

Alex Zhang, Ph.D.

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As a biomedical researcher-turned data scientist, I am passionate about gaining insights from complex datasets to support data-driven decision-making and improve operational efficiency.

SELECTED DATA PROJECTS

Nashville Software School, Data Scientist Apprentice 2021 - 2022

- **COVID-19 in the U.S.**
Leveraged CDC, HHS, and ESRI resources to build an interactive R Shiny App mapping US COVID-19 epidemiology and vaccination data. The app enables users to geospatially explore the relationship between COVID-19 disease / vaccination status and Social Vulnerability Index scores for metro and rural counties. https://czhang87.shinyapps.io/COVID-19_US/
- **Medicare Referral Analysis for Vanderbilt University Medical Center**
Utilized sqlite3 to build a relational database of Medicare patient referrals and leveraged python to analyze provider networks in middle TN. Recommended that our stakeholder, Vanderbilt University Medical Center, focus on three geographical areas and six specialties to optimize their market share of patient referrals. <https://sites.google.com/view/nss-ds5-healthcare-bluebook/introduction>

PROFESSIONAL EXPERIENCE

Austin Peay State University, Assistant Professor 2020 – Present

- Taught Microbiology lectures and labs to 260+ undergraduate and graduate students and advised 20+ students on plan of study and career preparedness.
- Analyzed data in R and ggplot2 from the university's first campus-wide Diversity, Equity, and Inclusion survey of 740 students. Recommended that university administration invest in financial support and international graduate students to improve student retention and promote an inclusive campus culture.

University of Nevada, Reno, Teaching Assistant Professor 2019 – 2020

- Created and taught two new Microbiology courses, incorporating cutting-edge research in the field and feedback from faculty and students to course design.

Johns Hopkins University, Research Fellow 2016 – 2019

- Independently designed and oversaw an experiment program to identify a host signaling pathway as a potential therapeutic target in the treatment of bacterial meningitis.

Vanderbilt University, Research Fellow 2013 – 2016

- Developed an enterotoxigenic *E. coli* vaccine against diarrhea that causes 220 million diarrheal episodes and 44,400 child deaths globally each year.
- Coordinated the logistics for a prospective epidemiology study involving nine researchers across two institutions in the U.S. and Colombia, South America.
- Trained and supervised international collaborators in microbial pathogen detection lab techniques, which lead to our discovery that Norovirus and Rotavirus are the most common pathogens of acute gastroenteritis in children under 5 living in Colombia, South America.

SKILLS

Machine Learning: scikit-learn, hierarchical clustering, k-means, DBSCAN, linear and logistic regression, k-nearest neighbors, decision trees, neural networks

NLP: nltk, spaCy, gensim

Python: pandas, numpy, matplotlib, seaborn, geopandas, folium, beautifulsoup4

R: tidyverse, Shiny, leaflet

SQL: PostgreSQL, sqlite3, sqlalchemy, RPostgres, DBI

Process: Git / GitHub, agile project management

Cloud platform: AWS

Data Visualization: Tableau

EDUCATION

PhD in Veterinary Microbiology, South Dakota State University (2013)

MS in Microbiology, South Dakota State University (2009)

BS in Veterinary Medicine, Huazhong Agricultural University (2006)

CERTIFICATIONS

Data Science Apprenticeship, Nashville Software School (2022)

Statistics for Data Science, Nashville Software School (2021)

PUBLICATIONS

20 peer-reviewed original scientific journal articles

[Google Scholar](#)