YALE QUAN

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RESEARCH INTERESTS

My research passion lies at the intersection of Applied Statistics, Psychometrics, and Education and is focused on issues of education inequality that exist in higher education, and the use of computer adaptive testing for high-stake assessments. My primary research interest focuses on the development and interpretation of multidimensional nonlinear latent variable modeling and their applications to Psychometric models. My secondary research interest focuses on the refinement and development of statistical models used to perform nonlinear multidimensional clustering in education data and how those clusters can be used in Item Response Theory models.

EDUCATION

Ph.D., Measurement & Statistics, Educational Psychology *Expected 2025*
University of Washington, Seattle WA

Advisor: Chun Wang Ph.D.

M.S. Applied Statistics *December 2020*
California State University Long Beach, Long Beach CA

Thesis Title: A Multivariate Statistical Analysis of Major Change Patterns and Significant Factors That Influence Graduation Rates: A Case Study at California State University, Long Beach

Advisor: Sung Kim Ph.D.

B.S. Criminal Justice *May 2013*
California State University Long Beach, Long Beach CA

PRESENTATIONS AND TALKS

"Clustering Education Data Using K-Medoids with Partitioning Around the Medoids Algorithm", *Measurement & Statistics Seminar*, University of Washington. November 2021

"A Multivariate Statistical Analysis of Major Change Patterns and Significant Factors That Influence Graduation Rates: A Case Study at California State University, Long Beach", *Beyond the First Year*, California State University, Long Beach. November 2020

TEACHING EXPERIENCE

Teaching Assistant, University of Washington *2021 -*

Course: PSYCH 209 - Fundamentals of Psychological Research

- Collaborated with the Professor and TA Fellow in the development of weekly lesson plans for all discussion sections and leading weekly meetings.
- Led up to 4 discussion sections per quarter with 25 students per section, lectured and facilitated discussion on research design, ethical considerations, and basic statistics.
- Developed exam questions and graded student work.

Lecturer, California State University, Long Beach *2020 - 2021*
Department of Mathematics and Statistics

Course: STAT 108 - Statistics for Everyday Life*

- Taught large lecture and 1 activity section.
- Collaborated with a team of lecturers and professors to update course material and discuss learning objectives.
- Developed and graded exams, quizzes, and homework.
- Course content includes exploratory data analysis, methods of visualizing data, descriptive statistics, misuse and manipulation of data in statistical analysis, probability, binomial and normal distributions, confidence intervals, hypothesis testing, correlation and regression, contingency tables.

Graduate Teaching Associate, California State University, Long Beach *2018 - 2020*
Department of Mathematics and Statistics

Course: STAT 108 - Statistics for Everyday Life

- Wrote weekly lesson plans and solutions for all STAT 108 activity sections
- Taught 5 activity sections with 30 undergraduate students per section
- Lectured and facilitated discussion

Course: MATH 112B - Essential Algebra B

- Assisted with the development and implementation during the first semester this course was implemented.
- Developed lesson plans that connected the new Geometry material taught in activity sections to the Algebra concepts covered in large lecture.
- Taught 4-5 activity sections per semester with 25-30 undergraduate students per section.

Course: MATH 104/94* - The Power of Mathematics

- Assisted with the development and implementation during the first semester this course was implemented.
- Wrote and graded weekly quizzes and developed lesson plans
- Taught 4-5 activity sections per semester with 25-30 undergraduate students per section

Mentor Supplemental Instructor, California State University, Long Beach *2017 - 2018*
Learning Assistance Center

Course: MATH 115/SI 60* - Business Calculus, MATH 122/SI 60* - Calculus I

- Taught 1 supplemental instruction section.
- Wrote and implemented lesson plans that reinforced and extends material covered in lecture.
- Supervised a group of 5 mathematics supplemental instructors and held bi-weekly training's on content, classroom management, and teaching techniques.

**Instructor of record*

PROJECTS AND RESEARCH

Teacher Retention in Washington, An Event History Analysis *2022*

In progress An analysis of teacher retention from 2017-2020 in Washington using data publicly available from the Washington State Office of Superintendent of Public Instruction (OSPI). Specifically the OSPI S-275 datasets for each year were merged with other publicly available OSPI datasets to create a comprehensive public dataset of Washington teachers. Methodology primarily consisted on non-parametric modeling techniques including Life Tables, and modeling teacher retention using time-varying covariates and coefficients in a Cox regression model.

An Item Response Theory Analysis of Biology Freshman Survey *2021*

A psychometric analysis of a survey administered to incoming freshman at California State University, Long Beach who were admitted into the Biological Sciences major. The goal of the analysis was to determine if there is any significant difference between the latent trait estimates of students who were admitted as Biological Sciences Majors to CSULB in 2020 as compared to students admitted in 2021, determine if there is a significant difference in latent trait estimates between male and female students, and determine if there are any significant correlations between latent trait estimates.

Predicting Growth Mindset *2022*

This project attempts to contribute to the literature on fostering growth mindset in students by using the 2018 PISA and focusing on the association between student's perception of their school and teachers and growth mindset in the context of students in grades eight through twelve in the United States. Due to the hierarchical structure of the data (students within schools) survey data, a Multilevel Logistic Model was fit to the data.

Master's Thesis *2020*

Applied a combination of χ^2 hypothesis testing and correlation analysis to determine if students who changed majors graduate at a significantly different rate than students who did not. A multinomial logistic model was developed to identify significant factors that influence a students time to graduation. Fishers Multi-population Linear Discriminate was implemented to develop a classification system which can be used to classify and predict a students time to graduation.

Detecting and Classifying Suspicious Yelp Reviews *2019*

Analysis of the Yelp Dataset written reviews and star ratings using a combination of Tableau, VADER Sentiment Analysis with Natural Language Processing (NLP), and Machine Learning. The goal was to identify suspicious Yelp reviews by calculating the sentiment of a review and comparing it to the star rating.

An Analysis of Sugar Sources and their Effect on Blood Glucose Levels *2019*

Designed and implemented a Repeated Measure ANOVA experiment for analyzing the effect of various sugar sources on blood glucose levels of four subjects.

AWARDS AND ACADEMIC ACHIEVEMENTS

Department of Mathematics and Statistics Graduate Student Honors Award *2020*

Departmental Graduate Student Honors are usually reserved for post-baccalaureate students not otherwise recognized by university or college awards. These honors are normally conferred for excellence in and contributions to the discipline.

Kenneth E. Lindgren Teaching Scholarship Recipient ($4,500) *2019*

Faculty nominated award which recognizes excellence in teaching and a dedication to student success. Presented to one Graduate Teaching Associate per academic year.

Phi Kappa Phi Honor Society (Top Academic 10%) *2019*

TRAININGS ATTENDED

National Center for Education Statistics

Process Data Summer Training Series *2020*

TECHNICAL SKILLS

Programming Languages	R (proficient), Python(proficient), SQL (competent) SAS (competent), Matlab (competent)
Software & Tools	Microsoft Word (proficient), Excel (proficient), Powerpoint (proficient) LaTeX(proficient), Tableau (proficient)