

# Erica Ryan

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## Education

**University of Maryland, College Park, MD**

*Aug 20' - May 25'*

*Ph.D. Economics, M.A. Economics*

- GPA: 3.9
- Fellowships: NSF Graduate Research Fellowship – March 2020; UMD Flagship Fellowship – March 2020
- Interests: Econometrics and Machine Learning, Household Decision Making, Urban, Labor, Public Finance
- Papers in progress
  - The effect of place-based policy on migration patterns for workers
  - The effect of differential tuition on enrollment, graduation, and post-grad outcomes for groups of students
  - The effect of upzoning policies on neighborhood dynamics including migration and schools

## Post-Baccalaureate Education:

- Harvard Extension School: *Linear Algebra, Real Analysis* *Sep 19' - Dec 19'*
- Indiana University East: *Abstract Mathematics, Differential Equations* *Jan 19' - Aug 19'*

**University of Maryland, College Park, MD**

*Aug 14' - May 18'*

*B.S. Economics, Magna Cum Laude; B.A. Studio Art, Magna Cum Laude, Honors*

- Honors: Phi Beta Kappa, Design, Cultures, and Creativity Honors College, Creative and Performing Arts Scholarship

# Professional Experience

## **The Economics Department (UMD)** *College Park, MD*

*Jul 22' - Current*

*Research Assistant to Melissa Kearney*

- Updated analysis for a paper by refreshing the data, updating the Stata code, and re-estimating relevant elements.
- Wrote three policy paper drafts on birth rates by marital/educational status and on social programs in the US, Canada, and the UK by reviewing over 50 documents from various agencies, reviewing the prior literature, downloading and cleaning data, and producing descriptive charts in R.

## **Ipso Facto Solutions** *Remote*

*Sep 21' - Current*

*Economist*

- Estimated a loss allowance forecast adjustment model to be used by 150+ financial institutions by testing for relationships in the data using PCA and RFE, estimating methods (linear regression, ARDL, LASSO, and elastic net), implementing CV and final model selection procedures in R (packages: glmnet, ARDL, caret, torch).
- Estimated a mortgage forbearance model for a research paper that is currently under review for publication by managing a large dataset on AWS S3, configuring Rstudio on AWS EC2, cleaning data and running feature selection procedures (PCA, RFE, decision trees), testing methodologies (random forest, SVM), estimating final models, and producing LaTeX output for the final paper in R and by building a home price index and interest rate forecast engine in Python (TensorFlow).
- Validated two mortgage pricing/valuation models that will price ~\$180 Billion in assets by assessing the econometric methodology, assumptions, governance, and documentation.
- Addressed technical and non-technical questions from roughly 15 clients directly through meetings and written memos.

## **Fannie Mae** *Washington, DC*

*Jun 18' - Sep 20'*

*Quantitative Analyst, Model Risk Management*

- Reviewed over 25 models in SAS, R, and Python including: cashflows, NPV calculations, profile forecasts, and COVID forbearance take-up by evaluating the econometric methods and limitations, assessing usages, assumptions, and developing/collaborating on comprehensive validation reports.
- Won third place out of 20 teams in a company-sponsored hackathon by testing a variety of machine learning techniques (Bagged Trees, Random Forest, Boosted Trees, etc.) and alternative data sources before estimating our final neural network model in Python (packages: H2O, scikit-learn, TensorFlow, Keras, XGBoost) that improved upon current distressed asset valuation techniques.

- Presented to the Model Risk Oversight Committee on best practices regarding the inclusion of macroeconomic variables in models after conducting research into the literature on practices used throughout the industry and on historical correlations between macroeconomic variables.
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## ***Software/Languages***

- Proficient in: R (other packages: tidymodels, httr, jsonlite), Python (other Packages: pandas, numpy, matplotlib, requests, BeautifulSoup), Tableau, SQL, LaTeX , MS Suite, G Suite, Adobe Creative Suite, Causal Inference
  - Basic Knowledge of: STATA, SAS, HTML, CSS, MATLAB, AWS (EC2, S3, SageMaker), Hive/Hadoop
  - Languages: Basic Spanish and Russian
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## ***Certifications***

- Coursera:
  - Introduction to Machine Learning-Duke University
  - Neural Networks and Deep Learning-DeepLearning.ai
  - Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization-DeepLearning.ai
  - Structuring Machine Learning Projects-DeepLearning.ai
  - Convolutional Neural Networks-DeepLearning.ai
  - Sequence Models-DeepLearning.ai