Luke Harold

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Summary

Economic Researcher for the Alberta Centre for Labour Market Research (ACLMR). Master's Degree in Economics with advanced knowledge of econometrics, machine learning, and forecasting, with proficiency in R, SQL, and Python for statistical analysis and Power BI for visualization.

Education

Master of Arts, Economics, University of Alberta, Edmonton, AB — June 2025
GPA: 3.5
Relevant coursework:
- Machine Learning and Forecasting, Data Analysis, Econometrics

Bachelor of Arts, Economics, MacEwan University, Edmonton, AB — April 2023
Major GPA: 3.7

Experience

Economic Researcher, Alberta Centre for Labour Market Research (ACLMR) — July 2025 – Present
- Developed reproducible data pipelines in Python, R, and SQL to clean, merge, and structure large geospatial, census, and project-level datasets for statistical modelling.
- Applied machine learning algorithms (e.g., Causal Forests) to build predictive models and estimate heterogeneous treatment effects across more than 50 outcomes.
- Collaborated with Statistics Canada and Natural Resources Canada to obtain and interpret specialized datasets.
- Presented analytical findings to technical and non-technical audiences.

Volunteer Data Analyst, Better Edmonton — July 2025 – October 2025
- Conducted geospatial analysis and mapping using R and Excel to support targeted mayoral campaigning

Construction Installer, Peregrine Landscape Construction — May 2022 - August 2024
- Installed residential and commercial landscaping, including patios, planters, decks, and water features
- Flexibly solved problems on the job site to meet deadlines and adapt to weather and unplanned circumstances

Projects

Labour Market Impacts of Major Projects in Canada
- Applied causal machine learning (Causal Forests) using R and Python, with spatial and economic data, to quantify economic impacts of major project investments in Canada
- Estimated a 17% increase in local construction sector growth during the construction phase
- Collaborated with Statistics Canada and Natural Resources Canada to obtain and integrate specialized datasets
- Awarded a paid position to continue research under the ACLMR

Adaptive Forecasting with Neural Networks
- Developed a rolling-window Neural Network Autoregression (NNAR) model in R to forecast unemployment under seasonal and structural shifts and compared to ARIMA models
- Found that the NNAR had the best accuracy overall and during the COVID period

Cost Prediction with Random Forests
- Trained Elastic-Net and Random Forest models in R to predict used car prices on held-out test data
- Achieved the highest accuracy in the course competition

Awards and Grants

Proposal Grant Recipient, Open Data Centre for Alberta Urban Real Estate — 2025
- Awarded $500 for a competitive research proposal; selected as finalist for overall paper competition prize

U SPORTS Academic All-Canadian — 2020 and 2021
- Achieved a GPA of 3.3 or higher while competing for a U SPORTS varsity team (Basketball)

Skills

Programming: Python, R, SQL
Data Engineering: Data Cleaning & Integration, Large Multi-Source Datasets, Version Control (Git)
Analytics & Modeling: Predictive Modeling, Forecasting (ARIMA, NNAR), Machine Learning, Causal Inference, Econometrics
Tools: Power BI, Jupyter, VS Code, Positron, Excel, GitHub, Overleaf
Other: Technical Writing, Presentation Development, and Delivery