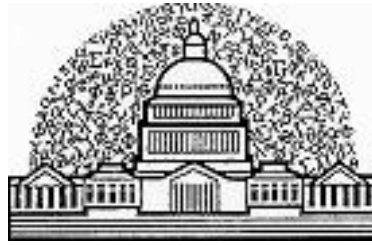# 31st Annual Morris Hansen Lecture

Washington Statistical Society

Registration

Model Selection and Its Important Roles in Surveys

Speaker: **Dr. Jiming Jiang**

Department of Statistics

University of California, Davis

Tuesday, November 14, 2023
3:30 – 5:30 pm

Jefferson Auditorium
USDA South Building
1400 Independence Ave. (between 12th and 14th Streets)
Smithsonian Metro Station (Blue, Orange and Silver Lines)

Jiming Jiang is a Professor and the Chair of the Department of Statistics at the University of California, Davis. His research interests include mixed effects models, model selection, small area estimation, longitudinal data analysis, precision medicine, Big Data intelligence, privacy-protection, statistical genetics/bioinformatics, age-standardized cancer rates, and asymptotic theory.

He has authored/coauthored over 100 research papers, many published in top statistics and data science journals, including *The Annals of Statistics*, *Journal of the American Statistical Association*, *Journal of the Royal Statistical Society, Series B*, and *Biometrika.* He is the author/co-author of five books and monographs: *Linear and Generalized Linear Mixed Models and Their Applications* (Springer 2007; 2nd ed. 2021); *Large Sample Techniques for Statistics* (Springer 2010; 2nd ed. 2022); *The Fence Methods* (World Scientific 2015; joint with Nguyen); *Asymptotic Analysis of Mixed Effects Models: Theory, Application, and Open Problems* (Chapman & Hall/CRC, 2017), and *Robust Mixed Model Analysis* (World Scientific 2019). He has served on editorial boards of several major statistical journals including *The Annals of Statistics* and *Journal of the American Statistical Association*.

Dr. Jiang is a Fellow of the American Association for the Advancement of Science (AAAS), a Fellow of the American Statistical Association (ASA), a Fellow of the Institute of Mathematical Statistics (IMS), and an Elected Member of the International Statistical Institute (ISI). He is co-recipient of the Outstanding Statistical Application Award (ASA, 1998), the first co-recipient of Distinguished Alumni Award (National Institute of Statistical Sciences, 2015), a Yangtze River Scholar (Chaired Professor, 2017-2020), as well as recipient of numerous awards from the National Science Foundation and National Institutes of Health of the United States of America.

Abstract

The practice of statistics often engages challenges of conflicting interests. A classic example is the type I and type II errors in hypothesis testing. In the context of surveys, an important issue that one often must deal with is trying to obtain accurate information from the surveys and, at the same time, keep the cost within the budget. In modern data science, one often faces the dilemma between privacy protection and providing useful information. Such a challenge is set straight in the basic principle of model selection, that is, striking a (good) balance between model fitting and model complexity. Furthermore, criteria in model selection need to incorporate considerations of practical interest. We discuss the important roles of model selection in surveys. Next, we introduce a flexible class of model selection strategies, known as the fence methods. Features of the fence methods include a data-driven procedure for choosing a cut-off or tuning parameter, known as the adaptive fence, and the ability to incorporate practical considerations in the model selection criterion. Some examples in small area estimation are used to illustrate the methods.

Program

Jefferson Auditorium
South Building
United States Department of Agriculture
Tuesday, November 14, 2023.

Opening Remarks
Dr. Linda J. Young
Research & Development Division, USDA NASS

Program Chair
Jenny Thompson
Associate Directorate for Economic Programs, U.S. Census Bureau

Keynote Speaker
Dr. Jiming Jiang
Department of Statistics
University of California, Davis

Discussants

Dr. Jane Meza
University of Nebraska Medical Center

Dr. Andreea Erciulescu
Westat

Hansen Lecture Committee
Jenny Thompson (Chair)
Partha Lahiri (Past Chair)
Carolina Franco (2024 Chair)
William Bell (2025 Chair)
Jeri Mulrow (Westat Representative)
Linda Young (NASS Representative)

Reception
Patio - Department of Agriculture
Jamie L. Whitten Building
(Across Independence Avenue, 5:30 - 6:30 p.m.)
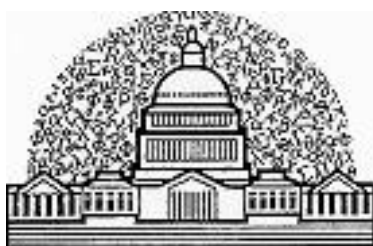
Morris Hansen Memorial Lecture Series

Morris Howard Hansen has been described as the most influential statistician in the development of survey methodology in the twentieth century. Early in his Census Bureau career he put together a staff to define the principal problems in the conduct of surveys, investigate these problems, and develop statistical methods to address them. Morris and his staff then widely distributed the results of their efforts, thus influencing statistical agencies all over the world. Generations of statistical students have learned from and been influenced by *Sample Survey Methods and Theory*, Volumes I and II by Hansen, Hurwitz, and Madow, which are commonly referred to by the authors' names instead of the title, and Hansen's other publications.

Morris was also known as an innovator and a leader in adapting electronic tools, such as computers and mark-reading sensors, to statistics. After his outstanding Census Bureau career, Morris joined Westat, which was at the time a fairly small statistical research company. Morris again assembled a strong staff and expanded Westat's scope to take on large federal government statistical problems.

Morris also made outstanding contributions to professional organizations, serving as the president of both the American Statistical Association and the Institute of Mathematical Statistics and as the first president of the International Association of Survey Statisticians. He was elected to the National Academy of Sciences in 1976 and was an important member of many Academy committees and panels.

There have been many tributes to Morris since his death in 1990, such as memorial issues of both the *Journal of Official Statistics* and *Survey Methodology*. Westat issued a grant to the Washington Statistical Society to honor Morris with an annual lecture series. The series has been so successful in attracting top quality presentations on a wide variety of topics—in keeping with Morris' broad interests—that Westat has added to the original grant.

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31st Morris Hansen Lecture Series