

**Stanford University**  
**Department of Statistics**

DEPARTMENTAL SEMINAR

4:30pm, Tuesday, November 13, 2018  
Sloan Mathematics Center Room 380C

Refreshments served at 4pm in Sequoia Lounge.

**Speaker:** Dawn B. Woodard  
*Director of Data Science of Maps,*  
*Uber*

**Title:** Dynamic Pricing and Matching for Ride-Hailing

**Abstract:**

Ride-hailing platforms like Uber, Lyft, Didi Chuxing, and Ola are transforming urban mobility by connecting riders with drivers via the sharing economy. These platforms have achieved explosive growth, in part by improving the efficiency of matching, and by calibrating the balance of supply and demand through dynamic pricing. We survey methods for dynamic pricing and matching in ride-hailing, and discuss statistical approaches used to predict key inputs into those algorithms: demand, supply, and travel time in the road network.

Dynamic pricing is particularly important for ride-hailing, because pricing too low causes very long pickup times, which reduces the efficiency of the platform and provides a poor experience for riders and drivers. Pricing and matching are closely connected; we link the two levers together by introducing a carpool-matching mechanism called dynamic waiting, which adjusts to demand and supply conditions by varying the rider waiting and walking time. We show that using this mechanism to flex wait time for riders during high-demand time periods could help alleviate the price volatility associated with dynamic pricing.