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Is Uber a substitute or complement for public transit?[☆]

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Abstract

How Uber affects public transit ridership is a relevant policy question facing cities worldwide. Theoretically, Uber's effect on transit is ambiguous: while Uber is an alternative mode of travel, it can also increase the reach and flexibility of public transit's fixed-route, fixed-schedule service. We estimate the effect of Uber on public transit ridership using a difference-in-differences design that exploits variation across U.S. metropolitan areas in both the intensity of Uber penetration and the timing of Uber entry. We find that Uber is a complement for the average transit agency, increasing ridership by five percent after two years. This average effect masks considerable heterogeneity, with Uber increasing ridership more in larger cities and for smaller transit agencies.

Keywords: Public transportation, Ride-hailing, Technological innovation, First mile/last mile, Difference-in-differences
JEL Codes: R40, H42, O33

1. Introduction

Uber, Lyft, and other ride-hailing companies have transformed the transportation marketplace in over six hundred cities around the world. While their entry into cities has been controversial, they have been credited with providing a reliable and affordable transportation option, serving neglected areas of cities, and providing meaningful employment. Against these benefits, they have been accused of being unsafe, creating congestion, destroying stable jobs, and flouting the law. Governments have struggled to decide how to regulate these companies, in part because of a poor understanding of the actual economic effects of ride-hailing companies.

Economists are quickly trying to understand Uber's general economic effects and especially its influence on other modes of

transportation. Uber's direct benefits appear to be large. Using Uber's individual-level data and its unique use of surge pricing, Cohen et al. (2016) estimate that UberX created \$6.8 billion of consumer surplus in 2015. The indirect effects are less clear: recent evidence shows that Uber could benefit public health by reducing drunk driving accidents and fatalities (Greenwood and Wattal, 2017; Peck, 2017; Dills and Mulholland, 2018), though other research finds no effect on traffic fatalities (Brazil and Kirk, 2016). In terms of the effect on other modes of transportation, Nie (2017) finds Uber has reduced taxi ridership, though its effect on taxi driver wages is less clear (Cramer, 2016; Berger et al., 2017).

This paper's contribution is to measure the effect of Uber on public transit. There are three reasons Uber's effect on public transit is important, and all three depend on whether Uber complements public transit. First, Uber could have important effects on public transit's social efficiency. Transit fares are typically above social marginal cost (though below average cost) due to economies of scale and density, implying transit ridership is inefficiently low.¹ If Uber increases transit ridership this would then increase the efficiency of the public-transit system. Second, Uber's effect on public transit directly affects city and state budgets. Ride-hailing services already face fierce political opposition from taxi services, and its effect on government

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¹Proost and Dender (2008), Parry and Small (2009), and Basso and Silva (2014) show that increasing transit subsidies, and so increasing transit ridership, increases social welfare given the existing set of transportation policies.

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