

# CASSANDRA M. SULLIVAN

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Data scientist with experience in generative AI and large-scale ML systems. I've built A/B testing frameworks and automated evaluation pipelines that made it easier to track model performance and translate results into decisions in research, product or policy.

## WORK EXPERIENCE

### Mexico Central Bank (Banco de Mexico)

May 2022 - Sep 2024

*Machine Learning & Data Science Economist*

*Monterrey, Mexico*

- Developed forecasting models (XGBoost, ARIMA, Prophet) that improved regional economic predictions by 15%.
- Applied causal inference (DiD, matching) and A/B testing to evaluate the impact of policy interventions.
- Conducted incrementality analysis to isolate true effects of programs on regional growth.
- Automated SQL pipelines while integrating generative AI tools to streamline data evaluation processes, aligning with large-scale model automation principles.
- My analyses were featured in national economic reports and policy briefings that informed high-level decisions and reached a nationwide audience.

### Universidad Autónoma de Nuevo León (University-Industry Relations Office)

Sep 2021 - May 2022

*Consultant*

*Monterrey, Mexico*

- Built Python-based KPI dashboards that improved visibility across departments and helped reduce operating costs by a 7% annually.
- Leveraged A/B testing and uplift modeling in data analysis to isolate the incremental effects of pricing strategies on customer conversion.

### Secretary of Finance and General Treasury of Nuevo León (State Gov. Office)

Jun 2020 - Aug 2021

*Financial Planning Analyst*

*Mexico*

- Improved budget accuracy by 23% through R-based forecasting models and real-time financial reporting tools.
- Reduced debt servicing costs by 1% by automating SQL pipelines and applying causal inference to evaluate fiscal reforms.

## EDUCATION

### University of Chicago, Physical Sciences Division

Dec 2025

*Master in Applied Data Science*

*Chicago, IL*

- **GPA:** Magna Cum Laude
- **Achievements:** Data Science Institute Merit Scholarship.

### Instituto Tecnológico y de Estudios Superiores de Monterrey

Dec 2019

*Bachelor in Economics*

*Monterrey, Mexico*

- **GPA:** Magna Cum Laude 94/100
- **Achievements:** Academic Excellence Award (Top 5%), President of the 36<sup>th</sup> Edition of the Economics Symposium.

## MAJOR PERSONAL PROJECTS

### Healthcare LLM (Inference Analytics)

Mar 2025 - Present

- Collaborating on a healthcare-specialized LLM fine-tuned with Reinforcement Learning from EHRs and clinical notes. Focused on prompt engineering, dataset preparation, and reward modeling.

### AirfareCast: Airline Fare Forecasting

Mar 2025

- Built machine learning models (XGBoost, Random Forest) to predict flight prices. Deployed an interactive Streamlit dashboard to visualize fare trends and optimize booking decisions.

### Conditional VAE for Age-Controlled Face Generation

Jan 2025

- Designed a Conditional Variational Autoencoder (CVAE) to simulate age-based facial transformations. Implemented data preprocessing and achieved latent space disentanglement.

### Customer Behavior Analysis Pipeline

Nov 2024

- Built a SQL-Python pipeline to analyze 6.75M+ e-commerce records using A/B testing and time series.

### John List Voltage Research Program

Sep 2024 - Present

- Used Bayesian modeling and causal inference to quantify real-world treatment effects in behavioral experiments, evaluated incremental outcomes from randomized interventions.

## TECHNICAL SKILLS

- **Programming:** Python (Pandas, NumPy, Matplotlib, Scikit-Learn), SQL, R, STATA, Git.
- **Machine Learning & AI:** Generative AI (LLMs, VAEs), Classification, Regression, XGBoost, Random Forest, A/B Testing, RNN-LSTM, NLP, Neural Networks, Prompt Engineering.
- **Statistics:** Time Series Forecasting, Bayesian Inference, GLMs, MLE, MCMC, Panel Data Econometrics, Causal Inference, Sentiment Analysis.