

# Patrick N. Drake

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## I. EDUCATION

**University of Michigan School of Public Health**, Ann Arbor, MI 2014 – 2016  
Master of Science (MS), Biostatistics with a focus on Epidemiology

**Lake Forest College**, Lake Forest, IL 2009 – 2013  
Bachelor of Arts (BA), Mathematics and Music, *Cum laude*  
Honors: Presidential Scholarship Award, Dean's list for all four years

## II. CURRENT POSITIONS

**The Global Fund to Fight AIDS, Tuberculosis and Malaria**  
*Associate Specialist, Programmatic Results and Impact* From August 2019  
*Programmatic Results and Impact Analyst* August 2019 – April 2020  
Geneva, Switzerland

Key member of the Global Fund's Strategic Information team. Leads the development of novel tools and approaches for analyzing and using programmatic data. Applies state-of-art data management tools and statistical approaches to internal and external public health data.

### *Major accomplishments:*

- Produces strategic information products including corporate annual results report, key performance indicators on impact and service delivery, country and region benchmarking analyses, and modelling impact and service delivery.
- Leads the design, development, and implementation of an automated results processing system.
- Designs and develops applications within SQL/Azure ecosystem to improve the team's functionality, data access and to create interactive visualizations and maps for use across the organization.
- Leverage advanced R and Excel functionality to automate the presentation of technical partner data in country specific reports to inform the grant making efforts of the organization.

### **Data, Et cetera**

*Co-Founder* From September 2018

Member of founding team for the data journalism platform, *Data, Et cetera* (<https://dataetc.org>).

- Web-based data journalism website covering a wide range of issues
- Design and analytics using R, d3.js, and HTML

## III. PAST EXPERIENCE

### **U.S. Centers for Disease Control and Prevention (CDC)**

*Statistician*

January 2017 – July 2019

Washington, D.C.

- Served as a subject matter expert throughout the Center on new applications of natural language processing and machine learning techniques, providing technical advice and guidance through seminars, research presentations, and individual support.
- Established novel approaches to improving the surveillance of drug-related infant and fetal deaths using descriptive literal text fields from death certificates. Designed and documented how to integrate this functionality into the existing data architecture.
- Created and curated automated data visualization tools for use by teams of statisticians in the real-time review of data quality and integrity of large databases of health information, including novel applications like visual abstracts.

### **U.S. Health and Human Services (HHS)**

*Statistician (seconded)*

July 2018

Washington, D.C.

- Built a data monitoring and reporting system to coordinate data from the Office of Refugee Resettlement and Immigration and Customs Enforcement for the Department of Health and Human Services as part of an emergency response unit to reunify migrant families separated at the border during the 2018 crisis.

### **Leading Age**

*SAS Programmer and Analyst*

August 2016 – September 2016

Washington, D.C.

- Contributed to data management, imputation, and analysis in R and SAS on data from the *Peak 2.0 Kansas Study*, a two-year study evaluating person centered retirement care.
- Constructed propensity scores for use in covariate adjustment in repeated measures analysis with multiple treatment groups via gradient-boosted methods.
- Drafted methodological contributions and data visualizations for publications and presentation.

### **Robert Wood Johnson Foundation Clinical Scholars Program**

*Research Assistant*

October 2015 – August 2016

University of Michigan, Ann Arbor, MI

- Analyzed NHANES and U.S. Department of Veterans Affairs claims data in Stata to assess the relationships between poor sleep, post-traumatic stress disorder (PTSD), and health care utilization.
- Prepared data visualization in R and Stata for presentations and meetings with non-statistician collaborators.
- Performed literature reviews and contributed to overall manuscript development.

## **IV. PROFESSIONAL SKILLS**

- Expert proficiency in R, SAS, SQL, and Excel; proficiency in python and Stata
- Advanced visualization tools and web development: R shiny apps, D3/JavaScript/HTML/CSS
- Natural language processing: text mining, sentiment analysis, and automated International Statistical Classification of Diseases (ICD) coding
- Programmatic monitoring and evaluation, with a focus on global health
- Predictive modeling and machine learning, including regression trees/random forests, gradient boosting, vector support machines, and neural networks
- Advanced statistical modeling including spatial analysis and mixed methods
- Institutional process documentation and scientific writing

- Proven ability to effectively communicate design specifications and results of modeling procedures to technical and non-technical audiences
- Proof of concept analyses and demo creation for wide ranging audiences
- Imputation methodology

## V. PUBLICATIONS

- DM Ely, ECW Gregory, **P Drake**. Infant mortality by maternal prepregnancy body mass index: United States, 2017-2018. *National Vital Statistics Reports*. 2020; 69(9). Hyattsville, MD: National Center for Health Statistics.
- JA Martin, BE Hamilton, MJK Osterman, AK Driscoll, **P Drake**. Births: Final data for 2017. *National Vital Statistics Reports*. 2018 Nov 7; 67(8). Hyattsville, MD: National Center for Health Statistics.
- ECW Gregory, **P Drake**, JA Martin. Lack of change in perinatal mortality in the United States, 2014–2016. *NCHS Data Brief*. 2018 Aug; 316. Hyattsville, MD: National Center for Health Statistics.
- **P Drake**, A. Driscoll, T Mathews. Tobacco Smoking During Pregnancy. *NCHS Data Brief*. 2018 Feb 05; 67(1). Centers for Disease Control and Prevention.
- J Martin, B. Hamilton, M Osterman, A. Driscoll, **P Drake**. Births: Final Data for 2016. *National Vital Statistics Reports*. 2018 Jan 31; 67(1). Hyattsville, MD: National Center for Health Statistics.
- J. Poey, L. Hermer, L. Cornelison, M. Kaup, **P Drake**, R. Stone, G. Doll. Does Person-Centered Care Improve Residents' Satisfaction With Nursing Home Quality? *Journal of the American Medical Directors Association*. 2017 Nov 1; 18(11):974-979.

## VI. PRESENTATIONS AND CONFERENCES

- **P. Drake**. Text mining literal fields on vital statistics records: Surveillance tools for drug-related deaths. 2019 June 5. *The National Association for Public Health Statistics and Information Systems (NAPHSIS)* [Oral].
- **P. Drake**. Natural Language Processing at the Division of Vital Statistics: Automating cause of fetal death classification. 2019 Apr 17. *FedCASIC Conference at the Bureau of Labor Statistics* [Oral].
- **P. Drake**, M. Spencer. An Introduction to Natural Language Processing (NLP) with applied use cases from projects conducted by the Division of Vital Statistics. 2018 Sep 18. *National Center for Health Statistics seminar series* [Oral].
- **P. Drake**, M. Spencer. Natural Language Processing (NLP) projects in the Division of Vital Statistics: Improving cause of death surveillance of the National Vital Statistics System. 2018 May 11. *Big Data Day Conference* [Poster].

## VII. AWARDS

- *NCHS Directors Award for Exemplary Work*. Annual award for excellence in domestic emergency response.
- *CDC & ATSDR Award for Excellence in Emergency Response*. For outstanding systems development support that directly aided in tracking the reunification of unaccompanied minors under the care of the U.S. Department of Health and Human Services with their parents or guardians who were in the custody of U.S. Department of Homeland Security Immigration and Customs Enforcement.