Carey Baldwin

Data Scientist and Educator

Innovative, collegial, and self-motivated professional with a unique and relevant skill set in statistics and computing. Well-versed in modern methods for data extraction, analytics, and predictive modeling using open-source software.

June, 2024

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EDUCATION

Master of Applied Statistics, *Colorado State University, Fort Collins, CO,*
AUGUST 2012 - DECEMBER 2016

Bachelor of Physics, *Mount Holyoke College, South Hadley, MA,*
AUGUST 1998 - MAY 2002

EXPERIENCE

Lecturer in Operations and Information Management, *The Isenberg School, UMass Amherst, MA*
September 2019 - Present
- Develop and teach industry-aligned courses in data science including classical statistics, introduction to Python programming, and data science for business at both the undergraduate and graduate levels.
- Serve on committees as assigned by the operations and information management (OIM) department to advance ongoing efforts
- Oversee and mentor doctoral students teaching OIM courses with the aim of elevating the student learning experience
- Serve on search committees as assigned

Data Scientist and CEO, *Green Line Analytics, LLC (self-employed), Northampton, MA*
SEPTEMBER 2010 - Present
- Provide personalized statistical consulting and dissertation support to graduate students pursuing research in a variety of disciplines.
- Provide academic instruction in statistics, data analysis, and computing to students at all levels.
- Conduct extensive statistical research projects that synthesize institutional data sources and provide insights to administrators regarding identified indicators of performance.
- Create customized, professional documents and instructional videos to interpret statistical results.
- Develop and maintain a website/blog detailing professional experiences and providing academic/technical resources to the public.

Faculty Director of the Masters in Business Analytics Graduate Program, *The Isenberg School, UMass Amherst, MA*
June 2023 - Present
- Serve as an instructor in the MSBA program
- Participate in MSBA promotional and recruiting activities

- Participate in MSBA-enrolled student activities
- Participate in curriculum review, development, and assurance of learning
- Participate in strategic review and analysis of program and competitor programs

Co-director of the Isenberg Insurance Academy, *The Isenberg School, UMass Amherst, MA*
September 2022 - Present
- Increase student interest in and interaction with the insurance industry by facilitating collaboration between insurance industry partners and Isenberg instructors in the Finance and OIM departments.
- Secure funding from partner companies (3-year commitment of $96,000 total) to support operations.
- Plan and execute student case competitions, presentations, and networking events.
- Coordinate the alignment of OIM and finance curricula with insurance industry-specific content and guest lectures.
- Build and lead the Institute for Quantitative Analytics, a program offered to an elite cohort of student analysts to build knowledge and skills in the domain of emerging technologies and predictive methods relevant to the insurance industry

Data Science Instructor, *Mass Mutual Data Science Development Program, Amherst, MA*
June 2020
- Develop and teach a week-long intensive course introducing Python for data science to a cohort of newly hired employees.
- Adapt courses for remote delivery using video lessons, conferencing, virtual collaboration tools, and online coding platforms.

Director of Academic Technology, *The Williston Northampton School, Easthampton, MA*
AUGUST 2016 - AUGUST 2018
- Provided leadership, structured training, and on-demand, individualized support to 60+ faculty members so that they may better incorporate technology into their instruction.
- Designed and led training for students in the effective use of Microsoft Office 365 programs.
- Researched and beta-tested curricular technology programs prior to universal adoption and provided feedback to developers, technologists, and academic department heads.

Statistics Instructor, *The Williston Northampton School, Easthampton, MA*
AUGUST 2013 - AUGUST 2018
- Developed curricula and taught all levels of Probability and Statistics to 60-70 students, yearly.
- Strategically implemented a flipped classroom model to support differentiated instruction and self-paced, individualized learning.
- Built an extensive archive of video lessons using screen-recording technologies.
- Developed and taught data science course designed to build understanding of statistical concepts, and capabilities in effective implementation of R statistical software packages (dplyr and ggplot).
- Served as an advisor to between 4 and 7 students guiding academic, athletic, and social progress.
- Wrote between 8 and 22 college letters of recommendation each year.

Physics Instructor, *Bellarmine Prep. School, Tacoma, WA*
AUGUST 2007 - MAY 2009
- Taught multiple levels of physics to 5 sections of 20-25 high school students.
- Developed and taught a special curriculum, designed to build statistical research and analysis skills, to students in an advanced Marine Science Program.

Math and Physics Instructor, *Sacred Heart Cathedral Prep., San Francisco, CA*
AUGUST 2002 - MAY 2007
- Taught multiple levels (standard and AP) of physics and statistics, and other math/science courses.
- Played a leading role in a schoolwide effort to build an Advanced Placement program by proposing and developing curricula for AP physics C and AP statistics courses.

PROFESSIONAL TRAINING

Course Design Institute, *Instructional Media Lab, University of Massachusetts, June 2024*
- Selected for a special workshop due to high course demand with the expectation that the current in-person course be adapted as an additional online offering for undergraduate students.
- Completed a week-long program to develop high-quality online instructional materials.
- Worked closely with an instructional designer to build an undergraduate online course offering

AWS Machine Learning Program, *The Coding School, July 2023 - August 2023*
- Completed a 2-week intensive program in current machine learning techniques including the use of emerging technologies for managing big data and automating processes with AI.

Applied Data Science Program, *MIT Professional Education, Cambridge, MA*
May 2021 - August 2021
- Completed an 8-week virtual program to develop an understanding of and abilities in the use of modern data science techniques such as machine learning for classification and regression, neural networks, time-series analysis, and recommendation systems
- Attended weekly lectures given by top MIT scholars responsible for the development of principles and cutting-edge methods in the domain of data science
- Completed 6 comprehensive, real-world, individual projects applying advanced data science techniques using Python (see e-portfolio)

Software Development, *Lambda School, San Francisco, CA*
JUNE 2018 - FEBRUARY 2019
- Completed an 8-month, full-time program to build comprehensive skills in web-based software development.
- Built daily/weekly projects, including both front end and back end applications in JavaScript, Python, and C.
- Worked individually and collaboratively to build complete, web-based software from wireframe specifications, while ensuring conformity with industry standards.
- Built relational databases with Express.js, Django.py and graphQL and composed queries with SQL and Apollo Client to effectively extract pertinent data.

AWARDS AND GRANTS

Isenberg Teaching Excellence Award, 2024 - Awarded to two Isenberg faculty members each year in recognition of superior teaching impact.

Teaching with Digital Technology Award, 2023 - Student-nominated recognition that goes to faculty who have used digital technology to improve teaching and learning

Flexible Learning Fellow, 2021-2022 - The FLF program provides departments with a faculty-led opportunity to identify a path to flexible learning that reflects their unique contexts including the departmental disciplinary focus, degree programs, and students; and provides the participating faculty leaders with a faculty-centered learning community in which they can further their knowledge and skills of flexible pedagogy and, in turn, serve as leaders and models in their department and the university.

Isenberg Teaching Fellow, 2021-2023 - This honor goes to faculty whose creative and effective use of educational technologies in course design and delivery have helped improve all types of courses, whether delivered face-to-face, online, or in a hybrid combination. During the fellowship, they are responsible for sharing best practices with the full faculty, to enhance the school's instructional quality across departments, programs, and teaching levels.

Teaching with Digital Technology Award, 2021 - Student-nominated recognition that goes to faculty who have used digital technology to improve teaching and learning

Northampton School for Girls Instructorship, 2016 - Award given once every three years to a teacher who demonstrates exceptional classroom instruction, innovation, and dedication to professional development.

Cain Family Grant, 2017 - Funding for professional development to be allocated at the discretion of awardee. Used to fund institutional research project analyzing indicators of Williston student achievement.

COMPUTING SKILLS

R: Descriptive and inferential statistics, regression analysis, Bayesian modeling, spatial and time-series analysis, data mining (dplyr), data visualization (ggplot2), sampling, statistical functions and algorithms

Python: Expertise in program control, knowledge of data structures and algorithms for dynamic front-end web-applications, data extraction and manipulation (Pandas, NumPy, Beautiful Soup), data visualization (Matplotlib, seaborn), supervised and unsupervised machine learning (scikit learn), statistical analysis and modeling (statsmodels), neural networks, time-series analysis, recommendation systems, database creation and management (Django.py)

JavaScript: Web-based software development in React.js framework, functions, data structures and algorithms for dynamic front-end web-applications, database construction and management (Express.js).

HTML & CSS: Fully responsive web design and development with modern frameworks (Bootstrap, Material UI, and styled components).

LaTeX: Reporting of scholarly research and documentation.

C: Basic knowledge of functions, data structures and algorithms.

RESEARCH PROJECTS AND PUBLICATIONS

Kamine, T. H, Rembisz, A., Barron, R. J, Baldwin, C., & Kromer, M. (2020). Decrease in Trauma Admissions with COVID-19 Pandemic. *Western Journal of Emergency Medicine: Integrating Emergency Care with Population*

Health, 21(4). Retrieved from https://escholarship.org/uc/item/05n535hg

AP Grade Analysis — *Institutional Research Project, 2017*
Tested for differences between Williston scores and Global scores using traditional (ANOVA, t-tests) and non-parametric (Kruskal-Wallis) methods. Predicted student performance with logistic regression models. Identified statistically significant predictors for probability of earning a high AP score and presented results to academic office and other school administrators in order to inform school decision-making.

Rice Bran Supplementation Study — *Capstone Project, 2016*
Estimated physiological outcomes of experimental rice-bran supplementation for low-resource Nicaraguan infants using a mixed-models approach with compensation for repeated measures. Found that the supplementation method resulted in statistically significant effects with potential to dramatically improve health and development of infants.

Lyme Disease Research Project — *Contracted with MyGuru as expert statistical consultant, 2012*
Analyzed public health data from Connecticut Department of Health to determine significant predictors of Lyme disease occurrences in the state. Constructed a multiple regression model and used AIC and R-Squared to finalize predictors. Found that the abundance of acorns two years prior, was the most significant, and practically obtainable ecological indicator for Lyme disease rates.

Bootstrapping a Spatial Process — *Literature Review in Statistical Computing, 2011*
Conducted exhaustive review of literature on establishing independence among observations in a spatial data set. Most inferential methods rely on the assumption of independence, which is difficult to achieve in the context of spatial processes. The literature review synthesizes various approaches for achieving the assumption of independence so that advanced statistical methodology may be applied to spatial data.

WEB DEVELOPMENT PROJECTS

QuizTime, *Capstone Software Development Project, 2019*
Used Next.js and graphQL to build customizable, adaptive quiz software. Worked with a team of five to bring application from specification to production in under five weeks. Implemented external APIs (SendGrid, Stripe, DatePicker) to support features.

TrailTracker, *Contracted Project, 2019*
Used React.js to design and construct a dynamic user interface to serve as a model for a fully implemented application. Used modern techniques in front-end web development to highlight the key features of a patented technology for phone geolocation tracking.

Web Notes, *Portfolio Project, 2019*
Built a dynamic note-taking web application with a React.js front-end and node-express back-end. Designed intuitive user interface to allow users to create, edit, and delete customized notes.

Multi User Text-Based Game, *Portfolio Project, 2019*
Built a dynamic web application with a React.js front-end and Django.py back-end. Handled authentication and registration of multiple users while facilitating player interaction throughout the application.

INSTITUTIONAL PROJECTS

Surface Pro at Williston, *Microsoft Promotional Video, 2017*
As director of academic technology, provided perspective and insights about cultivating an effective curricular technology program in the context of a college preparatory school. Contributions were included in final production of promotional video.

Course Content Archive - *Williston Institutional Advancement Project, 2014*
Developed a system for preserving and transferring curricular materials while leveraging Office 365 technologies. Cultivated procedures, with input from technology department and academic office, for streamlining conveyance of curricular content between departing and incoming instructors.

EdTech Blog - *Instructional Technology Initiative, 2013-2018*
Regularly contributed to an archive of technical tutorials and pedagogically informative posts on the topic of instructional technology. Shared classroom experiences, annotated samples of student work, and rationale for practices that support differentiated instruction.

PRESENTATIONS

Business Applications with Python, *Hack(H)er413 Conference, February 2024*
Python continues to be a trusted foundational tool for automating and streamlining a variety of critical business analytics tasks, from data extraction, processing, visualization, predictive modeling, and beyond. Businesses, both large and small, can achieve a competitive advantage by adopting Python to customize analytics solutions because it is free, open-source, and developed in an ongoing way by millions of contributing users. In this hands-on workshop, attendees can expect an overview of the modern business analytics space while gaining experience working with some of the most popular Python libraries such as Pandas, Matplotlib, and Seaborn. We will explore a real data set and focus on techniques to expose meaningful patterns in order to develop a compelling narrative about a business phenomenon.

Mitigating Algorithmic Bias in Healthcare, *Voices of Data Science Conference, March 2024*
To manage patients effectively, healthcare systems often estimate individual health risks using quantitative measures called "risk scores." These scores help prioritize patients and allocate resources where they are most needed. This workshop explores an algorithm commonly used in the industry to calculate risk scores based on medical expenses. This algorithm, however, underestimates the medical risk of Black patients compared to White patients, a bias that is not immediately apparent when comparing their medical expenses.

The Power of the Digital Pen, *Presentation at MassCue, 2015*
Shared insights with fellow educators and instructional technologists throughout the state on educational significance of digital inking. Presented an overview of effective tools to support use of digital ink for educational exercises and provided brief tutorials and resources for implementation.

CONFERENCES

- Open Data Science Conference East, Boston, MA, Spring 2017
- Open Data Science Conference West, San Francisco, CA, Fall 2016
- Joint Statistical Meetings, Baltimore, MD, Summer 2016
- MassCUE (Presentor), Foxboro, MA, Fall 2015

- Joint Statistical Meetings, Denver, Summer 2008
- Joint Statistical Meetings, Seattle, Summer 2006
- NCTM Conference, Salt Lake City, UT, Fall 2003

MEMBERSHIPS AND GROUPS

- Western Mass Statistics and Data Science
- Western Mass Developers
- American Statistical Association
- National Council for Teachers of Mathematics
- Open Data Science Conference