

# Smart Card VS OD Travel Survey

Fusion of Smart Card Data and Household Travel Survey Data for the Enhancement of Transit Riders' Behavior Characterisation

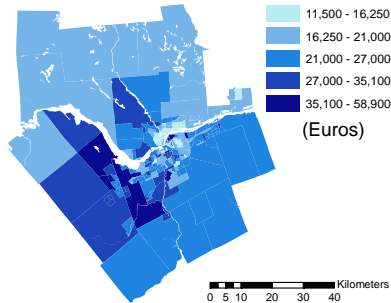
Pr. Martin Trépanier, Pr. Catherine Morency, Pr. Robert Chapleau and Carl Blanchette

## 1 Context and Objectives

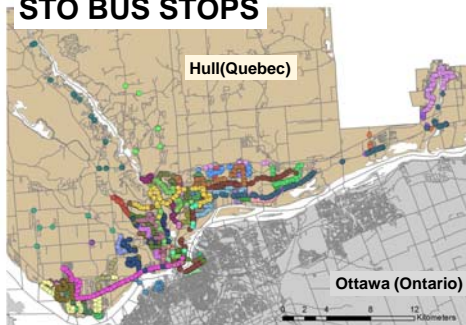
Large scale **Origin-Destination travel surveys (OD)** gather detailed information on the travel behaviours of a app. **5% sample** of people. **Smart card (SC)** fare payment systems in public transport can provide **very detailed data on the boarding date/time, boarding location and network use, on a continuous basis.**

In this work → **two public transport datasets** that cover the same period of time (**Fall 2005: 10 weeks**): 1) **2005 National Capital Region Travel Survey** (Ottawa-Gatineau, Canada), 2) **data from the smart card fare payment** system of the Gatineau public transport authority to → **Strengths and Limits** of each data collection method and sets **Compare** some transit use indicators, **Variability** of behaviours, **Transport Object-Oriented Modelling** framework.

### Average HH Income (Census)



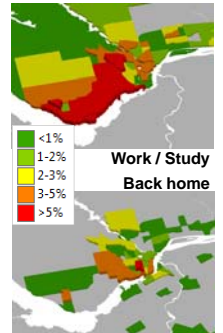
### STO BUS STOPS



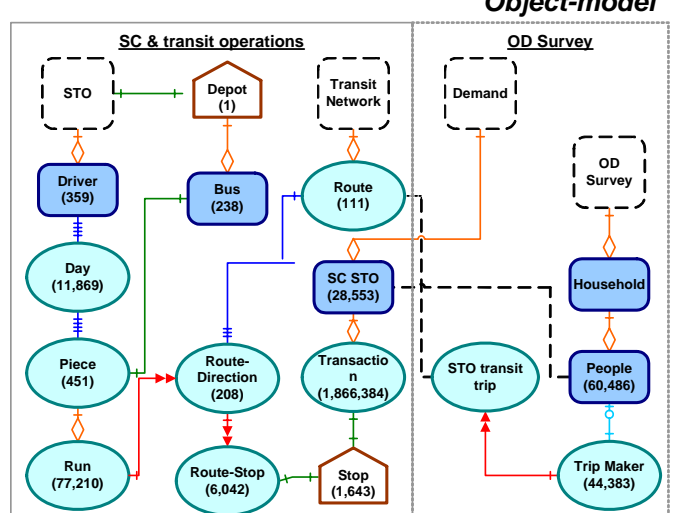
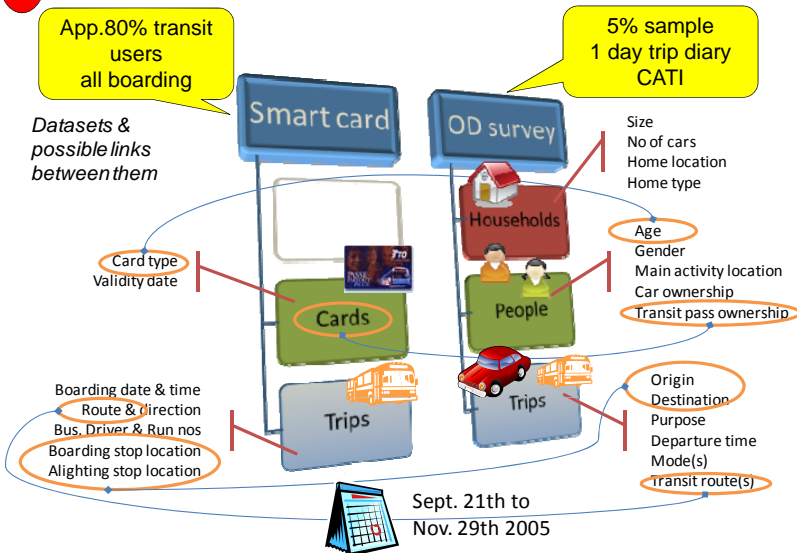
### Transit share (OD)



### CAP share (OD)

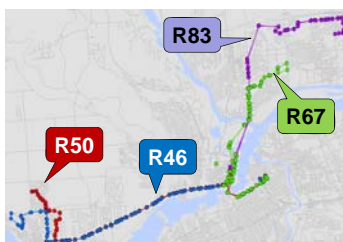
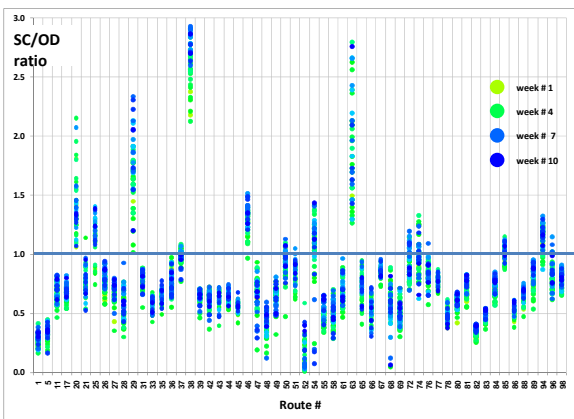


## 2 Methodology: databases + transportation object-oriented modelling

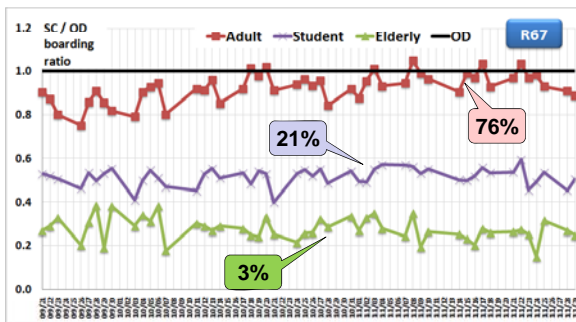


## 3 Results: comparison SC vs OD

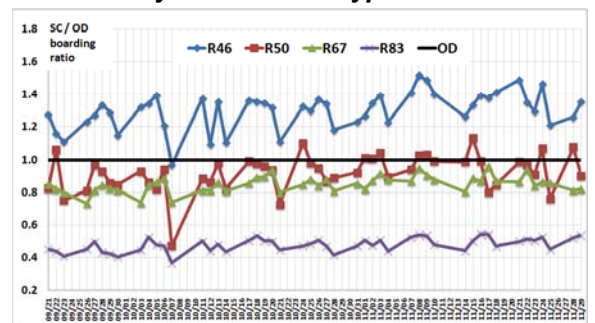
### Daily boarding per route



### Daily variation per card type (R67)



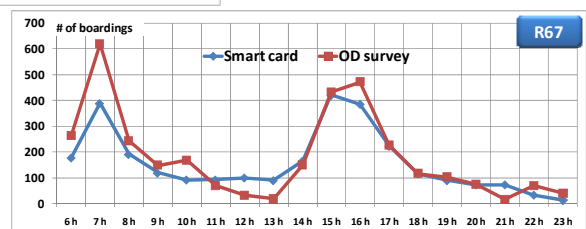
### Daily variation for typical routes



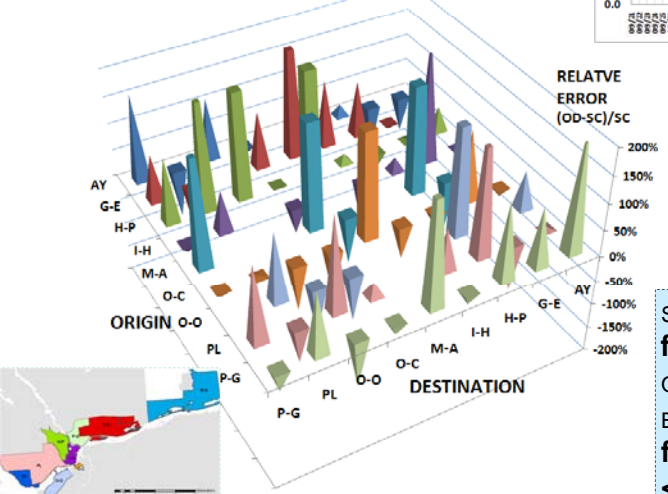
Daily average (SC):  
R46: 975 boarding  
R50: 510 boarding  
R67: 2885 boarding  
R83: 992 boarding

$$\text{ratio} = \frac{\text{SC\_boarding}}{\text{OD\_boarding}}$$

### Hourly variation (R67)



### O-D matrix



## 4 Conclusion

Smart card data show **that daily transit use is variable (CV: 10-30% for daily boarding per route, based on 10 weeks of data, only fall period)** OD survey data inform on **transit share** → subset of data can be compared to SC data → BUT our analysis **show important difference between typical day from OD and daily behaviours from smart card** → Generally: **SC < OD** except for some routes and card types → not uniform!