Modestino Statement on Research/Scholarship/Creative Activity

Throughout my career, my overarching scholarly goal has been to advance the use of data-driven research in policy decisions to improve the efficiency and effectiveness of public investments. Previously, as a Senior Economist at the Federal Reserve Bank of Boston, I led research projects that directly informed both regional and macroeconomic policy decisions. In my current position at Northeastern University, an institution committed to translational research, I have drawn on that experience to pursue research that is both academically rigorous and policy relevant.

My current research focuses on three areas: (1) employer skill requirements, (2) youth employment, and (3) healthcare. Much of my work is interdisciplinary and involves large-scale empirical evaluations to determine underlying causal relationships using a variety of data sources, methods, and techniques. For example, my work on employer skill requirements uses "big data" coupled with a rigorous empirical design, including the use of two natural experiments, to document new facts about labor market dynamics with wide-ranging implications for existing theoretical models and measurements of skills mismatch. Additionally, my research on youth employment makes use of a randomized design and combines administrative data with surveys or qualitative information to uncover the mechanisms underlying program impacts, often overturning existing beliefs about how outcomes are achieved. Finally, my studies assessing new medical interventions and changes in physician compensation use proprietary data to analyze the efficiency and effectiveness of healthcare markets, including innovations to address urgent issues such as the opioid crisis.

My work has been disseminated broadly across both academic and policy channels. This includes publications in top-tier general interest journals in both economics and public policy, and top field journals in labor and health economics, as well as other disciplines. I have had multiple papers accepted at competitive research conferences, including the NBER Summer Institute and the annual meetings of the American Economic Association and the Society of Labor Economists. Over the past five years, I have been invited to publish my findings in 18 policy-relevant outlets (including the Brookings Institution) and have presented my work at 24 policy events. I have provided testimony to legislative committees, including the National Academy of Sciences, no fewer than seven times. During this period, my work has been extensively covered by major media outlets in more than 35 articles including the *Wall Street Journal*, *NPR*, *Bloomberg*, *Vox*, and the *Washington Post*.

Additionally, through my role as Associate Director of the Dukakis Center for Urban and Regional Policy, I have developed a robust researcher-practitioner partnership with multiple city agencies to translate these new findings into innovations in policy and practice. The value of my work is evidenced by the $1.5 million in funding for which I have been PI or co-PI, including grants from the National Science Foundation, the Russell Sage Foundation, the William T. Grant Foundation, the Social Innovation Fund, and the Poverty Action Lab (J-PAL) at MIT.

Below I briefly summarize my three current research areas, noting major findings and the relevant articles in which they are presented. Representative peer-reviewed articles and their appendices are included in the sample publications of the tenure dossier materials and marked with an asterisk (*****) in bold below. Full copies of all publications, including other invited articles and public policy reports, are available at https://aliciasassermodestino.com/.

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1. Changes in Employer Skill Requirements

The persistent weakness of the U.S. labor market following the Great Recession puzzled researchers and policymakers. While a number of explanations have been explored, economists have hypothesized that the sluggish recovery was caused by a decrease in "recruitment intensity"—the actions employers take to fill job vacancies, such as changes in advertising expenditures, screening methods, hiring standards, and compensation. Yet to date, the application of this theory has been limited.

Using a proprietary dataset of the near-universe (90 million) of online job vacancy postings, my co-authors and I examine one channel along which recruitment intensity may have shifted during the Great Recession: employer skill requirements. In our first paper, forthcoming in the ***Review of Economics and Statistics***[*], we show that employer skill requirements for education and experience increased sharply during the Great Recession, rising more in states and occupations that experienced greater increases in the supply of available workers as measured by the unemployment rate. We use two identification strategies to establish a *causal* relationship between changing employer skill requirements and the supply of job seekers. First, to account for changes in the composition of employers and/or vacancies over time, we show that upskilling occurs even within firm × job-title pairs. Second, we make use of a natural experiment that provides an exogenous increase in labor supply: the drawdown of troops from Iraq and Afghanistan between 2009 and 2012. Our results imply that the increase in unemployed workers during the Great Recession accounts for as much as one-third of the increase in skill requirements between 2007 and 2010.

In our second paper, published in ***Labour Economics***[*], we analyze skill trends during the recovery and find that employer requirements for education and experience *decreased* between 2010 and 2014, falling more in counties and occupations that experienced a steeper decline in unemployment. We find a similar pattern of downskilling within skill categories, with larger declines in baseline skills versus specialized skills or software skills that might require more formal or time-intensive training. These findings are again robust to controlling for firm × job-title fixed effects and using a natural experiment from the hydraulic fracturing boom as an exogenous contraction of labor supply. Our results imply that cyclical downskilling reversed as much as 20 percent of the total increase in skill requirements that took place during the Great Recession, essentially reversing much of the upskilling that was related to the business cycle.

These papers provide some of the first empirical evidence of a shift in recruitment intensity whereby employer skill requirements are partly driven in response to labor market conditions, with important implications for our understanding of labor market dynamics. First, we document a novel feedback mechanism between labor supply and the selectivity of vacancies that operates *within* occupations and supports macroeconomic models of employer search decisions and heterogeneous workers. Second, we show that upskilling occurs even for the same job titles within the same firm, a notion that runs counter to some existing approaches to that model changes in recruitment intensity as a compositional effect. Third, our finding that some skill requirements are reversed during the recovery suggests that a portion of what is often labeled as "structural mismatch" is, in fact, a cyclical response to the number of available workers and is likely to revert.

These two papers on employer skill requirements have been widely disseminated across both academic and policy outlets, including the NBER Summer Institute, the ASSA and SOLE meetings, and the National Academies of Sciences. They were also featured in *Harvard Business Review*, *Issues in Science and Technology*, and *EconoFact*, and covered by a range of major media outlets such as the *Wall Street Journal, NPR, Bloomberg,* and the *Washington Post*.

More recently, I have studied the implications of upskilling for how economists measure labor market mismatch in a third co-authored paper under review at the ***Journal of Labor Economics.**** We find that cyclical upskilling largely occurred within low- and middle-skill occupations, but upskilling within high-skill occupations was more persistent and largely related to increasing demand for software skills—resulting in a high level of mismatch in this sector even after the Great Recession. I have presented this paper at the Society of Labor Economists (2019) and am also invited to present it at the IZA Institute for Labor Economics in Germany (2019) and the ASSA annual meeting (2020).

2. Youth Employment

This stream of research stems from a partnership with the City of Boston to study the impact and cost-effectiveness of municipal investments in youth employment in two key areas: summer jobs and financial education. Early work experience for disadvantaged youth is shown to be an important tool for enhancing their future employment prospects and earnings potential. Yet teen employment has fallen steadily since 2000, notably among low-income African-Americans and Hispanics in high-poverty neighborhoods. Even so, few of the newer programs that aim to increase youth employment have been rigorously evaluated in terms of efficacy or efficiency.

With support from a major grant from the William T. Grant Foundation, I am conducting a multiyear evaluation of the Boston Summer Youth Employment Program (SYEP). While prior studies demonstrated some encouraging results, my research sheds light on the mechanisms driving improved outcomes to better understand how these impacts are achieved and for whom benefits are greatest. To assess impacts, I make use of the SYEP lottery system that randomly assigns youth to jobs as the primary source of identification. I then then link behavioral changes in self-reported skills and attitudes that occur during the summer to longer-term outcomes measured by administrative data in the following one to two years after participation.

My first paper in this area, published with a graduate student in *Evaluation Program and Planning*, assesses changes in short-term behaviors and attitudes. Using a pre-/post-program survey, we find that Boston SYEP participants reported significantly greater increases in community engagement, social skills, job readiness, and college aspirations relative to the control group, with larger gains for nonwhite youth. In my second paper, published in the ***Journal of Policy Analysis and Management**,** I link the survey responses to administrative data on criminal arraignments. I find that the SYEP treatment group had significantly fewer arraignments for both violent and property crime compared to the control group, and these impacts accumulate after the program ends, suggesting long-lasting behavioral effects. This reduction in criminal activity is correlated with improvements in social skills, but not with changes in job readiness or academic aspirations, providing insight into the oft-cited claim from the criminal justice literature that “nothing stops a bullet like a job.”

More recently, I have explored the impact of the Boston SYEP on chronic absenteeism in secondary schools, a new accountability metric adopted by most states under the Every Student Succeeds Act. In this paper, under review at ***American Economic Journal: Economic Policy****, my co-author and I find that youth in the SYEP treatment group had significantly lower rates of chronic absenteeism relative to the control group in the school year following participation, largely due to fewer days of unexcused absences—subsequently improving course performance, lowering the dropout rate, and raising the likelihood of graduation. Reductions in chronic absenteeism are greater for youth participating multiple summers and are linked to improvements in both work habits and social skills. I have presented this work at the Association for Public Policy Analysis and Management and Association for Education Finance and Policy meetings.

Supported by a major grant from the Citi Community Development Foundation, I have also evaluated the Boston Youth Credit Building Initiative (BYCBI), a one-year financial coaching program for young adults ages 18 to 29. This paper, co-authored with a former student and forthcoming in the ***Journal of Consumer Affairs****, uses a randomized control trial to estimate the program's impacts. We find that the BYCBI increases access to credit and improves credit scores and ratings—which in turn lowers participants' interest rates on car loans and reduces their reliance on alternative financial services such as payday loans. These impacts appear to be driven by improvements in financial *self-efficacy*, rather than gains in financial literacy, overturning existing beliefs and providing an important insight for policymakers.

My body of work on youth employment has also been widely disseminated across academic and policy venues including the NBER Summer Institute, the Brookings Institution, *Harvard Business Review*, and the City of Boston. It has also been covered by an array of media outlets such as the *Wall Street Journal*, *Bloomberg Business*, *Politico*, *Christian Science Monitor*, NPR, and CNBC. In addition, this research has served as the basis of written testimony to the National Academies of Sciences, and led to a $250,000 Social Innovation Fund grant to determine the feasibility of pay-for-performance contracting for the summer jobs program.

3. Healthcare: Assessing Medical Interventions and Changes in Physician Compensation

My work on healthcare builds on two distinct sub-areas of expertise that originated early in my career: assessing the effectiveness of new medical interventions in real-world settings and examining changes in physician compensation.

In the first area, I use large medical claims databases to assess the costs and benefits of new medical interventions. For example, in an earlier paper published in ***Health Affairs****, my co-authors and I assess the value of antihypertensive drugs using data on health measurements across cohorts to estimate the number of prevented deaths from cardiovascular disease, finding a benefit-to-cost ratio of 6:1. More recently, with colleagues at Northeastern, I am studying opioid prescribing patterns. Our first paper, under revision at ***American Journal of Drug and Alcohol Abuse****, uses a database of all pharmacy and medical claims from commercial health insurance plans in Massachusetts. We find a sharp increase in prescribing for a new opioid deterrent (Suboxone) relative to existing opioids—including an increase in off-label prescribing. Our second paper, under review at *IIE Transactions on Healthcare Systems Engineering*, applies machine-learning algorithms to the claims data to identify patient characteristics associated with opioid dependency, with the goal of improving physician prescribing. We recently received a grant from the Department of Public Health to further study opioid prescribing patterns.

Currently, I am leading a randomized controlled trial of a community health center buyback program to reduce the supply of opioids to secondary users. This pilot program, funded by a grant from the Abdul Latif Jameel Poverty Action Lab (J-PAL) at MIT, seeks to determine whether informing and incentivizing patients at the point of dispensing medication increases the likelihood of returning unused opioids. The project is being monitored by the Massachusetts Board of Pharmacy as a potential statewide intervention.

My second area of research examines healthcare labor markets; specifically, physician compensation. My first paper, supported by a National Science Foundation grant and published in the ***Journal of Human Resources***[*], uses a longitudinal dataset on physicians in their first five years of practice to study the gender earnings gap. Using a fixed effects model, I find a family gap of roughly one-third in annual earnings between male and female physicians that stems from a sharp reduction in work hours after having children, suggesting that individual responses to family responsibilities is a key source of the disparity in pay. More recently, in a forthcoming paper in *Annals of Surgical Oncology*, my co-authors and I collect detailed data on pay, productivity, and family structure for a female-dominated surgical subspecialty, and still find a significant gender gap. In future work, we will use data from the survey to assess the importance of household bargaining as a determinant of the gender gap among physicians.

A second paper, under review at the ***Journal of Health Economics***[*], tests whether the gender gap among physicians is reduced as markets become more competitive and profits shrink. Using variation in HMO enrollments across states over time, I find that the gender gap among physicians narrowed in the 1980s and ’90s, as HMO market share increased, but then widened after 2000 when HMO enrollments declined. Changes in HMO reimbursement compressed the overall distribution of physician earnings, accounting for one-third of the improvement in the gender gap. The remaining two-thirds of the improvement was related to increases in the relative demand for different specialty fields and practice settings that favored female physicians.

Summary

Overall, my research demonstrates the value of applying the tools of economics to substantive policy questions that affect people’s lives across these three domains. By bringing novel “big” datasets to bear on existing issues, I have advanced our understanding of how the labor market shifts during recessions and which occupations are most affected. Working with city agencies to advance rigorous data collection and program evaluation methods, I have uncovered not only whether public programs achieve their goals, but also how these impacts are achieved and for whom the benefits are the greatest. Finally, by conducting innovative field experiments, I have endeavored to find new ways to address urgent policy issues such as the opioid addiction crisis. I am fortunate to be at a university where this type of applied research is not only valued but is also brought into the classroom as part of our experiential learning model and translated into practical solutions through my service to the local community via the Dukakis Center.