Parking Prices and Walking and Bicycling to Work in US Cities

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Date: Wednesday, April 22, 2015
Time: 11:15 am/et
Location: Dunwoody Suite

Summary: Physical activity is important for health, but less than half of Americans get enough activity through recreation. Active commuting is another way more Americans could be active. Across several densely populated cities, the number of people walking to work is 3.4% higher for every extra dollar charged for a day's parking.

Abstract:

Background: Physical activity reduces the risk of developing several of the leading causes of death in the U.S. Commuting by walking or bicycling is less common in the U.S. than other developed countries and is a potential source of physical activity. Environmental and policy determinants of active commuting are not well understood. The purpose of this city-level ecological study was to determine if daily parking prices are associated with active commuting in a sample of U.S. cities.

Methods: We obtained average daily off-street parking prices (2009, n=90 cities) from the Drexel University Parking Study. We obtained the prevalence of past-week active commuting to work from the American Community Survey (ACS). The 2010 Census and the 2009 ACS provided relevant covariates. We assessed the association between parking prices and walking and bicycling using weighted linear regression models to account for differences in the precision of commuting estimates. Walking and bicycling were modeled separately, with unique covariates selected by stepwise elimination.

Results: Daily off-street parking prices varied from $3 to $35. The prevalence of walking to work varied from 1% to 16%, and bicycling to work varied from 0% to 12%. After adjusting for age, household size, and an interaction with population density, the proportion walking to work was 3.4% higher ($p<0.0001$) for every additional dollar charged in more-dense (≥3550 people/mi2) but not less-dense cities. After adjusting for population density, household size, and income, there was no association between parking prices and bicycling to work.

Conclusions: At the city level, daily parking prices were significantly associated with walking to work in more densely populated cities. Additional individual-level research is needed to determine causality, but parking price may influence walking behaviors.