

Aditya S. Khanna

Research Assistant Professor, The University of Chicago

akhanna@medicine.bsd.uchicago.edu
<http://home.uchicago.edu/khanna7/>
Cell: 206 398 9978. Office: 773 834 5635

The University of Chicago
Biological Sciences Division, Medicine
5841 S. Maryland Avenue, Chicago IL 60637

Research Areas

Social network analysis and modeling; infectious disease epidemiology; agent-based modeling; computational social science; health statistics.

Education

Ph.D.

12/2012

University of Washington

Quantitative Ecology and Resource Management (QERM)
Dissertation: "Bio-Behavioral Models for HIV Prevention"

M.S.

12/2011

University of Washington

Statistics

M.S.

08/2009

University of Washington

Quantitative Ecology and Resource Management (QERM)

B.S.

05/2005

Moravian College

Mathematics; self-designed major in Physics and Political Science
Honors in Mathematics and Physics

Appointments

10/2017-present

02/2016-present

07/2015-09/2017

08/2014-07/2015

The University of Chicago, Department of Medicine

Research Assistant Professor, Director of Network Modeling
Faculty affiliate at Third Coast Center for AIDS Research
Staff Scientist, Director of Network Modeling
Postdoctoral Scholar

01/2013-07/2014

06/2009-12/2012

University of Washington (UW)

Department of Global Health, Senior Fellow
Center for Studies in Demography and Ecology, Research Assistant

Publications

Articles under peer review

1. Gore D, Ferreira M, **Khanna AS**, Schneider JA. HIV Partner Notification Services among a Representative Sample of Young Black Men Who Have Sex With Men Demonstrates Limited Service Offering and Potential Benefits of Clinic Involvement. *Sexually Transmitted Diseases*.
2. Skaathun B, **Khanna AS**, Morgan E, Friedman S, Schneider JA. Network Viral Load: A Critical metric for HIV elimination. *Journal of the Acquired Immune Deficiency Syndromes*.

Peer-reviewed and published

3. Young LE, Schumm P, Alon L, Bouris A, Ferreira M, Hill B, **Khanna AS**, Valente TW, Schneider JA. PrEP Chicago: A randomized controlled peer change agent intervention to promote the adoption of pre-exposure prophylaxis for HIV prevention among young Black men who have sex with men. *Clinical Trials*. 2017 Sep 1. doi: 10.1177/1740774517730012.
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*. 2017 Jan 17. doi: 10.1007/s10461-017-1679-8.
5. 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*. 2017 February. pp. 1-29.
6. **Khanna AS**, Schumm P, Schneider JA. Facebook network structure and awareness of preexposure prophylaxis among young men who have sex with men. *Ann Epidemiol*. 2016 Nov 29. pii: S1047-2797(16)30499-9. doi: 10.1016/j.annepidem.2016.11.006.
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. (*equally contributing authors)
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. CRAN R package (2015): <https://cran.r-project.org/web/packages/influenceR/index.html>

Honors and Awards

2017	UChicago Research Fellows: Awarded to mentor undergraduate student.
2016	Best Paper Prize, American College of Epidemiology.
2016	Paper featured on the UNAIDS <i>HIV This Month</i> : https://scienzenow.unaids.org/post/hiv-testing-and-treatment-21 .
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 th 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 Grants

Awarded

2017-2018	Third Coast CFAR Pilot Award P30 AI117943 (PI Khanna) “Towards an Effective PrEP Diffusion Model: Identifying Criteria for Peer Change Agent Selection.” Principal Investigator
<i>Active</i>	
2015-2019	NIH R01 DA 039934 (PI Schneider, Fujimoto, Harawa) “HIV intervention models for criminal justice involved substance using Black MSM.” Co-investigator
2015-2017	NIH R21 AI 118998 (PI Schneider) “Public health targeting of PrEP at HIV positives’ bridging networks.” Co-investigator
<i>Past</i>	
2013-2017	NIH R01 DA 033875 “Social network dynamics, HIV, and risk reduction among younger Black MSM.” Postdoctoral Research Associate
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.” Postdoctoral Research Associate
<i>Pending</i>	
2018-2020	NIH R21 R21CA21525 (PI Molina, Khanna, Watson) “Assessing and modeling network-level consequences of patient navigation” Principal Investigator

Teaching

Classroom Instruction (Full Courses)

2007-2012	Teaching Assistant Center for Quantitative Science, University of Washington Courses titled “Analysis for Biologists” and “Statistical Inference in Applied Research”,
2007-2008	Instructor Center for Quantitative Science, University of Washington Course titled “Analysis for Biologists”

2005-2006 **Full-time Teacher**
Trinity Collegiate High School
Advanced Placement Statistics; Honors Physics, Geometry, and Algebra.

Classroom Instruction (Guest Lectures)

2016 Critical Readings in Epidemiology (UChicago)
2015-2016 Math Research Experiences for Undergraduates (UChicago)
2015-2016 Youth Health Leadership Core: Epidemiology Research (UChicago)
2013 Social Networks and Health (U Washington)
2012 Seminar in Quantitative Ecology (U Washington)
2010 Statistical Software and Applications (U Washington)

Student Mentoring

2017 Daniel Gore
Department of Medicine, Rush University
Project on assessing covariates of HIV partner notification services

2017 Abigail Skwara
Mathematics (undergraduate), University of Chicago
Project on predicting new HIV cases in Chicago

2016 Alex Cordover
Statistics (undergraduate), University of Chicago
Project on Bayesian modeling of Ebola transmission

2015 Nathan Gill
Mathematics (undergraduate), University of Chicago
Stochastic network modeling of HIV transmission

Invited Talks

“Biosocial network models for HIV elimination.” School of Human Evolution and Social Change, Arizona State University, Tempe, AZ, January 2017.

“Biosocial network models for HIV elimination.” Department of Public Health Sciences, University of Chicago, Chicago, IL, January 2017.

“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 2016.

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 2016.

“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 (first author only)

“Towards an Effective PrEP Diffusion Model: Identifying Criteria for Peer Change Agent Selection.” *CFAR Social and Behavioral Sciences Research Meeting*, San Francisco, CA, October 2017.

“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.” *Population Association of America*, Chicago, IL, April 2017.

“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 (first author only)

"Towards an Effective PrEP Diffusion Model: Identifying Criteria for Peer Change Agent Selection." *Third Coast CFAR Research Symposium*, Chicago, IL, October 2017.

"Introducing BARS: Building Agent-based models for racialized justice systems." *Research Day*, University of Chicago Medicine, Chicago, IL, March 2017.

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

“Combination ART for prevention of mother-to-child HIV transmission can decrease adult HIV incidence in Uganda and South Africa.” *Gates Grand Challenges*, Seattle, WA, Fall 2014. (Presented by coauthor Sarah T. Roberts).

“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

- Chair of the Grants and Collaboration Committee at the Chicago Center for HIV Elimination (CCHE), Department of Medicine (2017-2018).
- Organized CFAR Seminar at the University of Chicago (2016).

- Served on the search committees for hiring Research Data Analysts and Postdoctoral Scholars for the Chicago Center for HIV Elimination, Department of Medicine (2016, 2017).

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 (2011).
- Served as Student Representative on Quantitative Ecology and Resource Management's Curriculum Revision Committee, (2009-2010).
- Served on a panel organized by the Center for Instructional Development and Research, to discuss my experiences as an international TA (2009).

Service to Profession

Reviewer for *Acta Biotheoretica*, *AIDS and Behavior*, *BMC Infectious Diseases*, *Bulletin of Mathematical Biology*, *Clinical Infectious Diseases*, *Harm Reduction Journal*, *Journal of the Acquired Immune Deficiency Syndromes (AIDS)*, *Mathematical Biosciences*, *PLoS One*, *Proceedings of the National Academy of Sciences* (declined), *Journal of the Royal Society Interface*, *Scientific Reports*, *Theoretical Population Biology*.

Natural Languages

Native: Hindi, English
 Fluent: Marathi
 Beginner: Portuguese

Citizenship

Indian citizen
 United States permanent resident