

**The Role:** Post-Doctoral Research Fellow (Data Science)**About the Unit**

The University of Chicago Crime Lab is a faculty-driven research center that tries to improve social conditions in American cities by partnering closely with local, state and federal government agencies to carry out the highest-quality scientific studies. The Lab is led by Jens Ludwig and Harold Pollack of the University of Chicago, Jonathan Guryan of Northwestern University and Pat Sharkey of New York University, and carries out research projects in collaboration with a national network of leading experts in fields such as economics, public policy, sociology, behavioral science, and computer science. Examples of some of our past projects include: several randomized controlled trials (RCTs) of behavioral science interventions to reduce crime and dropout in Chicago (Heller, Shah, Guryan, Ludwig, Mullainathan and Pollack, 2017, *Quarterly Journal of Economics*), the results of which were cited by the *Washington Post* as one inspiration for President Obama's My Brother's Keeper initiative; a RCT of a large-scale summer jobs programs for disadvantaged youth in Chicago (Heller, 2015, *Science*), which has helped inform Mayor Rahm Emanuel's anti-violence initiatives; and a study that highlights the potential for improving the criminal justice system using machine learning methods, but also the new social science-type challenges that arise in exporting those tools to policy applications (Kleinberg, Lakkaraju, Leskovec, Ludwig and Mullainathan, 2018, *Quarterly Journal of Economics*), which has led to a partnership with New York City government to build a new citywide system to help judges make bail decisions.

We have a full-time staff of nearly 70 in offices located in downtown Chicago (across from city hall) and New York City (also across from city hall), which includes PhD-level research directors, data scientists, and program managers. We are funded by research grants from foundations such as the Arnold, Joyce, MacArthur, McCormick, and Pritzker foundations, federal government agencies such as the National Institutes of Health, US Department of Education and US Department of Justice, and private individuals, as well as ongoing core operating support from the University of Chicago. Previous Crime Lab projects have been featured in national news outlets such as the *New York Times*, *Wall Street Journal*, PBS News Hour, and National Public Radio.

The Crime Lab is part of the University of Chicago's Urban Labs, a set of highly synergistic labs focused on undertaking inquiry and having impact on five areas of urban life: crime, education, health, poverty, and energy & environment (<https://urbanlabs.uchicago.edu/>).

**About our Machine Learning Portfolio**

The success of machine learning in the commercial sector raises the promising idea that the combination of machine learning and large administrative datasets can lead to similar benefits in the public sector. At the same time, machine learning is fundamentally different than the causal inference questions that have been the main stay of empirical policy research, resulting in hesitation and uncertainty about how and when to use these new techniques. This uncertainty is compounded by concerns that the naïve use of historical data will result in tools that will perpetuate biases and aggravate problems rather than solve them.

Crime Lab’s goal is to identify problems where machine learning can provide a significant social benefit<sup>1</sup>, and to solve the resulting conceptual challenges associated with the creation, evaluation, and deployment of predictive models. We believe that proper and judicious application of machine learning can yield the benefits of these techniques while mitigating harms, but that doing so will require careful thinking and new research at the intersection of computer science and the social sciences. We are particularly interested in novel approaches to prediction and evaluation in the presence of biased and censored data<sup>2</sup>, and in approaches to optimally combining the prediction from a machine learning algorithm with the expertise and private information of a human decision-maker.

Crime Lab offers a unique opportunity to work on these conceptual challenges in the context of problems faced by policy makers every day. We work with our partners to develop a project all the way from the basic research question to implementation and ultimate evaluation. Through this work, we hope to contribute to the development of best practices on how to effectively and responsibly implement predictive tools in public policy.

### **Unit Job Summary**

The University of Chicago Crime Lab is seeking a full-time one- or two-year data science postdoctoral research fellow to contribute scientific and intellectual leadership to our portfolio of projects applying machine learning to public policy, particularly in the area of reducing violence and incarceration, and improving policing and police-community relations. Postdocs will report to Crime Lab Faculty Director Jens Ludwig and are expected to productively carry out self-directed research and contribute to the larger intellectual community of the Crime Lab by, for example, interacting with Crime Lab research staff and senior faculty members at the University of Chicago and elsewhere. There may also be possibilities for interested postdoctoral research fellows to take on leadership roles for selected research projects with government agency partners. Though the position is relatively new, recent fellows have moved on to tenure-track faculty positions at top-tier research universities such as the University of Pennsylvania and the University of Michigan.

This position can be based in either Chicago, IL or New York City. The starting date for the position is flexible and could be as soon as Fall 2018 or as late as Fall 2019.

### **Education**

Applicants must be expected to receive their Ph.D. by Fall 2019 in computer science, statistics, economics, or other relevant field with substantial empirical research experience.

### **Experience**

The ideal candidate will have a strong background in machine learning, a track record of publishing machine learning research, and a good understanding of causal inference. Prior research in public policy is a bonus but not required.

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<sup>1</sup> We call these problems “prediction policy problems” (Kleinberg et al, 2015, *American Economic Review*)

<sup>2</sup> A challenge sometimes known as the “selective labels problem” (Kleinberg, Lakkaraju, Leskovec, Ludwig and Mullainathan, 2018, *Quarterly Journal of Economics*)

## Competencies

- Advanced knowledge of machine learning techniques.
- Experience developing reproducible and maintainable code strongly preferred.
- Strong interpersonal skills required.
- Excellent written and verbal communication skills, with the ability to present data in a simple and straightforward way for non-technical audiences required.
- Supervisory skills required.
- Strong attention to detail with superb analytical and organization skills required.
- Advanced knowledge in relevant scientific field required.
- Advanced knowledge of research techniques or methods required.
- Ability to work independently and as part of a team in a fast-paced environment required.
- Sound critical thinking skills required.
- Knowledge of content areas – Crime and Education – preferred.

## Required Job Seeker Documents

- CV
- Cover Letter
- 1-2 research papers (working papers and drafts are acceptable)
- Reference Contact Information

**To Apply:** Please submit CV, cover letter, 1-2 research papers (working papers and drafts are acceptable), and reference contact information to UChicago's Workday System, search for requisition **JR02856**. Please find instructions on how to access the application below.

- **If you have an active UChicago Workday employee account, you will need to complete the Internal Candidate application process. Internal Candidate instructions:** [Log into Workday](#) and select the career worklet.
- **External Candidates** should apply at <https://uchicago.wd5.myworkdayjobs.com/en-US/External>
- **If you have questions about the Workday application system,** please contact: [https://uchicago.service-now.com/sso?id=ssc\\_sc\\_cat\\_item&sys\\_id=cf359d671316660030c0bc0af3244b02d](https://uchicago.service-now.com/sso?id=ssc_sc_cat_item&sys_id=cf359d671316660030c0bc0af3244b02d).

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