

BRIAN MUIR, PHD


Highly-inquisitive team-leader with 11+ years of experience employing machine learning and statistics in the healthcare industry and in computational biology. Direct the forecasting of \$10+ billion in pharmacy and medical claim expenses using advanced predictive models in R for Centene Corporation's (Fortune 500) marketplace insurance LOB.

EDUCATION

2016
|
2010


- **University of California Riverside**
Ph.D. in Evolution, Ecology & Organismal Biology  Riverside, CA

2010
|
2006


- **Boston College**
B.S. in Biology, Psychology (Double Major)  Chestnut Hill, MA

PROFESSIONAL EXPERIENCE

Current
|
Jul, 2018

- **Director - Marketplace Forecasting**
Centene Corporation / *Actuarial Services*  Chicago, IL
 - Direct the development, implementation, and presentation of the financial forecast for medical expenses across 26 state products using mixed-models regression.
 - Lead a team of six actuaries and data analysts working on a wide range of analytics projects encompassing: interactive claims dashboards using Rshiny and RMarkdown, advanced forecasting methods, SQL database creation and maintenance, and ad-hoc deep dive analyses for multiple business partners across Actuarial, Finance, Sales, Product, Policy, Medical Management, Pharmacy, and Marketing.
 - Present findings to leadership on member-segmented variances to forecast, financial impacts of COVID cost and deferral of services, and deep-dives into claims trends during monthly CFO financial briefings.
 - Developed a member-level gross margin database detailing revenue and expense components across 40 targetable member characteristics that integrates disparate data sources using SQL/R. Deployed overlaying drill-down dashboard in RSConnect used widely across departments to identify risks and opportunities for member-segmented business actions.
 - Identified an \$8M annual initiative to improve on risk adjustment code capture of Hemophilia that we continue to support with outreach targets via an in-production Shiny Dashboard.
 - Created stratified med-management model based on interacting the two dimensions of utilization and health status to highlight top conditions, disease management status/acceptance, risk score, risk adjustment code capture opportunity, claim costs and demographics by segment to identify optimal cohorts for med management programs.


Jul
2018-
Sep
2016

- **Data Scientist I**
Centene Corporation / *Actuarial Services*  Chicago, IL
 - Built and implemented a novel claims completion model using regression to estimate incurred but not reported expenses prior to month end; an advance over traditional methods to accelerate preparation of financial reporting and commentary.
 - Developed a claims outlier detection model by Episode Treatment Group to direct investigations into abnormal claim areas each month.
 - Designed primary care auto-assignment algorithm to optimally assign members to high-quality, low-cost providers.
 - Devised Rx Trends and Top Conditions interactive RMarkdown dashboards to highlight emerging trends in Rx utilization; present findings monthly during Rx Governance Committee meetings.

CONTACT INFO

 brian.m.muir@gmail.com

 github.com/bmuir

 +1 774-222-2081

For more information, please contact me via email.

SKILLS

Experienced in statistical analysis, hypothesis testing, predictive modeling, experimental design, healthcare analytics, financial forecasting and budgeting.

Languages

R, SQL, Git / Gitlab, Excel, Tableau, PowerBI, Python, CSS, C++

End-to-End R Skills

Extraction (DBI, dbplyr, RODBC)
Wrangling (tidyverse)
Modeling / Statistics (tidymodels, lme4, ts, etc.)
Visualization (ggplot2, gt, DT, etc.)
Production (RShiny, RMarkdown, RNotebooks, RSConnect)

TEST

Extraction (DBI, dbplyr, RODBC), *Wrangling* (tidyverse), *Modeling* / *Statistics* (tidymodels, lme4, ts, etc.), *Visualization* (ggplot2, gt, DT, etc.), *Production* (RShiny, RMarkdown, RNotebooks, RSConnect)

Statistics

Experimental design, GLMs, time series, regression and classification, Generalized



RESEARCH EXPERIENCE

2010
|
2016



Graduate Research Assistant

University of California Riverside

📍 Riverside, CA

- Analyzed large gene expression datasets with R (Bioconductor) using non-parametric statistical models.
- Performed statistical tests of codon evolution in cancer gene-sequence alignments using maximum likelihood models.
- Designed and directed multi-year longitudinal experimental evolution study on fruit flies overseeing 2 – 6 undergraduate volunteer research assistants per quarter. Employed advanced experimental design statistics.
- Taught 18 quarters of upper and lower division biology courses with up to 150 students per week. Mentored 2 – 6 undergraduate volunteer research assistants per quarter.



PUBLICATIONS AND PRESENTATIONS

2015



The expression of tumour suppressors and proto-oncogenes in tissues susceptible to their hereditary cancers.

Muir, B. & Nunney, L. British journal of cancer, 113(2), 345-353.

2015



Peto's paradox and the hallmarks of cancer: constructing an evolutionary framework for understanding the incidence of cancer.

Nunney, L. & Muir, B. Phil. Trans. R. Soc. B, 370(1673), 20150161.



Presentations

- International Biannual Evolution and Cancer Conference - Lightning Talk & Poster | 2015
- Evolution Conference - Talk | 2014



EXAMS

Society of Actuaries Exams

- PA - Predictive Analytics | Jun 2019
- SRM - Statistics for Risk Modeling | Jan 2019
- P - Probability | Sep 2018