmas Gift for Mr. Paterakis, *[Baltimore] Sun*, (14 December 1997), 2F, 1997 WLNR 1086136 (noting that it takes thirty minutes to walk a mile).

c) The Results of Single-Use Zoning

In theory, a low-density community could still be somewhat walkable. For example, a thinly populated suburb might have only a few houses per block, but a store every block or two, thus allowing people to walk to minor errands. But this is rarely the case. More commonly, North American suburbs have combined low density and single-use zoning,¹⁹⁰ which means that (a) a residential block will typically have no shops on the block, and (b) even if there is a shop on a nearby block, very few residences will be within walking distance of that shop – in other words, that a suburbanite may have “nothing much else within walking distance, except more housing.”¹⁹¹ Thus, single-use zoning combines with low density to impair walkability.

d) Canadian and U.S. Suburbs Compared

Despite their density restrictions, Burlington and Mississauga allow fairly compact development in some neighborhoods. While Mississauga has zoned some areas for one-acre lots, that suburb has zoned other single-family areas for as many as 13 lots per acre,¹⁹² probably compact enough to support significant transit ridership.¹⁹³ Mississauga also has zones for high-rise apartments (including buildings as high as 25 stories) and for dwellings of intermediate density.¹⁹⁴ Similarly, Burlington’s single-family home zones range from a zone requiring half-acre lots to zones allowing ten

¹⁹⁰ See supra notes 98-110, 119-27, 165-80 and accompanying text (describing frequency of anti-density, single-use zoning); James Howard Kunstler, *Home from Nowhere: Remaking Our Everyday World For the Twenty-First Century* (New York: Touchstone, 1998) at 106 (housing typically “separated ... from every other human activity.”)

¹⁹¹ Id.

¹⁹² See supra notes 173-74 and accompanying text.

¹⁹³ See supra note 182 and accompanying text.

¹⁹⁴ See Mississauga By-Law, Table 4.15.1 (listing various apartment zones, including one zone allowing 25-story buildings).

homes per acre.¹⁹⁵ And like Mississauga, Burlington allows high-rise apartments in some multifamily zones.¹⁹⁶

By contrast, many American suburbs (and even parts of American cities) zone for significantly less density than Mississauga and Burlington. For example, in Atlanta, Georgia, even the central city is less dense than Mississauga; while Mississauga had 5504 people per square mile in 2001¹⁹⁷ (about half the density of the nearby central city of Toronto)¹⁹⁸, Atlanta had 3158 people per square mile.¹⁹⁹ While Mississauga's least dense zone still allows houses on slightly less than an acre of land,²⁰⁰ Atlanta has one residential zone where every house must gobble up two acres,²⁰¹ and another where houses must sit on one-acre lots.²⁰² Although these zones are certainly not typical,²⁰³ Atlanta's most sprawling areas are clearly even less compact than Mississauga's most sprawling areas.

American suburbs are generally quite aggressive in their commitment to low density; suburban minimum lot sizes are typically a quarter-acre or more.²⁰⁴ Table 12 compares the lot size regulation of Burlington and Mississauga with that of two Atlanta suburbs.

¹⁹⁵ Burlington's R1.1 zone requires 1850 square meter (or 19,906 square foot) lots, while its R3.3 and R3.4 zones allow lots as small as 400 square meters (or 4304 square feet). See Burlington By-Laws, Table 2.4.1; *supra* notes 91, 94 (translating square meters into square feet, and square feet into acres).

¹⁹⁶ See, e.g., Burlington By-Laws, Table 14.1 (18-story dwellings allowed in RH2 zone)..

¹⁹⁷ I calculate as follows: in 2001, Mississauga had 612,925 people, and 288.42 kilometers of land. See 2001 Census, *supra*. Because one kilometer is about 0.38 square miles, *supra* note 24, Mississauga encompasses just over 111 square miles. So Mississauga's population divided by its square mileage leads to the figure quoted above.

¹⁹⁸ See Table 11 *supra* (Toronto has just over 10,000 people per square mile).

¹⁹⁹ See 2004-05 Abstract, *supra* note 39, at 29 (in 2000, city of Atlanta had 416,000 people and 131.7 square miles).

²⁰⁰ See *supra* notes 168-170 and accompanying text.

²⁰¹ See Atlanta, Georgia, Code of Ordinances, Part 16, Sec. 16-03.007(2) (minimum lot size in R1 zone). The Atlanta Code is available online at http://library6.municode.com/default-now/home.htm?infobase=10376&doc_action=whatsnew ("Atlanta Code").

²⁰² *Id.*, Sec. 16-04.007(2).

²⁰³ See generally, Atlanta, Ga. Code, sec. 16 (listing wide variety of zones, including high-density zones).

²⁰⁴ See Ziegler et. al., *supra* note 95, at sec. 21.66 ("In suburban single-family residential areas, minimum lot sizes typically range from one-quarter to two acres.")

TABLE 12: Minimum lot sizes in suburbia²⁰⁵

	Least compact	Most compact	Most compact
	Single-family home area	single-family home area	multifamily area
Toronto suburbs			
Mississauga	37,660 square feet (just over .85 acre)	1/13 acre`	25 stories
Burlington	½ acre	1/10 acre	18 stories
Atlanta suburbs			
Sandy Springs	2 acres	4000 square feet (about 1/11 acre)	4 stories
Alpharetta	3 acres	10,000 square feet (just over ¼ acre)	10 units per acre

As Table 12 shows, suburban Atlanta’s density regulations are more restrictive than those of Toronto’s suburbs. For example, Sandy Springs, an inner ring suburb of Atlanta,²⁰⁶ has areas zoned for two-acre houses (more than twice the size of Mississauga’s least compact area)²⁰⁷ - and to a much greater extent than Toronto’s suburbs, limits even the density of multifamily areas. For example, Sandy Springs has an “apartment limited” district, which, according to the city code, is “intended to provide land areas for high to very high density apartment dwellings.”²⁰⁸ But even in this neighborhood,

²⁰⁵ For data on Burlington and Mississauga, see supra notes 168-80, 192-96 and accompanying text. For data on Atlanta suburbs, see infra notes 207-209, 211-215 and accompanying text.

²⁰⁶ See Marcus K. Garner, “Sandy Springs: Some are due refund on income tax”, *[Atlanta] Journal and Constitution*, (9 March 2008), A7, 2008 WLNR 4642172 (referring to Sandy Springs businesses “along the Atlanta border”).

²⁰⁷ See Sandy Springs, Georgia, Zoning Ordinances (revised 7 March 2009), Art. 6.1.3(E) (two-acre zone); 6.2.3[E] (one-acre zone) (online at <http://www.sandyspringsga.org/City-Government/Adopted-Ordinances/Zoning-Ordinances.aspx>) (“Sandy Springs Code”); Table 12, supra. (Mississauga zoning).

²⁰⁸ Sandy Springs Code, Art. 7.4.1.

buildings may be no higher than 60 feet or four stories, less than one-sixth the size of high-rises allowed in Mississauga.²⁰⁹

Alpharetta is a prosperous outer suburb of Atlanta, about 25 miles away from the city of Atlanta.²¹⁰ Alpharetta's most sprawling residential zone requires three-acre lots.²¹¹ And while Atlanta and Sandy Springs have zones allowing small single-family houses,²¹² no house in Alpharetta may consume fewer than 10,000 square feet, more than twice the size of the smallest lots allowed in Sandy Springs.²¹³ Similarly, Alpharetta controls multifamily development more rigidly than Sandy Springs or Toronto suburbs; while Sandy Springs has midrises and Toronto suburbs have high-rises, Alpharetta's multifamily zone allows only ten apartments per acre-²¹⁴ a lower density than some single-family zones in Mississauga!²¹⁵

Because Toronto's suburbs are more compact than some American cities and are part of regions with stronger public transit systems, one might think that they are less automobile-dependent than their American counterparts. In fact, this is the case, as Table 12 shows.

TABLE 13: Toronto and Atlanta compared

Central cities-	Population per square mile ²¹⁶	Percentage of commuters
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²⁰⁹ Id., Art. 7.4.3[A]. See also Table 12 supra. (Mississauga zoning).

²¹⁰ See Michael Pearson, "Kurey's face name purged councilman may appeal ouster", *[Atlanta] Journal and Constitution*, (20 August 2005), B1, 2005 WLNR 13113879 (describing Alpharetta as a "business-oriented suburb...about 26 miles from Atlanta"); Editorial, Access to public records lets us peek inside government's doors, *The [Indianapolis] Star*, (12 March 2006), E2, 2006 WLNR 25289645 (describing Alpharetta as a "chic" suburb).

²¹¹ See City of Alpharetta, Georgia, Unified Development Code (Revised 22 Sept 2009) Art. 2.1.1 (describing "RE" zone), (online at <http://www.alpharetta.ga.us/files/docs/pdfs/UDC/Article%202.pdf>) ("Alpharetta Code").

²¹² See Sandy Springs Code, Art. 6.9.3[B] (allowing 4000-square-foot houses in R5-A single family district); Atlanta Code, Sec. 16-06B.007(1) (allowing 2800-square-foot houses in R-4B zone).

²¹³ Id. (describing R-10 zone); Table 11 (comparing Alpharetta zoning to that of Sandy Springs and Toronto suburbs).

²¹⁴ Alpharetta Code, Art. 2.1.1 (describing R10M zone).

²¹⁵ See Table 12 supra.

²¹⁶ See supra notes 197-99 and accompanying text (noting density levels of Mississauga, Toronto, and Atlanta); 2001 Census, supra note 21 (Burlington has just over 150,000 residents and encompasses 185.71 square kilometers, or 71.7 square miles); supra note 24 (one square kilometer is 0.38 square miles); City Data For Alpharetta, Georgia, City-Data.com, online: <http://www.city-data.com/city/Alpharetta->

		Taking public transit to work ²¹⁷
Toronto	10,211	33.8
Atlanta	3158	15.0
Inner suburbs-		
Mississauga	5504	14.6
Sandy Springs	2192	5.4
Outer suburbs-		
Burlington	2103	7.8
Alpharetta	1932	1.5

Table 13 suggests that thinly populated cities and their suburbs are more automobile-dependent than more compact places. It follows that by strictly limiting density, Atlanta suburbs' zoning regulations may contribute to their level of automobile dependence.

In sum, both Canadian and American suburbs commonly favor single-use zoning and restrictions on density; as a result, both countries' suburbs are more thinly populated and automobile-dependent than a free market would dictate. However, Canadian suburbs are less hostile to density than are the most car-dependent American cities and suburbs.

e) Policy Consequences

[Georgia.html](http://www.city-data.com/city/Sandy-Springs-Georgia.html) ; City Data For Sandy Springs, Georgia, City-Data.com, online: <http://www.city-data.com/city/Sandy-Springs-Georgia.html> .

²¹⁷ Commuting statistics for Canadian cities come from Statistics Canada community profiles. To find the community profiles, go to <http://www12.statcan.ca/english/profil01/CP01/Index.cfm?Lang=E> and enter the community you wish to learn about in the "Place Name" box. For American communities' statistics, go to http://factfinder.census.gov/home/saff/main.html?_lang=en , check the "Get A Fact Sheet For Your Community" link, then check the "Show More" link for economic characteristics. I have chosen to use 2000 census data from the U.S. , rather than estimates from later surveys, because the census data might be more accurate. I have chosen to use 2001 Canadian census data, in turn, because it closer in time to the 2000 census than is the 2006 Canadian census.

As explained above, local governments in both Canada and America contribute to automobile-oriented sprawl by mandating low-density, single-use development. Thus, a municipality that wishes to make development less automobile-dependent should deregulate density, reducing or even eliminating regulations that discriminate against more compact development.²¹⁸

In addition, municipalities should partially deregulate land uses by allowing multifamily dwellings in retail and office zones. One traditional rationale for single-use zoning is the protection of homeowners from the noise and traffic caused by commerce.²¹⁹ However, apartments and condominiums are generally more heavily trafficked than blocks full of single-family houses, and thus unlikely to be disadvantaged by the existence of commerce nearby. Indeed, renters and condominium residents actually benefit from mixed-use zoning because mixed use allows them to have more shops and jobs within walking distance.

2. How Minimum Parking Requirements Reduce Walkability

As noted above, Canadian zoning codes typically require landowners to provide visitors and guests with off-street parking.²²⁰ These regulations, like laws directly regulating density, make these suburbs more automobile-dependent than might otherwise be the case.

a) For Example...

Minimum parking requirements are sometimes even more restrictive in suburbs than in cities. For example, while Hamilton and Windsor require landlords to build 1.25

²¹⁸ Cf. Part III-A-2(b) (criticizing arguments against allowing more compact development).

²¹⁹ Cf. *Village of Euclid v. Ambler Realty*, 272 U.S. 365, 392-93 (1926) (justifying single-use zoning on the ground that, inter alia, places of business likely to be create “congestion” and be “noisy” and thus incompatible with homes).

²²⁰ See Donovan and Seymour, *supra* note 119.

parking spaces per apartment,²²¹ Mississauga requires landowners to provide 1.38 parking spaces for each one-bedroom apartment.²²² Mississauga's commercial regulations are also stricter than Windsor's: while Windsor requires offices to provide 2.2 parking spaces per 100 square meters,²²³ Mississauga requires 3.2 per 100 square meters.²²⁴ And while Windsor requires retail shops to provide 4.4 parking spaces per 100 meters,²²⁵ Mississauga requires 5.4 parking spaces per 100 square meters.²²⁶

Burlington's residential parking regulations are even more restrictive than those of Mississauga, requiring 1.6 parking spaces per one-bedroom apartment.²²⁷ However, Burlington's commercial parking regulations are somewhat less restrictive than those of Mississauga; Burlington requires offices to build 3 parking spaces per 100 square meters of floor area, and 4 spaces per 100 square meters for retail stores.²²⁸

b) How Minimum Parking Requirements Make Suburbia Sprawling

Minimum parking requirements make suburbia unnecessarily automobile-dependent in a wide variety of ways. By increasing the supply (and thus reducing the price) of parking, minimum parking requirements effectively subsidize driving. And by reducing density and encouraging businesses to surround themselves with acres of parking,

²²¹ See supra notes 120, 123 and accompanying text.

²²² See Mississauga By-Law, Table 3.1.2.1 (requiring 1.18 spaces per one bedroom unit, plus 0.2 "visitor spaces" for every unit). I note that Mississauga's regulation is a bit more subtle than that of Hamilton and Windsor: while those cities require landlords to provide the same amount of parking for every rental unit, Mississauga allows off-street parking to vary with apartment size: thus, landlords need only provide 1.2 parking spaces per bachelor apartment, but must provide 1.56 for each two-bedroom unit. *Id.* Also, Mississauga's parking quotas are slightly different for condominiums and for some zones. *Id.*

²²³ See supra note 125 and accompanying text.

²²⁴ See Mississauga By-Law, Table 3.1.2.2, Line 31.1.

²²⁵ See supra note 124 and accompanying text.

²²⁶ See Mississauga By-Law, Table 3.1.2.2, Line 31.1.

²²⁷ See Burlington By-Law, Table 1.2.6, (online at <http://cms.burlington.ca/AssetFactory.aspx?did=10511>) (requiring 1.25 spaces per one-bedroom apartment, plus 0.35 visitor spaces per unit).

²²⁸ *Id.*

minimum parking requirements make suburbia uncomfortable for pedestrians and transit users. Each of these issues will be addressed in turn.

i) Fertility Drugs For Cars

i-a) The Subsidy Effect

Municipal parking requirements cause landowners to make parking free to customers by increasing the supply of parking, thus reducing the market price of parking down to zero.²²⁹ As a result, 90 percent of vehicle trips in North America are to destinations with free parking.²³⁰ However, such ostensibly “free” parking arises from a government-mandated redistribution of wealth from landowners to motorists, because such regulations force landowners to spend money building parking spaces and to forego the revenue that could be earned by placing businesses on the site of those parking spaces.

Estimates of the cost of parking space construction vary; an Ontario Municipal Board decision has mentioned parking spaces that cost \$15,000 per space,²³¹ but some commentators suggest that parking spaces may at times cost as much as \$40,000.²³² Where parking is free or nearly so, businesses do not pass those costs on to drivers—which means that as a practical matter, free parking subsidizes driving because drivers get real estate (in the form of parking spaces) from landowners without having to pay for it.

²²⁹ Richard Willson, “Suburban Parking Requirements: A Tacit Policy For Automobile Use And Sprawl”, (1995), 61 *Journal of the Am. Planning Ass’n* 29, at 34 (“When developers are required to provide more parking than is demanded, the oversupply tends to push the market price down to zero”).

²³⁰ Donovan and Seymour, *supra* note 119.

²³¹ *Devine v. Ontario*, 1999 CarswellOnt 4637 [1999] (development at issue “would be serviced by four parking spaces constructed at a cost of approximately \$15,000 each.”), *rev’d* on other grounds, 2001 CarswellOnt 4939 [2001], *aff’d*, 2002 CarswellOnt 883 [2002], 50 R.P.R. (3d) 93, 76 L.C.R. 89.

²³² Donovan and Seymour, *supra* note 119. But cf. Cervero and Aschauer, *supra* note 130, at 9-17 and 9-18 (cost of parking space may range from \$2000 to \$20,000, depending on a variety of factors)

Who pays for this subsidy? At first, landowners pay, because they build the parking lots. But to some extent, landowners may pass the cost of free parking on to their customers. For example, a landlord might seek to recoup the cost of parking through higher rents for commercial tenants (who in turn may pass such costs to their customers by charging higher prices for goods and services) and residential tenants (who presumably pay higher rents than would otherwise be the case).²³³ Thus, minimum parking requirements, by increasing residential and commercial rents, require society as a whole to subsidize driving.

i-b) The Subsidy Effect Matters

Numerous case studies show that the subsidy created by free parking in fact increases automobile travel. For example, in 1974, the Canadian federal government stopped providing free parking to its employees in Ottawa.²³⁴ Although the government still provided subsidized parking to employees, the subsidy was reduced from 100 percent of parking cost to 30 percent.²³⁵ The percentage of employees driving to work alone decreased from 35 percent to 28 percent, and the percent using public transit increased from 42 percent to 49 percent.²³⁶

The Ottawa study occurred in a downtown workplace with ample public transit-²³⁷but even in automobile-oriented suburban sites, reductions in parking subsidies affect

²³³ Cf. Victoria Transport Policy Institute, “Transportation Cost and Benefit Analysis II- Parking Costs”, 5.4:17, online: <http://www.vtpi.org/tca/tca0504.pdf> (study estimating that each “additional residential parking space effectively increases U.S. urban housing unit costs by \$52,000 to \$117,000”).

²³⁴ Richard W. Willson & Donald C. Shoup, “Parking Subsidies and Travel Choices: Assessing the Evidence”, (1990), 17 *Transportation* 141, at 148.

²³⁵ *Id.*

²³⁶ *Id.* at 146. This change occurred over a one-year period. *Id.* at 148.

²³⁷ *Id.* (Noting that Ottawa transit “has high ridership levels.”). See also *id.* at 146-47, 149-50 (describing similar results at worksites in and around downtown Los Angeles).

driver behavior. For example, in a suburb of Los Angeles with minimal transit service,²³⁸ an employer raised the price of parking for solo drivers to 2/3 of the market rate.²³⁹ Before parking rates were increased, 90 percent of workers drove alone to work, and 6 percent carpooled or vanpooled. Afterwards, 46 percent drove alone, and 48 percent carpooled or vanpooled.²⁴⁰

In sum, it is clear that parking is price-elastic: free parking means more driving and more solo driving, while priced parking leads to increased transit use (where public transit is available) and increased carpooling (where public transit is minimal or nonexistent).

ii) Increasing Driving By Reducing Density

As noted above, minimum parking requirements artificially reduce population and employment density, because land that is used for parking lots cannot be used for housing or commerce.²⁴¹

In turn, low density makes commuters more dependent on automobiles. As noted above,²⁴² lower density means that fewer people can live within walking distance of a given destination, which means they will have to drive to reach such destinations. So by reducing density, minimum parking requirements increase driving.

iii) A Degraded Urban Fabric

²³⁸ Id. at 146 (noting that both before and after parking prices changed, no employees commuted via public transit).

²³⁹ Id. at 147. Of course, this “market rate” was itself lower than it would have been in the absence of minimum parking requirements, see *supra* note 229 and accompanying text, so the authors’ suggestion that commuters were charged “market rate” overlooks the fact that even motorists charged the market rate are effectively subsidized as a result of minimum parking requirements.

²⁴⁰ Id. at 146.

²⁴¹ See *supra* notes 127-31 and accompanying text.

²⁴² See Part III-B-2(b) *supra*.

If landowners are forced to build parking, they will normally place parking lots in front of, rather than in back of, stores and offices – partially because municipal zoning ordinances often require buildings to be set back far from a sidewalk or street.²⁴³ For example, Mississauga requires most commercial buildings must be at least 4.5 meters (or about 15 feet)²⁴⁴ from the street,²⁴⁵ and Burlington requires 6-meter (or 20-foot)²⁴⁶ setbacks in some zones.²⁴⁷ Landowners must put something between the street and their buildings in order to comply with setback regulations, and that something might as well be a parking lot,²⁴⁸ because customers find it more convenient to park in front of their store than in back.²⁴⁹

But where shops are surrounded by a sea of parking, they are anything but inviting for pedestrians. In such situations, pedestrians must waste time walking through parking lots²⁵⁰ and risk life and limb dodging automobiles in those parking lots.²⁵¹ By

²⁴³ See, e.g., *Re Stevens*, 2008 CarswellOnt 7562 at para. 14 [2008] (mixed-use complex required to be 150 feet from street); *391675 Alberta Ltd. v. Calgary*, 1988 CarswellAlta 1852, at paras. 1, 18 [1988] (city established a 17 foot setback in commercial area). Cf. Lewyn, *supra* note 8, at 279 (setback requirements common in United States as well).

²⁴⁴ One meter is 3.28 feet. See Christopher D. Johnsen, “Why Florida Should Follow California’s Lead In Enacting A Mandatory Cap-and-Trade Program for Greenhouse Gases”, (2008), 38 *Stetson L. Rev.* 163, at 194. Thus, 4.5 meters are roughly equivalent to 15 feet.

²⁴⁵ See Mississauga By-Laws, Table 6.2.1, Line 4.0 (listing “minimum front yard” standards for most commercial zones), (online at <http://www6.mississauga.ca/online/planbldg/ZoneBylaw/DZBR1/Part%206%20-%20Com%20General%20Provisions.pdf>) , Id., Part I (defining “front yard” as space “extending across the full width of a lot between the front lot line and the nearest part of any building or structure on the lot.”) , (online at <http://www6.mississauga.ca/online/planbldg/ZoneBylaw/DZBR1/Part%201%20-%201.2-Definitions.pdf>))

²⁴⁶ Cf. *supra* note 244 (translating meters into feet).

²⁴⁷ See Burlington By-Law, Parts 4.1, 5.1, 6.1, 7.1.

²⁴⁸ Cf. Chad Emerson, “Making Main Street Legal Again: The Smartcode Solution to Sprawl”, (2006) 71 *Mo. L. Rev.* 637, at 645 n. 36 (under conventional American zoning codes, “front setbacks must be either a 25-foot grass yard or a paved parking lot.”) (citation omitted).

²⁴⁹ See Shoup, *supra* note 119, at 107. Of course, it could be argued that in order to cater to customer desires, businesses will supply such parking even in the absence of minimum parking requirements. But without government regulation, landowners would weigh this impulse against their desire to build more stores and thus obtain more revenue.

²⁵⁰ See Freilich, *supra* note 182, at 557 (“large expanses of asphalt devoted to parking often discourages pedestrian mobility”).

contrast, where shops and other destinations flank the sidewalk, pedestrians can reach their destinations quickly and conveniently.²⁵²

If the parking-dominated “strip mall” landscapes created by setback and minimum parking requirements are time-consuming and unpleasant for pedestrians, it logically follows that such requirements deter walking and encourage driving.

c) Canadian And U.S. Suburbs Compared

As Table 14 shows, some U.S. suburbs have parking and/or setback regulations that are more stringent than those of Mississauga and Burlington.

TABLE 14: Parking and setback regulations in Toronto and Atlanta suburbs²⁵³

	Parking spaces Per dwelling unit (for 100 units)	Retail spaces per 1000 square ft.	Office spaces per 1000 square feet	Setback from street (in feet)
Toronto suburbs:				
Mississauga	1.38	5	3.2	15
Burlington	1.6	3.7	3	20
Atlanta suburbs:				
Sandy Springs	1.4	5	3 ²⁵⁴	40 (plus parking)
Alpharetta	2.05	5	4	35 (apartments)

²⁵¹ Cf. Jil McIntosh, “It’s no cakewalk being a pedestrian”, *[Toronto] Star*, (18 July 2009), W2, 2009 WLNR 13724302 (parking lots “dangerous” because drivers “busy looking for spots or avoiding cars backing out, making pedestrians vulnerable”).

²⁵² And enjoyably as well. See Douglas G. French, “Cities Without Soul: Standards for Architectural Controls with Growth Management Objectives”, (1994) 71 U. Det. Mercy L.Rev. 267, at 280 (suggesting that pedestrians find such places more aesthetically appealing because “small setbacks and shopfront windows provide more interesting scenery for pedestrians and create a feeling of connection between the buildings and the public spaces bordering them.”).

²⁵³ See supra notes 222-228 and accompanying text (Burlington and Mississauga requirements); infra notes 255-266 and accompanying text (Sandy Springs and Alpharetta setback, office parking and residential parking requirements); Sandy Springs Code, Art. 18.2.1 (retail parking requirements); Alpharetta Code, Art. 2.5.1 (same).

²⁵⁴ Or 2.8 for buildings with over 250,000 square feet of space. See Sandy Springs Code, Art. 18.2.1.

50 (commercial)

Although Sandy Springs requires about the same amount of parking for apartments as Mississauga²⁵⁵ its setback requirements are more rigid: apartments must be set back at least 40 feet from the street.²⁵⁶ Furthermore, off-street parking may not be within the setback.²⁵⁷ Thus, the real setback for multifamily housing is 40 feet (twice the setback required in Burlington, and more than twice the setback required in Mississauga)²⁵⁸ **plus** the amount of space necessary for parking, thus significantly extending a pedestrian's walk from the street. Sandy Springs has enacted similar setback regulations for commercial buildings.²⁵⁹

Alpharetta requires even more parking than does Sandy Springs or the Toronto suburbs discussed above. That city requires two parking spaces for every dwelling unit, and an additional space for every 20 units.²⁶⁰ Thus, a 100-unit apartment complex in Alpharetta will have 205 parking spaces (as opposed to 125-140 in Sandy Springs, 138 in Mississauga, and 160 in Burlington).²⁶¹ Alpharetta's setback requirements are similar to those of Sandy Springs.²⁶²

²⁵⁵ Sandy Springs Code, Art. 18.2.1 (requiring 1.4 spaces per one bedroom unit, or 1.25 for apartment complexes with more than 40 dwelling units per acre); Table 12 *supra* (Mississauga typically requires 1.4 spaces per unit).

²⁵⁶ *Id.*, Art. 7.3.3(B), 7.4.3(B).

²⁵⁷ *Id.*, Art. 18.3.1© and (D).

²⁵⁸ See Table 14 *supra*.

²⁵⁹ See Sandy Springs Code, Arts. 8.1.3B (40 foot setback in "Office/Institutional" district); 9.1.3B (40 foot setback for "Community Business" district), (40 foot setback for "Commercial" district), 18.3.1E (in "Office/Institutional" district, no parking may be within setback area); 18.3.1F (in commercial districts, parking location governed by same rules as apartment districts); *supra* note 221 and accompanying text (Sandy Springs apartment parking may not be within setback area);

²⁶⁰ Alpharetta Code, Art. 2.5.1.

²⁶¹ See Table 14 *supra*.

²⁶² Alpharetta Code, Art. 2.2.10D (apartment buildings must be 35 feet from street); Alpharetta Code, Art. 2.2.12D (50 feet setback in Office/Professional zone), 2.2.13D (same for Office/Institutional zone), 2.2.14D (same for Neighborhood Commercial zone)

Commercial parking requirements are also more restrictive in Atlanta suburbs. Mississauga and Burlington require offices to install 3.2 and 3 (respectively) parking spaces per 100 meters²⁶³ – that is, 3 and 2.8 spaces per 1000 square feet.²⁶⁴ By contrast, American municipalities typically require office buildings to install 4 spaces per 1000 square feet,²⁶⁵ a rule followed by Alpharetta.²⁶⁶

In sum, the most sprawling American suburbs require buildings to be set back significantly further from the street than in the Toronto suburbs studied; in addition, some American parking requirements are more stringent. So it is not surprising that, as noted above, these suburbs are more automobile-dependent than their Canadian counterparts.²⁶⁷

d) Policy Consequences

If, as suggested above, minimum parking requirements and setback requirements reduce density and degrade the pedestrian environment, the logical solution for a city wishing to improve the pedestrian environment is to abolish such rules: let the market determine how many parking spaces (if any) landowners should provide, and let the market determine where those parking spaces (if any) should be located.

Courts have justified minimum parking requirements on the ground that if landowners are not forced to build parking lots, their tenants and customers will engage in “cruising”²⁶⁸ – that is, driving “around block after block seeking a place to park... [thus

²⁶³ See Table 14 *supra*.

²⁶⁴ One square meter is 10.76 square feet. See Yihan, *supra* note 75, at 343. Thus, 100 square meters is 1076 square feet, which means that Mississauga requires 3.2 spaces per 1076 square feet- about the same as 3 per 1000 square feet.

²⁶⁵ See Shoup, *supra* note 119, at 31.

²⁶⁶ Alpharetta Code, Art. 2.5.1B. But not by Sandy Springs, which is more lenient. See Sandy Springs Code, Art.18.2.1.

²⁶⁷ See Table 13, *supra*.

²⁶⁸ See Michael Manville and Donald Shoup, “People, Parking and Cities” (2004), 25 *Access* 1 at 4 (using term “cruising” to describe motorists’ search for parking).

clogging] the streets, air and ears of our citizens.”²⁶⁹ According to this theory, minimum parking requirements actually prevent pollution and congestion. But if, as suggested above, minimum parking requirements actually increase societal vehicle travel, such rules may actually **increase** automobile-induced pollution and congestion.²⁷⁰

Setback requirements are often even less justifiable; courts upholding such rules have not listed any danger as specific as cruising, but have upheld setback regulations as rational based on vague anti-density concerns about congestion.²⁷¹ But if, as suggested above, compact development does not significantly increase congestion,²⁷² this argument is meritless.

3. Streets Designed For Cars, Not For People

In both Canadian and U.S. suburbs, government designs wide streets – streets that are often unsafe and uncomfortable for pedestrians. The discussion below will provide

²⁶⁹ *Stroud v. City of Aspen*, 188 Colo. 1, 6, 532 P.2d 720, 723 (1975).

²⁷⁰ Another argument for minimum parking requirements is that they prevent “spillover parking” – that is, customers of businesses that fail to provide parking “spilling over” into nearby residential areas and parking their vehicles in those neighborhoods. See Douglas Laycock, “State RFRA’s and Land Use Regulation”, 32 U.C. Davis L. Rev. 755, 766 (1999) (for example, if church provides its worshippers with an insufficient number of parking spaces, city has an interest in “ensuring that the spillover from the church parking lot does not deprive neighbors of reasonable opportunity to park in their own neighbourhood.”). The argument outlined above also applies to spillover parking: in an automobile-dependent area where more people drive to more destinations, spillover parking may increase because alternatives to driving are impractical. Moreover, less restrictive alternatives exist. Some cities have created a permit system for parking in residential neighborhoods, thus ensuring that parking in residential areas is limited to neighborhood residents and their guests. See *County Bd. Of Arlington County v. Richards*, 434 U.S. 5, 7 (1977) (upholding such a system).

²⁷¹ See, e.g., *Noto v. Zoning Board of Appeals of Weston*, 2009 WL 330945 (Mass. App. Ct.) (setback requirements and similar rules have “the rational purpose of preventing overcrowding”); *In re Letourneau*, 168 Vt. 539, 544, 726 A.2d 31, 35 (1998) (vague references to overcrowding, congestion, and “adequate light and air”), citing *Gorieb v. Fox*, 274 U.S. 603, 608-10 (1927).

²⁷² See *supra* notes 145-164 and accompanying text (suggesting that anti-density regulation may not reduce congestion, and creates environmental harms that may outweigh any congestion-related benefits). Setbacks have also been justified on aesthetic grounds. See *Texas Midstream Gas Services v. City of Grand Prairie*, 2008 WL 5000038 (N.D.Tex. 2008) (“Where [setbacks] are uniform throughout a neighborhood, they promote a pleasing appearance”). Setbacks may indeed make aesthetic sense in a residential neighbourhood. But as explained above, commercial and multifamily buildings set back far from the street are anything but attractive to pedestrians. See *supra* notes 243-252 and accompanying text.

some examples of such anti-pedestrian design in both nations, and will discuss possible alternative policies.

a) Unsafe At High Speeds

In Canada, suburban streets are often too wide to be safe for pedestrians.

The Mississauga code provides that some major streets must have a 60-meter (or almost 200 foot) right of way,²⁷³ including medians, sidewalks, and landscaping.²⁷⁴ Such streets are often eight to ten lanes wide.²⁷⁵ Burlington's major streets are only slightly smaller; Burlington's official plan calls for streets with 42 meters (or roughly 135 feet) of right-of-way.²⁷⁶ One of these streets, Guelph Line,²⁷⁷ has segments that are seven lanes wide.²⁷⁸

The wide streets of Canadian suburbs make those suburbs more automobile-dependent because such streets are both inconvenient and dangerous for pedestrians- inconvenient because a wide roadway takes more time to cross than a narrower street,²⁷⁹ and dangerous because the more time a pedestrian spends on such a street, the more time he or she spends exposed to traffic.²⁸⁰

²⁷³ See City of Mississauga, Amendment No. 25 to Schedule No. 5 (http://www.mississauga.ca/file/COM/MP_OPA_25_Schedule_5_Right_of_Way_June_2007.pdf) (map listing at least half a dozen 60-meter streets); supra note 244 (meter is 3.28 feet). Because 60 meters x 3.28 = 196, 60 meters is equal to 196 feet. However, I note that this figure may include not just the portion of the street used by cars, but also sidewalks and greenspace between those sidewalks and private property.

²⁷⁴ See Lewyn, supra note 8 at 284 n. 276.

²⁷⁵ See "Former hayfield heads for heyday", *[Toronto] Star*, (23 November 2006), at R06 ("Hayfield"), 2006 WLNR 20295384 (noting existence of ten-lane streets in Mississauga). Such streets are not limited to Toronto suburbia. See, e.g., Margo Goodhand, "Two wheels are good", *[Winnipeg] Free Press*, (20 June 2008) at A11, 2008 WLNR 11652760 (referring to eight-lane street in Winnipeg).

²⁷⁶ See supra note 208 (meter is 3.28 feet); City of Burlington, *Official Plan, Part VII- Schedules and Tables* (December 2009), at 4, 6 (online at <http://cms.burlington.ca/AssetFactory.aspx?did=10259>) (parts of Burloak Drive and Guelph Line have 42 meter right-of-way).

²⁷⁷ Id. at 6.

²⁷⁸ See Google Street View, 888 Guelph Line, Burlington, Ontario, online:maps.google.com

²⁷⁹ See *Donovan v. Jones*, 658 So.2d 755, 765 (La.Ct. App. 1995).

²⁸⁰ Id. See also Wallace Immen, "City seeks solution to commute crunch", *Globe and Mail* (26 April 2002), A22, 2002 WLNR 12038490 (even in downtown Toronto, pedestrians "have to run to beat the changing light" on wide streets).

Wide streets also increase pedestrian risk by encouraging motorists to drive more rapidly.²⁸¹ High speeds increase the risk of serious pedestrian/vehicle crashes in three ways. First, a motorist has a narrower field of vision the faster he or she drives. A motorist driving 30 miles (or roughly 48 kilometers)²⁸² per hour has a 150-degree field of vision.²⁸³ By contrast, a motorist driving at twice that speed has only a 50-degree field of vision,²⁸⁴ a vision level so narrow that the driver would be unqualified for a driver's license in some Canadian provinces.²⁸⁵ Thus, a fast driver is less likely than a slower driver to notice a pedestrian (or for that matter, any other road users).²⁸⁶

Second, even a motorist who does notice a pedestrian is less likely to be able to stop in time if he or she is driving at a rapid speed. A motorist who is driving 40 miles (or just over 60 kilometers)²⁸⁷ per hour will be able to stop 120 feet after noticing a pedestrian or other road user.²⁸⁸ By contrast, a motorist driving half that speed will be able to stop only 40 feet after seeing the other road user.²⁸⁹

Third, a car traveling rapidly is more likely to kill or maim a pedestrian than a slow-moving vehicle. A pedestrian has a 3.5 percent chance of death from a car traveling

²⁸¹ See Stephen H. Burrington, "Restoring the Rule of Law and Respect for Communities in Transportation", (1996) 5 N.Y.U. Envtl. L.J. 691, at 694 (traffic engineers build wide streets out of "solicitude for fast traffic").

²⁸² A kilometer is 0.6 miles. See Thomas H. Maugh II, "They saw the light, and life changed", [*Los Angeles*] *Times*, (7 October 2009), 1, 2009 WLNR 19732179.

²⁸³ See Burrington, *supra* note 281, at 704 n. 50.

²⁸⁴ *Id.*

²⁸⁵ See Visual Field Augmentation, online: <http://www.theworkshop.ca/VFA/VFA1/VFA1.htm> (noting 120-degree limit in Ontario).

²⁸⁶ See Burrington, *supra* note 281, at 704 n. 50. Cf. Peter Swift, Residential Street Typology and Injury Accident Frequency, online: The Sierra Club, <http://www.sierraclub.org/sprawl/articles/narrow.asp> (in one community studied, "a typical 36 foot wide residential street has 1.21 a/m/y (Ed: accidents/mile-year) as opposed to 0.32 for a 24 foot wide street").

²⁸⁷ See *supra* note 282 (kilometer is 0.6 miles).

²⁸⁸ See Joey Ledford, "Speeding Cars Terrify Neighborhoods", [*Atlanta*] *Journal and Constitution* August 27, 1997, B, 1997 WLNR 3173969 ("At 20 mph, it takes you 20 feet to react [to a pedestrian or vehicle in the street] and another 20 feet to stop. At 40 mph, it's 40 feet to think and another 80 feet to stop.")

²⁸⁹ *Id.*

15 miles (or 25 kilometers)²⁹⁰ per hour, but the likelihood of death increases to over 80 percent when the vehicle is traveling at three times that speed.²⁹¹

In addition, wide streets may combine with setbacks to create a visually disorienting and uncomfortable environment for pedestrians. Numerous commentators suggest that pedestrians are “drawn to streets with a feeling of intimacy and enclosure”²⁹² and that wide streets make pedestrians feel less enclosed.²⁹³

b) Canada and U.S. Suburbs Compared

American suburbs, like Canadian suburbs, tend to have streets wide enough to be uncomfortable for pedestrians.²⁹⁴ The major streets of Alpharetta and Sandy Springs tend to be five or six lanes.²⁹⁵ However, some American streets are significantly wider.²⁹⁶

But in another respect, American street regulation is significantly more anti-pedestrian than that of Mississauga or Burlington. The zoning code of Sandy Springs

²⁹⁰ See supra note 282 (each kilometer is 0.6 miles)

²⁹¹ See Burrington, supra note 281, at 704 (83 percent risk of death from car traveling 44 miles per hour); supra note 241 (kilometer is 0.6 miles).

²⁹² Paul Zyckofsky, *Building Livable Communities with Transit*, online:

http://www.lgc.org/freepub/community_design/articles/build_with_transit/index.html

²⁹³ Id. (less enclosure possible “in a wide open area with busy traffic passing closely by”); see also Andres Duany, Elizabeth Plater-Zyberk and Jeff Speck, *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*, (New York, North Point Press, 2001) at 78 (“If a street is to provide the sense of enclosure that pedestrians desire—if it is to feel like a room—it cannot be too wide”); J.H.Crawford, *Carfree Cities*, (International Books, Utrecht, 2000), at 44 (“long strips of low buildings bordering wide streets fail to create a sense of enclosure [desirable to pedestrians].”)

²⁹⁴ See John Kimble, “Insuring Inequality: The Role of the Federal Housing Administration in The Urban Ghettoization of African Americans”, (2007) 32 Law & Soc. Inquiry 399, at 410 n. 8 (wide streets part of what “characterize suburbia today”); Lewyn, supra note 8, at 284-85 (citing examples).

²⁹⁵ Keri Smith, “Alpharetta Turns 150: a wealth of memories”, [Atlanta] *Journal and Constitution*, (3 Feb. 2008), 8, 2008 WLNR 2033424 (citing one example of six-lane Alpharetta street); Janet Frankston, “Westside Parkway stretch in Fulton to be widened”, [Atlanta] *Journal and Constitution*, (8 September 2003), F2, 2003 WLNR 6205722 (citing another example); Saeed Ahmed, “Roswell Road Back in Business in Sandy Springs”, [Atlanta] *Journal and Constitution*, C1, 2003 WLNR 6211437 (noting that Roswell Road, Sandy Springs’ major street, is five lanes wide).

²⁹⁶ Jim Schaefer, “Walking the Whole Way Up Woodward: The Avenue from Detroit to Pontiac Is Paved with 26 Miles of History --and It's Celebrating Its 200th Anniversary”, [Detroit] *Free Press*, (17 August 2007), A1, 2007 WLNR 15984999 (explaining the transformation of Woodward Avenue, a major street in Detroit, that is now ten lanes wide); Susan Warner, “Trials of Travel on City Avenue”, [Philadelphia] *Inquirer*, (26 Feb. 1987), M5, 1987 WLNR 533119 (noting that Philadelphia's City Avenue is eight lanes wide)

states that “[l]ocal” (i.e. residential) streets²⁹⁷ “shall be laid out so that their use by through traffic will be discouraged.”²⁹⁸ Alpharetta’s code contains an identically worded provision.²⁹⁹ As a practical matter, this means that such streets should connect to as few other streets as possible – that is, that they are dead-end (or “cul-de-sac”)³⁰⁰ streets rather than being part of a grid of interconnected streets.³⁰¹

Cul-de-sac neighborhoods are less walkable than interconnected “grid” streets, because in a neighborhood dominated by dead-end streets, people cannot walk to visit their neighbors without going out of their way to a major street linking all the neighborhood streets.³⁰² By contrast, in a gridded neighborhood, people can take the shortest possible route to visit their destination.³⁰³

Cul-de-sacs, although certainly allowed in Canadian suburbs,³⁰⁴ are not mandatory in Mississauga or Burlington, and are thus not as universal as in many American suburbs.³⁰⁵ In this respect, the streets of Mississauga and Burlington may be less pedestrian-hostile than those of Atlanta suburbs.

²⁹⁷ See Lewyn, *supra* note 8, at 284 (explaining that “local streets are smaller, residential streets”).

²⁹⁸ Sandy Springs Code, Sec. 103-74(b).

²⁹⁹ Alpharetta Code, Art. 3.5.2E.

³⁰⁰ See Dictionary.com, Cul-de-sac Definition, online: [http:// dictionary.reference.com/browse/cul-de-sac](http://dictionary.reference.com/browse/cul-de-sac) (defining “cul-de-sac” pattern).

³⁰¹ Cf. Lewyn, *supra* note 8, at 288-89 (noting that some ordinances make this point more explicitly). Cf. See Dictionary.com, Grid Definition, online: [http:// dictionary.reference.com/search?q=grid](http://dictionary.reference.com/search?q=grid) (defining “grid” street pattern);

³⁰² See Brian W. Ohm and Robert J. Sitkowski, “The Influence of New Urbanism on Local Ordinances: The Twilight of Zoning?”, (2003), 35 Urb. Law. 783 at 792 (cul-de-sacs “force the major circulation pattern of a community onto a few major roads”); Duany, Plater-Zyberk & Speck, *supra* note 252, at 23 (showing visual examples)..

³⁰³ Ohm and Sitkowski, *supra* note 302 at 792 (grid “creates multiple and more direct routes”).

³⁰⁴ See Hayfield, *supra* note 275 (Mississauga “ended up with subdivisions with cul-de-sacs and crescents.”)

³⁰⁵ See, e.g., Diane Tierney, “Upscale homes found in rare cul-de-sac; Plenty of green space, privacy in well-established community”, *[Toronto] Star* (13 November 2008), at 2, 2008 WLNR 21649444 (describing cul-de-sacs in Toronto suburbs as “a rare street form”). In addition, any comparison of the suburbs discussed above at Google Maps, online:<http://maps.google.com>, reveals the difference between Toronto and Atlanta suburbs: in Sandy Springs and Alpharetta, there is nothing resembling a street grid, while in Burlington and Mississauga, the street pattern is more mixed.

c) Policy Consequences

Given the dangers caused to pedestrians by humongous streets, cities seeking to protect pedestrians should build narrower streets. If, as suggested above, wide streets encourage high-speed traffic, narrower streets encourage slower, less dangerous traffic.

How much narrower should streets be? There is no simple, one-size-fits-all answer to this question. However, the SmartCode, a model zoning code designed to facilitate compact development,³⁰⁶ suggests that most commercial streets have no more than two lanes set aside for traffic,³⁰⁷ and that only streets in the urban core have more than four lanes.³⁰⁸

It could be argued that because more people drive than walk to work, the risk to pedestrians from wide streets is simply not as important as the majority's need to drive more rapidly. But driver safety benefits from slow traffic as well, because areas with slower, more pedestrian-friendly traffic have fewer car crashes. One recent study examined two stretches of Colonial Drive, a street in Orlando, Florida:³⁰⁹ one part of the street that was 44 feet wide, and another portion of the street which had similar traffic volume but was 50 feet wide.³¹⁰ The narrower, more walkable section of Colonial Drive not only had fewer pedestrian injuries, but also had 31% fewer injuries from **all** mid-block crashes.³¹¹

³⁰⁶ See Kathryn E. Dennis, "Remembering Our Mississippi Gulf Coast", (2008) 77 Mississippi L.J. i, at viii n. 31 (SmartCode codifies compact development) (citation omitted).

³⁰⁷ See *SmartCode Modules* at SCA38, SC39-40, online: http://www.smartcodecentral.org/docs/modules_v9/3000_3_Modules-V9_PrintFinal.pdf (listing street sizes for typical commercial streets).

³⁰⁸ Id. at SCA42, SC 43 (listing widest streets, and suggesting that such streets be limited to T5 and T6 zones); Emerson, *supra* note 248, at 679 (noting that T5 and T6 are "most urban" zones).

³⁰⁹ See Eric Dumbaugh, "Safe Streets, Livable Streets", (2005), 71 J. Am. Plan. Ass'n 283.

³¹⁰ Id. at 288-90.

³¹¹ Id. at 290. However, both sections of Colonial Drive had similar levels of crashes at intersections, perhaps because of the design of the intersecting streets. Id.

Moreover, when people walk instead of drive to their jobs or errands, they are not the only beneficiaries. Automobiles are a significant emitter of carbon dioxide, a major greenhouse gas.³¹² So by reducing automobile travel, pro-pedestrian street design benefits not just pedestrians, but the general public as well.

As noted above,³¹³ neighborhoods dominated by cul-de-sacs are less walkable than those that include street grids, because pedestrians cannot reach most destinations as quickly if most streets are on cul-de-sacs. On the other hand, cul-de-sacs do have a countervailing public benefit: because of their very inaccessibility, they tend to have less automobile traffic.³¹⁴ Given the existence of important public policy goals on both sides, a city seeking to maximize walkability should not favor cul-de-sacs over grids, but should also allow some cul-de-sacs as a legitimate residential option.³¹⁵

III. Conclusion

This paper seeks to answer two questions:

First, Is sprawl more extensive in the United States than in Canada? In two ways, the answer is “yes.” Although population in both nations has to some extent dispersed from older cities to newer suburbs, migration to suburbia has been more rapid in the United States. Canadian cities have generally either grown or lost a modest amount of

³¹² See *Massachusetts v. EPA*, 549 US 497 (2007) (U.S. transportation industry responsible “for more than 6% of worldwide carbon dioxide emissions.”); *id.* at 525 (carbon dioxide makes “a meaningful contribution to greenhouse gas concentrations” which in turn may lead to climate change).

³¹³ See *supra* notes 302-303 and accompanying text.

³¹⁴ See *supra* notes 298-299 and accompanying text (cul-de-sacs popular with American municipalities because of concerns about “through traffic”).

³¹⁵ In addition, there are “middle ground” alternatives between prohibiting cul-de-sacs and mandating them. For example, a city could encourage cul-de-sacs combined with pedestrian walkways. See, e.g., Judy Liebner, “Stratford leads the way for fused grid streets”, *[Toronto] Star* (26 June 2004) N10, 2004 WLNR 6099796 (discussing “fused grid” proposal in Stratford, Ontario; under fused grid system, most residential streets are cul-de-sacs, but these cul-de-sacs are connected by pedestrian-only walkways to make walking easier). Or a city could require a combination of cul-de-sacs and grids, so as to avoid the disadvantages of having a subdivision be completely dominated by either of the two street designs.

population; by contrast, many older American cities have declined precipitously over the last half century. And American cities and suburbs tend to be far more automobile-dependent than their Canadian counterparts.

Second, to what extent has government regulation promoted sprawl in the United States and Canada? In both nations, government has promoted sprawl through highway spending that opened up suburbs to development, and through zoning and parking regulations that limit infill development and made suburbia less pedestrian-friendly than might otherwise have been the case. And in both nations, governments have encouraged the construction of streets that are not easily crossed by pedestrians. However, Canadian government regulation has been more lenient than American regulation; Canadian suburbs are apparently more likely to allow the construction of neighborhoods compact enough to support at least some public transit ridership, and to mandate somewhat smaller seas of parking around buildings than their American counterparts.

Finally, I note that a government that wishes to repopulate central cities, and to make neighborhoods more walkable and less automobile-dependent, can do so by reversing the policies discussed above: that is, by building fewer highways, eliminating anti-density zoning restrictions, abolishing minimum parking requirements, and building narrower streets.³¹⁶

³¹⁶ Of course, these are not the only possible anti-sprawl policies. Because the body of my paper focuses on government policies that accelerate sprawl, my policy proposals suggest dismantling those policies. However, some jurisdictions have chosen to limit sprawl by increasing government regulation. For example, some jurisdictions in both Canada and the United States have chosen to restrict development of suburban and rural land. See, e.g., Chuck Hewitt, “Home builder backs tighter mortgage eligibility rules”, [Waterloo] Region-Record, (7 January 2010) at B4, 2010 WLNLR 300783 (noting that Ontario’s “Greenbelt” law limits development of suburban land in southern Ontario); Carl J. Circo, “Does Sustainability Require A New Theory of Property Rights?”, (2009) 58 U. Kan. L. Rev. 91, at 100 (describing Oregon’s similar system). The wisdom of these policies is beyond the scope of this paper.