Joemari E. Olea

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Department of Educational Psychology
College of Education
The University of Texas at Austin
Austin, TX 78712

EDUCATION

PhD in Educational Psychology – Quantitative Methods, The University of Texas at Austin *Aug 2025-present*
Adviser: Dr. Hyeon-Ah Kang
Electives Taken: Psychometric Theory and Methods, Data Exploration and Visualization in R, Convex Optimization, Experimental Data Analysis, Structural Equation Modelling, Item Response Theory, Social Psychology

Master of Science in Statistics, University of the Philippines, Diliman *Aug 2018-Jul 2021*
Thesis: "A general mixture model for cognitive diagnosis"
Adviser: Dr. Kevin Carl Santos
Electives Taken: Cognitive Diagnosis Modelling, Item Response Theory, Survival Analysis, Quantitative Risk Management, Business Analytics

Bachelor of Science in Statistics, University of the Philippines, Diliman *Aug 2014-Jun 2018*
Class Salutatorian, Magna Cum Laude
Electives Taken: Applied Stochastic Processes, Introduction to Spatial Data Analysis, Advanced Statistical Computing

ACADEMIC APPOINTMENTS

Assistant Professor, University of the Philippines Diliman *2021 - present*
School of Statistics
Courses Handled: Elementary Statistics, Applications Software and Software Packages, Probability Theory, Statistical Inference, Regression Analysis, Multivariate Analysis, Item Response Theory

Instructor, University of the Philippines Diliman *2019-2021*
School of Statistics

Teaching Associate, University of the Philippines Diliman *2018-2019*
School of Statistics

PUBLICATIONS

Journal Articles Published

- Olea, J., & Santos, K. C. (2024). A General Mixture Model for Cognitive Diagnosis. *Journal of Educational and Behavioral Statistics*, 49(2), 268-307.

- Olea, J., Pangilinan, J. A., & Primavera, H. J. (2023). Spatial point pattern analysis of drug related crimes in October 2017 in Manila City. *International journal of comparative and applied criminal justice*, 47(4), 397-416.

Journal Articles for Publication

- Tuazon, J., Abubo, G., Olea, J. "Interpretability Indices and Soft Constraints for Factor Models." Preprint currently in arXiv. https://arxiv.org/abs/2409.11525

RESEARCH EXPERIENCE

Biostatistician, University of the Philippines *2023-2025*
Philippine Genome Center

- Developed the statistical analysis procedure and experimental design for the research project on proteomic analysis of breast cancer.
- Conducted metabolomic analysis of tuberculosis among Filipino children using data gathered from subject urine sample.

Statistician, Philippines' Overseas Workers Welfare Administration *2023*

- Analyzed survey data from the Overseas Workers Welfare Administration Balik Pinas Balik Hanapbuhay Rapid Assessment Project
- Wrote the report from the said survey project. The report is now used by the Philippine government to make decisions about overseas Filipino workers

Statistical Data Analyst, Philippines' Department of Education *2021*

- Conducted psychometric analysis on the 2019 Southeast Asia Primary Learning Metrics large-scale assessment
- Wrote the Philippines' National Report of the 2019 Southeast Asia Primary Learning Metrics. The said report has been used by the Philippine lawmakers to make decisions about the educational system of the country

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PAPER PRESENTATIONS

- Tuazon, J., Abubo, G., Olea, J. *Pairwise Target Rotation for Factor Models*. 2026 International Meeting of the Psychometric Society. Seoul, South Korea. July 20-24, 2026
- Olea, J., & Kang, H.A. *Nonparametric Classification for Ordinal Items with Heterogenous Attribute Interactions*. 2026 International Meeting of the Psychometric Society. Seoul, South Korea. July 20-24, 2026.
- Olea, J., & Kang, H.A. *Nonparametric Diagnostic Classification in Ordinal Response Items*. 2026 National Council on Measurement in Education Annual Meeting. Los Angeles, California, USA. April 8-11, 2026.
- Tuazon, J., Abubo, G., Olea, J. *Interpretability Indices and Soft Constraints for Factor Models*. 25th Student-Faculty Conference in Statistical Sciences. Quezon City, Philippines. October 17-18, 2024.
- Olea, J., Pangilinan, J. A., & Primavera, H. J. *Spatial Point Pattern Analysis of Drug Related Crimes in Manila City in October 2017*. 15th National Convention on Statistics. Manila City, Philippines. October 3-5, 2022.
- Olea, J. *Analysis of Response Time from Assessments Using Concepts in Survival Analysis*. National Conference on Educational Measurement and Evaluation. Manila City, Philippines, August 25-27, 2022
- Olea, J., Ladaga, B., & Santos., K. *Performance of Absolute Fit Indices for pG-DINA Model under Q-Matrix Misspecification*. 2022 National Council on Measurement in Education Annual Meeting. San Diego, California, USA. April 8-14, 2022.

- Olea, J., & Santos., K. *An Application of Mixture Modelling for Cognitive Diagnosis*. 2022 National Council on Measurement in Education Annual Meeting. San Diego, California, USA. April 8-14, 2022.
- Olea, J., Ladaga, B., & Santos., *Investigating the Impact of Response Noise on Forced-Choice Item Response Theory Models*. 2022 National Council on Measurement in Education Annual Meeting. San Diego, California, USA. April 8-14, 2022.
- Olea, J. *Finite Mixture Modelling Application for Cognitive Diagnosis*. Colloquium on Statistical Sciences – UP School of Statistics, Quezon City, Philippines. April 8, 2021.
- Olea, J., Pangilinan, J. A., & Primavera, H. J. *Spatial Point Pattern Analysis of Drug Related Crimes in Manila City in October 2017*. National Convention on Statistics 2018. Bohol, Philippines. October 2018.
- Olea, J., Pangilinan, J. A., & Primavera, H. J. *Spatial Point Pattern Analysis of Drug Related Crimes in Manila City in October 2017*. 19th Faculty – Student Conference in Statistical Sciences. Quezon City, Philippines. October 2018.
- Olea, J. & Ladaga, B. *Trends and Structural Change: Fast Fashion in the Philippines from 1998 to 2016*. Student-Faculty Conference in Statistical Sciences 2017. Laguna, Philippines. October 2017.
- Olea, J. *Multiple Linear Regression Analysis on Proportion of Population Living in Slums*. Student-Faculty Conference in Statistical Sciences 2017. Laguna, Philippines. October 2017.

HONORS AND AWARDS

Best Graduate Student Paper Award (1st Place) *2024*
"Interpretability Indices and Soft Constraints for Factor Models"
25th Student-Faculty Conference in Statistical Sciences

Best Undergraduate Teacher Award (2nd Place) *Spring 2024*
Awarded faculty members with the highest Student Evaluation for Teaching scores
University of the Philippines School of Statistics

Best Undergraduate Teacher Award (1st Place) *Fall 2023*
Awarded faculty members with the highest Student Evaluation for Teaching scores
University of the Philippines School of Statistics

Gawad Kasarian 2022: Gender and Development (GAD) Breakthrough Activity *2022*
Awarded to all UP School of Statistics GAD Committee Members

Gawad Kasarian 2022: Distinguished Gender and Development Committee *2022*
Awarded to all UP School of Statistics GAD Committee Members

Best Undergraduate Student Paper Award (2nd Place) *2018*
"Spatial Point Pattern Analysis of Drug Related Crimes in Manila City in October 2017"
National Convention on Statistics 2018

Best Undergraduate Student Paper Award (2nd Place) *2018*
"Spatial Point Pattern Analysis of Drug Related Crimes in Manila City in October 2017"
19th Student Faculty Conference in Statistical Sciences

Best Undergraduate Student Paper Award (Shortlisted) *2018*
"Applying Generalized Linear Models in Exploring the Factors Affecting Terrorism, its Nature and Effect to the Welfare of the People"
19th Student Faculty Conference in Statistical Sciences

Best Undergraduate Student Paper Award (Shortlisted) *2018*
"Spatial Point Pattern Analysis of Drug Related Crimes in Manila City in October 2017" and "Investigating the Effect of Charcoal Ash Concentration on Latex and Enamel Paints."
University of the Philippines School of Statistics

TEACHING EXPERIENCE

School of Statistics, University of the Philippines Diliman *2018-2025*

- Statistics 100 – Calculus and Matrix Algebra for Statistics. Midyear 2021, Midyear 2022
- Statistics 101 – Elementary Statistics. Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020, Fall 2021, Spring 2022, Fall 2022
- Statistics 121 - Probability Theory I. Fall 2020, Fall 2021
- Statistics 122 - Probability Theory II. Spring 2021, Spring 2022, Spring 2023
- Statistics 125 - Applications Software and Software Packages. Spring 2021
- Statistics 131 – Parametric Statistical Inference. Fall 2022, Spring 2023
- Statistics 132 – Nonparametric Statistics Inference. Spring 2025
- Statistics 136 - Introduction to Regression Analysis. Midyear 2023
- Statistics 147 - Introduction to Multivariate Analysis. Fall 2023, Fall 2024
- Statistics 194 – Introduction to Item Response Theory. Fall 2023
- Statistics 221 – Introductory Probability. Fall 2021
- Statistics 222 – Introduction to Statistical Inference. Spring 2022
- Statistics 223 - Applied Regression Analysis. Spring 2025

PEDAGOLOGICAL TRAINING

Teaching Effectiveness Course *2022*
University of the Philippines Diliman
Completed a series of sessions about teaching amidst the pandemic and conducting remote learning.

Teaching Effectiveness Course *2020*
University of the Philippines Diliman
Successfully completed five training sessions focused on assessment design, inclusive teaching strategies, lesson planning, and student engagement.

MENTORSHIP EXPERIENCE

As Adviser

- Leo Mamolo. Master of Science in Statistics Student. UP School of Statistics *2025*
  Special Problem: Blended Learning Readiness Scale for Secondary School Students (BLRS): A Scale Development Study
- Juan Miguel Sevilla. Master of Science in Statistics Student. UP School of Statistics *2025*
  Special Problem: Retrofitting cognitive diagnostic models to well-being assessments to identify possible depression risk factors of Filipino high school students

- Analyn Maligaya. Master of Science in Statistics Student. UP School of Statistics *2022*
  Special Problem: A Multilevel Modeling Approach to Analyzing Regional Acute Lower Respiratory Tract Infection and Pneumonia Incidence
- Diane Pucyutan. Master of Science in Statistics Student. UP School of Statistics *2021*
  Special Problem: Analysis of PISA 2018 Reading Literacy Results of Asean Countries Using Hierarchical Linear Models

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As Panel Member

- Aiza Lucero Dilidili. Master of Science in Statistics Student. UP School of Statistics *2025*
  Special Problem**:** Estimating the Efficiency of Philippine State Universities and Colleges
- Harvey De Leon and Alfredo Robles. Professional Masters in Data Sciences and Analytics Student. UP School of Statistics. *2025*
  Special Problem: Forecasting WESM Prices for the Philippine Grid using Time Series Models and Decision Tree Ensembles
- John Paulo E. Baticulon and Gerald Marlon S. Dayao. Professional Masters in Data Sciences and Analytics Student. UP School of Statistics. *2024*
  Special Problem: Sales Forecasting and Market Insights for a Tea Manufacturing Company
- Fernan Dayson C. Manahan. Professional Masters in Data Sciences and Analytics Student. UP School of Statistics. *2024*
  Special Problem: Text-Mining Techniques to Identify Ageist Online Job Ads in the Philippines
- Andrea Marie L. Maderazo. Professional Masters in Data Sciences and Analytics Student. UP School of Statistics. *2023*
  Special Problem: Image-based Detection of Coconut Scale (*aspiodotus rigidus*) Infestation using Image Data Preprocessing, Augmentation Techniques and Convolutional Neural Networks

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ADMINISTRATIVE WORK

Director for Facilities and Resource Management *2023-2025*
School of Statistics, University of the Philippines Diliman
Tasked to maintain the facilities, library services, and digital resources of the school.

ACADEMIC SERVICE

Journal Article Reviewer

The Philippine Statistician *2026*
Chinese/English Journal of Educational Measurement and Evaluation *2025*

Rapporteur

- 25th Faculty-Student Conference on Statistical Sciences *2024*
- 24th Faculty-Student Conference on Statistical Sciences *2023*
- 22nd Faculty-Student Conference on Statistical Sciences *2022*
- 21st Faculty-Student Conference on Statistical Sciences *2021*
- 20th Faculty-Student Conference on Statistical Sciences *2020*

Judge

- 11th Department of Science and Technology Accelerated Science and Technology Human Resource Development Program Graduate Scholars' Conference – Poster Competition *2023*
- University of the Philippines School of Statistics Best Undergraduate Student Paper Award

Keynote Speaker

- Thesis It! Chapter 3 Webinar (Statistical Analysis)– University of the Philippines College of Education *2021*

Organizing Committee Member

- 23rd Faculty-Student Conference on Statistical Sciences *2022*
- Notes from the Rainbow Field – A Panel Discussion on Lessons and Experiences in Conducting LGBTQ+ Research *2022*
- Survey, Survey, Paano ka Ginawa? – UP School of Statistics *2022*
- What Do They Mean? Numbers of COVID-19 Vaccines – University of the Philippines School of Statistics *2021*
- Researching the Rainbow: A Webinar on Doing LGBTQI+ Research in the Philippines - UP School of Statistics *2020*

Proposal Reviewer

- 2022 National Council for Measurement in Education Annual Meeting *2022*

Examiner

- University of the Philippines College Admissions Test *2018-2024*
- UP School of Statistics Validation Exam for Graduate Students (Calculus and Matrix Algebra, Probability and Statistical Inference) *2024*
- UP School of Statistics Validation Exam for Graduate Students (Calculus and Matrix Algebra, Probability and Statistical Inference) *2022*

Proctor

- UP School of Statistics Validation Exam for Graduate Students (Calculus and Matrix Algebra) *2023*

Resource Person

- Basic Statistics and Analysis, Information Graphics, and Technical Writing for Information Technology and Dissemination Service for the Philippine Statistics Authority *2022*
- Use of Software Programs and Orientation to Access Data Enclaves for Central and Field Offices for the Philippine Statistics Authority *2022*

Training Assistant

- Basic Statistics with Exploratory Data Analysis for UP School of Statistics *Dec 2021*
- Training on Stratification Techniques using R for Statistical Methodology Unit – Philippine Statistics Authority *Nov 2021*
- Basic Statistics with Exploratory Data Analysis for UP School of Statistics *Oct 2021*
- Basic Statistics with Exploratory Data Analysis for UP School of Statistics *Jul 2021*
- Training on Statistics for Philippine Statistics Authority Employees 2018-2019 *Oct 2018*

UP Rainbow Research Hub Committee Member

University of the Philippines Diliman *2023*

Registration Adviser
UP School of Statistics *2021-2025*

Facilities and Resource Management Committee Head
UP School of Statistics *2023-2025*

Research Committee Member
UP School of Statistics *2021-2025*

Information, Communication, and Technology Committee Member
UP School of Statistics *2021-2022*

Extension Services and External Linkages Committee Member
UP School of Statistics *2022-2025*

Undergraduate Committee Member
UP School of Statistics *2022-2025*

Socials Committee Member
UP School of Statistics *2018-2025*

Gender and Development Core Group Member
UP School of Statistics *2021-2025*

UP Variates Faculty Adviser (Student Organization)
UP School of Statistics *2022-2023*

UP Psychometrics Lab
UP College of Education *2022-2025*

Biostatistics Research Group
UP School of Statistics *2022-2025*

Statistics 101 Committee Member
UP School of Statistics *2018-2023*
Committee tasked to create the Statistics 101 departmental final exam every semester.

Statistics 102 Committee Member
UP School of Statistics *2019*
Committee tasked to develop the Statistics 102 curriculum

TRAININGS AND WORKSHOP ATTENDED

- Seminar on Statistical Sciences - Block intransitive, point imprimitive 2-designs *May 16, 2024*
- Seminar on Statistical Sciences - Introduction to Copulas and Applications in Finance *May 2, 2024*

- Seminar on Statistical Sciences - Bioequivalence and its Statistical Aspects *Apr 25, 2024*
- Stat Speaks - Exploring the Application and Qualification Patterns in the University of the Philippines College Admission 2023 using a Geospatial Framework *Apr 11, 2024*
- Stat Speaks - Speakers from King Abdullah University of Science and Technology *Jul 21, 2023*
- Special Colloquium on the Statistical Sciences in honor of Dr. Lisa Grace Bersales *Jun 26, 2023*
- Stat Speaks - Biostatistics in clinical trials *May 4, 2023*
- Stat Speaks - Data fusion in a two-stage spatio-temporal model using the INLA-SPDE approach *Apr 27, 2023*
- Stat Speaks - Statistical Matching for modelling of count data *Apr 20, 2023*
- Lawig: Public Forum on Service Learning *Apr 18, 2023*
- Stat Speaks - Seminar on Directional Statistics *Mar 21, 2023*
- Seminar on Path Analysis – Institute for Statistical and Data Science *Mar 1, 2023*
- Good Clinical Practice Training *Feb 23, 2023*
- UP School of Statistics Lecture on Ultrahigh dimensional data *Jan 27, 2023*
- Stat Speaks - Highlights of ADB's Key Indicators for Asia and the Pacific *Nov 21, 2022*
- UP School of Statistics Writing Retreat *Oct 24-26, 2022*
- UPSS Research Workshop on Computational Bayes *Aug 16-17, 2022*
- Launching of a Newly Developed Moodle-based Learning Management Systems *Aug 15, 2022*
- UP Diliman GAD Agenda Planning and Development Series *May-Aug, 2022*
- UPSS Research Capacity Building Workshop on Scientific Writing *Jul 11-12, 2022*
- Stat Speaks - Fiducial Inference in Testing the Comparability of Originators and Biosimilars *Jul 2, 2022*
- Wag MatakOAT! Maki-blended! (Re)Designing Courses for Blended Learning *Jun 30, 2022*
- Empowering knowledge on ethical publishing: Mastering the art of identifying predatory, fake and cloned journals *Jun 8, 2022*
- Stat Speaks - Nonparametric Test for Volatility in Clustered Multiple Time Series *May 5, 2022*
- Stat Speaks - Nonparametric Performance Hypothesis Testing with the Information Ratio *Mar 10, 2022*
- Research Capacity Building Workshop *Feb 28, 2022*
- Faculty Retooling Workshops for Natural Language Processing *Aug 23-26, 2021*
- Faculty Retooling Workshops for Deep Learning *Aug 27-28, 2021*
- SAS Faculty Development Workshop Series *Jul 2021*
- Statistical Sciences Research Summit 2018 in University of the Philippines School of Statistics *Mar 2018*
