Hsiao-Hui Sophie, Tsou, Ph.D.

Institute of Population Health Science
National Health Research Institutes
35, Keyan Road, Zhunan Town, Miaoli, 35053, Taiwan
Phone No.: 037-206-166 ext. 36181
Fax No.: 037-586467
E-mail: tsouhh@nhri.edu.tw
Web: https://ph.nhri.edu.tw/zhtw/hhtsou/

Education

1992	B.S., Mathematics, Fu-Jen Catholic University, Taiwan
1994	M.S., Mathematics, Fu-Jen Catholic University, Taiwan
2002	M.A., Mathematical Statistics, University of Maryland, College Park, USA
2005	Ph.D., Mathematical Statistics, University of Maryland, College Park, USA

Research and Professional Positions Held in Chronological Sequence

2005-2008	Post-doctoral Fellow, National Health Research Institutes, Taiwan
2008-2013	Assistant Investigator, National Health Research Institutes, Taiwan
2013-2024	Associate Investigator, National Health Research Institutes, Taiwan
2014-2024	Associate Professor, Graduate Institute of Biostatistics, College of Public Health, China Medical University, Taiwan
2015-present	Associate Editor, Journal of Biopharmaceutical Statistics
2015-present	Statistical Advisory Board, PLOS ONE
2024-present	Investigator, National Health Research Institutes, Taiwan
2024-present	Professor, Graduate Institute of Biostatistics, College of Public Health, China Medical University, Taiwan

Research Interests

Dr. Hsiao-Hui Tsou (Sophie) is a mathematical statistician with a PhD in Mathematical Statistics from the University of Maryland, College Park (2005). Her initial research focused on the design and analysis of clinical trials, encompassing bridging studies, multi-regional and biosimilar trials, and non-inferiority designs. Her extensive experience spans various therapeutic areas, including oncology, geriatric care, mental health, and substance abuse. Notably, Dr. Tsou also possesses expertise in evaluating the cost-effectiveness of public health interventions.

Aligning with the National Health Research Institutes' (NHRI) mission, Dr. Tsou specializes in applying mathematical and statistical models to understand and combat infectious diseases, including COVID-19 and dengue fever. She played a role in the "Comprehensive mosquito-borne disease control program" (2016-2021), contributing to database development, systematic data quality assessment, statistical analyses of dengue data, and providing insights for central and local epidemic prevention efforts. Her collaborative work resulted in the development of real-time dengue forecast models for outbreak alerts in Southern Taiwan, in partnership with the Kaohsiung

City Government. She also assisted colleagues in developing a SEIR model to understand dengue virus transmission dynamics.

Since the early stages of the COVID-19 pandemic (January 2020), Dr. Tsou has been instrumental in establishing mathematical models for the disease. As a member of the NHRI COVID-19 working group, she utilized stochastic transmission models to evaluate the effectiveness of contact tracing and case isolation. Her development of SEIR models based on dynamic ordinary differential equations provided critical predictions of COVID-19 spread. Over three years, under the leadership of NHRI's president, she collaborated closely with Taiwan's Centers for Disease Control (CDC), presenting dynamic model simulations at the Central Epidemic Command Center (CECC). These timely reports directly informed policymaking and enabled proactive public health measures.

Currently, Dr. Tsou leads the development of an Infectious Diseases Theme Database leveraging artificial intelligence (AI) to advance precision health. Furthermore, she applies big data analytics to infectious disease surveillance and modeling, incorporating human behavior data to assess the effectiveness and outcomes of COVID-19 policies.

Major Honors and Awards

2022	Service Contribution Award
2023	FutureTech Award. Topic: Application of natural language technology to build AI automation to manage infectious disease pathogen thematic database
2023	FutureTech Award. Topic: Establishing dynamic models to evaluate the mode of transmission and epidemic prevention measures for COVID-19