Davut Ayan, PhD
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SUMMARY

Senior Data Scientist with 7+ years of experience applying machine learning, causal inference, experimentation, GenAI, and large-scale analytics to complex business problems. Skilled in building predictive models, segmentation frameworks, data pipelines, automated reporting systems, and decision-support tools across marketing, media, policy, and risk domains. Strong technical foundation in Python, SQL, R, Databricks, Snowflake, statistical modeling, and cloud-based analytics. Experienced in translating ambiguous stakeholder needs into analytical roadmaps, scalable data products, and executive-ready insights. PhD-trained economist with a strong background in statistics, causal inference, and applied research.

TECHNICAL SKILLS

Programming & Data Platforms: Python, R, SQL, PySpark, RSpark, Databricks, Snowflake, Azure, AWS, Hadoop, Stata, Tableau, Power BI, Streamlit, R Shiny, Plotly

Machine Learning & AI: Predictive modeling, supervised and unsupervised learning, XGBoost, Random Forests, gradient boosting, CatBoost, Scikit-learn, H2O, MLlib, TensorFlow, Keras, PyTorch, NLP, LLMs, Generative AI, prompt engineering

Statistical Modeling & Experimentation: Causal inference, difference-in-differences, regression discontinuity, instrumental variables, synthetic control, propensity score matching, doubly robust estimation, A/B testing, MMM, Bayesian modeling, survival analysis

Analytics & Data Products: Customer segmentation, RFM, clustering, time series forecasting, market basket analysis, LTV modeling, audience modeling, automated reporting, data visualization, stakeholder-facing analytics applications

EXPERIENCE

Senior Data Scientist, Starcom Worldwide / Publicis Groupe, Chicago, IL *Oct 2025 - Present*

- Lead applied data science workstreams across audience analytics, customer segmentation, transaction-based measurement, and automated reporting, translating ambiguous business questions into scalable analytical frameworks and production-oriented data workflows.
- Build large-scale SQL, Python, and Databricks pipelines using person-level, household-level, and transaction-level datasets to create model-ready features, buyer segments, market sizing outputs, and reusable reporting assets.
- Design deterministic and model-based audience frameworks, including customer segmentation, value-tiering, lookalike modeling strategy, market sizing, and activation-ready audience outputs for cross-functional marketing, strategy, and engineering teams.
- Prototype GenAI- and LLM-assisted analytics tools using Streamlit and Databricks to accelerate insight generation, summarize complex analytical outputs, and improve analyst productivity.
- Automate and reconcile reporting workflows by mapping raw platform data, snapshot feeds, web analytics, and business taxonomies; document assumptions, definitions, and data gaps for transparent, scalable reporting.
- Partner with product, engineering, data governance, analytics, and business stakeholders to define requirements, align metrics, resolve data quality issues, and deliver decision-ready outputs for senior stakeholders.

Data Scientist, Associate Director, Horizon Media, New York, NY *Mar 2022 - Oct 2025*

- Performed predictive and diagnostic analytics across time series, demographic, market basket, and customer journey datasets; estimated customer lifetime value to support A/B testing of personalized versus fixed user bids, contributing to a 15% increase in conversions and 10% reduction in ad spend.
- Engineered high-performance scripts to generate balancing weights for large datasets, improving population representativeness while reducing processing time and cost by 95% and minimizing dependency on external data purchases.
- Built segmentation, market sizing, campaign measurement, and audience analytics workflows using Python, R, SQL, Snowflake, Streamlit, and cloud-based analytics environments.
- Applied machine learning, statistical modeling, and business analytics to evaluate audience quality, identify growth opportunities, and translate complex data into marketing strategy recommendations.
- Leveraged Generative AI and LLM-based workflows to interpret descriptive demographic analysis, generate actionable marketing insights, and support scalable analyst-facing applications.
- Collaborated with strategy, analytics, product, and engineering stakeholders to convert business questions into analytical plans, reusable tools, and stakeholder-ready deliverables.

Postdoctoral Researcher, University of Kansas, Lawrence, KS *Feb 2021 - Mar 2022*

- Conducted advanced causal inference research using regression discontinuity, synthetic control, and panel data methods to evaluate public policy impacts on healthcare utilization, state expenditures, social safety programs, and veteran employment.
- Managed diverse administrative and public datasets; performed data collection, data mining, feature engineering, transformation, validation, and visualization using R and Stata.
- Developed reproducible analytical workflows and data dictionaries to standardize variable definitions, improve research quality, and support collaboration across research teams.
- Published applied economics and policy research, including work on global R&D workforce estimation and the economic costs of Medicaid non-expansion in Kansas.
- Presented research on causal impacts of federal legislation on U.S. veteran employment at the 91st Southern Economic Association Annual Meeting.

Lead Economist, Lecturer, National Defense University, Turkey *Aug 2016 - Feb 2021*

- Taught Introduction to Economics and contributed to curriculum development, course planning, and applied economics instruction.
- Conducted risk analysis and supported broader risk assessment initiatives within the Ministry of Defense, with emphasis on disaster and emergency management planning.
- Developed operational scenarios, disaster risk assessments, and action plans for national-level preparedness projects.
- Led training exercises and collaborated on operational planning for emergency and disaster management units, improving coordination and response readiness.
- Directed multi-agency disaster response units during international disaster and risk management exercises, coordinating teams and stakeholders under complex operating conditions.

EDUCATION

- Doctor of Philosophy (PhD), Economics, University of Kansas, KS
- Master of Arts (MA), Economics, University of Kansas, KS
- Bachelor of Science (BS), Industrial and Systems Engineering, National Defense University

PUBLICATIONS

- Ayan, D., Haak, L., & Ginther, D. K. “How many people in the world do research and development?” Global Policy, 2023.
- Ginther, D. K., Ayan, D., & Slusky, D. J. G. “Economic Costs to Kansas Due to State’s Failure to Expand Medicaid.” The REACH Foundation, 2022.
- Ginther, D. K., Ayan, D., & Slusky, D. J. G. “The Unexpected Costs of Not Expanding Medicaid in Kansas.” Institute for Policy & Social Research, University of Kansas, 2022.