



NOVEMBER 14-15, 2018 • PHILADELPHIA, PA

EXPLORE STRATEGIC MCM PLANNING AND BUILDING A CENTER OF EXCELLENCE

FORM & FUNCTION FOR CUSTOMER ENGAGEMENT

ABOUT ME

Brian Griner, PhD



Brian Griner is a PhD in applied micro economics, econometrics, and multivariate statistics with 16 yrs experience in the pharmaceutical industry supporting HCP, Payer and Provider marketing teams, sales management and medical affairs. He is an expert in the application of econometric modeling, marketing science, machine learning, statistical learning and deep learning to discover strategic insights and identify hidden value drivers that impact marketing and sales performance.

Areas of analytic expertise include:

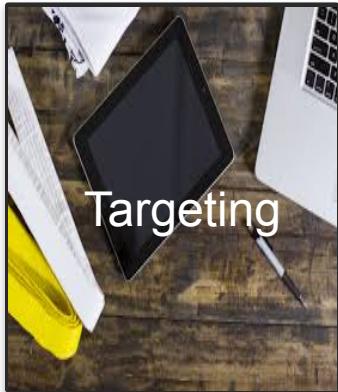
- **Health Economic Outcomes Research:** *Retrospective studies using EMR, EHR, Claims data*
- **Payer and Provider Research:** *Segmentation, targeting, formulary positioning, pricing*
- **Marketing Science:** *Case based linked choice models using conjoint designs for market simulation. Real world evidence-based Bayesian network models for supplementary indication planning*
- **Commercial Analytics:** *Promotion-response modeling for HCP non personal campaigns, influencer network modeling for specialist targeting*
- **Machine Learning:** *Feature engineering of server logs for segmentation of publisher sites to inform allocation of media spend for display advertising*
- **Statistical Learning:** *Ensemble learning and partial dependence plots for identification of high-risk subpopulations with metabolic syndrome.*
- **Deep Learning:** *CNN + LSTM network with attention for social media image captioning. LSTM networks for time series analysis.*



DIGITAL ANALYTICS CASE STUDY:

Segmentation and Targeting of Endemic Partner Sites for Optimal Customer Engagement

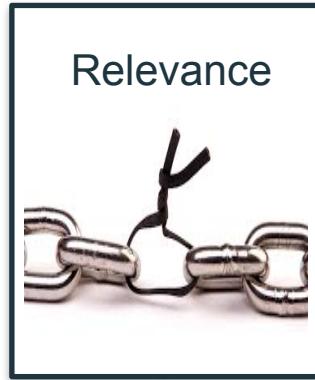
Digital Customer Engagement Strategy



Targeting



Reach



Relevance

Right customer, Right Channel,
Right message



Strategic Analysis for Digital Media Targeting

- **Business Case:** Digital media has a low engagement rate and ROI. Banner ads can be somewhat commoditized in media buying
 - How do I use the CoE to improve my messaging and targeting in the digital channel?
- **Marketing Excellence Approach:**
 - Execution of online ads directed at specific segments with focused content through specific endemic publisher segments
- **Analytics solution:**
 - Use of machine learning to identify top performing publishers for your target segments



Research Design

- Study populations:
 - Endemic content partner sites, e.g., Web MD, Everyday Health, ...
 - Customer-site interactions
- Performance measure:
 - Predicted propensity for customer engage (CTR)
- Control factors:
 - Number of impressions served by partner site
 - Viewability of ads served by partner site
 - Number of unique potential customers reached by partner site
- Data source:
 - Client server log files from campaign



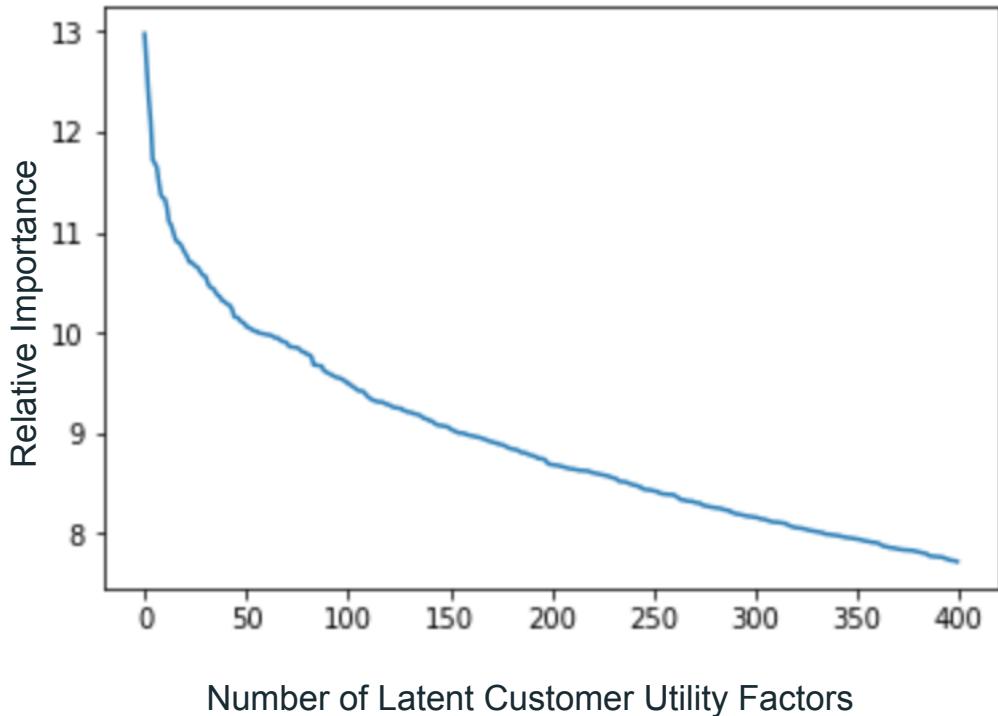
Collaborative Filtering used to extract customer utility for specific publisher sites

- Collaborative Filtering used for recommender systems by top online brands (e.g. Netflix, Amazon marketplace)
- Collaborate Filtering measures customer utility for a site through **revealed preference**
 - When a customer clicks on an ad (or does not click), they reveal their preference for that site
- Measures of customer utility from Collaborative Filtering used as predictors of the CTR in machine learning models



Singular Value Decomposition (SVD) of Customer-Site Interactions - 400 Factors 400,000 Customer Interactions

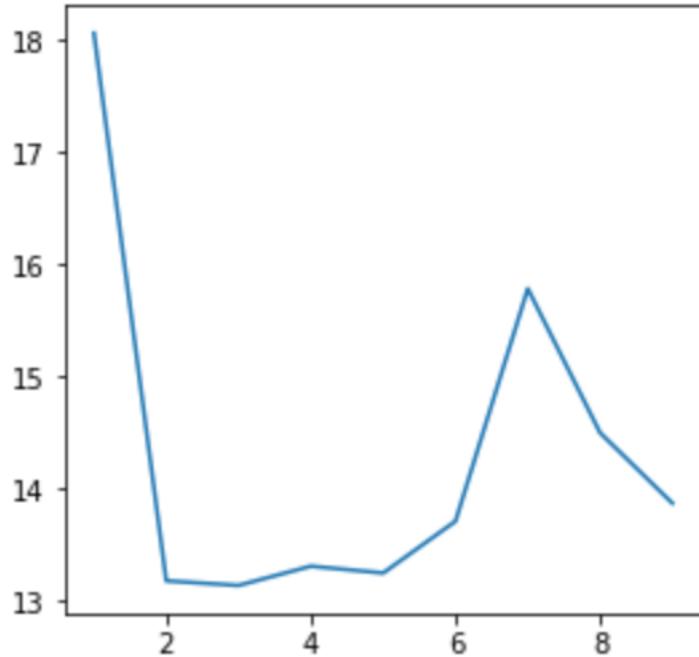
- Transforms customer-site interactions into site specific latent utilities
- Latent utility factors represent customer revealed preferences for specific sites
- Data reduction benefit:
 - *Reduces 400,000 customer interactions into 400 latent utility factors*





K-Nearest Neighbors - Optimal number of neighbors is 2

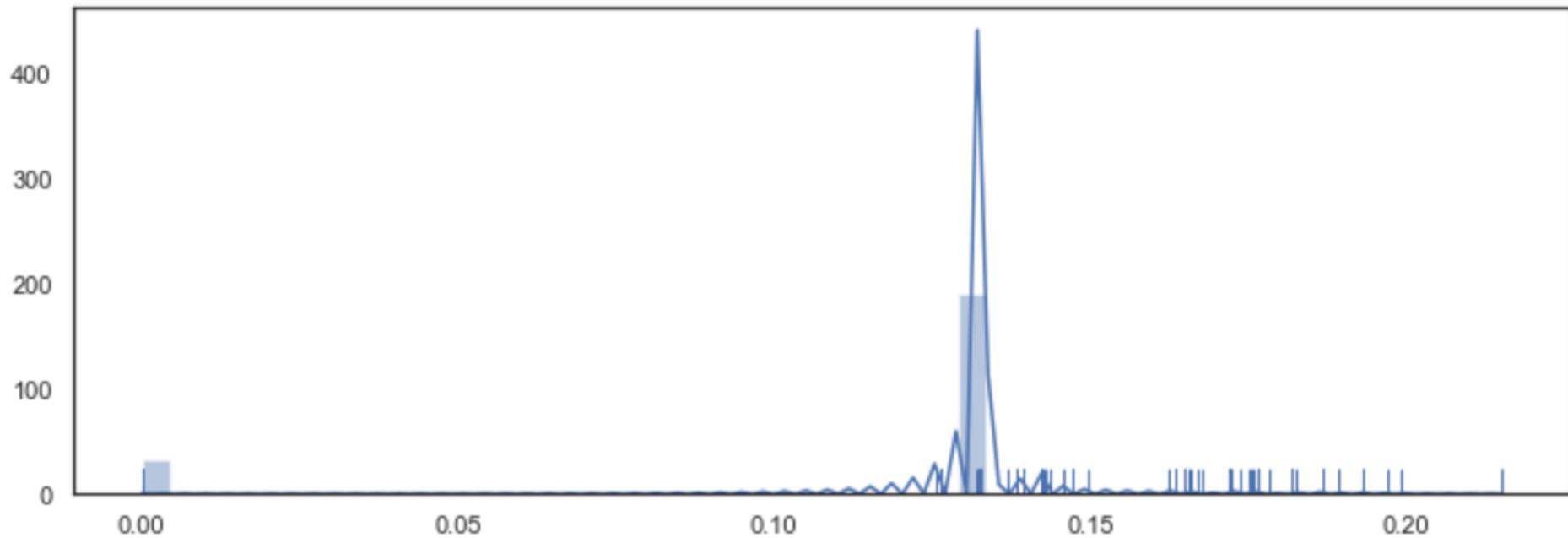
- K-Nearest Neighbors predicts the CTR for a publisher domain by averaging the CTR of the 'k' most similar publishers
- Similarity / dissimilarity is measured by the pairwise distance between publishers
- To find the optimal value for k, a grid search is used to identify the value of k that minimizes the Root Mean Squared Error (RMSE)
- In this sample, the optimal value for k is 2





K Nearest Neighbors: Top 40 publisher domains have the highest level of engagement

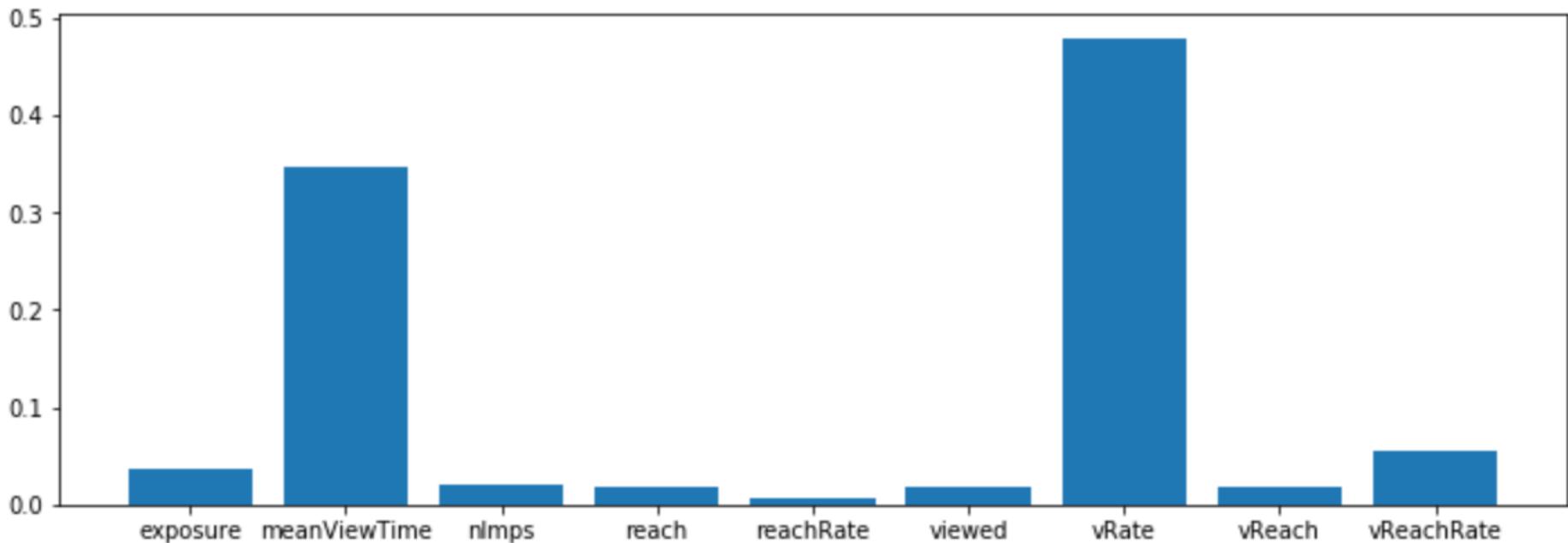
- Targeting: Top 40 - 120 publisher domains have the highest customer engagement





Random Forest Regression: Key Drivers of Customer Engagement

- Random Forest Regression identified two metrics that drive the click through rate:
Average View Time and the Viewed Rate
- Viewed CTR and View Time are related to the attraction of great content





Customer Engagement Analytic Insights

-  **Segmentation:** Collaborative Filtering used to segment endemic publisher sites on latent customer utilities
-  **Targeting:** Machine Learning used to predict customer propensities scores used to target top performing sites
-  **Content:** Optimize display ad placements on endemic publisher sites by allocating ad spend to top performing sites