

# Matthew S. Mietchen, PhD, MPH

## *Curriculum Vitae*

University of North Carolina at Chapel Hill  
Carolina Population Center  
123 W Franklin St  
Chapel Hill, NC, 27516

Phone: 801-718-0501  
[mietchen@unc.edu](mailto:mietchen@unc.edu)

## **CURRENT POSITION**

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Postdoctoral Research Associate

Start Date – April 2023

Supervisors/Mentors: Justin Lessler (UNC)  
Lindsay Keegan (University of Utah)

## **EDUCATION & TRAINING**

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2017 – 2023                      Doctor of Philosophy (PhD), Washington State University, Pullman, WA

Dissertation:    Mietchen MS. *Modeling infectious disease dynamics among structured hospital and community population interactions*. [Order No. 30312624]. Washington State University; 2023.

Advisor:            Eric T. Lofgren

2007 – 2009                      Masters of Public Health (MPH), University of Utah, Salt Lake City, UT

2001 – 2005                      Bachelor of Science (BS) – Biology, Westminster College, Salt Lake City, UT

## **EMPLOYMENT HISTORY**

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Jan 2010 – July 2017            **HIV/STD Epidemiologist II & HIV Surveillance Coordinator**  
Prevention, Treatment, & Care Program  
Bureau of Epidemiology, Utah Department of Health

Jul 2008 – Dec 2009            **STD Prevention Specialist**  
HIV, STD, & Viral Hepatitis Prevention Program  
Bureau of Communicable Disease, Utah Department of Health

Jan 2007 – Jan 2008            **Laboratory Technologist**  
Hepatitis C Research Program  
Eckels Research Laboratory, University of Utah

Apr 2005 – Feb 2007            **Laboratory Technician**  
Sorenson Genomics  
Salt Lake City, Utah

## PROFESSIONAL ACTIVITIES

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### Peer-Reviewed Publications

Johnson S, **Mietchen MS**, Lofgren E. Healthcare Worker Staffing Ratios Affect Methicillin-Resistant *Staphylococcus aureus* Acquisition. Preprint. *medRxiv*. **2024**; 2024.02.14.24302485. Published 2024 Feb 15. DOI: <https://doi.org/10.1101/2024.02.14.24302485>

**Mietchen MS**, Clancey E, McMichael C, Lofgren E. Estimating SARS-CoV-2 transmission parameters between coinciding outbreaks in a university population and the surrounding community. Preprint. *medRxiv*. **2024**; 2024.01.10.24301116. Published 2024 Jan 11. DOI: <https://doi.org/10.1101/2024.01.10.24301116>

Johnson S, **Mietchen MS**, Lofgren E. Modeling methicillin-resistant *Staphylococcus aureus* (MRSA) acquisitions in the intensive care unit with different staffing levels and finite direct-care tasks. *Antimicrobial Stewardship & Healthcare Epidemiology*. **2023**; 3(S2):s95-s95. DOI: <https://doi.org/10.1017/ash.2023.362>

**Mietchen MS**, Short C, Samore M, Lofgren E, CDC Modeling Infectious Diseases in Healthcare Program (MInD-Healthcare). Examining the impact of ICU population interaction structure on modeled colonization dynamics of *Staphylococcus aureus*. *PLOS Computational Biology*. **2022**; 18(7): e1010352. DOI: <https://doi.org/10.1371/journal.pcbi.1010352>

Jackson K, Short C, Toman K, **Mietchen MS**, Lofgren E, for the CDC Modeling Infectious Diseases in Healthcare Program (MInD-Healthcare). Transient Dynamics of Infection Transmission in a Simulated Intensive Care Unit. *PLoS ONE*. **2021**; 17(2): e0260580. DOI: <https://doi.org/10.1371/journal.pone.0260580>

Lofgren E, **Mietchen MS**, Dicks K, Moehring R, Anderson D, Centers for Disease Control Modeling Infectious Diseases in Healthcare Program. Estimated Methicillin-Resistant *Staphylococcus aureus* Decolonization in Intensive Care Units Associated With Single-Application Chlorhexidine Gluconate or Mupirocin. *JAMA Netw Open*. **2021**; 4(3): e210652. DOI: <https://doi.org/10.1001/jamanetworkopen.2021.0652>

Johnson S, Jackson K, **Mietchen MS**, Sbai S, Shwartz E, Lofgren E. Excess Risk of COVID-19 to University Populations Resulting from In-Person Sporting Events. *International Journal of Environmental Research and Public Health*. **2021**; 18(16):8260. DOI: <https://doi.org/10.3390/ijerph18168260>

Short C, **Mietchen MS**, Lofgren E. Assessing the Potential Impact of a Long-Acting Skin Disinfectant in the Prevention of Methicillin-resistant *Staphylococcus aureus* Transmission. *International Journal of Environmental Research and Public Health*. **2020**; 17(5):1500. DOI: <https://doi.org/10.3390/ijerph17051500>

Watson J, Carlile J, Dunn A, et al. Increased Gonorrhea Cases — Utah, 2009–2014. *MMWR Morb Mortal Wkly Rep*. **2016**; 65:889–893. DOI: <http://dx.doi.org/10.15585/mmwr.mm6534a1>

Ashton C, Bernhardt S, Lowe M, **Mietchen MS**, Johnston J. Comparison of HIV/AIDS Rates Between U.S.-Born Blacks and African-Born Blacks in Utah, 2000-2009. *Open AIDS J*. **2012**; 7;6:156-62. Epub 2012 Sep7. DOI: <https://dx.doi.org/10.2174%2F1874613601206010156>

### Technical Reports (Contributions/Collaborations)

National Alliance of State and Territorial AIDS Directors (NASTAD). Connections: From Health Informatics to Improved HIV Outcomes. Washington D.C.; 2016.

### Oral Presentations

**Mietchen MS**, Lofgren E. Highly Structured Nurse-to-Patient Interactions in an Acute Care Hospital ICU Reduces MRSA Transmission When Limited to Assigned Patient Groups: A Mathematical Model Approach. Virtual HAI/AR Lightning Session; *The Council of State and Territorial Epidemiologists (CSTE) Annual Conference*; **2020** November 12.

**Mietchen MS**, Short C, Samore M, Lofgren E. Population Structure Drives Differential Methicillin-resistant *Staphylococcus aureus* Colonization Dynamics. Concurrent Session; *2019 Society for Epidemiological Research (SER) Annual Conference*; **2019** June 18-21; Minneapolis, MN.

**Mietchen MS**, Larson K, Nakashima AK. Viral Suppression among Individuals Co-Infected with HIV and Sexually Transmitted Infections in Utah, 2009 – 2013. Concurrent Session; *2015 National HIV Prevention Conference*; **2015** December 6-9; Atlanta, GA.

Burke A, **Mietchen MS**, Eason J, Jackson D, Nakashima AK. Electronic Record Linkage as a Tool to Assess Morbidity and Mortality Associated with Hepatitis C Virus Infection Among People Living with HIV/AIDS in Utah, 2009-2013. Breakout Session; *The Council of State and Territorial Epidemiologists (CSTE) Annual Conference*; **2015** June 14-18; Boston, MA.

Mottice S, Boulton R, **Mietchen MS**, Piper J. Detecting Unknown Cases of HIV using CD4 Data. Breakout Session; *The Council of State and Territorial Epidemiologists (CSTE) Annual Conference*; **2015** June 14-18; Boston, MA.

**Mietchen MS**, Burke A, Larson K, Nakashima AK. An Evaluation of HIV Case and Electronic Laboratory Reporting between eHARS and a Local Surveillance System, TriSano, in Utah. Plenary Session; *Center for Disease Control & Prevention (CDC) National HIV Surveillance System Grantee Meeting*, **2014** December 3-5; Atlanta, GA.

Burke A, **Mietchen MS**, Jackson D, Nakashima AK. Evaluating Retention-in-Care Among HIV/AIDS Patients By Linking Surveillance Data with AIDS Drug Assistance Program (ADAP) Data, Utah 2012. Breakout Session; *The Council of State and Territorial Epidemiologists (CSTE) Annual Conference*; **2014** June 22-26; Nashville, TN.

**Mietchen MS**, Prendergast E. STD Analysis Using Geomapping and Social Determinant Health Data in Utah. Breakout Session; *Utah Public Health Association (UPHA) Annual Conference*, **2012** April 9-11; Sandy, UT.

Prendergast E, **Mietchen MS**. Analysis of HIV Prevalence Data Using Geomapping and Social Determinants of Health in Utah, 2010. Breakout Session; *Utah Public Health Association (UPHA) Annual Conference*, **2012** April 9-11; Sandy, UT.

### Poster Presentations

**Mietchen M**, Clancey E, Lofgren E. Never the two shall meet? SARS-CoV-2 transmission dynamics between a university's student population and the surrounding community. Poster Session; *Epidemics 2023 – 9<sup>th</sup> International Conference on Infectious Disease Dynamics, Bologna, Italy*; **2023** Nov 28 – Dec 1.

**Mietchen M**, Clancey E, Lofgren E. SARS-CoV-2 Transmission Parameter Estimation Using a Two-Population SEIR Model. Poster Session; *2023 Society for Epidemiological Research (SER) Annual Conference, Portland, OR*; **2023** June 13-16.

**Mietchen M**, Jackson K, Johnson S, Lofgren E. A Tale of One City: Geographic and Social Meta-Populations and COVID-19. Poster Session; *2021 Society for Epidemiological Research (SER) Annual Conference (Virtual)*; **2021 June 22-25**.

**Mietchen M**, Keppler P, Lofgren E. Model Emulation Using Machine Learning: Applications to Hospital Epidemiology. Poster Session; *2020 Society for Epidemiological Research (SER) Annual Conference (Virtual)*; **2020 Dec 16-18**.

**Mietchen M**, Lofgren E. Highly Structured Nurse-to-Patient Interactions in an Acute Care Hospital ICU Reduces MRSA Transmission When Limited to Assigned Patient Groups: A Mathematical Model Approach. Poster Session; *Washington State University's 2020 GPSA Research Exposition, 2020 March 26, Washington State University, Pullman, WA*

**Mietchen M**, Short C, Lofgren E. MRSA Colonization Dynamics in a Meta-Population Model of an ICU. Poster Session; *2018 Center for Health and Human Ecosystem (CHHE) Annual Research Symposium, 2018 October 10, University of Idaho, Moscow, ID*

**Mietchen M**, Larson K, Nakashima AK. Utilizing the HIV Continuum of Care to Target Populations not Achieving Viral Suppression in Utah, 2013. Poster Session; *2015 National HIV Prevention Conference; 2015 December 6-9; Atlanta, GA*.

Hartsell J, **Mietchen M**. Enhanced Gonorrhea Case Investigation to Inform Program Response to Increasing Gonorrhea Trends, Utah, 2014. Poster Session; *Utah Public Health Association (UPHA) Annual Conference; 2015 April 13-15; Layton, UT*.

Burke A, **Mietchen M**, Jackson D, Nakashima AK. A Quality Improvement Analysis of Death Ascertainment among Utah HIV/AIDS Cases, 1985-2012. Poster Session; *Center for Disease Control & Prevention (CDC) National HIV Surveillance System Grantee Meeting, 2014 December 3-5; Atlanta, GA*.

Burke A, **Mietchen M**, Jackson D, Nakashima AK. Causes of death and mortality trends among Utah HIV/AIDS cases, 2000-2011. Poster Session; *American Public Health Association (APHA) Annual Conference; 2014 November 15-19; New Orleans, LA*.

**Mietchen M**, Mottice S, Nakashima AK. Integrating HIV/AIDS Surveillance into a Web-Based System That Includes Electronic Laboratory Reporting to Improve Case Reporting and Monitoring of HIV Care and Treatment Status. Poster Session; *The Council of State and Territorial Epidemiologists (CSTE) Annual Conference; 2014 June 22-26; Nashville, TN*.

Burke A, **Mietchen M**, Jackson D, Nakashima AK. A Quality Improvement Analysis of Death Ascertainment among Utah HIV/AIDS Cases. Poster Session; *The Council of State and Territorial Epidemiologists (CSTE) Annual Conference; 2014 June 22-26; Nashville, TN*.

**Mietchen M**. Geomapping Analysis and Comparison of Chlamydia trachomatis infections among Highly Affected Populations in Utah. Poster Session; *Utah Public Health Association (UPHA) Annual Conference, 2012 April 9-11; Sandy, UT*.

**INVITED LECTURES, PANELS, & SEMINARS**

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- 2024 “Understanding Bias in Epidemic Parameters among Detected Outbreaks of Subcritical Pathogens: A Simulation Study”, Carolina Population Center Mini-Conference, University of North Carolina at Chapel Hill, NC
- 2022 “Modeling Infectious Diseases (yeah, it’s math, but it’s cool math)”, Introduction to Epidemiology (PAOH 3010), Auburn University, AL
- 2022 “Disease Surveillance: What it is, What it’s not, & Why It’s Foundational to Public Health”, Introduction to Public Health (PAOH 2100), Auburn University, AL
- 2022 “Guidance for Master’s-Level Epidemiologists Considering Returning to School to Pursue Doctoral Studies”, Lunchtime Symposium, 2022 SER Annual Conference, Chicago, IL
- 2021 “Introduction to Networks” in Python  
CougPy Workgroup, Washington State University
- 2021 “Missing Data & Multiple Imputation” in R  
CougR Workgroup, Washington State University
- 2020 “Machine Learning & Regression” in R  
CougR Workgroup, Washington State University
- 2020 “Infectious Disease Modeling of Community and Healthcare Population Interactions”  
Mathematical Biology Seminar, Washington State University
- 2019 “Introduction to Network Analysis” in R  
CougR Workgroup, Washington State University
- 2018 Outbreak Response VetMed Course  
4<sup>th</sup> Year Veterinary Medicine Student Rotation, Washington State University
- 2017 “Ending the Epidemic: HIV Surveillance Data-to-Care Methods & Other Interesting Tools”  
Mathematical Biology Seminar, Washington State University
- 2010 – 17 Undergraduate & Graduate Course Guest Lectures; University of Utah, Westminster College, Brigham Young University, Weber State University, Salt Lake Community College
- 2014 “HIV Infections in Utah: Epidemic Update & Continuum of Care”  
Utah HIV Planning Group Conference, University of Utah
- 2013 “2012 Evaluation of HIV Infection and Continuum of HIV Care in Utah”  
2013 Regional HIV/AIDS Summit, Salt Lake City
- 2013 “HIV Infections in Utah: Using Surveillance Data for a Continuum of Care”  
Utah HIV Planning Group Conference, University of Utah
- 2012 “HIV/STD Surveillance Update”  
HIV Treatment and Care Planning Committee, University of Utah

- 2012 “HIV & Sexually Transmitted Infections in Utah.” Sexual Health Symposium, Brigham Young University
- 2011 “Epidemiological Update of Syphilis & HIV in Utah.” 2011 Utah STD/HIV Clinical Update, University of Utah
- 2011 “Epidemiological Profile of Sexually Transmitted Infections in Utah.” McKay Dee Regional Hospital Grand Rounds, Ogden, Utah

### **FELLOWSHIPS, SCHOLARSHIPS, & GRANTS**

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- 2020 Russ and Anne Fuller Fellowship for Interdisciplinary Research, Washington State University Graduate School, Award - \$4,000
- 2019 Ron & Sheila Pera Endowment CVM Scholarship, College of Veterinary Medicine, Washington State University, Award - \$950
- 2013 National HIV Surveillance System (NHSS) & Molecular HIV Surveillance (MHS) Grant, Cooperative Agreement Award, Centers for Disease Control and Prevention
- 2013 STD Surveillance Network (SSuN) Grant, Competitive Cooperative Agreement Award, Centers for Disease Control and Prevention

### **AWARDS & HONORS**

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- 2024 Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID) 2024 Halloran Scholarship and Travel Award, Emory University, Atlanta, GA
- 2023 Council of State and Territorial Epidemiologists (CSTE) Annual Conference and Forecasting Workshop Sponsorship and Travel Award, Salt Lake City, UT
- 2019 Science Talk '19 Conference Travel Award, Portland, OR
- 2018 10<sup>th</sup> Annual Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID) Registration and Travel Award, University of Washington, Seattle, WA
- 2008 Graduate School Internship, Communicable Disease Program, Utah Department of Health
- 2004 Undergraduate Internship, Cytogenetic Research & Clinical Laboratory, University of Utah Medical Center
- 2003 – 04 Organization of the Year Award, Pre-Medical Society, Westminster College
- 2002 Psychology Academic Research Awardee, New York Academy of Sciences, NYC
- 2001 – 05 Academic Scholarship, Westminster College

**ACADEMIC ACTIVITIES**

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- 2020 – 22 MIDAS Student Committee Member, MIDAS Student Network
- 2020 – 22 Program Co-Chair. Student & Post-Doc Committee (SPC), Society of Epidemiological Research
- 2019 – 20 Vice President, College of Veterinary Medicine Graduate Student Association (CVMGSA), Washington State University
- 2008 – 09 Activities Chair, Student Advisory Committee, University of Utah
- 2006 – 08 Student Advisory Committee, University of Utah
- 2003 – 05 Tri-Beta Honors Society Associate Member, Westminster College
- 2003 – 05 Pre-Medical Society President & Student Ambassador, Westminster College

**PROFESSIONAL & COMMUNITY ASSOCIATIONS**

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- 2020 – 22 Palouse Diabetes and Wellness Center (PDWC) Board Member, Pullman, WA  
- Patient Advisor & Stakeholder
- 2020 – 22 Council of State and Territorial Epidemiologists (CSTE)
- 2019 – Society of Epidemiologic Research (SER)  
- Student & Post-Doc Committee (SPC)
- 2010 – 17 Council of State and Territorial Epidemiologists (CSTE)  
- CSTE HIV Sub-committee Leadership Group (elected in 2016)
- 2009 – 17 Utah Public Health Association (UPHA)

**TECHNICAL SKILLS & EXPERIENCE**

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R Programming	Python Programming (novice)	Network Science
Data Science	Version Control (GitHub)	ArcGIS (novice)
High Performance Computing (HPC)	CDC Cooperative Grant Writing	Program/Budget Management

## REFERENCES

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Justin Lessler  
Professor  
University of North Carolina at Chapel Hill  
Chapel Hill, NC  
919-599-2133  
[jlessler@unc.edu](mailto:jlessler@unc.edu)

Lindsay T. Keegan  
Research Associate Professor  
University of Utah  
Salt Lake City, UT  
801-585-6186  
[lindsay.keegan@utah.edu](mailto:lindsay.keegan@utah.edu)

Eric T. Lofgren  
Associate Professor  
Washington State University  
Pullman, WA  
509-335-4022  
[eric.lofgren@wsu.edu](mailto:eric.lofgren@wsu.edu)