

## COMMUTING BURDEN DISTRIBUTION: THE EQUITY EFFECTS OF THE NEW WORK DYNAMICS ON METROPOLITAN AREAS.

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**Summary:** Attention is growing on transport-related equity issues, focusing on ensuring that the transportation system is equitable, accessible, and affordable to all members of society. From a spatial perspective, the transport resources and infrastructure distribution should rectify spatial inequalities. Since the COVID-19 pandemic, the public and private sectors have implemented new work dynamics (telework). The Commuting Burden (CB) concept provides another approach referring to challenges associated with traveling between home and workplace. Efforts to reduce CB may include improving public transportation infrastructure, fostering mixed land use, or alternatively, teleworking to reduce the need for commuting. Since the adoption of teleworking is understood to be a function of commuting costs, it can be expected that this will also influence CB.

This study focuses on the distribution of CB within the Lisbon Metropolitan Area in the context of the wider adoption of telework. As the distribution of telework adoption is not spatially uniform since people with different occupations and socioeconomic characteristics with different propensities to adopt telework are unevenly distributed through the LMA, it is expected that the adoption of telework will imply changes in the distribution of CB. These new dynamics end up raising a series of equity issues, namely whether it is possible to establish a connection between adherence to teleworking, travel generalized costs (times, plus cost by mode), and household employment. Taking advantage of the geography of teleworking adoption, we will compare the spatial distribution of commuting burden, before and after the wider adoption of teleworking in the aftermath of the COVID-19 pandemic. The CB by civil parish is obtained considering the percentage of different professional occupations, enabling us to determine average wages and the potential to adopt telework. Commuting generalized costs are estimated using commuting times by mode, commute model split and transit fares, road travel-based costs, and values of travel time saving obtained from the literature.

We aim to evaluate the distribution of CB in the LMA using the described data and assess the role that telework adoption could have on its distribution. Thus, we will assess these distributions through an Equity Index. The results will allow us to map the places with double burdens or benefits. In other words, whether individuals with lower CB are engaging in more teleworking and where individuals who do not telework have higher CB. Also, if this reduction is greater or smaller in the more distant zones or in the areas with higher levels of low-income population.