

## Zach Flynn's Curriculum Vitae

### **Basic Info**

Website – <http://www.zflynn.com>

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LinkedIn – <https://www.linkedin.com/in/zlflynn>

Github – <https://github.com/flynnzac>

Skills – Economics (Industrial Organization, Econometrics), Machine Learning, Data Science

Current and Prior Employers – Afiniti (an AI company), Amazon (an internet company)

### **Education**

#### PhD in Economics

- The University of Wisconsin - Madison (2012-2017)
- Fields: Industrial Organization and Econometrics.
- Dissertation title: Measuring productivity and market power.
- Committee: Ken Hendricks, Alan Sorensen, Amit Gandhi, Jack Porter

#### BS in Economics and Mathematics

- Tulane University (2008-2012)

### **Experience (high-level, details below)**

I have built models for pricing products (specifically, Amazon Prime), models to understand the effects of carbon taxation on power plants, novel methods to learn how policy affects firm productivity and how market power has changed over time, econometric methods that make common empirical problems easier to solve, and built flexible statistical models ("machine learning") to decide how best to pair callers and agents in call centers.

### **Employment**

#### Afiniti

- Research Scientist, Research and Development, Washington, DC.
- July 1, 2018 to present.
- This role is a hybrid between applying and developing models and actually building the tools to operationalize those models. A hybrid research scientist/engineer role.
- The company builds models to decide how best to pair callers and call center agents. It bills based on how much it increases, say, the sales rate or reduces the cancellation rate.
- I developed
  - an internal R package and strategy to predict the performance of models in production before they are deployed.
  - models that determined which call center agents and callers should be paired to maximize our client's objectives.
  - a main component of the application we use to decide how to route calls between callers and agents (in C++).
  - metrics to monitor how well different strategies for pairing callers and agents do in production once they are deployed.
  - research on new, next-generation matching algorithms.

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#### Amazon

- Economist, Amazon Prime, Seattle, WA.
- May 1, 2017 to June 30, 2018

- Designed, developed, and used a discrete choice demand model to help make pricing and product design decisions that was used in a wide variety of applications at the company. For example, it was used
  - to inform major Prime pricing decisions;
  - to separately value the various benefits of being a Prime member (free shipping, streaming video and music, etc)
  - to estimate the effect of modifying Prime benefits on Prime membership;
  - to estimate the effect of *potential* video content investment decisions on Prime membership.
- Developed a censored quantile regression approach to model what factors make customers buy a product or sign up for Prime sooner.
- Worked on many smaller projects, including analysis of which cities had the greatest opportunity size for advertising Prime during NFL games and which lower-income markets had the greatest opportunity size for advertising a lower-priced Prime for lower-income customers.
- Promoted to Economist II in April 2018.

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### University of Wisconsin - Madison, Economics Department

- Research Assistant to [Jesse Gregory](#)
  - Fall 2014 to August 2016
  - Implemented dynamic discrete choice models to understand housing decision problems for two projects: one on post-Katrina New Orleans and the other on the national housing market.
  - Used Condor at the CHTC at the University of Wisconsin Madison to estimate the large scale dynamic discrete choice models.
- Teaching Assistant
  - Introduction to Macroeconomics (Spring 2013, Spring 2014), Economic Statistics (Fall 2013), Introduction to Microeconomics (Fall 2012)

### Research

The latest versions of all papers are also linked at my website: <http://zflynn.com>. I have other works in progress, but I only show the papers with public or nearly-public drafts available below. I (mainly) study how to measure productivity and how productivity affects market structure and economic growth.

### Working Papers

- [Identifying productivity when it is a factor of production](#) (revision requested at RAND Journal of Economics)
- [Measuring markups with production data](#) (with Amit Gandhi and James Traina)
- [Ex-ante evaluation of a policy's effect on productivity: the substitution and scale effects of carbon taxation on power plant productivity](#)
- [Unproductive by choice: substitution and the slowdown in aggregate productivity growth in the United States](#)
- [Partial identification of production functions with flexible inputs](#) (with Amit Gandhi)
- [Identifying the elasticity of experience and its effect on market structure](#)
- [Inference based on continuous linear inequalities via semi-infinite programming](#)

### Published Papers

- Parametric Inference Using Structural Breaks (with Leandro Magnusson). Stata Journal (2013).

### Short writing

- [Estimating Logistic Regressions Using Two Stage Least Squares](#)

### Awards and Fellowships

Alice S. Gengler Fellowship – University of Wisconsin Madison – awarded May 2016

Culbertson Prize for Top Field Paper – University of Wisconsin Madison – awarded May 2015

Graduate Research Fellowship – University of Wisconsin Madison – awarded May 2015

### **Programming languages and computing**

Environments and programs: AWS, Linux, some Spark knowledge

Programming languages: C/C++, R, SQL (MySQL, Oracle, Redshift, PostgreSQL, etc), SAS, InfluxDB, Fortran, Matlab/Octave, Ada, Perl, Python, Stata, Julia, Shell Scripting, Lisp, and Scheme.

For some examples of projects I have done/jobs where I used the above languages regularly:

- C/C++ – I have used C++ for projects at Afiniti and I have written C code for open source projects.
- R – All of my academic papers were mostly written in R (and Fortran). The censored quantile regression project at Amazon mentioned above was done in R as well. I use it frequently for projects at Afiniti.
- I used various SQL products essentially daily at both Afiniti and Amazon.
- Stata – Some of my RA work at Wisconsin was in Stata, the paper with Lenadro Magnusson developed a Stata package, and I used Stata at Amazon for many projects.
- RA work with Jesse Gregory used both Matlab and Fortran.
- I use Perl in personal scripts, and I used it to automate many tasks at Amazon.
- I learned SAS in college and did some part time "consulting" in SAS while in grad school to help pay for... food... in the summers when there was no TA salary coming in (I helped people write programs to get results they needed for their thesis for 20 dollars an hour).