

# **Heather Leffew, PhD**

## **Data Product Strategist | Behavioral Science & Analytics**

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### Summary

Results-driven product and data science leader with 10+ years of experience building and scaling high-impact data products and leading cross-functional teams of up to 25 members across global organizations. PhD-level expertise in measurement, behavioral modeling, and causal inference, with proven track record launching analytics platforms, attribution models, and BI tools processing billion-record datasets. Expert in end-to-end data product lifecycle—from architecture and ETL to statistical analysis and go-to-market—with history of driving significant business outcomes including \$500K+ funding, multi-million dollar acquisition offers, and 40% operational efficiency gains. Seeking to apply a decade of experience in large-scale data measurement and user behavior analytics to drive the next generation of performance marketing attribution and incrementality products.

### Experience



#### **Full-Stack Principal Data Scientist & Applied Researcher - TikTok US**

07/2022 - Present

**Owned product roadmap and led cross-functional pods** of up to 25 members (data science, policy, engineering, operations) across global regions (UCAN, LATAM, EU, GBR, APAC), delivering behavioral insights and measurement products that directly translate to understanding user engagement, attribution, and incrementality in commercial performance marketing contexts.

- **Architected and launched comprehensive analytics product suite** including proprietary text analysis pipeline (Project SCOPEX) and multi-signal detection frameworks processing 1B+ records, preventing advertiser churn through brand safety assurance while driving content strategy optimization
- **Developed and scaled measurement products** using prioritization frameworks to identify highest-impact initiatives, resulting in identification of 400K+ violative accounts and enabling mass banning of 15K+ accounts with zero increase in user appeals while delivering 40% reduction in manual review effort, saving an estimated \$2M+ in annual operational costs
- **Successfully advocated for dedicated computational infrastructure** securing YARN queue allocation and critical resources after years of failed attempts by other leaders, enabling scalable data processing and reducing query failures through strategic stakeholder management and technical specifications development
- **Led go-to-market strategy** for analytics products including resource planning for large-scale initiatives, team allocation, hardware upgrades, and procurement of previously unvetted third-party software solutions through enterprise processes
- **Directed collaborative research partnerships** with Harvard Medical School, Ontario Brain Institute, and external institutions, working with stakeholders to define product requirements while establishing industry-first IRB processes for ethical research review and securing legal approval for cutting-edge methodologies
- **Built automated detection systems** with 95%+ accuracy deployed organization-wide, developing comprehensive analysis tools spanning 5,000+ lines of Python code for highest-harm platform issues, directly protecting advertiser brand safety and platform integrity



#### **Head of Accreditation - National Emergency Responder and Public Safety Center**

11/2020 - 07/2022

**Led product development team of 8** responsible for course development, market penetration analysis, and accreditation compliance, with full P&L responsibility for programs serving 1,000+ public safety agencies.

- **Drove B2B client acquisition by authoring winning RFPs**, translating complex agency needs into tangible product solutions and strategic partnerships, resulting in adoption by 1,000+ agencies and generating multi-million dollar acquisition offers
- **Owned product vision and strategy** for dynamic analytics products including dashboards (Tableau, Power BI) and outcome measurement tools, working with stakeholders to define product requirements that provided strategic insights driving client retention and expansion
- **Built strategic partnerships** with National Organization of Chiefs of Police, Association of Threat Assessment Professionals, Lexipol Inc., and regional disaster response organizations, expanding market reach and product offerings
- **Secured significant revenue growth** through RFPs, grants, and market expansion that **attracted multi-million dollar acquisition interest** and positioned organization for strategic exit
- **Presented to government officials and regulatory bodies** including oversight commissions and public safety leadership, ensuring compliance while driving product strategy



#### **Director of Evaluations and Analytics - Brower Psychological Police and Public Safety Services**

07/2019 - 07/2022

**Directed three product teams with 18 total direct reports**, overseeing complete product lifecycle for pre-employment assessments, people analytics platforms, and wellness programs while managing stakeholder relationships across executive teams and regulatory bodies.

- **Increased operational throughput 5x** by leading digital transformation initiative, deploying cloud-based psychological assessment products and digitalizing organizational workflows
- **Secured over \$500K in grant funding** by leveraging data-driven product roadmaps, demonstrating measurable DEI outcomes, and crafting proposals emphasizing behavioral insights and digital innovation
- **Built strategic partnerships** with American Psychological Association, National Board of Certified Counselors, California and Colorado POST commissions, expanding service offerings and regulatory compliance
- **Successfully authored and won numerous RFPs** to grow portfolio of client agencies across multiple states, driving dramatic revenue increases and market expansion
- **Developed predictive analytics capabilities** for mental health service forecasting, improving resource allocation for underserved populations through evidence-based product interventions

## Experience



### Practicum, Doctoral, and Post-Doctoral Positions - Fielding Graduate University

05/2015 - 07/2019

**Led supervision and training programs** for 12 master's level clinicians and practicum students across multiple specialized contexts while conducting advanced research in predictive behavioral analytics.

- **Assistant Disaster Coordinator, Comprehensive Clinical Services:** Aurora Mental Health Center
- **Critical Incident Response, Fitness for Duty Evaluations, Psychotherapy:** Brower Psychological Police and Public Safety Psychology
- **Research Assistant:** Clinically Predictive Linguistic Analysis of Thematic Apperception Test Narratives
- **Teaching Assistant:** Theories of Psychotherapy
- **Diagnostic Psychological Evaluations:** Cedar Springs Psychiatric Hospital
- **Forensic, Occupational, and Clinical Neuropsychological Assessment:** Rocky Mountain Behavioral Health



### Staff Data Scientist - QMS Infotech, Inc.

03/2008 - 10/2019

**Pioneered development of advanced analytics products** to audit private-sector hiring practices, identifying systemic biases and developing psychometric frameworks grounded in regulatory compliance for B2B clients.

- **Built comprehensive analytics frameworks** enabling HR partners to implement bias-mitigating policies at scale while ensuring psychometric validity and legal compliance
- **Established statistical modeling practices** for organizational audit processes, delivering actionable recommendations that transformed client hiring strategies and improved diversity outcomes

## Skills

### Product Leadership & Strategy

Product vision, strategy, and roadmap ownership, cross-functional team leadership (up to 25 members), go-to-market strategy and product launch execution, B2B stakeholder management and client relationships, prioritization frameworks (RICE, MoSCoW) and product requirements definition, P&L management and budget oversight, resource planning and infrastructure advocacy

### Statistical Analysis & Machine Learning

A/B testing frameworks and experiment design, causal inference and behavioral modeling, predictive modeling (XGBoost, neural networks), statistical analysis and hypothesis testing, machine learning and deep learning, classification and clustering, time series analysis, psychometric frameworks

### Behavioral Science and Research

Measurement frameworks and predictive typologies, experimental and survey design, psychometrics and causal inference, natural language processing (NLP), behavioral modeling, customer segmentation, user behavior analysis, market research, content performance analysis

### Data Product Development

Analytics platform architecture and scaling, attribution modeling and incrementality measurement, BI tool and dashboard development (Tableau, Power BI, Looker, Mode Analytics), ETL pipeline design and data governance, product discovery and validation, competitive analysis, data lifecycle management

### Programming & Data Engineering

Python (Pandas, Scikit-learn, Statsmodels, NumPy, Matplotlib, Seaborn), R, SQL, PySpark, Spark, Hive, Scala, ETL processes, data pipelines, data architecture and modeling, data governance and quality management

### Business Strategy & Operations

Strategic partnerships and external collaborations, revenue growth and market expansion, grant writing and funding acquisition, regulatory compliance and accreditation management, organizational transformation and change leadership

### Performance Marketing & Measurement

Incrementality testing, attribution modeling, media mix modeling (MMM), multi-touch attribution, lift studies, holdout testing, marketing measurement, campaign optimization, conversion tracking, Google Analytics, Adobe Analytics, Mixpanel, Amplitude, Heap Analytics

### Cloud Infrastructure & MLOps

AWS (SageMaker, Redshift, S3, EC2), GCP (Vertex AI, BigQuery, Cloud Storage), Azure, Databricks, Snowflake, Docker, Kubernetes, Airflow, Jenkins, MLOps, CI/CD pipelines, version control (Git), YARN, Kafka, Redis

### Stakeholder Engagement & Communication

Executive presentation and board communication, government relations and regulatory engagement, client relationship management and B2B sales, team development and talent coaching, cross-functional collaboration and influence

## Education

### Doctor of Philosophy (PhD), Psychology - Quantitative Predictive Linguistics

Fielding Graduate University | APA Accredited

- **Dissertation Link:** [\*Instrumental and Affective Mass Murder: Establishing a Predictive Typology with Computer-Mediated Linguistic Analysis\*](#)
- **Conference Presentation Link:** [\*Implicit Power Drives in the Manifestos Preceding Autogenic Massacres\*](#)

### Master of Arts (MA), Psychology - Advanced Psychometrics | 4.14 GPA

Fielding Graduate University | WSCUC Accredited

### Bachelor of Science (BS), Psychology - Emergency Management & Public Safety | summa cum laude - 4.00 GPA

Liberty University | SACSOC Accredited

## Projects of Note

### Predicting B2B Buyer Intent with XGBoost & Hive Data

#### [View Project](#)

**Problem:** Increase sales efficiency by focusing effort not just on accounts likely to convert, but on those with the highest potential value.

**Solution:** Developed a dual-model B2B attribution product. A classification model predicts conversion probability while a regression model predicts expected deal size. The outputs are combined into a final priority score, enabling sales teams to target high-value opportunities and maximize ROI.

# Projects of Note

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## AI-Driven Email Personalization Engine

[View Project](#)

**Problem:** Optimize email campaign performance and drive engagement across diverse and nuanced customer segments.  
**Solution:** Architected a contact-level click prediction product using engagement history and intent data. The system maps model probabilities to a tiered personalization logic (e.g., direct CTA vs. soft nurture content) to scale personalized messaging and maximize engagement.

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## A/B Testing Framework for Product Feature Validation

[View Project](#)

**Problem:** Measure the true causal impact of a new "Optimal Outreach Timing" feature on sales engagement rates to inform a high-stakes rollout decision.  
**Solution:** Designed and executed a rigorous A/B test, from power analysis and sample size calculation to hypothesis testing and segment-level analysis. The results provided a definitive measure of the feature's lift and a clear recommendation on the go-to-market strategy.

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## Agent-Based Reinforcement Learning for Behavioral Simulation

[View Project](#)

**Problem:** Reduce business risk and optimize incentive strategies for a gig workforce before costly and disruptive real-world implementation.  
**Solution:** Built a productized agent-based simulation framework using Deep Q-Learning. The system models how thousands of workers adapt to gamified incentives and environmental changes, providing a robust testbed to optimize business strategy and forecast outcomes.

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## Comprehensive Workforce Analytics & Talent Intelligence Platform

[View Project](#)

**Problem:** Enable data-driven talent management and strategic workforce planning by understanding organizational structure and competitive market positioning.  
**Solution:** Developed a comprehensive workforce analytics pipeline analyzing internal organizational structure, tenure, promotion velocity, and leadership span of control. Integrated this with external market data on compensation and skill demand to provide executive-level talent intelligence and strategic recommendations.

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## Synthetic Data Generation for Bias-Free Talent Acquisition

[View Project](#)

**Problem:** Safely test for and mitigate bias in talent acquisition models when real-world data is sensitive, protected, or has privacy constraints.  
**Solution:** Built an end-to-end synthetic data generation pipeline to simulate hiring processes with configurable bias injection (e.g., demographic, gender, accommodation). This product enables robust fairness testing and model validation without using protected data, ensuring equitable algorithm development.

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## Financial Data Collection Project Plan

[View Project](#)

**Problem:** Design a scalable, cost-effective framework for collecting high-quality financial data from SEC filings to train and evaluate LLM systems while maintaining rigorous quality standards.  
**Solution:** Developed comprehensive end-to-end project management framework including multi-stage workforce qualification (15% selection rate), tiered task complexity structure, and two-tier quality assurance system. Achieved 99% accuracy target while reducing costs 42% through strategic resource allocation and risk management protocols.

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## Credit Policy Fairness Analysis

[View Project](#)

**Problem:** Evaluate proposed credit approval policy changes for fairness across protected demographic groups while maintaining risk standards and business performance.  
**Solution:** Built comprehensive simulation framework using 100,000+ synthetic applicant profiles to A/B test credit policies. Implemented SHAP analysis for explainable AI, fairness auditing across race/ethnicity/immigration status, and statistical testing (Chi-square, disparate impact analysis). Identified 20.9% approval rate reduction while maintaining default rates and ensuring equitable outcomes across all demographic groups.

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## Platform Strategy Optimization Analysis

[View Project](#)

**Problem:** Transform traditional 6-week outsourcing model into competitive advantage by leveraging existing platform capabilities for premium service delivery.  
**Solution:** Developed comprehensive comparative analysis showing 85% timeline reduction (6 weeks → 5 days) and 42% cost optimization while achieving 99% accuracy targets. Created value-based pricing strategy enabling 34-49% profit margins and established framework for premium market positioning through speed-and-quality differentiation.

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## Clinical AI System for Autism Spectrum Disorder Assessment

[View Project](#)

**Problem:** Develop a scalable, clinically-valid system to aid in the complex behavioral analysis required for Autism Spectrum Disorder (ASD) assessments.  
**Solution:** Designed and built an end-to-end clinical AI system that uses a late-fusion model to combine visual and audio signals from assessment sessions. The product delivers uncertainty-aware predictions and stakeholder-aligned reports for both clinicians and researchers, bridging the gap between advanced AI and real-world clinical application.