# Colin Pawlowski, Ph.D.

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## Summary


- Biomedical research scientist with expertise in machine learning, statistics, deep learning, natural language processing, and real-world evidence studies.
- Proven research track record with 20+ peer-reviewed publications (1000+ citations) leveraging AI-based methods to analyze healthcare data.
- Experience leading high-functioning teams, promoting an active and collaborative research culture, and driving projects to completion.


## Education

**Massachusetts Institute of Technology,** Cambridge, MA
Ph.D. in Operations Research, June 2019. GPA: 5.0/5.0
Supported by National Science Foundation (NSF) Graduate Research Fellowship.

**Yale University,** New Haven, CT
B.S. in Mathematics (Intensive), May 2014.
GPA: 3.93/4.00; Magna Cum Laude, Phi Beta Kappa Society.

## Experience

**2020-2023** **nference**, Cambridge, MA
(Nov-present) *Director & Head of Data Sciences*
Leading data science research projects at nference and client engagements with biopharma partners. Co-author on 15+ peer reviewed publications and 2 patents, including the first real-world evidence study confirming the effectiveness of mRNA COVID-19 vaccines in a US-based health system. Work cited by multiple government agencies and organizations including the White House, CDC, and WHO. In addition, directly supervising a team of 2 PhD-level data scientists which is developing AI algorithms to predict cardiovascular conditions from 12-lead ECGs.

**2020** **nference**, Cambridge, MA
(Jul-Nov) *Head of Data Sciences*
Led COVID-19 data science research projects at nference. Conducted real-world evidence studies on electronic health record data from the Mayo Clinic. First author on 4 publications, including one featured in the NYTimes.

**2020** **nference**, Cambridge, MA
(Jan-Jun) *Data Science Partnerships Lead*
Contributed to the development of DeepModelBuilder, an nferX NLP software platform. Led client engagements to enable use of the nferX AI platform in research and product development-related projects at life sciences organizations.

**2019** (Jul-Dec) **nference**, Cambridge, MA
*Translational Scientist*
Trained NLP models to extract information from unstructured biomedical text.

**2014–2019** **MIT Operations Research Center**, Cambridge, MA
*Research Assistant*
Developed fast machine learning algorithms to perform statistical inference on healthcare datasets with missing and uncertain values. Worked on applications in personalized medicine using large-scale EHR and genomic data. Research advisor: Dimitris Bertsimas.

**2013** (Summer) **Mount Holyoke College REU**, South Hadley, MA
*Undergraduate Researcher*
Researched mathematical modeling and epidemiology. Programmed a population-level model for tuberculosis in the USA, with cost analysis for several intervention strategies.

**2011-2012** **NASA Flight Opportunities Program**, Houston, TX
*Microgravity Research Team Leader*
Led a team of six students; built a prototype of a 3-D cell culture apparatus and tested it aboard NASA's zero-gravity plane.

**Selected Publications**

1. **Pawlowski C**, et. al. SARS-CoV-2 and influenza coinfection throughout the COVID-19 pandemic: an assessment of coinfection rates, cohort characteristics, and clinical outcomes. PNAS Nexus, 2022 Jul 1.
2. Niesen M, **Pawlowski C**, et. al. Surveillance of Safety of 3 Doses of COVID-19 mRNA Vaccination Using Electronic Health Records. JAMA Network Open, 2022 Apr 1.
3. Razonable R, **Pawlowski C**, et. al. Casirivimab-Imdevimab treatment is associated with reduced rates of hospitalization among high-risk patients with mild to moderate coronavirus disease-19. EClinicalMedicine, 2021 Oct 1.
4. Ganesh R, **Pawlowski C**, et. al. Intravenous bamlanivimab use associates with reduced hospitalization in high-risk patients with mild to moderate COVID-19. J Clin Invest., 2021 Oct 1.
5. Donadio G, Choudhary M, Lindemer E, **Pawlowski C**, Soundararajan V. Counties with Lower Insurance Coverage and Housing Problems Are Associated with Both Slower Vaccine Rollout and Higher COVID-19 Incidence. Vaccines, 2021 Aug 31.
6. **Pawlowski C**, et. al. FDA-authorized COVID-19 vaccines are effective per real-world evidence synthesized across a multi-state health system. Med, 2021 Aug 13.
7. Venkatakrishnan A, **Pawlowski C**, et. al. Mapping each pre-existing condition's association to short-term and long-term COVID-19 complications. NPJ Dig. Med., 2021 Jul 27.
8. **Pawlowski C**, et. al. Cerebral Venous Sinus Thrombosis is not Significantly Linked to COVID-19 Vaccines or Non-COVID Vaccines in a Large Multi-State Health System. Journal of Stroke and Cerebrovascular Diseases, 2021 June 16.
9. **Pawlowski C**, et. al. Enoxaparin is associated with lower rates of mortality than unfractionated Heparin in hospitalized COVID-19 patients. EClinicalMedicine, 2021 Mar 9.
10. Kirkup C, **Pawlowski C**, et. al. Healthcare disparities among anticoagulation therapies for severe COVID-19 patients in the multi-site VIRUS registry. J Med Virol., 2021 Mar 5.
11. **Pawlowski C**, et. al. Exploratory analysis of immunization records highlights decreased SARS-CoV-2 rates in individuals with recent non-COVID-19 vaccinations. Sci Rep., 2021 Feb 26.

12. **Pawlowski C**, et. al. Inference from longitudinal laboratory tests characterizes temporal evolution of COVID-19-associated coagulopathy (CAC). eLife, 2020 Aug 17.
13. Bertsimas D, **Pawlowski C**, Orfanoudaki A. Imputation of clinical covariates in time series. Machine Learning, 2020 Nov 10.
14. Bertsimas D, Dunn J, **Pawlowski C**, Zhuo Y. Robust Classification. INFORMS Journal on Optimization, 2018 Oct 19.
15. Bertsimas D, **Pawlowski C**, Zhuo Y. From predictive methods to missing data imputation: an optimization approach. Journal of Machine Learning Research, 2018 Apr 1.

Complete list of publications: https://scholar.google.com/citations?hl=en&user=WEsfOysAAAAJ

**Honors and Awards**

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| **2016** | athenahealth Hackathon Grand Prize |
| **2015** | NSF Graduate Fellowship |
| **2012** | Richter Summer Fellowship |
| **2011** | NASA Flight Opportunities Program, national research grant |
| **2011** | Connecticut Space Grant Consortium Project Grant |

**Skills**

*Programming languages:* Python, R, Julia, JavaScript/React, SQL, Bash
*Software packages:* NumPy, Scikit-learn, Matplotlib, TensorFlow, Tidyverse, ggplot2, MatchIt, XGBoost
*Project management:* Jira, Confluence, Github
*Other skills:* Adobe Illustrator