

Serin Lee, Ph.D.

Assistant Professor, Department of Industrial & Management Engineering
Incheon National University, Incheon, Republic of Korea

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EDUCATION

University of Washington (UW), Seattle, USA

Ph.D. in Industrial Engineering Jun. 2024

Thesis: “Modeling Healthcare Policy: From Calibration to Optimization”

M.S. in Industrial Engineering Jun. 2021

Seoul National University (SNU), Seoul, Republic of Korea

B.S. in Industrial Engineering Aug. 2018

RESEARCH INTERESTS

Healthcare, Modeling & Simulation, Simulation Optimization, Digital Twin, Agent-based Model, Pharmacometrics, Model Calibration, Disease Modeling

EMPLOYMENT HISTORY

Assistant Professor, Incheon National University (INU) Sep. 2025 – Present
Department of Industrial and Management Engineering

Postdoctoral Research Fellow, Fred Hutchinson Cancer Center Nov. 2024 – Jul. 2025
Biostatistics, Bioinformatics, and Epidemiology Program

Research Scientist, Bill & Melinda Gates Foundation Jun. 2023 – Feb. 2024
Institute for Disease Modeling, Global Health division

Researcher, Stanford University Jun. 2021 – Sep. 2021
Department of Medicine, Center for Primary Care and Outcomes Research

Undergraduate Researcher, Seoul National University Jun. 2017 – Dec. 2018
Center for Convergence Approaches in Drug Development

Summer Intern, Pfizer Pharmaceuticals Korea Jun. 2016 – Aug. 2016
Preventive Health Management Division

HONORS AND AWARDS

Industrial & Systems Engineering Faculty Endowed Fellowship, UW 2021 – 2022

Lee B. Lusted Prize Finalist, Society for Medical Decision Making 2020 & 2021

Graduate School Fund for Excellence and Innovation Top Scholar Award, UW 2019 – 2020

Merit-based scholarship, SNU 2017

National Scholarship For Science and Engineering, Korea Student Aid Foundation 2016

PUBLICATIONS

Work in Progress

1. **Lee S**, Dimitrov D, Anderson P, Moore M. Dried blood spots measurements as indicator of HIV PrEP adherence and protection: Insights from pharmacokinetic modeling. Accepted at AIDS and Behavior
2. **Lee S**, Maneekul P, Zabinsky ZB, Liu S. A tutorial on explainable post-calibration analysis for interpreting policy outcomes. Under review

Journal Papers

1. Moore M, **Lee S**, Matrajt L, Stansfield SE, Tao L, Yang J, Mezzio D, Jarrett J, Castro JC, Hsiao A, Zachry W, Dimitrov D. Modelling the 5-Year Impact of Twice-Yearly Injectable Lenacapavir for HIV Pre-Exposure Prophylaxis in the United States. *Journal of the International AIDS Society*. 2026;29(8):e70188
2. **Lee S**, Zabinsky ZB, Liu S. Optimizing vaccination campaign strategies considering societal characteristics. *Health Care Management Science*. 2025;28(1):84-98
3. Weyant C, **Lee S**, Goldhaber-Fiebert JD. Reinforcement Learning-Based Control of Epidemics on Networks of Communities and Correctional Facilities. *Medical Decision Making*. 2026;46(2):216-25
4. **Lee S**, Zabinsky ZB, Liu S. Optimizing vaccination campaign strategies considering societal characteristics. *Health Care Management Science*. 2025;28(1):84-98
5. Stuart RM, Cohen JA, Kerr CC, Mathur P, National Disease Modelling Consortium of India, Abey-suriya RG, Zimmermann M, Rao DW, Boudreau MC, **Lee S**, Yang L, Klein DJ. HPVsim: An agent-based model of HPV transmission and cervical cancer. *PLOS Computational Biology*. 2024 07;20(7):1-17
6. **Lee S**, Zabinsky ZB, Wasserheit JN, Ross JM, Chen S, Liu S. Impact of vaccination and nonpharmaceutical interventions with possible COVID-19 viral evolutions using an agent-based simulation. *AJPM Focus*. 2024;3(1):100155
7. Weyant C, **Lee S**, Andrews JR, Alarid-Escudero F, Goldhaber-Fiebert JD. Dynamics of respiratory infectious diseases in incarcerated and free-living populations: A simulation modeling study. *Medical Decision Making*. 2022
8. **Lee S**, Zabinsky ZB, Wasserheit JN, Kofsky SM, Liu S. COVID-19 pandemic response simulation in a large city: impact of nonpharmaceutical interventions on reopening society. *Medical Decision Making*. 2021;41(4):419-29

Peer-Reviewed Conference Proceedings

1. **Lee S**, Maneekul P, Zabinsky ZB. Representative calibration using black-box optimization and clustering. In: 2023 Winter Simulation Conference (WSC); 2023. p. 3669-80

CONFERENCE PRESENTATIONS

Oral Presentation

1. **Lee S**, Liu S, Zabinsky ZB. Optimizing Vaccination Campaign Considering Societal Characteristics.

Daejeon, Republic of Korea; 2025

2. **Lee S**, Liu S, Zabinsky ZB. Optimizing Vaccination Campaign Strategies Considering Societal Characteristics. Seattle, WA; 2024
3. **Lee S**, Liu S, Zabinsky ZB. Optimal Vaccine Promotion Campaigns Considering Disease Transmission and Opinion Propagation with Fairness. Phoenix, AZ; 2023
4. **Lee S**, Liu S, Zabinsky ZB. Optimal Budget Allocation to Vaccine Promotion Campaigns Considering Disease Transmission and Opinion Propagation. Toronto, Canada; 2023
5. **Lee S**, Liu S, Zabinsky ZB. Advancing Simulation Methodology for Identifying Optimal Healthcare Policy during the COVID-19 Pandemic. Seattle, WA; 2023
6. **Lee S**, Liu S, Zabinsky ZB. Optimal Vaccination Campaigns under Opinion and Physical Networks. Indianapolis, IN; 2022
7. **Lee S**, Zabinsky ZB, Liu S. Impact of Vaccination and Relaxation of Non-Pharmaceutical Interventions on Controlling COVID-19 Using Agent-Based Simulation. Virtual; 2021. **Finalist for the Lee B. Lusted Award**
8. **Lee S**, Zabinsky ZB, Liu S. Using Agent-Based Simulation to Optimize Vaccination Schedules and Non-Pharmaceutical Interventions to Control COVID-19 Outbreaks. Anaheim, CA; 2021
9. **Lee S**, Zabinsky ZB, Liu S. Using Agent-Based Simulation to Analyze How to Achieve Herd Immunity to SARS-CoV-2 with Vaccination and Non-Pharmaceutical Interventions. Virtual; 2021
10. **Lee S**, Zabinsky ZB, Kofsky SM, Liu S. Impact of Population Health Interventions for a Measles Outbreak in a Low-Vaccination Area. Virtual; 2020
11. **Lee S**, Zabinsky ZB, Kofsky SM, Liu S. Agent-Based Simulation of COVID-19 Society Reopening Plans in an Urban Setting. Virtual; 2020
12. **Lee S**, Zabinsky ZB, Liu S. Agent-Based Simulation Study of Reopening Scenarios for COVID-19 in a Large Urban Area. Virtual; 2020. **Finalist for the Lee B. Lusted Award**

Invited Seminar

1. **Lee S**. Data-Driven Approaches to Support Clinical Trials. Ochang, Republic of Korea; 2026
2. **Lee S**. Evaluating DBS Snapshots as a Benchmark for HIV PrEP Adherence and Protection in HPTN 067. Seoul, Republic of Korea; 2026
3. **Lee S**. Introduction to Agent-Based Modelling. Seoul, Republic of Korea; 2020

Poster Presentations

1. **Lee S**, Liu S, Zabinsky ZB. Optimal Vaccination Campaigns under Disease Transmission and Opinion Propagation. Seattle, WA; 2022
2. **Lee S**, Zabinsky ZB, Liu S. Optimizing COVID-19 Vaccine Prioritization Policies with Non-Pharmaceutical Interventions Using Agent-Based Simulation. Virtual; 2021
3. **Lee S**, Jeon Y, Chung TK, Kim M, Kim S, Lee H. Dimensionality Reduction Model for Common Eligibility Criteria to Effectively Use Electronic Medical Records: A Pilot Study. Seoul, Republic of Korea; 2018

TEACHING

Undergraduate courses at INU

Simulation	2026 Fall
Data Literacy	2026 Fall
Database	2025 Fall, 2026 Spring
Capstone Design	2026 Spring

Graduate courses at INU

AI Programming	2026 Spring
Digital Twin	2025 Fall

PROJECTS

Digital Twin-based Virtual Clinical Trial for Infectious Diseases: Effectiveness Prediction and Protocol Optimization

PI, National Research Foundation of Korea Mar. 2026 – Feb. 2029

Agent-Based Simulation Research Using Publicly Available Data

PI, INU Apr. 2026 – Apr. 2027

Studies on data-driven simulation and modeling

PI, INU Oct. 2025 – Apr. 2027

PROFESSIONAL ACTIVITIES

Reviewer

Medical Decision Making

Health Care Management Science

Journal of Medical Internet Research

Member

Institute for Operations Research and the Management Sciences (INFORMS)

Society for Medical Decision Making (SMDM)

Korean Institute of Industrial Engineers (KIIE)