

Title: Three essays on food security, food demand and food waste in America

My three essays are designed to explore food security, food demand, and food waste. Although these three topics are not independent of each other since the main goal to study food demand and food waste is to achieve food security finally. The first essay explores the association between SNAP participation and food security, and we find SNAP enrollment within the last three months is associated with higher food security. The second essay estimates the demand for local foods and uses the estimated demand to simulate the impacts of raising demand for local foods on the price and consumption of local and non-local foods. The third essay estimates the demand for at-home and away-from-home food waste and estimates the demand for food waste by different food categories.

Food insecurity, defined by the U.S. Department of Agriculture (USDA) as “a lack of consistent access to enough food for an active and healthy life,” continues to afflict millions of Americans (USDA, 2019). During the last twenty years, the percentage of U.S. households who are food insecure has never been below 10 percent. As food insecurity is one of the major challenges that contribute to poor health conditions among U.S. households, the federal government has implemented food assistance programs that provide nutritional support for eligible households, such as the Supplemental Nutrition Assistance Program (SNAP). Although there are some policy tools used to fight food insecurity, some other aspects should also be considered, such as food demand and food waste.

Food demand is expected to rise around the world between 59% to 98% by 2050 (Valin et al., 2013). If the capacity of agricultural systems cannot feed the world population, food insecurity conditions would be worse. The current food demand can be calculated using the Working-Leser model (Landry and Smith, 2019) and the Almost Ideal Demand System (AIDS) Model (Deaton and Muellbauer, 1980). Once the price and expenditure elasticity are estimated, we can use this information to project future food demand. Understanding current food demand and projecting future food demand are very important points to relieve food insecurity problems.

In the United States, 30% to 40% of food is wasted at the retail and consumer level (Buzby et al., 2014). Food waste occurs in households when an edible food item goes unconsumed, therefore food waste can be considered as an inefficiency problem. If the portion of food that is wasted can be redistributed to households who experience food insecurity, then the food insecurity problems could be relieved a lot. In 2010, the United States wasted 133 billion pounds of food, or 1249 calories per capita per day, which is more than one half of the daily calories needed to support people.