

MELANIE M. SPILLANE, MPH

Centers for Disease Control and Prevention (CDC)
Division of Global Migration and Quarantine (DGMQ)
Office of Innovation, Development, Evaluation,
Analytics (IDEA)

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Education

National University of Ireland, Cork	MPH	Epidemiology, Biostatistics	2017 - 2019
National University of Ireland, Galway		Semester abroad	2016 Spring
Rivier University	BS	Biology	2013 - 2017

Member of Eta Delta Chapter of TriBeta National Biological Honor Society

Work Experience

Data Scientist | CDC DGMQ IDEA Contractor Mar 2021-Present

- Provide epidemiological and analytic support by designing and implementing machine learning, statistical modeling, and interactive data visualization tools which supplement and support traditional epidemiological methods
- Use data mining techniques and incorporate large datasets (from CDC, proprietary sources, government data, and open-source) into analyses coherently
- Effectively communicate data insights to various audiences in order to guide the direction of public health decisions and guidelines
- Develop front-end dashboards, tools, and web applications
- Create and maintain stakeholder relationships
- Manage databases
- Collaborate with other CDC centers, institutes and offices, and federal agencies
- Design and prepare reports from analyses of surveillance data, literature reviews, and other sources

Epidemiologist | ORISE Research Fellow Mar 2019 - Mar 2021

CDC Division of Vector-borne Diseases, Bacterial Disease Branch, Epidemiology and Surveillance Team

- Analyzed data from epidemiological studies carried out by the CDC and state health department partners
- Designed public-facing, interactive data visualization tools using syndromic surveillance data for vector-borne diseases
- Conduct major scientific surveys/studies or projects to identify and solve public health problems
- Collaborated with team members and public health stakeholders
- Contributed to writing and publishing manuscripts, protocols, and public health guidelines
- Developed and analyzed public health surveys
- Collected, analyzed, modeled, and visualized data to communicate actionable public health insights
- Performed epidemiological statistical analyses
- Interviewed COVID-19 patients to gather data for a Case-Control Study
- Managed databases

- Served in several deployments to CDC's emergency operational response to COVID-19
- Generate descriptive analyses of surveillance systems.
- Use known techniques for analyzing epidemiologic investigation data
- Perform statistical analyses related to analytical investigations involving highly specialized scientific data
- Design and prepare reports from analyses of surveillance data, literature reviews, and other information
- Collaborate with scientists in the survey or investigation design process, including conducting a search or review of existing literature and data in a scientific area, and designing questionnaires and other data collection instruments

Microbiologist | ORISE Fellow

Mar 2019 - Sept 2019

CDC Division of Vector-borne Diseases, Bacterial Disease Branch, Microbiology and Pathogenesis Team

- Applied infectious disease metabolomics techniques to develop a biosignature for Lyme disease
- Analyzed and modeled genomics and metabolomics data
- Presented a poster describing projects methods and results at the 2019 Advanced Molecular Diagnostics conference at CDC Atlanta, GA
- Developed prevention interventions for vector-borne diseases
- Used knowledge in bioinformatics and analytical chemistry while learning lab instrument sample analysis software to disseminate and interpret pathology data

Analytical Chemistry Lab Demonstrator

Jan 2018 – May 2019

National University of Ireland, Cork Analytical Chemistry and Food Science Department

- Guided undergraduate analytical chemistry students through their lab procedures and calculations
- Taught and tutored students
- Graded student reports
- Provided mentorship to students
- Used subject matter expertise in Analytical Chemistry

Biopharma Manufacturing/Chemical Engineering Intern

May 2017 – Aug 2017

Lonza Biologics

- Assisted with the validation/qualification stages of new facility equipment and technology
- Operated equipment and instrument interfaces
- Edited and reviewed cGMP documentation, performing laboratory and utility chemical sampling
- Updated SOP work instructions
- Generated a visual process flow for customer presentation
- Assisted with buffer and optimization studies in the MSAT laboratory

Epidemiology Intern

May 2017 – Aug 2017

Nashua Public Health Department

- Collaborated with environmental health scientists and epidemiologists at the local public health department level
- Collected and analyzed data aiming to improve the efficacy of the food safety inspection process which is routinely performed at local food-selling establishments
- Formally presented the analysis of my findings to the department via PowerPoint presentation
- Search, synthesize, and interpret information to find solutions to public health problems
- Used knowledge in infectious disease, immunology, microbiology, and pathology

Veterinary Technician Assistant

Feb 2013 – Jan 2016

Amherst Animal Hospital

- Worked in the wards, reception, and lab areas of the animal hospital
- Fed, walked and provided care to animals
- Monitored IV fluid pumps and administered medications as directed by Veterinarians
- Assisted clients by checking them in and out
- Answered incoming phone calls
- Assisted with handling, examining, and interpretation of patient samples
- Supported the Veterinarians and Veterinary Technicians for more efficient, streamlined operations and to heighten standards and delivery of care to animals

Customer Service Representative

Aug 2009 - May 2017

Market basket

- Provided customer service
- Answered phone calls
- Managed revenue
- Balanced cash register drawers
- Entered financial data into the computer system
- Kept record of financial and performance reports
- Assisted customers with their item returns

Publications

- Marx G, Spillane M, Beck A, Stein Z, Kite Powell A, Hinckley A. Syndromic surveillance of emergency department visits for tick bites – United States, January 2017 – December 2019 MMWR
- Marshall K, Vahey GM, McDonald E, Tate JE, Herlihy R, Midgley CM, Kawasaki B, Killerby ME, Alden NB, Staples JE; Colorado Investigation Team. Exposures Before Issuance of Stay-at-Home Orders Among Persons with Laboratory-Confirmed COVID-19 - Colorado, March 2020. MMWR Morb Mortal Wkly Rep. 2020 Jul 3;69(26):847-849. doi: 10.15585/mmwr.mm6926e4. PMID: 32614809; PMCID: PMC7332095.

Presentations

- Presented a poster titled: "Development of a Lyme disease-specific metabolic biosignature using dried blood spots" at the 2019 Advanced Molecular Diagnostics Conference at CDC Atlanta, GA
- Masters dissertation title: "Are There Elevations of Pro-Inflammatory Cytokines IL-6, IL-8, and THF-a in Women with Preeclampsia? A Systematic Review and Meta Analysis"
- Presented R Shiny and Power BI Dashboards at CDC's DataViz Day Conference "Moving the needle in data modernization"

Leadership

- CDC DGMQ IDEA Team - Lead of Data Visualization
- CDC COVID-19 Response - Data Team Lead for South West Border Migrant Health Task Force
- CDC DGMQ IDEA Team - Developed the "Introduction to Dynamic Data Visualization" Workshop

Data Visualization, Application/Web Development

- CDC/DVBD Tick Bite Data Tracker (Power BI)
- CDC/DGMQ IDEA Travel Analytics Indicator Reports (Power BI R Shiny)
- CDC/DGMQ IDEA Local Mobility Systematic Review Dashboard (R Shiny)
- CDC/DGMQ IDEA ARROW Application (Group effort to develop a flight route optimization tool for Malaria medication releases, built in R Shiny)
- CDC/DGMQ IDEA Analytics Pillar Website "Data Team Hub" (SharePoint)
- CDC/DGMQ Data Team Lead for SWBMH TF (COVID-19 Response, Power BI)
- Personal side project: "An animation of the Fibonacci sequence in biology (Python)
- Personal side project: Personal Portfolio website (JS, HTML, CSS, Visual Studio Code)

Research Interests

- Closing the gaps to global health disparities and inequities
- Biostatistics
- Data visualization
- UI design
- Informatics

Highlighted Technical Skills

Programming: Fluent in R and have a working skill level in SQL, Python, Javascript, HTML, and CSS

Data visualization tools: R Shiny, Microsoft Power BI (including experience in DAX and MQuery languages)

DBMS: Microsoft SQL Server, REDCap

OS proficiency: Windows, Mac

Version control: Github, GitLab

IDEs: R Studio, Visual Studio Code

Bench science: Aseptic technique in handling pathogenic microorganisms, competent in using laboratory equipment such as microscopes, NMR, and LC-MS Instruments, performing DNA isolation, PCR, and Gel Electrophoresis. Skilled in preparing solutions, pipetting and measuring substances, identifying and staining bacteria, and inoculating cultures.

Community Service

1. *2020-2021* Secretary and leadership board member of the JLFC, a women-led, non profit organization located in Fort Collins, Colorado
2. *2020* Emergency response volunteer at COVID-19 Recovery Center (CRC) in Boulder, Colorado
3. *2018-2019* Student mentor and university tour guide to underprivileged youth at UCC PLUS School Outreach Organization
4. *2018-2019* Fundraiser through UCC's Friends of MSF Society Friends of Médecins Sans Frontières/Doctors without Borders (MSF)
5. *2016* Service provider/volunteer at Ann Marie House, a program supporting and providing resources to families experiencing homelessness in Hudson, New Hampshire
6. *2015-2017* Events planner/volunteer American Cancer Society
7. *2013-2015* Dog Walker at the Humane Society of Greater Nashua, New Hampshire

Languages:

1. **English:** Expert, Mother-tongue
2. **Spanish:** Intermediate level