

A partnership between the UCLA Ziman Center for Real Estate and the UCLA Anderson Forecast

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Monthly condensed analyses of crucial real estate and economic issues offered by the UCLA Anderson Forecast and UCLA Ziman Center for Real Estate. Here, Edward Kung, assistant professor of economics at UCLA Ziman Center for Real Estate, offers unique research showing how smart phones dramatically boosted the growth of the gourmet food-truck industry.

How Smart Phones Dialed up the Food-Truck Boom and Increased Access to Food Variety

By Edward Kung, Assistant Professor, UCLA Ziman Center for Real Estate

If you work in a city, chances are good that you have dined at, or know someone who has dined at, a gourmet food truck. The industry has grown by over 50% in the past five years, from about \$1b in 2007 to \$1.5b in 2012. Figure 1 shows annual food truck revenue from 2003 to 2012. There is a clear upsurge in 2007, and most of the additional growth has been from higher-end gourmet food trucks serving a variety of specialty cuisines. Not coincidentally, 2007 was also the year the iPhone was introduced, one of the first smart phones capable of accessing the internet from anywhere.

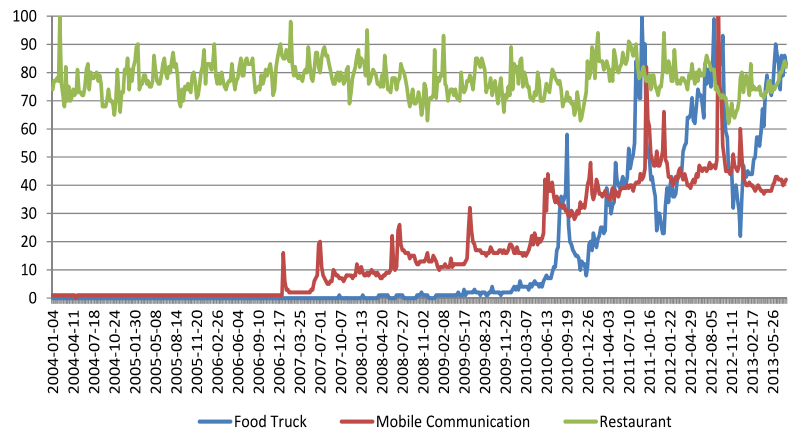
“Smart-phone and social media technology has a particular effect on food trucks which is distinct from its effect on the restaurant industry as a whole.”

The past decade has seen tremendous growth in communication technology, especially with the introduction of smartphones and new social media. Many of the benefits of these technologies are obvious (sharing photos); and others are more hidden (smart phones have helped Indian fishermen coordinate on sales while at sea). In a new research paper, Elliot Anenberg and I argue that one such hidden benefit is that smartphone and social media (henceforth S&S) technologies gave rise to gourmet food trucks, and that food trucks have increased the variety of food options available to us on a day-to-day basis.

We argue that S&S technology plays a pivotal role in enabling the food truck business model. These technologies allow trucks to broadcast their location to potential customers in real-time, from any location, thereby reducing the uncertainty that customers face about the truck's location. Consider a diner deciding where to go for food. Without real-time updating, the diner must rely on some knowledge of a food truck's schedule in order to find it. But even if the schedule is known, there is a possibility that the truck is not in the expected location (perhaps because all the parking spots were taken). This uncertainty reduces the value to the customer of visiting the truck as opposed to a brick-and-mortar restaurant, whose location is certain. By allowing real-time location updates from truck to customer, S&S technology eliminates locational uncertainty and increases the demand for food trucks.

Data from Google search statistics bear the theory out. Figure 2 plots the search intensity for S&S, food truck, and restaurant-related search terms, at the national level. S&S searches are highly correlated with food-truck searches, and S&S search intensity leads food-truck search intensity. Neither are correlated with searches for restaurants in general, suggesting that S&S has a particular effect on food trucks which is distinct from its effect on the restaurant industry as a whole, consistent with the theory of locational uncertainty. The same patterns exist at the city level, even when controlling for national trends and city-level demographic changes. These facts suggest a causal relationship between S&S and food trucks, in which the growth of S&S in a city causes the growth of the food truck industry in that city.

Figure 2: Google Search Trends for the U.S.

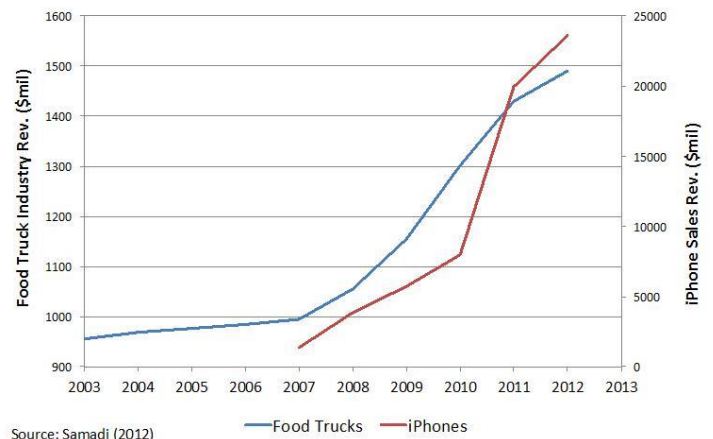


Note: Mobile communication search terms include "3g", "smartphone", "iphone", "android", "4g", and "twitter". The data shows no relationship between searches for restaurants and searches for mobile communication or food trucks, but a clear relationship between mobile communication searches and food truck searches.

Ultimately, we are interested in the hidden benefits from S&S technology. Is the growth of food trucks of any benefit to society or are they simply competing away profits from brick-and-mortar restaurants? Setting aside the issue of cost differences, we argue that food trucks use their mobility to increase our access to a variety of foods.

Consider an office-worker deciding where to go for lunch. Without food trucks, his only options are the set of restaurants nearby, which are the same every day. With food trucks, his options are increased, and the food trucks outside his office can be different every day because food trucks are mobile. Food truck mobility allows the same number of restaurants to serve a greater number of customers, and increases the variety of food options available to each customer. By observing the tendency of food trucks to avoid recently visited locations, we can put a magnitude on just how much variety matters. We find that food trucks are even more unlikely to visit the same location two days in a row than they are to operate in rainy weather, and that the decrease in profits to visiting the same location two days in a row is comparable to the effect of a 10% sales tax. If we took away food truck mobility, the loss in consumer surplus from the loss in access to variety would range from \$43m to \$71m per year, which is 6 to 10% of food truck industry profits.

Figure 1: Annual U.S. Food Truck Revenues and iPhone sales



Source: Samadi (2012)

The next time you dine at a food truck, remember to thank your smart phone for making it all possible. On a more serious note, I hope the story of food trucks will inspire you to think about the many hidden ways technology can benefit your life, your business, and society as a whole.