

Preferred citation style

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Singapore's travel demand management issues

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Acknowledgments

A Loder for the mobility tool work

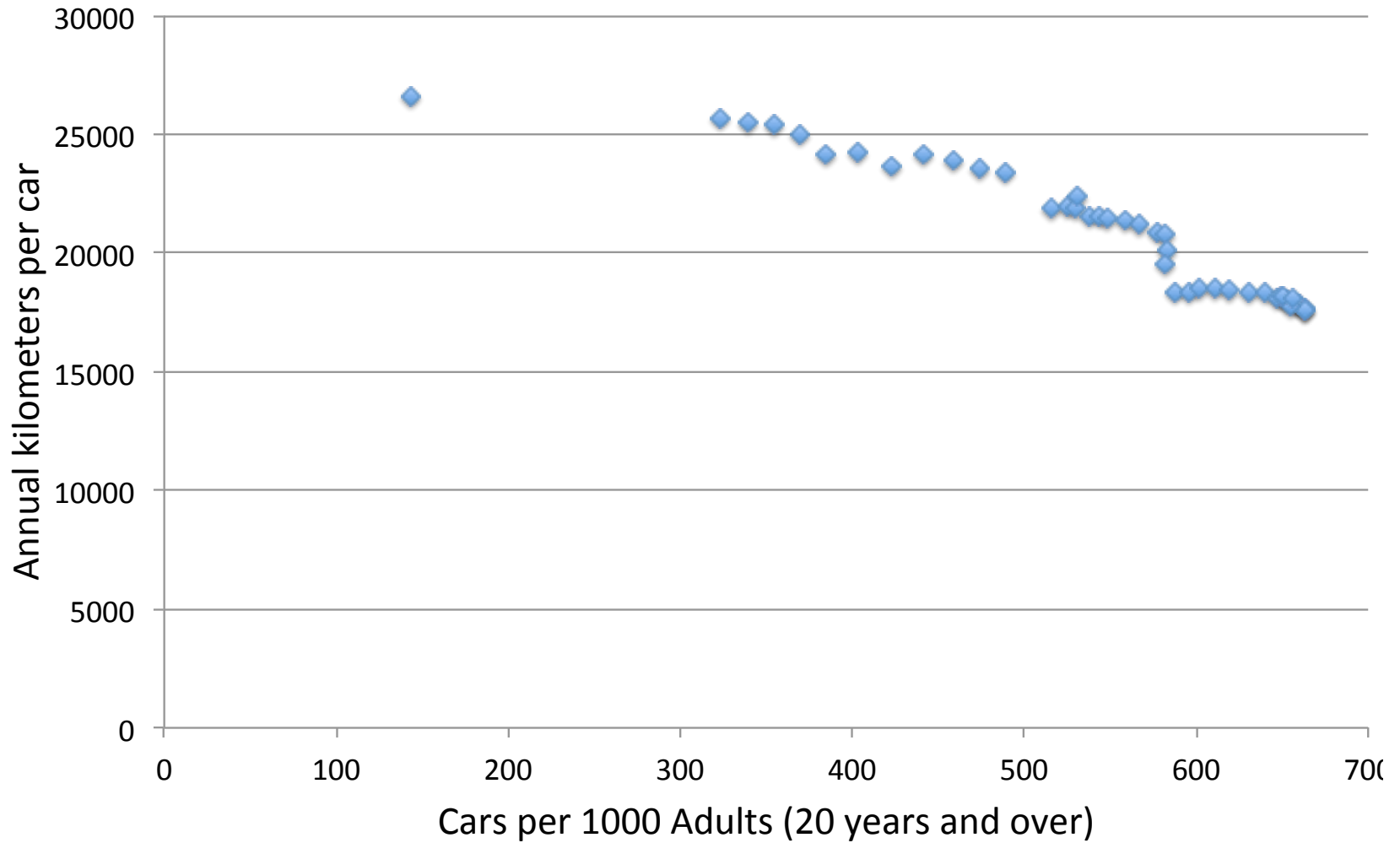
L Sun for the big data analysis

FCL M8 for the SG MATSim model

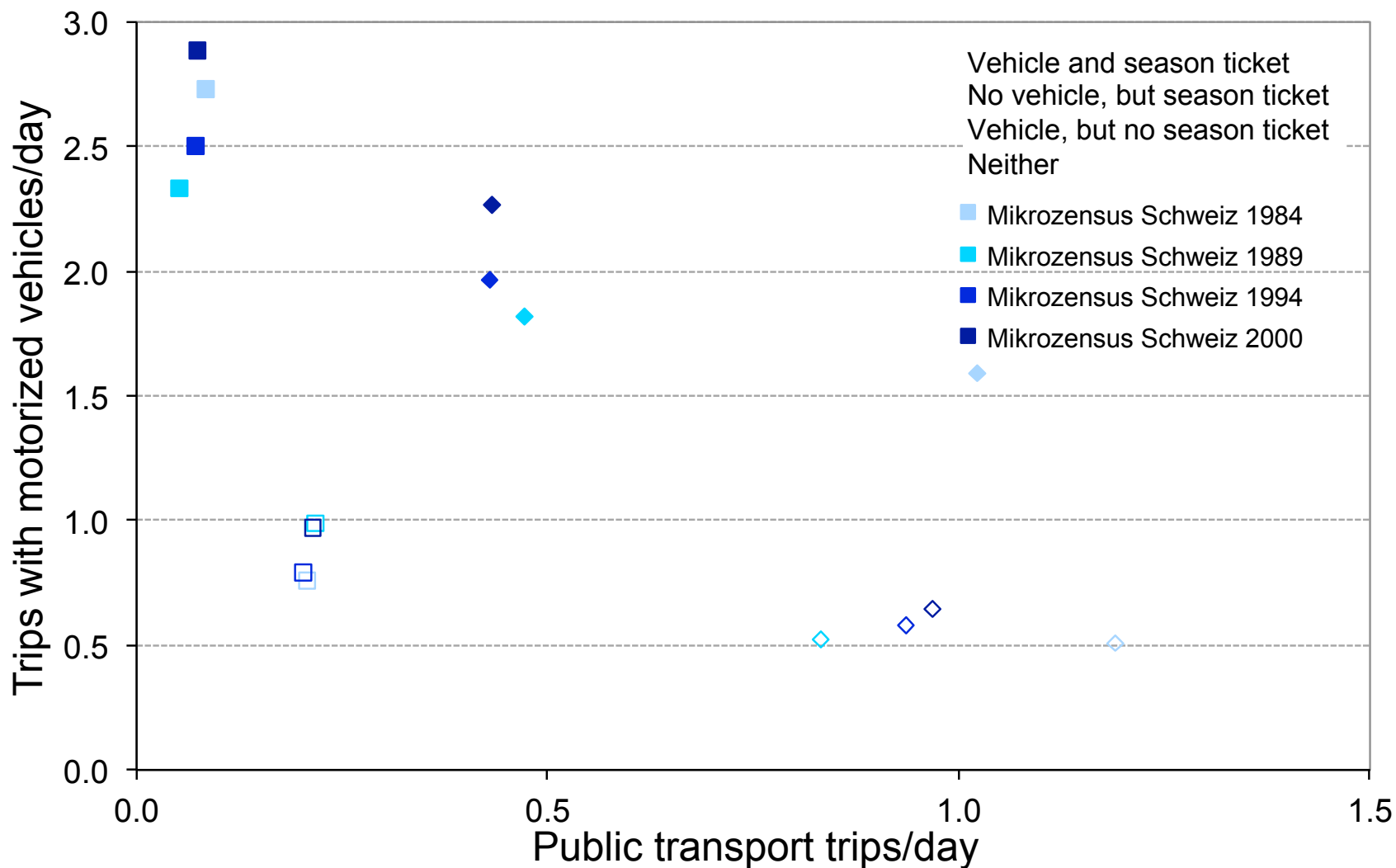
A model of Singapore's travel demand and traffic



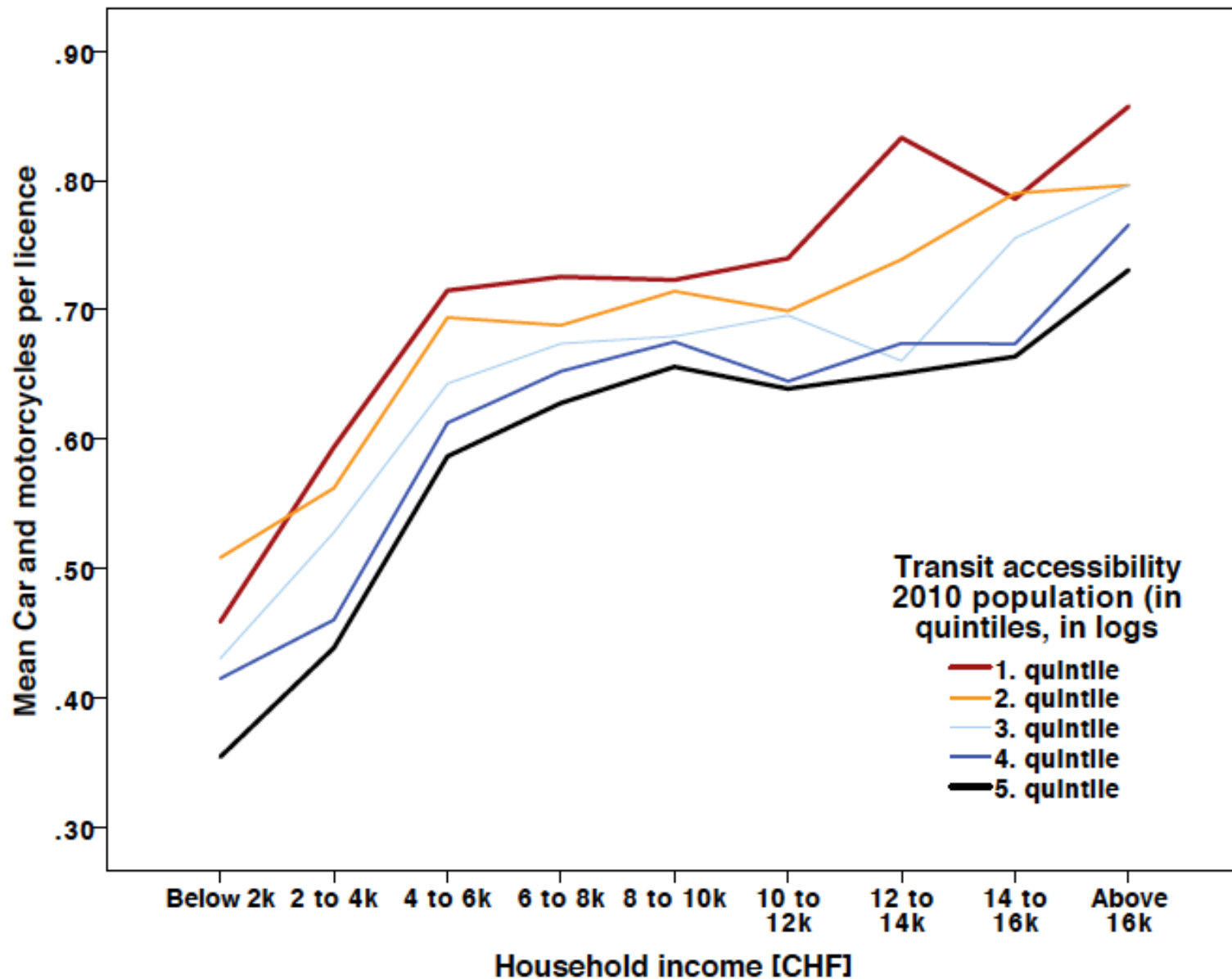
Development of km driven per car and year (CH, 1960-)



Travel, car and season-ticket ownership (CH, 1984-)

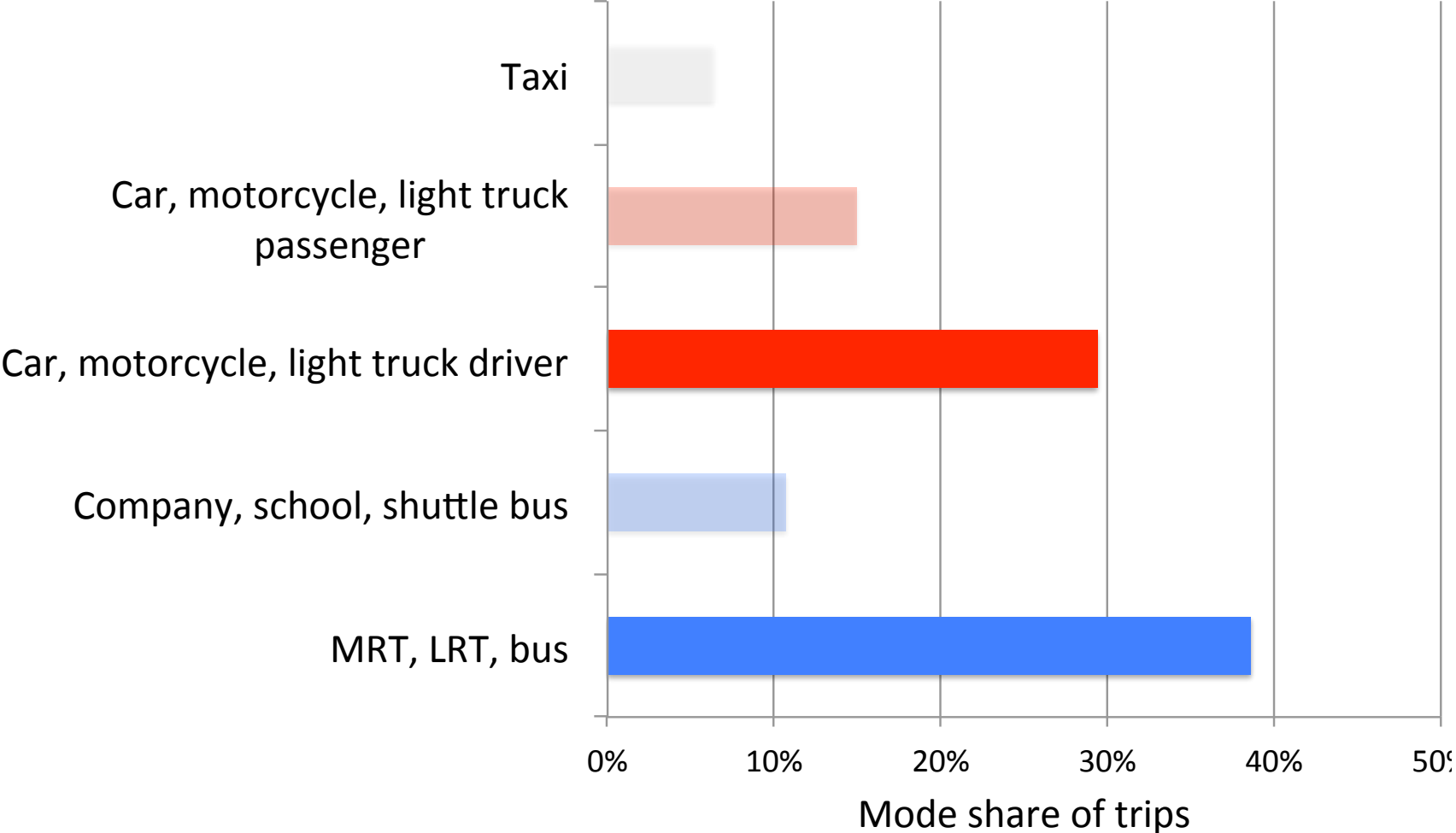


Accessibility and car ownership in Switzerland



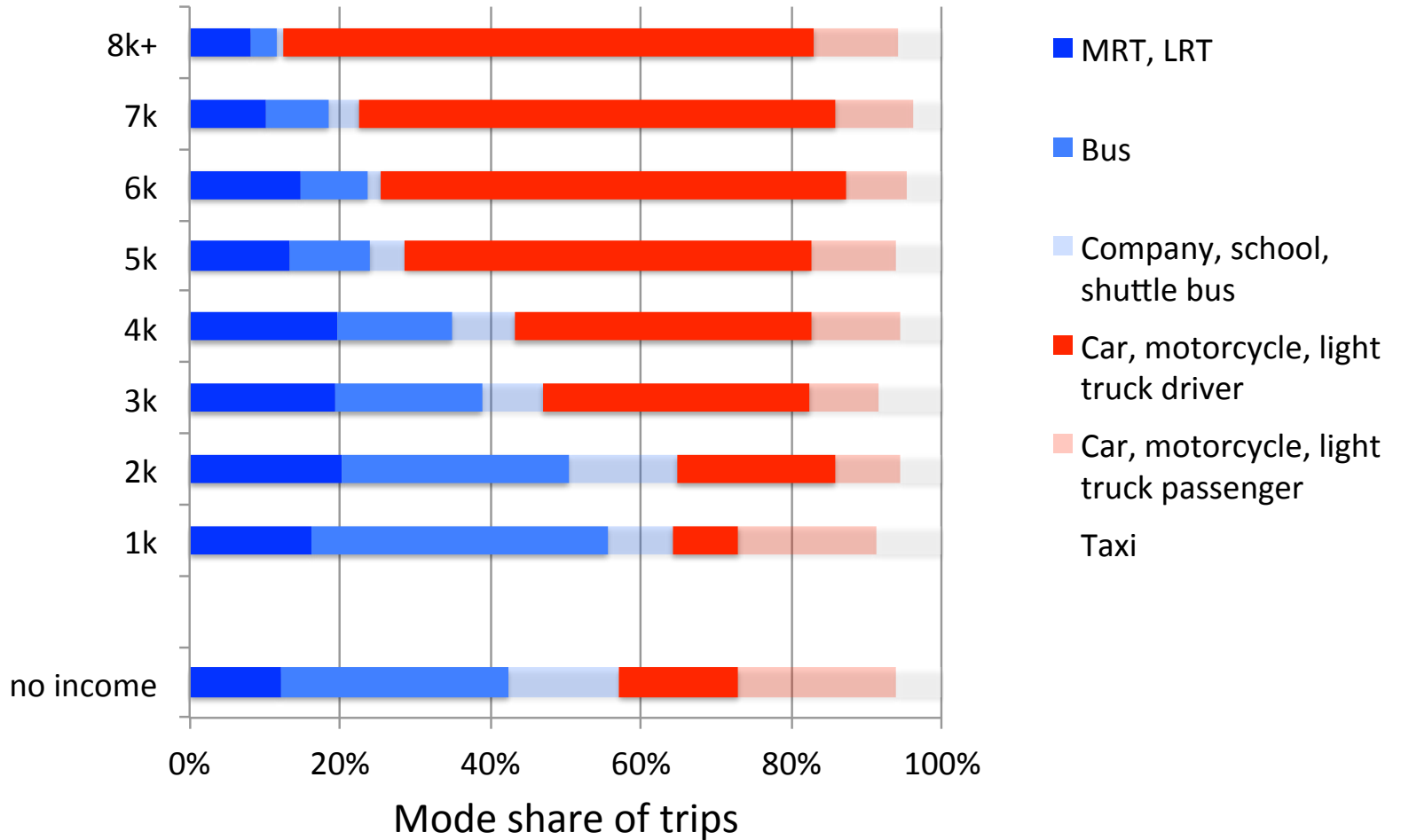
Some numbers first

Some numbers: Mode choice



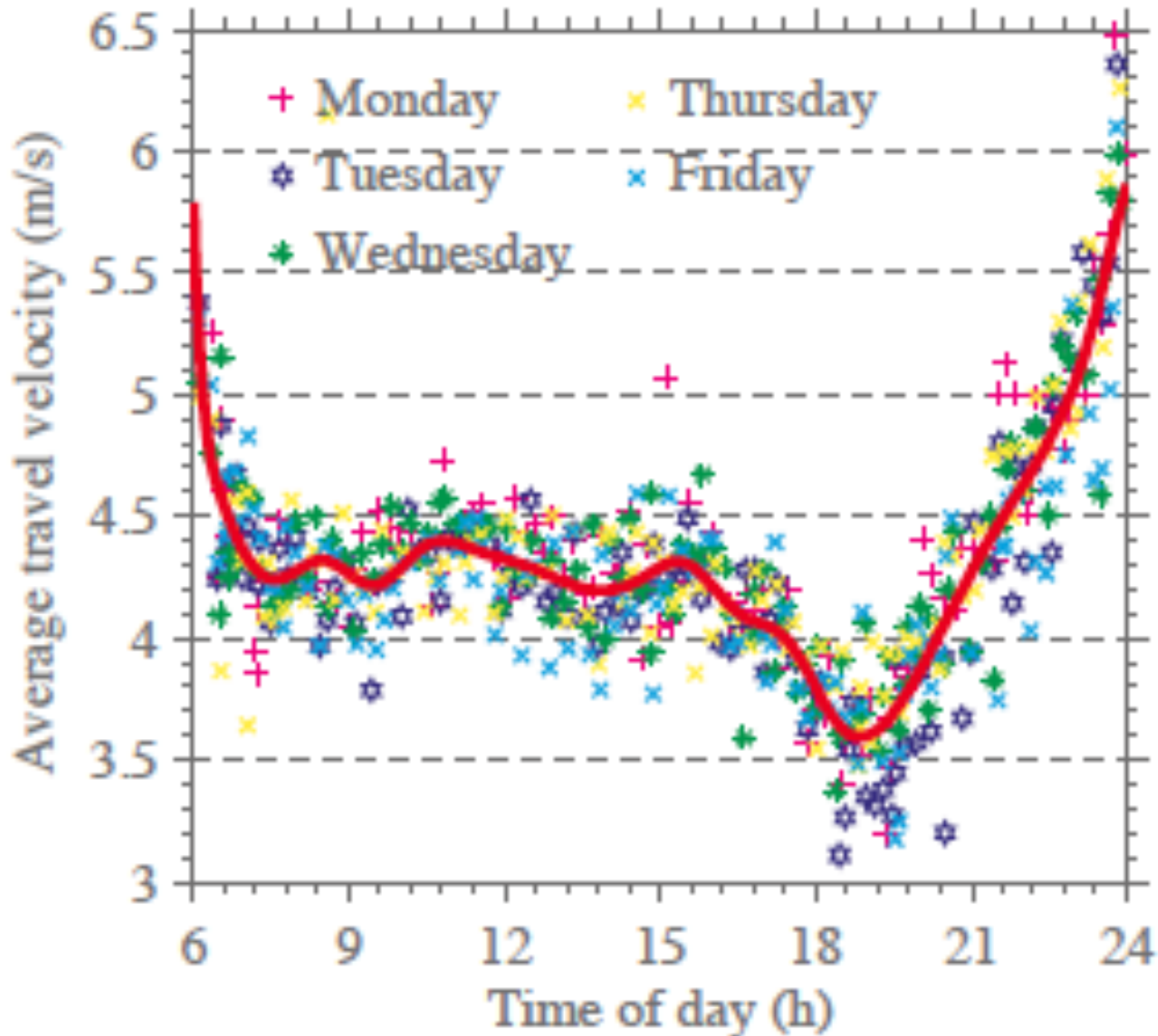
Some numbers: Mode shares by income 2008

Income [kSG]

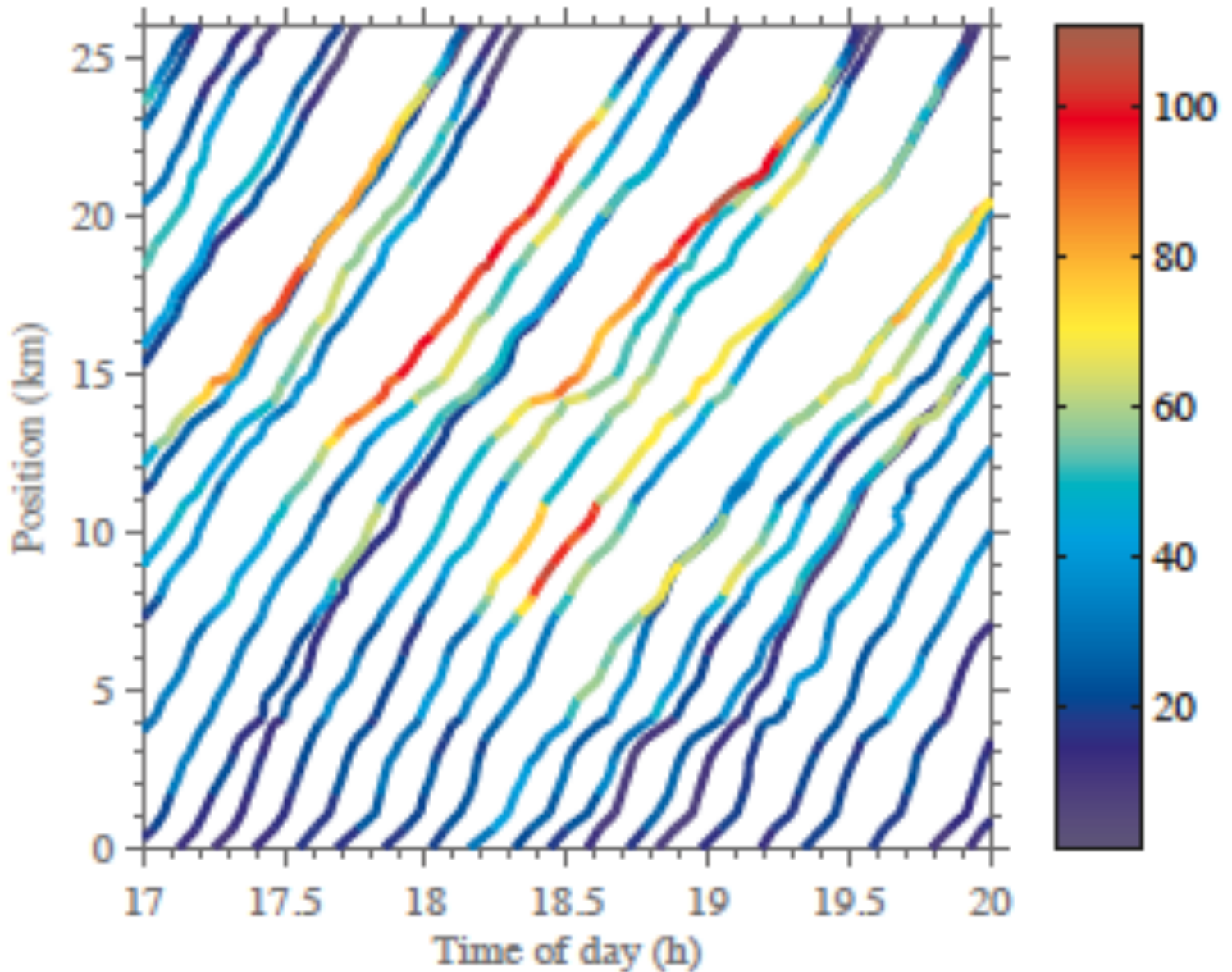


Current problems

Bus speeds in Singapore by time of day

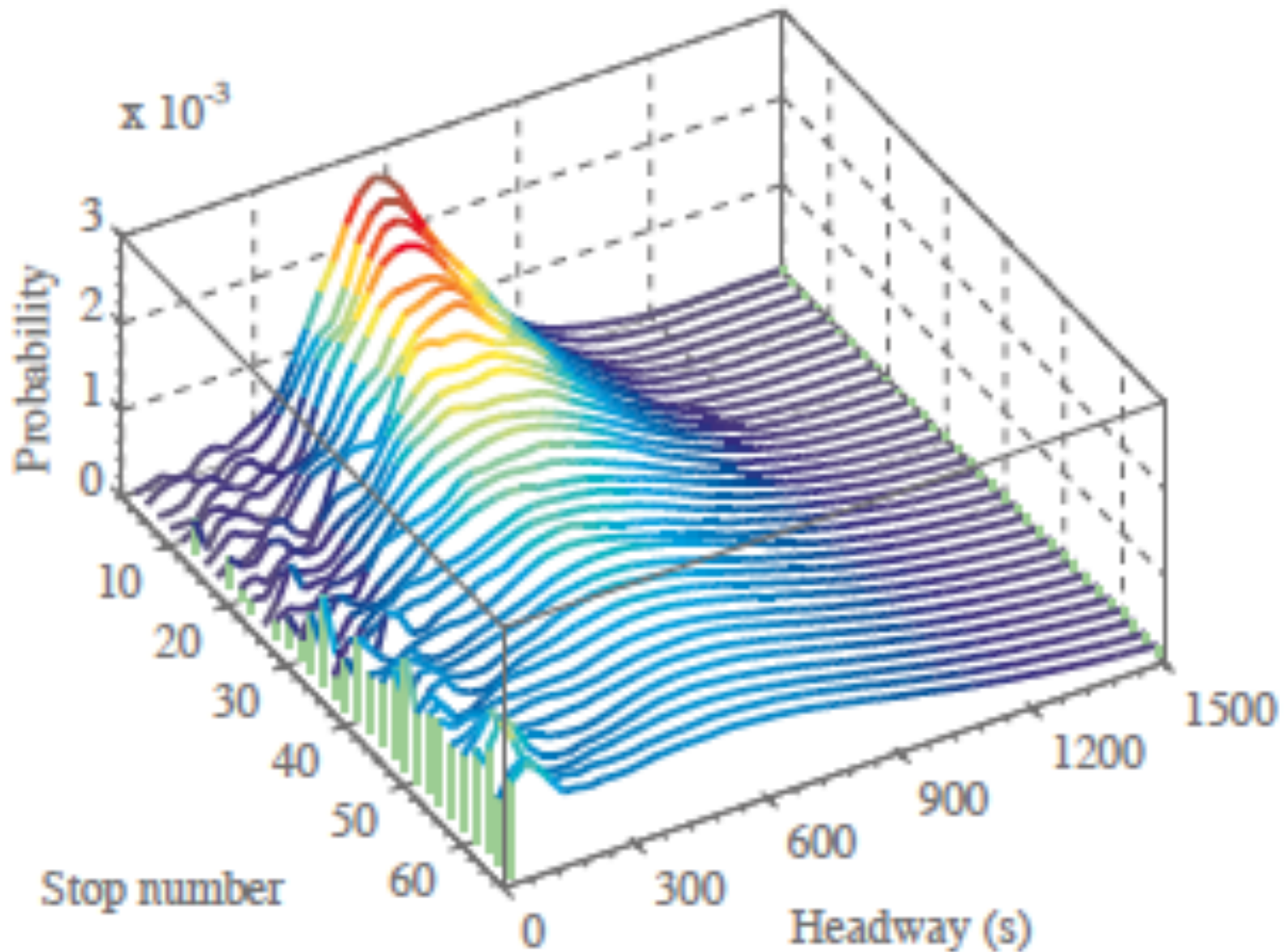


Bus occupancy and bus bunching during the evening peak

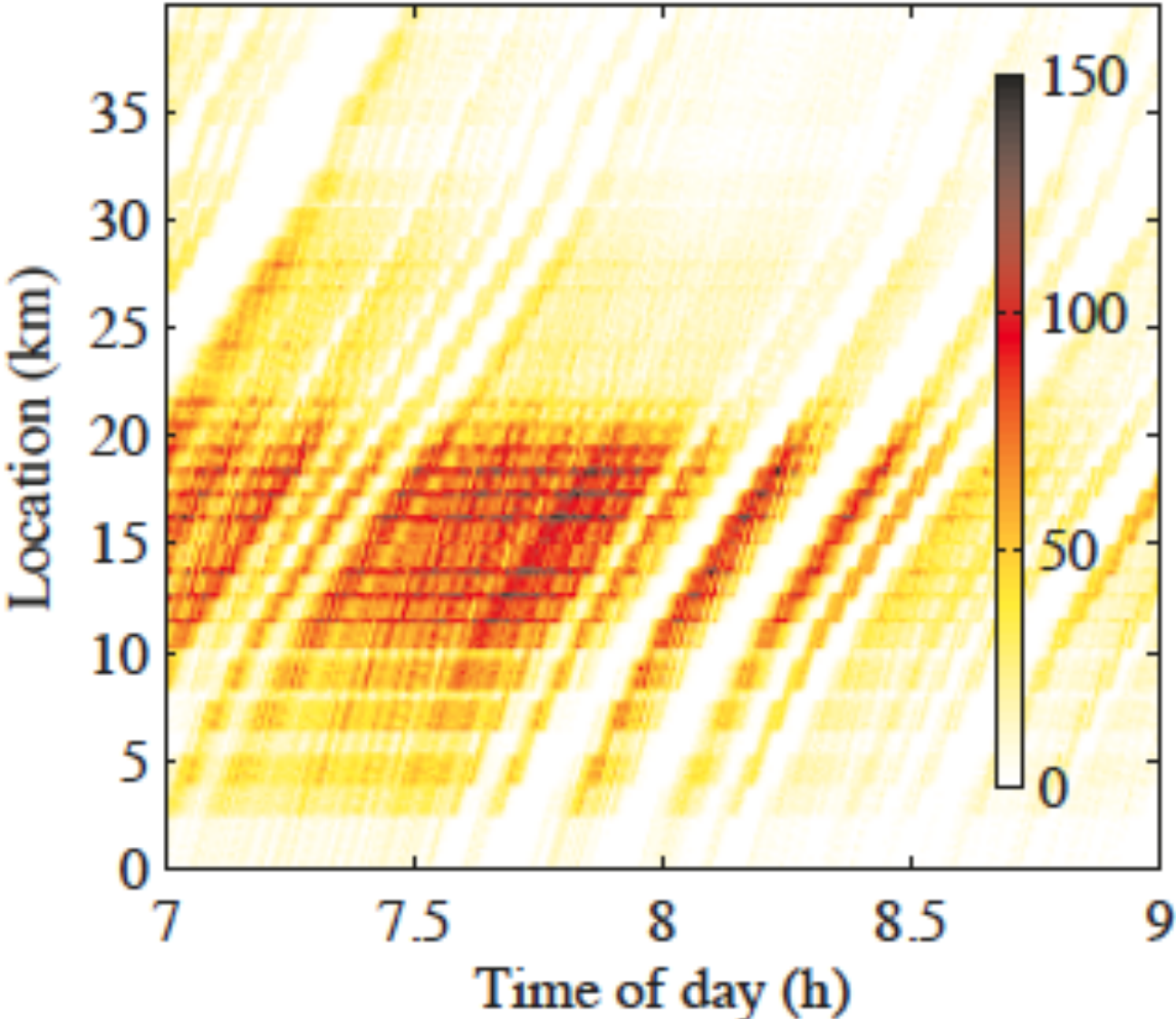


Sun, 2013

Headways along a bus line in Singapore



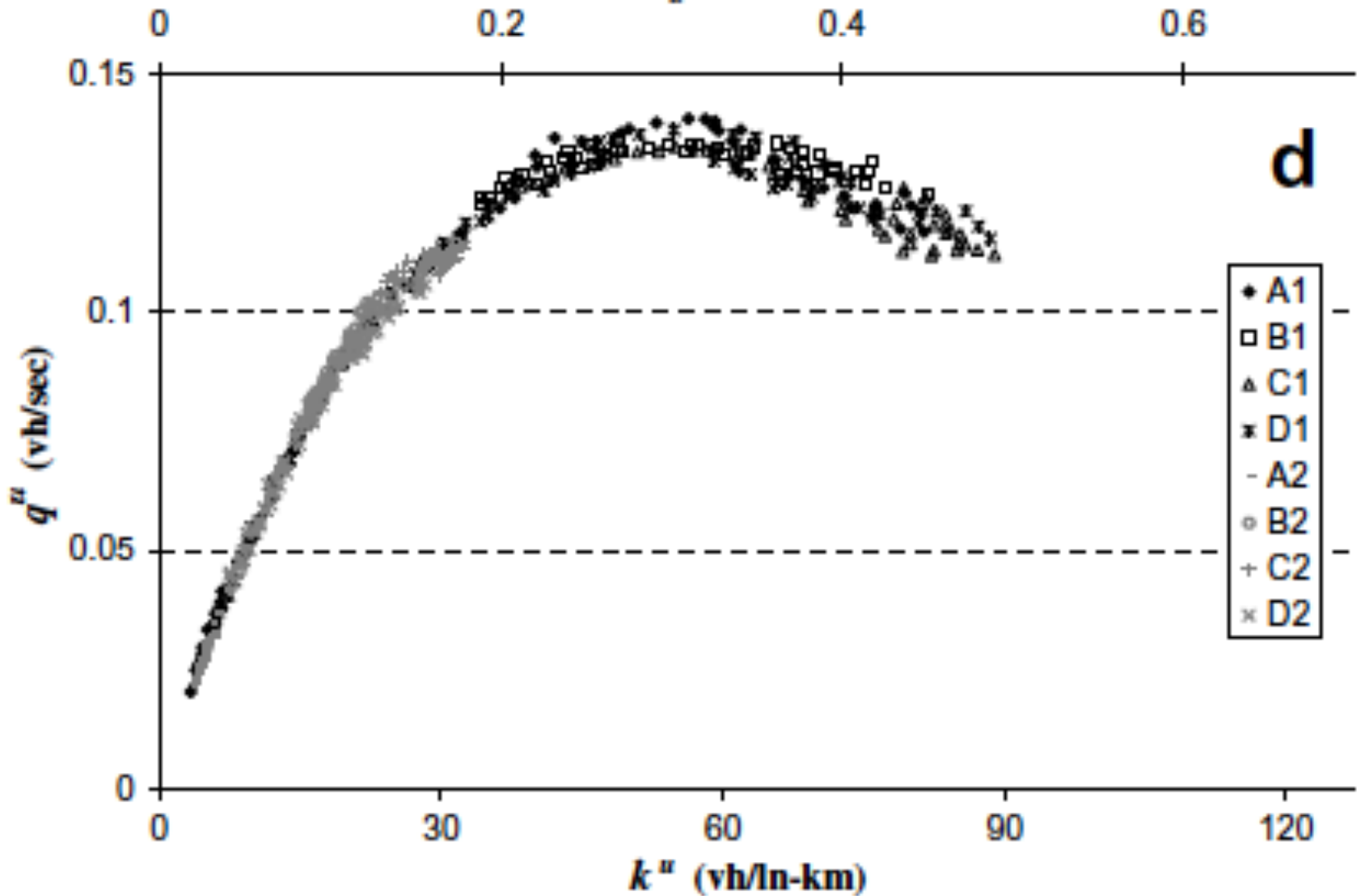
Occupancy and MRT bunching during the morning peak



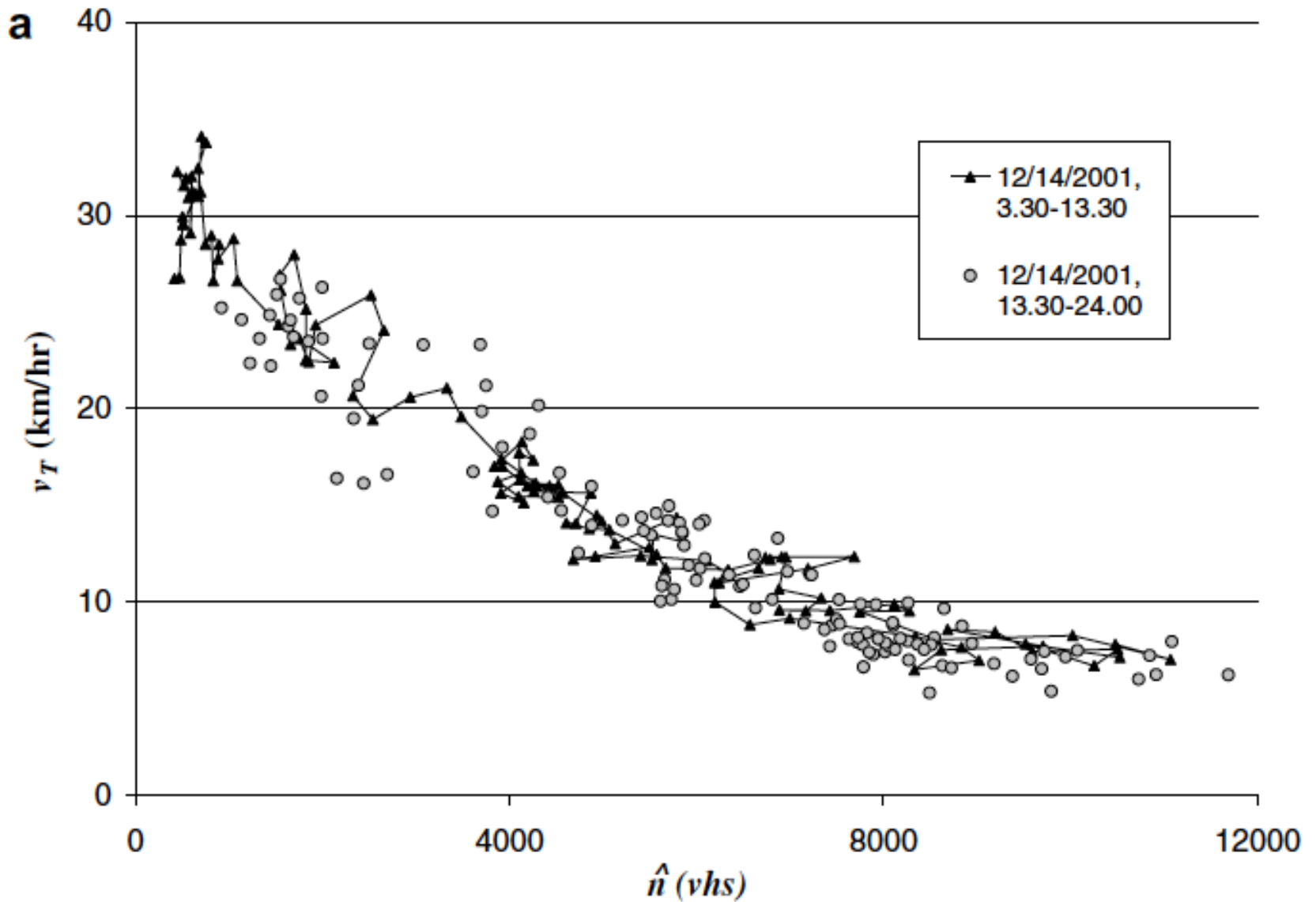
Sun, 2013

Constraints

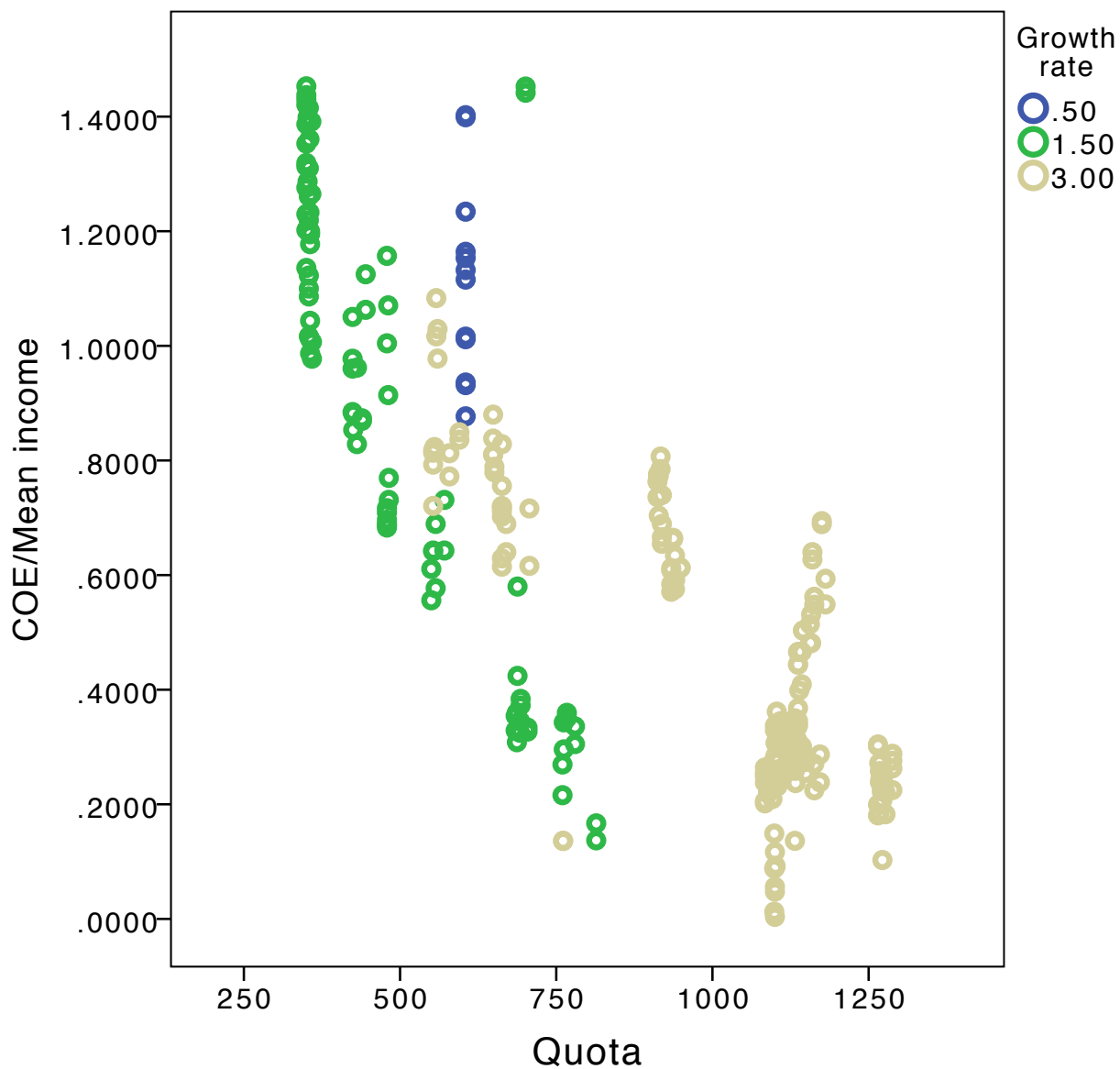
Macroscopic fundamental diagram (Yokohama; loops)



Macroscopic fundamental diagram (Yokohama; taxis)



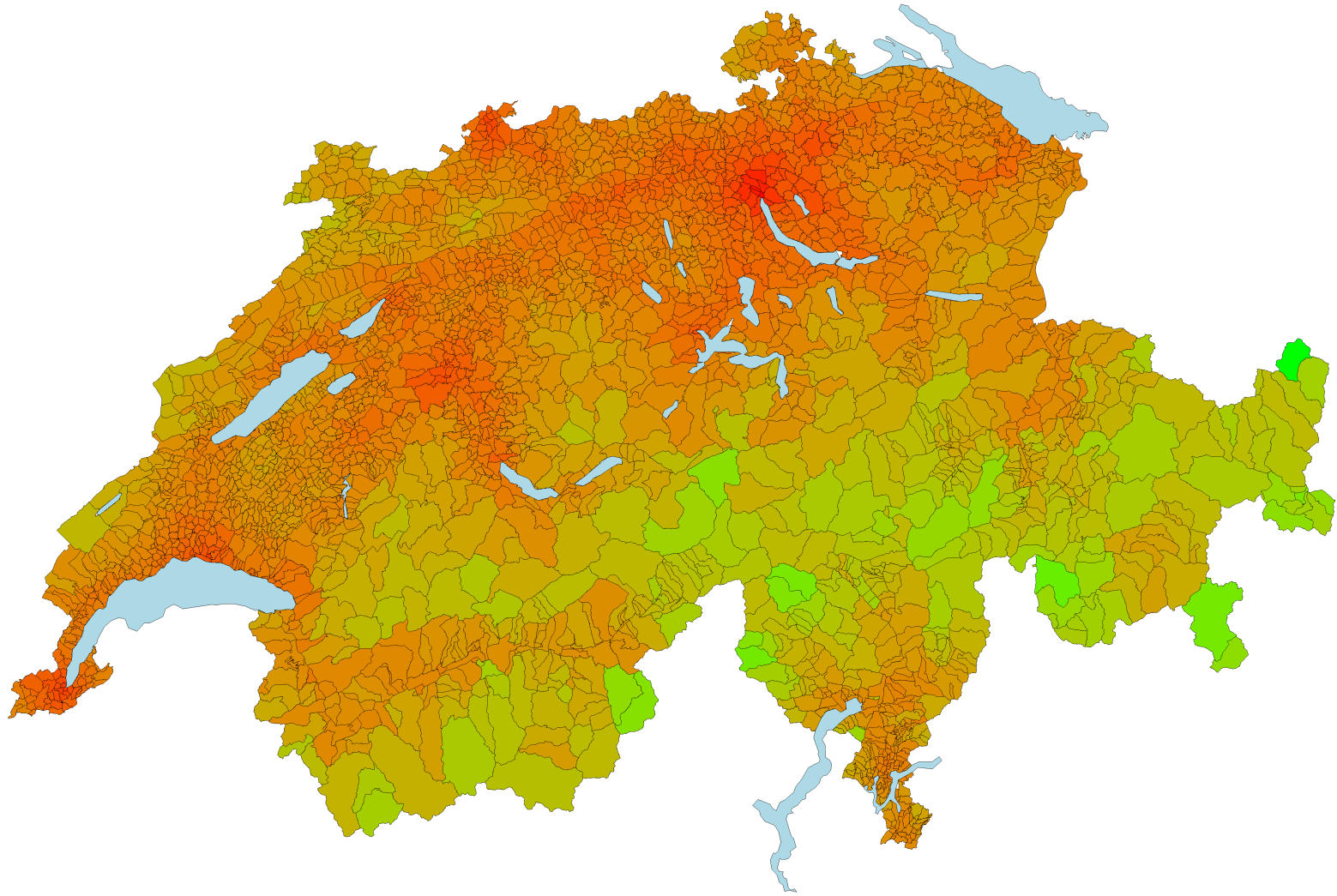
Analysis of the COE Category B prices since 2001



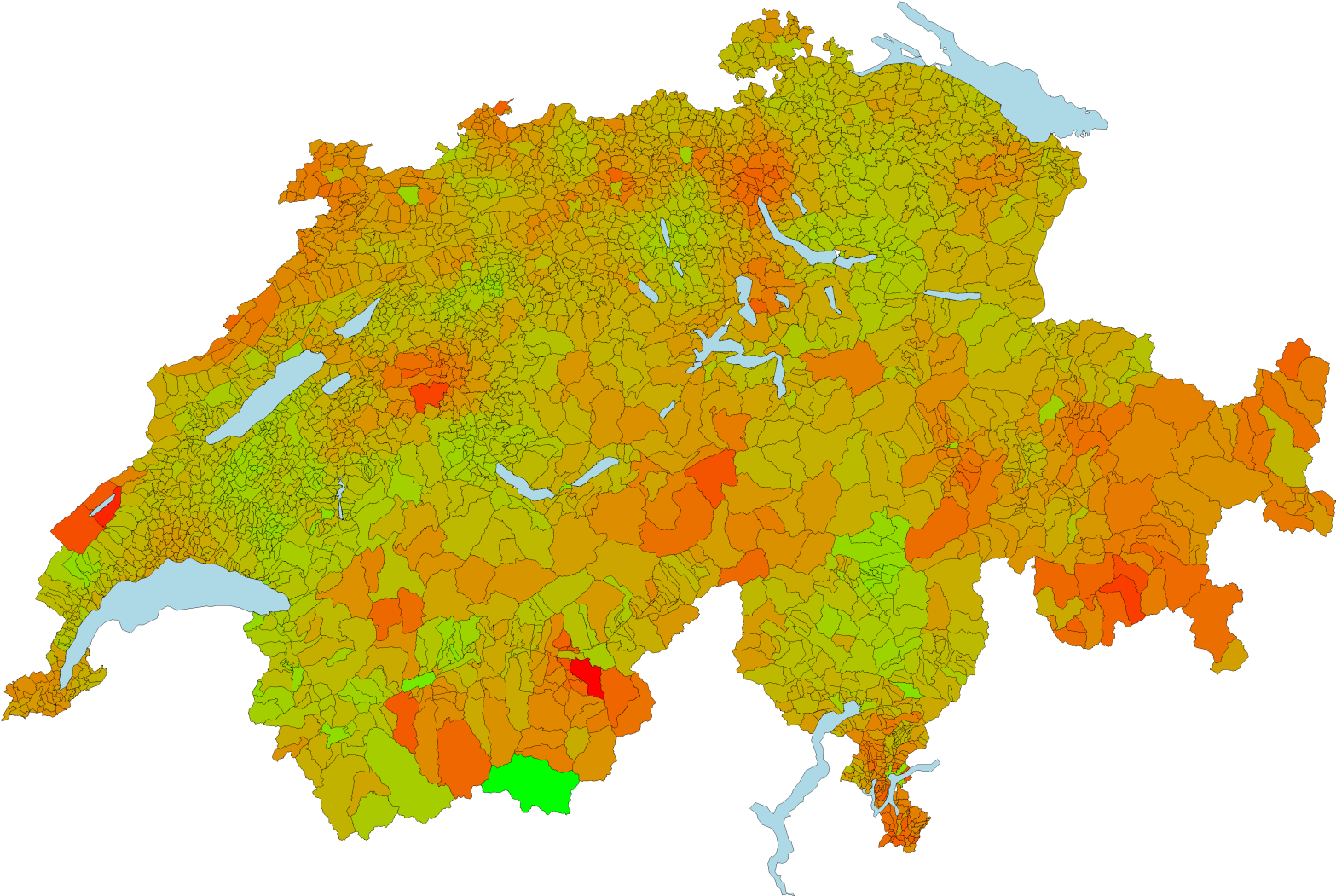
What can we do ?

Increase accessibility – Swiss case

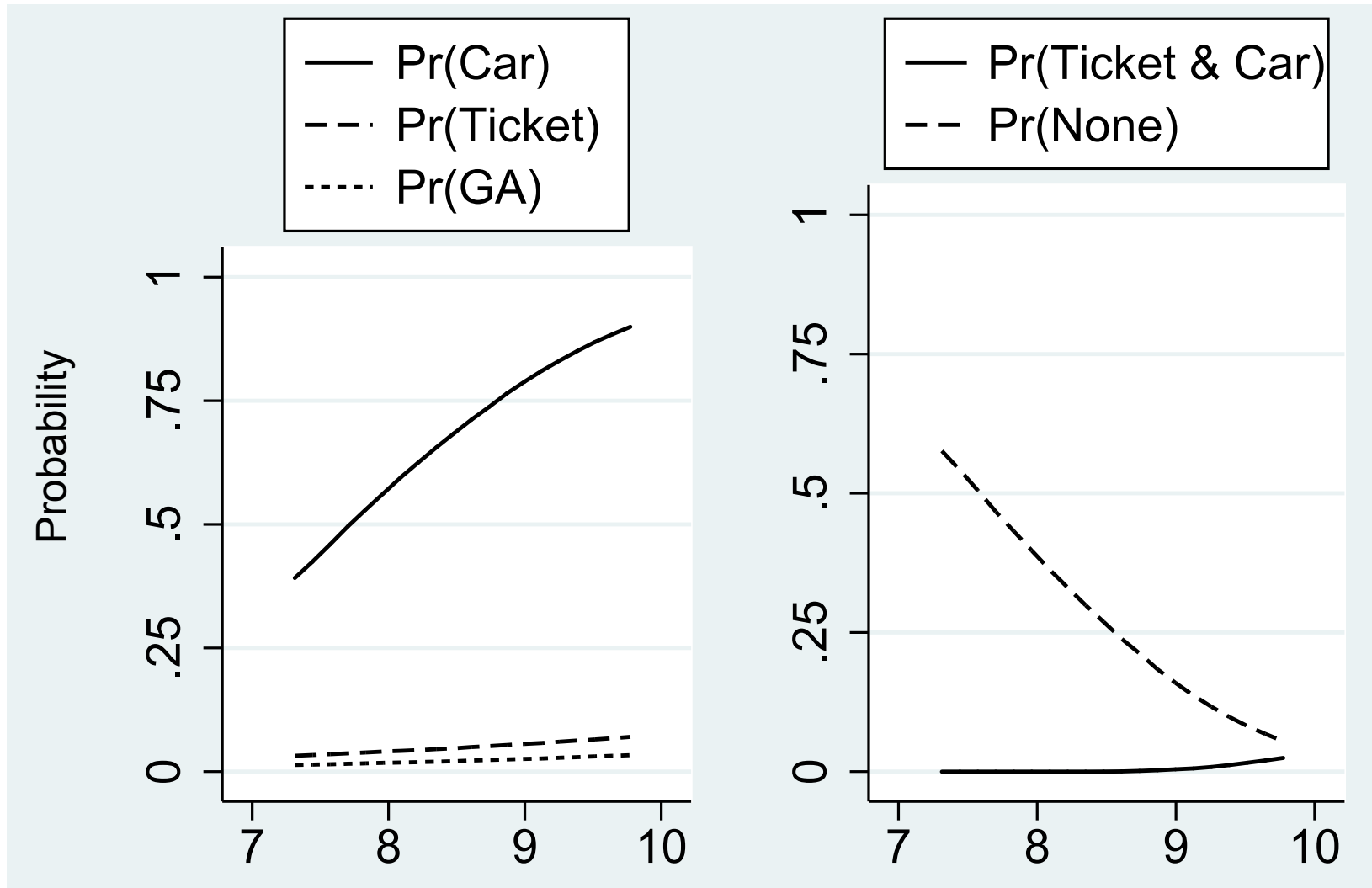
Switzerland: general accessibility



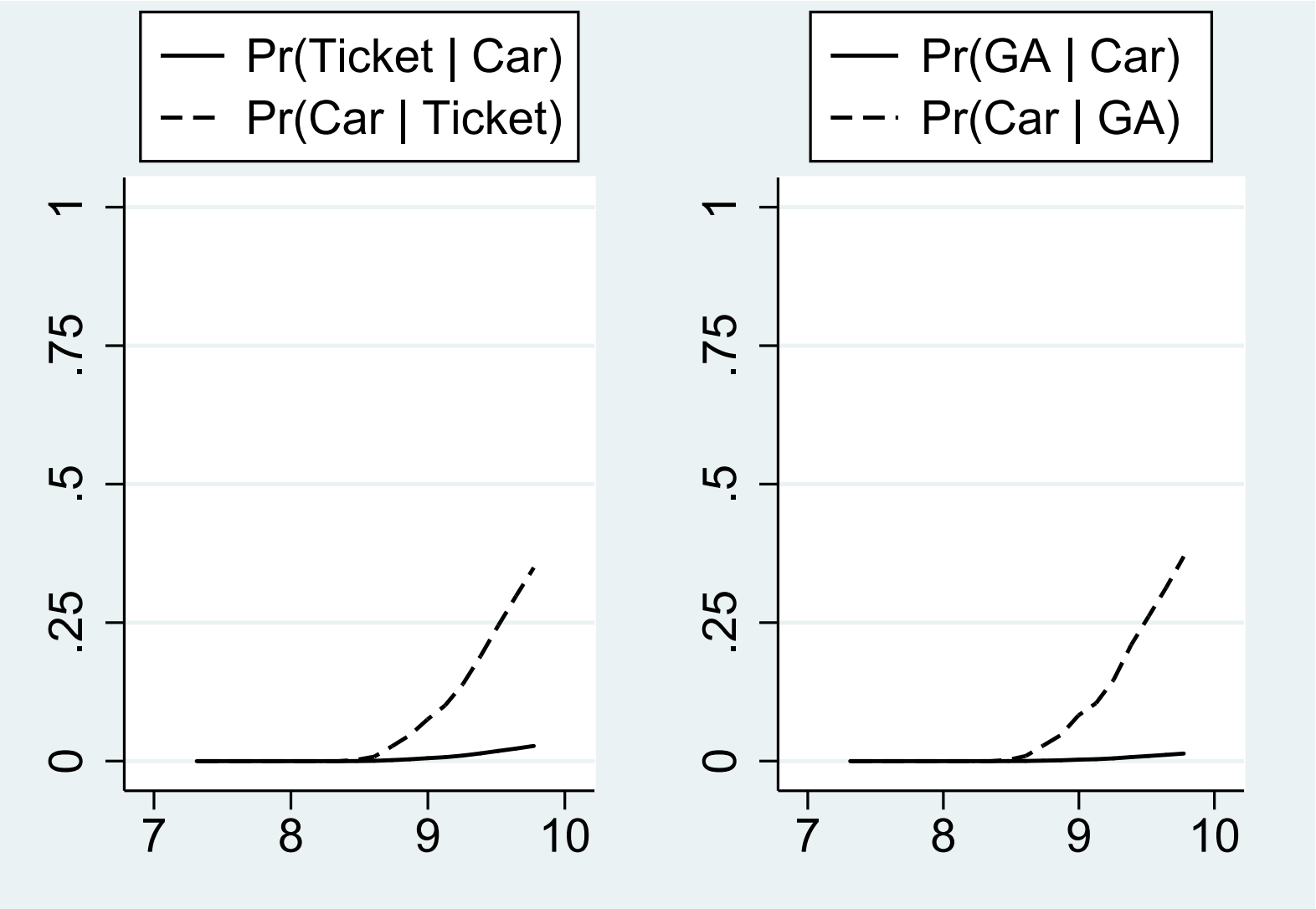
Switzerland: workplace accessibility



Switzerland: Probabilities by log of income

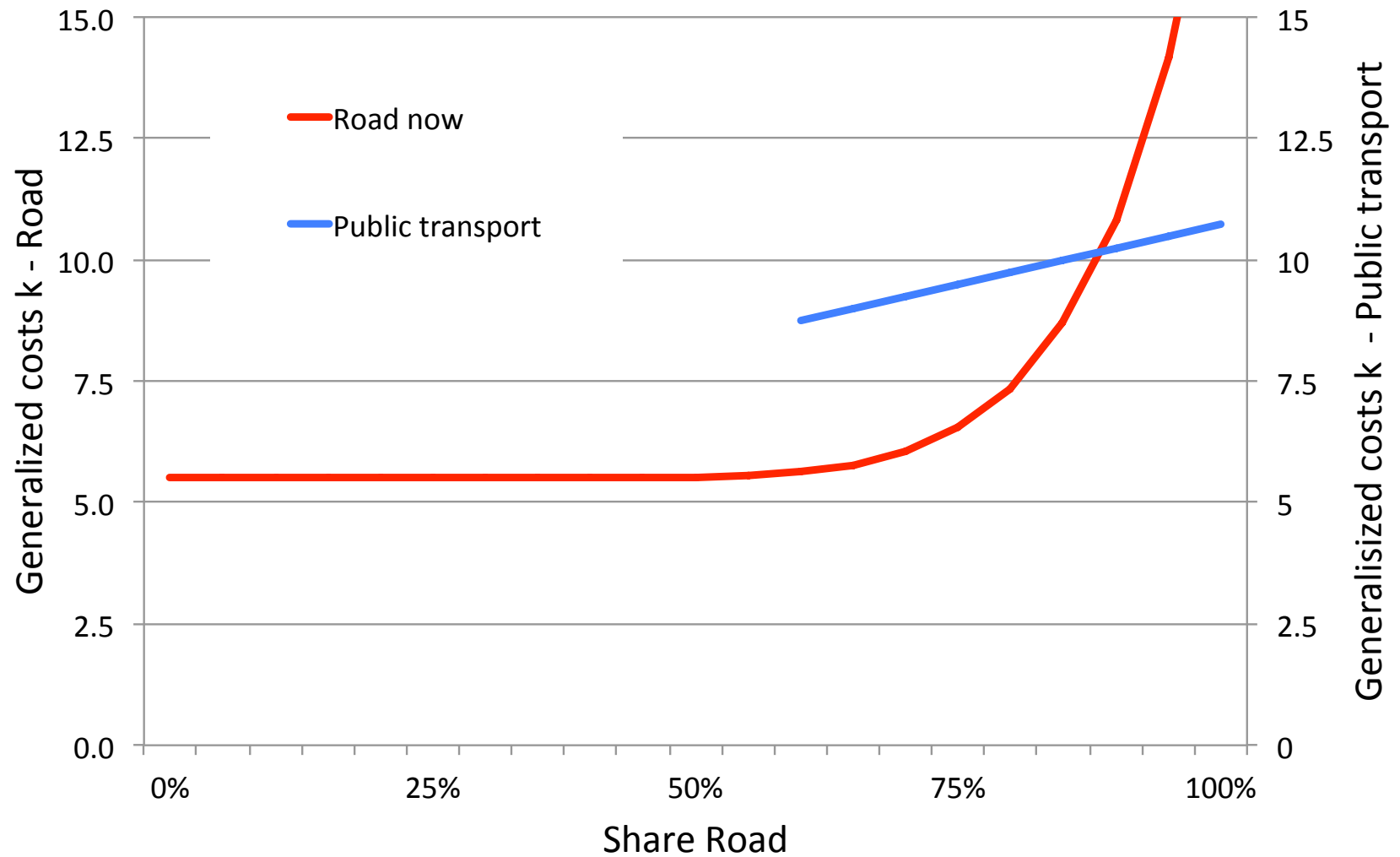


Switzerland: Conditional probabilities by log of income

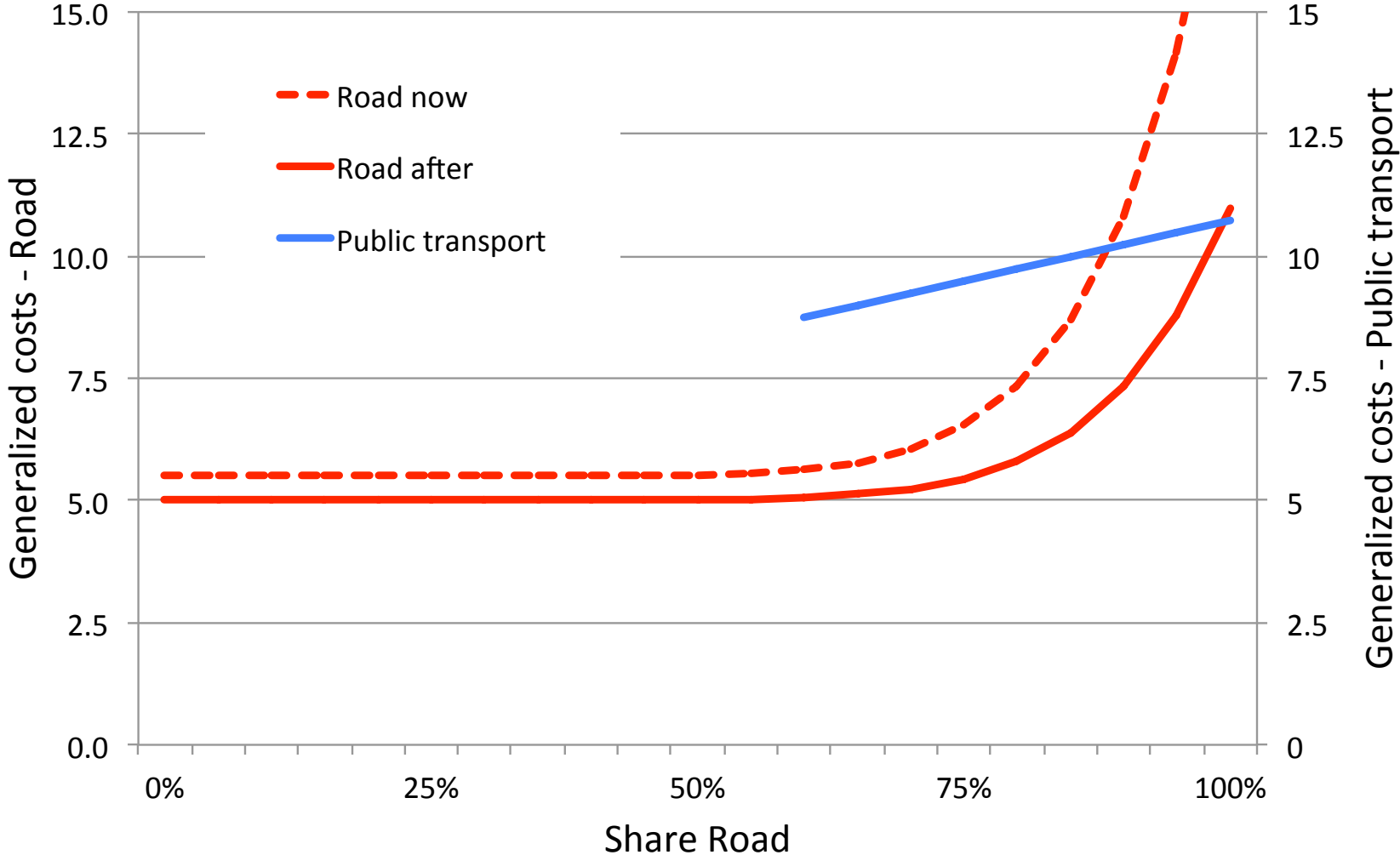


Fund the right mode: Downs-Thompson paradox

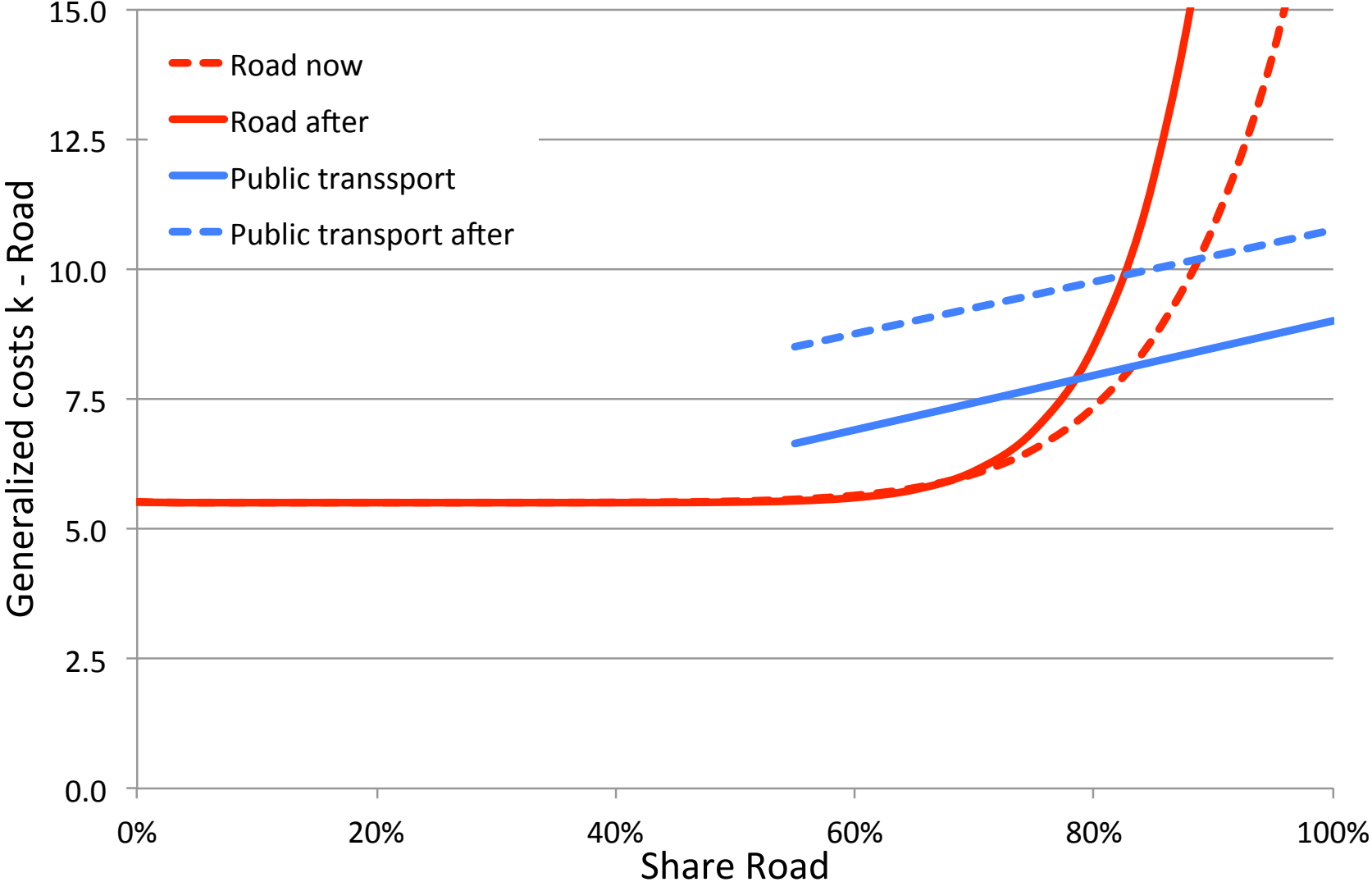
A simplified model of the transport market



After building more roads: Downs-Thompson Paradox

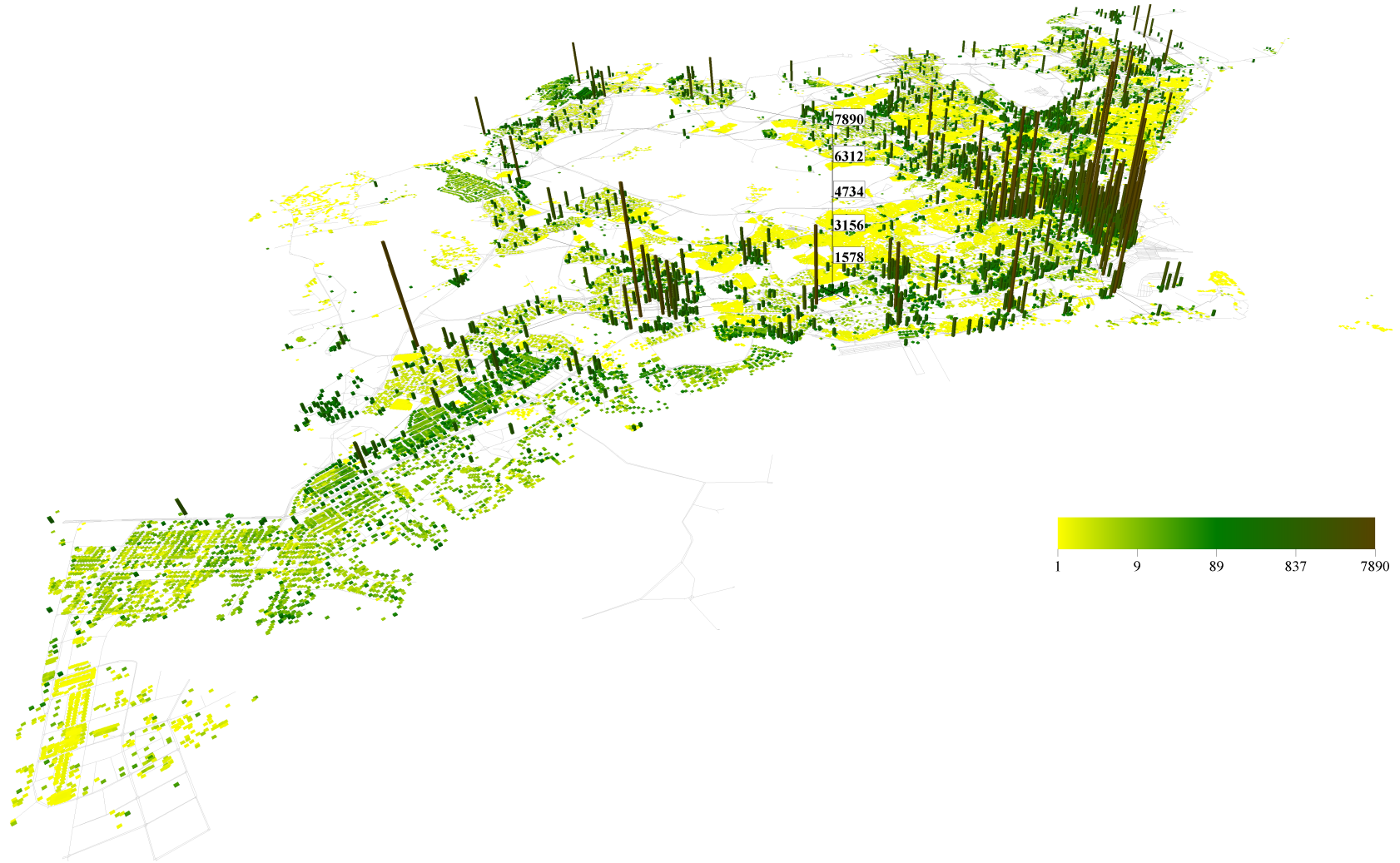


After improving public transport/removing road capacity

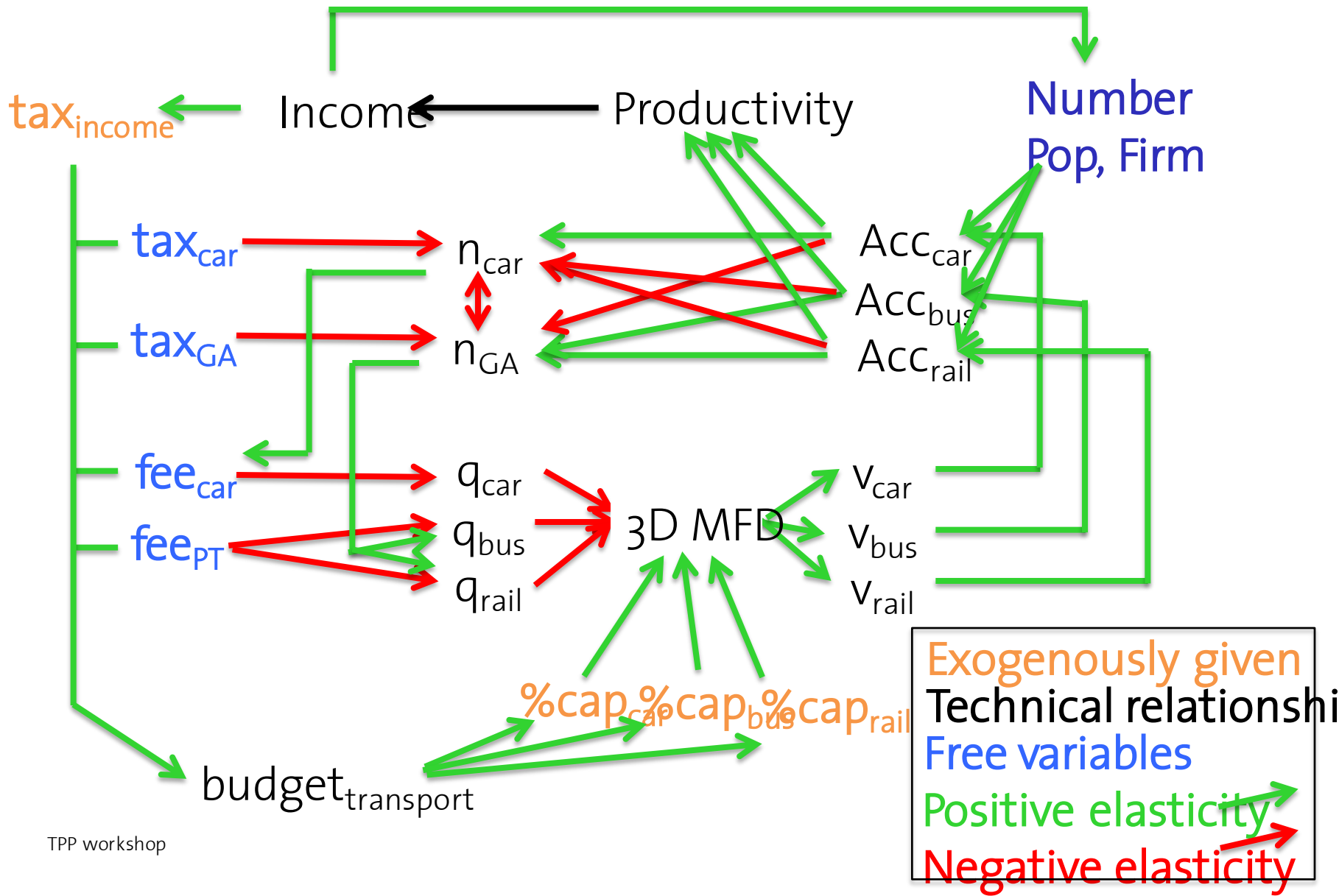


Land use: Estimated number of work places

Ordonez, S and A. Erath (2012) Estimating Dynamic Workplace Capacities using Public Transport Smart Card Data and a Household Travel Survey



In summary, but for land use



Questions ?

www.matsim.org

www.ivt.ethz.ch

www.futurecities.ethz.ch

www.senzon.ch

Appendix

Switzerland: Ownership models (1/2)

| | Season- ticket owner | | Car available | |
|---------------------------------|----------------------------|-----|------------------|-----|
| Age | -0.059 | *** | 0.099 | *** |
| Age squared | 0.052 | *** | -0.088 | *** |
| Male | -0.132 | *** | 0.439 | *** |
| Working | 0.066 | *** | 0.258 | *** |
| University level education | 0.146 | *** | -0.054 | ** |
| Log of monthly household income | 0.075 | *** | 0.391 | *** |
| Center of agglomeration | 0.132 | *** | -0.22 | *** |
| Constant | 0.052 | | -6.039 | *** |

Switzerland: Ownership models (2/2)

| | Season- ticket owner | | Car available | |
|-------------------------------------|----------------------------|-----|------------------|-----|
| Local access to public transport: E | -0.474 | *** | 0.505 | *** |
| Local access to public transport: D | -0.348 | *** | 0.384 | *** |
| Local access to public transport: C | -0.253 | *** | 0.286 | *** |
| Local access to public transport: B | -0.097 | *** | 0.154 | *** |
| General accessibility | 0.089 | *** | -0.028 | *** |
| Surplus public transport acc. | -0.005 | *** | -0.066 | *** |
| Surplus workplace accessibility | 0.729 | *** | -0.527 | *** |

Switzerland: GA given season ticket (2/2)

| | General abonnement | |
|---------------------------------|-----------------------|-----|
| Secondary residence | 0.302 | *** |
| Log of monthly household income | 0.128 | *** |
| Self-reported distance [1000km] | 0.005 | *** |
| Constant | -2.188 | *** |

| Error correlations | | |
|---------------------------|---------------|-------|
| | Car available | GA |
| Season ticket | -0.44 | 0.62 |
| Car available | | -0.24 |