# Michael Freeman

Senior Lecturer, The Information School
University of Washington

## Teaching Areas

My teaching revolves around the technical and conceptual skills necessary for programmatically transforming raw data into meaningful information. As such, I teach courses in **Data Science**, **Interactive Data Visualization**, and **Web Development**. To effectively teach these courses, I develop detailed learning materials (such as my forthcoming textbook, *Programming Skills for Data Science*) and collaborate with students to support them through the learning process.

## Education

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| 2013 | **Master of Public Health**<br>University of Washington. Focus: Health Metrics and Evaluation |
| 2010 | **Bachelor of Arts: Sociology and International Affairs**<br>Colorado College, *Magna Cum Laude*. |

## Professional Experience

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|---|---|
| 2018 - | **Senior Lecturer**<br>The Information School, University of Washington |
| 2015 - 2018 | **Lecturer**<br>The Information School, University of Washington |
| 2013 - 2015 | **Data Visualization Specialist**<br>Institute for Health Metrics and Evaluation, University of Washington |
| 2010 - 2013 | **Post-Bachelor Fellow**<br>Institute for Health Metrics and Evaluation, University of Washington |
| 2010 - | **Freelance Data Visualization Designer**<br>Self employed |

## Teaching Experience

I have taught  8 different courses to over 1,300 students at the University of Washington. In each course, I develop robust learning resources to collaboratively guide students through challenges using real data sets. Courses are listed below with the number of quarters taught and the average course evaluation score.

### University of Washington

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|---|---|
| GH 590H | **Interactive Data Visualization for Global Health**<br>*(1 quarter, avg. score 4.9/5)* |
| INFO 200 | **Intellectual Foundations of Informatics**<br>*(2 quarters, avg. score 4.1/5)* |
| INFO 201 | **Technical Foundations of Informatics**<br>*(5 quarters, avg. score 4.6/5)* |
| INFO 328 | **Population Health Informatics**<br>*(2 quarters, avg. score 4.8/5)* |
| INFO 340 | **Client-Side Web Development**<br>*(6 quarters, avg. score 4.7/5)* |
| INFO 370 | **Introduction to Data Science**<br>*(3 quarters, avg. score 4.2/5)* |
| INFO 474 | **Interactive Information Visualization**<br>*(2 quarters, avg. score 4.8/5)* |
| INFO 498 | **Independent Studies and Internship Supervision**<br>*(11 internships and independent studies supervised)* |
| PCE 300 | **Decision Making through Data Visualization**<br>*(1 quarter, no evaluations collected)* |

### Professional Courses and Workshops

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| Metis | **Data Visualization with D3.js**<br>*(a 36 hour, 6 week course for professionals)* |
| Cisco | **Storytelling with Visualization**<br>*(Delivered five two-day workshops to employees)* |

## Conferences Presentations and Invited Talks

2018 **React for D3 Users**
*OpenVis Conference, Paris*

2017 **Visually Explaining Statistical and Machine Learning Concepts**
*Open Data Science Conference, San Francisco*

2016 **Writing Reusable Visualization Software with D3**
*Strata Data Conference, Singapore*

2016 **Using Storytelling to Effectively Communicate data**
*Microsoft, Seattle*

2016 **Small Tips for Visualizing Big Data**
*Data Science Singapore Meetup, Singapore*

2016 **Visualizing Concepts with D3.js**
*PLOTCON, New York*

2015 **Visualizing Methods and Models for Decision Makers**
*Strata Data Conference, New York*

2014 **Using Storytelling to Enhance Interactive Visualizations**
*Strata Data Conference, Barcelona*

## Sevice

I have engaged in service at the Information School through the following committee memberships:

2018 - **Elected Faculty Council**
*Develop policies for the department's self governance*

2015 - 2018 **Informatics Program Committee**
*Developed curriculum, co-created a health-informatics concentration*

2015 - 2018 **Diversity Committee**
*Planned and participated in events for faculty, staff, and students.*

# Publications

I have worked independently and as part of large research groups[1] to publish various books, instructional videos, and refereed journal articles. While my primary research area is population health measurement, my current focus is developing learning materials for data science.

## Books and Videos

**Freeman**, Michael and Ross, Joel. *Programming Skills for Data Science: Start Writing Code to Wrangle, Analyze, and Visualize Data with R*. Boston, MA: Addison-Wesley, 2018.

**Freeman**, Michael. *Using Storytelling to Effectively Communicate Data: Tips and Techniques for Data Visualization*. Infinite Skills, 2015.

## Refereed Journal Articles

Bui, Anthony L, Rouselle F Lavado, Elizabeth K Johnson, Benjamin PC Brooks, Michael K **Freeman**, Casey M Graves, Annie Haakenstad, Benjamin Shoemaker, Michael Hanlon, and Joseph L Dieleman. "National Health Accounts Data from 1996 to 2010: A Systematic Review." *Bulletin of the World Health Organization* 93, no. 8 (August 1, 2015): 566-576D. https://doi.org/10.2471/BLT.14.145235.

Dieleman, Joseph L., Casey Graves, Elizabeth Johnson, Tara Templin, Maxwell Birger, Hannah Hamavid, Michael **Freeman**, et al. "Sources and Focus of Health Development Assistance, 1990–2014." *JAMA* 313, no. 23 (June 16, 2015): 2359. https://doi.org/10.1001/jama.2015.5825.

**Freeman**, Michael K, Ella Sanman, Krycia Cowling, Marie Ng, Alan D Lopez, Ali Mokdad, Christopher JL Murray, and Emmanuela Gakidou. "Concentrating Risk: A Systematic Analysis of the Global Smoking Epidemic." *The Lancet* 381 (June 2013): S52. https://doi.org/10.1016/S0140-6736(13)61306-9.

Lim, Stephen S, Theo Vos, Abraham D Flaxman, Goodarz Danaei, Kenji Shibuya, Heather Adair-Rohani, Mohammad A AlMazroa, et al. "A Comparative Risk Assessment of Burden of Disease and Injury Attributable to 67 Risk Factors and

[1] For work with large groups, my name is not always listed as part of the citation.

Risk Factor Clusters in 21 Regions, 1990–2010: A Systematic Analysis for the Global Burden of Disease Study 2010." *The Lancet* 380, no. 9859 (December 2012): 2224–60. https://doi.org/10.1016/S0140-6736(12)61766-8.

Lozano, Rafael, Mohsen Naghavi, Kyle Foreman, Stephen Lim, Kenji Shibuya, Victor Aboyans, Jerry Abraham, et al. "Global and Regional Mortality from 235 Causes of Death for 20 Age Groups in 1990 and 2010: A Systematic Analysis for the Global Burden of Disease Study 2010." *The Lancet* 380, no. 9859 (December 2012): 2095–2128. https://doi.org/10.1016/S0140-6736(12)61728-0.

Murray, Christopher J. L. "The State of US Health, 1990-2010: Burden of Diseases, Injuries, and Risk Factors." *JAMA* 310, no. 6 (August 14, 2013): 591. https://doi.org/10.1001/jama.2013.13805.

Murray, Christopher J L, Theo Vos, Rafael Lozano, Mohsen Naghavi, Abraham D Flaxman, Catherine Michaud, Majid Ezzati, et al. "Disability-Adjusted Life Years (DALYs) for 291 Diseases and Injuries in 21 Regions, 1990–2010: A Systematic Analysis for the Global Burden of Disease Study 2010." *The Lancet* 380, no. 9859 (December 2012): 2197–2223. https://doi.org/10.1016/S0140-6736(12)61689-4.

Murray, Christopher JL, Spencer L James, Jeanette K Birnbaum, Michael K **Freeman**, Rafael Lozano, and Alan D Lopez. "Simplified Symptom Pattern Method for Verbal Autopsy Analysis: Multisite Validation Study Using Clinical Diagnostic Gold Standards." *Population Health Metrics* 9, no. 1 (December 2011). https://doi.org/10.1186/1478-7954-9-30.

Murray, Christopher JL, Rafael Lozano, Abraham D Flaxman, Peter Serina, David Phillips, Andrea Stewart, Spencer L James, et al. "Using Verbal Autopsy to Measure Causes of Death: The Comparative Performance of Existing Methods." *BMC Medicine* 12, no. 1 (December 2014). https://doi.org/10.1186/1741-7015-12-5.

Ng, Marie, Michael K. **Freeman**, Thomas D. Fleming, Margaret Robinson, Laura Dwyer-Lindgren, Blake Thomson, Alexandra Wollum, et al. "Smoking Prevalence and Cigarette Consumption in 187 Countries, 1980-2012." *JAMA* 311, no. 2 (January 8, 2014): 183. https://doi.org/10.1001/jama.2013.284692.

Salomon, Joshua A, Haidong Wang, Michael K **Freeman**, Theo Vos, Abraham D Flaxman, Alan D Lopez, and Christopher JL Murray. "Healthy Life Expectancy for 187 Countries, 1990–2010: A Systematic Analysis for the Global Burden Disease

Study 2010." *The Lancet* 380, no. 9859 (December 2012): 2144–62. https://doi.org/10.1016/S0140-6736(12)61690-0.

Serina, Peter, Ian Riley, Andrea Stewart, Abraham D. Flaxman, Rafael Lozano, Meghan D Mooney, Richard Luning, et al. "A Shortened Verbal Autopsy Instrument for Use in Routine Mortality Surveillance Systems." *BMC Medicine* 13, no. 1 (December 2015). https://doi.org/10.1186/s12916-015-0528-8.

Serina, Peter, Ian Riley, Andrea Stewart, Spencer L. James, Abraham D. Flaxman, Rafael Lozano, Bernardo Hernandez, et al. "Improving Performance of the Tariff Method for Assigning Causes of Death to Verbal Autopsies." *BMC Medicine* 13, no. 1 (December 2015). https://doi.org/10.1186/s12916-015-0527-9.

Lozano, Rafael, Michael K **Freeman**, Spencer L James, Benjamin Campbell, Alan D Lopez, Abraham D Flaxman, and Christopher JL Murray. "Performance of InterVA for Assigning Causes of Death to Verbal Autopsies: Multisite Validation Study Using Clinical Diagnostic Gold Standards." *Population Health Metrics* 9, no. 1 (December 2011). https://doi.org/10.1186/1478-7954-9-50.

Vos, Theo, Abraham D Flaxman, Mohsen Naghavi, Rafael Lozano, Catherine Michaud, Majid Ezzati, Kenji Shibuya, et al. "Years Lived with Disability (YLDs) for 1160 Sequelae of 289 Diseases and Injuries 1990–2010: A Systematic Analysis for the Global Burden of Disease Study 2010." *The Lancet* 380, no. 9859 (December 2012): 2163–96. https://doi.org/10.1016/S0140-6736(12)61729-2.