

## Jessie K. Edwards

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ACADEMIC APPOINTMENTS	<b>Research Assistant Professor</b> Department of Epidemiology University of North Carolina at Chapel Hill  <b>Postdoctoral Research Associate</b> Department of Epidemiology University of North Carolina at Chapel Hill	2015 to present  2013 to 2015
EDUCATION	<b>PhD, Epidemiology</b> University of North Carolina at Chapel Hill  <b>MSPH, Epidemiology</b> University of North Carolina at Chapel Hill  <b>BS, International Affairs</b> Georgia Institute of Technology	2013  2010  2007
AWARDS	2018 Article of the Year American Journal of Epidemiology  Berton H. Kaplan Student Publication Award University of North Carolina at Chapel Hill  Sidney Kark Award for Distinguished Teaching Assistant University of North Carolina at Chapel Hill  Delta Omega Public Health Honor Society, Theta Chapter  Society for Epidemiologic Research Student Poster Award  Travel Award UNC Gillings School of Global Public Health  Graduate Merit Assistantship UNC Gillings School of Global Public Health  President's Undergraduate Research Award Georgia Institute of Technology  President's Scholarship Georgia Institute of Technology	2019  2013  2013  2013  2012  2010  2008–2009  2005–2007  2003–2007

- [1] **Edwards JK**, Htoo PT, Stürmer T. Keeping the demons at bay when handling time varying exposures: beyond avoiding immortal person time. *American Journal of Epidemiology*. 2019; *Accepted pending technical review*.
- [2] Lesko CR, **Edwards JK**, Moore RD, Lau B. Censoring for loss to follow-up in time-to-event analyses of composite outcomes or in the presence of competing risks. *American Journal of Epidemiology*. 2019; *In press*.
- [3] **Edwards JK**, Arimi P, Ssengooba F, Mulholland G, Markiewicz M, Bukusi EA, Orikiiriza J, Virkud A, Weir S. The HIV care continuum among resident and non-resident populations found in venues in East Africa cross-border areas. *Journal of the International AIDS Society*. 2019; *In press*.
- [4] Breskin A, Westreich D, Cole SR, **Edwards JK**. Using bounds to compare the strength of exchangeability assumptions for internal and external validity. *American Journal of Epidemiology*. 2019; *In press*.
- [5] Rudolph JE, Cole SR, **Edwards JK**, Whitsel EA, Serre ML, Richardson DB. Using Animations of Risk Functions to Visualize Trends in US All-Cause and Cause-Specific Mortality, 1968–2016. *American Journal of Public Health*. 2019; *In press*.
- [6] Verdery AM, Weir S, Reynolds Z, Mulholland GM, **Edwards JK**. Estimating Hidden Population Sizes with Venue Based Sampling: Extensions of the Generalized Network Scale-up Estimator. *Epidemiology*. 2019; *In press*.
- [7] Stoner MCD, Rucinski KB, **Edwards JK**, Selin A, Hughes JP, Wang J, Agyei Y, Gomez-Olive FX, Macphail C, Kahn K, Pettifor A. The relationship between school dropout and pregnancy among adolescent and young women in South Africa: A HPTN 068 analysis. *Health Behavior and Education*. 2019; *In press*.
- [8] Cole SR, Hudgens MG, **Edwards JK**, Brookhart MA, Richardson DB, Westreich D, Adimora A. Nonparametric bounds for the risk function. *American Journal of Epidemiology*. 2019; *In press*.
- [9] Horner MJ, Chasimpha S, Spoerri A, **Edwards JK**, Tweya H, Tembo P, Nkhambule F, Phiri EM, Miller WC, Cole SR, Olshan AF, Bohlius J, Malisita K, Phiri S, Dzamalala C, Gopal S. High Cancer Burden Among Antiretroviral Therapy Users in Malawi: a Record Linkage Study of Observational HIV Cohorts and Cancer Registry Data. *Clinical Infectious Diseases*. 2018; *In press*.
- [10] Datta A, Lin W, Rao A, Diouf D, Kouame A, **Edwards JK**, Bao L, Louis TA, Baral S. Bayesian estimation of MSM population in Côte d’Ivoire. *Statistics and Public Policy*. 2018; *In press*.
- [11] Lu H, Cole SR, Hall HI, Schisterman EF, Breger TL, **Edwards JK**, Westreich D. Generalizing the per-protocol treatment effect: The case of ACTG A5095. *Clinical Trials*. 2018; *In press*.
- [12] Singh K, Changier G, Lau B, **Edwards JK**, Moore RD, Lesko CR. Association of history of injection drug use with external cause-related mortality among persons linked to HIV care in an urban clinic, 2001-2015. *AIDS and Behavior*. 2018; *In press*.
- [13] Westreich D, **Edwards JK**, Lesko CR, Cole, SR, Stuart EA. Target validity and the hierarchy of study designs. *American Journal of Epidemiology*. 2018. *In press*.

- [14] Fatukasi TV, Edmonds A, Gustafson DR, Cole SR, **Edwards JK**, Bolivar H, Cohen M, Fischl MA, Gange S, Konkle-Parker D, Moran CA. Prevalence and 1-year incidence of frailty among women with and without HIV in the Women's Interagency HIV Study. *AIDS*. 2019 Feb 1;33(2):357-9.
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- [16] **Edwards JK**, Hileman S, Donastorg Y, Zadrozny S, Baral S, Hargreaves J, Fearon E, Zhao J, Datta A, Weir S. Estimating sizes of key populations at the national level: considerations for study design and analysis. *Epidemiology*. 2018; 29(6): 795-803
- [17] Rudolph JE, Cole SR, **Edwards JK**. Parametric assumptions equate to hidden observations: comparing the efficiency of nonparametric and parametric models for estimating time to AIDS or death in a cohort of HIV-positive women. *BMC Medical Research Methodology*. 2018; 18:142
- [18] **Edwards JK**, Cole SR, Moore RD, Mathews WC, Kitahata M, Eron JJ. Sensitivity analyses for misclassification of cause of death in the parametric g-formula. *American Journal of Epidemiology*. 2018; 8(1): 1808-1816
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- [20] Herce M, Miller W, Bula A, **Edwards JK**, Sapalalo P, Lancaster K, Mofolo I, Mendes Furtado M, Weir S. Achieving the first 90 for key populations in sub-Saharan Africa through venue-based outreach: Challenges and opportunities for HIV prevention based on PLACE study findings from Malawi and Angola. *Journal of the International Aids Society*. 2018; 21:e25132
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- [22] Keil AP and **Edwards JK**. You are smarter than you think: (super) machine learning in context. *European Journal of Epidemiology*. 2018; 33(5): 437-440
- [23] Bengtson AM, Pence BW, Eaton EF, **Edwards JK**, Eron JJ, Mathews WC, Mollan K, Moore RD, O'Cleirigh C, Geng E, Mugavero MJ. Patterns of Efavirenz Use as First Line Antiretroviral Therapy in the United States: 1999-2015. *Antiviral Therapy*. 2018; 23:363-372
- [24] **Edwards JK**, Cole SR, Hall HI, Mathews WC, Moore RD, Mugavero MJ, Eron JJ. Virologic suppression and CD4 cell count recovery after initiation of raltegravir or efavirenz-containing HIV treatment regimens. *AIDS*. 2018; 32(2): 261-266
- [25] Keil AP, Mooney S, Jonsson Funk M, Cole SR, **Edwards JK**, Westreich D. Resolving an apparent paradox in double-robust estimators. *American Journal of Epidemiology*. 2018; 187(4): 891-892

- [26] Rudolph JE, Cole SR, **Edwards JK**, Moore R, O’Cleirigh C, Mathews WC, Christopoulos K. At-risk alcohol use among HIV-positive patients and completion of patient-reported outcomes. *AIDS and Behavior*. 2018; 22(4): 1313-1322
- [27] Weir S, Baral SD, **Edwards JK**, Zadrozny S, Hargreaves J, Zhao J, Sabin K. HIV Surveillance of Key Populations: Opportunities for Enhanced Strategic Use of Surveys, Health Records, and Program Data. *JMIR Public Health and Surveillance*. 2018; 4(2): e28
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efavirenz as initial antiretroviral therapy and suicidal thoughts among HIV-infected adults in routine care. *JAIDS*. 2017; 76(4): 402-408

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- [42] Westreich D, **Edwards JK**, Lesko CR, Stuart E, Cole SR. Transportability of trial results using inverse odds of sampling weights. *American Journal of Epidemiology*. 2017; 186(8): 1010-1014
- [43] Lesko CR, Buchanan AL, Westreich D, **Edwards JK**, Hudgens MG, Cole SR. Generalizing study results: a potential outcomes perspective. *Epidemiology*. 2017; 28(4), 553-561
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- [66] **Edwards JK**, Cole SR, Troester MA, Richardson DB. Accounting for Misclassified Outcomes in Binary Regression Models Using Multiple Imputation With Internal Validation Data. *American Journal of Epidemiology*. 2013;177(9):904-912
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LETTERS AND  
BOOK CHAPTERS

- [1] Lesko CR, Buchanan, AL, Westreich D, **Edwards JK**, Hudgens MG, Cole SR. Re: Generalizing study results: a potential outcomes perspective. The authors respond. *Epidemiology*. 2018; 29(2), e14-e15
- [2] Cole SR, Chu H, Brookhart MA, **Edwards JK**. Re: Dogmatists cannot learn. The authors respond. *Epidemiology*. 2017; 28(6), e62-e63
- [3] Keil A, **Edwards JK**. Bias in environmental epidemiology. In: *Encyclopedia of Environmental Health*, 2e. 2017

- [1] *A hitchhikers guide to causal inference*, Causal Inference Research Group, University of North Carolina, Chapel Hill, 7 September 2018
- [2] *Causal inference across space and time*, Society for Epidemiologic Research Annual Meeting, Baltimore, MD, 23 June 2018
- [3] *An imputation approach to account for measurement error in marginal structural models*, International Biometric Society Eastern North American Regional Meeting, Atlanta, GA, 27 March 2018
- [4] *Integrating data from key population surveys into surveillance efforts*, Measurement and Surveillance of HIV Epidemics Scientific Symposium, Johannesburg, South Africa, 7 December 2017
- [5] *Estimating sizes of key populations as a missing data problem*, UNAIDS Reference Group Meeting, London, United Kingdom, 19 October 2017
- [6] *A randomized trial of data adaptive doubly robust estimators versus standard practice*, Society for Epidemiologic Research Annual Meeting, Seattle, WA, 22 June 2017
- [7] *A method to compare viral suppression over time in observational studies with competing events: Applied example to estimate the comparative effectiveness of raltegravir vs efavirenz*, International Workshop on HIV Observational Databases, Lisbon, Portugal, 31 March 2017
- [8] *A geographic approach to extrapolating characteristics of key populations*, Population Size Estimation Technical Consultation, CDC, Atlanta, GA, 31 January 2017
- [9] *Estimating the size, location and key characteristics of most-at-risk populations*, Measurement and Surveillance of HIV Epidemics Scientific Symposium, Tallinn, Estonia, 27 October 2016
- [10] *Disparities in the HIV care continuum in the Dominican Republic*, Social Epidemiology Seminar, UNC, Chapel Hill, NC, 12 October 2016
- [11] *Extrapolation of data from key population surveys and programs*, AIDS, Durban, South Africa, 18 July 2016
- [12] *Scaling up interventions on the HIV care continuum: a practical example of meeting in the middle*, Epidemiology Congress of the Americas, Miami, FL, 24 June 2016
- [13] *External validity and the transportability of internally valid effects*, Epidemiology Congress of the Americas, Miami, FL, 22 June 2016
- [14] *Measurement error and causal inference: Incorporating measurement error into the potential outcomes framework*, Workshop on Measurement Error and Complex Data, College Station, TX, 22 April 2016
- [15] *Estimating risk functions for cause-specific mortality when cause of death may be misclassified*, International Workshop on HIV Observational Databases, Budapest, Hungary, 8 April 2016
- [16] *Quantitative methods to extrapolate size estimates: a geographic approach*, Strategic information for key populations technical consultation, UNAIDS, Geneva, Switzerland, 9 March 2016



- [17] *Benefits of unique identifiers for studying the HIV care and treatment cascade*, Strategic information for key populations technical consultation, UNAIDS, Geneva, Switzerland, 8 March 2016
- [18] *Age at entry into care, timing of antiretroviral therapy initiation, and 10-year mortality among HIV-seropositive adults in the United States*, International Workshop on HIV Observational Databases, Catania, Sicily, 27 March 2015
- [19] *Missing data in epidemiologic analyses*, UNC Annual Epidemiologic Methods Workshop, 10 October 2014
- [20] *Estimating effects of interventions*, Society for Epidemiologic Research, Seattle, WA, 27 June 2014
- [21] *Loss to follow-up and mortality among US HIV-infected antiretroviral therapy initiators*, Society for Epidemiologic Research, Seattle, WA, 26 June 2014
- [22] *Missing data and causal inference*, Causal inference research group, University of North Carolina, Chapel Hill, 7 February 2014
- [23] *Incorporating retention in care into estimates from observational HIV cohort studies: implications for evaluation and inference*, Biostatistics seminar, University of California, Berkeley, School of Public Health, 13 November 2013
- [24] *Methods to account for misclassification of cause-specific mortality*, Society for Epidemiologic Research, Boston, MA, 21 June 2013
- [25] *Comparison of three causal models to control time-varying confounding in a cohort of bone marrow transplant recipients*, Causal inference research group, University of North Carolina, Chapel Hill, 7 September 2012

## TEACHING

### *University of North Carolina at Chapel Hill*

#### Instructor

Spring 2018–2019	Epidemiologic Analysis of Time-To-Event Data
Fall 2012	SAS Programming and Data Management

#### Guest lecturer

Spring 2012–2017	Epidemiologic Analysis of Time-To-Event Data
Fall 2015–2016	Fundamentals of Epidemiology
Fall 2013	Epidemiologic Analysis of Binary Data
Fall 2011	SAS Programming and Data Management

#### Teaching assistant

Spring 2012–2013	Epidemiologic Analysis of Time-To-Event Data
Spring 2011	Quantitative methods in Epidemiology
Fall 2009	Fundamentals of Epidemiology

### *Short courses and workshops*

January 2019: Co-instructor, Capture-Recapture Workshop, Raleigh, North Carolina

January 2016: Instructor, Priorities for local AIDS control efforts workshop, Cape Town, South Africa

## FUNDING

### *Pending*

NIH/NIAID R21 (PI: J. Edwards)

01/01/2019 – 12/31/2021 \$275,000

*Evaluation of intervention portfolios in HIV cohorts using new two-stage study designs*

The goal of this work is to develop and illustrate novel two-stage parametric g-computation methods to quantify impacts of comprehensive intervention portfolios in observational HIV cohorts when exposure to candidate interventions is incompletely measured. Results from this work will provide investigators with tools to leverage fragmented real world data to answer important public health care delivery questions among HIV-positive populations and guide clinical decision making.

NIH/NIGMS R01 (MPI: J. Edwards & J. Lessler)

01/01/2019 – 12/31/2021 \$2,500,000 (direct, all years)

*Algorithm Agnostic Integration of Mechanistic and Statistical Models for Disease Forecasting*

The purpose of the proposed project is to improve inference, forecasting and decision making in response to emerging infectious diseases by developing a framework to integrate mechanistic and statistical approaches to epidemic modeling and causal inference. Approaches developed will be validated using simulations and retrospective data and applied prospectively to reduce morbidity and mortality in emerging public health crises. Further, they will be incorporated into publicly available tools for use in epidemic response.

### *Current*

NIH/NIAID K01AI125087 (PI: J. Edwards)

12/15/2016 – 12/14/2021 \$658,028

*Comparative effectiveness of tailored HIV treatment plans and mortality*

The overall goal of this K01 application is to optimize clinical care decisions for people living with HIV. Specifically, this project will explore how antiretroviral therapy regimens affect cause-specific mortality and how treatment plans can be tailored or personalized based on patient characteristics to improve survival.

USAID AID-OAA-L-14-00004 (PI: J. Thomas)

*Monitoring and Evaluation to Assess and Use Results (MEASURE) Evaluation Phase IV Project*

- *Effect of mobility on treatment outcomes among mobile populations infected with HIV and TB in East Africa Cross-Border Regions*

(Activity Lead: J. Edwards)

01/01/2018 – 6/31/2019 \$1,000,000 (total)

To estimate the impact of mobility on TB and HIV treatment outcomes among mobile and vulnerable populations coinfecting with TB and HIV in East Africa cross border regions.

### *Completed*

UNC CFAR Developmental Award (PI: J. Edwards)

11/1/2015 – 10/31/2016 \$30,000

*Examining causes of death among patients with HIV in the United States*

To present critical information on trends in causes of death among patients with HIV in the United States.

NIH/NIAID R01AI100654 (PI: S. Cole)

03/19/2013 – 02/28/2017 \$1,000,000 (direct, all years)

*Structural models for treatment and exposure effects in clinical HIV cohorts*

The overall goal of this proposed research is to develop, apply and disseminate advanced, yet practical quantitative methods to enable accurate inference from complex longitudinal data on individuals infected with HIV.

NIH/NIAID DP2HD084070 (PI: D. Westreich)

09/15/2014 – 08/31/2019 \$1,500,000 (direct, all years)

*From patients to policy: innovative epidemiology for implementation science*

To innovate and extend epidemiologic methods to create usable tools for translating scientific results of typical studies into public health policy.

USAID AID-OAA-L-14-00004 (PI: J. Thomas)

07/01/2014 – 06/28/2017 \$12,102,280 (total)

*Monitoring and Evaluation to Assess and Use Results (MEASURE) Evaluation Phase IV Project*

- *Impact evaluation of the Cross Border Health Integrated Partnership Project*

(Activity Lead: J. Edwards)

06/01/2015 – 12/31/2016 \$1,871,000 (total)

To estimate the impact of the cross border health integrated partnership project, a multifaceted structural intervention implemented in 10 cross border sites in 5 countries in East Africa

- *Phylogenetic analysis of HIV infections in cross border sites in East Africa*

(Activity Lead: J. Edwards)

08/01/2016 – 05/01/2017 \$790,000 (total)

To identify and describe HIV transmission clusters occurring among key populations in cross border sites in East Africa and to describe patterns of resistance to antiretroviral medications in these populations.

- *Estimation of the sizes of key populations in the Dominican Republic*

(Activity Lead: S. Hileman)

08/01/2016 – 12/31/2017

To estimate the sizes of key populations in the Dominican Republic, including female sex workers, men who have sex with men, and transgender people.

Gates Foundation PHSEZE81 (PI: S. Weir)

01/01/15 – 06/30/17 \$711,007 (total, current year)

*MESH Consortium: Key Populations Working Group*

The unique contribution of the consortium will be to maximize the potential of data routinely collected through HIV surveillance and service delivery platforms to provide timely information on key outcomes in relevant populations at a level appropriate to support resource allocation and realignment.

FHI 100303/W0936 (PI: S. Weir)

07/03/2014 – 03/10/2017 \$812,030 (total, current year)

*Linkages across the continuum of HIV services for key populations affected by HIV*

- *Improving estimates related to the HIV care continuum in the Dominican Republic*

(Activity Lead: J. Edwards)

10/01/2015 – 12/31/2016 \$300,000 (total)

To improve estimates of virologic suppression for sex workers and men who have sex with men in care for HIV in the Dominican Republic

New Aid Foundation Grant for the study of neglected tropical diseases. (PI: J .Edwards)  
7/1/2010 - 7/1/2011 \$4000 (total)

*t. cruzi* infection and cognitive development in primary school children in rural Nicaragua

To provide information to local public health leaders on the prevalence of Chagas disease among children in rural Nicaragua and to assess the extent to which Chagas disease affects cognitive development.

#### ACADEMIC SERVICE

Coordinator, Causal inference research group, University of North Carolina, Chapel Hill, 2013–2015

Coordinator, Infectious disease epidemiology journal club, University of North Carolina, Chapel Hill, 2009–2010

Associate editor for *BMC Infectious Diseases*

Reviewer for

*American Journal of Epidemiology*

*Epidemiology*

*Biometrics*

*Statistics in Medicine*

*Annals of Applied Statistics*

*Journal of Causal Inference*

*Epidemiologic Methods*

*Journal of Acquired Immune Deficiency Syndromes*

*Pharmacoepidemiology and Drug Safety*

*Journal of Clinical Epidemiology*

*Annals of Epidemiology*

*Occupational and Environmental Medicine*

*Antiviral Therapy*

*Computational and Mathematical Methods in Medicine*

*Lifetime Data Analysis*

*Plos ONE*

*Scientific Reports*

*Environmental Health Perspectives*

*Paediatric and Perinatal Epidemiology*

Society for Epidemiologic Research:

*Member*, 2009–Present.

*Publication Committee*, 2015–present

*Symposium session chair*

2019 - “The elephant in the room: Causal inference in the face of competing events” (accepted)

2018 - “Epidemiologic research with incomplete and imperfect data: making progress in the face of uncertainty”

2017 - “Putting the ‘Implementation’ back into Implementation Science: Moving beyond the ‘Implications’ of Epidemiologic Research”

2016 - “Meeting in the middle: systems science and causal inference”

2015 - "Bayesian methods and causal inference"  
2014 - "Selection bias due to loss: An old and often ignored problem revisited"  
2013 - "Recording nature's answers: Measurement bias in epidemiology"

Sidney Kark Distinguished Teaching Assistant Award Committee, 2015

Masters thesis committees

Grace Mulholland, Epidemiology, UNC, 2016  
Jackie Rudolph, Epidemiology, UNC, 2016

Doctoral thesis committees

Completed

Marie Stoner, Epidemiology, UNC, 2017: "The influence of school attendance on partner selection and sexually transmitted infections among young South African women"  
Bradley Saul, Biostatistics, UNC, 2017: "Applications of and Tools for Causal Inference"  
Marie-Josephe Horner, Epidemiology, UNC, 2018: "Cancer Burden Among HIV-Infected Individuals On Antiretroviral Therapy In Malawi: A Record Linkage Study"  
Terra Fatuski, Epidemiology, UNC, 2018: "Frailty Differences between Women Living with HIV infection and Women without HIV infection: Components, Trends in Prevalence and Incidence, and Risk Factors"

In progress

Lisa Albert, Epidemiology, UNC  
Jackie Rudolph, Epidemiology, UNC  
Grace Mulholland, Epidemiology, UNC  
Tiffany Breger, Epidemiology, UNC  
Michael Webster-Clark, Epidemiology, UNC  
Molly Deutsch-Feldman, Epidemiology, UNC  
Nicholas Brazeau, Epidemiology, UNC  
Rebecca Stebbins, Epidemiology, UNC