BIOMEDICAL & VETERINARY SCIENCES GRADUATE PROGRAM

ANNOUNCES

The Doctor of Philosophy Seminar
and Examination of

Gloria Kang

Systems analysis of vaccination in the United States: Socio-behavioral dynamics, sentiment, effectiveness and efficiency

Monday, July 9, 2018
1:00 pm
Biocomplexity Institute (Steger Hall), Room 118

Lay Language Abstract

This dissertation examines the socio-behavioral determinants of vaccination and its impact on public health, using a systems approach that emphasizes the interface between population health research, policy, and practice. First, we identify the facilitators and barriers of parental attitudes and beliefs toward school-located influenza vaccination in the United States. Next, we examine current vaccine sentiment on social media by constructing and analyzing semantic networks of vaccine information online. Lastly, we estimate the health benefits, costs, and cost-effectiveness of influenza vaccination strategies in Seattle using a dynamic agent-based model. The underlying motivation for this research is to better inform public health policy by leveraging the facilitators and addressing potential barriers against vaccination; by understanding vaccine sentiment to improve health science communication; and by assessing potential vaccination strategies that may provide the greatest gains in health for a given cost in health resources.

Publications

Kang GJ, Lewis BL, Marathe A, Abbas KM. Health benefits, costs, and cost-effectiveness of influenza vaccination in Seattle. (In prep)

Abbas KM, **Kang GJ**, Chen D, Werre SR, Marathe A. Demographics, perceptions, and socioeconomic factors affecting influenza vaccination among adults in the United States. PeerJ. (Accepted)

Singh M, Sarkhel P, **Kang GJ**, Marathe A, Boyle K, Murray-Tuite P, Abbas KM, Swarup S. Impact of Demographic Disparities in Social Distancing and Vaccination on Influenza Epidemics in Urban and Rural Regions of the United States. BMC Infectious Diseases. (In review)

Kang GJ, Ewing-Nelson SR, Mackey L, Schlitt JT, Marathe A, Abbas KM, Swarup S. Semantic Network Analysis of Vaccine Sentiment in Online Social Media. Vaccine, vol. 35, no. 29, pp. 3621-3638, 2017. DOI:10.1016/j.vaccine.2017.05.052; PMID:28554500

Kang GJ, Culp RK, Abbas KM. Facilitators and Barriers of Parental Attitudes and Beliefs toward School-Located Influenza Vaccination in the United States: Systematic Review. Vaccine, vol. 35, no. 16, pp. 1987-1995, 2017. DOI:10.1016/j.vaccine.2017.03.014; PMID:28320592; PMCID: PMC5401629

Kang GJ, Gunaseelan L, Abbas KM. Epidemiological Modeling of Bovine Brucellosis in India. Proceedings of the 2014 IEEE International Conference on Big Data, IEEE Big Data 2014, pp. 6-10, Washington, DC, October 2014. DOI: 10.1109/BigData.2014.7004420; PMID: 26280026; PMCID: PMC4537291

Presentations

Kang GJ, Ewing-Nelson SR, Mackey L, Schlitt JT, Marathe A, Abbas KM, Swarup S. Vaccine sentiment on social media: A semantic network analysis. 145th American Public Health

Association (APHA) Annual Meeting and Exposition, Atlanta GA, November 2017.

Kang GJ, Gunaseelan L, Abbas KM. Epidemiological Modeling of Bovine Brucellosis in India. IEEE International Conference on Big Data, BigData 2014, Washington, DC, October 2014. DOI: 10.7490/f1000research.1111710.1

Gloria Kang and Kaja Abbas. Epidemiological Modeling of Infectious Diseases. The Institute of Mathematical Sciences, Chennai, India. August 2014.

Kang GJ, Culp R, Gunaseelan L, Srividya V, Swaminathan S, Abbas KM. Ecology and Epidemiology of Brucellosis and Tuberculosis: One Health Perspective. International Symposium on Livestock Diseases affecting Livelihood Options and Global Trade - Strategies and Solutions. Chennai, July 2014. DOI: 10.7490/f1000research.1111714.1

Kang GJ, Gunaseelan L, Abbas KM. Directions for Brucellosis in India: Where do we go from here? International Symposium on Livestock Diseases affecting Livelihood Options and Global Trade - Strategies and Solutions. Chennai, July 2014. DOI: 10.7490/ f1000research.1111715.1 (Award: 2nd Place)

Awards and Academic Achievements

National Science Foundation Research Traineeship (NRT) in Urban Computing; Discovery Analytics Center, Virginia Tech (2017-2018)

Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID) Scholarship, University of Washington (2016)

Ryan C. Aday Memorial Award in Health Promotions 2014-2015; Virginia-Maryland College of Veterinary Medicine (2015)

Examination Graduate Committee

Major Advisor/Chair

Kaja Abbas, PhD, MPH
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Department of Epidemiology and Population Health
London School of Hygiene & Tropical Medicine

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Laboratory
Professor, Department of Population Health Sciences
Adjunct Professor, Department of Physics

Madhav Marathe, PhD
Director, Network Dynamics and Simulation Science Laboratory
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Marcella Kelly, PhD
Professor
Department of Fish and Wildlife Conservation

External Examiner

Andreas Handel, PhD
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