

BENJAMIN ALTHOUSE – CURRICULUM VITAE

CONTACT

Institute for Disease Modeling
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Bellevue, WA 98005
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Google Scholar: <http://scholar.google.com/citations?user=FUOBYjkAAAAJ>

PROFILE

RESEARCH INTERESTS

Mathematical modeling of infectious disease, ecology of infectious disease, medical/healthcare economics, statistical and time series methods.

OTHER INTERESTS

Downhill skiing, running, hiking, graphic design, jazz music, and photography.

EDUCATION

2013 – 2015

Omidyar Postdoctoral Fellowship Santa Fe Institute, Santa Fe, NM

2010 – 2013

PhD Epidemiology; Johns Hopkins University, Baltimore, MD
Thesis: *Mechanistic Modeling of Sylvatic Arboviruses in Senegal*
Advisor: Derek Cummings

2012

Complex Systems Summer School, Santa Fe Institute, Santa Fe, NM

2009 – 2010

ScM Biostatistics; Johns Hopkins University, Baltimore, MD
Thesis: *A Multi-host, Multi-vector SIR Model of Dengue Fever in Senegal*

2003 – 2008

BS Mathematics; University of Washington, Seattle, WA
BS Biochemistry; University of Washington, Seattle, WA

POSITIONS

JUNE 2016 –

Affiliate Assistant Professor, Information School, University of Washington

APRIL 2015 –

Affiliate Faculty, Department of Biology, New Mexico State University

JANUARY 2015 –

Research Scientist, Institute for Disease Modeling

SEPTEMBER 2013 –
JUNE 2015

Omidyar Fellow, Santa Fe Institute

AUGUST 2010 –
AUGUST 2013

Doctoral Student – Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health

AUGUST 2009 – AUGUST 2010 Master's Student – Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health

JUNE 2008 – AUGUST 2009 Research Associate, Prof. Carl Bergstrom's lab, Department of Biology, University of Washington

JUNE 2006 – MAY 2008 Undergraduate Research Assistant, Bergstrom lab

AWARDS

APRIL 2010 – AUGUST 2013 NSF Graduate Research Fellowship

JUNE 2009 Best Poster, Gordon Research Conference (Microbial Population Biology)

JANUARY – JUNE 2008 Mary Gates Research Scholarship (award of \$4,000)

JANUARY – OCTOBER 2007 Howard Hughes Medical Institute Integrative Research Internship (award of \$7,000)

GRANTS

awarded

Santa Fe Institute & MIDAS Center for Communicable Disease Dynamics Harvard University, for SFI Working Group, *Next generation surveillance for the next pandemic*, \$82,794 (2014).

The Monday Campaigns, J.W. Ayers (PI) 12/13/12–1/13/13: *Is Monday the Healthiest Day?*, Role: Investigator

Institute for Global Tobacco Control, Ayers (PI) 12/1/12–12/1/13: *Harnessing the Web for Real-Time Global Tobacco Control*, Role: Investigator

Google Research Award, Ayers (PI) 7/1/11–7/1/12: *Using Aggregate Search Queries for Real-Time Mental Health Surveillance in the United States*, Role: Consultant

submitted

Quantifying Network Resilience and Vulnerability to Behaviors Using Social Media, PI: Del Valle & Althouse, NIH RO1, Total requested indirect costs: \$2,496,924

PUBLICATIONS

A. Allard*, B.M. Althouse*, L. Hébert-Dufresne*, S.V. Scarpino*, *The risk of sustained sexual transmission of Zika is underestimated*, PLoS Pathogens, *in press* *These authors contributed equally

S. Pollett, B.M. Althouse, B. Forshey, G.W. Rutherford, R. Jarman, *Internet-based biosurveillance methods for vector-borne diseases: are they novel public health tools or just novelties?*, PLoS Neglected Tropical Diseases, *in press*

A. Allard, B. M. Althouse, S. V. Scarpino, L. Hébert-Dufresne, *Asymmetric percolation drives a double transition in sexual contact networks*, Proceedings of the National Academy of Sciences of the United States of America, *in press*

B. M. Althouse, L. L. Hammit, L. Grant, B. G. Wagner, R. Reid, F. Larzelere-Hinton, R. Weatherholtz, K. P. Klugman, G. L. Rodgers, K. L. O'Brien, H. Hu, *Identifying Transmission Routes of Streptococcus pneumoniae and Sources of Acquisitions in High Transmission Communities*, Epidemiology & Infection, *in press*

J. R. Nahum, J. West, B. M. Althouse, L. Zaman, C. Ofria, B. Kerr, *Improved Adaptation in Exogenously and Endogenously Changing Environments*, European Conference on Artificial Life, 2017

J. W. Ayers, B. M. Althouse, E. C. Leas, M. Dredze, J-P Allem, *Web searches for suicide increased following Netflix's release of '13 Reasons Why'*, JAMA Internal Medicine, *in press*

J-P Allem, E. C. Leas, T. L. Caputi, M. Dredze, B. M. Althouse, S.M. Noar, J.W. Ayers *The Charlie Sheen Effect on Rapid In-Home Human Immunodeficiency Virus Test Sales*, Prevention Science, *in press*

J. W. Ayers, E. C. Leas, J-P Allem, A. Benton, M. Dredze, B. M. Althouse, T.B. Cruz, J.B. Unger, *Why Do People Use Electronic Nicotine Delivery Systems (Electronic Cigarettes)? A Content Analysis of Twitter, 2012-2015*, PLoS One, Mar 1;12(3):e0170702, 2017

2016 S. L. Nuismier, B. M. Althouse, R. May, J. J. Bull, R. Antia, *Quantifying the efficacy of weakly transmissible vaccines*, Proceedings of the Royal Society B, 283 (1841), 20161903

B. M. Althouse, N. Vasilakis, A.A. Sall, M. Diallo, S. C. Weaver, K.A. Hanley, *Potential for Zika virus to establish a sylvatic transmission cycle in the Americas*, PLoS Neglected Tropical Diseases, 10 (12), e0005055, 2016

M. Espinola, J. M. Shultz, Z. Espinel, B. M. Althouse, J. L. Cooper, F. Baingana, L. H. Marcelin, T. Cela, S. Towers, L. Mazurik, M. C. Greene, A. Beck, M. Fredrickson, A. McLean, and A. Rechkemmer, *Fear-related behaviors in situations of mass threat*, Disaster Health, Nov 22;3(4):102-111, 2016

H. DeAngelis, S. V. Scarpino, B. M. Althouse, *'Modelling the effects of priming with the whole-cell Bordetella pertussis vaccine' – Reply*, JAMA Pediatrics, 170 (12), 1229-1229, 2016

J. M. Shultz, B. M. Althouse, F. Baingana, J. L. Cooper, Z. Espinel, M. C. Greene, *Fear-Related Behaviors as Drivers of Pandemic Infectious Disease*, Bulletin of the Atomic Scientists, Volume 72, Issue 5, 2016

J. M. Shultz, J. L. Cooper, F. Baingana, M. A. Oquendo, Z. Espinel, B. M. Althouse, M. Espinola, M. C. Greene, C. B. McCoy, L. Mazurik, Y. Neria, A. Rechkemmer, *The Role of Fear-Related Behaviors in the 2013-2016 West Africa Ebola Outbreak*, Current Psychiatry Reports, 18(11):104, 2016,

E. C. Leas, B. M. Althouse, M. Dredze, N. Obradovich, J. H. Fowler, S. M. Noar, J.-P. Allem, J. W. Ayers, *Big Data Sensors of Organic Advocacy: The Case of Leonardo DiCaprio and Climate Change*, PLoS One 11 (8), e0159885, 2016

M. C. Fitzpatrick, N. S. Wenzel, S. V. Scarpino, B. M. Althouse, K. E. Atkins, A. P. Galvani, J. P. Townsend, *Cost-effectiveness of a next-generation pertussis vaccine*, Vaccine, Jun 17;34(29):3405-11, 2016

J. W. Ayers, B. M. Althouse, M. Dredze, E. C. Leas, S. M. Noar, *News and Internet Searches About Human Immunodeficiency Virus After Charlie Sheen's Disclosure*, JAMA Internal Medicine 176 (4), 552-554, 2016

Media coverage: Huffington Post, New York Magazine, ABC News, CNN, Fox News, BBC News, NBCNews.com, CBS News, Mirror (UK), Yahoo News, Medical Xpress, CBC

K.J. Margevicius, N. Generous, E. Abeyta, B. Althouse, H. Burkom, L. Castro, A. Daughton, S.Y. Del Valle, G. Fairchild, J.M. Hyman, R. Kiang, A.P. Morse, C.M. Pancerella, R. Priedhorsky, L. Pullum, A. Ramanathan, J. Schlegelmilch, A. Scott, K.J. Taylor-McCabe, A. Vespignani, A. Deshpande, *The biosurveillance analytics resource directory (BARD): Facilitating the use of epidemiological models for infectious disease surveillance*, PLoS One, 11(1): e0146600

H. DeAngelis, S. V. Scarpino, M. C. Fitzpatrick, A. P. Galvani, B. M. Althouse, *Epidemiological and economic impacts of priming with whole-cell Bordetella pertussis vaccine*, JAMA Pediatrics, 170(5):459-

465, 2016

H. E. Clapham, I. Rodriguez- Barraquer, A. S. Azman, B. M. Althouse, H. Salje, S. Kalayanarooj, R. V. Gibbons, R. G. Jarman, A. Nisalak, B. Thaisomboonsuk, S. Nimmannitya, I.-K. Yoon, A. Rothman, D. A.T. Cummings, *Dengue neutralizing antibody kinetics in children after symptomatic primary and post-primary dengue virus infections*, *Journal of Infectious Diseases* 213 (9), 1428-1435, 2016

B. M. Althouse*, S. V. Scarpino*, L. Ancel Meyers, J. W. Ayers, M. Bargsten, J. Baumbach, L. Castro, H. Clapham, D. Cummings, S. Del Valle, S. Epperson, S. Eubank, G. Fairchild, L. Finelli, N. Generous, D. George, D. Harper, L. Hebert-Dufresne, M. Johansson, K. Konty, M. Lipsitch, G. Milinovich, J. Miller, E. Nsoesie, D. Olson, M. Paul, P. Polgreen, R. Priedhorsky, J. Read, I. Rodríguez-Barraquer, D. J. Smith, C. Stefansen, D.L. Swerdlow, D. Thompson, A. Vespignani, A. Wesolowski, *Enhancing disease surveillance with novel data streams: challenges and opportunities*, *EPJ Data Science*, 4:17, 2016

*These authors contributed equally

J. W. Ayers, B. M. Althouse, *“Tips From Former Smokers” Can Benefit from Considering all Available Data*, *American Journal of Preventative Medicine* 49 (6), e133, 2016

J. W. Ayers, B. M. Althouse, J.-P. Allem, E. C. Leas, M. Dredze, R. Williams, *Revisiting the Rise of Electronic Nicotine Delivery Systems Using Search Query Surveillance*, *American Journal of Preventive Medicine* 50 (6), e173-e181, 2016

J. W. Ayers, J. L. Westmaas, E. C. Leas, A. Benton, A. Y. Chen, M. Dredze, B. M. Althouse, *Leveraging Big Data to Improve Health Awareness Campaigns: A Novel Evaluation of the Great American Smokeout*, *JMIR Public Health and Surveillance* 2 (1), 2016

2015

B. M. Althouse, S. V. Scarpino, *Asymptomatic transmission and the resurgence of Bordetella pertussis*, *BMC Medicine*, 13:146, 2015

Media coverage: The New York Times (print edition), Minnesota Public Radio, MSN.com, Healio, U.S. Pharmacist, Univision, Medical Daily, Medical Xpress, Science Daily, Medical News Today, Health Medicine Network, Infection Control Today

L. Hébert-Dufresne, B.M. Althouse, *Complex dynamics of synergistic coinfections on realistically clustered networks*, *Proceedings of the National Academy of Sciences of the United States of America*, 112 (33) 10551-10556, doi:10.1073/pnas.1507820112, 2015

B. M. Althouse, K. A. Hanley, *The Tortoise or the Hare? Impacts of Within-Host Dynamics on Transmission Success of Arthropod-Borne Viruses*, *Phil. Trans. R. Soc. B.*, 370 (1675), 20140299

J.-P. Allem, J.W. Ayers, B.M. Althouse, R. Williams, *When a Ban Really isn't a Ban: Internet Loopholes and Djarum Flavoured Cigarettes in the United States*, *Tobacco Control*, in press

C. L. Jo, J. W. Ayers, B. M. Althouse, S. Emery, J. Huang, K. M. Ribisl, *U.S. Consumer Interest in Non-cigarette Other Tobacco Products Spikes around the 2009 Federal Tobacco Tax Increase*, *Tobacco Control*, in press

J.W. Ayers, B.M. Althouse, S. Emery, *Changes in Internet searches associated with the “Tips from Former Smokers” campaign*, *American Journal of Preventive Medicine*, 48 (6), e27, 2015

M. M. Tanaka, B. M. Althouse, C. T. Bergstrom, *Timing of antimicrobial use influences the evolution of antimicrobial resistance during disease epidemics*, *Evolution, Medicine, and Public Health*, 2014(1):150-161, 2014

S. M. Noar, B. M. Althouse, J. W. Ayers, D. B. Francis, K. M. Ribisl, *Cancer information seeking in the digital age: Effects of Angelina Jolie's prophylactic mastectomy announcement*, *Medical Decision Making*, 35(1), 16–21, January 2015

B. M. Althouse, K.A. Hanley, M. Diallo, A.A. Sall, Y. Ba, O. Faye, D. Diallo, D.M. Watts, S. C. Weaver, D.A.T. Cummings, *Impact of climate and mosquito vector abundance on sylvatic arbovirus circulation dynamics in Senegal*, *American Journal of Tropical Medicine and Hygiene*, 92(1), 88–97, January 2015

2014 B.M. Althouse, L. Hébert-Dufresne, *Epidemic Cycles Driven by Host Behaviour*, *Journal of the Royal Society Interface*, vol. 11 no. 99, October 2014

J. W. Ayers, B. M. Althouse, M. Dredze, *Could Behavioral Medicine Lead the Web Data Revolution?*, *JAMA*, 311(14), 1399–1400, 2014

M. Santillana, D. W. Zhang, B. M. Althouse, J. W. Ayers, *What Can Digital Disease Detection Learn from (an External Revision to) Google Flu Trends?*, *American Journal of Preventative Medicine*, (47)3, 341-7, 2014

J. W. Ayers, B. M. Althouse, M. Dredze, M. Johnson, J. E. Cohen, *What's the Healthiest Day? Circaseptan (Weekly) Rhythms in Healthy Considerations*, *American Journal of Preventative Medicine*, (47)1, 73-76, July 2014

Media coverage: The Atlantic, Medical Daily, Bloomberg Business Week, Science Daily, Men's Fitness, Prevention, Refinery 29, Montgomery Advertiser, The Business Standard (India) India.com Health, Delhi Daily News, New Tang Dynasty Television (China), iAfrica.com, Malaysian Digest, Medycyna Praktyczna (Poland), and Sassari Notizie (Italy)

B. M. Althouse, A.P. Durbin, K.A. Hanley, S.B. Halstead, S. C. Weaver, D.A.T. Cummings, *Viral Kinetics of Primary Dengue Virus Infection in Non-Human Primates: A Systematic Review and Individual Pooled Analysis*, *Virology*, 452-453: 237-246, March 2014

J. W. Ayers, B. M. Althouse, K. M. Ribisl, S. Emery, *Digital Detection for Tobacco Control: Online Reactions to the United States' 2009 Cigarette Excise Tax Increase*, *Nicotine & Tobacco Research*, 16(5): 576-583, January 2014

S. M. Noar, K. M. Ribisl, B. M. Althouse, J. F. Willoughby, J. W. Ayers, *Using Digital Surveillance to Examine the Impact of Public Figure Pancreatic Cancer Announcements on Media and Search Outcomes*, *Journal of the National Cancer Institute*, 47:188-94, January 2014

J. W. Ayers, B. M. Althouse, M. Johnson, J. E. Cohen, *Weekly "Circaseptan" Rhythms in Smoking Cessation Considerations*, *JAMA Internal Medicine*, 174(1):146-8, January 2014

Media coverage: New York Times, WebMD, USA Today, NBCNews.com, New York Daily News, Economic Times, Huffington Post, Sacramento Bee, Philadelphia Inquirer, Science World Report, Sci-Tech Today, U-T San Diego, Medical Daily, The Inquisitr, The Stir, University Herald

J. W. Ayers, B. M. Althouse, S. M. Noar, J. E. Cohen, *Do Celebrity Cancer Diagnoses Promote Primary Cancer Prevention?*, *Preventive Medicine*, 58: 81-84, January 2014

Media coverage: NY Times, Huffington Post, The Hindu, Science Daily, Medical Daily, Scope, The Medical News, redOrbit.com, AllVoices, Medical Xpress, India.com Health

2013

B. M. Althouse, J. Patrick-Allem, M. A. Childers, M. Dredze, J. W. Ayers, *Population Health Concerns During the United States' Great Recession*, American Journal of Preventative Medicine, 46(2):166–170, 2013

Media coverage: Times of London, New York Times, Huffington Post, Science 2.0, Science Daily, Free Press Journal, India.com Health, Imperial Valley News, RedOrbit

A.S. Azman, J.H. Stark, B. M. Althouse, C.J. Vukotich, S. Stebbins, D.S. Burke, D.A.T. Cummings, *Household Transmission of Influenza A and B in a School-based Study of Non-Pharmaceutical Interventions*, Epidemics, 5 (4), 181-186, 2013

O. J. Bienvenu, J. Gellar, B. M. Althouse, E. Colantuoni, T. Sricharoenchai, P. A. Mendez-Tellez, C. Shanholtz, C. R. Dennison, P. J. Pronovost, D. M. Needham, *Post-traumatic stress disorder symptoms after acute lung injury: a 2-year prospective longitudinal study*, Psychological Medicine, 43 (12): 2657-2671, 2013

Media coverage: New York Times, Boston Globe, Philadelphia Inquirer, Medcity News

J. W. Ayers, B. M. Althouse, J. P. Allem, J. N. Rosenquist, D. E. Ford, *Seasonality in Seeking Mental Health Information on Google*, American Journal of Preventative Medicine, Vol. 44, Issue 5, May 2013

Media coverage: New York Times, Time, The Atlantic, Popular Science, Wired, Huffington Post, Scientific American, Health Magazine, U-T San Diego, Philadelphia Inquirer, New York Daily News, Minneapolis Star Tribune, US News and World Reports, Sky News Australia, 3News New Zealand, Medical Daily, Medical Xpress, redOrbit.com, iTech Post, HealthDay News, Newsroom America, health 24, Science Daily, PsychCentral, InformationWeek

O. Patterson-Lomba, B. M. Althouse, G. M. Goerg, L. Hébert-Dufresne, *Optimizing Treatment Regimes to Hinder Antimicrobial Resistance Across Time Scales*, PLoS One, 8(3): e59529. March 2013

L. Hébert-Dufresne, O. Patterson-Lomba, G. M. Goerg, B. M. Althouse, *Pathogen mutation as coevolutionary competition between site and bond percolation*, Physical Review Letters, Vol. 110, Issue 10, Mar 2013

B. M. Althouse, O. Patterson-Lomba, G. M. Goerg, L. Hébert-Dufresne, *The Timing and Targeting of Treatment in Influenza Pandemics Influences the Emergence of Resistance in Structured Populations*, PLoS Computational Biology, 9(2): e1002912. Mar 2013.

2012

B. M. Althouse, J. Lessler, A.A. Sall, M. Diallo, K.A. Hanley, D.M. Watts, S. C. Weaver, D.A.T. Cummings, *Synchrony of Sylvatic Dengue Isolations: A Multi-host, Multi-vector SIR Model of Dengue Virus Transmission in Senegal*, PLoS Neglected Tropical Diseases, 6(11): e1928, Nov 2012

J. W. Ayers, B. M. Althouse, J.P. Allem, M. A. Childers, W. Zafar, C. Latkin, K. M. Ribisl, J. S. Brownstein, *Novel Surveillance of Psychological Distress during the Great Recession*, J of Affective Disorders, Vol. 142, Issues 1-3, (323-330), Dec 2012

J. W. Ayers, B. M. Althouse, J.P. Allem, D. E. Ford, K. M. Ribisl, J. E. Cohen, *A Novel Evaluation of World No Tobacco Day in Latin America*, J Internet Med Research 14(3):e77, May 2012

Media coverage: Los Angeles Times, Huffington Post, Baltimore Sun, India.com Health, Yahoo! Philippines News

2011 & earlier

B. M. Althouse, Y.Y. Ng, D.A.T. Cummings, *Prediction of Dengue Incidence using Search Query Surveillance*, PLoS Neglected Tropical Diseases 5(8): e1258, Aug. 2011

B.M. Althouse, T. Bergstrom, and C.T. Bergstrom, *A Public Choice Framework for Controlling Transmissible and Evolving Diseases*, Proceedings of the National Academy of Sciences of the United States of America, 107: 1696-1701, Jan. 2010

B.M. Althouse, J.D. West, T. Bergstrom, and C.T. Bergstrom, *Differences in Impact Factor Across Fields and Over Time*, Journal of the American Society for Information Science and Technology. Vol. 60, No.1, (27-34), Jan. 2009

BOOK CHAPTERS J. W. Ayers, B. M. Althouse, E. C. Leas, T. Alcorn, M. Dredze, *Big Media Data Can Inform Gun Violence Prevention*, in Bloomberg Data for Good Exchange, *in press*

MANUSCRIPTS Q. A. ten Bosch, H. E. Clapham, L. Lambrechts, B. M. Althouse, A. L. Lloyd, L. A. Waller, A. C. Morrison, U. Kitron, G. M. Vazquez-Prokopec, T. W. Scott, T. A. Perkins, *Contributions from the silent majority dominate dengue virus transmission*, submitted

J. W. Ayers, B. M. Althouse, E. C. Leas, M. Dredze, *Big Media Data Can Inform Gun Violence Prevention*, submitted

J. W. Ayers, B. M. Althouse, M. Dredze, *The Distressed State of the United States*, submitted

S. M. Noar, E. Leas, B. M. Althouse, M. Dredze, D. Kelley, J. W. Ayers, *Can a "Selfie" Promote Public Engagement with Skin Cancer? The Case of Tawny Willoughby*, submitted

B. M. Althouse*, S. V. Scarpino*, K. Rubin, S. Glazer, *The hidden costs of Bordetella pertussis infection in the United States of America*, submitted, *These authors contributed equally

B.M. Althouse*, K. Solovay, K. Rubin, S. Glazer, S.V. Scarpino*, *The epidemiological benefit of adult vaccination with a transmission blocking Bordetella pertussis vaccine*, submitted *These authors contributed equally

G. Otero, B. M. Althouse*, S. V. Scarpino*, *Analysis of clinical Bordetella pertussis isolates using whole genome sequences reveals novel genomic regions associated with recent outbreaks in the United States of America*, submitted, *These authors contributed equally

S. Chadsuthi, B. M. Althouse, S. Iamsirithaworn, W. Triampo, K. Grantz, D.A.T. Cummings, *Travel distance and human movement predict paths of emergence and spatial spread of Chikungunya in Thailand*, submitted

L. Meyers, C. C. Ginocchio, A. Faucett, F. S. Nolte, A. Leber, D. Janowiak, V. Donovan, J. D. Bard, S. Spitzer, K. Stellrecht, H. Salimnia, R. Selvarangan, S. Juretschko, J. A. Daly, J. C. Wallentine, K. Lindsey, F. Moore, S. L. Read, M. Aguerro-Rosenfeld, P. Fey, G. A. Storch, J. Meredith, S. Melnick, P. H. Gesteland, C. Cook, R. Nelson, T. Robbins, S. V. Scarpino, B. M. Althouse, K. M. Ririe, B. A. Malin, M. A. Poritz, *A web-based epidemiological system for real-time, pathogen-specific syndromic surveillance*, submitted

B. M. Althouse, M. Guerbois, D. A. T. Cummings, O. M. Diop, O. Faye, A. Faye, D. Diallo, B. D. Sadio, A. Sow, O. Faye, A. A. Sall, M. Diallo, B. Benefit, E. Simons, D. M. Watts, S. C. Weaver, K. A. Hanley, *Monkey in the middle: monkeys serve as amplification hosts but not reservoir hosts of sylvatic chikungunya virus*, submitted

B. M. Althouse, S. Flasche, L. N. Minh, V. D. Thiem, M. Hashizume, K. Ariyoshi, D. D. Anh, G. L. Rogers, K. P. Klugman, H. Hu, L.-M. Yoshida *Seasonality of common respiratory viruses causing hospitalizations for acute respiratory infections and pneumonia in Nha Trang, Vietnam*, submitted

J. W. Ayers, B. M. Althouse, E. C. Leas, M. Dredze, *What Does A “Quit Smoking” Internet Search Mean? Assessing the Validity of Search Query Surveillance in Tobacco Control*, in preparation

J.-P. Allem, B. M. Althouse, E. C. Leas, M. Dredze, M. F. Hovell, J. W. Ayers, *Ten Years of Cigarette Excise Tax Increases in the United States (2006-2016): Do Tobacco Taxes Motivate Cessation Considerations?*, in preparation

B. M. Althouse, M. Salathé, M. Lipsitch, C. T. Bergstrom, J. D. West, *Heterogeneous vaccination coverage and measles transmission dynamics*, in preparation

G. M. Goerg, O. Patterson-Lomba, L. Hébert-Dufresne, B. M. Althouse, *Escaping the poverty trap: modeling the interplay between economic growth and the ecology of infectious disease*, in preparation

Media coverage: Physics arXiv blog, slashdot.org

B. M. Althouse, N. Generous, *Prediction and Estimation of Lyme Disease Incidence using Search Query Surveillance*, in preparation

B. M. Althouse, J. Lessler, N. G. Riech, D.A.T. Cummings, *Heterogeneous transmission in homogenous populations: over-dispersion arises endogenously from competitive interactions between transmitters*, in preparation

POPULAR WRITING B.M. Althouse, *A safer world through disease mathematics*, Science in a Complex World Series, Santa Fe New Mexican, September 7, 2014

WORKSHOPS & IDEAS RCN Workshop & Santa Fe Institute Working Group, *Re-emerging Infectious Diseases; The CHALLENGES OF PERTUSSIS*, (March 2016)

Santa Fe Institute Working Group, *Next generation surveillance for the next pandemic*. Co-Organizer (May, 2014).

Santa Fe Institute Workshop, *From Co-Infection to Cultural Dissonance: New Challenges for Biological and Cultural Evolution*. Lead Organizer (September–October 2013).

INVITED PRESENTATIONS *Answering open questions on the epidemiology and biology of S. pneumoniae with mathematical models*, IV University Speaker Series, September 14, 2017

Invited participant, *WHO Technical Expert Consultation on Optimization of PCV Impact: Review of Evidence and Programmatic Considerations to Inform Policy*, Geneva, Switzerland, 12-13 June 2017

Invited participant, *RCN- IDEAS workshop: Evolutionary Causes and Consequences of Arbovirus Emergence*, New Orleans, May 30-31, 2017

Panelist, *Measuring and Modeling Community Engagement in Health Emergencies*, Washington, DC, April 26th, 2017

Modeling the transmission dynamics of Zika virus, American Society of Tropical Medicine and Hygiene 65th Annual Meeting, November 14-17, 2016

Pondering the fundamentals of disease transmission, Healthspottr Meeting, October 14, 2016

Introduction to Infectious Disease Dynamics, Santa Fe Institute Medical Short Course, October 12-14, 2016

State of the art in mathematical modeling of dengue, 5th Pan-American Dengue Research Network Meeting Panama, April 21, 2016, Panama City

Assessing the threat of establishing a sylvatic Zika virus cycle in South America, Institute for Disease Modeling Annual Symposium, April 19, 2016, Bellevue, WA

Modeling Long-term Vaccine Serotype Transmission Dynamics under Current and Alternative PCV Schedules, WHO Technical Expert Consultation: Alternate Dosing Schedules of Pneumococcal Conjugate Vaccines 9-10 February 2016, Geneva, Switzerland

Asymptomatic Transmission, the Resurgence of Bordetella pertussis and an Option for Reducing Rising Whooping Cough Incidence, Public Health Modeling Seminar, Yale University, New Haven, CT, March 6, 2015

Superspreaders, Asymptomatic Transmitters, and Pondering the Fundamentals of Disease Transmission, Institute for Disease Modeling, Bellevue, WA, December 8, 2014

Shifts in Medical Diagnostic Practice Revealed by Diagnosis Networks, Dynamics Of and On Networks, Santa Fe Institute Workshop, December 3, 2014

Epidemiological Consequences of An Ineffective Bordetella Pertussis Vaccine and an Option for Reducing Rising Whooping Cough Incidence, INFORMS Annual Meeting 2014, San Francisco, CA, November 12, 2014

Novel Data Sources and the Prediction of Dengue, Integrating Prediction And Forecasting Models For Decision-Making: Dengue Epidemic Prediction, Convened by the White House Office of Science and Technology Policy, September 15th, 2014

Why do vaccine-preventable diseases persist in highly vaccinated populations?, Annual Science Board Symposium and Meeting, Santa Fe Institute, Santa Fe, NM, May 2nd, 2014.

Infectious Disease Dynamics: Tracking and Understanding the Diseases that Kill Us, Northern New Mexico College, March 28th, 2014.

Competition between infectors leads to heterogeneous transmission patterns in homogeneous populations, Los Alamos National Labs, Center for Nonlinear Studies, October 31st, 2013.

Mechanistic Modeling of Sylvatic Arboviruses in Senegal: Understanding the Fevers in the Forest, Department of Biology Seminar Series, New Mexico State University, October 3rd, 2013.

Competition between infectors leads to heterogeneous transmission patterns in homogeneous populations, Georgetown University, Washington, D.C., February 19th, 2013.

Competition between infectors leads to heterogeneous transmission patterns in homogeneous populations, Santa Fe Institute, Santa Fe, NM, January 31st, 2013.

GENERAL PUBLIC
PRESENTATIONS

Why do vaccine-preventable diseases still plague us?, Los Alamos Rotary Club, April 14, 2015.

Science on Screen Lecture: *Panic in the Streets*, Center for Contemporary Arts, Santa Fe, NM, March 31st, 2014.

ABSTRACTS

H. DeAngelis, S. V. Scarpino, M. C. Fitzpatrick, A. P. Galvani, B. M. Althouse, *Epidemiological and Economic Effects of Priming With the Whole-Cell Bordetella pertussis Vaccine*, *Epidemics* 6, Nov. 28th-

Dec. 1st, 2017

B. M. Althouse, N. Vasilakis, A.A. Sall, M. Diallo, S. C. Weaver, K.A. Hanley, *Potential for Zika Virus to Establish a Sylvatic Transmission Cycle in the Americas*, *Epidemics* 6, Nov. 28th- Dec. 1st, 2017

B. M Althouse, B. G. Wagner, H. Hu, *Estimating the critical community size of Streptococcus pneumoniae transmission in multiple settings*, *Epidemics* 6, Nov. 28th- Dec. 1st, 2017

B. M Althouse, S. Flasche, L. N. Minh, Vu Dinh Thiem, M. Hashizume, K. Ariyoshi, D. D. Anh, G. L. Rogders, K. P. Klugman, H. Hu, L.-M. Yoshida, *Spatiotemporal dynamics of common respiratory viruses causing hospitalizations for acute respiratory infections and pneumonia in Nha Trang, Vietnam*, Oral Presentation, ASTMH 66th Annual Meeting, November 5-9, 2017, Baltimore, MD

Espinel Z, Shultz JM, Cooper JL, Baingana F, Althouse BM. *Fear-related Behaviors in the 2013-2016 West Africa Ebola Virus Disease Outbreak*. (Poster). 170th American Psychiatric Association Annual Meeting. San Diego CA, 21 May 2017

B. M. Althouse, B.G Wagner, H. Hu, *Estimating The Critical Community Size Of Streptococcus Pneumoniae Transmission In Multiple Settings*, ISPPD 2016, Glasgow, Scotland

B. M. Althouse, D. Krishnan, B.G Wagner, H. Hu, *Trends In Pneumonia Hospitalizations In Washington State, USA, 1990-2012*, ISPPD 2016, Glasgow, Scotland

B. M. Althouse, R. Dagan, N. Givon-Lavi, L. Grant, L.L. Hammitt, M. Knoll, K.L O'Brien, S.I. Pelton, K. Shea, B.G. Wagner, H. Hu, *Identification Of Latent Reservoirs Of Pneumococcal Conjugated Vaccine (PCV) Serotypes After Extended Vaccination*, ISPPD 2016, Glasgow, Scotland

B. M. Althouse, R. Dagan, N. Givon-Lavi, L. Grant, L.L. Hammitt, M. Knoll, K.L O'Brien, S.I. Pelton, K. Shea, B.G. Wagner, H. Hu, *Examination Of Potential Reduced-Dose Pcv Schedules Using A Mathematical Model Of S. Pneumoniae Colonization*, ISPPD 2016, Glasgow, Scotland

B.G. Wagner, R. Dagan, N. Givon-Lavi, B. M. Althouse, H. Hu, *Pneumococcal Transmission Patterns In Pre-PCV, Southern Israel*, ISPPD 2016, Glasgow, Scotland

B. M. Althouse, S. V. Scarpino, *Asymptomatic transmission and the resurgence of Bordetella pertussis*, *Epidemics* 5, Dec. 1-Dec. 4, 2015, Clearwater Beach, FL

B.M. Althouse, M. Salath, M. Lipsitch, C.T. Bergstrom, J.D. West, *Heterogeneous vaccination coverage and measles transmission dynamics*, *NetSci*, Seoul, South Korea, June 2016

L. Hébert-Dufresne, B.M. Althouse, *Complex dynamics of synergistic coinfections on realistically clustered networks*, *Epidemics* 5, Dec. 1-Dec. 4, 2015, Clearwater Beach, FL

B.M. Althouse, L. Hébert-Dufresne, *Epidemic Cycles Driven by Host Behaviour*, *NetSci* 2015, June, 2015, Zaragoza, Spain

B.M. Althouse, S.V. Scarpino, *Enhancing disease surveillance with novel data streams*, Oral Presentation, Digital Disease Detection, May 21-22, 2015, Florence, Italy

B.M. Althouse, L. Hébert-Dufresne, *Epidemic Cycles Driven by Host Behaviour*, Oral Presentation, *NetSci-x*, January, 2015, Rio De Janeiro, Brazil

B. M. Althouse, S. V. Scarpino, *Vaccine induced selection mimics waning immunity in Pertussis*, Oral Presentation, European Society for Pediatric Infectious Diseases, May 6-10, 2014, Dublin, Ireland.

B. M. Althouse, O. Patterson-Lomba, G. M. Goerg, L. Hbert-Dufresne, *The Timing and Targeting of Treatment in Influenza Pandemics Influences the Emergence of Resistance in Structured Populations*, *Epidemics* 4, Nov. 19th-22nd, 2013, Amsterdam, The Netherlands.

B. M. Althouse, A. P. Durbin, K. A. Hanley, S. B. Halstead, S. C. Weaver, D. A. T. Cummings *Viral Kinetics of Primary Dengue Virus Infection in Non-Human Primates: A Systematic Review and Individual Pooled Analysis*, American Society of Tropical Medicine and Hygiene 62nd Annual Meeting, November 13-17, 2012, Washington D.C.

B. M. Althouse, M. Guerbois, A. A. Sall, M. Diallo, D. Diallo, O. Diop, B. Benefit, E. Simons, D. M. Watts, S. C. Weaver, K. A. Hanley, D. A. T. Cummings *Age-Stratified Serological Survey of Sylvatic Chikungunya Virus in Nonhuman Primates in Senegal*, Oral Presentation, American Society of Tropical Medicine and Hygiene 62nd Annual Meeting, November 13-17, 2012, Washington D.C.

B. M. Althouse, D. L. Smith, R. C. Reiner Jr, C. M. Barker, D. A. T. Cummings, *Modeling the Ecology of Generalist Pathogens in Multiple Mosquito Vectors*, American Society of Tropical Medicine and Hygiene 61st Annual Meeting, November 11-15, 2012, Atlanta, GA.

C. L. Jo, K. M. Ribisl, B. M. Althouse, J. W. Ayers, S. Emery, *Search Queries for Non-cigarette Tobacco Product Alternatives Post-2009 Federal Tax Increase*, National Conference on Tobacco or Health, August 15-17, 2012, Kansas City, MO.

B. M. Althouse, Y.Y. Ng, D.A.T. Cummings, *Prediction of Dengue Incidence using Search Query Surveillance*, Oral Presentation, American Society of Tropical Medicine and Hygiene 60th Annual Meeting, December 4-8, 2011, Philadelphia, PA.

A. Azman, H. Salje, B. Althouse, I. Rodriguez-Barraquer, T. P. Endy, A. Nisalak, R. Jarman, R. Gibbons, D.A.T. Cummings, *Longitudinal Characterization of Antibody Response to Dengue Virus in Bangkok Thailand*, American Society of Tropical Medicine and Hygiene 60th Annual Meeting, December 4-8, 2011, Philadelphia, PA.

B. M. Althouse, J. Lessler, N.G. Riech, D.A.T. Cummings, *Heterogeneous transmission patterns in homogeneous populations*, *Epidemics* 3, Nov. 29th-Dec. 2nd, 2011, Boston, MA.

S. Chadsuthi, B. Althouse, S. Iamsirithaworn, W. Triampo, D.A.T. Cummings, *Climate, land use and travel times predict the spatial advance of cases of Chikungunya during an outbreak in southern Thailand*, *Epidemics* 3, Nov. 29th-Dec. 2nd, 2011, Boston, MA.

B. M. Althouse, A. Sall, K. Hanley, M. Diallo, D. Watts, S. Weaver, D. A. T. Cummings, *A Multi-host, multi-vector SIR model of Dengue 2 virus in Senegal*, Oral Presentation, American Society of Tropical Medicine and Hygiene 59th Annual Meeting, November 3-7, 2010, Atlanta, GA.

B. Althouse, A. Sall, M. Diallo, S. Weaver, D. Watts, K. Hanley, D.A.T. Cummings, *A Multi-host, Multi-vector SIR Model of Dengue Virus Transmission in Senegal*, MIDAS Network Meeting, Pittsburgh Supercomputing Center, October 7-8, 2010

J. Nahum, B.M. Althouse, J.D. West, C. Ofria, B. Kerr, *Traversing Fitness Landscapes by Changing Environments*, Gordon Research Conference (Microbial Population Biology) Proctor Academy, NH, (July 20-24, 2009), *Winner: Best Poster Award*

B.M. Althouse, J.D. West, and C.T. Bergstrom, *A Novel Method for Ranking the Quality of Cardiology Literature*, American College of Cardiology Scientific Sessions, March 2009, Orlando, FL.

B.M. Althouse, J.D. West, T. Bergstrom, and C.T. Bergstrom, *Differences in Impact Factor Across Fields*

and Over Time, Undergraduate Research Symposium, University of Washington, May 16, 2008

B. M. Althouse, *Directed Evolution of Human Apolipoprotein A-I Milano Protein and Expression in Escherichia coli*, Transcatheter Therapeutics (TCT), October 2007, Washington, D.C.

J.D. West, M. Rosvall, B.M. Althouse, C.T. Bergstrom, *Ranking and Mapping Scholarly Literature*, Gordon Research Conference (Microbial Population Biology), July 22-27, 2007, Proctor Academy, NH

PROFESSIONAL
ACTIVITIES &
SERVICE

Participant, *Integrating Forecasting Models for Decision-making: A National Strategy*, White House Office of Science and Technology Policy and the federal Pandemic Prediction and Forecasting Science and Technology Working Group, August 2015

Participant, WHO Technical Expert Consultation: Alternate Dosing Schedules of Pneumococcal Conjugate Vaccines 9-10 February 2016, Geneva, Switzerland

Topic Editor: Frontiers in Public Health, Infectious Disease Section, *Advances in Information Science for Disease Surveillance*

Associate Editor: PLoS Neglected Tropical Diseases

Statistical Reviewer for:

– BMJ Open

Reviewer for:

- American Journal of Epidemiology,
- American Journal of Preventive Medicine,
- American Journal of Public Health,
- BMC Infectious Diseases,
- BMC Ophthalmology,
- BMC Public Health,
- BMJ Open,
- BMJ Global Health,
- Bulletin of Mathematical Biology,
- Bulletin of the World Health Organization,
- Computers in Biology and Medicine,
- Computational and Mathematical Methods in Medicine,
- Emerging Infectious Diseases,
- Environmental and Ecological Statistics,
- Environmental Health Insights,
- Environmental Health Perspectives,
- Epidemiology and Infection,
- Frontiers in Public Health,
- Harvard Review of Psychiatry,
- IEEE Journal of Biomedical and Health Informatics,
- Infection, Genetics and Evolution,
- Insects,
- International Health,
- International Journal of Environmental Research and Public Health,
- International Journal of Infectious Diseases,
- Journal of Infection in Developing Countries,
- Journal of Infectious Diseases,
- Journal of Medical Internet Research,
- Journal of the Royal Society Interface,
- Journal of Studies on Alcohol and Drugs,

- Journal of Theoretical Biology,
- The Lancet,
- The Lancet Global Health,
- The Lancet Infectious Diseases,
- Medical Decision Making Policy & Practice,
- Nature Scientific Reports,
- PLoS Computational Biology,
- PLoS Medicine,
- PLoS Neglected Tropical Diseases,
- PLoS One,
- Population Health Metrics,
- Proceedings of the Royal Society B,
- Scientometrics,
- Social Science & Medicine,
- Vaccine.

Ad hoc Grant Reviewer: National Science Foundation, Decision, Risk, and Management Sciences Program

Active member:

- American Society of Tropical Medicine and Hygiene (2014 –).
- American Committee on Arthropod-Borne Viruses (2015 –)

Chair, Colloquium Committee, Santa Fe Institute (2013-2015)

Johns Hopkins Bloomberg School of Public Health Student Assembly:

- Epidemiology Departmental Student Representative Student Assembly JHSPH (2012-2013);
- Elected Treasurer Student Assembly JHSPH, 2011-2012 (managed a team of 5 people and a budget of \$120,000);
- Elected Member-at-large Student Assembly JHSPH (2010-2011).

Student Leader, JHSPH Modeling of Spatial and Temporal Disease Epidemiology Forum (MOST-DEF) Speaker Series, (2011-2012, 2012-2013).

Co-developer, Eigenfactor (eigenfactor.org): a free online tool for researchers, librarians, editors and administrators to assess the quality of scientific literature.

Founder: Directing Medicine L.L.C.: Our group of computer scientists, statisticians, and epidemiologists advise health advocacy organizations on modern approaches for population health promotion using technologies we have exclusively developed in the private sector. As a group we focus on high risk, high reward projects that would not be considered by conservative public health funding organizations.

TEACHING & MENTORING

University of Washington, INFX 573: *Data Science I: Theoretical Foundations*, Winter 2017
 Lecturer, University of Washington, INFX 572: *Introduction to Data Science*, Autumn 2015
 - Developed a full curriculum for a new course.

Undergraduate Mentoring:

- Haedi DeAngelis, Trinity College, Deerfield, IL
- Cody O’Ferrall, St. John’s College, Santa Fe, MN

Post-graduate Mentoring:

- Divya Krishnan, UW Information School
- Akashdeep Jaswal, UW Information School

– Chana Greene, US Air Force

Teaching Assistant:

- Spring 2010, 2011: 340.677, *Infectious Disease Dynamics: Theoretical And Computational Approaches*;
- Summer 2011: 140.611-2, *Graduate Summer Institute of Epidemiology and Biostatistics: Statistical Reasoning in Public Health I & II*;
- Winter 2012: 340.609, *Concepts and Methods in Infectious Disease Epidemiology*;
- Spring (3rd term) 2013: 140.655, *Analysis Of Longitudinal Data*;
- Spring (4th term) 2013: 140.656, *Multilevel Statistical Models In Public Health*.

Instructor, Complex Systems Summer School, Santa Fe Institute, Santa Fe, NM, 2014

Short course in Search Query Surveillance, UNC Chapel Hill, Jan. 2012; University of Illinois, Chicago, Oct. 2012.

Invited workshop: *Introduction to Disease Modeling*, UNIMAS, Kuching, Sarawak, Malasia, Aug. 2016.

REFERENCES

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