

Telework frequency and travel behavior during the COVID-19 pandemic. A study across different Metropolitan Areas: Lisbon, Istanbul, and Porto Alegre

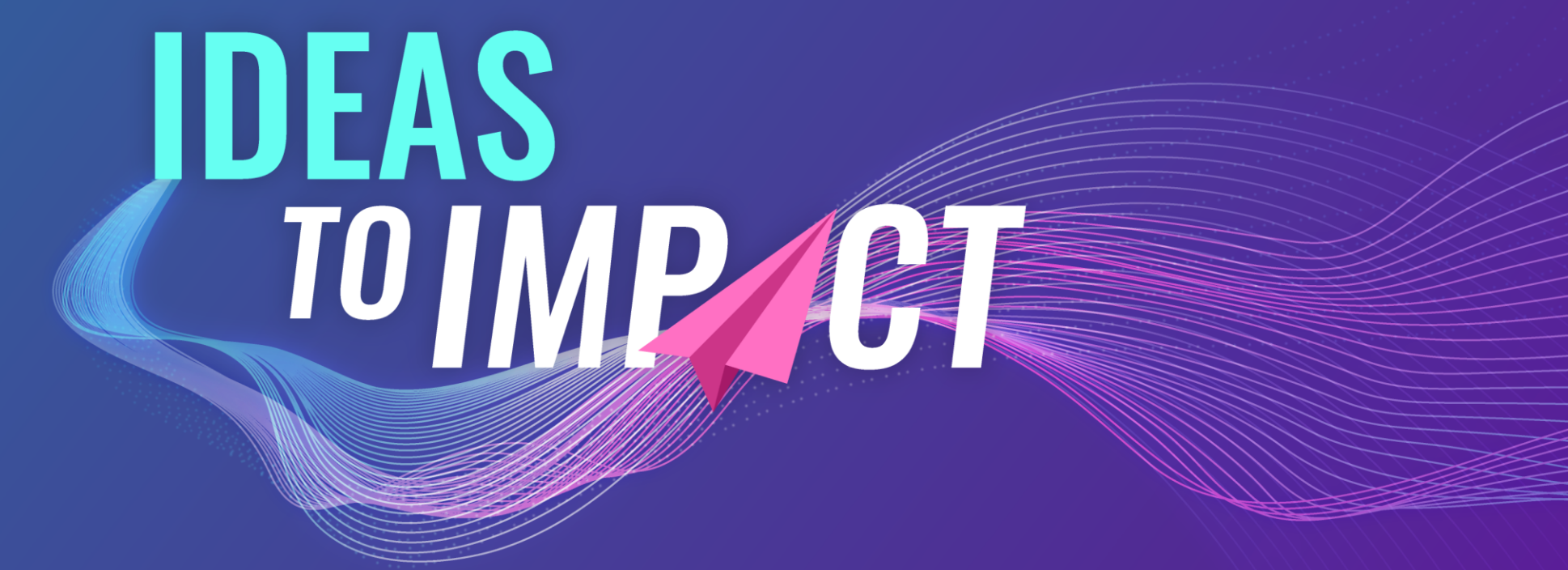


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RESEARCH AIM

Study the effects of weekly telework adoption on the number of trips by mode in the context of the later stages of the pandemic in the Lisbon (Portugal), Istanbul (Turkey), and Porto Alegre (Brazil) Metropolitan Areas.

LITERATURE REVIEW HIGHLIGHTS

- Information and Communication Technologies (ICTs) emerged in the 1970s, permitting individuals to telework.
- As working from home could eliminate commuting trips, it has the potential to be a travel demand management tool.
- Several studies have looked into the travel impacts of telework, but their results have been contradictory.
- Early studies supported the hypothesis that telework would reduce travel and congestion levels.
- However, more recently, researchers warned about the possible negative impacts of telework adoption on travel.
- Until 2020, telework was marginal (less than 3% in Portugal).
- The COVID-19 pandemic enabled a global work from home experience, changing its perceptions and urban patterns.
- It is expected that in the post-pandemic world, telework engagement stays high.

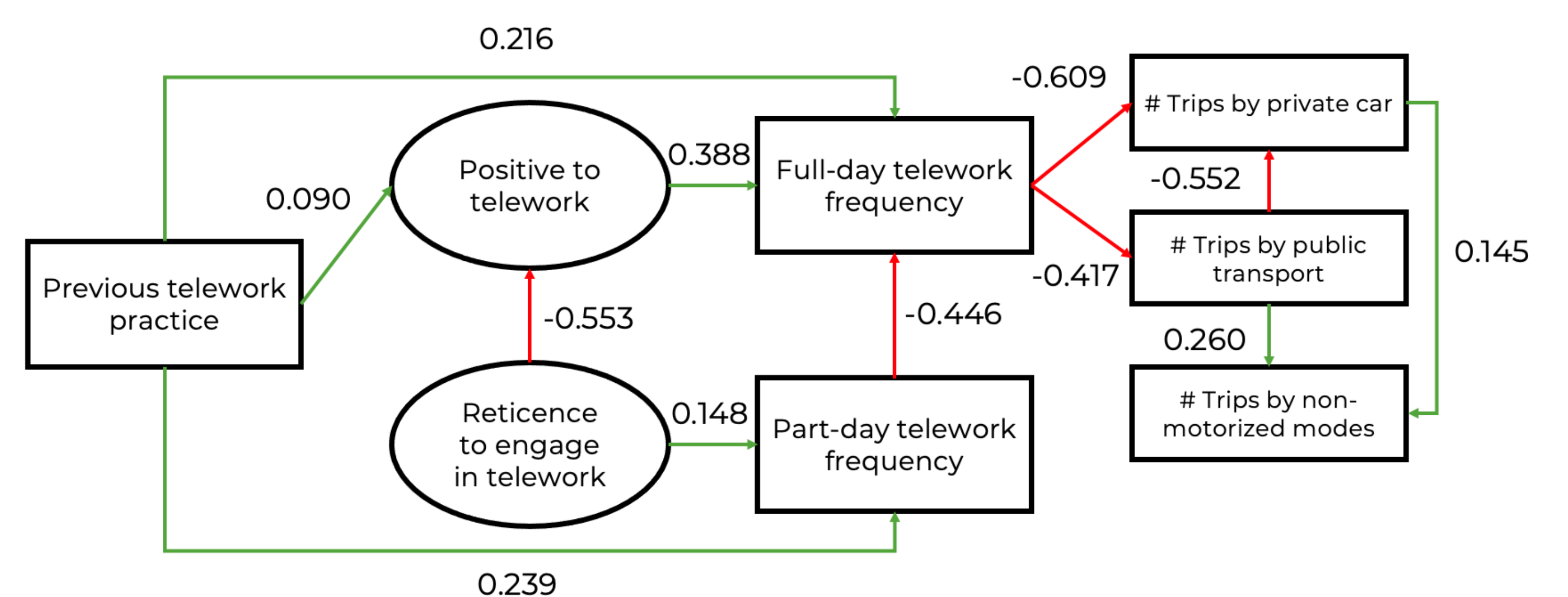
DATA

- Online surveys applied to workers residing in the Lisbon, Istanbul, and Porto Alegre Metropolitan Areas between April and July 2021 (920 valid responses).
- 5-day telework (both full and partial day) and travel diary; and attitudinal questions about perceptions and experiences about telework.

METHODOLOGY

- Structural Equation Modelling (SEM) developed to analyze the effects of telework frequency on the weekly number of trips by mode (car, public transport and non-motorized).
- SEM is a powerful modelling technique that combines factor analysis and simultaneous regression-type equations.

RESULTS

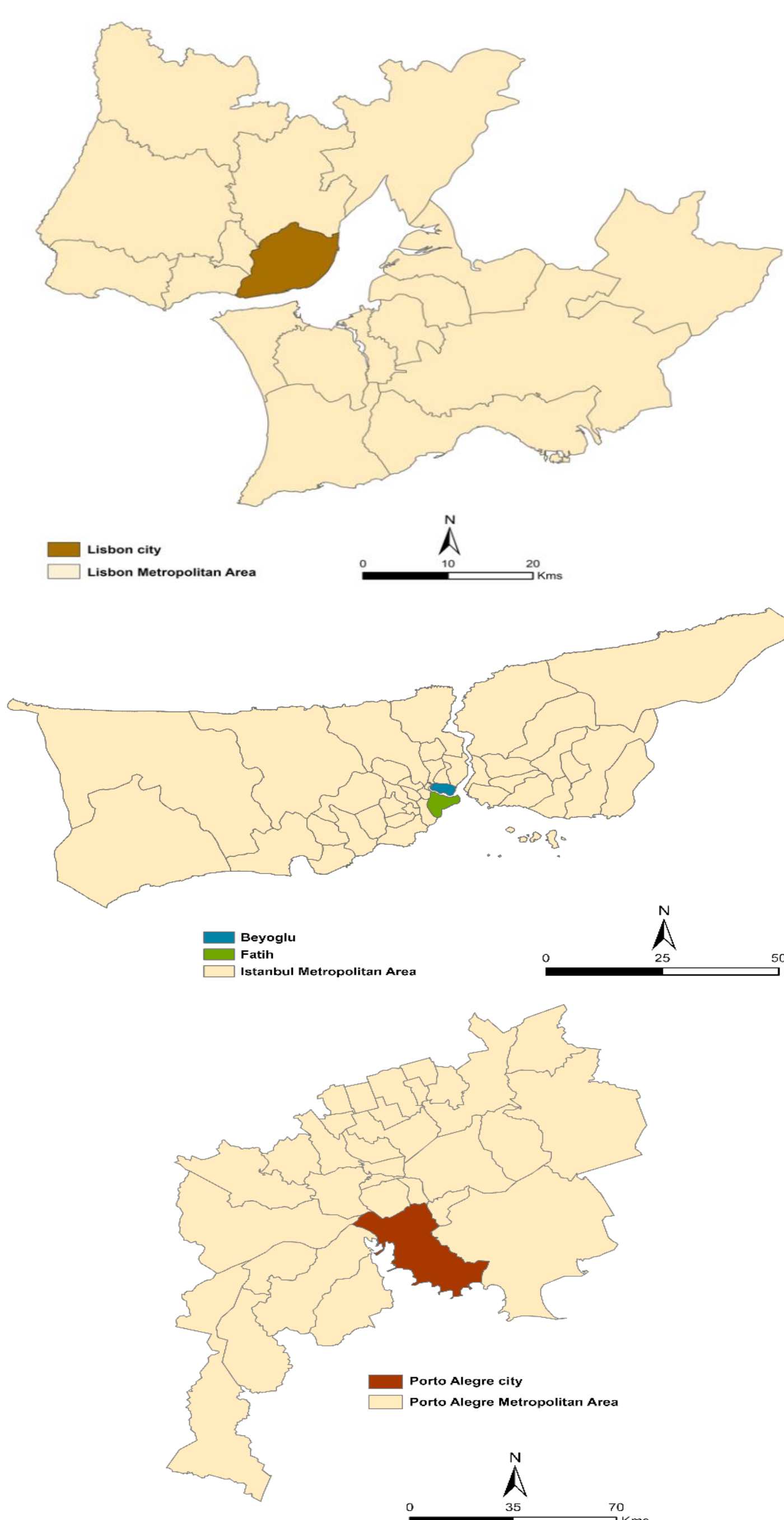


- Model fit: CFI 0.923, TLI 0.908, and RMSEA 0.042.
- Very frequent full-day telework reduces the number of trips by all modes.
- Very frequent part-day telework increases travel by all modes, as it still requires commuting during part of the day.
- Previous telework frequency and being positive about telework reduce the number of trips by all modes,
- Being reticent to engage in telework increases the number of trips.
- The magnitude of the total effects is higher for motorized modes.

- The number of trips is also influenced by socioeconomic characteristics, commuting, and location patterns:
 - short commuting times (up to 30 minutes) are associated with being less positive about telework and teleworking less frequently;
 - young people are more positive to telework;
 - living in the central city is associated with fewer trips by car and more by non-motorized modes;
 - the particular characteristics of the Istanbul Metropolitan Area (lower adherence to telework, lower share of car use, higher percentage of public transport) are also captured by the model.

CONCLUSIONS

- Full-day telework leads to a reduction in travel demand.
- Part-day telework increases travel.
- Measures to incentivise and promote telework may produce positive impacts, potentially contributing to a reduction in congestion, pollution, and carbon emissions.
- The unavailability of trip distances is a caveat in this work, which we aim address in future developments.



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