

# Bernard J. Koch

## COMPUTATIONAL SOCIAL SCIENTIST & SOCIOLOGIST

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I am a computational social scientist (sociologist) focused on organizational issues in science. In my research I work with Bayesian hierarchical modeling, deep learning, causal inference, and qualitative interviews. Before graduate school, I worked as a bioinformatics fellow at NIH and as a science education policy researcher and front-end developer at AAAS (publisher of *Science*).

### EXPERIENCE

**UCLA**, Los Angeles, CA — *PhD Student*

**2016 -**

- Using computational methods and interviews with scientists, engineers, & regulators to understand epistemic and ethical tradeoffs of current evaluation practices in ML
- Contrasting long-term academic and public responses to published scientific racism across scientific and online networks
- Wrote review on deep learning for observational causal inference with extensive [tutorials](#) in Tensorflow 2

**AAAS**, Washington, DC — *Research Assistant*

**2014 - 2016**

- Policy research on science curriculum standards/design
- Front-end development of online science education tools

**NIH**, Bethesda, MD — *Bioinformatics Fellow*

**2010-2011, 2013-2014**

- Worked on genome assembly/annotation projects, phylogenomics of animal kingdom

### EDUCATION

**UCLA** — *PhD in Sociology*

**2018 -**

**UCLA** — *MA in Sociology*

**2016 - 2018**

**Swarthmore College** — *BA in Biology*

**2009 - 2013**

### SELECTED PUBLICATIONS

- **Koch BJ**, Denton E, Hanna A, Foster JG. *Reduced, Reused and Recycled: The Life of a ML Dataset. [NeurIPS \[oral, Best Paper Award\]](#)*, 2021.
- Jiang S, **Koch BJ**, Sun Y. *HINTS: Time Series Prediction via Dynamic Heterogeneous Information Network Embedding. [WWW \[oral\]](#)*, 2021.
- **Koch BJ**, Sainburg T, Geraldo P, Jiang S, Sun Y, Foster JG. *Deep Learning of Potential Outcomes. [Preprint](#)*.
- **Koch BJ**, Silvestro D, Foster JG. *The Evolutionary Dynamics of Cultural Change (as Told Through the Birth and Brutal, Blackened Death of Metal Music). [R&R at American Journal of Sociology](#)*.
- Brand JE, Xu J, **Koch BJ**, Geraldo PE. *Uncovering Sociological Effect Heterogeneity Using Tree-Based Machine Learning. [Sociological Methodology](#)*, 2021.
- Ryan JF, Pang K, Schnitzler CE, Nguyen A-D, Moreland RT, Simmons DK, **Koch BJ**, et al., Baxevanis AD. *The Genome of the Ctenophore Mnemiopsis leidyi. [Science](#)*, 2013.

### SKILLS

#### • Machine learning:

Classification, Regression, Clustering

• **Deep Learning:** GNN, Transformers

• **GLMs:** OLS, GLM, Mixed Effects

• **Qualitative:** Interviews, Focus Groups

### PROGRAMMING

Fluent: Python, R, Bash

Intermediate: Tensorflow, SQL

### GRANTS & FELLOWSHIPS

**I have won \$230,000+ in competitive grants from:**

- NSF (GRFP, DDRIG)
- UCLA
- Russell Sage Foundation
- J. Templeton Foundation