

# Dana Udwin

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EDUCATION	<i>Doctor of Philosophy</i> , Biostatistics Brown University, Providence, RI Advisor: Lorin Crawford, Ph.D. Title: Linear Mixed Models for Heterogeneity Estimation	November 2022
	<i>Master of Science</i> , Statistics University of Massachusetts Amherst, Amherst, MA	May 2017
	<i>Bachelor of Arts</i> , Mathematics Smith College, Northampton, MA Minor: East Asian Language and Literature	May 2014
INDUSTRY	<i>Data Scientist Intern</i> Meta, New York, New York	Summer 2021
	<ul style="list-style-type: none"><li>Translated massive, user-level Facebook App for Android clicks into chronological metrics that reflect depleting cellular data, an actionable signal that the application should activate data-saving mode.</li><li>Segmented along derived features to isolate data-constrained users.</li><li>Used A/B testing to administer a survey to Japanese customers and validate that model-identified data-constrained users are 2.7x as likely to “always” be concerned about running out of data.</li></ul>	
	<i>Summer Associate</i> RAND Corporation, Arlington, VA	Summer 2020
	<ul style="list-style-type: none"><li>Forecast year-over-year attrition in the Air Force using a recurrent neural network, to inform field-specific recruitment and retention strategy.</li><li>Implemented Blinder–Oaxaca decomposition to break servicemember separation rates into (i) that which is predictable due to population shift, and (ii) that which is revealed through modeling.</li></ul>	
	<i>Junior Data Scientist</i> MassMutual Financial Group, Amherst, MA	2014 - 2017
	<ul style="list-style-type: none"><li>Modeled likelihood to purchase life insurance in order to maximize return on direct mail advertisements.</li><li>Operationalized customer service outreach program by constructing a pipeline that links disparate databases, scores policyholders by satisfaction then presents the information in a web application.</li><li>Revamped corporate spend accounting through a full stack construction that ingests employees’ expensed charges into a multi-page interactive visualization.</li><li>Created behavioral profiles of customers using non-parametric <math>k</math>-means clustering to inform targeted marketing campaigns.</li></ul>	

## RESEARCH

### *Research Assistant*

Fall 2017 - Present

Brown University, Department of Biostatistics, Providence, RI

Under the advisement of Lorin Crawford, Ph.D. (Spring 2018 - Present):

- Conduct dissertation research in interpretable machine learning and non-additive variance estimation.
- With collaborators at the Center for Molecular and Computational Biology, design linear mixed models to estimate complex human trait heritability from DNA.

Under the supervision of Roei Gutman, Ph.D. (Fall 2017):

- Performed propensity score analysis on observational study of post-motor vehicle collision emergency department visits to identify causal link between receiving opioids and continued drug dependence.
- Designed and implemented sensitivity analyses to determine robustness of results under confounding.
- Restructured code base to facilitate collaboration and support reproducibility.

### *Summer Undergraduate Research Fellow*

Summer 2013

Advisor: P. Jonathon Phillips, Ph.D.

National Institute of Standards and Technology, Information Technology Laboratory, Gaithersburg, MD

- Analyzed performance of face recognition technologies in point-and-shoot video using 1.8 million frame-by-frame between-video similarity scores and metadata.

### *Research Assistant*

Spring 2013 - Fall 2013

Advisor: Nick Horton, Ph.D.

Smith College, Department of Mathematical Sciences, Northampton, MA

- Coauthored instructor's guide with code addendum for STatistics Education Web (STEW), the American Statistical Association's online resource for peer-reviewed K-12 lesson plans.

## TEACHING

*Teaching Assistant*, Causal Inference, Brown University

FA 2020

*Co-Instructor*, Biostatistics Workshop, Brown University

SU 2019, SU '20, '21

*Grader*, Statistical Inference I, Brown University

FA 2019

*Teaching Assistant*, Bayesian Statistical Analysis, Brown University

SP 2019

*Teaching Assistant*, Applied Statistics, Summer@Brown

SU 2018

*Teaching Assistant*, Applied Generalized Linear Models, Brown University

SP 2018

*Teaching Assistant*, General, Smith College

SP 2013 - SP 2014

*Grader*, Introduction to Statistics, Smith College

SP 2013

## PUBLICATIONS

Darnell, G., Smith, S.P., **Udwin, D.**, Ramachandran, S., Crawford, L. (2022) "Partitioning Marginal Epistasis Distinguishes Nonlinear Effects from Polygenicity and Other Biases in GWA Summary Statistics." *bioRxiv*.

Ish-Horowicz\*, J., **Udwin\***, D., Kolbeinsson, A., Scharfstein, K., Flaxman, S., Crawford<sup>†</sup>, L., Filippi<sup>†</sup>, S. (2019) "A Group Variable Importance Framework for Bayesian Neural Networks." *arXiv*.

\*Authors contributed equally; <sup>†</sup>Authors contributed equally

Baumer, B., **Udwin, D.** (2015) "R Markdown." *WIREs: Computational Statistics*.

Stoudt, S., Cao, Y., **Udwin, D.**, Horton, N.J. (2014) "What Percent of the Continental US is Within One Mile of a Road?" *STatistics Education Web*.

<b>LEADERSHIP AND COMMUNITY INVOLVEMENT</b>	<i>Student Ambassador</i>	2021 - 2022
	School of Public Health, Brown University, Providence, RI	
	<i>Social Committee</i>	2019 - 2022
	Department of Biostatistics, Brown University, Providence, RI	
	<i>Diversity &amp; Inclusion Committee</i>	2019 - 2022
	Brown University, Department of Biostatistics, Providence, RI	
<b>TALKS</b>	<i>Grant Coordinator</i> , PRIDE Business Resource	2015 - 2017
	MassMutual Financial Group, Springfield, MA	
	<i>Consultant</i>	2015 - 2017 (Annual)
	Five College DataFest, Northampton, MA	
	<i>Tour Guide</i>	2013 - 2014
<b>PROFESSIONAL DEVELOPMENT</b>	<i>Co-Instructor</i> , R Summer Workshop Series	2016
	Western Mass Statistics and Data Science Meet-Up, Northampton, MA	
	<i>Guest Lecturer</i> , d3 and Crossfilter	2015
	Western Mass Statistics and Data Science Meet-Up, Northampton, MA	
<b>COMPUTER SKILLS</b>	<i>Sheridan Teaching Seminar (Certificate I)</i> , Brown University	2020
	<i>Best in Show</i> , Five College Datafest	2014
	<i>Honorable Mention</i> , Undergraduate Statistics Class Project Competition	2014
	<i>Successful Participant</i> , Mathematical Contest in Modeling	2013
<b>COMPUTER SKILLS</b>	<i>Languages &amp; Software</i> : R, Python, C++, SQL, Bash, SAS.	
	<i>Visualization</i> : ggplot, Shiny, HTML, CSS, JavaScript.	
	<i>Big Data</i> : Spark, HDFS, Vertica.	
	<i>Workflow</i> : Git, L <sup>A</sup> T <sub>E</sub> X.	