



Public Transportation, Transportation Network Companies (TNCs), and Active Modes

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Project Objectives

The objectives of this project are to: 1) better understand how TNCs likely impacted transit ridership before COVID-19; 2) explore if transit can be partially modeled as an active mode; 3) investigate the impact of COVID-19 on selected road transportation modes; and 4) elicit some of the obstacles likely to hinder a resurgence of transit after the COVID-19 pandemic.

Problem Statement

We surmise that, the fall in transit ridership in the years preceding COVID-19 is partly due to the explosive growth of TNCs, which also resulted in a reduction in physical activity for people who would otherwise walk/bike to access transit. We seek to quantify the extent to which COVID-19 has further affected transit in California and explore what could be done to reenergize transit after the pandemic.

Research Methodology

To better understand how TNCs likely impacted transit ridership before COVID-19 and explore if transit could be explained as an active mode, we analyzed data from the 2017 National Household Travel Survey (NHTS) using discrete choice models. To investigate the impact of COVID-19 on selected road transportation modes, in May 2021 we surveyed the California members of KnowledgePanel®, the oldest and largest probability-based panel in the U.S. and estimated simple logit models. We then analyzed reasons why Californians are reluctant to use transit based on their answers to both surveys.

Results

Our results show that transit and TNCs target similar households. These households are more likely to include Millennials and post-Millennials, have higher incomes, advanced degrees, no children, and fewer vehicles than drivers. Compared to public transit, TNCs provide more convenient and faster point-to-point service, so increasing the exposure of these households to TNCs may hasten their exodus away from transit. Many low-income households (often members of disadvantaged groups) also reside in core urban areas served by transit. However, we found that these households are less likely than higher-income groups to take both TNCs and transit, which is not surprising since TNCs are typically more expensive. Partnerships between transit and micro-mobility providers could prove attractive to these households if pricing is right. We note that African American and Asian households are also less likely to use TNCs (all else being equal), which suggests racial discrimination.

Our exploration of whether transit can be partially modeled as an active mode in California showed that transit is best modeled separately (i.e., not grouped with walking and biking in a nesting structure). Our results highlight the importance of travel time between home and the workplace. Moreover, inadequate facilities refrain commuters from walking and biking even in dense urban areas. This highlights the importance of developing good walking and biking infrastructure.

Results from our May 2021 survey shows that three modes could see substantial drops in popularity: driving, transit, and TNCs (Figure 1). A decrease in driving would reduce VMT and help California achieve its greenhouse gas reduction target. However, it is not possible to say at this point if the intentions of

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the 18.9% of our respondents who plan to drive less will be sufficient to offset the 13.2% who intend to drive more. Results for transit are grim (Figure 2): over 28% of Californians intend to use transit less after COVID-19 (5.0% plan to use it more). This drop disproportionately affects Hispanics, Asians, and women, many of whom sustained transit ridership before COVID-19. Likewise, respondents from a broad range of backgrounds intend to use TNCs less after COVID-19. A silver lining is a substantial uptick in intentions to walk and bike more (+22.9%), with just 8.8% of Californians stating opposite intentions. Surprisingly, results were mixed among Hispanics, African Americans, and Asians, with relatively large percentages of respondents in each of these groups stating their intent to walk less.

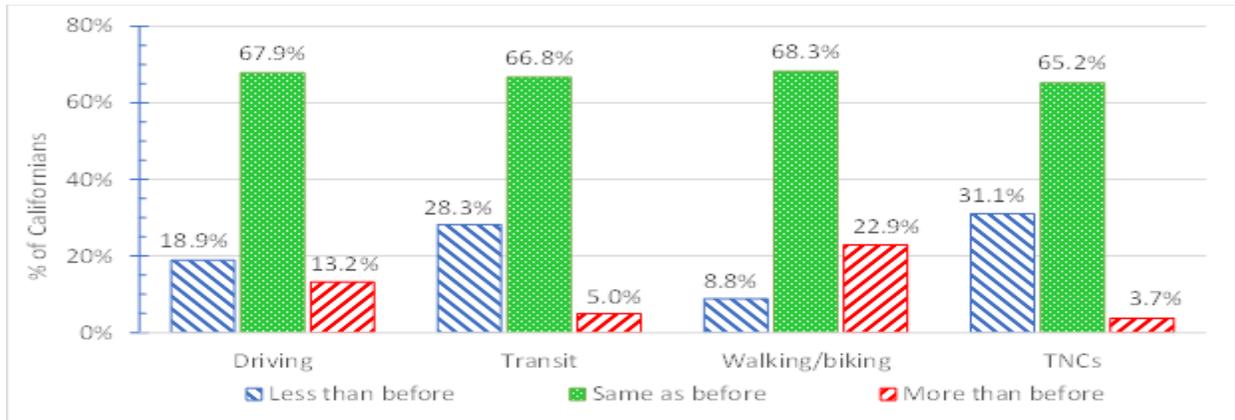


Figure 1. Weighted projected mode use changes (post- vs. pre-pandemic)

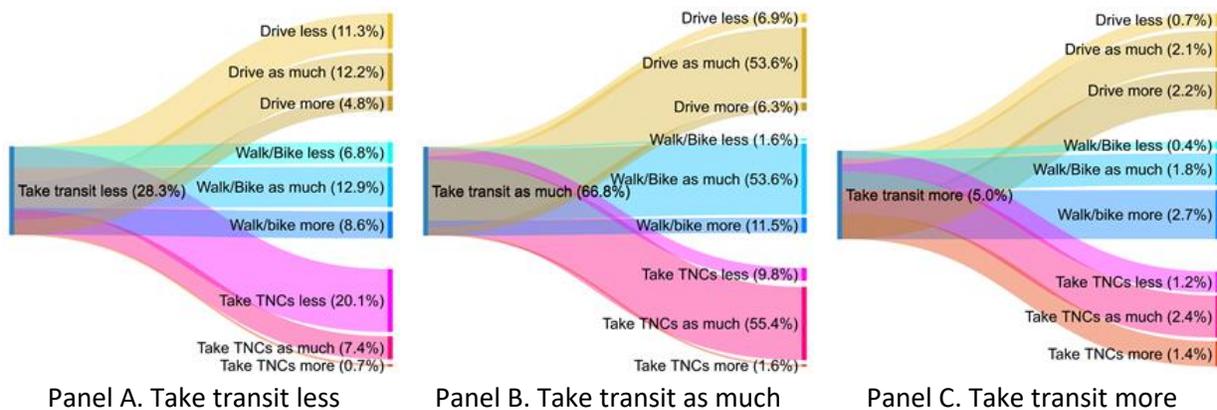


Figure 2. Weighted mode changes from transit

The main reason why Californians will not take transit is well-known: they prefer to drive, as driving is more flexible and perceived as safer than transit. The other main reasons (“no stops near destinations of interest,” “service not frequent enough,” and “service takes too long”) reinforce that point. The limitations of transit’s reach and frequency are especially of concern to younger adults, more educated people, and more affluent households. A key priority for transit agencies should therefore be to increase service frequency, develop their network and extend their reach by addressing the first- and last-mile problems. To attract younger riders in urban areas, one possibility would be to offer micro-mobility services (e.g., shared e-scooters, bikes, or e-bikes). To address the health concerns of African American and Asian riders, transit operators should adopt best practices to promote health, and publicize their efforts. It is also essential to address public safety concerns, which are particularly important to women. Overall, transit policy needs to be integrated into a comprehensive framework designed to achieve California’s transportation, social, and environmental goals. These policies need to account for the generalized costs and the characteristics of all the transportation options available. They should strive to better price urban space (i.e., parking) and the externalities of motor vehicles (e.g., air pollution and greenhouse gas emissions) while fostering new alternatives to achieve more equitable mobility.