Executive Summary

Defining the Suburbs: A Case Study of the Thunder Bay Census Metropolitan Area

Introduction

The purpose of this study is to determine if two previously suggested definitions of suburb proved accurate when tested on a smaller Census Metropolitan Area (CMA), namely Thunder Bay, Ontario. Upon formulating the best definition, the proportion of residents of the City of Thunder Bay will be calculated using GIS software in tandem with Statistics Canada Census data. The research questions to be examined are:

- Are either of the previously suggested definitions used on larger Canadian CMAs sufficient for a smaller CMA such as Thunder Bay?
- Is built form the only, or the best, determinant of suburban development? Can other characteristics be worked into the definition that result in a more accurate overall representation?
- What proportion of the population of Thunder Bay resides in the suburbs based on the tested definitions?

Method

To determine if the definitions being tested are accurate for Thunder Bay, 2006 Statistics Canada Census data will be used together with GIS to create maps of the results of the different definitions. An air photo interpretation will be undertaken based on Google Earth satellite imagery as well as personal knowledge of the CMA. The air photo interpretation will examine various characteristics of the Census Tracts: curvilinear street pattern with numerous T-

family detached housing stock; and large setbacks and side/rear yards. Tracts will be ranked based on how they exhibit the aforementioned criteria. The rank system will be as follows:

1 = Criteria met in a few places across the tract
2 = Criteria met in some places across the tract
3 = Criteria met in many places across the tract
4 = Criteria met almost universally across the tract

Inclusion Criteria

The first definitions to be tested are two previously developed and tested on the CMAs of Montréal and Ottawa. The definition tested on Montréal (coined the Modified Statistics Canada method) was proposed by Statistics Canada Researcher Martin Turcotte and classifies a tract as suburban if 66 percent or more of the housing stock is single family detached. The definition tested on Ottawa was created in response to the first definition and was formulated by Queen's University's School of Urban and Regional Planning alumni Chris Vandyk (2009) ff

The criteria for the Final Transportation Method can be seen in Table I. The Initial Transportation method used the same classification system but excluded the Auto-Dominant Suburbs category and instead left some tracts unclassified. The Final Transportation method was developed in response to this inadequacy.

Table I: Final Transportation Method Criteria

	Active Transport Ratio	

Figure I: Final Transport Method Map

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Table III: Classification Statistics for All Methods

	Inner City	*Rural*	*Suburbs*	*Auto-Dominant Suburbs*	*Unclassified*
Air Photo Interpretation	N/A	N/A	65,089 (53%)	N/A	57,818 (47%)
Modified Statistics Canada Method	N/A	N/A	89,565 (73%)	N/A	33,342 (27%)
Built Form Method	46,948 (38%)	25,035 (20%)	33,826 (28%)	N/A	17,098 (14%)
Initial Transportation Method	29,514 (24%)	37,289 (30%)	51,659 (42%)	N/A	4,445 (4%)
Final Transportation Method	29,514 (24%)	26,567 (22%)	51,659 (42%)	15,167 (12%)	N/A

Conclusions and Recommendations

Findings

The purpose of this study was to test two previously suggested methods (Turcotte, 2008; and VanDyk, 2009) on the City of Thunder Bay, and to devise a more fitting classification scheme if the other two proved inadequate. The study also sought to determine the proportion of Thunder Bay residents living in suburban neighbourhoods. The results from these methods were compared to the Air Photo Interpretation, and it was found that they did not accurately represent Thunder Bay's suburbs. From here it was decided that the focus should be shifted from characteristics of built form to transportation modal split for the journey to work.

The Initial Transportation Method, although more accurate than either the Modified Statistics Canada and the Built Form Method, still left a number of tracts unclassified. The Final Transportation Method was developed to address these unclassified tracts, and proved to most accurately mirror the air photo interpretation. The Final Transportation Method defined 54 percent of Thunder Bay's population as suburban, while the Air Photo Interpretation identified 53 percent of the population.

These findings are consistent with the literature, of which the general consensus is

In comparing the results for the Thunder Bay CMA to other cities across Canada it becomes apparent that there are great differences in the amount of suburbanization experienced by different cities across the country. Smaller CMAs such as Thunder Bay and Kingston seem to have seen slower development and therefore less suburbanization than larger CMAs, such as Toronto, Vancouver, and Hamilton. This realization paints an interesting picture in considering the impact of development in these larger cities.

Conclusions

Suburban development in Thunder Bay does not follow either of the models focusing on built form. As these methods proved inadequate a method involving transportation modal split was devised which represented Thunder Bay's suburbs more accurately. The Final Transportation method distinguishes between suburbs and auto-dominated suburbs, as there is significant variation in the ratio of people using transit between suburban tracts. The difference between the two designations in the suburbs, the transit usage ratio is 0.5 times the CMA average or greater, and in the auto-dominant suburbs the transit usage ratio is less than 0.5 times the CMA average. Thus, using this method 54 percent of Thunder Bay's population reside in either a suburb or an auto-dominant suburb.

Recommendations

In order to determine the effectiveness o