Charlie Wiebe

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EDUCATION

M.S., *Data Science*, Willamette University Expected August 2025
- Relevant Coursework: *Biostatistics, Advanced Models & Machine Learning, Survival Analysis, Advanced Data Visualization, Biological Inquiry, Advanced Data Engineering, Geographic Information Systems*

B.S., *Data Science*, Willamette University May 2025
- Minor in Biology

HONORS AND AWARDS

2025 Oregon DataFest Competition April 2025
- Awarded *Best Data Visualization* honors in statewide competition sponsored by the American Statistical Association
- Developed/optimized an XGBoost model to assign gentrification risk scores to neighborhoods, forecasting gentrification likelihood within a 12-month period
- Designed and deployed an interactive RShiny web application to visualize gentrification predictions, enabling user-driven exploration by location and risk level

2023 Oregon DataFest Competition April 2023
- Awarded *Best Statistical Analysis* and *Best Overall Submission* honors in statewide competition that included competitors from the University of Oregon, Oregon State University, Willamette University, Pacific University, Lewis & Clark College, George Fox University, and Linfield University
- Engineered and cleaned a dataset provided by the American Bar Association on client behavior
- Developed a decision tree-based machine learning model that matched prospective clients with lawyers based on their demographic backgrounds and experiences

American Statistical Association April 2023 – Present
- Awarded lifetime membership for work analyzing the American Bar Association's client data, providing valuable insights and contributing to data-driven decision-making

RESEARCH EXPERIENCE

Assessment of the Dependence of Cancer Outcomes on Socioeconomic Covariates
Willamette University
- Implemented a variety of machine learning techniques and regression models (methods listed below) to predict cancer outcomes within patient communities in the United States based on socioeconomic factors
- Methods: *Neural networks, random forests, Bayesian linear regression, generalized additive models (GAM), ridge regression, LASSO, locally estimated scatterplot smoothing (LOESS), and jackknife resampling*

Model of Heart Disease Outcomes Using Machine Learning Techniques
Willamette University
- Developed machine learning models (methods listed below) to predict heart disease using a dataset of patients in the United States and Europe using vitals and demographic variables as features
- Methods: *K-Nearest Neighbors (KNN), Bagging (Bootstrap Aggregation), Decision Trees, Multiple Logistic Regression (MLR), and Simple Logistic Regression*

Mesopelagic Biodiversity: Effects of Mixed-Layer Depth and Dissolved Oxygen
Marine Biodiversity & Conservation Program, Sea Education Association, Boston University

- Conducted research on large-mast sailing vessel during semester-long program with the Woods Hole Oceanographic Institution
- Extracted zooplankton and water samples from the South Pacific Ocean, involving a variety of sample preservation and documentation techniques
- Utilized MinION sequencers and associated bioinformatic pipelines (e.g., referencing COI barcode loci using R scripts) to sequence DNA
- Analyzed population genomics of several zooplankton species and community measures of zooplankton diversity to determine how local zooplankton assemblages are affected by changes in water chemistry

Analysis of Wood Thrush Migration and Home Range Dynamics
Marra Lab of Ecology & Conservation, Georgetown University

- Analyzed the effects of moisture and food availability on wood thrush migration and home range patterns using satellite tag-generated movement data
- Engineered survey data regarding bird tagging methods using SQL
- Created data visualizations of the effects of different bird tagging methods on host behavior using R

Assessment of the Impact of Primary Gall Maker Presence on *Disholcaspis Mellifica* Gall Size
Willamette University

- Conducted fieldwork to collect *Disholcaspis* galls from oak trees
- Performed DNA isolation, PCR amplification, and sequencing of the COI locus; processed raw sequence data through editing, alignment, and species identification
- Implemented phylogenetic analyses using PhyML to explore evolutionary patterns and relationships

Predictive Modeling of Wolverine Habitat Suitability in Oregon using R & QGIS
Willamette University

- Engineered climatic data and wolverine observation data
- Created species distribution models (SDMs) with high predictive performance to assess wolverine habitat suitability in Oregon and project efficacy of reintroduction efforts

WORK EXPERIENCE

Ambassador, *Willamette University Office of Admissions,* Salem, OR November 2022 – Present

- Processed student data, including personal information and academic records, ensuring accuracy and confidentiality
- Retrieved and organized historical student data for student outreach purposes
- Administered student outreach efforts, ensuring timely communication and engagement with prospective students
- Gave campus tours and managed front desk operations, providing assistance and support to students, staff, and visitors

SKILLS

Language - Japanese (Proficient)
Programming Languages - Python, R, SQL, LangChain, HTML, Excel, Javascript, arcGIS