

# SHELDON G.B. WAUGH, MSC, PHD

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## BASIC INFORMATION

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### Citizenship

Yes - United States

### Federal Experience

United States Army Medical Command, Army Public Health Center

United States Census Bureau, Department of Commerce

*June 2018 - Present*

### Military Experience

United States Army Reserve, Signal Corps, Captain

*December 2011 - Present*

## EDUCATION

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### University of Florida, Gainesville, Florida

Department of Epidemiology, College of Public Health and Health Professions

PhD in Epidemiology

*August 2007 - May 2018*

*August 2014 - May 2018*

Department of Geography, College of Liberal Arts and Sciences

Masters of Science in Geography

Bachelors of Science in Geography

*August 2007 - May 2014*

## WORK EXPERIENCE

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### Field Quality Monitoring Branch, Office of Survey and Census Analytics, Field Division, US Census Bureau

*January 2021 - Present*

*Data Scientist GS-13*

*Supervisor: Mary Davis*

- Provides expertise in the applications of data science (interdisciplinary analytical, statistical, and programming skills) to develop data-driven solutions for difficult business challenges. Works with stakeholders to improve Census business outcomes by leveraging analytic, statistical and programming techniques to collect, analyze and interpret large or complex data sets to develop data-driven solutions. Improves efficiency and/or quality in Census Bureau research and production activities through state of the art data science methods including, but not limited to, machine learning, neural networks, Natural Language Processing, anomaly detection, regression or association analysis, data mining, data matching, big data principles, web scraping, operations research, business analytics, data visualization, predictive analytics (including forecasting), and/or statistical analysis.

### One Health Division, Veterinary Service and Public Health Sanitation Directorate, Army Public Health Center, Aberdeen Proving Ground

*June 2018 - January 2021*

*Epidemiologist GS-0601-11/12/13*

*Supervisor: LTC Sara Mullaney DVM, PhD, DACVPM*

- Serves as technical expert and advisor in the Veterinary One Health Division within the Veterinary Services and Public Health Sanitation Directorate, U.S. Army Public Health Center, in the epidemiology and surveillance of both the military and beneficiary animal populations as they relate to specific population assessments and health related outcome analysis, zoonotic diseases, infectious illnesses, injuries and occupational illness and injury (military working animals), and as related to human biosurveillance through a One Health paradigm. Work involves assessment of available Department of Defense (DoD veterinary medical data, disease and non-battle injury data and other health outcomes data looking to assess trends and potential associations.
- Plans and executes epidemiological projects and outbreak investigations aimed at identifying population based risk factors for zoonotic disease, infections and/or acute or chronic illnesses, injuries, and occupational hazards.

### Spatial Epidemiology & Ecology Research Laboratory (SEER), Department of Geography, University of Florida

*March 2017 - June 2018*

*Bioinformatician*

*PI: Jason K Blackburn, PhD*

- Chief Bioinformatics analyst and developer in genomic and spatial analysis
- Utilized advanced statistical and phylogenetic techniques to update genomic laboratory procedures in order to standardize lab results

**Department of Epidemiology, College of Public Health and Health Professions, University of Florida**

August 2014 - June 2018

*Research/Study Coordinator*

*PI: Volker Mai, PhD*

- Bioinformatics analyst and developer in metagenomics
- Responsible for creation of data algorithms and specialized software pipelines to identify and classify components of 16S sequencing fragments.

**Department of Geography, College of Liberal Arts and Sciences, University of Florida**      January 2013 - July 2013

*Research/Data Analyst*

*PI: Andrew Tatem, PhD*

- Tasked with data entry and processing of country population data to GIS databases
- Data used in AfriPOP and AsiaPOP projects with an aim of producing population distribution maps

## TEACHING AND MENTORING EXPERIENCE

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**Science and Mathematics Academy, Aberdeen High School, Aberdeen, MD**      June 2019- Present

*Mentor: Thomas Carey*

*Program Supervisor: Sarah Ashley*

- Assists in project development, assessing the burden of antibiotic prescriptions among our companion animal population
- Provides research, logistical and overall support to the mentee developing a fully fledged and validated project
- Provides a synergistic relationship between mentor and mentee to allow for a collaborative and cooperative experience.

**Department of Epidemiology, College of Public Health and Health Professions, University of Florida**

January – May 2015

*Teaching Assistant (PHC6003: Epidemiology of Chronic Diseases)*

*Instructor: David Sheps MD, MSPH*

- Assisting Instructor with developing, grading assignments quizzes and exams
- Provided presentations and online lectures to students

**Department of Epidemiology, College of Public Health and Health Professions, University of Florida**

January – May 2015

*Teaching Assistant (PHC4101: Public Health Concepts)*

*Instructor: Sarah McKune MPH, PhD*

- Assisting Instructor with developing, grading assignments quizzes and exams
- Provided presentations and online lectures to students

## RESEARCH SUPPORT

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Accelerating Innovation in Military Medicine Research - **DM190430** - Integrating High-Performance Computing and Machine Learning Within the Army Veterinary Service to Improve Surveillance of Companion Animal Disease Within the Department of Defense      *March 2020 - Present: 280,000*

The project will use ML and Natural Language Processing (NLP) models and algorithms to annotate, code and categorize unstructured text in the form of veterinary encounter notes (eNotes) with SNOMED (ID-10-like codes for Animals) codes and categorizations. Our approach will include structured categorization that will improve the current state of veterinary surveillance by harnessing the ability to access the robust data source of eNotes and the diagnoses and observations within. From this output, for the companion animal population that includes Military Working Dogs and Service Members' pets seen globally at veterinary treatment facilities (VTFs), we aim to accurately and timely evaluate the current burden of disease and identify risk factors for disease.

**Role: Principal Investigator**

## TECHNICAL STRENGTHS

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**Advanced Biostatistical Methods**  
**Machine Learning Methods**  
**Geo-spatial Modeling and Analysis**  
**Data Management and Cleaning Methods**  
**Data Visualization Solutions**  
**Software & Tools**

Machine Learning and Bayesian modeling  
NLP and Advanced Regression techniques  
ESRI ArcGIS Enterprise, Database management  
SQL, R and, NoSQL coding techniques  
Tableau, Power BI, R, Python  
Python, R, VB, linux, bash and C++ (12+ years of proficiency)

## HONORS, ACHIEVEMENTS AND AWARDS

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Army Commendation Medal, U.S. Army Reserve, Milton, Florida	October 2019
Honorable Mention, Student Research Abstract Award, SHES/APHA Annual Meeting	November 2016
SMART Scholarship, Department of Defense, Washington D.C.	August 2016 - May 2018
McKnight Fellowship, Florida Education Fund, Orlando, Florida	August 2014 - May 2018
Ryan Poehling Fellowship Award, University of Florida	December 2013 - May 2014
Army Achievement Medal, U.S Army Reserve, Milton, Florida	June 2014
Army Achievement Medal, U.S Army Reserve, Milton, Florida	December 2013
LTC Samuel W Anderson Scholarship, University of Florida	December 2009 - May 2011
1LT Mark T Barrett Memorial Award, University of Florida	May 2009 - May 2010
Gold Scholarship, University of Florida	August 2007

## PROFESSIONAL SOCIETIES AND ORGANIZATIONS

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The National Association of County Health Officials	March 2019 - Present
International Society of Disease Surveillance	August 2018 - Present
Association for Veterinary Informatics	July 2018 - Present
AMSUS - The Society of Federal Health Professionals	May 2018 - Present
Association of American Geographers	September 2013 - Present
American Public Health Association	October 2014 - Present

## MILITARY EXPERIENCE

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**Headquarters Company, 302nd Maneuver Enhancement Brigade, Chicopee, Massachusetts, United States Army Reserve**  
*Captain, Signal Corps*

- Brigade S-6 August 2020 - Present
- Network Operations Officer September 2018 - July 2020

**842nd Signal Company, Milton, Florida, United States Army Reserve**  
*Captain, Signal Corps*

- Company Commander September 2015 - 2018
- Family Readiness Group Liaison January 2015 - 2018
- Company Executive Officer September 2013 - 2015
- Platoon Leader December 2011 - 2013

## PUBLISHED WORKS

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Wijayabahu, A.T., **Waugh, S.**, Ukhanova, M. and Mai, V., 2019. Dietary raisin intake has limited effect on gut microbiota composition in adult volunteers. *Nutrition journal*, 18(1), p.14.

Tagliamonte, M. S., **Waugh, S.**, Prosperi, M., Mai, V. (2019, September). An Integrated Approach for Efficient Multi-Omics Joint Analysis. In *Proceedings of the 10th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics* (pp. 619-625). ACM.

**Waugh, S.**, and Mullaney, S. "Progress towards Companion Animal Zoonotic Disease Surveillance in the US Army." *Online Journal of Public Health Informatics* 11.1 (2019).

Ball, J. D., Fe Agana, D., **Waugh, S.**, Wang, K., James, T. G., Nicolette, G. (2019). Systematically collected information at encounters with HIV-positive students: A review of 10 years of electronic medical records. *Journal of American College Health*, 1-5. PMID: 30681932

Spatial-Genomic Association of Co-Circulating Brucella Strains in Southern Kazakhstan: Phylogenetic Inferences Using MLVA Data, **Waugh, S.** (Submitted)

Brucellosis Transmission Between Humans and Domesticated Livestock in Southern Kazakhstan: Inferences through MLVA Typing, **Waugh, S.** (Submitted)

Visualizing the Occurrence of Zoonotic Diseases among Military Associated Canines, **Waugh, S.** (Submitted)

Jennifer C. Dennis, Tyler Culpepper, Carmelo Nieves, Jr., Cassie C. Rowe, Alyssa M. Burns, Carley T. Rusch, Ashton Federico, Maria Ukhanova, **Waugh, S.**, Volker Mai, Mary C. Christman, Bobbi Langkamp-Henken, Probiotics (*Lactobacillus gasseri* KS-13, *Bifidobacterium bifidum* G9-1, and *Bifidobacterium longum* MM-2) improve rhinoconjunctivitis-specific quality of life in individuals with seasonal allergies: a double-blind, placebo-controlled, randomized trial. *Am J Clin Nutr* 105, 758–767 (2017). PMID: 28228426

**Waugh, S.** App.: Gut Microbiota Differences in Children From Distinct Socioeconomic Levels Living in the Same Urban Area in Brazil. *Journal of Pediatric Gastroenterology and Nutrition* (2016). PMID: 28644365

Oliveira, F.P. de, Mendes, R.H., Dobbler, P.T., Mai, V., Pylro, V.S., **Waugh, S.**, Vairo, F., Refosco, L.F., Roesch, L.F.W., and Schwartz, I.V.D. (2016). Phenylketonuria and Gut Microbiota: A Controlled Study Based on Next-Generation Sequencing. *PLOS ONE* 11, e0157513. PMID: 27336782

Dahl, W. J., Ford, A.L., Ukhanova, M., Radford, A., Christman, M.C., **Waugh, S.**, Mai, V. Resistant potato starches (type 4 RS) exhibit varying effects on laxation with and without phylum level changes in microbiota: A randomised trial in young adults. *Journal of Functional Foods* 23, 1–11 (2016).

**Waugh, S.** Apropos: *Plasmodium knowlesi* malaria an emerging public health problem in Hulu Selangor, Selangor, Malaysia (2009–2013): epidemiologic and entomologic analysis. *Parasites Vectors* 8, 79 (2015). PMID: 25651916

Mai, V., **Waugh, S.**, Byrd, D., Simpson, D. Ukhanova, M. Novel encapsulation improves recovery of probiotic strains in fecal samples of human volunteers. *Appl Microbiol Biotechnol* 1–7 (2016). PMID: 27796434

**Waugh, S.**, Varma, D., Striley, C., Cottler, L. Comparing Spatial Techniques to Visualize Hypertension Spread and Risk Factors for Hypertension Using Self-report from Community Participants. *Applied Geography* (2015). (Submitted)

## PRESENTED WORKS

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**Waugh, S.**, Progress Towards an Integrative and Data-Driven Companion Animal Zoonotic Disease Surveillance System within the Department of Defense, World One Health Congress, 2020

**Waugh, S.**, Progress Towards an Integrative and Data-Driven Companion Animal Zoonotic Disease Surveillance System within the Department of Defense, Military Health System Research Symposium, 2020

**Waugh, S.**, Progress Towards an Integrative and Data-Driven Companion Animal Zoonotic Disease Surveillance System within the Department of Defense, Consortium on Global Health Annual Meeting, 2020

Bayko, H, **Waugh, S.**, Watkins, S, Mullaney, S , Zoonotic Disease Prioritization for Government and Privately Owned Companion Animal Zoonotic Disease Surveillance System: Adaptation of the One Health Zoonotic Disease Prioritization Tool, American Public Health Association Annual Meeting, 2019

**Waugh, S.**, Progress towards an Integrated Companion Animal Zoonotic Disease Surveillance System within the DoD, International Society of Disease Surveillance Annual Meeting, 2019

**Waugh, S.**, Progress towards an Integrated Companion Animal Zoonotic Disease Surveillance System within the DoD, APHC Science Exchange, 2019

**Waugh, S.**, Progress towards an Integrated Companion Animal Zoonotic Disease Surveillance System within the DoD, APHC One-Health Day Seminar, 2018

**Waugh, S.**, Sytnik, I, Karibayev, T, Alimbayev, A, Ornybayev, M, Rametov, M, Nikolich, M, Hagijs, S, Elzer, P, Blackburn, J. Brucellosis Transmission Between Humans and Domesticated Livestock In Southern Kazakhstan: Inferences Through MLVA Typing, UF Emerging Pathogens Institute Research Day, 2018

**Waugh, S.**, Sytnik, I, Karibayev, T, Alimbayev, A, Ornybayev, M, Rametov, M, Nikolich, M, Hagijs, S, Elzer, P, Blackburn, J. Brucellosis Transmission Between Humans and Domesticated Livestock In Southern Kazakhstan: Inferences Through MLVA Typing, UF Public Health and Health Professions Research Day, 2018

**Waugh, S.**, Sytnik, I, Karibayev, T, Alimbayev, A, Ornybayev, M, Rametov, M, Nikolich, M, Hagijs, S, Elzer, P, Blackburn, J. Brucellosis Transmission Between Humans and Domesticated Livestock In Southern Kazakhstan: Inferences Through MLVA Typing, AAG Annual Meeting, 2018

**Waugh, S.**, Ball, J. Using statistical approaches to quantify the effects of ridesharing accessibility on Driving under the Influence (DUI) arrests in a university city, American Public Health Association Annual Meeting, 2016

**Waugh, S.**, Varma, D., Striley, C., Cottler, L. Utilizing GIS to Visualize Hypertension Spread: A Comparative Study using HealthStreet Data, American Public Health Association Annual Meeting, 2015

**Waugh, S.**, Varma, D., Striley, C., Cottler, L. Utilizing GIS to Visualize Hypertension Spread: A Comparative Study using HealthStreet Data, UF Public Health and Health Professions Research Day, 2015

**Waugh, S.** Geo-Spatial Risk Modeling for West Nile Virus in Tarrant County, TX Using Environmental and Demographic Data, AAG Annual Meeting, 2014