

## Aditya S. Khanna

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### Education

<b>Ph.D.</b> 2012	<b>University of Washington</b> Quantitative Ecology and Resource Management (QERM)
<b>M.S.</b> 2011	<b>University of Washington</b> Statistics
<b>M.S.</b> 2009	<b>University of Washington</b> Quantitative Ecology and Resource Management (QERM)
<b>B.S.</b> 2005	<b>Moravian College</b> Mathematics; self-designed major in Physics and Political Science Honors in Mathematics and Physics

### Professional Appointments

2015-present	<b>University of Chicago, Department of Medicine</b> Staff Scientist, Director of Network Modeling
2014-2015	<b>University of Chicago, Department of Medicine</b> Postdoctoral Scholar
2013-2014	<b>University of Washington (UW), Global Health</b> Senior Fellow
2009-2012	<b>UW, Center for Studies in Demography &amp; Ecology</b> Research Assistant

## Publications

*Articles under review, or in press.*

1. Skaathun B, **Khanna AS**, Morgan E, Friedman S, Schneider JA. Network Viral Load: A Critical metric for HIV elimination. *Lancet HIV*.
2. **Khanna AS**, Goodreau SM, Michaels S, Schneider JA. The impact of missing data imputation on the selection of peer change agents in a Facebook network of young men who have sex with men. *Social Networks*.
3. Cordover A and **Khanna A**. *A Bayesian inference of the transmission parameters of the Ebola virus disease in the United States and Western Europe. Epidemics*.
4. Young LE, Michaels S, Jonas A, **Khanna AS**, Skaathun B, Morgan E, Schneider J. The organizing potential of sex behaviors: Sex behaviors as social cues that motivate where young men who have sex with men go to meet and socialize. *AIDS and Behavior*.
5. **Khanna AS**, Schumm P, Schneider JA. A comparison of temporal Facebook networks of young men who have sex with men (MSM), differentiated by awareness and use of preexposure prophylaxis (PrEP). *Annals of Epidemiology*. In press.
6. Schneider JA, Cornwell B, Jonas A, Behler R, Lancki N, Skaathun B, Michaels S, **Khanna AS**, Young LE, Morgan E, Duvoisin R, Friedman S, Schumm P, Laumann EO. Network dynamics and HIV risk and prevention in a population-based cohort of Young Black Men Who have Sex with Men. *Network Science*. In Press.

*Peer-reviewed and published*

*(\* equally contributing authors)*

7. Schneider JA, Kozloski M, Michaels S, Skaathun B, Voisin D, Lancki N, Morgan E, **Khanna A**, Green K, Coombs RW, Friedman SR, Laumann E, Schumm P; uConnectand BARS study teams. Criminal justice involvement history is associated with better HIV care continuum metrics among a population-based sample of young black men who have sex with men. *AIDS*. 2016. September 20. Epub ahead of print.
8. Morgan E, **Khanna AS**, Skaathun B, Michaels S, Young L, et al. Marijuana use among young black men who have sex with men and the HIV Care Continuum: Findings from

the uConnect cohort. *Subst Use Misuse*. 2016 Nov 9;51(13):1751-9. doi: 10.1080/10826084.2016.1197265.

9. Roberts ST\*, **Khanna AS\***, Barnabas RV, John-Stewart G, Goodreau SM, Baeten JM, Celum C, Cassels S. Estimating the impact of universal antiretroviral therapy (ART) for HIV serodiscordant couples through home HIV testing: Insights from mathematical models. *J Int AIDS Soc*. 2016 May 11;19(1):20864. doi: 10.7448/IAS.19.1.20864. eCollection 2016.
10. **Khanna AS**, Michaels S, Skaathun B, Morgan E, Green K, Young L, Schneider JA; uConnect Study Team. Preexposure Prophylaxis Awareness and Use in a Population-Based Sample of Young Black Men Who Have Sex With Men. *JAMA Intern Med*. 2016 Jan 1;176(1):136-8. doi: 10.1001/jamainternmed.2015.6536.
11. Morgan E, Skaathun B, Michaels S, Young L, **Khanna A**, Friedman SR, Davis B, Pitrak D, Schneider J; UConnect Study Team. Marijuana Use as a Sex-Drug is Associated with HIV Risk Among Black MSM and Their Network. *AIDS Behav*. 2014 Feb;18(2):335-45. doi: 10.1007/s10461-013-0677-8.
12. **Khanna AS**, Roberts ST, Cassels S, Ying R, John-Stewart G, Goodreau SM, Baeten JM, Murnane PM, Celum C, Barnabas RV. Estimating PMTCT's Impact on Heterosexual HIV Transmission: A Mathematical Modeling Analysis. *PLoS One*. 2015 Aug 11;10(8):e0134271. doi: 10.1371/journal.pone.0134271.
13. **Khanna A**, Goodreau SM, Wohlfeiler D, Daar E, Little S, Gorbach PM. Individualized diagnosis interventions can add significant effectiveness in reducing human immunodeficiency virus incidence among men who have sex with men: insights from Southern California. *Ann Epidemiol*. 2015 Jan;25(1):1-6. doi: 10.1016/j.annepidem.2014.09.012.
14. **Khanna AS**, Dimitrov DT, Goodreau SM. What can mathematical models tell us about the relationship between circular migrations and HIV transmission dynamics? *Math Biosci Eng*. 2014 Oct;11(5):1065-90. doi: 10.3934/mbe.2014.11.1065.
15. Cassels S, Jenness SM, **Khanna AS**. Conceptual framework and research methods for migration and HIV transmission dynamics. *AIDS Behav*. 2014 Dec;18(12):2302-13.

16. **Khanna AS**, Goodreau SM, Gorbach PM, Daar E, Little SJ. Modeling the impact of post-diagnosis behavior change on HIV prevalence in Southern California men who have sex with men (MSM). *AIDS Behav.* 2014 Aug;18(8):1523-31. doi: 10.1007/s10461-013-0646-2.

## Software

Jacobs Simon, **Khanna Aditya**, Madduri Kamesh, Bader David. *influenceR: Software Tools to Quantify Structural Importance of Nodes in a Network*. Version: 0.1.0. URL: <https://cran.r-project.org/web/packages/influenceR/index.html>

## Honors and Awards

2016	Best Paper Prize, American College of Epidemiology.
2016	Paper featured on the UNAIDS <i>HIV This Month</i> : <a href="https://scienzenow.unaids.org/post/hiv-testing-and-treatment-21">https://scienzenow.unaids.org/post/hiv-testing-and-treatment-21</a> .
2014	Best Poster for Development and Discovery, University of Washington (UW) Department of Global Health Symposium.
2013	Best Student Paper (Honorable Mention), Sunbelt: International Network for Social Network Analysis.
2013	Appointed as a gonfalonier at UW Commencement 2013, as one of two graduating doctoral students who exemplify "the ideals of graduate education at UW: excellence in learning, teaching, mentoring and/or research".
2013	University of Washington Travel Award.
2012	Best Presentation (Co-Winner), Quantitative Ecology and Resource Management Seminar.
2011	University of Washington Travel Award.
2009	Best Poster Prize (Co-winner), UW Center for Statistics and Social Sciences, 10 <sup>th</sup> Anniversary Conference.
2006-2007	University of Washington First Year Fellowship, QERM program.
2004	Moravian College, Student Opportunities for Academic Research Award (SOAR), Mathematics.
2002	Moravian College, Student Opportunities for Academic Research Award (SOAR), Physics.
2001-2005	Moravian College International Student Grant, Covering Full Tuition Expenses.
1998-2000	Scholarship to attend the Mahindra United World College of India.

## Research Support

### Active

2015-2019	<b>NIH R01 DA 039934 (PI Schneider, Fujimoto, Harawa)</b> HIV intervention models for criminal justice involved substance using
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Black MSM.  
Co-investigator

2015-2017      **NIH R21 AI 118998 (PI Schneider)**  
Public health targeting of PrEP at HIV positives' bridging networks.  
Co-investigator

2013-2017      **NIH R01 DA 033875**  
Social network dynamics, HIV, and risk reduction among younger  
Black MSM.  
Postdoctoral Research Associate

*Past*

2013-2014      **HIV Modeling Consortium RFA 3.2 (PI Barnabas, Cassels)**  
Using network models to optimize the impact of treatment programs  
for HIV prevention among serodiscordant couples and pregnant  
women in South Africa and Uganda.  
Co-Investigator

2009-2012      **NIH R01 DA 022116 (PI Gorbach)**  
Transmission Behavior in Partnerships of Newly HIV Infected  
Southern Californians.  
Graduate Research Assistant

2004      **Student Opportunities for Academic Research, Moravian College**  
Schemes on Polytopes.  
Student Investigator

2002      **Student Opportunities for Academic Research, Moravian College**  
Sputtering of under-powered lasers.  
Student Investigator

*Pending*

2016-2021      **NIH R01 (PI Fujimoto, Schneider)**  
V-PrEP: Venue Based Decision Support to Optimize PrEP linkage for  
young Black MSM.  
Co-Investigator

2017-2019      **NIH R01 (PI Molina, Khanna)**  
Assessing and modeling network-level consequences of patient  
navigation.  
Co-Principal Investigator

## Teaching

### *Classroom Instruction (Full Courses)*

2007-2012	<b>Teaching Assistant</b> Center for Quantitative Science, University of Washington Teaching assistant for Analysis for Biologists II and Statistical Inference in Applied Research.
2007-2008	<b>Instructor</b> Analysis for Biologists II: course emphasized techniques of integral calculus for students majoring in biological and social sciences.
2005-2006	<b>Full-time Teacher</b> Trinity Collegiate High School Courses in Advanced Placement Statistics, and Honors Physics, Geometry, and Algebra.

### *Classroom Instruction (Guest Lectures)*

#### **University of Chicago**

2016	<b>Critical Readings in Epidemiology</b> Led a discussion on computational modeling in infectious disease research.
2015-2016	<b>Mathematics Research Experience for Undergraduates (REU)</b> Two lectures on network science and modeling, social network analysis in public health, and infectious disease modeling.
2015	<b>Youth Health Leadership Corps (YHLC)</b> Chicago Center for HIV Elimination, University of Chicago Gave lectures in statistical analysis, survey design, and public health research to high school students. Advised students on a class research project on sexual health of adolescents.

#### **University of Washington**

2013	<b>Social Networks and Health</b>
2012	<b>Seminar in Quantitative Ecology</b>
2010	<b>Statistical Software and Applications</b>

### *Student Mentoring*

2016	<b>Alex Cordover</b> Department of Statistics, University of Chicago Project on Bayesian modeling of Ebola transmission dynamics.
2015	<b>Nathan Gill</b> Department of Mathematics, University of Chicago Research Experience for Undergraduate (REU) program Supervised project on stochastic modeling of HIV transmission dynamics

### **Invited Talks**

Network Analysis to Reduce New HIV Infections among Young Black Men who have sex with Men (BMSM) in Chicago. Third Coast Center for AIDS Research, Feinberg School of Medicine, Northwestern University, Chicago, IL, November 2017.

Invited panelist in a satellite session titled “Addressing the Leading Edge of the HIV Epidemic in the U.S.: Advancing Prevention Programs for Urban YMSM” at the HIV Research for Prevention (HIVR4P) Conference, Chicago, IL, October 2017.

Epidemiology of HIV Prevention: Networks, Models and Data. Homer Stryker School of Medicine, Western Michigan University, Kalamazoo, MI. June 2016.

The BARS Modeling Plan: Agent-based modeling using a combination of the Repast HPC and Statnet suites. BARS Investigator Retreat at UCLA, January 2016.

The use of mathematical modeling in public health decision making. University of Chicago India Center, New Delhi, India, December 2015.

Stochastic agent-based network modeling of HIV transmission. BARS Study Retreat, Argonne National Laboratory, Lemont, IL, May 2015.

Treatment as Prevention for Serodiscordant Couples and Pregnant Women. HIV Modeling Consortium Symposium, Kuala Lumpur, Malaysia, June 2013.

An Examination of Diagnosis Strategies to Maximize the Preventive Potential of Post-Diagnosis Behavior Change: Insights from Southern California. March 2013. Public Health Seattle and King County (PHSKC) brown bag series, Seattle, WA, March 2013.

Bio-Behavioral Models for HIV Prevention. Professor Pejman Rohani's laboratory at the Center for Complex Systems, University of Michigan, Ann Arbor, MI, May 2012.

## **Conference Activity**

### *Contributed Talks*

The BARS Study: Building Agent-Based Models of Racialized Justice Systems (BARS) Study in Black MSM. Joint with Kayo Fujimoto, Nina Harawa, John Schneider. *NAESM*, Los Angeles, CA. January 2016.

Lifelong ART for pregnant women has the potential to reduce heterosexual HIV transmission. *Treatment as Prevention Workshop*, Vancouver, BC, April 2014. (Presented by PI, Dr. Ruanne Barnabas).

Modeling the Impact of Post-Diagnosis Behavior Change on HIV Prevalence in Southern California Men who have Sex with Men (MSM). *Population Association of America*, New Orleans, LA, April 2013.

Circular Migrations and HIV Transmission Dynamics: A Comparison of Compartmental and Network-Based Modeling. *Population Association of America*, San Francisco, CA, May 2012.

The impact of acute infection, testing, and post-diagnosis behavior change on HIV transmission among men who have sex with men (MSM) in Southern California. *Sunbelt: International Network for Social Network Analysis*, Redondo Beach, CA, March 2012.

Circular Migrations and HIV Transmission Dynamics. *International Symposium on Biomathematics and Ecology: Education and Research*, Portland, OR, December 2011.

Circular Migrations and HIV Transmission Dynamics, *Mathematical Association of America, Annual Meeting*, Northwest Section, Seattle, WA, April 2010.

Daisyworld. *American Association of Physics Teachers Meeting*, York, PA, March 2005.

Environmental Feedback in Daisyworld. *Moravian College Mathematics Conference*, Bethlehem, PA, February 2005.

### *Posters*

Pre-Exposure Prophylaxis (PrEP) knowledge and use in a population-based sample of younger Black Men who have sex with men (YBMSM) in Chicago. *8<sup>th</sup> IAS Conference on HIV Pathogenesis, Treatment and Prevention*; Vancouver, BC, July 2015. (Presented by PI Dr. John Schneider.)



Individualized diagnosis strategies have potential to substantially reduce HIV incidence among men who have sex with men (MSM), *Population Association of America*, Boston, MA, May 2014.

Lifelong ART for pregnant women has the potential to reduce heterosexual transmission of HIV. *University of Washington Global Health Research Symposium*, Seattle, WA, March 2014. (Won Best Poster Prize for Development and Discovery).

Circular Migrations and HIV Transmission Dynamics: A Comparison of Compartmental and Network Modeling. IAS 2013. *7th IAS Conference on HIV Pathogenesis, Treatment and Prevention*; Kuala Lumpur, Malaysia, July 2013.

The impact of acute infection, testing, and post-diagnosis behavior change on HIV transmission among men who have sex with men (MSM) in Southern California. *Population Association of America*, San Francisco, CA, May 2012.

The impact of acute infection, testing, and post-diagnosis behavior change on HIV transmission among men who have sex with men (MSM) in Southern California. *Epidemics 3*, Boston, MA, December 2011.

Circular Migrations and HIV Transmission Dynamics. *Epidemics 3*, Boston, MA, December 2011.

Circular Migrations and HIV Transmission Dynamics. *Center for Statistics and Social Sciences, University of Washington, 10th Anniversary Conference*; Seattle, WA, May 2009. (Co-Winner, Best Poster Prize.)

Dynamics of Under-Powered Lasers. *National Council of Undergraduate Research*, Salt Lake City, UT, March 2003.

## **Service to Department**

*University of Chicago*

Currently managing the UChicago side of the Third Coast CFAR Seminar.

Served on the Search Committee for a Research Data Analyst for the Chicago Center for HIV Elimination.

*University of Washington*

Developed and co-presented a workshop titled "Being an RA in Math, Science and Engineering" to about 30 incoming graduate students during the TA/RA conference organized by the Center for Teaching and Learning.

Served as Student Representative on Quantitative Ecology and Resource Management's Curriculum Revision Committee, 2009-2010.

Served as as a panelist on a Teaching Assistant (TA) conference organized by the Center for Instructional Development and Research, to discuss my experiences as an international TA, September 2009.

## **Service to Profession**

Occasional reviewer for *Acta Biotheoretica*, *AIDS and Behavior*, *BMC Infectious Diseases*, *Bulletin of Mathematical Biology*, *Clinical Infectious Diseases*, *Harm Reduction Journal*, *Mathematical Biosciences*, *PLoS One*, *Journal of the Royal Society Interface*, *Theoretical Population Biology*.

## **Natural Languages**

Native: Hindi, English  
Fluent: Marathi  
Beginner: Portuguese

## **Citizenship**

Indian citizen  
United States permanent resident