Yuyu(Ruby) Chen

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EDUCATION

2019 – 2020 **M.S. Biostatistics** (GPA: 3.98/4.00)
New York University, New York, NY
Courses: Regression, Missing Data, Survival Analysis, Bayesian, Statistical Inference, Epidemiology, Survey Methods, Psychometric Measurements

2015 - 2019 **B.A., Biochemistry** (Math GPA: 3.56/4.00)
Minor, Mathematics
Occidental College, Los Angeles, CA
Courses: Calculus (I, II), Ordinary Differential Equations, Fundamentals of Computer Science, Bioinformatics

2017 **Study Abroad** (GPA: 85/100; Top 5%)
Jinan University, Guangzhou, China
Courses: Statistics, Linear Algebra, Multivariable Calculus

RESEARCH EXPERIENCE

2019 – Present **Measurement, Learning & Evaluation Lab (MLE), New York University**, New York, NY
Graduate Research Assistant
PI: Melody Goodman, Ph.D.
- Managed the data-literacy training survey data and performed analysis on pre/post-training bivariate and multivariate analysis on the association of student performance among college students and high school students the effect of remote learning.
- Validated the research-literacy and research-knowledge evaluation scale by assessing reliability, validity, factor analysis and principal component analysis.
- Implemented complex survey design on COVID-19 attitude, knowledge and behavior among younger population with scale development.
- Construct the frontend and design the UI/UX of MLE lab website.

2019 – Present **Center for Drug Use and HIV/HCV Research, New York University**, New York, NY
Biostatistician
PI: Melody Goodman, Ph.D.& Alex Bennett, Ph.D.& Luther Elliot, Ph.D.
- Directed the Opioid Overdose Risk Management Research clinical trial data management and analysis.
- Developed Opioid Overdose Risk Behavior Score measurement scale using factor analysis and latent class analysis.
- Conducted linear-mixed effects model on longitudinal data to determine the association between demographic, psychometric status and opioid overdose behavior.
- Assessed the Poisson regression predictors of Opioid Overdose Risk Behavior in relation with Naloxone use, psychometric status and biophysical factors.

2019 – Present **Population Health Biostatistics Division, NYU Langone Health,** New York, NY
Biostatistics Research Assistant
PI: Eva. Petkova, Ph.D. & Keith Goldfeld, Ph.D.

- Collaborated in an innovative Phase II/Phase III clinical trial study design and statistical analysis plan preparation for early pain investigation using the Bayesian Adaptive Platform trial approach.
- Implemented an "N of 1" multi-crossover study design simulation R function using simstudy to perform power analysis and sample size calculation for Centrexion's asset.
- Developed simulations for continuous outcome in Bayesian Adaptive basket trial study design in Rstan interface to prove the efficacy.
- Performed Bayesian prior prediction simulations with random effect ordinal logistic model for COVID-19 convalescent plasma pooling project on High Performance Computing Cluster using SlurmR.

2020 – Present **New York City Department of Health and Mental Hygiene,** New York, NY
Naloxone Research Intern
Supervisor: Alexandra Kingsepp

- Managed large raw Naloxone Recipients records database and queried data from 10,000 recipients using MS Access and MS SQL server.
- Completed cleaning and matching for involved Naloxone monthly distribution reports among 1000+ Opioid Prevention Program sites using R and MySQL.
- Automated pharmacy indicator, pharmacy standard report queries and the ad-hoc queries.
- Optimized the Naloxone Respondent data extract cleaning and SQL server database management processes from manual to automated program using SAS.
- Created more than 10 advanced and interactive Tableau dashboards with live connections to help Technical Assistance team monitor Opioid Overdose Prevention Programs survey responses.
- Analyzed the survey result of naloxone distribution data extract and conducted comprehensive descriptive statistics for program improvement using SQL.

2017 – 2019 **The Spain Lab, Department of Chemistry, Occidental College**, Los Angeles, CA
Research Assistant
Supervisor: Eileen Spain, Ph.D.

- Led bacterial incubation and sample preparation, manipulated Atomic Force Microscope to analyze bacterial adhesion.
- Analyzed force curve of bacterial adhesion using Argyle Light which further understands the mechanism and applies anti-bacterial system in medical instruments surfaces which minimized the contamination.
- Cooperated across disciplines and institutions to assist with verifying findings, sharing resources and to troubleshot.

CONSULTING PROJECT EXPERIENCE

Fall 2020 **The association between blood-related biomarkers and time-to-event outcome for hospitalized COVID-19 (In Progress)**

- Assessed the time to death of hospitalized COVID-19 patients Electronic Health Records (EHR) with competing risk analysis.
- Fitted biomarkers with non-linear relationship in Partial-linear single-index Cox (PLSI-Cox) regression model in association to time to death and comorbidity.

Summer 2020 **Machine Learning Loan Status/Charge-off Prediction**

- Imputed MAR and MCAR missing using mean, hotdecking and regression imputation.
- Compared machine learning models including Random Forrest, xgboost, RUS Adaboost, KNN, ANN and CNN to predict the loan status and charge-off determinations, with the best model achieving a 92% Accuracy.

Spring 2020 **Respondent Driven Sampling Population Estimate**
- Estimated the posterior probability of teenager heroin users based on survey data to create a Bayesian prior.
- Obtained the population size estimate of the hidden population using RDS Analyst interface.

Spring 2020 **Cessation of Heroin: A Neighborhood Grounded Exploration**
- Operated matching and data cleaning for a two-arm cohort study and conducted bivariate and multivariate analysis to study the heroin cessation behavior in factors including sexual transmissions.

MANUSCRIPT IN PROGRESS

Chen, Y., & Goodman, M. S. *VALIDATION OF RESEARCH KNOWLEDGE AND LITERACY EVALUATION METRICS*. Manuscript in progress.

CONFERENCE PRESENTATIONS

Chen, Y., & Spain, E. M. (2019). *MECHANISMS OF ADHESION OF A BACTERIAL PREDATOR TO SURFACE WITH QUANTITATIVE FORCE MEASUREMENTS*. Baltimore, MD: Biophysical Society 63rd Annual Meeting 2019.

Chen, Y. (2018). *ADHESION OF A BACTERIAL PREDATOR TO SURFACE WITH QUANTITATIVE FORCE MEASUREMENTS.* Pasadena, CA: Southern California Conference for Undergraduate Research.

Chen, Y. (2018). *ADHESION OF A BACTERIAL PREDATOR TO SURFACE WITH QUANTITATIVE FORCE MEASUREMENTS.* Pasadena, CA: Undergraduate Research Center Summer Research Conference.

TEACHING AND SERVICES

2020	**Lab Coordinator,** Measurement, Learning & Evaluation Lab, New York University
2020	**Course Assistant,** Social Network Analysis in R, New York University
2020	**Course Assistant,** Data-Literacy Training Summer Program
2018	**Laboratory Teaching Assistant,** General Chemistry, Occidental College
2017	**Recruitment Director,** Asian American Tutorial Project, Occidental College
2016	**International Ambassador,** Occidental College

AWARDS AND HONORS

2019-2021	Master Merit-based Scholarship, New York University
2017-2019	Summer Research Program Fellowship, Occidental College
2018-2019	Academic Research Project Fellowship, Occidental College
2019	Academic Research Conference Travel Fund, Occidental College

SKILLS

Technical: R, SAS, SQL, Stata, Tableau, Java, Python, Git, Latex, Spark, Hadoop
Libraries: SciKit, Pandas, matplotlib, ggplot2, MICE, dplyr, randomForest, KernLab, nnet, simstudy, igraph, Stan, Slurm
Survey: Qualtrics, Redcap