# Caitlin **Brown**

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## OVERVIEW

Energy policy analyst and data scientist with a background in applied mathematics, specializing in turning complex datasets into actionable insights for clean energy policy and regulatory decision-making. Experienced in statistical modeling, economic impact analysis, and technical writing, with a strong focus on collaboration and equitable, mission-driven outcomes. I'm especially motivated by roles that sit at the intersection of data, policy, and climate—where the right analysis can make a meaningful difference.

## PROFESSIONAL EXPERIENCE

**Lawrence Berkeley National Laboratory**                                            *2021 to Present*
ENERGY/ENVIRONMENTAL POLICY RESEARCHER I
SENIOR RESEARCH ASSOCIATE
AFFILIATE INTERN

- Designed and maintained econometric analysis tools (Monte Carlo life-cycle cost models, agent-based transportation models), to deliver rigorous insights supporting federal policy decisions.
- Conduct cluster analysis on large-scale geospatial data to reveal EV charging needs, informing targeted policy and resource allocation.
- Analyzed federal energy policies to support U.S. Department of Energy appliance/equipment efficiency standards, contributing to carbon and water use reductions.
- Drafted and reviewed official reports and Federal Register Notices, ensuring accuracy and clarity; presented at rulemaking seminars for industry stakeholders.
- As one of a select few, ensure the accuracy and professional presentation of Technical Support Documents and Federal Register Notices through meticulous final formatting in Microsoft Word.
- Streamlined and modernized a legacy software package, cutting lines of code by 60%, methods by 50%, and runtime by 25%.

**Topological Molecular Biology Lab, UC Davis** - UNDERGRADUATE RESEARCHER          *2020 to 2021*

- Coded a neural network from scratch to predict the binding affinity of observed and theoretical mutations to the SARS-CoV-2 Spike protein, enabling researchers to anticipate and mitigate the impact of potential high-risk variants before they emerge.

**Aggie Reuse Store, UC Davis** - DATA ANALYST                                       *2021*

- Conducted analytics on financial data of a university thrift shop to gain valuable insights on sales trends.

**Sonoma County Regional Parks** - PARK RANGER ASSISTANT                            *2014 to 2018*

- Collaborated with park rangers to enhance visitor experiences, support park maintenance and landscaping efforts, and ensure safety and compliance with park regulations.

## EDUCATION

UNIVERSITY OF CALIFORNIA, DAVIS

- Bachelor of Science in Applied Mathematics                                        *2021*
- Minor in Computer Science

SANTA ROSA JUNIOR COLLEGE

- Associate of Science in Natural Sciences, high honors                                    *2018*
- Associates of Arts in Social & Behavioral Sciences and Humanities, both with high honors

## SKILLS
PROGRAMMING LANGUAGES: Python (OOP), R, Bash, SQL (Postgres), MATLAB
LIBRARIES/FRAMEWORKS: tidyverse, scikit-learn, pandas, Polars, NumPy, statsmodels, TensorFlow
STATISTICAL METHODS: Regression (OLS & variants, MLE), classification, clustering, PCA, neural networks
DATA VISUALIZATION: ggplot2, Seaborn, Tableau, Excel (advanced formulas, pivot tables, VBA automation)
VERSION CONTROL: Git: GitHub, BitBucket (issues, pull requests, version tagging)
TYPESETTING TOOLS: LaTeX, R Markdown, Microsoft Word (template creation, VBA macros)

## PEER-REVIEWED RESEARCH PUBLICATIONS
1. "What Makes You Hold on to That Old Car? Joint Insights From Machine Learning and Multinomial Logit on Vehicle-Level Transaction Decisions," L. Jin, A. Lazar, **C. Brown**, Q. Chen, A. Sim, K. Wu, S. Ravulaparthy, V. Garikapati, and C. A. Spurlock. *Frontiers in Future Transportation* (2022). doi: 10.3389/ffutr.2022.894654.
2. "Performance of the Gold Standard and Machine Learning in Predicting Vehicle Transactions," A. Lazar, L. Jin, **C. Brown**, C. A. Spurlock, A. Sim, and K. Wu. *IEEE International Conference on Big Data* (2021). doi: 10.1109/BigData52589.2021.9671286.

## TEACHING AND VOLUNTEERING
**San Francisco Public Library** - READING TUTOR                                    *2025 to Present*
**Berkeley Lab**                                                                     *2024 to Present*
- DATA SCIENCE SEMINARS: Co-led a series on inference, regression, Bayesian methods, and machine learning, fostering collaboration and skill-building.
- K-12 STEM EDUCATION & OUTREACH: Taught programming to high school students.
**Santa Rosa Junior College** - TEACHING ASSISTANT & TUTOR                           *2017 to 2018*

## PROFESSIONAL DEVELOPMENT
TOASTMASTERS INTERNATIONAL - Member, Golden Gate club                                 *2025 to Present*
LINKEDIN LEARNING, COURSERA - 30+ courses on: leadership, coding, game theory, GIS, accounting, etc.