

Alexandra Dobre

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EDUCATION

The London School of Economics and Political Science

London, UK

Master of Science, Statistics (Social Statistics)

September 2024 – June 2025 (Expected)

- Coursework: Distributed Computing & Big Data (cloud computing, data pipelines), Causal Inference (A/B Testing), Artificial Intelligence, Generalised Linear Modeling, Longitudinal Data Analysis, Social Network Analysis

The George Washington University

Washington, DC

Bachelor of Science, Economics (First-Class Honours)

August 2016 – May 2020

- Coursework: Econometrics, Linear Algebra, Multivariate Calculus, Macro/microeconomics, Economic Public Policy

TECHNICAL AND LANGUAGE SKILLS

Coding: Python, R, Stata, SQL, Bash, LaTeX Google Cloud Platform, Hadoop

Tools: Google Cloud Platform, Hadoop, Apache Spark, Tableau, Postgres, Databricks, AWS Snowflake

Workflow and collaboration: Git, Github, Google Colab, Jupyter

Languages: English (fluent), Romanian (working proficiency)

PROJECTS

Machine Learning for Fake News Detection

Tools: Python (NLTK, pandas, numpy), Apache Spark (PySpark, MLlib), Google Cloud Platform (GCS)

April 2025

- Developed a scalable fake news detection pipeline in Python using Apache Spark MLlib with over 98% accuracy, using Natural Language Processing techniques with feature engineering from article metadata to predict article accuracy.
- Analyzed Logistic Regression and Random Forest model interpretability by extracting coefficients and feature importances, revealing key predictors of fake news, such as sensationalist stylistic elements and temporal patterns.

Personalized Stock Portfolio Optimization

Tools: Python (pandas, NumPy, CVXPY), GLPK, Google Colab

January 2025

- Engineered an AI-driven Constraint Satisfaction Problem (CSP) framework in Python using CVXPY and GLPK to personalize stock portfolio allocations, optimizing for user-defined risk and returns.
- Designed an interactive Python tool integrating financial stock data and user input to generate optimal, diversified portfolios using mathematical optimization, data manipulation, and financial modeling.

Social Network Analysis: Eurovision Voting Networks

Tools: R (igraph, knitr, dplyr), RStudio

May 2025

- Conducted a comprehensive social network analysis in R using 'igraph' to visualize and analyze historical Eurovision voting patterns, uncovering nuanced geospatial relationships and voting blocs based on public and jury data (1957-2023).
- Applied community detection algorithms (Spinglass) and quantitative measures (reciprocity, assortativity) to identify latent alliances within the voting network, providing insights into cultural and regional influences on international competitions.

EXPERIENCE

Research Analyst

July 2022 – August 2024

Consumer Financial Protection Bureau, Office of Research

Washington, DC

- Led analysis on mortgage market research and 10+ fair lending examinations, developing advanced statistical models and using causal inference techniques in R and Stata to assess discrimination risk in the mortgage market.
- Applied causal inference techniques, including nearest-neighbor matching, to quantify financial damages from discriminatory lending and identify interest rate disparities.
- Optimized large-scale data processing workflows using SQL and Python, cleaning and integrating millions of unstructured mortgage loan records with regulatory home mortgage data.
- Translated complex statistical findings into clear, actionable financial market regulatory policy insights for attorneys, drafting detailed memos and presenting analyses in written, tabular, and graphical formats.
- Authored government reports and peer-reviewed research on market segmentation and consumer lending trends, and presenting results to diverse audiences including industry leaders, economists, and the general public.
- Led cross-functional collaboration with IT engineers and analysts on a 12-week cloud-based big data system transition, coordinating testing, analyzing performance on 100+ million records, and presenting recommendations to leadership.

Research Assistant

May 2020 – July 2022

Consumer Financial Protection Bureau, Office of Research

Washington, DC

- Performed data cleaning and analysis on multiple waves of the Bureau's Making Ends Meet survey, linking survey responses to millions of credit bureau records to generate insights on credit card and mortgage markets.
- Supported PhD economists in drafting internal memos on underwriting and pricing disparities for prohibited basis groups, preparing written and graphical reports for attorneys.
- Administered the Office of Research's Linux computing environment, providing training, troubleshooting, and performance monitoring for 100+ users across complex distributed systems.
- Managed the construction of the Bureau's HMDA Reporter Panel dataset, executing code to integrate multiple regulatory mortgage data sources covering 5,000+ lenders, and automating the reconciliation of conflicting reporter identifiers.
- Co-authored a Bureau report on credit characteristics of Asian Americans and Pacific Islanders in the mortgage market, coordinated the review and timely release of the report with internal stakeholders.

WORKING PAPERS AND REPORTS

Dobre, Alexandra and B. Heath Witzel. "Mortgage Lender Misclassification of Applicant Race and Ethnicity: Evidence from HMDA Data." *Consumer Financial Protection Bureau Office of Research Working Paper Series*. No. 23-04. November 3, 2023.

Dobre, Alexandra, Marie Rush, and Eric Wilson. "Financial conditions for renters before and during the COVID-19 pandemic." *Consumer Financial Protection Bureau Office of Research Reports Series*. No. 21-11. September 17, 2021.

Jo, Young and Alexandra Dobre. "Asian American and Pacific Islanders in the mortgage market." *Consumer Financial Protection Bureau Office of Research Reports Series*. No. 21-8. July 1, 2021.