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TRAVEL AND HOUSING COSTS IN THE GREATER TORONTO AREA: 1986 - 1996

EXECUTIVE SUMMARY

Most people who live and work in the Toronto region assume that housing and travel costs vary according to where one lives. But if so, how exactly does the pattern play out in the region? Does one save, overall, by living in the suburbs?

To learn more about this, the Neptis Foundation commissioned Professor Eric J. Miller and colleagues at the Joint Program in Transportation, University of Toronto, to conduct a thorough empirical analysis of the matter. They have now completed their study and released their report.

The researchers concluded that household transportation expenditures do indeed rise, on average, as one moves out from city centres, and were in fact able to quantify this phenomenon. They also observed, rather surprisingly, that although house prices fall as one moves out from the city centre, the amount of money households spend on housing – broadly defined to include utilities and other costs, for both owners and renters – actually rises as one moves out. This all brings into question the notion that suburban living is cheaper than urban living. The researchers explore several other aspects of the subject, including the comparative costs of automobile travel and public transit, and the relationship between housing and travel costs and household income.

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TRAVEL AND HOUSING COSTS IN THE GREATER TORONTO AREA: AN EMPIRICAL ANALYSIS, 1986-96

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

Purpose

This study explores the interrelationships between housing costs, travel costs, income, and accessibility across the Greater Toronto Area (GTA). Understanding the interplay between these variables is critical to the formulation of land use and transportation policy for the region. The study includes a detailed examination of the spatial patterns of housing and travel costs in a base year (1996) and of trends in these patterns over the decade 1986-1996 for which consistent data are available.

Housing and transportation are the two biggest budget items for the average household. Houses cost hundreds of thousands of dollars and automobiles cost tens of thousands. The importance, therefore, of housing and travel markets for household well-being is self-evident.

The importance of housing and transportation markets in the evolution of urban form is equally clear. Issues of urban sprawl, roadway congestion, air quality, greenhouse gas emissions, social equity, and, more generally, the economic, social, and environmental sustainability of urban areas are all tied directly to the way housing and transportation markets cause urban form and travel behaviour to evolve over time.

It is generally believed that many households choose to live in suburban locations either because housing costs are lower there (for a given size or type of dwelling) or because households can obtain "more house" (more floorspace, bigger lot) for a given expenditure. What is not clear from casual observation is the extent to which transportation costs are factored into these decisions. That is, people in suburban locations on average might spend more on cars and travel than people living in more central locations, and this difference might compensate for differences in housing costs between these locations. If this is indeed the case, then alternative patterns of residential locations (and associated travel patterns) might exist that would be superior from both the individual household and societal perspectives.

Furthermore, low-income households may be forced to live in suburban locations if these are the only locations in which "affordable" housing is located. However, they may then be required to spend a considerable portion of their income on automobile-based transportation, leaving very little money for expenditure on other necessities. Again, an alternative distribution of affordable housing that resulted in less costly travel patterns for such households would be highly desirable.

The purpose of this study is to investigate these issues and concerns empirically through a time-series analysis of housing costs, travel costs, and income (and their inter-relationships) within the Greater Toronto Area (GTA). The study emphasizes both spatial patterns (i.e., how these amounts vary and co-vary in value across the GTA), as well as temporal trends (i.e., how they are changing over time).

Method

The overall study approach was straightforward. Available data sets on housing, travel, and income in the GTA were integrated (to the extent possible) to provide a comprehensive overview of the GTA housing and travel markets. Extensive, but relatively simple, statistical analyses of these data were undertaken to explore the spatial patterns and temporal trends that have occurred over the past 15 years in these markets.

Travel costs were calculated based on observed trip rates, origin-destination travel patterns, and trip mode choices as captured in the Transportation Tomorrow Survey (TTS) series of surveys for 1986, 1991, and 1996 – a high-quality, statistically reliable database for analyzing travel behaviour in the GTA. Travel cost models recently developed for the GTA by study team members were then applied to the observed travel data to generate estimates of daily (and, eventually, annual) household travel costs.

Sales price or market value data for GTA owner-occupied housing came from two sources: census data for 1986, 1991, and 1996; and Toronto Real Estate Board data, available for all years from 1987 to 1995. Both data sets were analyzed in this study and yielded a consistent picture of housing price patterns and trends in the GTA.

To compare housing and travel expenditures, however, one needs to know the **total** costs of housing paid by GTA households, where these total costs include the effects of renting rather than owning (in 1996, 40% of all GTA households rented rather than owned their dwellings), the actual annualized costs of owning a house (i.e., how a purchase price translates into an annual cash flow of mortgage payments), and the annual costs of maintenance, utilities, property taxes, and other expenses that households must pay to occupy and use their dwellings. Fortunately, the census collects information on the total monthly expenditures of both housing owners and renters, and these data for 1986, 1991, and 1996 were used in this study.

Note: In speaking of "costs," only "hard" (actual monetary) expenditures by households on their travel and housing are considered in this study. The "cost" of the time spent travelling is not included in the analysis, nor are the social costs of pollution, greenhouse gas emissions, etc. With respect to pollution and emissions, Miller and Lee [2002] have provided a detailed audit of emissions from vehicles used by households for personal travel for the GTA over the same 1986-1996 time period that is used in this study. In terms of time spent travelling, it is possible to convert time into dollar equivalents through the use of "value of time" factors. This was not done in this study for two reasons. First, such values of time are not well established for the GTA. Second, the focus of this study is explicitly on the monetary cost trade-offs that households make in their residential location and travel decision-making. Including the time-based "psychic costs" of travel would not be appropriate at this stage of the analysis.

Findings

Overall, we found that in 1996 GTA households on average spent $20,000 a year on housing and travel combined. Table E.1 summarizes average expenditures by regional municipality, as well as for the GTA as a whole. As Table E.2 shows, this represents 34% of their average 1996 income. On average,15.2% of their income is spent on travel, while 18.6% is spent on housing.

These figures are comparable to similar data for U.S. cities. This expenditure has increased over time, largely due to increases in housing costs. Travel costs were actually quite stable over the 1986-1996 period, possibly due to recessionary effects that reduced average car ownership slightly across the GTA during the early 1990s. Another factor that may have helped keep travel costs relatively stable is the continuing employment growth in Peel region, which has resulted in somewhat reduced average trip lengths for Peel residents.

Table E.1 Housing and Travel Cost Trends ($1996)

Regional Municipality	Average Travel Costs			Average Housing Costs			Average Travel + Housing Costs		
	1986	1991	1996	1986	1991	1996	1986	1991	1996
Toronto	7,900	8,300	7,000	9,000	10,400	10,100	16,900	18,700	17,100
Durham	10,800	12,000	10,400	9,900	12,600	12,000	20,700	24,600	22,400
York	13,400	15,400	13,700	11,700	14,100	13,600	25,100	29,500	27,300
Peel	12,000	13,000	11,000	10,800	13,000	12,800	22,800	26,000	23,800
Halton	12,700	13,600	12,000	10,500	12,600	12,300	23,200	26,200	24,300
Hamilton	7,600	9,200	8,300	7,700	9,000	8,800	15,300	18,200	17,100
GTA Total	**9,300**	**10,300**	**9,000**	**9,400**	**11,300**	**11,000**	**18,700**	**21,600**	**20,000**

Table E.2 Housing and Travel As a Proportion of Income

Regional Municipality	Average (Travel Costs) / Income			Average (Housing Costs) / Income			Average (Travel + Housing Costs) / Income		
	1986	1991	1996	1986	1991	1996	1986	1991	1996
Toronto	14.2%	14.2%	13.0%	16.2%	17.8%	18.8%	30.3%	32.0%	31.8%
Durham	18.3%	19.0%	16.6%	16.8%	19.9%	19.1%	35.1%	38.9%	35.7%
York	18.8%	19.8%	18.4%	16.4%	18.2%	18.3%	35.3%	38.0%	36.7%
Peel	18.7%	19.2%	16.8%	16.8%	19.2%	19.6%	35.6%	38.4%	36.4%
Halton	19.3%	18.6%	16.4%	16.0%	17.2%	16.8%	35.3%	35.7%	33.2%
Hamilton	16.2%	18.3%	16.9%	16.4%	17.9%	17.9%	32.6%	36.1%	34.8%
GTA Total	**16.1%**	**16.6%**	**15.2%**	**16.3%**	**18.3%**	**18.6%**	**32.4%**	**34.9%**	**33.8%**
% Growth 1986-96			-5.4%			14.4%			4.6%

Both housing costs **and** travel costs tend to increase as one moves away from the central areas of the region's cities (particularly from the Toronto downtown). Increasing average travel costs are expected, due to longer average trip lengths, the need to do more travel by automobile, and associated higher automobile ownership levels in more suburban/rural areas. Increasing average annual housing costs are, perhaps, less expected, but reflect the increased size (and, perhaps, other amenities) of much suburban/rural housing relative to more centrally located housing (which, on average, is older and smaller). These increases in house size outweigh the effect of falling land values as one moves away from the city centres.

Transportation costs make up an increasing proportion of the total as one moves towards the outer areas of the GTA. In many zones outside the more urbanized areas of Toronto, Mississauga/Brampton, Hamilton, and the lakeshore communities, average annual travel costs actually *exceed* average annual housing costs.

Given these results, the notion that a household should locate at or beyond the urban fringe in order to obtain "cheap" or "affordable" housing is called into serious question. That is, the

increased cost of transportation in such areas more than compensates for any savings in housing costs. Indeed, these findings raise the issue of whether there really is such a thing as "cheap" housing, even before one factors in the "cost" of travel time and the environmental costs associated with auto-dominated travel (which have not been included in this study).

With respect to equity issues, it was found that many lower-income households, which often include recent immigrants to the GTA, are spending above-average portions of their incomes (e.g., more than 40%) on housing and travel, even though many of these households live in neighbourhoods that have relatively low housing and travel costs. This is particularly the case in traditionally lower-income neighbourhoods within the cities of Toronto and Hamilton, but such neighbourhoods also exist in Peel and York Regions, among others.

Conclusions

The research suggests two conclusions (or, at least, hypotheses).

1. Automobiles are clearly expensive to own and operate. If transit systems can be improved (particularly in somewhat denser suburban areas such as central Mississauga, southern York Region, and along the lakeshore in both Halton and Durham Regions), *and* greenfield and redevelopment infill developments can be designed to improve both transit and "pedestrian friendliness," thereby enabling households to own and operate fewer cars, it would save households considerable amounts of money. It would also reduce roadway congestion, accidents, and air pollution and greenhouse gas emissions.

2. Households are clearly willing to spend more on both housing and travel to obtain the perceived amenities of suburban lifestyles (such as larger houses on larger lots). What is not clear from this analysis is whether this is a "demand-driven" or a "supply-driven" phenomenon. That is, are households moving to relatively expensive suburban locations because they "prefer" these locations, or because these are where new housing is being supplied? It is a standard assumption that the "consumer is sovereign"; that is, suppliers of goods (in this case the developers of housing) merely "respond" to the will of consumers. This is, however, in many respects an untested hypothesis, perhaps especially in the GTA housing market. A critical question for GTA housing policy is the extent to which households might respond favourably to alternative combinations of housing and travel opportunities.

Areas for further research

The study suggests at least two streams of future work. The first is the obvious one of continuing to extend the empirical analysis of this study as data for subsequent years become available. It was unfortunate that neither detailed census nor TTS data were available for 2001 when the present research was undertaken. The period 1991-1996 was unusual for the GTA given the severe recession that was in effect for much of the period. Anecdotal evidence indicates that the 1996-2001 period was characterized by more aggressive growth (reflecting presumably a return to the long-term growth trend that has typified the GTA since the 1960s). The 2001 data might well alter some of the findings in this report. In particular, significant increases in City of Toronto housing prices, auto ownership levels throughout the GTA, and continuing declines in

transit usage would affect the overall cost of housing and travel within the GTA and the spatial distribution of these costs.

Second, to address issues such as the one raised above concerning households' responses to alternative housing and transportation policies, researchers need an integrated model of urban land use (i.e., the demand *and* supply of housing, as well as other urban economic sectors) and transportation. The Integrated Land Use, Transportation, Environment (ILUTE) project at the University of Toronto represents an ongoing effort to develop such a capability for the GTA. The empirical findings of this study will help develop an operational model of the GTA housing market that, it is hoped, will someday be used to inform policy debate in the GTA and elsewhere.