Hiroaki Murayama
Curriculum Vitae
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Education

2019 – **Medical Student**, Dept. of Medicine, School of Medicine, International University of Health and Welfare, Chiba, Japan

Career/Academic Appointments

2024 – **Lab Associate, SPARK Lab NYC, Environmental Health Sciences, Columbia University, New York, The United States (Asst. Prof. Robbie M. Parks)**
Spatio-temporal modelling in the context of tropical cyclone impacts on health.

2020 – 2024 **Advisor, The National COVID-19 Cluster Taskforce, Ministry of Health, Labour and Welfare, Tokyo, Japan (Prof. Hiroshi Nishiura)**
Performed ad-hoc analysis and research to provide risk assessment of the coronavirus disease 2019 (COVID-19) epidemic and evaluate the impact of public health responses, including estimation and projection of the Alpha variant epidemic, evaluating vaccine effectiveness against death from population-level data, exploring the impact of healthcare burden on temporal case fatality risk, and more. (Murayama et al. *Theo Bio Med Model*. 2021; Ko et al. *Emerg Inf Dis*. 2022)

2022 – 2023 **Research Assistant, Graduate School of Public Policy, University of Tokyo, Japan (Assoc. Prof. Taisuke Nakata)**

2021 – 2023 **Member, CoV-Navi** (https://covnavi.jp/)
Reviewed scientific evidence regarding vaccines against COVID-19 for science communication to the general public.

2021 – 2022 **Research Assistant, Graduate School of Social Sciences, Chiba University, Chiba, Japan (Assist Prof. Shouto Yonekura)**
Proposed a novel Bayesian framework for estimating waning vaccine effectiveness from population-level surveillance data in the presence of multi-variant circulation, working with Dr. Akira Endo. (Murayama et al. *Epidemic*. 2024)

Publications

Peer-Reviewed Original Research (†: equal contribution)

1. Jung S†, Miura F†, Murayama H, Funk S, Wallinga J, Lessler J, Endo A. Dynamic landscape of mpox importation risks driven by heavy-tailed sexual contact networks among men who have sex with men in 2022: a mathematical modeling study. **The Journal of Infectious Diseases**. 2024;jiae433.
2. Murayama H, Endo A, Yonekura S. Estimation of waning vaccine effectiveness from population-level surveillance data in multi-variant epidemics. **Epidemics**. 2023;100726.
3. Murayama H, Pearson CAB, Abbott S, Miura F, Jung S, Fearon E, Funk S, & Endo A. Accumulation of immunity in heavy-tailed sexual contact networks shapes mpox outbreak sizes. **The Journal of Infectious Diseases**. 2023 Jul 4;jiad254.
4. Endo A, Murayama H, Abbott S, Ratnayake R, Pearson CAB, Edmunds WJ, Fearon E†, Funk S†. Heavy-tailed sexual contact networks and monkeypox epidemiology in the global outbreak, 2022. **Science**. 2022 Sep 25;0(0):eadd4507.
5. Ko Y, Murayama H, Yamasaki L, Kinoshita R, Suzuki M, Nishiura H. Age-Dependent Effects of COVID-19 Vaccine and of Healthcare Burden on COVID-19 Deaths, Tokyo, Japan. **Emerging Infectious Diseases**. 2022;28(9).
6. Murayama H†, Yamasaki L†, Hashizume M. The impact of temperature on the transmissibility and virulence of COVID-19 in Tokyo, Japan. **Scientific Reports**. 2021;11(1):24477.
7. Murayama H, Kayano T, Nishiura H. Estimating COVID-19 cases infected with the variant alpha (VOC 202012/01): an analysis of screening data in Tokyo, January-March 2021. **Theoretical Biology and Medical Modelling**. 2021;18(1):13.

Under Review (†: equal contribution)

1. Murayama H†, Asakura TR†, Dickens BL, Foo JH, Jin S, Mukadi PK, Prem K, Endo A. Roles of community and sexual contacts as drivers of clade I mpox outbreaks. **medRxiv**. 2024 Jan;2024.10.15.24315554.
2. Asakura TR, Jung S, Murayama H, Ghaznavi C, Sakamoto H, Teshima A, Miura F, Endo A. Projecting international mpox spread in Asia: ongoing global health risk. **medRxiv**. 2024 Jan 1;2024.04.17.24305832.
3. Murayama H, Nishi A, Endo A. Different time scales used for sexual partner surveys pose a challenge in modelling dynamics of sexually transmitted infections. **medRxiv**. 2023 Jan 1;2023.12.25.23300526.

Report

1. Ko KY, Murayama H, Yamasaki L, Kinoshita R, Nishiura H, Suzuki M. Evaluating the Age-Specific Effectiveness of COVID-19 Vaccines Against Death from surveillance data in Tokyo. **National Institute of Infectious Diseases, Infectious Diseases Surveillance Center**. 2021 Dec. https://www.niid.go.jp/niid/ja/2019-ncov/2484-idsc/10873-covid19-65.html (Japanese only)

Conference (†: equal contribution)

1. Murayama H, Endo A. Transmission dynamics and risk assessment of mpox clade IIb and Ib within men who have sex with men. **Early Career Researcher Sandbox session, Infectious Disease Modelling conference**. 2024 Nov. Bangkok, Thailand. (Oral)
2. Murayama H. Impacts of vaccine, healthcare burden, and temperature on the transmissibility or virulence of COVID-19. **COVID-19 pandemic conference**. 2022 Sep. Nagoya, Japan. (Oral)

Skills and professional development

Technical Expertise

- Data-analysis and scripting languages: R, Julia, Stan.
- Statistical computing environments: Jupyter Lab (via Windows), Docker environment; familiar with RStudio,
- Other software: Microsoft Office, GitHub Desktop, Mendeley.
- Markup languages: LaTeX, Markdown; familiar with HTML, XML, CSS.
- Experience with Bayesian methods, maximum likelihood estimation, differential equations, stochastic process, network modelling approaches.
- Work on infectious disease epidemiology, mathematical modelling of infectious diseases, environmental epidemiology, COVID-19, mpox, sexually transmitted infections, sexual contact network, temperature.

Language

- Japanese (native)
- English (advanced)

Professional Services

Reviewer for peer-reviewed journals
2024 PLoS Neglected Tropical Diseases
2023 PLoS ONE (co-review with Dr. Akira Endo)
2023 The Journal of Infectious Diseases (co-review with Dr. Akira Endo)

Teaching Experience

July 2023 Teaching Assistant, Introduction to Infectious Disease Epidemiology and Modelling, School of Tropical Medicine and Global Health, Nagasaki University, Japan

Membership

1. Japan Epidemiological Association
2. Japanese Society of Tropical Medicine