

Modelando cambios en el comportamiento de la demanda de transporte público en situaciones contextuales especiales

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1 Motivation

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1 Motivation

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COVID-19 pandemic, London, 2020



Social unrest, Santiago, Chile, 2019



National blackout, Santiago, Chile, 2025

2 Research Gaps

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- RG-1 Narrow scope in the modelling of passengers' behavioural responses to disruptive events.
- RG-2 Limited utilization of smart card data for the modelling of passengers' behavioural responses amid disruptive events.
- RG-3 Absence of a systematic comparison of the influence of individual-level factors on public transport usage amid a disruptive event.
- RG-4 Insufficient evidence of the capabilities of emerging data sources to be used as a proxy for actual ridership changes.

2 Objective

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General research objective: expand the understanding of public transport demand change amid disruptive events. `

Chapter 2

“Analysing the impacts of individual-level factors on public transport usage during the COVID-19 pandemic: A comprehensive literature review and meta-analysis”

Lizana, M., Choudhury, C. & Watling, D. (2024). Analysing the impacts of individual-level factors on public transport usage during the COVID-19 pandemic: a comprehensive literature review and meta-analysis. *Transport Reviews* 44 (2), 434-460. DOI: [10.1080/01441647.2023.2295967](https://doi.org/10.1080/01441647.2023.2295967)

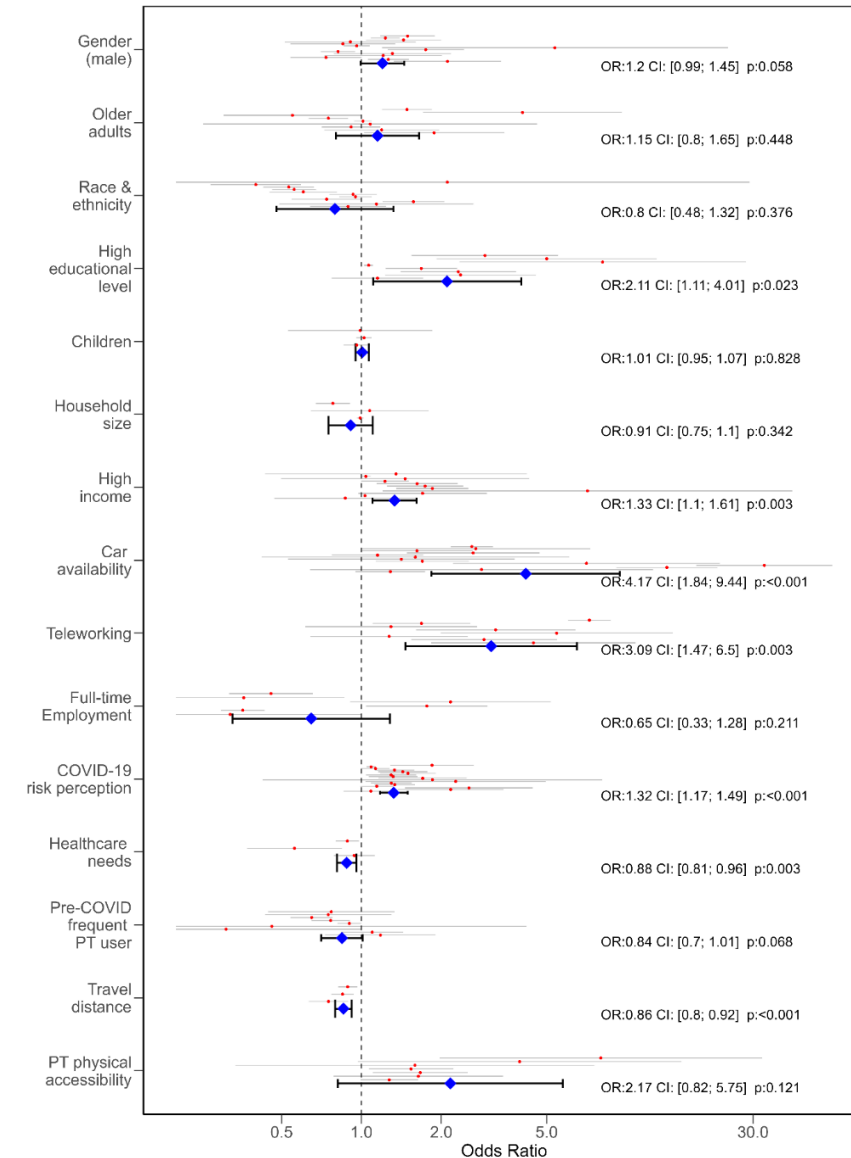
Chapter 2

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Global evidence of how individual-level factors affect public transport usage of passengers during a disruptive event.

Results:

- 36 studies analysed
- 15 different individual-level factors were identified
- Effect directions were analysed
- Pooled effect sizes were estimated
- Comparison of the effect sizes
- Subgroup analysis



Chapter 3

“Using smart card data to model public transport user profiles in light of the COVID-19 pandemic”

Lizana, M., Choudhury, C. & Watling, D. (2023). Using smart card data to model public transport user profiles in light of the COVID-19 pandemic. *Travel Behaviour and Society* 33, 100620. DOI: [10.1016/j.tbs.2023.100620](https://doi.org/10.1016/j.tbs.2023.100620).

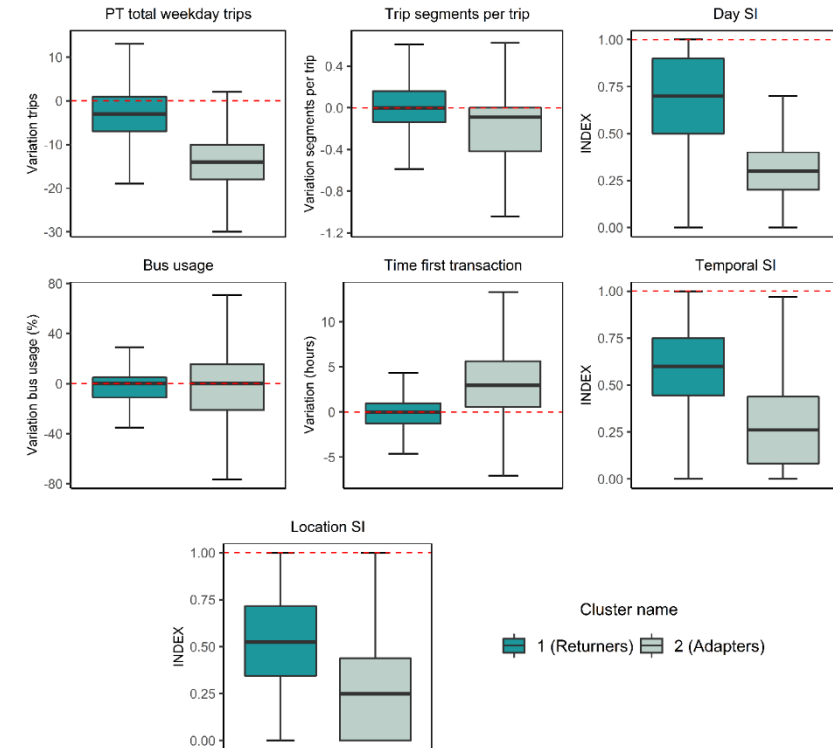
Chapter 3

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Profiles of passengers based on the recovery in their public transport usage amid a disruptive event employing smart card data

Results:

- Identify profiles of passengers based on their public transport usage recovery after a long-term lockdown in Santiago.
- Seven intrapersonal mobility indicators were calculated.
- Two clusters identified: returners and adapters.
- The contribution of several explanatory variables were tested to explain cardholders' class membership.



Chapter 4

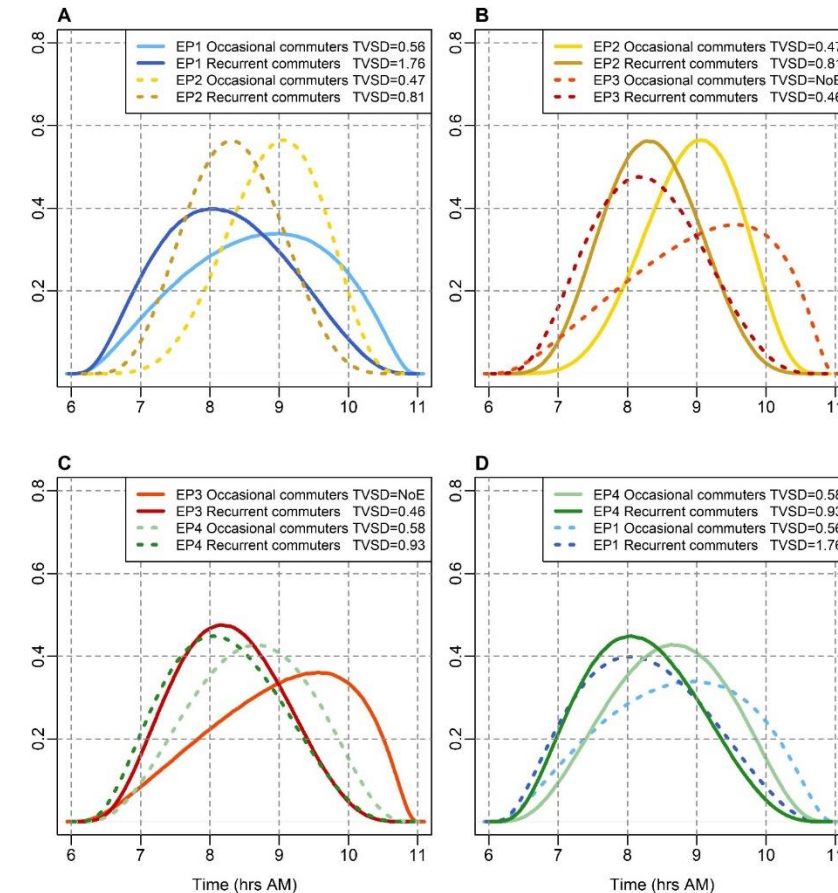
“Modelling trip timing preferences of bus commuters amid disruptive events using smart card data”

Lizana, M., Watling, D. & Choudhury, C. (under review). Modelling trip timing preferences of bus commuters amid disruptive events using smart card data.

- To model trip scheduling decisions of bus commuters during several episodes affected by disruptive events employing smart card data.

Results:

- Trip scheduling decisions of bus commuters across multiple episodes influenced at different degrees by two disruptive events
- Situational contexts affects passengers' behavioural sensitivity to time-varying attributes such as travel time and schedule delay.
- Smart card data can be used for the estimation of DTCM.



Chapter 5

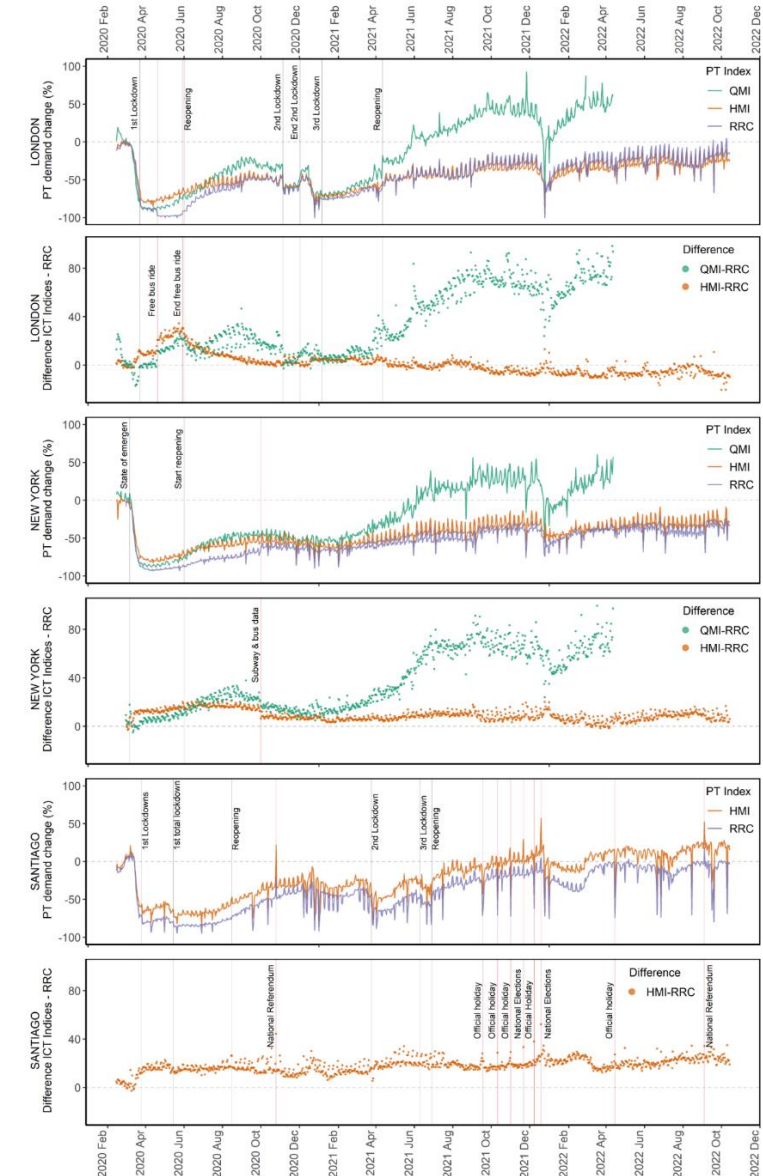
“Investigating the potential of aggregated mobility indices for inferring public transport ridership changes”

Lizana, M., Choudhury, C. & Watling, D. (2024). Investigating the potential of aggregated mobility indices for inferring public transport ridership changes. *PLOS ONE*. DOI: [10.1371/journal.pone.0296686](https://doi.org/10.1371/journal.pone.0296686)

An assessment of the potential of emerging data sources to characterise public transport ridership changes in a context of high mobility disturbances.

Results:

- A notable alignment between the trends in ridership data and the AMI shared by Google based on human mobility.
- AMIs can complement existing data sources for the analysis of ridership changes during high mobility disturbances.



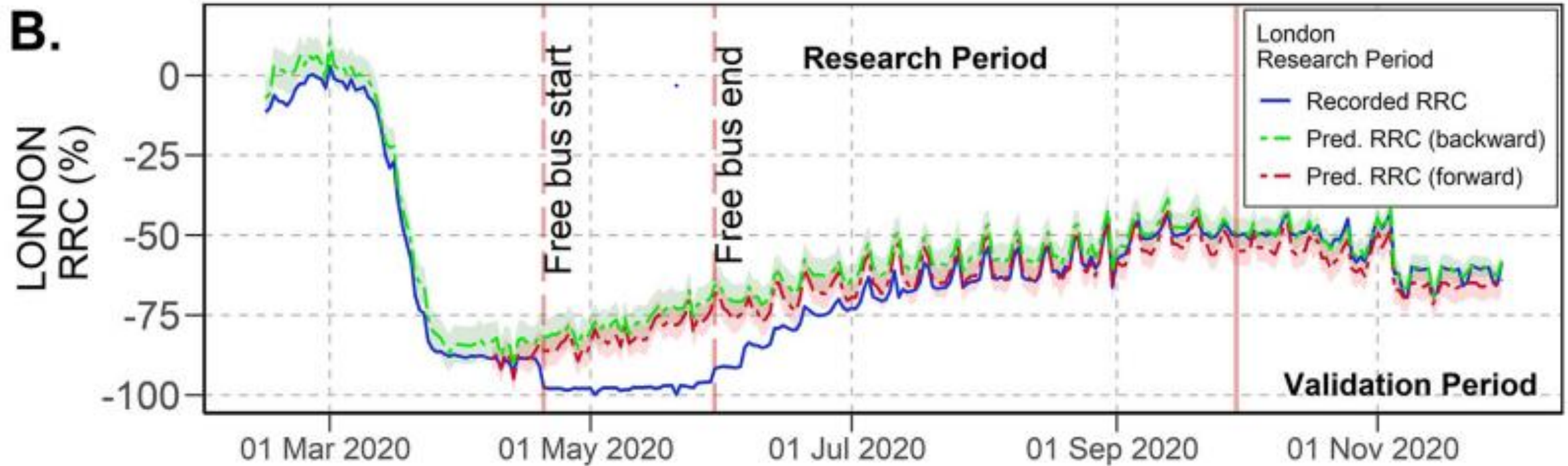


Fig 4. Predicted RRC using calibrated HMI for London. (A) Results for the fitting and validation period, (B) Forecasting for the research period (95% confidence intervals).

C-1 Extending the scope of modelling passengers' behavioural

C-2 Leveraging smart card data for modelling passengers' behavioural responses while addressing missing attribute limitations

C-3 Elucidating how individual-level factors influence public transport usage during a disruptive event

C-4 Demonstrating the capabilities of emerging data sources to be used in the analysis of public transport ridership changes

What's next

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- Docencia Ingeniería Civil UFRO
- Investigación – temas
- Trabajar con organismos públicos
- SOCHITRAN
- Invitación



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