Transit to eternal youth:
Lifecycle and generational trends in Greater Montreal public transport mode share

Michael A. Grimsrud & Ahmed M. El-Geneidy, School of Urban Planning, McGill University

INTRODUCTION

Recent studies show young people using public transit more than their predecessors, reversing 20th century trends, but the importance of such findings depends on whether high transit use persists as these riders age.

Existing research on life course and inter-generational changes in mode choice tends to:

- Examine automobile ownership, an imperfect proxy
- Use household-level data, tied to age of household head, potentially misattributing data between household members
- Use data too old to address apparent recent changes

This study uses 1998-2008 individual-level travel surveys to examine changes in transit use in time within age groups, as well as changes in transit use as groups of people grow older survey-to-survey. The aim is to answer the questions:

Are young people in Greater Montreal choosing transit more than previous generations and will this change as they age?

STUDY CONTEXT

Montreal (Figure 1) is Quebec's largest city, with a moderately growing 2006 metropolitan population of 3,635,571 and a high population density. Employment hubs are all fairly close to downtown, some with good transit accessibility.

Over the study period some changes favored automobile use:

- Most population growth in peripheral areas
- Home ownership increase 5% and unemployment drop 2%

Other changes favored public transportation:

- Average age of new mothers and fathers increase by 1 yr
- Graduated drivers' licensing introduction 1997
- Student transit fares made more accessible 2002
- Subway expansion into Laval and improved integration with bus system 2007 and 2008, respectively
- Gasoline price spike summer 2008, shortly before survey

METHODOLOGY

DATA

- From 1998, 2003, and 2008 Greater Montreal cross-sectional origin-destination surveys
- Geographical boundaries standardized
- Over 45,000 home-to-work and home-to-school trips by individuals aged 20-59 each year

ANALYSIS

- Transit shares plotted for 5-year age groups at each survey year and by birth year group (Figure 2)
- Transit share differences between years tested using Pearson's chi-square test for age groups and for birth year groups
- Subgroup transit shares examined: household structure and home location (Figure 3), gender (not pictured)

RESULTS

- General lifecycle pattern: declining transit use through youth into early 30s, then long plateau (Figure 2)
- Transit mode shares for youth age groups: 2008>>2003>>1998
- 2008 transit mode share increases later in life might reflect temporary gasoline price spike

Chi-square ananalyses between survey years confirm:

- Variation within age groups (especially youth)
- Stability within older birth cohorts

Single or childless commuters often choose transit (Figure 3).

Transit use is higher for central residents, but suburban areas show similar trends (Figure 3).

Transit mode share decline from late 20s to early 30s (Figure 2) is not clearly present within household structure and home location subgroups (Figure 3).

DISCUSSION & CONCLUSION

TRENDS

Young Montrealers' transit mode share for commutes has increased. Lifecycle literature and study results suggest it will stay high throughout most of their working years, greatly increasing overall ridership, given adequate provision.

Trends observed might not be seen elsewhere. Montreal features:

- High population density
- Extensive transit infrastructure and use history

However, other studies suggest youth transit use is increasing across the US and Germany.

FACTORS

Youth transit use is foundational for lasting habits. In Montreal, pertinent factors likely included:

- New graduated licensing
- Reduced transit fares for students aged 18-25
- New school curriculum sustainability focus
- New trip planning technologies

More affordable transit-accessible homes for young families might further increase transit mode share gains.

RESEARCH

- Incorporating cohort measures can improve future transit demand forecasting
- Panel data following changes in individuals is expensive and often unavailable
- Pseudo-panel data assembled from repeated cross-sectional studies can stand in to capture aggregate cohort trends

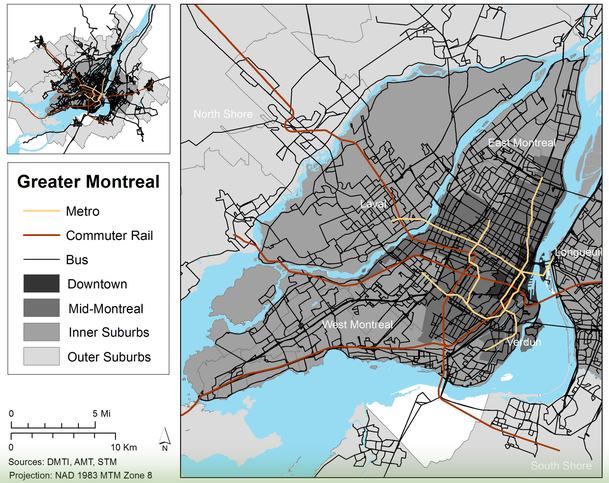

Figure 1: Context and home location zones

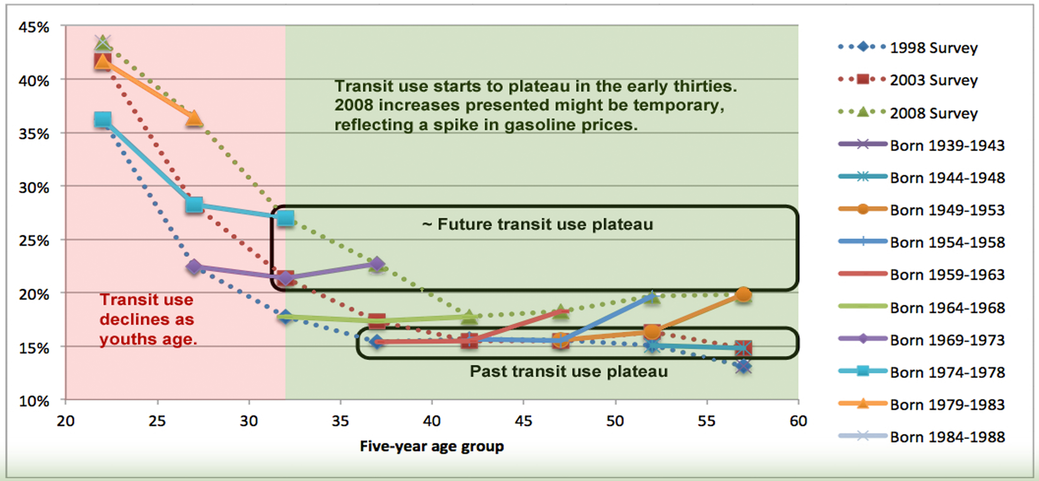

Figure 2: Transit commute mode share

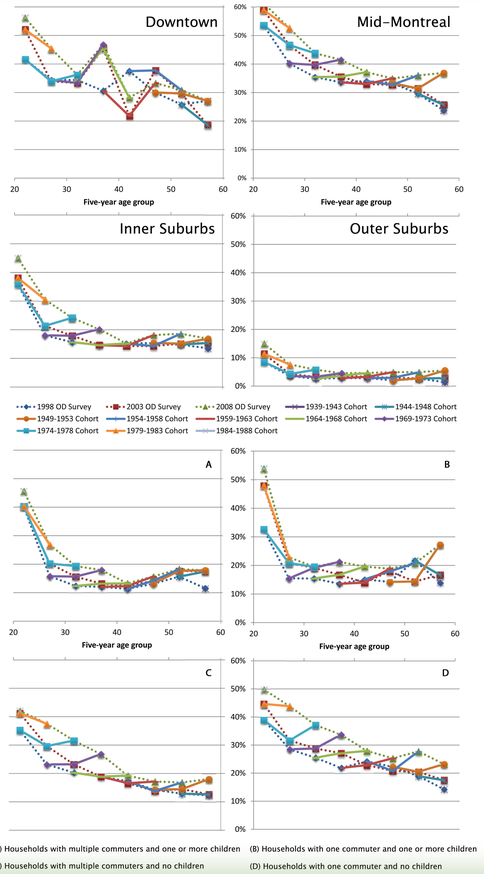

Figure 3: Transit commute mode share by home location (top) and household characteristics (bottom)

TRANSPORTATION RESEARCH BOARD ANNUAL MEETING
WASHINGTON, D.C.
JANUARY 13 - 17, 2013

ACKNOWLEDGMENTS

The authors wish to thank AMT for access to Montreal Origin-Destination survey data analyzed in this paper and the Natural Sciences and Engineering Research Council of Canada for financial support. We would also like to acknowledge the members of TRAM research group for their helpful feedback, especially Kevin Manaugh for conceptual input, Ehab Diab for technical advice, Cynthia Jacques for editing, and Ted Horton for timely research.