

RESEARCH STATEMENT

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I am an empirical economist who applies industrial organization (IO) methods to questions at the intersection of technology and transportation. Through this research, I seek to understand both technology's power to improve economic outcomes and its disruptive potential to upend existing institutions and markets. This research agenda has two threads: *First*, I study artificial intelligence (AI). In my job market paper (joint with Maggie Yellen), I study the interaction between human decision-making and AI prediction. While machine learning algorithms excel at making payoff-relevant predictions, their effect on outcomes depends—in most settings—on how humans incorporate these algorithmic predictions into their decision-making. Using novel observational data from a large fleet of heavy-duty trucks, we present evidence on how human technicians incorporate AI predictions into their decisions. *Second*, in a series of papers with Thi Mai Anh Nguyen, I study the long-term relationships around which the US truckload freight industry is organized and the potential of new digital technologies and platforms to reshape this vital industry.

In addition to their common themes of technology and transportation, these two threads are tied together by two features that are representative of my approach to research: (1) using novel data sets to provide new empirical evidence and (2) making use of modern methodological tools, including machine learning methods and dynamic structural modeling.

Looking ahead, my research agenda over the next three to five years will continue to explore both artificial intelligence and freight transportation.

On the artificial intelligence front, I plan to expand on my job market paper to address two key issues: the heterogeneous effects of AI and the interaction between AI and agency issues.

First, building directly on my job market paper, I plan to analyze how the predictive AI tool differentially affects the decision-making of technicians with different characteristics (e.g., longer tenure versus shorter tenure, older versus younger). The goal of this analysis will be to shed light on the distributional effects of predictive AI, which is becoming increasingly ubiquitous in workplaces throughout the economy.

Second, as my job market paper recognizes, the way that AI changes decision-making may depend critically on the incentives of the decision-maker. With this in mind, I plan to explore the interaction between AI and principal-agent problems. This work will address if and how predictive algorithms affect these agency problems and how, in turn, the existence of agency problems alters the effects of predictive algorithms on decision-making.

Anh Nguyen and I also plan to continue exploring the role of informal relationships in freight transportation markets. Most immediately, we will further our research on the role of shipper-carrier relationships in the US trucking industry—a critical, yet understudied industry.

In light of the supply chain disruptions the US has experienced over the last several years, we are particularly interested in studying the role of these relationships in determining supply chains'

resilience to, for instance, pandemics, natural disasters, and geopolitical disruptions. The fact that long-term relationships, rather than a centralized spot market, are the key means of arranging trucking transactions likely affects the ability of the industry—and thus, the US goods economy as a whole—to adjust to such shocks. If transactions in this industry were arranged through a spot market, we would expect shocks to generate price signals, effecting a rapid adjustment. However, in a world where transactions are actually arranged through a decentralized network of informal long-term relationships with prices that are (at least in the short-run) fixed, this may not be true. With this motivation in mind, we plan to study—at the micro level—how shocks affect relationship stability and—at the macro level—how such shocks are transmitted through relationship networks.