IRENA CHEN

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Department of Biostatistics, University of Michigan
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EDUCATION

University of Michigan, Ann Arbor *2018-Present*
Ph.D in Biostatistics (expected 2023)
University of Michigan, Ann Arbor *2018-2020*
M.S., Biostatistics
University of Washington, Seattle *2012-2016*
Bachelor of Science, Economics
Bachelor of Arts, Mathematics
Minor, International Studies

WORK EXPERIENCE

University of Michigan, Ann Arbor, Michigan

Graduate Student Research Assistant *2018-Present*

- **Estimation of Joint Means and Variances of Estrogen Hormones to Predict Health Outcomes (2020-Present)**
- The aim of this project is to utilize measures of variability, in addition to mean profiles, to predict health outcomes from longitudinal data. We combine mean profile and residual variance/covariances from multiple longitudinal predictors to estimate a cross-sectional outcome, all within a joint modeling framework.
- **Probabilistic Latent Class Models for Cause-of-death Assignment (2020-Present)**
- The aim of this project is to estimate individual and population level causes of death in areas where health services are limited and often inaccessible. In such cases, doctors and researchers often must rely on "verbal autopsy" questionnaires to assign a cause of death. Estimating cause-of-death distributions for policymakers and stakeholders will lead to better informed decision-making about health patterns in the population.
- By treating the cause of death as a latent variable, we will use a combination of symptom and demographic data to develop a tool that will assist physicians and other healthcare practitioners in cause of death assignment, and better quantify the uncertainty related to these unobserved causes.
- **Nested Partially Latent Class Model w/ Covariates for Cause-of-disease Assignment - Simulation Study (2019-2020)**
- I developed code to simulate a variety of scenarios for testing a nested partially latent class model with regression parameters. We found that when measurement specificity and sensitivity were weak, the model relied heavily on the prior distributions of these parameters. This research is part of a submitted paper on estimating pneumonia pathogen distributions among children.

Institute for Health Metrics & Evaluation, Seattle

Data Analyst, Primary Data Collection *2017-2018*

- Created an automated method for processing and analyzing primary data sources from partner countries. This method converted data into an easily accessible format that can be shared across teams.

- Developed statistical analysis for multiresolution datasets to understand and evaluate the linkage between financial inputs (aid grants) and health outcomes.
- Regularly presented analyses to upper level management and researchers, and participated in conferences and stakeholder meetings.

AWARDS & HONORS

Most Likely to Make an Impact in the Field (Poster Award): Michigan Institute for Data Science Symposium 2019, *University of Michigan.*

Undergraduate Thesis (Best Paper Award): Department of Economics 2016, *University of Washington.*

PUBLICATIONS

Chen, I. & Wu, Z, "**baker:** Bayesian Analysis Kit for Etiology Research" (2020+) *In Preparation.*

Wu, Z & **Chen, I.**, "Probabilistic Cause-of-disease Assignment using Case-control Diagnostic Tests: A Hierarchical Bayesian Latent Variable Regression Approach." (2020+) *Accepted*, Statistics in Medicine.

Chen, I., Fay, J. & Stadt M., "Increasing Efficiency for United Way's Tax Campaign". (2017) *SIAM Undergraduate Research Online.*

POSTER PRESENTATIONS

Michigan Institute for Data Science Symposium: "Probabilistic Cause-of-disease Assignment using Case-control Diagnostic Tests: A Hierarchical Bayesian Latent Variable Regression Approach" (2019) *University of Michigan.*

Mathematical Modeling Presentation Day: "Increasing Efficiency for United Way's Tax Campaign" (2016) *University of Washington.*

Undergraduate Research Symposium: "Does Aid really Aid? Examining the Roles of State Capacity and Government Corruption on Health Aid Effectiveness" (2016) *University of Washington.*

TECHNICAL STRENGTHS

Modeling and Analysis	R, Stan, Python
Software & Tools	Zotero, LaTex

COMMUNITY ENGAGEMENT & SERVICE

Service Learning and Trans-disciplinary Education (SLATE) Mentor, University of Michigan and Community Action Network of Washtenaw County (2020+).

Student Diversity Equity and Inclusion Committee, University of Michigan (2020+).

Admissions Committee Student Representative, University of Michigan (2020+).

Departmental Computing, Social Media and Website Reform Committee, University of Michigan (2019-2020).

Biostatistics Peer Mentor, University of Michigan (2019+).

Women in Data Science Datathon, Kaggle Competition (2018).

Economics Undergraduate Board, University of Washington (2014-2016).