Erin N Frame (née Hulland), MPH

Education:

09/2018 – Present **University of Washington**
Department of Global Health – Metrics and Implementation Science
PhD student in Metrics - Anticipated graduation 12/2022
GPA: 3.8 / 4.0

08/2012 – 05/2014 **Emory University**
Rollins School of Public Health
Master of Public Health (MPH) – Biostatistics
GPA: 3.7 / 4.0

08/2007 -05/2012 **Pennsylvania State University**
Bachelor of Science (BS) – Biology and French, Statistics minor
GPA: 3.6 / 4.0

01/2010-05/2010 **IES Institute Paris, France**
French Language Studies, Spring Study Abroad

Relevant Work Experience:

09/2018 – present **Local Burden of Disease – Pandemics & COVID-19 Team**
Institute for Health Metrics and Evaluation, Seattle WA
Researcher *09/2020 – present*

- Responsible for weekly production of results from data cleaning through SEIR model estimation and our results briefings used by governors, ministries of health, and other public health governing bodies
    - Used multitude of coding languages and software principles for maintaining a rapid-paced, high quality production pipeline including Python, Linux command line, Git and Github, and R and R Markdown
- Worked as first author on a manuscript analyzing differences in countries' COVID-19 outcomes including pandemic preparedness indicators, response metrics, and governance variables to better understand this pandemic and prepare for the next
- Developed a system for flagging routine data issues in our files and worked with engineering team to create a set of files to help with debugging and identifying reporting errors on a weekly basis
- Developed plots, maps, tables, and text bullets for the results briefings to be automated for rapid dissemination
- Trained junior staff members on data cleaning and quality control processes
- Created quality control products for data extraction analysts to better assess quality and coverage of inputs including testing data, serology data, hospitalizations, cases and deaths

Pre-doctoral Researcher *09/2018 – 09/2020*

- Provided maps and geospatial estimates of travel time to nearest health facility given 5x5 km grid cells at risk for viral hemorrhagic fevers in Africa
- Estimated the largest reduction in raw and person-weighted travel time with the simulated placement of a new facility in a given country
- Estimated the travel time to any location at risk for viral hemorrhagic fevers from any point in a given country
- Assisted with literature reviews, data extraction, geo-positioning, and data cleaning of published data on Rift Valley Fever

- Assisted with new grant development and current grant reporting
- Modeled environmental suitability of Monkeypox virus using environmental and species covariates and extracted published literature using generalized boosted regression modeling
- Estimated spillover event potential from animals to humans for Monkeypox considering environmental suitability and populations living in such locations
- Assisted with early database curation of COVID-19 cases globally with demographic data, published March 2020
- Performed a meta-analysis of published systematic reviews of mask effectiveness for respiratory virus transmission including data extraction, processing, code development, documentation and manuscript preparation

06/2020 – 09/2020 **Global Development Division – Polio Eradication Team**

Bill and Melinda Gates Foundation, Seattle WA

Summer Associate *06/2020 – 09/2020*

- Evaluated additional geospatial covariates to improve a random effects model for circulating type 2 vaccine-derived polioviruses
- Forecasted possible district-level transmission in upcoming months to help with outbreak preparedness and response
- Investigated the use of existing friction travel surface in standard human mobility models (radiation and gravity models) for improving infectious disease exposure modeling
- Developed a manuscript draft on ongoing work
- Attended working group sessions on piloting of the novel type 2 oral poliovirus vaccine (nOPV2)

06/2014 – 07/2018 **Emergency Response and Recovery Branch**

Center for Global Health, US Centers for Disease Control and Prevention, Atlanta GA

Biostatistician (Associate Service Fellow) *04/2016 – 07/2018*

Junior Biostatistician (ORISE Fellow) *06/2014 – 04/2016*

- Provided statistical analyses for the Emergency Response and Recovery Branch, Division of Global Health Protection, and external partners including analysis of survey data, descriptive statistics, survival analysis, linear and logistic regression, principal components analysis, propensity score matching, capture-recapture, non-parametric analyses, meta-analyses and sample size calculations
- Collaborated with branch scientists on and provided sample size calculations and survey designs for various types of international surveys including cross-sectional population surveys, respondent driven sampling, longitudinal surveys, and national-level surveys
- Provided statistical support and mentoring to branch Epidemic Intelligence Service officers, epidemiologists and researchers, CDC Haiti country office and external partners
- Developed and conducted multiple trainings in Haiti (in French):
    - Data cleaning and analysis trainings for hospital statisticians / information officers
    - Verbal autopsy survey methods for interviewers
    - EpiSample and Open Data Kit trainings for household selection and data collection for interviewers
    - R programming for beginners for Ministry of Health and CDC Haiti staff
    - Annual training for intermediate-level Field Epidemiology Training Program fellows on study design and sample size calculations
- Assisted with development of grant proposals

11/2013 - 05/2014 **Surveillance and Health Services Research Team**

American Cancer Society, Atlanta, GA

Intern

- Performed various data analysis tasks under the supervision of two leading cancer epidemiologists including logistic regression, chi-square analysis, survival curves, and Cox Proportional Hazards models on national cancer registry data using SAS, SEER*Stat, and JoinPoint software

Selected Publications:

2015 **Hulland, E.N**., Brown, J.L., Swartzendruber, A.L., Sales, J.M., Rose, E.S., & DiClemente, R.J. (2015). The association between stress and coping and sexual risk behaviors over 24-months among African-American female adolescents. *Psychology, Health, and Medicine, 20(4):* 443-456. DOI 10.1080/13548506.2014.951369

2016 **Hulland, E**., Blanton, C., Leidman, E., & Bilukha, O. (2016). Parameters associated with design effect of child anthropometry indicators in small-scale field surveys. *Emerging Themes in Epidemiology. 13(1):13.* DOI 10.1186/s12982-016-0054-y

2017 **Hulland, E.**, Chowdhury, R., Sarnat, S., Chang, H., & Steenland, K. (2017). Socioeconomic Status and Non-fatal Adult Injuries in Selected Atlanta (Georgia USA) Hospitals. *Prehospital and Disaster Medicine. 32(4):1-11.* DOI: 10.1017/S1049023X17000255.

2017 Boyd, A.T., **Hulland, E.N.**, Grand'Pierre, R., Nesi, F., Honoré, P., Jean-Louis, R., & Handzel, E.W. (2017): Use of Rapid Ascertainment Process for Institutional Deaths (RAPID) to identify pregnancy-related deaths in tertiary-care obstetric hospitals in three departments in Haiti. *BMC Pregnancy and Childbirth, 17:145*. DOI: 10.1186/s12884-017-1329-1

2017 Domercant, J.W., Jean Louis, F., **Hulland, E.N.**, Griswold, M., André-Alboth, J., Ye, T., & Marston, B.J. (2017): Seroprevalence of Herpes Simplex Virus type-2 (HSV-2) among pregnant women who participated in a national HIV surveillance activity in Haiti. *BMC Infectious Diseases, 17:577*. DOI: 10.1186/s12879-017-2674-4

2017 Hynes, M., Meehan, K., Meyers, J., Mashukano Maneno, L. & **Hulland, E.N.** (2017): Using a Quality Improvement approach to improve maternal and neonatal care in North Kivu, Democratic Republic of Congo. *Reproductive Health Matters, 25 (51): 140-151.* DOI: 10.1080/09688080.2017.1403276

2018 **Hulland, E.N.,** Subaiya, S., Pierre, K., Barthelemy, N., Pierre, J.S., Dismer, A., Juin, S. Fitter, D. & Brunkard, J. (2019). Increase in reported cholera cases in Haiti following Hurricane Matthew: an interrupted time-series model. *American Journal of Tropical Medicine and Hygiene, 100(2): 378.* DOI:10.4269/ajtmh.17-0964.

2019 Doherty S., **Hulland E.**, Lopes-Cardozo B., Kirupakaran S., Surenthirakumaran R., Cookson S., et al. Prevalence of mental disorders and epidemiological associations in post-conflict primary care attendees: a cross-sectional study in the Northern Province of Sri Lanka. *BMC psychiatry. 19(1):83*. DOI: 10.1186/s12888-019-2064-0.

2019 Leidman, E., Couture, A., **Hulland, E.**, & Bilukha, O. (2019). Concordance between estimates of acute malnutrition measured by weight-for-height and by mid-upper arm circumference after age adjustment: population-representative surveys from humanitarian settings. *BMC Nutrition, 5(1): 39.* DOI: 10.1186/s40795-019-0301-z.

2019 **Hulland, E.N.,** Wiens, K.E., Shirude, S. et. al. (2019) Travel time to health facilities in areas of outbreak potential: maps for guiding local preparedness and response. *BMC Med, 5(232).* DOI:10.1186/s12916-019-1459-6.

2020 Xu, B., Gutierrez, B., Mekaru, S., Sewalk, K., Goodwin, L. Loskill, A., Cohn, E.L, Hswen, Y., Hill, S.C., Cobo, M.M., Zarebski, A.E, Li, S., Wu, C.H, **Hulland, E.,** Morgan, J.D, Wang, L., O'Brien, K., Scarpino, S.V., Brownstein, J.S., Pybus, O.G, Pigott, D.M, & Kraemer, M.U.G. (2020) Epidemiological data from the COVID-19 outbreak, real-time case information. *Scientific Data, 7(106).* DOI: 10.1038/s41597-020-0448-0.

2021 IHME COVID-19 Forecasting Team. Modeling COVID-19 scenarios for the United States. *Nat Med* **27,** 94–105 (2021). https://doi.org/10.1038/s41591-020-1132-9

2021 Greene-Cramer, B. J., **Hulland, E. N**., Russell, S. P., Eriksson, C. B., & Lopes-Cardozo, B. (2021). Patterns of posttraumatic stress symptoms among international humanitarian aid workers. *Traumatology, 27*(2), 177–184. https://doi.org/10.1037/trm0000286

2021 **Hulland EN**, Leidman E, Wilkinson C, Tondeur M, Bilukha O (2021) Anemia design effects in cluster surveys of women and young children in refugee settings. PLOS ONE 16(7): e0254031. https://doi.org/10.1371/journal.pone.0254031

Posters and Presentations:

2014 **Hulland, E**. The Association between stress, coping, and sexual risk behaviors over 24 months among African-American female adolescents. *Society of Behavioral Medicine 35th Annual Meeting.* Philadelphia, PA. April 26, 2014.

2016 **Hulland, E.** Parameters associated with design effect of child anthropometry indicators in small-scale field surveys. *2nd International Conference on Survey Methods in Multinational, Multiregional, and Multicultural Contexts*. Chicago, IL. July 28th, 2016.

2019 **Hulland, E.** Travel time to health facilities in areas of viral hemorrhagic fever outbreak potential: maps for guiding preparedness and response. *University of Washington Department of Global Health SLEIGH symposium.* Seattle, WA. May 30, 2019.

2019 **Hulland, E.N.** Precision Public Health and Pandemic Preparedness: Quantifying travel time to health care from locations at risk for pathogen transmission. *American Society for Tropical Medicine and Hygiene Annual Meeting.* National Harbor, MD. November 21, 2019.

Professional organizations:

2014 – 2015 Society of Behavioral Medicine (Member)
2015 – 2017 American Statistical Association (Member)
2018 – present American Society for Tropical Medicine and Hygiene (Member)

Skills:

Languages:

- English (Native Tongue)
- French (Advanced)
- Spanish (Low Intermediate)

Software:

- R software (Advanced)
- Microsoft Excel, Word, Office, PowerPoint (Advanced)
- SAS statistical software and SAS-callable SUDAAN (Advanced)
- SEER*Stat (Advanced)
- EpiSample (Advanced)
- JoinPoint (Intermediate)
- ArcGIS (Intermediate)
- Open Data Kit (Intermediate)
- Stata (Basic)
- EpiInfo (Basic)
- SPSS (Basic)
- Python (Basic)
- SQL (Basic)