NOAH M. SWAN

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EDUCATION & SKILLS

University of Chicago, Chicago, IL
Fall 2025-Present
Master of Science in Statistics

Villanova University, Villanova, PA
May 2023
Bachelor of Science in Mathematics, Minors in Economics, Statistics and French, Honors PPE Concentration
Graduated Summa Cum Laude
Villanova University Honors Program, Honors Thesis during Senior Year
Phi Beta Kappa Honor Society, Pi Mu Epsilon Math Honor Society, Pi Delta Phi French Honor Society
GPA: 3.97, Dean's List (*all semesters)*

University of Cambridge, Institute of Economic and Political Studies (INSTEP) Program
Fall 2021

Programming Languages: Python, R, C++, SQL
Software and Tools: pandas, polars, XGBoost, PyTorch, Scikit-learn, NumPy, SciPy, Matplotlib, tidyverse, data.table, Arrow, ggplot2, shiny, Git, ArcPy/ArcMap

SELECTED PROJECTS

MLE for Truncated Normal Distribution with Gradient Descent (C++)
- Implemented maximum likelihood estimation for a truncated normal distribution in C++20 using gradient descent with JSON-configurable inputs and Boost.Math integration.

Marginal Effect of XGBoost Hyperparameter Tuning (XGBoost, hyperopt, polars)
- Ran controlled tuning experiments for XGBoost across search-space regimes, and built a modular, reusable codebase for alternative prediction tasks.

Simulating Tennis Matches for Outcome Prediction (PyTorch, XGBoost, Scikit-learn, SciPy, pandas, Matplotlib)
- Built a post-match win-probability model and simulated match paths from player-level statistic distributions to forecast outcomes; parameterized player-level distributions using maximum likelihood estimation with truncated normal distribution.

BUSINESS EXPERIENCE

Associate Analyst – Antitrust Team, NERA Economic Consulting, Washington DC
July 2024-May 2025
Research Associate
July 2023-July 2024
- Digested and analyzed datasets to conduct research evaluating the competitive effects of mergers, using R, Python, and SQL.
- Led efforts to comply with governmental data requests across multiple mergers, coordinating data review with other researchers and presenting analyses to senior team members.
- Leveraged arrow and data.table packages in R to conduct analyses on datasets up to 1.5 TB balancing computational time and memory efficiency.
- Developed S3 method for internal R package to streamline charting with ggplot2; improved reproducibility and reduced build time on deliverables.
- Drafted service area maps, programmatically across different geographies, using ArcMap and Python (ArcPy).

Soccer Analytics Intern, Orlando City SC, Remote
Fall 2022
- Prepared and cleaned datasets to complete data-driven projects using R. Designed and applied analytical methods to extract insight from existing datasets.

Business Analyst Intern, KlearNow.AI, Remote   Summer 2022
- Conducted research and data analysis to write reports for internal and external stakeholders. Assisted in the restructuring of company's database architecture. Extensive use of ThoughtSpot business intelligence tool.
- Researched and presented machine learning model to evaluate customer behavior using R.

Data Analyst Participant, DataFest Philadelphia 2022, Villanova, PA   Spring 2022
- Worked with team to analyze complex video-game dataset to provide insights on player behavior through data visualizations and k-means clustering analysis using R. Presented to judges after weekend of work, earning best visualizations award.

Lead Data Analyst, Villanova Soccer, Villanova PA   2021-2022
- Conducted statistical analysis and implemented data visualizations to inform Villanova Soccer training and strategy using Shiny apps.

NBA Future Analytics Star, National Basketball Association, Remote   Fall 2021
- Received extensive training opportunities in basketball, business and marketing analytics led by leaders across the NBA, WNBA, and NBA G League. Learned how the NBA and teams leverage analytics and statistical methods.
- Collaborated with team to create and present research into coach's challenges to determine the coaches improving win probability through their challenges.

Lead Data Analyst, Oklahoma City Energy FC, Remote   2021-2022
- Developed pipeline to receive data from Wyscout API and presented data in multiple Shiny apps analyzing team performance and player recruitment.

Community Partnerships Intern, Soles4Souls, Nashville, TN   2018, 2020
- Created a startup kit for college shoe drives and worked on outreach to national donors.
- Analyzed and prepared raw data to gain insights on registration outcomes for different categorical variables.

LEADERSHIP & ACTIVITIES

Economics Ambassador, The American Bar Association, Washington D.C.   Fall 2024
- Selected to serve as a liaison to the ABA's working group for Antitrust law, contributing to the publications and events held throughout the year.

Analytics Chair, Villanova Sports Analytics Society, Villanova, PA   2020-2023
- Planned weekly meetings, organized club initiatives around soccer analytics, developed presentations for personal projects, facilitated group sports analytics project, and produce podcast. Taught modeling and analytics process to members.
- Participated in 2021 Big Data Bowl and 2021 Syracuse Football Analytics Blitz, and 2022 Big Data Bowl Competitions. Won 2023 Syracuse Basketball Analytics Competition.
- Lead group projects and mentorship program to teach students how to code in R.

President, Villanova University Business in Entertainment Society, Villanova, PA   2019-2022
- **President**: Lead society meetings, delegated tasks, plan events, contacted alumni, wrote newsletter, and moderated events.
- **Planning Committee** for Business in Sports Conference 2020.   Fall 2020

ADDITIONAL INTERESTS

Reading, Sports Journalism, Sports Analytics, Intramural Sports, Art History, French, Podcast Production, Travel