Research Statement
Atia Ferdousee

I was drawn to economics from the beginning of my undergraduate life, mostly because of its analyzing power and the statistical tools to model and frame people's actions individually and collectively. Examining public policies and exploring different economic aspects of these policies was always a core interest of economists, and I am no exception. I became more inclined in the applied-microeconomics, industrial organization, and policy analysis during my graduate career

In my academic research, I use up-to-date statistical methods to analyze public policies and market responses. Specifically, my dissertation research focuses on analyzing environmental policies and their implications on different economic and environmental factors.

In my dissertation, I analyze how the state-level incentive policies influence the market as well as the other unintended unexplored direction of these policies. In the first chapter of my dissertation, I analyze the effect of state-level tax credit policy on electric vehicle sales in Maryland by focusing on a synthetic control approach using Bayesian structural time series. Previous studies focused on different discrete choice models analyzing such policies that require another control state's data. Bayesian time series approach, however, is able to show the effectiveness of the policy by employing counterfactual analysis without another control state's information. In this study, I found this incentive indeed increased electric vehicle (EV) adoption, but at the same time, the State's goal of EV adoption is too high to achieve with the current incentive program.

As I have observed a substantial increase in EV adoption by the State incentive program, I elaborate on the analysis in my second paper titled "Impact of Electric Vehicle Adoption on Electricity Consumption and Generation." This study focuses on two different but interrelated aspects of EV adoption. First, using California's monthly county-level data for 2010 to 2019, this study reveals that electric vehicles and their supportive infrastructures like charging stations have a significant effect on increased residential and commercial electricity consumption. Second, analyzing the electricity generation information by county, this study concludes that there is a significant negative relation between EV adoption and the share of electricity that comes from renewable sources. Although electric vehicles emit lower greenhouse gas than conventional vehicles, it demands a significant amount of electricity for charging. This study argues that unless California adopts cleaner sources of power plants, billions of dollars of public spending on EV adoption may not result in a clean atmosphere, which was the primary concern of the EV incentive policies in the first place.

In my third chapter, I investigate the factor behind the adoption of multiple green technologies together. Previous studies suggest that although EVs emit fewer pollutants than conventional vehicles, they increase energy consumption and more energy consumption usually comes with more environmental damage. Installing solar PV can be a solution by producing energy at the same time reducing our carbon footprints. In this paper, I explore the contributing factors for adopting both electric vehicles and solar photovoltaics together.

The research journey of my dissertation has paved the way for my future exploration.

I think my research interest would explore understanding the economic principles and both individual and collective behavior from various perspectives. I believe trying to understand different perspectives with unbiased viewpoints is the true beauty of academic research. By doing this, we can always walk one step towards a better society.