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Michael Lewyn*

THE PURPOSE OF THIS ARTICLE IS TO ASCERTAIN WHETHER (1) suburban sprawl (as defined below) is as widespread in Canadian metropolitan areas as in their American counterparts, and (2) Canadian government policies, and in particular Canadian zoning law and transportation policies, encourage sprawl.

Part I of the Article defines sprawl and explains why sprawl is controversial. Part II shows that Canadian metropolitan areas are in fact somewhat less sprawling than most of their American counterparts. (The more speculative question of why this is so is beyond the scope of the Article). Part III demonstrates that in Canada, as in the United States, land use law and government transportation policy favor sprawl. In particular, Part III explains that in both nations highway spending facilitates suburban development, and municipal zoning regulations, by limiting density and forcing landowners to build parking lots, encourage driving and discourage walking and transit ridership.

The issues discussed in this Article are important because some pro-sprawl theorists have argued that the persistence of suburban growth in Canada (among other affluent nations) shows that sprawl is an inevitable result of affluence, rather than a by-product of pro-sprawl American public policy. By showing that Canadian sprawl is both (a) less extensive than American sprawl and (b) also related to pro-sprawl government policies, this Article rebuts that claim.

I. What is Sprawl and Why is it Controversial?

There are many definitions of sprawl.¹ Most of these definitions relate to

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1. See OLIVER GILLHAM, *THE LIMITLESS CITY* 4 (2002) (citing numerous definitions).

1. **Where** land is developed—that is, in newly developing suburbs as opposed to cities and older suburbs;² and/or
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.³

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 (1) shifts people from traditional city cores to their suburbs 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 least sprawling if its central city is growing and if many of its residents commute by public transit or other non-automotive means.

Many environmentalists (as well as some other commentators) seek to contain sprawl on a variety of grounds.⁴ They assert that the movement of people from city to suburb drains core cities of economic health⁵ and that when once-rural areas turn into suburbs, those areas’ stock of farmland and wildlife habitat is destroyed.⁶ 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.⁷ And as people move to environments where driving is virtually mandatory, societal vehicle mileage increases,⁸ thus lead-

2. *Id.* at 3 (citing dictionary definition of sprawl as “expansion of urban area into areas of countryside”) (citation omitted), 4 (citing Reason Public Policy’s Institute’s assertion that “[m]any people think sprawl is synonymous with suburbanization” and Heritage Foundation’s definition of sprawl as “low-density, residential development beyond a city’s limits”).

3. *Id.* (citing Massachusetts state agency’s description of sprawl as “low-density, single-use development on the urban fringe that is almost totally dependent on private automobiles for transportation” and Natural Resources Defense Council’s definition of sprawl as “strip malls and subdivisions that serve cars better than people”).

4. *Id.* at 74 (leading critics of sprawl include environmentalists, inner-city advocacy groups, historic preservation advocates, and public transit advocates).

5. *Id.* (“Center-city mayors . . . generally hold that sprawl has negatively affected the nation’s core cities and continues to drain them of vitality and economic health.”)

6. *Id.* at 75.

7. OLIVER GILLHAM, *THE LIMITLESS CITY* 11 (2002) (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.”).

8. *Id.* at 75 (“Between 1980 and 1997, total annual vehicle miles traveled (VMT) in the [United States] increased by 68 percent.”)

ing to increased traffic congestion,⁹ air pollution and greenhouse gas emissions.¹⁰

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.¹¹ 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.¹²

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.”¹³ 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.¹⁴

By showing that sprawl is less extensive in Canada than in the United States,¹⁵ and by showing that even Canadian sprawl is at least partially the product of government regulation,¹⁶ this Article at least partially rebuts the claim that sprawl is an inevitable result of affluence and the free market.

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

In this section, I compare Canadian regions with their American counterparts. I first examine the “where we develop” element of sprawl by showing that Canada’s urban cores have not shrunk to the same extent as their American counterparts. I then address the “how we develop” element of sprawl by showing that Canadian cities are not as automobile-dependent as their American counterparts.

9. *Id.* (as VMT increased, “the average annual delay experienced by individual drivers increased by 150 percent.”)

10. *Id.* at 76.

11. See Michael Lewyn, *New Urbanist Zoning for Dummies*, 58 ALA. L. REV. 257, 258 n.11 (2006) (describing non-environmentalist critiques of sprawl in more detail).

12. *Id.* at 259, 259 n.15.

13. GILLHAM, *supra* note 1, at 75 (describing argument).

14. See ROBERT BRUEGMANN, *SPRAWL: A COMPACT HISTORY* 10 (2006) (sprawl a “predictable result of increasing wealth”); *id.* at 169-219 (describing failure of numerous attempts to limit sprawl); PAMELA BLAIS, *PERVERSE CITIES* 5 (2010) (defenders of sprawl describe it as result of “rising real incomes and falling transportation costs, which have allowed homes and businesses to locate farther from central cities”).

15. See *infra* Part II.

16. See *infra* Part III.

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.¹⁷

Table 1: Population Trends: Ten American Cities with Largest 1950 Populations (population in thousands)¹⁸

	1950	1970	2000	Percent gain or loss	Percent gain or loss
	<i>Pop.</i>	<i>Pop.</i>	<i>Pop.</i>	<i>1950–2000</i>	<i>1970–2000</i>
New York	7891	7895	8008	+1	+1
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

17. In theory, it is possible for a region to have no suburban growth at all, or for its suburbs to grow more slowly than its cities. But this has rarely been the case. *See infra* note 39 (even in Canada, suburbs have grown faster than cities).

18. *See* THE WORLD ALMANAC AND BOOK OF FACTS 403 (William A. McGeeveran Jr. et al. eds., 2003) [hereinafter ALMANAC]; U.S. BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES 22-25 (1953) [hereinafter 1953 ABSTRACT]; U.S. BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES: 1973 22-24 [hereinafter 1973 ABSTRACT]. I have chosen to use 2000 rather than 2010 figures because 2010 U.S. Census data is still contested, and may well be adjusted over the next few years. *See* Marisa Kendall, *Census figures not as easy as 1, 2, 3 Cities argue populations undercounted*, USA TODAY, Apr. 6, 2011, at 3A, available at 2011 WLNR 6630711 (numerous cities have alleged that Census Bureau undercounted their population, and some will file suit to challenge figures). I also note that the U.S. cities listed above are fairly typical of major American cities. When areas added in post-1950 annexations are 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?*, 122 Q. J. ECON., no. 2, 2007, at 775, available at http://www.econ.brown.edu/fac/Nathaniel_Baum-Snow/hwy-sub.pdf.

Table 1 reveals that older American cities declined 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 high-growth city, Los Angeles, had a significant amount of undeveloped land within its limits, and was thus able to sprawl without losing population.¹⁹

It could be argued that the decline of these eight older cities reflects regionwide 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 1950-2000: Metropolitan Area Populations of Ten U.S. Cities with Largest 1950 Populations
(population in thousands)²⁰

	1950	2000
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, suburban 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.²¹ Thus, it cannot plausibly be argued that urban decline is simply a result of regional decline.

19. See DAVID RUSK, *INSIDE GAME/OUTSIDE GAME* 131-32 (1999) (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)”).

20. See 1953 ABSTRACT, *supra* note 18, at 20-21; U.S. BUREAU OF THE CENSUS, *STATISTICAL ABSTRACT OF THE UNITED STATES: 2003* 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 18, at 20-21.

21. See *supra* Tables 1 and 2. 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

Admittedly, some American cities gained population: in fact, five cities (Houston, Phoenix, San Diego, Dallas, and San Antonio) that had fewer than 600,000 residents in 1950 had over a million residents in 2000.²² 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.²³ Thus, it appears that pre-1950 American urban cores generally declined in the late 20th century.

2. HOW CANADA COMPARES

At first glance, Canadian central cities appear to have grown throughout the 20th century. Table 3 shows population trends in Canadian cities, in order of 1951 population.²⁴

Table 3: Population Trends: Ten Canadian Cities with Largest 1951 populations (in thousands)²⁵

	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	129	403	878
Windsor	120	203	208

apparent that the population of suburban Detroit increased from about 1.1 million to 3.5 million.

22. See ALMANAC, *supra* note 18, at 503.

23. See RUSK, *supra* note 19, at 133 (most “elastic” cities generally gained population, while least elastic cities declined); DAVID RUSK, CITIES WITHOUT SUBURBS 140-41 (2003) (grading cities on a five-point scale from “inelastic” to “hyperelastic”; Phoenix, San Diego, Houston and San Antonio all hyperelastic, while Dallas in second most elastic “high elastic” category).

24. While the United States 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.

25. See STATISTICS CANADA, CENSUS OF CANADA (1951), available at <http://www.chass.utoronto.ca/datalib/cc51/census51.htm#nation> (Table 3) [hereinafter 1951

Table 3 suggests that Canadian cities are 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.²⁶ For example, the Toronto of 1951 encompassed 34 square miles,²⁷ while the Toronto of 2001 encompassed 245 square miles.²⁸ Similarly, Calgary expanded from 39 square miles to 270 square miles.²⁹ Because most major Canadian cities have annexed large amounts of territory,³⁰ merely looking at city population growth understates Canadian sprawl.

There is a way to make Canadian city populations comparable to those of inelastic U.S. cities: by focusing on only those areas within pre-annexation city limits. For three of Canada's largest cities, I was able to ascertain which current census tracts were part of those cities in 1951.³¹

CENSUS]; STATISTICS CANADA, POPULATION AND DWELLING COUNTS, FOR CANADA AND CENSUS SUBDIVISIONS (MUNICIPALITIES) WITH 5,000-PLUS POPULATIONS, 2001 AND 1996 CENSUSES, *available at* <http://www12.statcan.ca/english/census01/products/standard/popdwel/Table-CSD-N5.cfm> [hereinafter 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 2-14, 19, 24, 28, 31, 34, 43, 45 (1974) [hereinafter 1971 POPULATION AND DWELLING].

26. See Peter J. Smith, *Suburbs*, in CANADIAN CITIES IN TRANSITION 303, 314 (Trudi Bunting & Pierre Filion eds., 2000) (discussing numerous examples of city/suburb amalgamation).

27. See 1951 CENSUS, *supra* note 25.

28. By 2001, Canada had switched to the metric system, and the Census listed Toronto as encompassing 629 square kilometers. See 2001 CENSUS, *supra* note 25. One square kilometer is equivalent to roughly 0.38 square miles. See *In re Morley*, 1987 CarswellNS 560, para. 5 (Can. N.S. Mun. Bd.) (WL) (9.9 square kilometers equal to 3.8 square miles). Thus, Toronto encompassed 245 square miles (629 x 0.38). For the rest of this paper, I will use square miles and other non-metric measurements, because both the American census and earlier Canadian censuses do so.

29. 1951 CENSUS, *supra* note 25 (1951 population and city area); 2001 CENSUS, *supra* note 25 (2001 population and city area); *supra* note 28 (comparing square miles and kilometers).

30. 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 25; 2001 CENSUS, *supra* note 25; *supra* note 28.

31. These three cities did not annex any territory between 1951 and 1971. See 1971 POPULATION AND DWELLING, *supra* note 25, at 2-28, 31, 45 (listing land area for these

Table 4: Population Trends in Large Canadian Cities, 1951-2001
(in thousands) (excluding census tracts³² annexed after 1951)

	1951	1971	2001 ³³
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 population losses suffered by American cities. One city (Toronto) essentially stagnated, and two (Ottawa³⁴ and Vancouver) grew.

Because 1971 census tracts, unlike 1951 census tracts, have the same boundaries as 2001 tracts,³⁵ 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.

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. 95-726 1 (1983) [hereinafter CENSUS TRACTS IN CALGARY] ("For the 1971 census, the census tract numbering system was completely revised, and a uniform system to allow for comparability with future censuses was adopted.") (emphasis added).

32. Census tracts "are small neighbourhood-like areas into which metropolitan areas have been divided [by census agencies] for data reporting and analysis purposes." Robert A. Murdie & Carolos Teixeira, *The City As Social Space*, in CANADIAN CITIES IN TRANSITION, *supra* note 26, at 198, 219-20 n.2.

33. 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].

34. Ottawa'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)*, 68 LANDSCAPE & URB. PLAN. 199, 215 (2004) (explaining that because Ottawa has annexed much rural territory, area within city limits is now "90% rural"). I have found no way of ascertaining to what extent this is true of other Canadian cities.

35. *See* CENSUS TRACTS IN CALGARY, *supra* note 31 (explaining how I was able to exclude tracts added to these cities after 1971).

Table 5: Population Trends in Selected Canadian Cities, 1971-2001
(in thousands) (excluding census tracts annexed after 1971)³⁶

	1971	2001	Population increase/decline
Toronto	712	676	-5
Vancouver	426	538	+26
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 that six of the ten cities listed continued to grow within their 1971 borders. Even the weakest cities experienced nothing like American levels of depopulation: while Montreal and Quebec City lost 18% and 14% of their population respectively between 1971 and 2001, St. Louis had lost 44% of its 1970 population by 2000,³⁷ and Cleveland and Detroit had lost over 30%.³⁸

36. See 1971 POPULATION AND DWELLING, *supra* note 25 (data for 1971); Population Printout, *supra* note 33 (2001 data).

37. See *supra* Table 1.

38. *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* 44 CAHIERS DE GEOGRAPHIE DU QUEBEC 341, 351 (2000), available at <http://www.erudit.org/revue/cgq/2000/v44/n123/022925ar.pdf>. This study showed 1971-96 population losses ranging from 1% (in Calgary) to 35% (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 include neighborhoods dominated by post-1946 housing. See *American Factfinder: Data Sets with Detailed Tables*, U.S. CENSUS BUREAU, available at http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&_lang=en&_ts=281376275609 (last visited Jan. 2, 2012) (selecting geographic region and narrowing search inquiry to H35: Median Year Structure Built) (finding that 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

Thus, Canadian central cities, unlike U.S. cities, tend to be about as populous as they were a few decades ago. This does not mean that there was no suburban growth in Canada: even where central cities have grown, suburban portions of Canadian metropolitan areas have grown faster.³⁹ 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.⁴⁰

function of declining household size rather than urban decay. See Bunting et al., *supra* note 38, at 351. By contrast, 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, 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, available at 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); *American Factfinder: Data Sets with Detailed Tables*, U.S. CENSUS BUREAU, available at http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&_lang=en&_ts=281376275609 (last visited Jan. 2, 2012) (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").

39. See Smith, *supra* note 26, at 354 (Montreal's suburbs grew by 26% between 1971 and 1996, and other major Canadian cities' suburbs grew even more rapidly). See also BLAIS, *supra* note 14, at 1 (in Canada, the "vast majority of population and employment growth is taking place in outer suburbs"); Andrew Heisz, *Ten Things To Know About Canadian Metropolitan Areas: A Synthesis of Statistics Canada's Trends and Conditions in Census Metropolitan Areas Series 25* (Sept. 2005), available at <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, the rest of the metropolitan area grew more rapidly).

40. Because 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 *URBAN SPRAWL IN WESTERN EUROPE AND THE UNITED STATES* 137, 144 (Harry W. Richardson & Chang-Hae Christine Bae eds., 2004) (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 *URBAN SPRAWL IN WESTERN EUROPE AND THE UNITED STATES*, *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*, in *TRANSFORMING BARCELONA* 27, 29-31 (Tim Marshall ed., 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 & Christian Kesteloot, *Urban Policies in Belgium: A Puff Pastry With A Bitter-Sweet After-Taste?*, in *NATIONAL POLICY RESPONSES TO URBAN CHALLENGES IN EUROPE* 79, 104 (Leo Van Den Berg, Erik Braun & Jan Van Den Meer eds., 2007) (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*

B. *How We Grow: Comparing American to Canadian Cities*

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 urban growth. 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 percentage⁴¹

	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 (and on foot) than Americans.⁴²

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

Development, in NATIONAL POLICY RESPONSES TO URBAN CHALLENGES IN EUROPE, *supra*, at 105, 124 (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*, 46 SAN DIEGO L. REV. 85, 95 (2009) (most European cities rebounded in 1990s and 2000s).

41. *See* Kim England & John Mercer, *Canadian Cities in Continental Context: Global and Continental Perspectives on Canadian Urban Development*, in CANADIAN CITIES IN TRANSITION, *supra* note 26, at 24, 30 (U.S. and Canadian statistics).

42. The reasons for this divergence are beyond the scope of this paper. *But see infra* notes 51-52 and accompanying text (noting that Canadian regions more likely to restrict suburban development and that gasoline prices higher in Canada). Also, Canadian cities tend to provide more transit service than most U.S. cities. *See* TORONTO Bd. OF TRADE, TORONTO AS A GLOBAL CITY: SCORECARD FOR PROSPERITY-2011 64 (2011), *available at* http://www.bot.com/Content/NavigationMenu/Policy/Scorecard/Scorecard_2011_Final.pdf (Toronto, Calgary, Vancouver and Montreal all have more bus service, as measured by miles traveled by city buses, than all but one American city listed; only exception, Seattle, has less rail service than every major Canadian city other than Calgary).

Table 7: Usual Mode of Transport for Work Commute, by percentage, Canadian and U.S. Metropolitan Areas⁴³

	Driving	Public Transit
<i>Largest⁴⁴ Canadian Metropolitan Areas</i>		
Toronto	71.1	22.2
Montreal	70.4	21.4
Calgary	76.6	15.6
Ottawa	70.7	19.4
Edmonton	82.8	9.7
Winnipeg	78.7	13.0
Vancouver	74.4	16.5
<i>Largest American Metropolitan Areas</i>		
Chicago	81.5	11.0
Dallas	92.8	1.8
Houston	91.2	3.3
Los Angeles	87.6	4.7
New York	65.7	24.9
Philadelphia	83.6	8.7
Phoenix	90.1	3.3
San Diego	86.9	3.4

43. For American data, go to U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2004-05 694-95 [hereinafter 2004-05 ABSTRACT]. For Canadian data, see STATISTICS CANADA, COMMUTING PATTERNS AND PLACE OF WORK OF CANADIANS, 2006 CENSUS, Catalog No. 97-561-X at 27-29, 31, *available at* <http://www12.statcan.ca/english/census06/analysis/pow/pdf/97-561-XIE2006001.pdf> [hereinafter 2006 COMMUTING PATTERNS]. I note that my totals do not add up to 100% because I have chosen to exclude data on walking, bicycling and working at home, for two reasons. First, these transportation modes are not tremendously significant in most cities listed above. In no metropolitan area do these categories include as many as 10% of commuters. See *supra* Table 7. Second, U.S. and Canadian statistics for modes other than driving and transit are not comparable. For example, U.S. census data adds a “worked at home” category, which is not in the Canadian census. See 2004-05 ABSTRACT, *supra*, at 695; 2006 COMMUTING PATTERNS, *supra*, at 27.

44. 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 43, at 695 (listing number of core city commuters in table); 2006 COMMUTING PATTERNS, *supra* note 43, at 36 (doing the same for Canadian cities).

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.

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

Table 8: Percentage of Commuters Using Various Forms of Transportation, Major Canadian and U.S. Cities⁴⁵

	Driving	Public Transit	Other ⁴⁶
<i>Canadian Cities</i>			
Toronto	55.7	34.3	10.0
Vancouver	57.6	25.1	17.3
Montreal	53.2	34.7	12.1
Ottawa	67.1	21.8	11.1
Calgary	75.2	16.7	8.1
Winnipeg	77.0	14.1	8.9
Edmonton	79.0	12.7	8.3
<i>American Cities</i>			
New York	32.9	52.8	14.3
Philadelphia	62.0	25.4	12.6
Chicago	64.6	26.1	9.3
Los Angeles	80.4	10.2	9.4
San Diego	86.2	4.2	9.6
Houston	87.7	5.9	6.4
Dallas	88.6	5.5	5.9
Phoenix	89.1	3.3	7.6

45. For an explanation of which cities I have chosen, see *supra* note 44. For American data, go to 2004-05 ABSTRACT, *supra* note 43, at 695. For Canadian data, go to STATISTICS CANADA, COMMUNITY PROFILES FROM THE 2006 CENSUS, available at <http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-591/index.cfm?Lang=E>, [hereinafter COMMUNITY PROFILES] and then search for individual municipalities. Cf. ROBERT DUNPHY, DEVELOPING AROUND TRANSIT: STRATEGIES AND SOLUTIONS THAT WORK 17 (2005) (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).

46. I have chosen to lump walking and bicycling together because the Canadian city-city census statistics do not separate the two. See COMMUNITY PROFILES, *supra* note 45.

Table 8 shows that North American central city commuting follows the same patterns as region-wide commuting. The newest American cities are the most automobile-dependent: in the four large cities that were not among the ten largest in 1950 (San Diego, Houston, Dallas and Phoenix)⁴⁷ between 3% and 6% of commuters take a bus or train to work—less than half the proportion of commuters doing so in Edmonton, Canada's most automobile-oriented major city.

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 less true in Canada.⁴⁸

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

It has been argued that the existence of 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 affluent households have sought to move away from central cities since the days of the Roman Empire,⁴⁹ and that modern affluence is moving industrialized nations towards ever-greater suburbanization.⁵⁰

Peter Gordon and Bumsoo Lee apply this theory to Canada. These commentators assert that Canadian land use regulation is more restrictive than that of the United States (thus discouraging suburban development),⁵¹ and that Canadian gasoline prices are higher (thus discouraging

47. See *supra* Table 1 (listing largest cities as of 1950).

48. I note in passing, however, that Canadian cities are more car-oriented than some European cities. In numerous European cities, less than half of commuters use a car to get to work. See *City Profiles*, URBAN AUDIT, www.urbanaudit.org/CityProfiles.aspx (last visited Jan. 2, 2012) (to find statistics for individual city, select nation and city, and find "Transport and Travel" in "City and LUZ" level list of tables; automobile commuting percentages are as low as 24% in Zurich, 26% in Copenhagen, and 33% in Stockholm).

49. See BRUEGMANN, *supra* note 14, at 23-24.

50. *Id.* at 10-11, 73-78, 201-02 (describing suburbanization in Europe); see also RANDAL O'TOOLE, *THE BEST-LAID PLANS* 109 (2007) ("European cities are looking more American every year"). But see Lewyn, *supra* note 40, 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).

51. Peter Gordon & Bumsoo Lee, *Settlement Patterns in the U.S. and Canada: Similarities and Differences-Policies or Preferences?* 2 (Oct. 3, 2003), available at <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."); see also BLAIS, *supra* note 14, at 26 (regional land use planning "universal" in Canada).

driving).⁵² Nevertheless, Canada is similar to the United States in some ways: although its cities have grown, its suburbs have grown faster,⁵³ and most Canadians drive to work.⁵⁴ Gordon and Lee accordingly reason that 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 has no pro-sprawl public policies that counterbalance anti-sprawl planning restrictions. 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 population density. Both policies encourage migration from city to suburb.

1. HIGHWAYS

In the United States, government has generously supported highways. For example, between 2005 and 2009, the U.S. federal government spent \$201 billion on highways (compared to only \$46 billion on

52. *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*, GLOBE & MAIL, June 7, 2008, at B15 (68.4% of Canadian households own houses as opposed to 67.9% of Americans).

53. Gordon & Lee, *supra* note 51, at 8 ("the suburbs of Canada's major cities added more people than the central cities. . . .")

54. *Id.* at 10. Gordon and Lee also note that during the early 1990s, Canadian per capita transit ridership fell. *Id.* at 9. However, this is no longer the case. See 2006 COMMUTING PATTERNS, *supra* note 43, at 28-29 (in most Canadian metropolitan areas, transit ridership rose between 1996 and 2006, not only in absolute terms but as percentage of overall workforce).

55. *Id.* at 2 (suburban development outside the United States is 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.

public transit).⁵⁷ Canadian government has a similar bias; in 2008, all levels of Canadian government spent \$20.8 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, suggest some possible results of these differences, and compare the American experience.

a. A Canadian Comparison: Toronto vs. Vancouver

The province of Ontario has supported road construction in Toronto and its suburbs since 1927, when the province paid 40% of the cost of road construction and 20% of the cost of road maintenance.⁶⁰ In addition, the province required the city of Toronto to help pay for roads leading outside of downtown, 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 operational 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 suburban commuters. For example, government

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*, 17 N.Y.U. ENVTL. L.J. 580, 587 (2008). State and local governments also favored highways, though to a lesser degree. See U.S. CENSUS BUREAU, STATE AND LOCAL GOVERNMENTS-EXPENDITURES FOR PUBLIC WORKS: 2000 TO 2006 (July 2008), available at <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 public transit).

58. Table G5: *Transport Expenditure and Revenues by Mode and Levels of Government, 1999/2000 to 2008/2009*, TRANSPORT CANADA, <http://www.tc.gc.ca/eng/policy/report-aca-anre2008-add-table-g5-1200.html> (last modified Mar. 15, 2010).

59. See Gordon and Lee, *supra* note 51, at 7.

60. See JOHN SEWELL, *THE SHAPE OF THE SUBURBS: UNDERSTANDING TORONTO'S SPRAWL* 14 (2009).

61. *Id.*

62. *Id.* at 30.

63. *Id.* at 33.

64. *Id.* at 34.

65. SEWELL *supra* note 60, 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").

planners expected Highway 401 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 built several additional Toronto-area highways over the following decades.⁷¹

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 major suburban highways.⁷² These three clusters alone have attracted over 100,000 jobs.⁷³

By contrast, Vancouver has never developed a regional freeway network,⁷⁴ has no expressways running through its downtown,⁷⁵ and has also avoided widening downtown streets to accommodate suburban commuters.⁷⁶

The experience of these two cities suggests that Vancouver's policies have allowed the core of Vancouver to have a healthy share of metropolitan Vancouver's growth. 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 neither gained nor lost a significant amount of population.⁷⁷ 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 2003.⁷⁸

69. *Id.* at 67.

70. In Canada, provinces are primarily responsible for highway finance. *See* SEWELL *supra* note 60, 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.")

71. *Id.* at 67 (Don Valley Parkway opened in the 1960s and was later extended into Toronto's northern suburbs as Highway 404), 70 (Highway 427 opened in 1972, and Highway 410 opened during the 1980s), 57 and 72 (Highway 407 built in 1980s).

72. *See* Andrew Heisz and Sebastien LaRochelle-Cote, *Work and Commuting in Census Metropolitan Areas, 1996-2001* 26, 34 (June 2005), available at <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).

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

74. *See* LANCE BERELOWITZ, *DREAM CITY 80* (2005) ("Unlike most North American cities, Vancouver has never developed a comprehensive regional freeway network.")

75. *See* Maria Saporta, *The Road Not Taken In Growth*, ATLANTA J. & CONST., May 28, 2007, at B3, available at 2007 WLNR 9980127 (Vancouver is "the only North American city of any consequence without an interstate [highway] at its core.")

76. *See* BERELOWITZ, *supra* note 74, at 219 (city has adopted policy of "not building additional bridges or traffic lanes" downtown).

77. *See supra* Table 4.

78. *See* BERELOWITZ, *supra* note 74, at 218.

b. The U.S. Experience

The experience of the United States also supports the view that highways promote suburbanization. As early as 1921, the federal government began to fund state and local road construction.⁷⁹ A few decades later, Congress massively increased highway development by passing the Federal-Aid Highway Act of 1956, which supported the construction of the Interstate Highway System.⁸⁰ Under that statute, the federal government paid for 90% of interstate road construction, expanding the national road system from 341 miles to over 43,000 miles.⁸¹ As a result of these policies, there is no U.S. city without a highway in its core.⁸²

For example, Atlanta built two major highways from city to suburb in the 1950s,⁸³ a third highway encircling the city in 1969,⁸⁴ and yet another city-to-suburb highway in 1993.⁸⁵ While metropolitan Atlanta's population grew by over 80% between 1980 and 2000, the city of Atlanta actually lost population in the late 20th century.⁸⁶

In the United States, as in Canada, highway construction apparently shifted population from city to suburb by facilitating suburb-to-city commuting. In the decades before the interstate highways were built, American cities generally gained population.⁸⁷ By contrast, most large cities lost population over the next few decades.⁸⁸

Nathaniel Baum-Snow of Brown University recently sought to measure the relationship between suburban highways and urban decline. By comparing highway construction and population decline in a number of U.S. metropolitan areas, he concluded, even after controlling for regional size and income,⁸⁹ that "each new highway causes . . . central

79. See Michael Lewyn, *Suburban Sprawl: Not Just An Environmental Issue*, 84 MARQ. L. REV. 301, 313 (2000).

80. See John R. Annand, *A Coordinated Approach to Growth Control in Northern Virginia*, 52 WM. & MARY L. REV. 1679, 1687 (2011).

81. See Baum-Snow, *supra* note 18, at 4.

82. See Saporta, *supra* note 75 (noting that Vancouver "only North American city" without urban highways).

83. See Michael Lewyn, *How City Hall Causes Sprawl-A Case Study*, 30 ECOLOGY L.Q. 189, 194 (2003).

84. *Id.* at 194-95.

85. *Id.* at 196.

86. *Id.* at 190 (noting suburban growth and urban decline in 1980s and 1990s), 194-95 (city also lost population in 1970s).

87. Lewyn, *supra* note 79, at 320 (every American city with over 500,000 residents gained population between 1930 and 1950).

88. *Id.* (in the 1950s, thirteen of the eighteen cities with over 500,000 people in 1950 lost population, and two lost over 10% of their population; in the 1960s, fifteen lost population, and six lost over 10% and in the 1970s, sixteen lost population and fourteen lost over 10%).

89. See Baum-Snow, *supra* note 18, at 2.

city population to decline by about 18%, all else equal.”⁹⁰ Had the U.S. interstate highway system not been built, American central city population would have grown by 8% since 1950 rather than declining by 17%.⁹¹ Moreover, the location of highways accurately predicts the location of suburbanization: suburban areas developed near highways had higher population growth in the late 20th century than other suburbs and neighborhoods.⁹² For example, Baum-Snow notes that after Austin, Texas built a north-south highway (Interstate 35) in 1950s, “nearly all of the new residential development between 1950 and 1990 occurred along the north-south highway and not in the east-west direction.”⁹³

c. 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 should 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 caused by highways.⁹⁴ 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 suburbanites had to spend hours commuting on two-lane dirt roads—obviously an absurd result. Moreover, surveys of homeowners show that many homeowners prefer locations with highway access⁹⁵—which means that in the absence of such access, many suburbs would be less popular with homeowners.

90. *Id.* at 2.

91. *Id.*

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

93. *Id.* at 10.

94. See Gordon & Lee, *supra* note 51, at 2 (making argument). Cf. BRUEGMANN, *supra* note 14, at 10-11 (suggesting that sprawl a result of increased affluence), 108 (arguing that highways may have even helped cities by making them easier to reach).

95. See Ralph Bivins, *Las Vegas To Get Metropolis Condo Transplant*, HOUSTON CHRONICLE, March 30, 2003, at 8, available at 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 18, at 2 (estimating that each new limited-access highway, other factors being equal, causes central city population to decline by 18%).

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.⁹⁶

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 Canada⁹⁷ and the United States,⁹⁸ cities⁹⁹ limit residential and commercial density through a wide variety of techniques, including (but not limited to)¹⁰⁰ minimum lot size requirements¹⁰¹ and minimum parking requirements.¹⁰² By limiting the supply of dwelling units, offices and shops within municipal boundaries, these regulations reduce population and employment within central cities.

96. See Lewyn, *supra* note 79, 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); see also Gilles Duranton & Matthew Turner, *The Fundamental Law of Road Congestion: Evidence from U.S. Cities* (Nat'l Bureau of Econ. Research, Working Paper No. w15376, Sept. 2009), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1478794## (concluding that roads fail to relieve congestion). I refer to "city-to-suburb" highways because a road linking two suburbs or two urban neighborhoods may not always accelerate sprawl. For example, if both suburbs are already-developed inner suburbs, the highway might not affect development of outer suburbs.

97. See *infra* Part III-A-2(a) (describing examples of Canadian anti-density zoning).

98. See Richard Briffault, *Smart Growth and American Land Use Law*, 21 ST. LOUIS U. PUB. L. REV. 253, 253 (2002) ("Hallmarks of American land use law . . . [include] reducing population density").

99. And suburbs as well. See *infra* Part III-B. However, this portion of the Article focuses on how zoning reduces urban population (the "where we grow" element of sprawl) while Part III-B focuses on how zoning reduces suburban walkability (the "how we grow" element).

100. Other anti-density regulations include height restrictions and "bulk" limitations prohibiting landowners from building on all of their land. See EDWARD H. ZIEGLER, ARDEN H. RATHKOPF & DAREN A. RATHKOPF, *RATHKOPF'S THE LAW OF ZONING AND PLANNING* § 54.3 (4th ed. 2011) (describing various types of bulk and height controls in more detail). However, I have chosen to focus on minimum lot sizes and parking below because I think these two forms of regulation are easier to understand than bulk-related rules, and my concerns about minimum lot size requirements apply with equal force to bulk controls.

101. *Id.* § 51.10 (such restrictions common in United States); 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*, 63 M.P.L.R. (4th) 56, 104 (2009) (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") (emphasis added).

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

a. Limiting Residential Density

Canadian cities typically regulate residential density in a variety of ways. For example, slow-growing¹⁰³ Hamilton, Ontario limits density in its residential zones¹⁰⁴ through minimum lot sizes and height restrictions. In its “suburban residential zone”, the minimum lot size is just over 5800 square feet,¹⁰⁵ or roughly one-seventh of an acre.¹⁰⁶ In Hamilton’s most compact single-family zone (its “small lot single family dwelling” zone)¹⁰⁷ the minimum lot size is 2991 square feet.¹⁰⁸ Even in its “High Density Multiple Dwelling”¹⁰⁹ zone, the city limits density by prohibiting buildings taller than 18 stories,¹¹⁰ and by requiring buildings to set aside space for front and rear yards,¹¹¹ as well as other landscaping comprising 40% of the total building area.¹¹² Such anti-density regulations exist even in cities more compact than Hamilton: for example, the city of Toronto (one of Canada’s more compact cities)¹¹³ has a zone in which homebuilders are limited to building 8 dwelling units per acre.¹¹⁴

American cities have created similar restrictions.¹¹⁵ Even in Houston, one of the less heavily regulated American cities,¹¹⁶ minimum lot sizes dictate the size of homes. Until 1998, the city mandated that every

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

104. See generally HAMILTON, CAL., BY-LAW 6593, §§ 8-11 (1993), available at <http://www.hamilton.ca/CityDepartments/PlanningEcDev/Divisions/Planning/FormerZoningByLaws/By-LawNo6593.htm> [hereinafter HAMILTON ZONING] (listing numerous residential districts).

105. *Id.* § 8B(4) (minimum lot size of 5812.7 square feet).

106. Arthur Allen Leff, *The Leff Dictionary of Law: A Fragment*, 94 YALE L.J. 1855, 1905 (1985) (defining one acre as containing 43,560 square feet).

107. HAMILTON ZONING, *supra* note 104, at § 9A.

108. *Id.* § 9A(2)(c)(2) (minimum lot size is 278 square meters). One square meter is 10.76 square feet. See Goh Yi-han, *Tort Law In The Face of Land Scarcity in Singapore*, 26 ARIZ. J. INT’L & COMP. L. 335, 343 (2009). Thus, 278 square meters is 2991 square feet. For the purposes of this Article, I shall use feet rather than meters as a measurement.

109. HAMILTON ZONING, *supra* note 104, at § 11C.

110. *Id.* § 11C (1)(1a)c.

111. *Id.* § 11C (2).

112. *Id.* § 11C (5).

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

114. The city allows 20 dwelling units per hectare. See 2081679 Ontario Ltd. v. Toronto, 2007 CarswellOnt 8107 (Can. O. Mun. Bd.) (WL) (rejecting rezoning to higher density). A hectare is roughly 2.5 acres. See Robert DeLay, *Our Post-Kyoto Treaty Climate Change Framework: Open-Market Carbon-Ranching As Smart Development*, 17 PENN ST. ENVTL. L. REV. 55, 73 (2008). Thus, 20 units per hectare equals 20 units per 2.5 acres, or 8 units per acre. For the purposes of this paper, I shall use acres rather than hectares.

115. See Briffault, *supra* note 98, at 253 (noting that density restrictions common).

116. See Dustin Brown, *Property Taxes in Texas: Smaller Piece of the Pie, or Simply A Fairer Share?*, 11 TEXAS TECH. ADMIN. L.J. 355, 372 (2010) (Houston has “resisted

single-family home consume at least 5000 square feet of space,¹¹⁷ or about 1/8 of an acre.¹¹⁸ Today, this requirement exists only in the city's "suburban" zone,¹¹⁹ which includes three-fourths of the city's residents.¹²⁰ In the city's more "urban" zone, the minimum lot size is 1400 square feet.¹²¹ Builders of urban units less than 3500 square feet, however, must provide their neighbors with additional open space,¹²² thus diluting the effect of the urban zone's more generous rules. Houston also regulates density less directly through other types of regulations; for example, houses must (depending on the zone) be 5 to 20 feet from the street¹²³—a rule that, by reducing the space available for residences, may reduce density. Other American cities are more strict; for example, the city of Atlanta, Georgia has one residential zone where every house must gobble up two acres,¹²⁴ and another where houses must sit on one-acre lots.¹²⁵

By limiting the number of houses or apartments that can be built on a tract of land, a city reduces the amount of number of dwelling units available within its boundaries and thus increases the price of the remaining units.¹²⁶ 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 housing density also limits urban, and increases suburban, population.

There is no way of knowing how populous North American cities would be in the absence of anti-density zoning. However, the example

zoning requirements and restrictions to ensure as much freedom of land use as possible to its citizens"). In fact, Houston has no formal zoning code. See Michael Lewyn, *How Overregulation Creates Sprawl (Even in a City Without Zoning)*, 50 WAYNE L. REV. 1171, 1172 (2005).

117. Lewyn, *supra* note 116, at 1178.

118. See Leff, *supra* note 106, at 1905 (listing number of square feet in acre).

119. HOUSTON, TEX., CODE OF ORDINANCE § 42-182(1), available at <http://library.municode.com/index.aspx?clientID=10123&stateID=43>Texas [hereinafter HOUSTON CODE] (stating general rule). Cf. §§ 42-182(2)-(3), 42-184 and 42-185 (noting exceptions to rule where landowner provides additional open space to neighbors, or where no wastewater treatment). The "suburban" zone begins about five miles from downtown Houston. Lewyn, *supra* note 116, at 1181.

120. Lewyn, *supra* note 116, at 1182.

121. HOUSTON CODE, *supra* note 119, § 42-182.

122. *Id.* § 42-183(a)(1) and (2) (enunciating city's basic standards for urban zone housing); *Id.* § 42-184 (table listing amount of open space).

123. *Id.* § 42-150c (table).

124. See ATLANTA, GA., CODE OF ORDINANCES Pt. 16, § 16-03.007(2) (minimum lot size in R1 zone), available at <http://library.municode.com/index.aspx?clientID=10376&stateID=10&statename=Georgia> [hereinafter ATLANTA CODE].

125. *Id.* § 16-04.007(2).

126. Cf. Anup Malani, *Valuing Laws As Local Amenities*, 121 HARV. L. REV. 1273, 1293-94 (2008) (laws that constrict housing supply raise land prices, and sometimes are even designed to achieve that goal).

of Vancouver suggests that a city that accommodates in-town development can grow.¹²⁷ Throughout the past half century, Vancouver has:

- upzoned existing neighborhoods to allow higher densities;¹²⁸
- allowed the conversion of commercial and industrial lands to residential and mixed-use,¹²⁹ especially in downtown Vancouver;¹³⁰ and
- created a zone in which up to three floors of housing may be built on top of shops.¹³¹

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.¹³² Since 1971 alone, the number of dwelling units in the city has increased by 50%.¹³³ Thus, Vancouver's strategy has apparently limited the dispersion of population to suburbs.

b. Limiting Density Indirectly 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.¹³⁴ For example, Hamilton, Ontario

127. This is not to say that Vancouver has abolished zoning. See BERELOWITZ, *supra* note 74, 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 128-31 and accompanying text (describing examples).

128. BERELOWITZ, *supra* note 74, 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* 18 (2003) (Vancouver "relax[ed] 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).

129. BERELOWITZ, *supra* note 74, at 218 (One "major trend in the use of zoning . . . is the conversion of commercial lands to residential use."), 217 (supplying example of industrial waterfront land converted to mixed use).

130. See PUNTER, *supra* note 128, at 63 ("in a departure from previous policy [city's 1975 plan] both permitted and encouraged well-designed residential development throughout downtown.")

131. BERELOWITZ, *supra* note 74, at 119. Of course, such zoning is subject to the city's historic preservation rules. See *Heritage Conservation Program Information*, CITY OF VANCOUVER, <http://vancouver.ca/commssvcs/PLANNING/heritage/fact8.htm> (last modified July 20, 2006).

132. See *supra* note 30 and accompanying text.

133. PUNTER, *supra* note 128, 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").

134. See Stuart Donovan & David Seymour, *Parking Requirements Come With A High Price*, GUELPH MERCURY, July 7, 2009, at A61, available at 2009 WLNR

requires the owners of multifamily dwellings to provide 1.25 parking spaces per dwelling unit.¹³⁵ Hamilton's code also lists parking requirements for seven different commercial uses.¹³⁶

Minimum parking requirements in larger U.S. cities are similar. Houston's requirements for multifamily dwellings depend on the size of the unit—apartment owners must provide 1.25 spaces for each efficiency apartment, and more spaces for larger apartments.¹³⁷ In addition, Houston's code lists dozens of different requirements for various specified land uses.¹³⁸ For example, the code contains a dozen parking categories for retail uses alone, while creating seven separate parking regulations for different types of health care facilities.¹³⁹

Land that is used for parking lots cannot be used for housing or commerce. It follows that minimum parking requirements, by increasing the amount of land used by parking lots, artificially limit population density and 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.¹⁴⁰ Within three years of this ordinance, the number of apartments per acre in Oakland had decreased by thirty percent.¹⁴¹

Minimum parking requirements may yield similar results in other North American cities. The average North American one bedroom apartment includes 700-800 square feet of space.¹⁴² 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

12980999 (In Canada, "Municipal regulations typically require that urban developments provide on-site parking"); DONALD C. SHOUP, *THE HIGH COST OF FREE PARKING* 22, 25 (2005) (similarly, minimum parking requirements "virtually universal" in the United States).

135. See HAMILTON ZONING, *supra* note 104, § 18A, tbl. 1, § 1(g) (stating general rule, and noting exceptions for certain neighborhoods).

136. *Id.* § 18A, tbl. 1, § 4. The code also 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. *Id.* § 4(i).

137. *Id.* § 4.

138. HOUSTON CODE, *supra* note 119, § 26-492.

139. *Id.*

140. SHOUP, *supra* note 134, at 143.

141. *Id.* at 144.

142. See Ian MacNeill, *Real Freedom: RV Retirement*, 50-PLUS.COM (May 20, 2010) <http://www.50plus.com/Travel/BrowseAllArticles/index.cfm?documentID=6072> ("the average one-bedroom apartment runs anywhere from 700 to 800 square feet"); Suzanne Roig, *Planned Cabins Run into Resistance in Hawai'i Kai*, HONOLULU ADVERTISER, June 28, 2006, at B1, available at 2006 WLNR 25027535 (vacation cabins were "about 800 square feet the size of a typical one bedroom condominium").

has to build 1.25 parking spaces for every one-story unit,¹⁴³ it may not be able to build 100 apartments. Because the average parking space includes 350 square feet of space,¹⁴⁴ the landlord must either purchase additional land, build smaller apartments, or build only about 64 apartments.¹⁴⁵ Thus, a 1.25-space-per-unit rule reduces density by 36% (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 plentiful;¹⁴⁶ 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 nearby buildings, and thus be unable to build housing or businesses without violating minimum parking requirements.

143. I realize that a landlord could avoid these problems by building a parking facility underground instead of aboveground so that parking and apartments would not need to compete for land. However, underground spaces are more expensive to build, and thus less desirable to landowners. See TRANSP. RES. BD., ECONOMIC IMPACT ANALYSIS OF TRANSIT INVESTMENTS: GUIDEBOOK FOR PRACTITIONERS 9-17 (1998), available at http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_35.pdf (underground parking lot may cost ten times as much to build as surface lot).

144. *Id.* at 3-4.

145. Or more precisely, somewhere between 64 and 65. If the landlord builds 64 apartments, it can devote 51,200 square feet to apartments (64 x 800) and 28,000 square feet to parking (because it must build 64×1.25 , that is 80, parking spaces, and $80 \times 350 = 2800$) and have 800 unbuildable square feet left over. On the other hand, the landlord cannot build 65 units without purchasing some additional land, because in order to build 65 apartments it must have not only an extra 800 square feet (for the 65th apartment) but also sufficient land for an extra parking space or two (since $65 \text{ apartments} \times 1.25 \text{ parking spaces per unit} = 81.25$).

146. See Roberta F. Mann, *On The Road Again: How Tax Policy Drives Transportation Choice*, 24 VA. TAX. REV. 587, 635 (2005) (parking spaces more expensive in cities than in suburbs); Ryan McGreal, *Downtown is for living, not driving*, HAMILTON SPECTATOR, Mar. 30, 2007, at A13, available at 2007 WLNR 5997477 ("Only cheap, abundant, unbounded land lets the suburbs keep expanding"). I note that in those regions where suburban land is less expensive than urban land, suburbia's cost advantage may in part be the result of public policies that may make suburban land artificially inexpensive. For example, North American municipalities typically charge developers fees to compensate for one-time government expenses caused by new development, such as the cost of sewer lines and new roads. See BLAIS, *supra* note 14, at 91. These charges are typically equal for all developments of the same size, even though suburban development may impose additional costs on governments by using additional infrastructure while urban development uses existing roads and sewers. *Id.* at 92. However, I do not discuss this point in the main text, because I am not convinced that this subsidy has a significant effect on development patterns. In the United States, central cities have declined significantly in some regions where suburban housing is more expensive than urban housing. See James A. Kushner, *Affordable Housing as Infrastructure in the Time of Global Warming*, 42/43 URB. LAW. 179, 190 n.69 (2010/2011) (suburbs more expensive than city in Detroit, Cleveland and Baltimore); see also *supra* Table 1 (these three cities each lost over 25% of their 1950 population in last half of 20th century).

For example, in the American case of *Milburn Courtyard Associates v. Planning Board*,¹⁴⁷ an entrepreneur proposed to establish a restaurant in a downtown¹⁴⁸ district which (according to the city's official plan) had an "emphasis on pedestrian scale retail business."¹⁴⁹ 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.¹⁵⁰ A New Jersey court held that the restaurant could not be established without a zoning variance.¹⁵¹ Thus (assuming no variance was granted) the would-be restaurant owner in *Milburn* would have had to either (a) pay to build a garage above or under the restaurant, or (b) purchase enough land for a dozen surface parking spots—a task that might be more difficult, other things being equal,¹⁵² in a downtown surrounded by existing buildings than in a more suburban area with more undeveloped land. It follows that, other things being equal, minimum parking requirements encourage would-be builders to move from built-out urban areas to developing areas with a more abundant supply of land.¹⁵³

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, may limit the supply of urban 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 may wish to deregulate density, eliminating (or at least reducing the severity of) density restrictions and minimum parking requirements.¹⁵⁴

147. 2006 WL 1413698 (N.J. Super Ct. Law Div. May 23, 2006).

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

149. *Id.* at *4.

150. *Id.* at *2.

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

152. Of course, if the additional value created by the parking spaces outweighed the extra cost of buying the land, it might be economically efficient for the landowner to purchase the land. But if this was the case, the landowner would purchase additional land for parking even in the absence of government regulation.

153. 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.*, No. Civ. A. PC 04-2401, 2005 WL 1433736 (R.I. Super. Ct. June 16, 2005) (barring expansion of existing medical office due to parking requirements).

154. Of course, a government may also wish to protect the urban core by prohibiting or restricting new suburban development, thus forcing new development into cities and existing suburbs. The wisdom of such policies is beyond the scope of this article. *Cf. GILLHAM, supra* note 1, at 217-22 (discussing pros and cons of Oregon's growth control program); Chuck Howitt, *Home builder backs tighter mortgage eligibility rules*,

It could be argued that anti-density regulations have little effect on urban growth, because landowners who wish to build compact developments outlawed by current zoning codes can usually persuade cities to amend those codes.¹⁵⁵

But a 2001 study by the Urban Land Institute, an American developers' organization, suggests otherwise.¹⁵⁶ The survey asked developers to list significant barriers to compact development.¹⁵⁷ 78% of developers listed government regulation as an obstacle.¹⁵⁸ By contrast, only 26% listed insufficient market interest.¹⁵⁹ 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.¹⁶⁰ Thus, developers themselves believe that in the absence of anti-density 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.¹⁶¹

But by definition, residents of lower-density areas live further away from shops, jobs and other destinations, which means that they are less likely to live within walking distance of those destinations¹⁶²—which in turn makes them *more* likely to drive to those destinations, thus increasing rather than reducing automobile traffic.

WATERLOO REGION REC., Jan. 7, 2010, at B4, *available at* 2010 WLNR 300783 (noting that Ontario's "Greenbelt" law limits development of suburban land in southern Ontario). Because I seek to rebut the claim that the free market favors sprawl, this article is meant primarily to focus on government regulations favoring sprawl and on deregulatory solutions to those regulations, rather than on governmental attempts to cure the actual or perceived excesses of the free market.

155. See BRUEGMANN, *supra* note 14, at 106.

156. See JONATHAN LEVINE, ZONED OUT: REGULATION, MARKETS AND CHOICES IN TRANSPORTATION AND METROPOLITAN LAND-USE 127-31 (2006).

157. *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).

158. *Id.* at 129.

159. *Id.*

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

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

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

Increased automobile traffic may explain why the correlation between density and congestion is a fairly weak one: as American urban areas have become less dense, no corresponding reduction in congestion has occurred. Between 1982 and 1997, population density in U.S. metropolitan areas decreased by 15.7%.¹⁶³ Out of 281 metropolitan areas,¹⁶⁴ only 17 became more densely populated during this period.¹⁶⁵ However, automobile congestion increased rather than decreasing; nationally, the average number of yearly hours lost to congestion increased from 14.4 per person to 33.8.¹⁶⁶

Moreover, compact development has positive side effects that may at least partially outweigh any possible increased congestion. A recent study sponsored by the U.S. Department of Energy¹⁶⁷ suggests that compact, transit-oriented development reduces greenhouse gas emissions by reducing driving. In particular, the study found that:

- Doubling residential density, standing alone, reduces household vehicle miles traveled by 5-12%.¹⁶⁸ If increased density was accompanied by other transit-supportive land use policies and by improved public transit, household driving could be reduced by as much as 25%.¹⁶⁹
- These reductions in driving would, in turn, reduce greenhouse gas emissions. If 75% of future housing was at double the density of existing housing, and residents of those communities drove 25% fewer miles, U.S. greenhouse gas emissions could be reduced by 8-11% by 2050.¹⁷⁰ Smaller reductions in driving would lead to more modest reductions in emissions.¹⁷¹

163. See BLAIS, *supra* note 14, at 65.

164. *Id.*

165. *Id.*; see also WILLIAM FULTON, ROLF PENDALL, MAI NGUYEN, & ALICIA HARRISON, CTR. ON URB. & METRO. POL'Y, BROOKINGS INST., WHO SPRAWLS MOST? HOW GROWTH PATTERNS DIFFER ACROSS THE U.S. 8 (July 2001), available at <http://www.brookings.edu/es/urban/publications/fulton.pdf>.

166. See DAVID SCHRANK, TIM LOMAX & SHAWN TURNER, TTI's 2010 URBAN MOBILITY REPORT 3 (2010).

167. See TRANSP. RES. BD., DRIVING AND THE BUILT ENVIRONMENT ii-iii (2009) (describing authors and sponsorship), available at http://www.nap.edu/catalog.php?record_id=12747#toc [hereinafter TRB].

168. *Id.* at 2; see also ABT ASSOCIATES, RESEARCH ON FACTORS RELATING TO DENSITY AND CLIMATE CHANGE 5 (2010), available at http://www.nahb.org/fileUpload_details.aspx?contentID=139993&fromGSA=1 (this view supported by "weight of the evidence") [hereinafter ABT ASSOCIATES].

169. TRB, *supra* note 167, at 2-3; see also ABT ASSOCIATES, *supra* note 168, at 31-66 (describing relationship between density and vehicle miles traveled in more detail).

170. *Id.* at 4.

171. *Id.*

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.¹⁷² For example, New York City, the region with the highest use of public transit,¹⁷³ emitted only 19,524 pounds of carbon dioxide (a major greenhouse gas,¹⁷⁴ also known as “CO₂”) per household from automobiles and transit users combined,¹⁷⁵ 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.¹⁷⁶

Moreover, suburbs, which tend to be less compact and more automobile-oriented,¹⁷⁷ 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.¹⁷⁸ Thus, the alleged congestion-related benefits of low-density development may be offset by the environmental harm caused by increased driving and resulting increases in greenhouse gas emissions.

B. *How We Grow: Land Use Regulation*

In addition to encouraging suburban development, North American governments have made those suburbs unnecessarily automobile-dependent through a wide variety of municipal land use laws, including regulations forcing landowners to (1) build less compact developments than they might otherwise prefer, (2) set aside more land for off-street parking than they might otherwise prefer, and (3) build (or give government agencies land for) wider streets than they might otherwise prefer.¹⁷⁹

172. See EDWARD L. GLAESER & MATTHEW KAHN, RAPPAPORT INST. FOR GREATER BOSTON, *THE GREENNESS OF CITIES 1* (2008), available at http://www.hks.harvard.edu/var/ezp_site/storage/fckeditor/file/pdfs/centers-programs/centers/rappaport/policy_briefs/greencities_final.pdf (“low-density development . . . is associated with far more carbon dioxide emissions than higher density construction”).

173. *Id.* at 5.

174. See *Massachusetts v. EPA*, 549 U.S. 497, 504-05 (2007) (carbon dioxide a major greenhouse gas).

175. See GLAESER & KAHN, *supra* note 172, at 5.

176. *Id.*

177. *Id.* at 8.

178. *Id.* (suburbanites emitted 6,172 more pounds of automobile-related emissions per household than city residents; however, this gap was partially offset by city residents’ generation of 2,367 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.

179. I note that “single-use” zoning, which segregates land uses, also contributes to the unwalkable nature of many suburbs. See Lewyn, *supra* note 79, at 331 (in practice,

To compare Canadian and American suburbs, I have chosen to examine several suburbs with online zoning codes: one first-ring suburb (that is, a suburb bordering a central city) and one outer suburb of Toronto, and one first-ring suburb and one outer suburb of Atlanta, Georgia.

1. LOW DENSITY ZONING

a. Canadian Examples

Canadian suburban zoning codes often favor low-density development.¹⁸⁰ For the purposes of this paper, I focus primarily on two suburbs whose zoning codes are online (and thus more easily accessible than most zoning codes): Mississauga, a rapidly growing inner ring Toronto suburb,¹⁸¹ and Burlington, an outer suburb 40 miles from Toronto.¹⁸²

single-use zoning means that housing is not within walking distance of commerce); Martine August, *Social mix and Canadian public housing redevelopment: experiences in Toronto*, 17 CANADIAN J. URB. RES. 82 (2008), available at 2008 WLNR 26067898 (“segregated land uses” one feature of Canadian suburbia). However, I will not focus on this issue in detail below because I believe it is somewhat less important, standing alone, than density and street design. If single-use zones were smaller and more compact, and streets were designed for pedestrians as well as automobiles, a residential block could be within walking distance of commercial blocks even if each block was single-use. For example, New York City has a zoning code that is basically single-use, and yet is less automobile-dependent than any Canadian city. See Eliza Hall, *Divide and Sprawl, Decline and Fall: A Comparative Critique of Euclidean Zoning*, 68 U. PITT. L. REV. 915, 938 (2007) (describing New York City’s zoning code as “typically American”); see also *supra* Table 8 (public transit ridership higher in New York than in any Canadian city).

180. August, *supra* note 179 (post-war suburb construction in Canada was largely homogeneous, featuring low densities, open spaces, car-oriented transportation systems . . . [and] zoning codes and land-use plans of the post-war era formalized this type of urban landscape”) (page numbers unavailable).

181. See Gordon Brunskill, *Moscato Drawing on World Cup Experience*, ST. C. CENTRE DAILY TIMES, Nov. 14, 2003, at 1B, available at 2003 WLNR 16289999 (“Mississauga a suburb west of Toronto”); 2001 CENSUS, *supra* note 25 (population increased by 12.6% between 1996 and 2001, while central city population increased by only 4%); Andy Holloway, *Canada’s Best Cities: Toronto vs. Mississauga*, CAN. BUS. ONLINE (Sept. 26, 2005), <http://www.canadianbusiness.com/article/12656—canada-apos-s-best-cities-toronto-vs-mississauga> (suggesting that Mississauga is 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, Feb. 18, 2006, at 9, available at 2006 WLNR 4733132 (noting that condo project is “near Toronto’s border with Mississauga”).

182. See Geoffrey York, *Before Madonna’s Babies, There Was Idah*, TORONTO GLOBE & MAIL, June 22, 2009, at A1, available at 2009 WLNR 11895708 (“Burlington, an outer suburb of Toronto”); Holly J. Wagner, *True North*, CUSTOMER INTERFACE, March 1, 2001, at 42, available at 2001 WLNR 2838569 (Burlington 40 miles southwest of Toronto).

Mississauga requires homes in one of its residential zones to take up 37,660 square feet¹⁸³—or about .85 acres.¹⁸⁴ In Mississauga's other major "detached dwelling zones", the city mandates minimum lot sizes ranging from 1/5 acre¹⁸⁵ to 1/13 acre.¹⁸⁶ Similarly, houses in Burlington's least dense zone must consume about half an acre of land.¹⁸⁷ Burlington's other single-family home zones have maximum densities ranging from half an acre to ten homes per acre.¹⁸⁸

b. An International Comparison

Despite their density restrictions, Burlington and Mississauga allow fairly compact development in some neighborhoods. While Mississauga has zoned some areas for just one or two houses per acre,¹⁸⁹ that suburb has zoned other single-family areas for as many as 13 lots per acre,¹⁹⁰ probably compact enough to support significant transit ridership.¹⁹¹ Mississauga also has zones for high-rise apartments (including buildings as high as 25 stories) and for dwellings of intermediate density.¹⁹² Such leniency may be one reason why 15.7% of Mississauga residents

183. MISSISSAUGA, CAL., ZONING BY-LAW §4.2.2.6.1, available at <http://www6.mississauga.ca/online/planbldg/ZoneBylaw/DZBR1/Part%204%20-%20R01.pdf> [hereinafter MISSISSAUGA BY-LAW] (setting forth minimum lot size of 3500 square meters for R1-6 zone, one of forty-seven R1 "detached dwelling" zones). Because a square meter is 10.76 square feet, the statute creates a minimum lot size of 37,660 square feet. See Yihan, *supra* note 108, at 343.

184. See Leff, *supra* note 106, at 1905 (acre is 43,560 square feet).

185. See MISSISSAUGA BY-LAW, *supra* note 183, at tbl. 4.2.1 (R1 minimum lot area is 750 square meters, except for corner lots); see also *supra* notes 183-84 (translating meters into feet and feet into acres).

186. See MISSISSAUGA BY-LAW, *supra* note 183, at tbl. 4.2.1 (R5 minimum lot area is 295 square meters, except for corner lots); see also *supra* notes 183-84 (translating meters into feet and feet into acres).

187. See BURLINGTON, CAL., ZONING BYLAW 2020 (as amended) p. 2 (Residential Zones), tbl. 6.1, available at <http://cms.burlington.ca/AssetFactory.aspx?did=10512>. [hereinafter BURLINGTON BY-LAW] (2000 meter requirement in R5 "cluster home" zone); see also *supra* notes 183-84 (translating meters into feet and feet into acres).

188. 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, *supra* note 187, at tbl. 6.1; see also *supra* notes 183-84 (translating meters into feet and feet into acres).

189. See *supra* notes 183-84 and accompanying text (lowest-density area in city zoned for .85 units per acre, or just over one house).

190. See *supra* note 186 and accompanying text.

191. See Robert H. Freilich, *The Land Use Implications of Transit-Oriented Development: Controlling the Demand Side of Transportation Congestion and Urban Sprawl*, 30 URB. LAW. 547, 552 & n.18 (1998) (because commuters generally will not walk more than a quarter mile to transit station, residential densities of at least 7-15 dwelling units per acre are required for significant transit ridership).

192. See MISSISSAUGA BY-LAW, *supra* note 183, at tbl. 4.15.1 (listing various apartment zones, including one zone allowing 25-story buildings).

use public transit to get to work¹⁹³—more than in some major cities on both sides of the Canada/U.S. border.¹⁹⁴

Similarly, Burlington's single-family home zones range from a zone requiring half-acre lots to zones allowing ten homes per acre.¹⁹⁵ And like Mississauga, Burlington allows high-rise apartments in some multifamily zones.¹⁹⁶

By contrast, many American suburbs zone for significantly less density than Mississauga and Burlington. American suburbs are generally quite aggressive in their commitment to low density; suburban minimum lot sizes are typically a quarter-acre or more.¹⁹⁷ Table 9 compares the lot size regulation of Burlington and Mississauga with that of two Atlanta suburbs.

As Table 9 shows, suburban Atlanta's density regulations are more restrictive than those of the Toronto suburbs discussed above. For ex-

Table 9: Minimum Lot Sizes in Suburbia¹⁹⁸

	Least compact Single-family home area	Most compact Single-family home area	Most compact Multifamily area
<i>Toronto Suburbs</i>			
Mississauga	.85 acre	1/13 acre	25 stories
Burlington	1/2 acre	1/10 acre	18 stories
<i>Atlanta Suburbs</i>			
Sandy Springs	2 acres	1/11 acre	4 stories or 60 ft.
Alpharetta	3 acres	10,000 square feet (just over 1/4 acre)	10 units per acre

193. See COMMUNITY PROFILES, *supra* note 45. I suspect, however, that a more important reason is Toronto's relatively strong public transit system. See *supra* Tables 6 & 7 (Toronto and Montreal are Canada's two most transit-oriented cities).

194. See *supra* Table 7.

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, *supra* note 187, at tbl. 2.4.1; see also *supra* notes 183-84 (translating square meters into square feet, and square feet into acres).

196. See, e.g., BURLINGTON BY-LAWS, *supra* note 187, at tbl. 14.1 (18-story dwellings allowed in RH2 zone).

197. See ZIEGLER et al., *supra* note 100, § 21.66 (in "suburban single-family residential areas, minimum lot sizes typically range from one-quarter to two acres").

198. For data on Burlington and Mississauga, see *supra* notes 183-96 and accompanying text. For data on Atlanta suburbs, see *infra* notes 200-208 and accompanying text.

ample, Sandy Springs is a first-ring suburb of Atlanta¹⁹⁹—but even Sandy Springs allows only one house per two acres in some zones (less than half the density of Mississauga’s least compact area).²⁰⁰

Sandy Springs also limits the density of multifamily areas to a much greater extent than do Toronto’s suburbs. 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.”²⁰¹ But even in this supposedly dense zone, buildings may be no higher than 60 feet or four stories, less than one-sixth the size of high-rises allowed in Mississauga.²⁰²

Alpharetta is a prosperous outer suburb of Atlanta, about 25 miles away from the city of Atlanta.²⁰³ Alpharetta’s least dense residential zone requires three-acre lots.²⁰⁴ And while Atlanta and Sandy Springs have zones allowing small single-family houses,²⁰⁵ 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.²⁰⁶ Similarly, Alpharetta controls multifamily development more rigidly than Sandy Springs or Toronto suburbs; while Sandy Springs has mid-rises and Toronto suburbs have high-rises, Alpharetta’s multifamily zone prohibits all development with over ten dwelling units per acre²⁰⁷—a lower density than some single-family zones in Mississauga!²⁰⁸

199. See Marcus K. Garner, *Sandy Springs: Some are due refund on income tax*, ATLANTA J. & CONST., Mar. 9, 2008, at A7, available at 2008 WLNR 4642172 (referring to Sandy Springs businesses “along the Atlanta border”).

200. See SANDY SPRINGS, GA., ZONING ORDINANCES art. 6.1.3[E] (two-acre zone); 6.2.3[E] (one-acre zone), available at <http://www.sandyspringsga.org/ZoningOrdinances> [hereinafter SANDY SPRINGS CODE]; see also *supra* Table 12 (Mississauga zoning).

201. SANDY SPRINGS CODE, *supra* note 200, at art. 7.4.1.

202. *Id.* at art. 7.4.3[A]; see also *supra* Table 12 (Mississauga zoning).

203. See Michael Pearson, *Kurey’s Face Name Purged Councilman May Appeal Ouster*, ATLANTA J. & CONST., August 20, 2005, at B1, available at 2005 WLNR 13113879 (describing Alpharetta as a “business-oriented suburb. . . about 26 miles north of Atlanta”); Editorial, *Access to public records lets us peek inside government’s doors*, INDIANAPOLIS STAR, Mar. 12, 2006, at E2, available at 2006 WLNR 25289645 (describing Alpharetta as a “chic” suburb).

204. See ALPHARETTA, GA., UNIFIED DEV. CODE art. 2.1.1 [hereinafter ALPHARETTA CODE] (describing “RE” zone), available at <http://www.alpharetta.ga.us/files/docs/pdfs/UDC/Article%202.pdf>.

205. See ATLANTA, GA., CODE § 16-06B.007(1) (allowing 2800-square-foot houses in R-4B zone); SANDY SPRINGS CODE, *supra* note 200, at art. 6.9.3[B] (allowing 4000-square-foot houses in R5-A single family district).

206. See SANDY SPRINGS CODE, *supra* note 200, at art. 6.9.3[B] (describing R-10 zone); see also *infra* Table 11 (comparing Alpharetta zoning to that of Sandy Springs and Toronto suburbs).

207. ALPHARETTA CODE, *supra* note 204, at art. 2.1.1 (describing R10M zone); *Id.* at art. 2.2.10(D).

208. See *infra* Table 12.

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, the Canadian suburbs studied above are less hostile to compact development than some of their U.S. counterparts.

c. So, What's Wrong With Anti-Density Regulation?

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 a critical mass of people living within walking distance of a bus or train stop.²⁰⁹ 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,²¹⁰ which in turn means that transit agencies will be inclined not to serve such areas.²¹¹ Thus,

Table 10: Modal Shares and Population Density²¹²

	Percent of Commuters Driving to work	Percent Using Public Transit	Population Per Square Mile
<i>Canadian Cities</i>			
Toronto	55.7	34.3	10,211
Vancouver	57.6	25.1	12,345
Montreal	53.2	34.7	14,498
Ottawa	67.1	21.8	721
Calgary	75.2	16.7	3244
Winnipeg	77.0	14.1	3451
Edmonton	79.0	12.7	2523
<i>U.S. Cities</i>			
New York	32.9	52.8	26,403
Philadelphia	62.0	25.4	11,236
Chicago	64.6	26.1	12,752
Los Angeles	80.4	10.2	7876
San Diego	86.2	4.2	3771
Houston	87.7	5.9	3372
Phoenix	90.1	3.3	2922

209. See Freilich, *supra* note 191, at 552 & n.18.

210. See BLAIS, *supra* note 14, at 60-61 (citing numerous studies).

211. *Id.* at 61 (a "minimum threshold density is needed to support a rudimentary level of transit service (say, a bus every half hour). As densities increase, so, too, does the economic viability of higher levels of transit service").

212. Commuting statistics are from Table 8, *supra*, and I have chosen to focus on the same cities listed in that table. See *supra* note 44 (explaining criteria for choosing cities

anti-density regulations effectively reduce the utility and frequency of transit service.

Table 10 illustrates the relationship between density and commuting patterns in major North American cities.

Table 10 shows a significant (if imperfect) correlation between driving and density. The most densely populated major city, New York, has lower car use and higher transit use than any of the other cities listed in either country. In cities with 10-15,000 people per square mile (Toronto, Montreal and Vancouver in Canada, and Chicago and Philadelphia in the United States), 25-35% of commuters use public transit—fewer than in New York, but more than in cities with lower population densities.

By contrast, Canada's least dense cities (with the partial exception of Ottawa, which contains unusually large amounts of undeveloped land,²¹³ and thus seems to have a lower population density than its urban neighborhoods in fact have) have much 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 75-80% range.²¹⁴ 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. In the latter neighborhood, far fewer people will live within a short walk of the grocery store.²¹⁵

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-den-

to list). Canadian density statistics are based on population data at Table 3, *supra*, and on municipal square mileage in *supra* note 30. U.S. Census statistics are based on 2000 population estimates and municipal square mileage data found at 2004-05 ABSTRACT, *supra* note 43, at 29-32.

213. See Erickson, *supra* note 34, at 215 (because city has annexed much rural territory, area within city limits is now "90% rural").

214. 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. Michael Lewyn, *You Can Have It All: Less Sprawl and Property Rights Too*, 80 TEMP. L. REV. 1093, 1111-13 (2007) (suggesting that Los Angeles's combination of relatively high density and low transit ridership may be a result of street design rules that make walking uncomfortable).

215. In particular, because there are 640 acres in a square mile, 12,800 (640 x 20) households in the more compact neighborhood will live within a long (one-mile) walk of the store, and one-fourth as many households (or 3200 households) will live within a short (quarter-mile) 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.

sity zoning regulations make suburbia less walkable and more automobile-dependent. 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.²¹⁶

2. HOW MINIMUM PARKING REQUIREMENTS

REDUCE WALKABILITY

As noted above, North American zoning codes typically require landowners to provide visitors and guests with off-street parking.²¹⁷ These regulations, like laws directly regulating density, make these suburbs more automobile-dependent than might otherwise be the case.

a. Some Canadian Examples

Toronto's suburbs, like those of other Canadian cities and suburbs, require landowners to set aside land for parking spaces. For example, Mississauga requires landowners to provide 1.38 parking spaces for each one-bedroom apartment.²¹⁸ Mississauga also requires owners of office space to set aside 2.9 parking spaces per 1000 square feet,²¹⁹ and requires retail landlords to provide 5 parking spaces per 1000 square feet.²²⁰

Burlington's residential parking regulations are even more restrictive than those of Mississauga, requiring 1.6 parking spaces per one-bedroom apartment.²²¹ However, Burlington's commercial parking regulations are somewhat less restrictive than those of Mississauga; Burlington requires owners of office space land to build 2.7 parking spaces per 1000 square feet of floor area, and retail landlords to provide 3.7 spaces per 1000 square feet.²²²

216. Anti-density counterarguments are addressed above, *see supra* Part III-A-2(c), and accordingly will not be addressed here. *See supra* notes 155-78 and accompanying text (responding to counterarguments).

217. *See supra* note 132.

218. *See* MISSISSAUGA BY-LAW, *supra* note 183, at tbl. 3.1.2.1 (requiring 1.18 spaces per one bedroom unit, plus 0.2 "visitor spaces" for every 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. Also, Mississauga's parking quotas are slightly different for condominiums and for some zones.

219. Actually, Mississauga requires 3.2 spaces per 100 square meters. *See* MISSISSAUGA BY-LAW, *supra* note 183, at tbl. 3.1.2.2, l. 31.1. Because 100 square meters is equal to 1076 square feet, *see* Yiham, *supra* note 108, at 343, this means that Mississauga requires 3.2 spaces per 1076 square feet, or 2.9 per 1000 square feet.

220. *See* MISSISSAUGA BY-LAW, *supra* note 183, at tbl. 3.1.2.2, l. 31.1 (city requires 5.4 spaces per 1000 square meters); *supra* note 219 (explaining how square meters translated into square feet).

221. *See* BURLINGTON BY-LAW, *supra* note 187, at tbl. 1.2.6 (requiring 1.25 spaces per one-bedroom apartment, plus 0.35 visitor spaces per unit).

222. The city requires 3 parking spaces per 100 square meters of office land, and 4 per 100 square meters of land used for retail. *Id.* *See supra* note 219 (explaining how square meters translated into square feet).

b. Canadian and U.S. Suburbs Compared

As Table 11 shows, some U.S. suburbs have parking and/or setback regulations that are more stringent than those of Mississauga and Burlington.

Table 11: Parking and Setback Regulations in Toronto and Atlanta Suburbs²²³

	Parking Spaces Per Dwelling Unit (for one bedroom units)	Parking Spaces Per 1000 square ft. of Retail Space	Parking Spaces Per 1000 square ft. of Office Space
<i>Toronto Suburbs</i>			
Mississauga	1.38	5	2.9
Burlington	1.6	3.7	2.7
<i>Atlanta Suburbs</i>			
Sandy Springs	1.4	5	3 ²²⁴
Alpharetta	2 or more	5	4

Sandy Springs’s requirements are roughly in line with those of Mississauga: that city requires about the same amount of parking for apartments as Mississauga,²²⁵ and its requirements for commercial and retail space are also roughly comparable.²²⁶

Alpharetta requires even more parking than 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.²²⁷ 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).²²⁸

223. See ALPHARETTA CODE, *supra* note 204, at art. 2.5.1 (retail parking requirements); SANDY SPRINGS CODE, *supra* note 200, at art. 18.2.1 (same); *supra* notes 218-222 and accompanying text (Burlington and Mississauga requirements); *infra* notes 225-232 and accompanying text (Sandy Springs and Alpharetta parking requirements).

224. Or 2.8 for buildings with over 250,000 square feet of space. See SANDY SPRINGS CODE, *supra* note 200, at art. 18.2.1.

225. SANDY SPRINGS CODE, *supra* note 200, at 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); see *supra* Table 11 (Mississauga typically requires just under 1.4 spaces per unit).

226. See SANDY SPRINGS CODE, *supra* note 200, at art. 18.2.1.

227. ALPHARETTA CODE, *supra* note 204, at art. 2.5.1.

228. See *supra* Table 11.

Commercial parking requirements are also more restrictive in Alpharetta. Burlington, Alpharetta's fellow outer suburb, requires owners of office land to install 2.7 spaces per spaces per 1000 square feet.²²⁹ By contrast, American municipalities typically require office buildings to install 4 spaces per 1000 square feet,²³⁰ a rule followed by Alpharetta.²³¹ Alpharetta's rules for retail landowners are also more restrictive than those of Burlington; Alpharetta requires these landowners to supply 5 parking spaces per 1000 square feet,²³² about a third more than does Burlington.

On balance, it appears that Alpharetta and Sandy Springs require more parking (especially for commercial uses) than do Mississauga and Burlington; however, the difference between Canadian and American suburbs in this regard is more modest than the differences between the density restrictions of Mississauga and Burlington and the comparable restrictions of its Atlanta-area counterparts.

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

(i) *The Subsidy Effect*

(a) Why Minimum Parking Requirements Are A Subsidy

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.²³³ As a result, 99% of vehicle trips in North America are to destinations with free parking.²³⁴ However, such ostensibly "free" parking arises from a government-mandated redistribution of wealth from landowners to motorists, because such regu-

229. See *supra* note 219 and note 221 and accompanying text.

230. See SHOUP, *supra* note 134, at 31.

231. ALPHARETTA CODE, *supra* note 204, at art. 2.5.1B. But not by Sandy Springs, which is more lenient. See SANDY SPRINGS CODE, *supra* note 200, at art.18.2.1.

232. See ALPHARETTA CODE, *supra* note 204, at art. 2.5.1B.

233. Richard Willson, *Suburban Parking Requirements: A Tacit Policy For Automobile Use And Sprawl*, 61 J. AM. PLAN. ASS'N 29, 34 (1995) ("When developers are required to provide more parking than is demanded, the oversupply tends to push the market price down to zero").

234. BLAIS, *supra* note 14, at 145.

lations 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.

Published estimates of the cost of parking space construction vary from about \$2,000 per space²³⁵ to as much as \$40,000 per space.²³⁶ 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.

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).²³⁷ Thus, minimum parking requirements, by increasing residential and commercial rents, require society as a whole to subsidize driving.

(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.²³⁸ Although the government still provided subsidized parking to employees, the subsidy was reduced from 100% of parking cost to 30%.²³⁹ The percentage of employees driving to work alone decreased from 35% to 28%, and the percent using public transit increased from 42% to 49%.²⁴⁰

The Ottawa study occurred in a downtown workplace with ample public transit²⁴¹—but even in automobile-oriented suburban sites, reductions in parking subsidies affect driver behavior. For example, in

235. See BLAIS, *supra* note 14, at 145 (cost of parking space may range from \$2000 to \$20,000, depending on a variety of factors).

236. See Donovan and Seymour, *supra* note 134.

237. Donovan and Seymour, *supra* note 134, at 146. Cf. *Transportation Cost and Benefit Analysis II—Parking Costs*, VICTORIA TRANSP. POL’Y INST., 5.4:17 (Aug. 10, 2011), available at <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”).

238. Richard W. Willson & Donald C. Shoup, *Parking Subsidies and Travel Choices: Assessing the Evidence*, 17 TRANSP. 141, 148 (1990).

239. *Id.*

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

241. *Id.*; see also *id.* at 146–47, 149–50 (describing similar results at worksites in and around downtown Los Angeles).

a suburb of Los Angeles with minimal transit service,²⁴² an employer raised the price of parking for solo drivers to 2/3 of the market rate.²⁴³ Before parking rates were increased, 90% of workers drove alone to work, and 6% carpooled or vanpooled. Afterwards, 46% drove alone, and 48% carpooled or vanpooled.²⁴⁴

In sum, it is clear that parking is at least somewhat 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.²⁴⁵

In turn, low density makes commuters more dependent on automobiles. As noted above,²⁴⁶ 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) No Fun To Walk

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 in both Canada and the United States, municipal zoning ordinances often require commercial buildings to be set back far from a sidewalk or street.²⁴⁷ For example, Mississauga requires that many commercial buildings be at least 15 feet from the street,²⁴⁸

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

243. *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* notes 219-221 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.

244. *Id.* at 146.

245. *See supra* notes 140-45 and accompanying text.

246. *See supra* notes 209-215 and accompanying text.

247. *See, e.g., In re Stevens*, 2008 CarswellOnt 7562 para. 14 (Can. O. Mun. Bd.) (WL) (mixed-use complex required to be 150 feet from street); 391675 Alberta Ltd. v. Calgary, 1988 CarswellAlta 1852 paras. 1, 18 (Can.) (WL) (city established a 17 foot setback in commercial area). *Cf. Lewyn, supra* note 11, at 279 (setback requirements common in United States as well).

248. *See MISSISSAUGA BY-LAWS, supra* note 183, at tbl. 4.2.1, l. 6.0 (listing “minimum front yard” standards for most commercial zones, and requiring 4.5 meter setback) and pt. 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

and Burlington has a 20-foot setback requirement in some commercial zones.²⁴⁹ Atlanta suburbs regulate setbacks even more stringently, requiring some commercial landowners to place their buildings 40 or 50 feet behind the street.²⁵⁰

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,²⁵¹ because a parking lot in front of a building is more visible to (and thus convenient for) customers than a parking lot in back.²⁵²

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 lots²⁵³ and risk life and limb dodging automobiles in those parking lots.²⁵⁴ By contrast, where shops and other destinations flank the sidewalk, pedestrians can reach their destinations quickly and conveniently.²⁵⁵

Indeed, keeping shops far away from streets may even increase crime on commercial streets. Where businesses flank a sidewalk rather than

lot.”). 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*, 38 STETSON L. REV. 163, 194 (2008). Thus, 4.5 meters are roughly equivalent to 15 feet.

249. See BURLINGTON BY-LAW, *supra* note 183, at pts 4.1, 5.1, 6.1, 7.1. (requiring 6 meter setbacks); see also *supra* note 248 (translating meters into feet).

250. See ALPHARETTA CODE, *supra* note 204, at arts. 2.2.10D (apartment buildings must be 35 feet from street), 2.2.12D, 2.2.13D and 2.2.14D (50 foot setback in Office/Professional, Office/Institutional and Neighborhood Commercial zones). This argument does not apply to Sandy Springs, because its setback requirement excludes parking, thus requiring landowners to build a 40-foot setback *and* a parking lot behind the setback. SANDY SPRINGS CODE, *supra* note 200, at arts. 7.3.3(B) and 7.4.3(B) (40 feet setbacks, excluding parking).

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

252. See SHOUP, *supra* note 134, 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.

253. See Freilich, *supra* note 191, at 557 (“large expanses of asphalt devoted to parking often discourages pedestrian mobility”).

254. Cf. Jil McIntosh, *It's No Cakewalk Being a Pedestrian*, TORONTO STAR, July 18, 2009, at W2, available at 2009 WLNR 13724302 (parking lots “dangerous” because drivers “busy looking for spots or avoiding cars backing out, making pedestrians vulnerable”).

255. And enjoyably as well. See Douglas G. French, *Cities Without Soul: Standards for Architectural Controls with Growth Management Objectives*, 71 U. DET. MERCY L. REV. 267, 280 (1994) (suggesting that pedestrians find such places more aesthetically

being barricaded behind parking lots, business owners and employees provide additional “eyes on the street”²⁵⁶—that is, they can make the street seem less deserted (and thus more safe)²⁵⁷ and can monitor the behavior of strangers.²⁵⁸

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.

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, at a minimum,²⁵⁹ to make such rules more lenient or even to abolish them: 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

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.”).

256. Stephen Clowney, *Invisible Businessman: Undermining Black Enterprise with Land Use Rules*, 2009 U. ILL. L. REV. 1061, 1070 (2009) (using phrase).

257. *Id.* at 1071 (“small businesses keep urban places safe because they make everything feel ‘lighted’”).

258. *Id.* (“Entrepreneurs seem better positioned to monitor the neighborhood ecology than other citizens. Anxious about the safety of their customers and the physical condition of their stores, they are often the first—or only—community members to discourage heinous street behavior or call police when trouble stirs.”) A related issue is whether primarily residential neighborhoods are safer when mixed with commercial areas, rather than being placed in separate zones. This issue, however, is vastly more complicated and thus will not be addressed in this article. See Richard S. Geller, *The Legality of Form-Based Zoning Codes*, 26 J. LAND USE & ENVT'L. L. 35, 63(2010) (asserting that mixed-use areas safer than areas dominated by residences). *But cf.* Nicole Stelle Garnett, *Restoring Lost Connections: Land Use, Policing and Urban Vitality*, 36 OKLA. CITY U. L. REV. 253, 267-68 (2011) (noting that “most social scientists have concluded that commercial land uses generally (and not just criminal hotspots like bars) are associated with elevated levels of crime and disorder” but going on to add that evidence mixed).

259. Some cities have gone further and imposed maximum parking requirements for certain neighborhoods in order to limit auto use and its negative side effects. See Adam Millard-Ball, *Putting on Their Parking Caps*, AM. PLAN. ASS'N., 1 (Apr. 2002), http://www.stanford.edu/~adammb/Publications/Millard-Ball_2002_Putting_on_Their_Parking_Caps.pdf. Because this article is focused on government regulations that promote sprawl rather than those that deter sprawl, this question is beyond the scope of the current article.

customers will engage in “cruising”²⁶⁰—that is, driving “around block after block seeking a place to park . . . [thus clogging] the streets, air and ears of our citizens.”²⁶¹ 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.²⁶²

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 concerns about congestion.²⁶³ But if, as suggested above, low-density, automobile-oriented sprawl has failed to reduce congestion,²⁶⁴ this argument is meritless. Some courts have also suggested that setback regulations promote fire safety: for example, a 1927 U.S. Supreme Court opinion upheld such regulations based on the possibility that by “securing a greater distance between houses on opposite sides of the street, [setbacks] reduce the fire hazard [to those houses].”²⁶⁵ However, the Court failed to explain how a fire could jump from one side of the street to another, or

260. See Michael Manville & Donald Shoup, *People, Parking and Cities*, 25 ACCESS 1, 4 (2004), available at <http://shoup.bol.ucla.edu/People,Parking,Cities.pdf> (using term “cruising” to describe motorists’ search for parking).

261. *Stroud v. City of Aspen*, 532 P.2d 720, 723 (Colo. 1975).

262. Another argument for minimum parking requirements is that they prevent “spillover parking”—that is, customers of businesses that fail to provide parking “spill over” into nearby residential areas and park their vehicles in those neighborhoods. See Douglas Laycock, *State RFRAs 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 neighborhood.”). However, less restrictive alternatives may reduce spillover parking. 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 *Arlington Cnty. Bd. v. Richards*, 434 U.S. 5, 7 (1977) (upholding such a system).

263. See, e.g., *Noto v. Zoning Bd.*, No. 08-P-329, 2009 WL 330945 (Mass. App. Ct. Feb. 12, 2009) (setback requirements and similar rules have “the rational purpose of preventing overcrowding”); *In re Letourneau*, 726 A.2d 31, 35 (Vt. 1998) (citing *Gorieb v. Fox*, 274 U.S. 603, 608-10 (1927)) (references to overcrowding, congestion, and “adequate light and air”).

264. See *supra* notes 161-66 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 *Tex. Midstream Gas Servs. v. City of Grand Prairie*, No. 3:08-CV-1724-D, 2008 WL 5000038 (N.D. Tex. Nov. 25, 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 253-55 and accompanying text.

265. *Gorieb v. Fox*, 274 U.S. 603, 609 (1927).

how often this occurs in neighborhoods where shops do in fact stand immediately behind a sidewalk. In fact, bringing buildings closer to streets may actually aid firefighting. Where structures are closer to the street, fire trucks parked on the street can reach those structures more easily.²⁶⁶

3. STREETS DESIGNED FOR CARS, NOT FOR PEOPLE

In both Canadian and U.S. suburbs, governments mandate streets that are too wide to be safe or comfortable for pedestrians. The discussion below will provide 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 200-foot right of way,²⁶⁷ including medians, sidewalks, and landscaping.²⁶⁸ Such streets are often eight to ten lanes wide.²⁶⁹ Burlington's major streets are only slightly smaller; Burlington's official plan calls for streets with 135 feet of right-of-way.²⁷⁰ One of these streets, Guelph Line,²⁷¹ has segments that are seven lanes wide.²⁷²

American suburbs, like Canadian suburbs, tend to have streets wide enough to be uncomfortable for pedestrians.²⁷³ Some of the major streets

266. See *Firefighting in a New Urban Era*, FIRE ENGINEERING, Aug. 1, 2005, available at <http://www.fireengineering.com/index/articles/display.articles.fire-engineering.volume-158.issue-8.features.firefighting-in-a-new-urban-era.html> (where structures are close to the street, they "will be easier to reach with aerial ladders.")

267. See *Amendment No. 25 to Schedule 5: Designated Right-of-Way Widths*, MISSISSAUGA, CAL. (June 2007), 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.

268. See Lewyn, *supra* note 11, at 284 n.276.

269. See *Former Hayfield Heads for Heyday*, TORONTO STAR, Nov. 23, 2006, at R06, available at 2006 WLNLR 20295384 [hereinafter *Hayfield*] (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, June 20, 2008, at A11, available at 2008 WLNLR 11652760 (referring to eight-lane street in Winnipeg).

270. See BURLINGTON PLAN, CAL., OFFICIAL PLAN, PART VII-SCHEDULES AND TABLES 4, 6 (last updated June 2011), available at <http://cms.burlington.ca/AssetFactory.aspx?did=10259> [BURLINGTON PLAN] (parts of Burloak Drive and Guelph Line have 42 meter right-of-way); *supra* note 208 (meter is 3.28 feet).

271. See BURLINGTON PLAN, *supra* note 270, at 6.

272. See Google Street View of 888 Guelph Line, Burlington, Ont. (Can.), GOOGLE MAPS, <http://maps.google.com>.

273. See John Kimble, *Insuring Inequality: The Role of the Federal Housing Administration in The Urban Ghettoization of African Americans*, 32 LAW & SOC. INQUIRY

of Atlanta suburbs such as Alpharetta are five or six lanes wide²⁷⁴—and other American streets are significantly wider.²⁷⁵

The wide streets of North American 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,²⁷⁶ and dangerous because the more time a pedestrian spends on such a street, the more time he or she spends exposed to traffic.²⁷⁷

Governments build wide streets in order to help motorists drive more rapidly.²⁷⁸ But this apparent virtue is also a vice: 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 per hour has a 150-degree field of vision.²⁷⁹ By contrast, a motorist driving at twice that speed has only a 50-degree field of vision,²⁸⁰ a vision level so narrow that the driver would be unqualified for a driver's license in some Canadian provinces.²⁸¹ Thus, a fast driver is less likely than a slower driver to notice a pedestrian (or for that matter, other drivers).²⁸²

399, 410 n.8 (2007) (wide streets part of what “characterize suburbia today”); Lewyn, *supra* note 8, at 284-85 (citing examples).

274. Keri Smith, *Alpharetta Turns 150: A Wealth of Memories*, ATLANTA J. & CONST., Feb. 3, 2008, at 8, available at 2008 WLNR 2033424 (citing one example of six-lane Alpharetta street); Janet Frankston, *Westside Parkway Stretch in Fulton to be Widened*, ATLANTA J. & CONST., Sept. 8, 2003, at F2, available at 2003 WLNR 6205722 (citing another example).

275. See, e.g., 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, Aug. 17, 2007, at A1, available at 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, Feb. 26, 1987, at M5, available at 1987 WLNR 533119 (noting that Philadelphia's City Avenue is eight lanes wide).

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

277. *Id.*; see also Wallace Immen, *City Seeks Solution to Commute Crunch*, GLOBE & MAIL, Apr. 26, 2002, at A22, available at 2002 WLNR 12038490 (even in downtown Toronto, pedestrians “have to run to beat the changing light” on wide streets).

278. See Stephen H. Burington, *Restoring the Rule of Law and Respect for Communities in Transportation*, 5 N.Y.U. ENVTL. L.J. 691, 694 (1996) (traffic engineers build wide streets out of “solicitude for fast traffic”).

279. *Id.* at 704 n.50.

280. *Id.*

281. See Highway Traffic Act, Ont. Reg. 340/94: Driver's Licenses, available at http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_940340_e.htm (noting 120-degree limit in Ontario for novice driver's license).

282. See Burington, *supra* note 278, at 704 n.50. Cf. Peter Swift, *Abstract: Residential Street Typology and Injury Accident Frequency*, available at <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”).

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 per hour will be able to stop 120 feet after noticing a pedestrian or other road user.²⁸³ By contrast, a motorist driving half that speed will be able to stop only 40 feet after seeing the other road user.²⁸⁴

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% chance of death from a car traveling 15 miles per hour, but the likelihood of death increases to over 80% when the vehicle is traveling at three times that speed.²⁸⁵

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”²⁸⁶ and that wide streets make pedestrians feel less enclosed.²⁸⁷

b. 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,²⁸⁸ suggests that most

283. See Joey Ledford, *Speeding Cars Terrify Neighborhoods*, ATLANTA J. & CONST., Aug. 27, 1997, at B, available at 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.”).

284. *Id.*

285. See Burrington, *supra* note 278, at 704 (83% risk of death from car traveling 44 miles per hour); *supra* note 241 (kilometer is 0.6 miles).

286. Paul Zykovsky, *Building Livable Communities with Transit*, LOCAL GOV’T COMMISSION, http://www.lgc.org/freepub/community_design/articles/build_with_transit/index.html (last visited Jan. 2, 2012).

287. *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* 78 (2001) (“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* 44 (2000) (“long strips of low buildings bordering wide streets fail to create a sense of enclosure [desirable to pedestrians].”)

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

commercial streets have no more than two lanes set aside for traffic,²⁸⁹ and that only streets in the urban core have more than four lanes.²⁹⁰

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:²⁹¹ 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.²⁹² 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.²⁹³

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.²⁹⁴ So by reducing automobile travel, pro-pedestrian street design may benefit not just pedestrians, but the general public as well.

c. A Note on Cul-de-sacs

In another respect, American street regulation is significantly more anti-pedestrian than that of Mississauga or Burlington. The zoning code of Sandy Springs states that "[l]ocal" (i.e. residential) streets²⁹⁵ "shall be laid out so that their use by through traffic will be discouraged."²⁹⁶ Alpharetta's code contains an identically worded provision.²⁹⁷ As a practical matter, this means that residential streets should connect to as few other streets as possible—that is, they should be dead-end (or

289. See *SmartCode Modules*, SCA38, SC39-40, http://curis.msstate.edu/public/3000_3_Modules-V9_PrintFinal.pdf (last visited Jan. 2, 2012) (listing street sizes for typical commercial streets).

290. *Id.* at SCA42, SC 43 (listing widest streets, and suggesting that such streets be limited to T5 and T6 zones); Emerson, *supra* note 251, at 679 (noting that T5 and T6 are "most urban" zones).

291. See Eric Dumbaugh, *Safe Streets, Livable Streets*, 71 J. AM. PLAN. ASS'N 283 (2005).

292. *Id.* at 288-90.

293. *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.

294. See *Massachusetts v. EPA*, 549 U.S. 497, 524 (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).

295. See Lewyn, *supra* note 11, at 284 (explaining that "local streets are smaller, residential streets").

296. SANDY SPRINGS CODE, *supra* note 200, § 103-74(b).

297. ALPHARETTA CODE, *supra* note 204, at art. 3.5.2E.

“cul-de-sac”)²⁹⁸ streets rather than being part of a grid of interconnected streets.²⁹⁹

Subdivisions dominated by cul-de-sacs are less walkable than neighborhoods full of interconnected “grid” streets, because in the first type of neighborhood, people cannot walk to visit their neighbors without going out of their way to a major street linking all the neighborhood streets.³⁰⁰ By contrast, in a gridded neighborhood, people can take the shortest possible route to visit their destination.³⁰¹

Cul-de-sacs, although certainly allowed in Canadian suburbs,³⁰² are not mandatory in Mississauga or Burlington, and are thus not as universal as in many American suburbs.³⁰³ In this respect, the streets of Mississauga and Burlington may be less pedestrian-hostile than those of Atlanta suburbs.

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.³⁰⁴ Given the existence of important public policy goals on both sides, a city seeking to maximize walkability need not favor cul-de-sacs over grids, but should also allow some cul-de-sacs as a legitimate residential option.³⁰⁵

298. See *Cul-de-sac Definition*, DICTIONARY.COM, <http://dictionary.reference.com/browse/cul-de-sac> (last visited Jan. 2, 2012) (defining “cul-de-sac” pattern).

299. Cf. Lewyn, *supra* note 11, at 288-89 (noting that some ordinances make this point more explicitly). Cf. *Grid Definition*, DICTIONARY.COM, <http://dictionary.reference.com/search?q=grid> (last visited Jan. 2, 2012) (defining “grid” street pattern).

300. See Brian W. Ohm and Robert J. Sitkowski, *The Influence of New Urbanism on Local Ordinances: The Twilight of Zoning?*, 35 URB. LAW. 783, 792 (2003), (cul-de-sacs “force the major circulation pattern of a community onto a few major roads”); DUANY, PLATER-ZYBERK & SPECK, *supra* note 287, at 23 (showing visual examples).

301. Ohm and Sitkowski, *supra* note 300, at 792 (grid “creates multiple and more direct routes”).

302. See Hayfield, *supra* note 269 (Mississauga “ended up with subdivisions with cul-de-sacs and crescents.”).

303. See, e.g., Diane Tierney, *Upscale Homes Found in Rare Cul-de-sac; Plenty of Green Space, Privacy in Well-Established Community*, TORONTO STAR, Nov. 13, 2008, at 2, available at 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, <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.

304. See *supra* notes 296-97 and accompanying text (cul-de-sacs popular with American municipalities because of concerns about “through traffic”).

305. 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, June 26, 2004, at N10, available at 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 combina

IV. Conclusion

This paper seeks to answer two questions:

First, whether sprawl is 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 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 make 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. But if the limited sample of suburbs studied above is typical, Canadian government regulation may be more lenient than American regulation, and thus more likely to allow the construction of neighborhoods compact enough to support at least some public transit ridership.

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.³⁰⁶

tion 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.

306. Of course, these are not the only possible anti-sprawl policies. Because the body of my paper focuses on government policies that accelerate sprawl, I suggest dismantling those policies. However, some jurisdictions have chosen to limit sprawl by increasing government regulation. *See supra* note 154 (citing some examples). The wisdom of these policies is beyond the scope of this paper.

