Alexander 'Sandy' Preiss

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EDUCATION

Master of Science in Analytics May 2020
Institute for Advanced Analytics, NC State University, Raleigh, NC

Master of International Studies May 2015
NC State University, Raleigh, NC

Bachelor of Arts in Psychology May 2009
University of North Carolina, Chapel Hill, NC

SKILLS

- *Technical:* applied machine learning and NLP, designing and building LLM-based agentic AI systems, causal inference with observational data, simulation modeling, data visualization, manuscript writing
- *Software:* Python, PySpark, SQL, R, AWS, CI/CD, version control, AI coding assistants
- *Business:* stakeholder engagement, identifying opportunities, proposal writing, developing requirements, presenting to audiences ranging from executive to academic
- *Leadership:* strategic direction, mentoring colleagues toward technical and interpersonal excellence, managing teams up to 10 people using agile methods

PROFESSIONAL EXPERIENCE

RTI International (Remote)
Research Data Scientist Jun 2020 – Present

- Build relationships with internal and external collaborators; identify and execute on opportunities to apply data science techniques to a broad range of research tasks
- Lead data science projects from inception to closeout. Recent projects include:
  - Developed an agentic RAG system enabling interaction with Federal survey statistics.
  - Helped develop a novel method for differentially private machine learning and piloted its use on a large Federal survey. Used Claude Code to refactor an experimental codebase into a production-ready system.
  - Led cross-functional teams for several target trial emulation studies. Extracted causal insights from a distributed EHR repository using techniques like propensity and censoring weights, coarsened exact matching, and ML-based outcome models.
  - Developed a cancer screening simulation model as an open-source Python package. Architected AWS tooling to run simulation experiments.
- Published over three papers per year, with over 800 citations and an h-index of 9
- Contributed to proposals leading to over $23M of new business

American Cancer Society (Raleigh, NC)
Senior Data and Evaluation Manager Mar 2019 – Jun 2019
Data Manager Nov 2016 – Mar 2019

- Led data strategy and evaluation for a multimillion-dollar HPV vaccination program
- Created a logic model and evaluation plan, including process and outcome measures
- Designed data collection instruments and trained hundreds of staff on their use
- Quantified program impact in terms of cancers averted and cost effectiveness (to make them compelling to laypeople and executive audiences)

- Built interactive Tableau dashboards to visualize program impact
- Presented program impact at an executive leadership meeting; helped convince ACS leaders to make HPV vaccination a core component of their mission platform

Ipas *(an international public health NGO)***, (Chapel Hill, NC)**
Global Data Analyst May 2015 – Nov 2016

- Managed Ipas's enterprise CRM database for monitoring and evaluation
- Translated business needs into SQL database structures and reports
- Developed tools to automate data extraction and processing for donor reporting
- Trained and supported hundreds of database users around the world

PUBLICATIONS

Preiss, A., et al. (2026). A Practical Guide to Differentially Private Deep Learning using the Pseudo Posterior Mechanism. In press at *Journal of Data Science*.

DeMichele, M., Silver, I. A., Preiss A., & Baumgartner, P. (2026). Modernizing criminal justice data: Developing a semi-supervised tool to code multi-jurisdictional data. In press at *American Journal of Criminal Justice.*

Tangka, F. K. L., Subramanian, S., Hoover, S., O'Rourke, K., Zirali, P., Preiss, A., et al. (2026). Cost-effectiveness of interventions to increase colorectal cancer screening among populations with low screening uptake. *Cancer,* 2026, e70436. https://doi.org/10.1002/cncr.70436

Chew, R., Williams, M. R., Segarra, E. A., Preiss, A., et al. (2025). Bayesian Pseudo Posterior Mechanism for Differentially Private Machine Learning. arXiv (Under review at *RSS: Data Science and Artificial Intelligence*). https://doi.org/10.48550/arXiv.2503.21528.

Brannock, M. D., Hadley, E., Preiss, A., et al. (2025). Incidence of Long COVID Following Reinfection with COVID-19 (p. 2025.08.12.25333155). medRxiv. https://doi.org/10.1101/2025.08.12.25333155

Preiss, A.*, Bhatia, A.*, et al. (2025). Effect of Paxlovid Treatment During Acute COVID-19 on Long COVID Onset: An EHR-Based Target Trial Emulation from the N3C and RECOVER Consortia (p. 2024.01.20.24301525). *PLOS Medicine*, 22(9), e1004711. https://doi.org/10.1371/journal.pmed.1004711

Bhatia, A.*, Preiss, A.*, et al. (2025). Effect of nirmatrelvir/ritonavir (Paxlovid) on hospitalization among adults with COVID-19: An electronic health record-based target trial emulation from N3C. *PLOS Medicine*, 22(1), e1004493. https://doi.org/10.1371/journal.pmed.1004493

Crosskey, M., McIntee, T., Preiss, A., et al. (2025). Re-engineering a machine learning phenotype to adapt to the changing COVID-19 landscape: A machine learning modelling study from the N3C and RECOVER consortia. T*he Lancet Digital Health*, 7(8). https://doi.org/10.1016/j.landig.2025.100887

Hadley, E., Yoo, Y. J., Patel, S., Zhou, A., Laraway, B., Wong, R., Preiss, A., et al. (2024). Insights from an N3C RECOVER EHR-based cohort study characterizing SARS-CoV-2 reinfections and Long COVID. *Communications Medicine*, 4(1), 1–12. https://doi.org/10.1038/s43856-024-00539-2

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Preiss, A., et al. (2024). Evaluation of Text Cluster Naming with Generative Large Language Models. *Journal of Data Science*, 22(3), 376–392. https://doi.org/10.6339/24-JDS1149

Brannock, M. D., Chew, R. F., Preiss, A., et al. (2023). Long COVID risk and pre-COVID vaccination in an EHR-based cohort study from the RECOVER program. *Nature Communications*, 14(1), 2914. https://doi.org/10.1038/s41467-023-38388-7

Jones, K., Hadley, E., Preiss, A., et al. (2022). Estimate of undetected severe acute respiratory coronavirus virus 2 (SARS-CoV-2) infection in acute-care hospital settings using an individual-based microsimulation model. *Infection Control and Hospital Epidemiology*, 1–10. https://doi.org/10.1017/ice.2022.174

Pepper, J. K., Zitney, L. V., Preiss, A., et al. (2022). Can social media monitoring help identify the next EVALI? An examination of Reddit posts about vitamin E acetate and Dank Vapes. *Drug and Alcohol Dependence*, 230, 109193. https://doi.org/10.1016/j.drugalcdep.2021.109193

Preiss, A., Baumgartner, P., Edlund, M. J., & Bobashev, G. V. (2022). Using Named Entity Recognition to Identify Substances Used in the Self-medication of Opioid Withdrawal: Natural Language Processing Study of Reddit Data. *JMIR Formative Research*, 6(3), e33919. https://doi.org/10.2196/33919

Preiss, A., Berghammer, A., & Bobashev, G. (2022). Virtual Opioid User: Reproducing Opioid Use Phenomena with a Control Theory Model. *2022 Winter Simulation Conference* (WSC), 1140–1151. https://doi.org/10.1109/WSC57314.2022.10015450

Preiss, A., et al. (2022). Incorporation of near-real-time hospital occupancy data to improve hospitalization forecast accuracy during the COVID-19 pandemic. *Infectious Disease Modelling*, 7(1), 277–285. https://doi.org/10.1016/j.idm.2022.01.003

Waldrop, A. M., Cheadle, J. B., Bradford, K., Preiss, A., et al. (2022). Dug: A Semantic Search Engine Leveraging Peer-Reviewed Knowledge to Query Biomedical Data Repositories. *Bioinformatics* (Oxford, England), btac284. https://doi.org/10.1093/bioinformatics/btac284

Endres-Dighe, S., Jones, K., Hadley, E., Preiss, A., et al. (2021). Lessons learned from the rapid development of a statewide simulation model for predicting COVID-19's impact on healthcare resources and capacity. *PloS One*, 16(11), e0260310. https://doi.org/10.1371/journal.pone.0260310

Khoury, D., Preiss, A., et al. (2021). Increases in Naloxone Administrations by Emergency Medical Services Providers During the COVID-19 Pandemic: Retrospective Time Series Study. *JMIR Public Health and Surveillance*, 7(5), e29298. https://doi.org/10.2196/29298

Perkins, R. B., Foley, S., Hassan, A., Jansen, E., Preiss, A., et al. (2021). Impact of a Multilevel Quality Improvement Intervention Using National Partnerships on Human Papillomavirus Vaccination Rates. *Academic Pediatrics*, 21(7), 1134–1141. https://doi.org/10.1016/j.acap.2021.05.018

Askelson, N., Ryan, G., Seegmiller, L., Preiss, A., & Comstock, S. (2020). Intersectoral cooperation to increase HPV vaccine coverage: An innovative collaboration between Managed Care Organizations and state-level stakeholders. *Human Vaccines & Immunotherapeutics*, 16(6), 1385–1391. https://doi.org/10.1080/21645515.2019.1694814

Escoffery, C., Riehman, K., Watson, L., Priess, A., et al. (2019). Facilitators and Barriers to the Implementation of the HPV VACs (Vaccinate Adolescents Against Cancers) Program: A Consolidated Framework for Implementation Research Analysis. *Preventing Chronic Disease*, 16, E85. https://doi.org/10.5888/pcd16.180406

Fedewa, S. A., Preiss, A., et al. (2018). Reaching 80% human papillomavirus vaccination prevalence by 2026: How many adolescents need to be vaccinated and what are their characteristics? *Cancer*, 124(24), 4720–4730. https://doi.org/10.1002/cncr.31763

Fisher-Borne, M., Preiss, A., et al. (2018). Early Outcomes of a Multilevel Human Papillomavirus Vaccination Pilot Intervention in Federally Qualified Health Centers. *Academic Pediatrics*, 18(2S), S79–S84. https://doi.org/10.1016/j.acap.2017.11.001

*equal contributions

PRESENTATIONS

Preiss, A., Chew, R., Williams, M. R., Segarra, E. A., Konet, A., Oh, D., Boon, E., & Savitsky, T. D. (2026). *Practical differentially private deep learning with SWAG-PPM*. AI Day for Federal Statistics, Washington, DC.

Preiss, A., Long, M., Klein Warren, L., Navarro, T. (2025, August). *Reducing risk from AI chatbots in public sector applications*. Presented at the 2025 Joint Statistical Meetings, Nashville, TN.

Chew, R., Williams, M.R., Segarra, E.A., Preiss, A. (presenting), Konet, A., Oh, D., Boon, E., Savitsky, T.D. (2025, April). *So you want to share your autocoder model, but what about disclosure risk? Real-world applications of differentially private machine learning.* Presented at the 2025 Federal Computer Assisted Survey Information Collection (FedCASIC) Workshops, virtual.

Preiss, A., Baumgartner, P., and Berghammer, A. (2024, August). *Text Cluster Profiling using Generative Language Models and Vector Search.* Presented at the 2024 Joint Statistical Meetings, Portland, OR.

Preiss, A. (2023, July). *Data Science Responses to an Evolving Pandemic*. Presented at INFORMS Healthcare, Toronto (Invited).

Preiss. A. (2023, March). *Putting a COVID-19 Simulation Model into Production*. Presented at Elon University Health Analytics Day, Burlington, NC (Invited).

Preiss, A., Bobashev, G. (2022, November). *Virtual Opioid User: Simulating the Effects of Counterfeit Pill Prevalence with a Control Theory Model*. Presented at Lisbon Addictions, Lisbon, Portugal.

Preiss, A. (2022, October). *Social Media as an Early Data Source for Emerging Substance Use Trends*. Presented at the Federal Committee on Statistical Methodology, Washington, DC (Invited).

Preiss, A., Bobashev, G. (2022, June). *Increased Discussion of Smoking Fentanyl in Online Opioid Forums*. Presented at the Society for Epidemiological Research, Chicago.

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Preiss, A. (2021, August). *Adapting the difference-in-difference technique to study change in opioid overdoses during the COVID-19 pandemic*. Presented at the 2021 Joint Statistical Meetings, virtual.

Preiss, A. (2020, November). *When a Dashboard Won’t Do: Static Visualization of COVID-19 Data using Python.* Presented at the Government Advances in Statistical Programming Workshop, virtual.

Preiss, A., Elkins, W., Jacobs, S., Fisher-Borne, M. (2018, December). *Implementation strategies associated with HPV vaccination initiation rates among federally qualified health centers.* Presented at the 11th Annual Conference on the Science of Dissemination and Implementation in Health, Washington, DC.

Preiss, A., Parkington, G., Fisher-Borne, M. (2018, May). *The Texas HPV Coalition: Building a State-Level Coalition to Increase HPV Vaccination Rates.* Presented at the National Immunization Conference, Atlanta.