

MICHAEL DEWITT

Winston Salem, NC

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EXPERIENCE

Cone Health

August 2019 - Current

Data Scientist - Intermediate, Data Scientist - Senior

Greensboro, NC

- Joined the Enterprise Analytics Data Science team at one of the largest health care systems in the North Carolina
- Lead infectious disease modeler during Covid-19 and core member of the Covid-19 Coordination Team. Role includes researching and developing advanced stochastic compartmental models tailored to regional differences, development of Bayesian state-space nowcast approaches to model changes in the reproduction number based on mobility data, and development of automated contact tracing system for outbreak detection.
- Provided weekly briefings to senior executives on Covid-19 models and trends. Includes media appearances and presentations to local officials and other entities in the community.
- Develop and Deploy predictive models to inform clinical operations including online predictions for patient admission probability, automatic detection of infectious disease outbreaks
- Provide forecasts and optimization for master bed planning operations
- Developed internal communications platform which includes specialized R packages, website, knowledge repository, and guide books for all of Enterprise Analytics. Also includes management of several Centos based servers that host applications and automated analysis pipelines.

Wake Forest University

October 2017 - August 2019

Data Scientist

Winston Salem, NC

- Worked in the Office of Institutional Research performing descriptive, predictive, and prescriptive analyses on a variety of topics from student outcomes analysis and observational experiment analysis to student retention prediction.
- Completed a predictive student retention risk model that highlights each student's risk of leaving the university using statistical machine learning techniques.
- Developed an "early warning" report to provide to the Office of Academic Affairs with students who are in a high risk category for early intervention based on data insights.
- Created an automatic data collection tool that combines various data from around campus and open source information into a centralized data store for further analysis.
- Conduct training on statistical topics, statistical programming, and data visualization techniques as part of the University wide "Business Intelligence and Analytics" team.
- Conduct survey analysis on university wide surveys which includes post-stratification and MRP.
- Serve as an internal consultant for programming and R related issues including developing an R packages to facilitate analysis and report writing.

Michelin North America

May 2013 - October 2017

Central Industrial Engineer

Greenville, SC

- Document and facilitate best practice sharing among all North American facilities and international locations. Coach plant staff and industrial engineers in the 10 manufacturing facilities.
- Identified and led prototype project to reduce the need to invest in new equipment through low cost machine modifications resulting in the savings of 2.3 million dollars.
- Used Monte Carlo simulation techniques in R to demonstrate a machine automation change could avoid 2 million dollars in losses per year.

- Developed an R package and Shiny App to model impact of new tire lines on industrial results.
- Developed an optimization algorithm which led to the development of a patented process.
- Provide studies and impact analysis on new product evolution including capacity, value stream mapping, sensitivity analysis, flow and storage impact including recommendation of new processing equipment to the global steering team.
- Lead the Best Practice Sharing Network which identifies and documents best practices and shares them with the different manufacturing facilities.
- Viewed as a reference on information systems, data visualization, analysis and business intelligence for manufacturing. Includes working to start a data science for manufacturing team and providing training to users on tools, analysis, and statistics.

Michelin North America

May 2010 - May 2013

Industrial Engineer

Columbia, SC

- Continuous Improvement Engineer for a shop of 163 operations employees, 15 maintenance technicians and 24 contractors in 4 separate business units with 22 individual machines. Responsible for determining capacities, staffing, guiding continuous improvement efforts and leading the annual business planning process.
- Implemented a plant-wide automated kanban system from curing through assembly and extrusion to create a pull system to the plant bottleneck.
- Developed dashboards and analysis tools to support use of the kanban tool company-wide.
- Developed a loading model using existing information systems that provides an eight week forecast (previously 1 week) of demand for the preparation shop allowing for capacity and flexibility planning.

Michelin North America

May 2007 - Aug 2009

Continuous Improvement Intern

Columbia, SC

- Two Summers as continuous improvement intern, implementing Michelin's Continuous Improvement System.

EDUCATION

Clemson University

2006-2010

B.S. in Chemical Engineering
 Minor in Philosophy

North Carolina State University

2015-2017

Post Baccalaureate Studies (*non-degree*)

North Carolina State University

2017-2019

Masters in Statistics

PUBLICATIONS

Michael E. DeWitt, Christopher Scheib, Morgan Jones and Pamela Cowin North Carolina Medical Journal July 2021, 82 (4) 284-286; DOI: <https://doi.org/10.18043/nmc.82.4.284>

Sam Abbott, Joel Hellewell, Katharine Sherratt, Katelyn Gostic, Joe Hickson, Hamada S. Badr, Michael DeWitt, Robin Thompson, EpiForecasts, and Sebastian Funk (2020). EpiNow2: Estimate Real-Time Case Counts and Time-Varying Epidemiological Parameters, DOI: 10.5281/zenodo.3957489

Sam Abbott, Nikos Bosse, Joel Hellewell, Katharine Sherratt, James Munday, Robin Thompson, Aurelien Chateigner, Sylvain Mareschal, Andrea Rau, Nathalie Vialaneix, Michael DeWitt and Sebastian Funk (2020). EpiSoon: Forecast Cases Using Reproduction Numbers. R package version 0.3.0.

DeWitt, Michael, and Phil Handwerk. "Wake Forest's Ten Years of Test-Optional Admissions: A Review of Students Who Did Not Submit Versus Those Who Did." In The Scandal of Standardized Tests: Why We Need to Drop the SAT and ACT, by Joseph A. Soares. Teacher's College Press, April 2020.

Bruno Castanho Silva and Michael DeWitt (2019). SCTools: Extensions for Synthetic Controls Analysis. R package version 0.3.0. <https://CRAN.R-project.org/package=SCTools>

DeWitt et al., (2019). tidyqwi: A Tidy Approach to Accessing The US Census Bureau's Quarterly Workforce Indicators. Journal of Open Source Software, 4(38), 1462, <https://doi.org/10.21105/joss.01462>

Summers, Phillip, and Michael DeWitt. "Analysis of the Winston-Salem Public Transit System." Virginia Policy Review, October 31, 2018. <http://www.virginiapolicyreview.org/1/post/2018/10/analysis-of-the-winston-salem-public-transit-system.html>.

DeWitt, Michael. "Institutional Research Survey Analysis and Reporting Methodology." Technical Report. Winston-Salem, NC: Wake Forest University Department of Institutional Research, May 8, 2018. https://prod.wp.cdn.aws.wfu.edu/sites/202/2018/05/oir_survey_methodology.pdf.

PRE-PRINTS

DeWitt, Michael E. "Rapid Impact Analysis of B.1.1.7 Variant on the Spread of SARS-CoV-2 in North Carolina." MedRxiv, February 9, 2021, 2021.02.07.21251291. <https://doi.org/10.1101/2021.02.07.21251291>.

DeWitt, Michael E. "Automatic Contact Tracing for Outbreak Detection Using Hospital Electronic Medical Record Data." MedRxiv, September 13, 2020, 2020.09.08.20190876. <https://doi.org/10.1101/2020.09.08.20190876>.

QUALIFICATIONS AND TRAINING

Certifications	Engineer in Training #19393 Lean Six Sigma Greenbelt Clemson Center for Excellence in Quality CITI Human Research for Social Sciences
Additional Training	Positive Management Leadership Situational Leadership AT Kearny's Lean Program

TECHNICAL STRENGTHS

Languages	Expert: R, SAS, SQL, Stan, bash, git, L ^A T _E X, Markdown Intermediate: French, Spanish, JAGS, HTML, CSS, VBA Novice: C++, Python, Julia
Visualization	MS Power BI, Microstrategies, Tableau, ggplot2