Richard Schwinn

curriculum vitæ

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EDUCATION

University of Illinois, Chicago, IL

PhD Economics, Advisor: Georgios Karras	2015
MS Mathematics, Advisor: Jie Yang	2012
MA Economics, Advisor: Ali Akarca	2003

Miami University, Oxford, OH

BS Business Economics	2002

LANGUAGES

R	UNIX regex	Python	English
Shiny	HTML	SQL	Spanish
RMarkdown	CSS	XPath	Japanese
LaTeX	JavaScript	Matlab	French
C	D3	VBA	

EXPERIENCE

US Small Business Administration, Office of Advocacy   2015–Present
Research Economist   Washington, DC

· Developed reproducible workflows for research products and interactive dashboards. Mentored interns and existing staff. Taught weekly R programming workshops. Presented at multiple federal agencies and numerous regional and national conferences.

PROJECTS

· Office of Economic Research (OER) Datascience Course
Teaching weekly datascience classes based on Duke University's *Datascience in a Box* series. The course is built around customized, Git-style, team projects. The course empowers OER staff to solve real-world problems using increasingly sophisticated computational techniques.

· *Code of Federal Regulations (CFR) Miner*
Created the CFR Miner, a text-mining interface for the CFR. The interface allows users to investigate the statistical qualities of CFR text using interactive visualizations while aggregating across the CFR hierarchy. Classification analysis, also known as supervised learning, and clustering analysis, also known as unsupervised learning, are applications of the CFR miner that can identify implicit qualities of regulatory text by identifying latent structures within the corpus. The CFR miner is primarily written in base R and XPath but relies on JavaScript, HTML, and CSS through Shiny, C++, and various R packages.

· *SUSB Explorer*
Led Advocacy's Human-Centered Design (HCD) team to create an interactive dashboard enabling users to explore, visualize, filter, and download the SUSB data. The team worked efficiently using Tufte-style team meeting handouts. SBA's Office of Entrepreneurial Development's HCD program is a 7-week

course organized around the ideals of *inspiration*, *ideation*, and *implementation*. The resulting application is driven by leaflet maps and interactive datatables.

· *Small Business GDP 1998–2014*
Measured the contributions of small businesses to the American economy. Used a reproducible workflow to perform intricate statistical operations and generate extensive data visualizations offering rich analyses of Small Business GDP (SGDP) estimates according to Kathryn Kobe's original methodology. In addition to providing updated estimates and analyses for the US, the paper combines the SGDP series with additional government data sources to provide 16 industrial profiles summarizing the experiences of small businesses during the 1998–2014 period.

· *2016 Small Business Profiles*
Redesigned the Small Business Profiles workflow on a foundation of reproducibility. Reproducibility refers to analyses that can be duplicated in their entirety by non-experts, using raw data and code that describes, step-by-step, how the data and results are acquired, processed, visualized, referenced, and typeset. The 220-page Small Business Profiles is Advocacy's premier economic research product and provides small business analyses for each of the 50 US states, the District of Columbia, and the US Territories based on the most recently available information from 14 federal statistical sources. Statistics include economic growth and employment; small business employment, industry composition and turnover, business owner demographics, and county-level employment breakdowns. The new workflow uses government APIs and LaTeX encoding to ensure that all data, custom visualizations, and adaptive texts are automatically updated in response to new releases from key federal data-gathering agencies. In addition, the report includes first-of-its-kind, automatic ADA 508-compliance scripts for LaTeX ensuring accessibility for all readers.

· *2017 Small Business Profiles*
Replaced the 2016 edition's LaTeX encoding with all-new, human-readable, RMarkdown encoding. Created new figures, adaptive text functions, and streamlined formatting.

· *2018 Small Business Profiles*
Created all new profiles with first-of-their-kind municipality maps for American Samoa, Guam, the Northern Marianas, Puerto Rico, and the U.S. Virgin Islands.

· *Advocacy Statistics of US Businesses (SUSB) Database*
Harmonized millions of SUSB records into a single database suitable for time series analysis. Hundreds of idiosyncratic ACCESS databases were extracted, re-coded, and otherwise wrangled using SQL Server and R to produce a single relational database.

Conferences and Committees

· Presented *The CFR Miner: Natural Language Processing of the Code of Federal Regulations Using R Studio and Shiny* at the American Statistical Association's (ASA) 2018 Joint Statistical Meetings (JSMs) in Vancouver, Canada.
· Presented *Reproducibility in Action* alongside Hadley Wickham at the 2017 Conference on Statistical Practice (CSP) in Jacksonville, FL.

- Presented *Reproducibility in Action* at the Securities and Exchange Commission (SEC), 2017.
- Presented *Reproducibility in Action* at the Bureau of Labor Statistics (BLS), 2017.
- Presented *The CFR Miner* at the Association of Public Data Users (APDU) Annual Conference, 2017.
- Presented multiple talks at Advocacy's Small Business Economic Research Forums 2016 and 2017.
- 2017 American Statistical Association's (ASA) Section on Statistical Programming's National Conference Planning Committee Member.
- 2017 APDU DataViz Awards Committee Chair.
- 2017 APDU Annual Conference Planning Committee Member.
- Presented *Regional Reporting* at the ASA's 2016 Joint Statistical Meetings (JSM).
- Chaired and served on numerous Technical Evaluation Boards (TEBs) to assess proposals for research funding each year.
- Certified Contracting Officer Representative (COR Level II) since July 2015. Served as the COR for five research contracts.

Avant Credit   2013–2015
Statistical Consultant   Chicago, IL

- Provided statistical research, analysis, and recommendations for a Chicago startup with over $1 billion in capital. Evaluated firm's default-risk assessment techniques, i.e. how the firm interpreted data from loan applications to make credit determinations. Translated advanced bootstrap aggregating techniques, such as random forest, into layman terms for presentation to top executives.
- Recommended a full revamp of firm's risk assessment algorithms and implementation of advanced statistical "ensemble learning" techniques. Following executive approval, collaborated with a dedicated team of 3 mathematicians to demonstrate the effectiveness of the new system in contrast to the old system.
- Designed, programmed, and documented standard operating procedures (SOPs) for implementing machine learning techniques and automatic report generation for models assessing credit worthiness according to 400+ variables per applicant. Counseled firm executives, mathematicians, and data scientists on statistical concepts, practices, and principles.

Northeastern Illinois University   2004–2015
Faculty Instructor   Chicago, IL

- Taught 8 to 10 economics courses per year from a portfolio of 12 distinct courses while consistently receiving "Excellent" evaluations. Created completely new courses, including a statistical consulting course for graduating economics students.
- Improved department effectiveness by evaluating and adjusting course offerings. Communicated with a wide range of students with diverse backgrounds and varied levels of understanding. Evaluated students' progress, provided academic feedback, and recommended additional assignments for advanced students. Demonstrated thorough knowledge of institutional structure in securing approval for new courses.

Loyola University   2015
Visiting Lecturer   Chicago, IL

· Taught Business Fluctuations to Quinlan MBA students and Intermediate Macroeconomics to undergraduate students.
· Created lectures outlining the underlying economic and regulatory forces that contributed to the vulnerabilities in US financial markets which, ultimately, led to the 2008 crisis.

University of Illinois   2011–2015
Visiting Lecturer   Chicago, IL

· Designed, established, and implemented course curricula and administered assessments. Taught Intermediate Microeconomics, Econometrics, and Introductory Statistics.

Lincoln Institute of Land Policy   2005
Research Assistant   Chicago, IL

· Collected data for innovative land valuation study. Populated a database for teardown-permit applications by filing FOIA requests at dozens of town halls across the Chicago-metropolitan area.
· Analyzed and evaluated permit records and prices which were later used to reduce bias in land valuations research published in *Landline*.

Institute of Public Safety Partnerships   2004–2005
Research Assistant   Chicago, IL

· Conducted research including a project analyzing large databases of police records to identify evidence of racial profiling.
· Performed detailed analyses and reviewed voluminous amounts of records including a census of police departments' traffic-stop data. Compiled statistical reports encompassing this information and forwarded the reports to corresponding police departments so that disciplinary actions could be taken prior to public release of data.

Academie de Versailles   2003–2004
Assistant Anglais   Paris, France

· Taught English as a foreign language to advanced students at Lycée du Parc des Loges in Evry Courcouronnes, France.

Chicago Mercantile Exchange   1996–2000
Trade Checker   Chicago, IL

· Manually confirmed transactions in the world's largest trading pit for the CME's leading euro-dollar broker by volume. Collaborated with the world's largest financial institutions to review and verify hundreds of millions of dollars in euro-dollar transactions daily. Communicated with brokers, custodians, and trade desk personnel to ensure timely notification of trades and resolution of trade settlement issues.

RESEARCH

Small Business GDP 1998–2014 with Kathryn Kobe, 2019

Released

Fiscal Volatility Diminishes Fiscal Multipliers PhD Thesis, 2015

Forthcoming

An Empirical Study of 225 Years of American Copyright Registrations with Zvi Rosen

Summarized Value: A straightforward and definitive solution to the Weitzman-Gollier puzzle

Treatment Techniques for Heat Stroke in Dogs: A Retrospective Analysis of Risk Factors for Death in 107 Cases with Christina Klippen

Automated 508-Compliance Scripts for LaTeX, RMarkdown, and Adobe: See StackExchange answer.

APIs and Databases

Small business

American Community Survey (ACS), Business Employment Dynamics (BDM), Business Dynamics Statistics (BDS), Current Employment Statistics (CES), Census of Employment and Wages (CEW), Current Population Survey (CPS), Federal Deposit Insurance Corporation (FDIC), Federal Financial Institutions Examination Council (FFIEC), International Trade Administration (ITA), Nonemployer Statistics (NES), Survey of Business Owners (SBO), Statistics of US Businesses (SUSB)

Financial

Bloomberg Data, Thomson Reuters' Database, Center for Financial Research and Services (CFRS) Database, Electronic Data Gathering, Analysis, and Retrieval (EDGAR), System for Electronic Document Analysis and Retrieval (SEDAR)

International

Organization for Economic Cooperation and Development (OECD) statistics database, World Bank's World Development Indices (WDI), Penn World Tables (PWT)

Select Honors

US Small Business Administration	**University of Illinois at Chicago**
Multiple Outstanding Achievement Awards	*Multiple Merit-Based Tuition Waivers*
	Multiple Avery Brundage Scholar Awards
Miami University	
Marion Scholar Award	**Boy Scouts of America**
Seibert Business Scholar Award	*Eagle Scout*
Scholar Leader Award	
Multiple French Awards	

References

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