Commuting to university in times of Covid-19. Changes in travel behavior and mode preferences

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Extended abstract

The present research stems from the need to understand the effects of the Covid-19 pandemic on transport mode choices. Actually, the spread of the COVID-19 virus has triggered unusual restrictive measures limiting the freedom to use transportation means in many countries. As one of the measures put in place was inevitably the social distancing to slow down the contagions, it is quite clear that the most affected transportation aspect has been the systematic movement of individuals to commute to work and study (Abdullah et al., 2020; Charreire et al., 2021). In Italy, this trend has had a significant impact on the demand for public transport (PT) services, which has suffered a relevant contraction in favor of motorized private vehicles and active mobility modes, e.g., biking and walking, for shorter distances (ISFORT, 2021). This report highlights how 2020 was the year of the deep crisis for public transportation (PT), also due to the social distancing and of the fear of contagion, which halved the modal share (from 10.8% to 5.4% of passengers flow). The study by De Vos (2020) estimated a reduction in travels by PT due to COVID-19, determining a switch to the cars but also to active mobility, widely recognized as a source of social inclusion and psycho-physical well-being (Crotti et al., 2021).

The focus of the paper is on university commuting, and it concerns the determinants of the propensity to change modal choices with respect to usual transport means used to reach the college. The data used have been collected through a national survey on university mobility at the time of Covid-19, carried out from July to September 2020 by the Italian Network of Universities for Sustainable Development (RUS, 2021). The final sample is composed by 114,000 observations (students: 79.4%; faculty: 11%; technical-administrative staff: 9.6%). A descriptive analysis helps us to understand the territorial context of the surveyed universities, founding that 45% of the response rate concerns the academic community of the North-West of Italy, 24% of the North-East, 16% of the Center, and finally 15.5% from the South or the Islands. As it can be seen from the above geographical distribution, most of the answers concern universities located in Northern Italy, which have been most affected by the pandemic. In addition to personal characteristics, mobility capital, pre-pandemic home-university travel habits and information concerning the propensity to adopt sustainable and multimodal travel choices, the respondents were asked to express their prospective choices and travel habits considering two alternative pandemic scenarios, i.e., optimistic or pessimistic with respect to the risk of contagion. In particular, in the survey the two scenarios considered to represent the socio-health risk were defined as follows: SCENARIO 1 ("optimistic") - The virus is almost eradicated, new infections are reduced throughout the national territory, and distancing and protection measures are relaxed and activities schools for children are regularly active. University teaching, while with precautions and avoiding the excessive concentration of students, is provided in presence, except for special cases. In case of modules fully delivered in presence, a complete online teaching may not be available; SCENARIO 2 ("pessimistic") - The virus is still dangerous, the contagion has slowed down but continues, it is necessary to maintain strict distancing and protection measures, and school activities for children are not regularly active. University teaching is provided in presence only for courses with few students, and it can be used in a partial way (not all lessons available).

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After a first descriptive analysis of the data, aimed at a greater understanding of the structure of the information collected, the study tries to answer to two research questions. The first concerns the propensity to change the habitual commute mode used before the pandemic. Consequently, by estimating a probit model (McFadden, 2001), we investigate the direction of the change of the chosen means of transport, using as a dependent variable the prevailing means of transport chosen to get to the university before the Covid-19 pandemic compared to that envisaged to use in the respective two scenarios. So, if the prevailing mode of transportation is the same, a value equal to 0 is assigned; otherwise, in the case in which the mode of transportation is different in one of the two scenarios optimistic (low risk of contagion) or pessimistic (medium-high risk of contagion), a value equal to 1 is attributed. To a deeper understanding of the factors influencing the transport mode choice (second research question) we analyze, by a multinomial logit model (Marcucci, 2005), the transitions from public transport towards private cars or active mobility (biking, walking). To do this, the dependent variable was setup by keeping the non-change of the local public transport as a baseline. Both the analyses were compared in the two pandemic scenarios, mainly to understand the perception of the risk of Covid-19 contagion, as it might conceivably affect the commute mode choice. As a result, the expected findings concern the identification of the socio-demographic and travel characteristics that can characterize the modal choice of transport and the factors that can influence the abandonment from public transport in the optimistic pandemic scenario as well in the pessimistic one. In conclusion, the results obtained from the analyzes can be used to cope with future waves. Knowing the future intentions and what are the determining factors of these choices, on two scenarios with low and medium-high risk of contagion, policy decisions can be implemented, in relation to the management of transport systems and working organization (e.g., considering an extension of smart working schemes), aimed at mitigating traffic congestion, and reducing the environmental impact of transportation. Consequently, the scientific contribution of this project consists in the analysis of changes in the commuting habits of students and staff to the universities of Italian universities, aware of the fact of creating large volumes of mobility and therefore of the difficulty in containing infections, using primary data with two possible evolutionary scenarios of contagion.

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