

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
University of Washington, Seattle WA

Expected 2025

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

Teach up to 100 undergraduate students per quarter. Students enrolled in this course are either applying into the psychology major or preparing to undertake research within the department. Course content covers psychological research methodology and techniques. Topics include the logic of hypothesis testing, experimental design, research strategies and techniques, fundamentals of scientific writing, search and evaluation of research literature in psychology, and ethical issues in psychological research.

Lecturer, California State University, Long Beach
Department of Mathematics and Statistics

2020 - 2021

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. 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
Department of Mathematics and Statistics

2018 - 2020

Course: STAT 108 - Statistics for Everyday Life

Wrote weekly lesson plans and solutions for all STAT 108 activity sections. Lesson plans consisted of a combination of think-pair-share, modeling, individual, and group work designed to extend student understanding of content covered in lecture as well as introduce new statistical concepts. Taught 5 activity sections with 30 undergraduate students per section. Students enrolled in this course were primarily pre-healthcare majors. Attended lecture 2 times per week and answered questions asked during lecture. Held 2hrs of office hours per week.

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. Lessons consisted of a combination of think-pair-share, modeling, individual, and group work. Taught 4-5 activity sections per semester with 25-30 undergraduate students per section. Students were primarily STEM majors. Attended lecture 2 times per week and answered questions asked during lecture. Held 2hrs of office hours per week.

Course: MATH 104/94 - The Power of Mathematics

Assisted with the development and implementation during the first semester this course was implemented. Wrote weekly quizzes and developed lesson plans that focused on think-pair-share, and group work designed to demonstrate real-world applications of concepts covered in large lecture. Taught 4-5 activity sections per semester with 25-30 undergraduate students per section. Students enrolled in this course were non-STEM majors and came from a diverse population of majors. Held 2hrs of office hours per week.

Mentor Supplemental Instructor, California State University, Long Beach
Learning Assistance Center

2017 - 2018

Course: MATH 115 - Business Calculus

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. Held weekly office hours by appointment. Attend weekly lecture. Lesson primarily focused on group work.

Course: MATH 122 - Calculus I

Taught 1 supplemental instruction section. Wrote and implemented lesson plans that reinforced and extends material covered in lecture. Held weekly office hours by appointment. Attend weekly lecture. Lessons were primarily lecture focused with sparse group work.

PROJECTS AND RESEARCH

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.

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)
L^AT_EX(proficient), Tableau (proficient)