

CURRICULUM VITAE

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SUMMARY OF PROFESSIONAL EXPERIENCE

I am a CDC Epidemic Intelligence Service Officer and research epidemiologist with 8 years of experience in applied public health, focusing on field epidemiology, health equity, and infectious disease modeling. I have extensive experience conducting field work and building statistical and mathematical models to identify at-risk populations and model transmission dynamics.

I have led teams of over 45 CDC investigators, designed my own studies, built multiple spatio-temporal statistical and mechanistic models, and worked with datasets containing millions of observations. I'm ready to take on the challenge of improving public health practices in the US and globally.

Key words: Field Epidemiology • Health Equity • Infectious Disease Modeling • Global Health

EDUCATION

University of California, Davis, Ph.D. Epidemiology (2020)

Dissertation: "*Quantifying heterogeneities in the risk of local Zika and dengue outbreaks in California*" (Advised by Dr. Christopher M. Barker)

University of California, San Diego, B.S. Environmental Systems, Minor in International Studies (2013)

Complutense University of Madrid, Spain, International Studies (2011)

LANGUAGES

- English (fluent)
 - Spanish (fluent)
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EMPLOYMENT

Centers for Disease Control and Prevention:

Epidemic Intelligence Service Officer 2020–Present

- As an **EIS Officer** and **US Public Health Service Lieutenant** for the **CDC**, I am on the front lines of public health investigating emerging public health threats. I am stationed in the Disease Investigation Section at the California Department of Public Health where I conduct epidemiological assessments, outbreak investigations of infectious diseases of public health importance, and develop prevention guidelines for their control. I have led multi-jurisdictional and multi-state investigations of disease clusters and consulted local health departments on prevention and control of communicable diseases.
- Projects have included:
 - **Leading a 3-month household transmission investigation of SARS-CoV-2** in San Diego County, CA and Denver, CO. I **led** this field investigation of **over 45 CDC deployers**, designed and implemented data collection and enrollment of 160 households with more than 500 participants, and conducted statistical analyses (seven publications in review).
 - **Investigating exposure to monkeypox** from a traveler on an international flight.
 - **Examining health disparities in coccidioidomycosis infections** across California residents over the past two decades.
 - **Investigating outbreaks of SARS-CoV** in high school basketball and baseball players from several counties that attended multi-state tournaments.
 - **Evaluating the California COVID-19 state surveillance system**, focusing on the accuracy of case demographics and race and ethnicity reporting.

California Department of Public Health:

Graduate Student Researcher 2018–2020

- As a **researcher** for the **Climate Change and Health Equity Program**, I investigated the human morbidity and mortality burden attributed to ambient temperature and extreme heat and cold events in California. The data I worked with contained over **8 million observations**. We developed distributed lag non-linear models to project future scenarios of excess temperature-related morbidity and mortality in California populations using climate change scenarios. We examined these relationships in less advantaged populations and identified the communities at greatest risk for increases in heat-related illness burden in the future. Publication in prep.

University of California, Davis:

Graduate Student Researcher 2014-2020

- As a **researcher** for the **Davis Arbovirus Research and Training group (DART)**, I quantified sociodemographic heterogeneities in *Aedes aegypti* abundance in Los Angeles, California, and developed risk assessment tools and maps that were incorporated into the California Vector-borne Disease Surveillance Gateway (VectorSurv Gateway). I developed mechanistic models to summarize mosquito population dynamics and assess present and future risk of *Ae. aegypti* and *Ae. albopictus* range expansion in California with climate change projections, [which are publicly accessible here](#). I also raised and maintained *Culex spp.* and *Aedes spp.* mosquito colonies for laboratory experiments and participated in an

experimental *Wolbachia*-infected *Aedes albopictus* release project with [MosquitoMate](#) at the Greater Los Angeles County Vector Control District in June of 2015. The field trial found that the release of sterile male *Ae. albopictus* mosquitoes led to an overall population reduction of *Ae. albopictus* in Los Angeles communities. This field trial was one of multiple in the U.S. that contributed to MosquitoMate getting EPA approval in 2017.

- As the **lead investigator** on project in collaboration with the **Greater Los Angeles County Vector Control District**, I ran a household survey of 163 households in Los Angeles County, CA. Our aim was to quantify sociodemographic heterogeneities in the risk of local Zika and dengue outbreaks in California. We found that a decrease in income of approximately \$20,000 was associated with a 30% increase in *Ae. aegypti* abundance at the household level, highlighting the need for community-specific vector control programs. At each household we administered a survey, which I wrote in English and in Spanish, and collected data on household characteristics and human behaviors. I designed the study, collected adult *Ae. aegypti* and identified species in the laboratory, and managed 3 undergraduate researchers. I also conducted all statistical and spatial analysis on household data and *Ae. aegypti* abundance. Publication in prep.
- As the **survey and data manager** for the [Proyecto Dengue](#) Program Project Grant (P01) (PIs Dr. Tom Scott and Dr. Amy Morrison), I managed and developed surveys and data-collection efforts for the Proyecto Dengue longitudinal cohort study; a study which has enrolled over **15,000 participants**. I translated and streamlined surveys and standard operating procedures into Spanish and field-tested applications and survey protocols in Iquitos, Peru. I also trained project members, including Peruvian doctors and researchers, in CommCare data management and survey design, and maintained communications between CommCare database management team and project administrators.

Journal Reviewer

2015–present

- **Journal of Medical Entomology**
- **Parasites and Vectors**
- **PLOS Neglected Tropical Diseases**
- **Vector-Borne and Zoonotic Diseases**

University of California, San Diego

Undergraduate Student Researcher 2011–2013

- As a **research assistant** in the **Department of Global Public Health**, I translated and edited HIV/STI participant surveys in Spanish and in English and aided in data cleaning. I also instigated protocol for GIS analysis of study location data and conducted general clerical tasks for multiple international epidemiological studies of HIV/STI transmission.
- As a **research assistant** at the **Scripps Institute of Oceanography**, I developed an open-source protocol using GRASS GIS to analyzed retrospective seasonal change of tide-pool algae ecology in response to seasonal and anomalous climate fluctuations. I also designed the data collection methodology and identification protocols for benthic layer marine

species identification survey using a Remote Operated Vehicle (ROV) video collection apparatus.

PUBLICATIONS

Donnelly, M.A.P., M.R. Cheuy, R. Soto, et al., Household transmission of SARS-CoV-2 Alpha variant - United States, 2021. 2022 (*Accepted*)

Schwartz, N.G, V.T. Chu, **M.A.P Donnelly**, et al., Sensitivity of at-home antigen testing compared with polymerase chain reaction testing and viral culture over the course of SARS-CoV-2 infection. 2022 (*In review*)

Whaley, M, M.W. Waltenburg, R. Chancey, **M.A.P. Donnelly**, et al., Symptoms and transmission of SARS-CoV-2 B.1.1.7 lineage among children and adolescents in household settings - California and Colorado, January-May, 2021, 2022 (*In review*)

Magleby, R., D.W. McCormick, S.L. Konkle, B. Austin, B. Albanese, M. Beatty, V.T. Chu, M.R. Cheuy, **M.A.P. Donnelly**, et al., COVID-19 Vaccine breakthrough infections, February-April, 2021: a case series, 2022 (*In review*)

McCormick, D.W., S.L. Konkle, R. Magleby, A.K. Chakrabarti, B. Cherney, K. Lindell, A. Namageyo-Funa, R. Soto, **M.A.P. Donnelly**, et al., Effect of vaccination against SARS-CoV-2 on household transmission during initial vaccine introduction prior to the Delta variant surge - Denver, Colorado and San Diego, California January-April 2021, 2022 (*In review*)

Shragai, T., C. Pratt, J. Castro Georgi, A. Ahmad, B. Albanese, B. Austin, M. Beatty, B. Cherney, V.T. Chu, M.R. Cheuy, **M.A.P. Donnelly**, et al., Household surface contamination with SARS-CoV-2, 2022 (*In review*)

Namageyo-Funa, A., J.D. Ruffin, M.F. Jalloh, C. Scott, K. Lindell, M. Silver, A. Matanock, B. Funnels, R. Soto, **M.A.P. Donnelly**, et al., Behaviors associated with household transmission of SARS-CoV-2 in California and Colorado, January-April, 2021, 2022 (*In review*)

Kawiecki, A., W. Elson, **M.A.P. Donnelly**, J. Schwarz, J. Simpson, T. Scott, N. Achee, A. Morrisson. Use of mobile data collection tools to improve implementation of epidemiological trials in Iquitos, Peru. 2022 (*In review*)

Donnelly, M.A.P., G.L., Sondermeyer Cooksey, A. Nguyen, A. Yu, D.Vugia, S. Jain, Health disparities in coccidioidomycosis incidence – California, 2000-2019. 2022 (*In prep.*)

Donnelly, M.A.P., D. Maffei, G.L. Sondermeyer Cooksey, B.L. Materna, A. Kamali, Coccidioidomycosis cluster among wildland firefighters – California, 2021. (*In prep.*)

Donnelly, M.A.P., T. Benmarhnia, J. Vargo. Quantifying Heat-related Morbidity in California: Understanding Community-scale Impacts. 2022 (*In prep.*)

Donnelly, M.A.P., C.M. Barker. The transmission potential of *Aedes aegypti*-borne viruses in Los Angeles, California. 2022 (*In prep.*)

Donnelly, M.A.P., S. Kluh, R. Snyder, C.M. Barker. Quantifying socioeconomic heterogeneities in the distribution of *Aedes aegypti* among California Households. *PLoS Neglected Tropical Diseases*. 2020 <https://doi.org/10.1371/journal.pntd.0008408>

Donnelly, M.A.P., B. Main, S. Kluh, C.M. Barker. *Aedes aegypti* blood and sugar-feeding patterns in Los Angeles, California, *Proceedings and Papers of the Mosquito and Vector Control Association of California*. 2019 [Available here](#)

Donnelly, M.A.P., S. Kluh, C.M. Barker. Quantifying socioeconomic heterogeneities in the risk of local Zika and dengue outbreaks in California. *Proceedings and Papers of the Mosquito and Vector Control Association of California*. 2018;86:84-85 [Available here](#)

Donnelly, M.A.P., M. Marcantonio, F. Melton, C.M. Barker. Mapping past, present, and future climatic suitability for invasive *Aedes aegypti* in the United States: a process-based modeling approach. *Proceedings and Papers of the Mosquito and Vector Control Association of California*. 2017;85:18-20 [Available here](#)

Donnelly, M.A.P., M. Marcantonio, F. Melton, C.M. Barker. Mapping climatic suitability for invasive *Aedes aegypti* and *Aedes albopictus* in the United States: a process-based modeling approach. *Proceedings and Papers of the Mosquito and Vector Control Association of California*. 2016;4:92:94 [Available here](#)

Simpson, J.K., **M.A.P. Donnelly,** M. Marcantonio, C.M. Barker. CalSurv Gateway: survey results and new tools for invasive *Aedes*, *Proceedings and Papers of the Mosquito and Vector Control Association of California*. 2016;84:69:70 [Available here](#)

TEACHING EXPERIENCE

- **Teaching Assistant:** Disease Ecology (VME 158) Spring 2019
 - **Teaching Assistant:** Analysis and Interpretation of Epidemiological Data (EPI 208) Fall 2018
 - **Teaching Assistant:** Spatial Epidemiology (EPI 223) Spring 2017
 - **Teaching Assistant:** Introduction to Biology: Biodiversity (BIS2C) Fall 2014
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GRANTS & AWARDS

- **(\$2,000)** Mosquito and Vector Control Association of California, Reeves New Investigator Award 2020
- **(\$30,000)** Pacific Southwest Center of Excellence in Vector-borne Diseases fellowship 2019
- **(\$8,500)** University of California Global Health Institute, Planetary Health Center of Expertise Summer fellowship 2018
- **(\$5,000)** University of California, Davis Graduate Group in Epidemiology fellowship 2015
- **(\$5,000)** University of California, Davis Graduate Group in Epidemiology fellowship 2014

- **(\$2,000)** Summer Institute in the Statistics and Modeling of Infectious Diseases fellowship (International competition) 2018
- *2nd place poster*, Designated Emphasis in the Biology of Vector-borne Diseases Annual Symposium 2017
- *National Institutes of Health Ruth L. Kirschstein National Research Service Award (F31) Applicant (unfunded)* 2017
- *National Institutes of Health Ruth L. Kirschstein National Research Service Award (F31) Applicant (unfunded)* 2017

COMMUNICATION & OUTREACH

Mentor and applications developer for the Girls Outdoor Adventure in Leadership and Science (GOALS) program 2017-2020

GOALS seeks to cultivate and embolden the next generation of STEM leaders through a free, immersive, field-based summer science program for high school girls. Ultimately, GOALS seeks to reduce racial and gender gaps in STEM careers by: - Minimizing barriers to participation in outdoor education - Nurturing interest in knowledge production and scientific inquiry - Supporting and guiding career path exploration - Teaching tangible skills and frameworks for future scientific learning - Providing access to tools and resources for college readiness - Creating peer support networks

Co-founder of the UC Davis Health Policy Journal Club 2017-2020

Organized monthly discussions on topics related to health policy in the U.S., selected relevant books, and facilitated discussions to engage members in conversation. Identified and invited guest speakers to attend club meetings.

Guest Lecturer 2016-present

Lectured in several junior high and high school classrooms on topics including epidemiology, vector-borne diseases in California, disease ecology, and statistics.

PRESENTATIONS

Donnelly, M.A.P, R. Chuey, R. Soto, et al. "Household Transmission of SARS-Cov-2 Virus Variant B.1.1.7 Compared with Non-B.1.1.7 Viruses — San Diego County, California, January – March 2021", Council for State and Territorial Epidemiologists Annual Conference, virtual, June (2021)

Donnelly, M.A.P, S. Jain, "Evaluation of the California COVID-19 surveillance system", Epidemic Intelligence Service Annual Symposium, virtual, September (2020)

Donnelly, M.A.P, C.M. Barker. "Quantifying sociodemographic heterogeneities in the risk of local Zika and dengue outbreaks in California", Reeves Young Investigator Symposium, Mosquito and Vector Control Association of California, San Diego, CA, January (2020).

Donnelly, M.A.P, B. Main, C.M. Barker. "*Aedes aegypti* blood and sugar-feeding patterns in Los Angeles, California", American Society for Tropical Medicine and Hygiene. Washington D.C., November (2020)

Donnelly, M.A.P, B. Main, C.M. Barker. "Development of a more efficient and cost-effective blood- and sugar-meal assay for mosquitoes." Pacific Southwest Regional Center of Excellence in Vector-Borne Diseases Seminar Series. Davis, CA. February (2019).

Donnelly, M.A.P, B. Main, C.M. Barker. "Studies on *Aedes aegypti* feeding and risk for local Zika virus transmission in Los Angeles, California." Mosquito and Vector Control Association of California, Burlingame, CA. February (2019).

Donnelly, M.A.P, C.M. Barker. (Invited Speaker) "Climate suitability for invasive *Aedes aegypti* in the United States." Centers for Disease Control, BRACE Methods Community of Practice Meeting, 10 October (2018).

Donnelly, M.A.P, S. Kluh, C.M. Barker. "Quantifying sociodemographic heterogeneities in the risk of local Zika and dengue outbreaks in California", American Society for Tropical Medicine and Hygiene. New Orleans, LA. November (2018).

Donnelly, M.A.P, S. Kluh, C.M. Barker. "Quantifying sociodemographic and human behavioral heterogeneities in *Aedes aegypti* abundance in Los Angeles, California", Designated Emphasis in the Biology of Vector-borne Diseases Annual Symposium. Davis, CA. May (2018).

Donnelly, M.A.P, S. Kluh, C.M. Barker. "Quantifying sociodemographic heterogeneities in *Aedes aegypti* abundance in Los Angeles, California", Mosquito and Vector Control Association of California, Monterrey, CA. January (2018).

Donnelly, M.A.P, S. Kluh, C.M. Barker. "Socioeconomic drivers of *Aedes aegypti* abundance in Los Angeles, California", American Society for Tropical Medicine and Hygiene. Baltimore, MD. November (2017).

Donnelly, M.A.P, M. Marcantonio, M. Neteler, F. Melton, A. Rizzoli, C.M. Barker. "A mechanistic modeling approach for mapping future climatic suitability for invasive *Aedes aegypti* in the United States", Designated Emphasis in the Biology of Vector-borne Diseases Annual Symposium. Davis, CA. May (2017).

Donnelly, M.A.P, M. Marcantonio, M. Neteler, F. Melton, A. Rizzoli, C.M. Barker. "Mapping past, present, and future climatic suitability for invasive *Aedes aegypti* and *Aedes albopictus* in the United States: a process-based modeling approach", Mosquito and Vector Control Association of California. San Diego, CA. January (2017).

Donnelly, M.A.P, M. Marcantonio, M. Neteler, F. Melton, A. Rizzoli, C.M. Barker. "Current and future climatic suitability for invasive *Aedes aegypti* in the United States", American Geophysical Union. San Francisco, CA. December (2016).

Mosquitoes: Vector Biology and Epidemiology, Symposium moderator, American Society for Tropical Medicine and Hygiene. Atlanta, GA. November (2016).

Donnelly, M.A.P, M. Marcantonio, M. Neteler, F. Melton, A. Rizzoli, C.M. Barker. "Mapping past, present, and future climatic suitability for invasive *Aedes aegypti* in the United States: a process-based modeling approach", American Society for Tropical Medicine and Hygiene. Atlanta, GA. November (2016).

Donnelly, M.A.P, M. Marcantonio, M. Neteler, F. Melton, A. Rizzoli, C.M. Barker. "Mapping climatic suitability for invasive *Aedes aegypti* and *Aedes albopictus* in the United States: a process-based modeling approach". Mosquito and Vector Control Association of California. Sacramento, CA. February (2016).

PROFESSIONAL AFFILIATIONS

- American Society for Tropical Medicine and Hygiene (ASTMH)
- American Committee of Medical Entomology (ACME)
- Mosquito and Vector Control Association of California (MVCAC)