

## BRIAN GRINER, PhD

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Data science / AI / statistical modeling consultant and researcher with 15+ years' experience analyzing healthcare data covering: marketing science (market research surveys), commercial analytics and forecasting (physician scripts, sale force details/non-personal promotions, payer/provider organizational associations), Health Economic Outcomes Research (Electronic Health Records/patient medical and pharmacy claims) and Clinical trial data (Survival modeling of Overall Survival and Progression Free Survival). Able to apply a diverse set of analytic frameworks (econometrics, statistics (Bayesian, biostatistics), machine/deep learning, Bayesian networks) with cross-sectional, time series and panel data to provide strategic business insights, predict market impact and business value. Ability to quickly understand client needs and utilize the client's data resources to create insightful research findings from models that identify key business drivers (leading and lagging indicators) to predict business impact over time. Models can be applied to score databases to support forecasting and tracking of key performance metrics associated with promotional activities.

Data/ML engineering consulting for data science teams working in enterprise high-performance computing environments (Azure, GCP, AWS and onsite Linux server environment). Able to provide support with prepping data inputs, setting up ML pipeline code for data prep/cleaning, model testing, selection and deployment to new data inputs or REST API.

## SKILLS

### *Management*

- 10+ years experience managing internal and external clients, direct reports, and client projects on cross-functional teams tasked with high profile projects
- Translate business questions into focused analytic workstreams that include: research design, data integration, appropriate analytic methods to produce high value, executive insights to support key business decisions and planning
- Leverage advanced analytic methods from statistics, machine learning and AI to deliver clear, actionable analytic insights and business recommendations
- Strong written, verbal and presentation skills and experience communicating to business audiences through many channels: meetings with internal colleagues, clients; national conference presentations and written scientific and trade publications
- Communicate complex analytic concepts into insights for a non-technical audience. Use business acumen and experience to connect analytic concepts and insights to a familiar context (e.g. football, golf, etc.) to help clients answer key business questions internally
- Develop advanced analytics teams that can work with internal and external business partners

### *Analytics*

- Multidisciplinary approach to analytics that leverages concepts from Multivariate Statistics, Bayesian Statistics, Time-Series Modeling, Econometrics, Marketing Science, Statistical Learning, Machine Learning and Deep Learning to analyze complex Real World Datasets of patients, physicians, hospital pharmacists and payer organizations
- Examples include:
  - **Promotional Response modeling** with physician/sales rep interaction data to predict future physician prescribing in response to rep approved emails, optimal level of rep approved emails, identify which messages have the greatest impact on future prescribing and ROI of email campaigns
  - **Physician segmentation and targeting** using integrated patient claims; physician, provider, healthcare organization profiles to create and predict individual segment membership to create target list for physician engagement model.
  - **Patient journey modeling** using Bayesian network to predict changes in duration of therapy for Parkinsons disease patients under different market scenarios to target key leverage points for marketing interventions
  - **Natural Language Processing.** Created text analyzer class for sentiment analysis of web pages, text files and strings using Python builtins, beautiful soup library and custom positive / negative word lists. Contains methods to calculate and plot word and character distributions, properties for total and distinct word counts, avg word length and a document positivity score, unit testing
  - **Online patient segmentation** using IQVIA AdIQ. Link patient IP address and location from digital marketing campaigns using different channels (e.g. banner and display ads, contextual search, programatic and endemic publishers) to internal database of patient Rx history. Segmentation used to allocate marketing spend across online channels.

### *Data Engineering*

- **Cloud computing:** Experience working in Azure, GCP, AWS as well as online Linux and Windows Server environments.
- **Programming languages:** Python, SAS, Unix/Linux shell, SQL (primarily for creating views and derived metrics for analytic datasets) in Oracle, MySQL, Snowflake, Redshift, (some Spark using SQL context/PySpark) and Python via ODBC or Database API v2.0

- **Interactive dashboards** for predictive models in PowerBI, e.g. Interactive immuno-oncology dashboard in Power BI using Python to deploying a model of Overall Survival

## Data sources

8+ years experience with real world data in Healthcare including:

- **Patient claims** (Symphony Health open claims, Truven MarketScan closed claims, IQVIA LAAD - Longitudinal Access and Adjudication Data)
- **Electronic Medical Records** (IQVIA Ambulatory EMR-US)
- **Physician/Provider/IDN Master Data** (Definitive Healthcare affiliations, Veeva OpenData, IQVIA OneKey)
- **Physician/payer Rx** (Xponent, PlanTrak)
- **Aggregated Specialty Pharmacy/Specialty Distributor** data
- Patient / Physician hub data
- **FDA Adverse Events Reporting & System (FAERS)** – Comprehensive global repository of data sources collected over a 20+ year period.
- **Market access** datasets: PlanTrak, Fingertip Formulary, Formulary Impact Analyzer, pharmacy Value of patient copay cards and market access contracts
- **Patient Reported Outcomes**, conjoint preference data, patient chart pulls
- **Consumer Financial Protection Bureau Consumer Complaint Database** - Big data batch pipeline to create summary report of consumer complaints by date and type from a large csv file (1.5+ mil. rows) using Python standard libraries and Linux shell script [https://github.com/briangriner/read\\_write\\_big\\_csv](https://github.com/briangriner/read_write_big_csv)

## Teaching

- **Learning Lab at Data Science & Learning Systems:** Develop and test ML/AI training materials through a series of 5 online workshops that introduced participants to ML/AI tools in the Python ecosystem: *Python language, Numpy, Pandas, Matplotlib, Scikit-learn and TensorFlow libraries*.
- Workshop textbook: **Geron A. Hands-On Machine Learning with Scikit-Learn, Keras & Tensorflow: Concepts, Tools and Techniques to Build Intelligent Systems. 2<sup>nd</sup> ed.** Sebastopol (CA): O'Reilly; 2019 (click on [link](#) to see jupyter notebooks used in workshop)

## EXPERIENCE

### DATA SCIENCE & LEARNING SYSTEMS, LLC - Founder and CEO

June 2017 to present

- Create new business insights from multiple data sources using Econometric, Time-series and statistical modeling, Statistical Learning, Machine Learning and Deep Learning models
- Integration of business and engineering data sources for analytics including: images, text, internet log files
- Professional experience includes projects in the life sciences, commercial pharmaceutical, financial services, technology, media and environmental non-profit sectors
- Teaching/mentoring ML and data science via hands on workshops, public classes (Princeton School of AI at Princeton Library) and participation in open-source projects (e.g., Open Source Technology Foundation)
- **Sample of projects:**
  - ***Stemline** - launch analytics for Elacestrant, new oral therapy for HR +/- HER2 - breast cancer*
  - ***MedRhythms next-generation neurotherapeutics** - medical device launch of novel music therapy device for post-stroke patients with residual gait impairment.*
  - ***Open Source Technology Foundation – HealthOne Project** – Interactive online tools for healthcare professional using the FDA Adverse Event Reporting System (FAERS) data. [https://github.com/briangriner/OSTF-FAERS/blob/main/faers\\_multilabel\\_outcome\\_ml\\_pipeline-dask-joblib\\_2\\_16\\_2021.ipynb](https://github.com/briangriner/OSTF-FAERS/blob/main/faers_multilabel_outcome_ml_pipeline-dask-joblib_2_16_2021.ipynb)*
  - ***American Statistical Association Biopharmaceutical Section Regulatory-Industry Workshop. PS40-Supervised Machine Learning to Identify Social Behavioral Health Care Risks for COVID-19—Related Mortality and Inform Targets for Treatment and Prevention***
  - ***Velocity, Acceleration, Jerk and Snap? Predicting Google Search Trends with Higher Order Derivatives of Motion (velocity, acceleration, jerk, snap)** using multivariate time-series LSTMs, CNNs and MLPs.*
  - ***Project management prognostic risk scoring model** - Agile project management Azure web app to predict user and team risk of task set non-completion*
  - ***Online Dashboard for Immuno-Oncology Clinical Trial.** Created pipeline process for transforming clinically validated SDTM and ADaM SAS datasets into interactive web dashboard with plots and graphs defined in the Statistical Analysis Plan that include interactive Kaplan-Meier plots for OS, PFS, TTE and Waterfall charts to measure Tumor Response over time for individual patients in different Best Response categories*
  - ***Predicting Heterogeneous Risk Factors and Prognostic Symptom Clusters for Prevention and Management of Pre-Diabetes and Metabolic Syndrome** using Gradient Boosting, XGBoost Ensemble Learning and Partial Dependence Plots to identify key predictors*
  - ***Digital Display Ad Resource Allocation Model** to target top performing pharma publisher domains for prioritizing media spend using sparse SVD, k-nearest neighbors and random forest*
  - ***TextAnalyzer class in Python:** Performs sentiment analysis and text analytics of web pages, text files and strings. Accepts custom word lists for the definition of positive and negative sentiment used to calculate sentiment scores.*
  - ***Anomaly detection** in import/export shipments using statistical tests of homogeneity*

**EVERSANA - Consultant****November 2021 to May 2022**

- Supported Eversana commercial team on launch of MedRhythms innovative medical device using music therapy and wearable sensors to treat patients with post stroke residual gate impairment.

**BAYER PHARMACEUTICALS - Consultant****December 2019 to mid-February 2020**

- Supported Commercial Data Management team to organize and complete data documentation across Bayer's pharmaceutical product franchises, e.g., diabetes, CKD, Oncology, hematology, ...
- Data types included: administrative claims, specialty pharma/distributor, customer data master
- Created SQL queries/views to help data analysts extract information schema from Bayer's data warehouse for individual products to incorporate into the data documentation platform

**ASSEMBLY - Director, Analytics****February 2018 to May 2018**

- Analytic support for large pharmaceutical account** for all currently marketed products
- Online dashboards of KPIs for multichannel media campaigns** including: Impressions, Clicks, CTR, Digital conversion, Rx conversion, ROAS, Spend pacing by Display, Search, Mobile, TV, Social
- Analysis of IQVIA ADIQ data** linking impressions to specific patients by disease category and type: New To Brand, Switch, Newly Diagnosed, Currently on client's product

**BOEHRINGER INGELHEIM – Sr. Assoc. Director, Data Strategy & Innovation****January 2016 to May 2017**

- Speaker Bureau Rx Impact Analysis** using event attendance history, speaker profile and attendee monthly Rx prescribing change
- Outbound Telemarketing Campaign Effectiveness** using call center history and monthly physician Rx prescribing change
- Physician Rx influencer predictive model score** using CMS physician to physician patient referral data
- Rep-Approved Email Click-Through promotion-response model score** using weekly physician NRx, rep-physician personal promotions (details and samples), email campaign history and content
- Diabetes Franchise Provider Access Analysis** using physician – provider associations and monthly physician Rx by brand

**QUINTILES (now IQVIA) – Chief Methodologist, Advisory Services****November 2012 to April 2015**

- Member of Commercial Advisory Services team** that included HEOR, IT, Clinical Sales and Consulting
- Real World Data Patient-based line of therapy physician treatment choice model and market share simulator** based on integrated treatment pathway and duration of therapy model using the GE EMR data to predict product sales in local geographies and create propensity scores for health outcomes model
- Patient journey simulator using Bayesian Network** built from pharmacy, hospital and medical claims data
- R & D, Real World Data** comorbidity analysis across 10 therapeutic areas using EMR data
- Provider evidence-based order set impact analysis** using EHR for an IDN both across facilities within a department and within a facility across departments; Survival modeling using patient claims data to measure medication adherence, Lifetime Value and identify predictors of adherence and value in oncology;
- PRO** structural equation model to measure association between levels of patient engagement and outcomes in respiratory;
- Access & Pricing:** Payer global value-based pricing models in oncology and infectious disease
- Market Research linked experimental design and choice model** of payers, providers and hospital decision-makers to measure pricing vs market access trade-offs to support Go-No Go decision in pre-term labor market
- Market Research and Physician Rx integrated Sales Force Effectiveness model** of sales and support service quality in the respiratory market. Model predicted incremental Rx share for an increase in perceived quality of the client's field reps and support services relative to competitors
- Market Research Payer-based choice-model and price-market access simulator** for HIV, HCV, Oncology markets using hierarchical Bayes random effects model of physicians and payers

**KANTAR HEALTH - Sr Methodologist, Advanced Methods****June 2010 to October 2012****BIOVID CORP - Exec Dir, Strategic Analytics****November 2007 to May 2010****EDUCATION**

UNIVERSITY OF PITTSBURGH, GRADUATE SCHOOL PUBLIC &amp; INTL. AFFAIRS - Pittsburgh, PA

**PhD Public Policy Research Methods** - *Doctoral Program Award* (Academic Excellence in Dissertation Research)**MPA Public Administration** - *Thesis: Evaluation of Alternative Methods for Forecasting Regional Industry Employment*

WEST CHESTER UNIVERSITY - West Chester, PA

**BA Communications** (Magna Cum Laude)

RUTGERS UNIVERSITY - New Brunswick, NJ

**Certification:** Oracle SQL and PL/SQL + Python Developer + Java Programmer (5 month program)

COURSERA

**Certificate:** Google Cloud Platform Big Data and Machine Learning Fundamentals<https://www.coursera.org/account/accomplishments/records/8XTLJMCD9RAG>



Google Cloud Essentials Quest



Google Cloud Foundational Data, ML and AI Quest

[https://google.qwiklabs.com/public\\_profiles/4fe14e18-78a7-40e5-9a06-3d9262c860b3](https://google.qwiklabs.com/public_profiles/4fe14e18-78a7-40e5-9a06-3d9262c860b3)

### AWARDS

- IPSOS NEW PRODUCT INNOVATION AWARD - 2001 Florence, Italy for customer satisfaction (CS) management system for inbound call center for automated reporting and manager email alerts for dissatisfied, high-value customers.

### SAMPLE OF POSTS, PRESENTATIONS, POSTERS & PUBLICATIONS

- *American Statistical Association Biopharmaceutical Section Regulatory-Industry Workshop. [PS40-Supervised Machine Learning to Identify Social Behavioral Health Care Risks for COVID-19—Related Mortality and Inform Targets for Treatment and Prevention](#)*
- *2018 Future Pharma Commercial Data Insights Conference: [Practical Applications for Building A Commercial Center of Excellence: Digital Analytics Case Study](#)*
- *ICAAC/ICC 2015 – 55th Interscience Conference on Antimicrobial Agents and Chemotherapy: [Inconsistency in Defining Profound and Prolonged Neutropenia for Antifungal Prophylaxis Decisions](#). A. H. Sung <sup>1</sup>, T. Rhodes <sup>1</sup>, J. Arduino<sup>1</sup>, S. W. Marcella <sup>1</sup>, R. Stolper <sup>2</sup>, M. Meyer <sup>2</sup>, D. Kombe <sup>2</sup>, B. Griner <sup>2</sup>; 1. Merck & Co., Inc., Kenilworth, NJ, 2. Quintiles, Durham, NC*
- *June 2014 Life Science Leader: [Navigating the New World of Value-Based Healthcare](#)*