# Caitlin **Brown**

*Website:* caitlinbrown.xyz | *Email:* me@caitlinbrown.xyz | (707) 327-6510 | San Francisco, CA

## 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**

ENERGY/ENVIRONMENTAL POLICY RESEARCHER I *2021 to Present*
SENIOR RESEARCH ASSOCIATE
AFFILIATE INTERN

- Designed and maintained tools for techno-economic analysis (Monte Carlo life-cycle cost, agent-based transportation modeling), providing rigorous insights for decision-making.
- Conduct cluster analysis on large-scale geospatial data to reveal EV charging needs, informing targeted policy and resource allocation.
- Developed a dynamic econometric model to improve household vehicle ownership forecasts, informing sustainable transportation policy.
- Analyzed federal energy policies to support U.S. Department of Energy appliance/equipment 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%.
- Maintain a national database of utility rates for use in policy and technical analysis.

**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 ANALYTICS INTERN *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 assist with ensuring 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*

- K-12 STEM EDUCATION & OUTREACH: Teach programming to high school students.
- DATA SCIENCE SEMINARS: Co-led a data science seminar series on inference, regression, Bayesian methods, and machine learning, fostering collaboration and skill-building.

**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, accounting, etc.