

Residential Parking Supply Has a Stronger Influence on Household Travel Choices Relative to a Neighborhood's Walkability and Access to Transit

Adam Millard-Ball, Ph.D. and Jeremy West, Ph.D.
Department of Environmental Studies and Department of Economics
University of California, Santa Cruz

August 2020

Issue

A large volume of research suggests that neighborhood attributes such as public transportation access, residential density, and walkability can have important impacts on people's travel, carbon footprint, and employment opportunities. More often than not, however, the research conducted on this topic is subject to "self-selection bias." For example, people who prefer to walk and ride transit are likely to move to neighborhoods that support these choices, while those who prefer to drive instead move to places with nearby highway access and ample parking.

To overcome these biases, a research team at the University of California, Santa Cruz surveyed successful applicants to San Francisco's affordable housing lotteries about their transportation choices and employment. In San Francisco, nearly all new housing developments with ten or more residential units must provide affordable housing units at below-market rates. The units are normally allocated to qualifying households through city-run lotteries. The chances of winning a lottery are small — less than two percent — and so, not surprisingly, households are not selective about which lotteries they enter. Analysis of lottery application data shows that applicants do not appear to enter any particular lottery based on where they would end up living, or if the residence has ample parking, or based on the neighborhood's walkability or transit accessibility.

Key Research Findings

Residential parking supply is a major factor affecting car ownership. In recent years, San Francisco made significant changes to its parking policy. Instead of requiring new buildings to provide a minimum amount of parking — typically one parking space per residential unit — San Francisco now caps the amount of parking in transit-friendly neighborhoods, often at one space for every two or four units. In buildings that did not have on-site parking, the survey found that only 38 percent of lottery-allocated households own a car. In buildings with at least one parking space per unit, more than 81 percent of households own automobiles (see Figure 1). This finding reveals that households in buildings with ample parking are more likely to choose to own a vehicle.

Transit accessibility affects transit use, but parking supply has a stronger influence. Households living in a building with less parking and in a neighborhood with good transit accessibility tend to use public transit more. The effect of parking on transit use is approximately three times as large as living in a neighborhood with good transit access. By contrast, increased on-site parking reduces transit use and also increases the amount of driving by a similar amount. More parking also discourages walking by a smaller, but still statistically significant, amount. In summary, cities that want to encourage transit use and

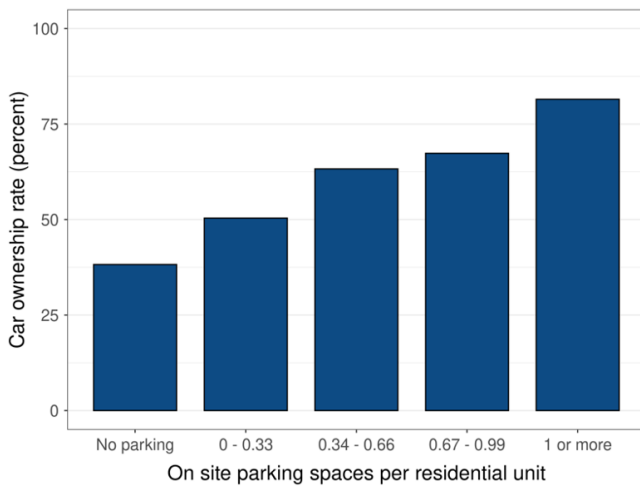


Figure 1. Residential parking supply affects household car ownership decisions

walking should consider reducing the quantity of residential parking as well as plan for alternatives to the private car.

Non-work trips are more sensitive to parking supply and transit accessibility than work trips. Households with abundant residential parking tend to commute more by private car (driving alone or carpooling) and are less likely to commute by transit. Greater transit accessibility has the opposite effects. However, non-work trips are more affected by these dynamics — possibly because commute trips are more constrained by the availability of workplace parking, transit proximity to the workplace, or distances that preclude walking or biking. In contrast, non-commuting trips, such as going to the grocery store, entail more choices of potential destinations, and so residential parking and neighborhood walkability have greater effects on household travel behavior.

Better public transit improves employment opportunities, but parking has no effect. One natural concern about reducing residential parking is that it might

limit access to jobs, but no evidence was found that this trade-off exists. More on-site residential parking has no detectable impact on commute length or employment mobility (a measure of worker flexibility to change jobs). Indeed, parking spaces intended for below-market-rate units often go unclaimed, even in buildings with less than one space per unit. While winning the affordable housing lottery is highly prized, households seem to care less about winning the “parking lottery.” Greater transit accessibility, in contrast, has a moderate positive effect on labor market outcomes, leading to shorter commutes and slightly more job turnover. However, neither transit accessibility nor parking ratios affect the probability of a household’s members being employed full-time, possibly because of the strong economy and minimal unemployment in San Francisco at the time of the survey in 2019.

Neighborhood design also affects walking and cycling. Increasing a neighborhood’s accessibility by walking or bicycling, as measured by its Walk Score and Bike Score, increases the frequency that household members use the corresponding travel mode, even after controlling for household income and demographics and for the building’s parking ratio.

More Information

This policy brief is drawn from the report “How the Built Environment Affects Car Ownership and Travel: Evidence from San Francisco Housing Lotteries” prepared by Adam Millard-Ball, Jeremy West, Nazanin Rezaei, and Garima Desai with the University of California, Santa Cruz. A digital copy of this brief and the report are available at: www.ucits.org/research-project/2019-26. For more information about findings presented in this brief, contact Adam Millard-Ball at adammb@ucsc.edu.

Research presented in this policy brief was made possible through funding received by the University of California Institute of Transportation Studies (UC ITS) from the State of California through the Public Transportation Account and the Road Repair and Accountability Act of 2017 (Senate Bill 1). The UC ITS is a network of faculty, research and administrative staff, and students dedicated to advancing the state of the art in transportation engineering, planning, and policy for the people of California. Established by the Legislature in 1947, the UC ITS has branches at UC Berkeley, UC Davis, UC Irvine, and UCLA.

Project ID UC-ITS-2019-26 | DOI: 10.7922/G26T0JX5