**ABSTRACT**

This research seeks to understand how daily fluctuations in transit service are related to ridership in the Greater Toronto and Hamilton Area (GTHA) for different wage groups. Many variables have been linked to transit use in past research, including frequency and proximity of transit service, socio-economic status, the built environment, and accessibility to employment using transit. However, many previous studies focus only on travel during peak hours. This study investigates whether temporal fluctuations in service or need are related to ridership. Using five time periods, this study produces an improved analysis of temporal fluctuations in service or need are related to ridership in the Greater Toronto Area (GTHA) for different wage groups. Many variables have been linked to transit use in past research, including frequency and proximity of transit service, socio-economic status, the built environment, and accessibility to employment using transit. However, many previous studies focus only on travel during peak hours. This research seeks to understand how daily fluctuations in transit service are related to ridership.

**INTRODUCTION, CONT’D**

Accessibility’s relationship with transit mode share has been investigated. This measure aims to account for both the access areas how to how to access transit service as well as the opportunities that are reachable using those services. Accessibility measures often make two basic assumptions, which this study avoids. A second assumption is that accessibility to jobs remains constant over the day or that accessibility during peak travel times is indicative of the whole day overall. This is clearly not the case regarding most transit services.

**METHOD**

Variables typically related to transit mode share can be divided into two main groups: those pertaining to the rider’s personal situation (socio-economic and other demographic variables) and those dealing with the activities and connectivity that make up a rider’s miles (the built environment and transit availability).

**METHODOLOGY**

A person’s social and economic status can influence their use of transit. In particular, social deprivation has been linked to higher rates of transit ridership. Deprivation is not determined by income alone, but by other factors, including immigration status, unemployment and housing affordability.

**Variables typically related to transit mode share** can be divided into two main groups: those pertaining to the rider’s personal situation (socio-economic and other demographic variables) and those dealing with the activities and connectivity that make up a rider’s miles (the built environment and transit availability).

**A Indicator which equally includes:**

- Median Income
- Unemployment rate
- Share of residents recently immigrated
- Share of residents paying > 30% of their income on rent
- Accessibility is calculated using the gravity-based measure:
  - For five time periods
  - For our two wage-groups
  - For the entire working population

**Statistical Model:**

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Low-Wage Workers</th>
<th>Higher-Wage Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Income</td>
<td>50,000</td>
<td>75,000</td>
</tr>
<tr>
<td>Unemployment</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Recent Immigrant</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>Rent Share</td>
<td>30%</td>
<td>25%</td>
</tr>
<tr>
<td>Accessibility</td>
<td>1.0</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**CONCLUSION**

By dividing the population into two wage groups, we notice that each wage group has significant differences regarding their transit mode share, and what may influence their mode share.

**ACKNOWLEDGEMENTS**

This research was partially funded by the Natural Sciences and Engineering Research Council of Canada collaborative research and development (NSERC-CDR) program and Metrolinx. The authors would like to thank Frank Cowey and Gustavo Bueno for their help in generating the transit travel data, Melissa Manor for her help with the “Better Bus Services” dataset, and Skipetra Longstaff for her review of this paper. We also wish to thank the four anonymous reviewers, who provided insightful comments and very helpful suggestions.