Personal, Background, and Future Goals Statement

I grew up in a rural Maryland town, and as a creative, academically focused, LGBTQ individual this meant that I was not particularly welcome; however, this also meant that the educational system had limited funding, prohibiting economics courses from being offered. When I graduated from high school, I knew next to nothing about economics, but I was eager to leave my hometown and find something I was passionate about. I started my undergraduate studies at the University of Maryland (UMD) as an art major and immediately recognized that the life of a professional artist was not for me. At the end of my freshman year as my summer internship plans fell apart, I happened to stumble upon the course listing for the introductory economics courses. During the first five minutes of class, the professor introduced his research—and I was hooked. Economics combines all the fascinating elements of psychology and math while also providing an avenue for improving the lives of those most disadvantaged. The flexibility of the field also means that my creativity can find a home in exploring alternative data sources, experimental methods, and data visualizations. I am thankful to have found economics, but this is just the beginning of my journey. While I'm constantly inspired by my female mentors, there are still strides to be made in the diversity and inclusion of the academic community. I consider it my responsibility now and throughout the rest of my career to inspire the future generations of LGTBQ and female economists. And an Economics Ph.D. followed by a career in research will empower me to interlace my creativity and academic aptitude while also engaging with a broad audience in the economics community and beyond.

Previous Research: As an undergraduate at UMD, I had the opportunity to work as a research assistant for Dr. Peter Murrell. His research was centered around the Act of Settlement of 1701, which gave parliament the sole right to remove judges, reducing the influence of monarchs. The Act did not apply to all judges during the 18th century, creating a natural experiment and allowing for measurement of the effect of judicial tenure on judicial performance. I collected biographical data on judges and tackled challenges including common and, as a result, hard to track names, misspellings, and indecipherable handwritten documents. I also developed imputations based on patterns in missing data which allowed for increased data utilization. I was exposed to the research process from start to finish, the challenge of data preprocessing, and the creativity that oftentimes must be employed in research. We found that judicial tenure had a strong negative effect on the quality of decisions[1]. Although the Act of Settlement is widely regarded as the foundation of judicial independence, previous research has shown that tenure in modern courts increases the quality of decisions, possibly indicating a fundamental shift in judicial systems since the 18th century[2]. Through this research I learned some of the best practices in empirical research that I continue to build upon, but importantly I became aware of the diverse subfields of economics and began to seek out my own interests.

As a Quantitative Analyst at Fannie Mae, I studied the role of unemployment in mortgage default models. The "double-trigger" theory states that negative equity combined with a negative income shock, such as job loss, are a strong impetus for default[3]. However, even at Fannie Mae,

[1] Murrell, Peter, The Independence of Judges Reduced Legal Development in England, 1600-1800 (October 4, 2018). Available at SSRN: https://ssrn.com/abstract=3260739

[2] Elliott Ash and W. Bentley MacLeod, "Intrinsic Motivation in Public Service: Theory and Evidence from State Supreme Courts," The Journal of Law and Economics 58, no. 4 (November 2015): 863-913.

[3] Foote, Christopher, Kristopher Gerardi, and Paul Willen, "Negative Equity and Foreclosure: Theory and Evidence," Journal of Urban Economics, 2008, 64 (2), 234-245

we often do not have borrower-level employment data. When reviewing our current models, I found aggregate unemployment metrics at varying levels of granularity. This raised the question: is aggregate unemployment a reasonable proxy for individual employment status? I first turned to a paper on unemployment and unobserved credit risk by Gyourko and Tracy[4]. They found that individual unemployment is an important risk factor, but aggregate unemployment metrics are a poor proxy leading to under-estimation of risk. I tested the inclusion of unemployment in several default models and found for complex models with additional macroeconomic indicators the paper's findings were confirmed. However, for models with limited or no macroeconomic variables, unemployment provided a performance boost, indicating that it might be an important nuisance factor. This research has informed the modeling process at Fannie Mae, particularly around the incorporation of economic risk factors. Through this research I developed skills in rigorous testing of various econometric models, complex coding, and best practices for efficiently handling the storage and computational concerns associated with big data. During my graduate studies I will utilize these skills to efficiently analyze my data and to explore interactive methods of displaying economic research throughout my career.

Intellectual Merit: In the spring of 2018, I graduated with two degrees: A Bachelor of Science in Economics and a Bachelor of Arts in Studio Art, both magna cum laude. While these two disciplines may seem diametrically opposed, fundamentally they complement each other through their mutual goal of unraveling and making sense of the complicated relationships of the world around us. In my current role as a Quantitative Analyst at Fannie Mae, I have used my design skills to take data and use it to not simply answer a question, but to tell a story. The lessons in time management and the process of creative problem solving I learned in art find applications in my often complex and challenging economics work, and I firmly believe that being an artist has made me a more resilient student and researcher.

I've accumulated leadership experience and technical skills in coding, visual design, and econometric modeling through my internships and research experiences that I will further build on during my career. At the FDIC and NASA Goddard, I led projects and worked with data analysts to design effective and interactive data displays, and to understand economic forces at work in these two very different professional settings. During my senior year at Maryland, I was recognized by the Dean of my college as a senior scholar for my strong academic performance throughout my undergraduate coursework. I was also elected to membership in Phi Beta Kappa based on my academic achievement in my interdisciplinary studies.

Broader Impacts: Through the Economics Association (EAM), I consistently engaged with the economics community on campus at Maryland. As the Director of Tutoring, I recruited and prepared 6 of my peers to serve as tutors and lead tutoring sessions for over 500 students in the introductory economics courses. As Vice President of EAM, I continued tutoring and planned career exploration events. I'm most proud of our Maryland Day event, during which I taught kids and adults alike about the power of risk aversion in a coin toss lottery. I want to continue to foster and build on expanded engagement beyond the academic economics community by sharing basic economic theory and relevant research findings in my career as a research economist.

My involvement on campus continued with the Promoting Achievement and Diversity in Economics (PADE) Program run by Dr. Jessica Goldberg. The program supports students from underrepresented groups in economics to encourage diversity in the field. Through discussions

[4] Gyourko, J., & Tracy, J. (2014). Reconciling theory and empirics on the role of unemployment in mortgage default. Journal of Urban Economics, 80, 87–96. doi: 10.1016/j.jue.2013.10.005

on behavioral economics papers with my graduate student mentor, I enhanced my ability to digest complex information. I was also able to give back to the program by assisting with peer tutoring for econometrics courses. Since graduating, I've begun providing career guidance and shadowing opportunities to current participants and other economics students who are interested in risk management and mortgage finance. PADE and the community that it created has helped me navigate my first job and explore graduate school options, particularly because Dr. Goldberg's leadership has underscored that women like myself can succeed in the academic world of economics. Throughout my career I want to foster communities like PADE and work towards being an inspiration for all students.

Since graduating, my engagement with my community has shifted: I have continued to take classes in order to build my math skills, which has also allowed me to continue to assist my peers through tutoring and mentoring, while also continuing to prepare me for graduate school. My work at Fannie Mae has influenced affordable housing programs, but my influence doesn't stop there. With several of Fannie Mae's employee resource groups, I planned and hosted a graduate school information event tailored to young professionals who are considering furthering their education. Since starting work in housing finance, I have gained a deeper understanding of the challenges around homelessness. So, I have begun volunteering with Friendship Place, a nonprofit providing housing and educational services to the homeless in Washington DC.

Future Goals: My undergraduate professors are why I began considering pursuing a Ph.D.; however, it was my professional experience at Fannie Mae that cemented my plans. Through my engagement with data analysts and economists across the financial services industry, I realized that I crave a deeper understanding of economics. And to become a leader in research, I will need the training and tools a Ph.D. in Economics provides.

In graduate school, I hope to develop skills in quantitative research methodology and economic theory. I not only want to do compelling research and publish the results, but also to expand the reach of economic research through creative and accessible content. Utilizing my background in coding and design, I endeavor to turn my future research into digestible, interactive, and fun experiences so people inside and out of the economics community can engage with academic research. I also hope to develop myself as a professor, mentor, and community leader through volunteering, conferences, and continuous dialogue with my peers. Teaching and mentoring undergraduate students will be an invaluable part of my graduate experience that will prepare me to be an effective professor. As a graduate student I hope to inspire undergraduate students to explore their interests and to also pursue an Economics Ph.D.

Post graduate school, my goal is to work as a professor teaching, mentoring, and performing research that can drive program and policy design. I also want to design a course that integrates data visualization and a hands-on coding experience into the typical econometric framework to enhance students' skills in storytelling with data. I found immense value in having a community in economics while in school, so I intend to build a program like PADE to help support students, while also increasing diversity in economics. And I hope that one day, students can look up to me as an openly bisexual woman in economics and know that they too are welcome in the economics community.

Conclusion: Steve Jobs once said "you can't connect the dots looking forward; you can only connect them looking backwards. So, you have to trust that the dots will somehow connect in your future." I am lucky that my dots connected and that I found my passion in economics. As I move forward in my career, I want to continuously help to connect the dots for others wherever I can.