<u>CURRICULUM VITAE</u>

Emily Kate Roberts
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II. EDUCATIONAL AND PROFESSIONAL HISTORY

A. Education

Institution	Field of Study	Degree Obtained	Degree Date
Coe College Cedar Rapids, Iowa Summa Cum Laude Honors thesis "Roommate Matching by Design" Advisor: Dr. Jonathan White	Mathematics, Psychology	BA	2016
University of Michigan Ann Arbor, Michigan	Biostatistics	MS	2018
University of Michigan Ann Arbor, Michigan Dissertation "Causal Inference Methods and Intermediate Endpoints in Randomized Clinical Trials" Advisors: Drs. Jeremy Taylor and Michael Elliott	Biostatistics	PhD	2022

B. Academic Positions

Title	Dates of Service	Location
Assistant Professor	2022-Present	Department of Biostatistics University of Iowa, College of Public Health, Iowa City, Iowa

Previous Employment and Experiences
Pre-doctoral Fellow and Graduate Student Research Assistant
University of Michigan, Ann Arbor, Michigan 2016-2022

National Institutes of Health Cancer Training in Biostatistics Grant Trainee
University of Michigan, Ann Arbor, Michigan 2016-2017

Summer Trainee Harvard Summer Program in Biostatistics and Computational Biology*,* Boston, Massachusetts 2015

Summer Trainee Columbia Summer Institute in Biostatistics
New York City, New York, 2014

Summer Trainee Coe College Research in Mathematics Program
Cedar Rapids, Iowa 2013

C. Honors, Awards, Recognitions, Outstanding Achievements

Phi Beta Kappa, Mortar Board, Psi Chi, Alpha Lambda Delta, Phi Kappa Phi
Dean's List Coe College 2012-2016
Coe College Hunt Award in Mathematics 2015
Barry Goldwater Honorable Mention 2015
R.J. McElroy Fellowship 2016
University of Michigan School of Public Health Regents' Fellowship Award 2016
National Science Foundation Graduate Research Fellowship Program 2016-2021
Rackham Graduate Travel Grant 2018, 2019, 2021, 2022
Michigan Institute of Data Science Travel Grant 2019
SAMSI Travel Grant 2019
School of Public Health Unsung Hero Award 2020
Telomere Network Analysis Award and Travel Grant 2020, 2021
University of Michigan Rackham Predoctoral Fellowship 2021-2022
University of Michigan Department of Biostatistics Excellence in Research Honorable Mention 2021
Women in Statistics and Data Science 2022 Travel Grant
American Statistical Association Lifetime Data Science 2023 Paper Award
Junior Faculty Opportunity Award, University of Iowa 2023

II. TEACHING

A. Experiences

University of Iowa Courses Primary Instruction
BIOS 6550 Causal Inference, Spring 2023
BIOS 6310 Introductory Longitudinal Data Analysis, Fall 2023

University of Michigan Biostatistics Tutor for Stochastic Processes 2019
Girls Who Code Data Science Summer Experience Facilitator/Teacher
University of Michigan, Ann Arbor chapter 2018-2019
Mathematics Help, Coe College Mathematics Department 2015-2016
SAS Teaching Assistant, Coe College Psychology Department 2015-2016

Kids on Course Elementary Math Tutor, Harrison Elementary 2014-2016

III. SCHOLARSHIP/PROFESSIONAL PRODUCTIVITY

A. Publications or creative works – Peer Reviewed Manuscripts

[1] **Roberts, E.** (2015). Mission of Hope Action Research: Analyzing and Understanding Local Homeless. *Undergraduate Journal of Service Learning and Community-Based Research*.

[2] Muller, K.E., **Roberts, E.,** Zhao, L., & Jorns, J. M. (2017). Isolated Atypical Lobular Hyperplasia Diagnosed on Breast Biopsy: Low Upgrade Rate on Subsequent Excision with Long-Term Follow-up. *Archives of pathology & laboratory medicine*.

[3] East, E.G., Gast, K.M., Kuzon, W.M., **Roberts, E.,** Zhao, L., & Jorns, J.M. (2017). Clinicopathologic Findings in Female-to-Male Gender-Affirming Breast Surgery. *Histopathology*.

[4] Kahn, J.M., Cole, P.D., Blonquist, T. M., **et al.** (2018). An investigation of toxicities and survival in Hispanic children and adolescents with ALL: Results from the Dana-Farber Cancer Institute ALL Consortium protocol 05-001. *Pediatric blood & cancer*.

[5] East, E., Gabbeart, M., **Roberts, E.,** Zhao, L. & Jorns, J. (2018). A Rapid Triage Protocol to Optimize Cold Ischemic Time for Breast Resection Specimens. *Annals of Diagnostic Pathology.*

[6] Geer, M.*, **Roberts, E.*,** … [17 authors] Phillips T. (2019). Multicentre retrospective study of intravascular large B-cell lymphoma treated at academic institutions within the United States. *British journal of haematology*. *equal contribution*

[7] East, E., **Roberts, E.,** Zhao, L. & Jorns, J. (2019). Repeat Biomarker Status in Breast Resection Specimens with Controlled Cold Ischemic Time. *American Journal of Clinical Pathology.*

[8] Siontis, B., McHugh, J., **Roberts, E.,** Zhao, L., Thomas, D., Baker, L., Owen, D., Biermann, J.S., Schuetze, S.M., Chugh, R. (2019). Radiation-Associated Versus Sporadic Osteosarcoma: A Single-Institution Experience. *Frontiers in Oncology.*

[9] Hanks, J.E., Kovatch, K.J., Ali, S.A., **Roberts, E.,** … [6 authors] McLean, S.A. (2020). Sentinel Lymph Node Biopsy in Head & Neck Melanoma: Long-Term Outcomes, Prognostic Value, & Accuracy. *Otolaryngology–Head and Neck Surgery*.

[10] Needham, B.L., Salerno, S., **Roberts, E.,** Boss, J., Allgood, K. L., & Mukherjee, B. (2020). Do Black/White Differences in Telomere Length Depend on Socioeconomic Status? *Biodemography and Social Biology.*

[11] **Roberts, E.** & Zhao, L. (2021) A Bayesian Mixture Model to Estimate Changepoints in Ordinal Predictors. *International Journal of Biostatistics.*

[12] Sun, Y., Patel, A., SantaLucia, J., **Roberts, E.,** Zhao, L., Kaye, K., Rao, K., & Bachman, M.A. (2021). Measurement of *Klebsiella* Intestinal Colonization Density to Assess Infection Risk. *mSphere.*

[13] **Roberts, E.,** Elliott, M.R., & Taylor, J.M.G. (2021). Incorporating Baseline Covariates to Validate Surrogate Endpoints with a Constant Biomarker under Control Arm. *Statistics in Medicine.*

[14] Vornhagen, J., **Roberts, E.K.,** … [13 authors] Bachman, M.A. (2022) Comparative Genomics Reveals Plasmid-Encoded Genes Associated with *Klebsiella* Infection in Colonized Patients. *Nature Communications.*

[15] **Roberts, E.K.,** Elliott, M.R., & Taylor, J.M.G. (2022). Solutions for Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy. *Biometrics.*

[16] **Roberts, E.K.,** Gu, T., Mukherjee, B., Fristche, L. (2022). Estimating COVID-19 Vaccination Effectiveness Using Electronic Health Records of an Academic Medical Center in Michigan. *American Journal of Preventative Medicine (FOCUS).*

[17] **Roberts, E.K.,** Boss, J., Mukherjee, B., Salerno, S., Zota, A., & Needham, B. L. (2022). Persistent organic pollutant exposure contributes to Black/White differences in leukocyte telomere length in the National Health and Nutrition Examination Survey. *Scientific Reports.*

[18] **Roberts, E. K.,** Elliott, M. R., & Taylor, J. M. (2023). Surrogacy Validation for Time-to-Event Outcomes with Illness-Death Frailty Models. *Biometrical Journal (accepted).*

Other Published Abstracts
[1] Kahn, J., Barrera, S., Davila, R., **Roberts, E**., … [13 authors] Kelly, K.M. (2015). Higher Incidence of Treatment-Related Toxicities in Non-Hispanic Patients Undergoing Therapy for Newly Diagnosed Pediatric Acute Lymphoblastic Leukemia on Dana-Farber Cancer Institute ALL Consortium Protocol 05-001. *Blood*.

[2] Siontis, E., **Roberts, E.**, … [6 authors] Chugh, R. (2017). Radiation-Associated Versus Sporadic Osteosarcoma: A Single-Institution Experience. *Journal of Clinical Oncology*.

[3] East, E.G., Gast, K., Kuzon, W., **Roberts, E.,** Zhao, L., & Jorns, J.M. (2017). Clinicopathologic Findings in Female to Male Gender Reassignment Surgery. *Laboratory Investigation.*

[4] Geer, M., … [13 authors] **Roberts, E.,** Boonstra, P.S., Devata, S., Wilcox, R.A., Kaminski, M.S., Phillips, T.J. (2017). Multicenter Retrospective Study of Features and Outcomes of Patients with Intravascular DLBCL Treated at Academic Institutions within the United States. *Blood*.

R Packages
mvnPS, IDSurrogacy, longSurrogate publicly available on github

Rshiny Applications
Tool for evaluating life expectancy after breast cancer diagnosis
https://emilyroberts.shinyapps.io/bc_lifeexpectancy/

Tool for assessing causal effect predictiveness plots for illness-death models for surrogacy validation and sensitivity analyses
https://emilyroberts.shinyapps.io/id_cep_parameters/

Tool to determine value of intermediate outcome (biochemical recurrence) as a marker for futility in a prostate clinical trial https://emilyroberts.shinyapps.io/bcr_futility_rules_simulations/

Tool to examine time-varying hazards for a pan-cancer approach within SEER data https://emilyroberts.shinyapps.io/pancancer/

B.   Areas of Research Interest and Current Projects

Causal inference, clinical trial design, Bayesian methods, longitudinal data, survival analysis, oncology, biomarkers

C.   Funding

National Institute of Neurological Disorders and Stroke (NINDS) NeuroNEXT. U01 NS077352-11. PI: Coffey, C. 25% 09/2022-Present. Role: Co-Investigator.

University of Iowa Center for Public Health Statistics. PI: Oleson, J. 10% 10/2022-Present. Role: Co-Investigator.

Completed
NIH U24 AG066528-01: Telomere Research Network, *Telomere Research Network Analysis Award,* 8/14/20-12/1/21, $4,000, (PI: Stacy Drury). Role: Co-PI on project exploring mediation of the Black/White telomere length difference by persistent organic pollutant exposure.

D. Presentations

1. Invited lectures

Surrogacy Validation with Illness-Death Models and Principal Stratification Methods
Oral Presentation at WNAR June 2023

Causal Inference and Surrogacy Validation with Illness-Death Models
Oral Presentation at ICSA June 2023

Investigating Surrogate Endpoints for Diabetes Clinical Trials
Oral Seminar Presentation for University of Iowa Frontiers in Obesity, Diabetes, and Metabolism Seminar February 2023

Causal Inference and Surrogate Endpoint Validation Using Principal Stratification Methods
Oral Seminar Presentation for University of Iowa Department of Statistics Seminar February 2023

Causal Inference Methods to Validate Surrogate Endpoints for Prostate Cancer Trials
Oral Seminar Presentation for Joint Mathematics Meetings January 2023

Surrogacy Validation Using Illness-Death Models and Principal Stratification Methods
Oral Seminar Presentation for University of Pennsylvania Center for Causal Inference Seminar December 2022

Surrogacy Validation for Time-to-Event Outcomes in Prostate Cancer with Illness-Death Models
Oral Seminar Presentation for University of Michigan Biostatistics in Cancer Seminar October 2022

Causal Inference Methods to Validate Surrogate Endpoints with Time-to-Event Data
Oral Presentation at Banff International Research workshop: Statistical Challenges in the Identification, Validation, & Use of Surrogate Markers August 2022

Causal Inference Methods to Validate Surrogate Endpoints in Clinical Trials

Oral Presentation at Joint Mathematics Meetings April 2022

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Seminar Presentation for University of Minnesota January 2022

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Seminar Presentation for University of Iowa January 2022

Adapting Causal Ideas from Surrogacy Validation of Intermediate Endpoints to Futility Analysis in Clinical Trials
Oral Seminar Presentation for St. Jude Children's Hospital January 2022

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Seminar Presentation for Vanderbilt University December 2021

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Seminar Presentation for St. Jude Children's Hospital November 2021

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Seminar Presentation for University of Michigan November 2021

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Seminar Presentation for FDA October 2021

Exposure to Carcinogens and Racial Differences in Leukocyte Telomere Length: Mediation Analysis of Race and Environmental Exposures
Oral Presentation at Telomere Research Network Conference December 2020

Incorporating Subgroups in a Surrogate Endpoint Setting
Oral Presentation at ENAR March 2020

2. Conference presentations/posters
Surrogate Validation for Time-to-Event Outcomes with Illness Death Frailty Models
Oral Presentation ENAR March 2023

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Presentation Women in Statistics and Data Science October 2022

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Oral Presentation Joint Statistical Meetings August 2022

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy
Speed Poster Presentation ACTStat Annual Meeting August 2022

Surrogacy Validation with Longitudinal Outcomes for a Gene Therapy

Poster Presentation STAT4Onc May 2022 *2nd Place Poster Prize*

Evaluating Intermediate Clinical Endpoints for Futility Analysis in Clinical Trials
Poster Presentation at Society for Clinical Trials May 2022, *Best Poster Award*

Mediation Analysis of Race and Environmental Exposures on Telomere Length using Data from the National Health and Nutrition Examination Survey (1999-2002)
Poster Presentation at Telomere Research Network Conference December 2021

Incorporating Longitudinal Outcomes and Baseline Covariates to Validate Surrogate Endpoints
Poster Presentation at Biopharmaceutical Workshop September 2021

Validating Surrogate Endpoints with Longitudinal Outcomes
Speed Talk at Joint Statistical Meetings August 2021

Incorporating Baseline Covariates to Validate Surrogate Endpoints with a Constant Biomarker under Control Arm
Oral Presentation at International Society for Clinical Biostatistics Conference July 2021

Incorporating Baseline Covariates to Validate Surrogate Endpoints with a Constant Biomarker under Control Arm
Oral Presentation at Society for Clinical Trials Annual Conference May 2021

Incorporating Baseline Covariates to Validate Surrogate Endpoints with a Constant Biomarker under Control Arm
Oral Presentation at ENAR March 2021

Exposure to carcinogens and racial differences in leukocyte telomere length: Mediation analysis of race and environmental exposures
Oral Presentation at MIDAS Data for Public Good Symposium February 2021

Validating Surrogate Endpoints with Longitudinal Outcomes
Sped Oral and Poster Presentation at Michigan Student Symposium for Interdisciplinary Statistics Symposium February 2021*: "Best Speed Oral Presentation" Presentation/Poster Award*

Validating Surrogate Endpoints with Longitudinal Outcomes
Poster Presentation at MIDAS Annual Symposium November 2020

Incorporating Subgroups in a Surrogate Endpoint Setting
Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS) Annual Symposium February 2020: "Best Speed Oral Presentation" Presentation/Poster Award

Incorporating Subgroups in a Surrogate Endpoint Setting
Poster Presentation at SAMSI Causal Inference Workshop December 2019

Incorporating Subgroups in a Surrogate Endpoint Setting
Poster Presentation at Michigan Institute of Data Science Symposium November 2019: *"Most Likely to Make an Impact in the Field" Award*

Incorporating Subgroups in a Surrogate Endpoint Setting
Poster Presentation at JSM August 2019

Incorporating Subgroups in a Surrogate Endpoint Setting
Poster Presentation at Michigan Rogel Cancer Center Spring Symposium June 2019

A Bayesian Mixture Model to Estimate the Effect of an Ordinal Predictor
Poster Presentation at ENAR March 2019

A Bayesian Mixture Model to Estimate the Effect of an Ordinal Predictor
Poster Presentation at Michigan Student Symposium for Interdisciplinary Statistics Symposium March 2019

Association of Telomere Length and Race: SES as a Potential Effect Modifier
Poster Presentation at MIDAS Data for Public Good Symposium February 2019

Differential Outcomes by SES in Children Undergoing Treatment for Acute Lymphoblastic Leukemia
Oral Presentation at Nebraska Conference for Undergraduate Women in Mathematics 2016

Roommate Matching by Design: A Computational Approach and Analysis
Oral Presentation at Coe College Research Symposium 2016

Differential Outcomes by SES in Children Undergoing Treatment for Acute Lymphoblastic Leukemia
Oral Presentation at Coe College Math Department Colloquium 2015

Differential Outcomes by SES in Children Undergoing Treatment for Acute Lymphoblastic Leukemia
Oral Presentation at Rice University Gulf Coast Undergraduate Research Symposium 2015

Differential Outcomes by SES in Children Undergoing Treatment for Acute Lymphoblastic Leukemia
Oral Presentation at Harvard Pipeline to Biostatistics 2015

Evaluation of the CARING Preschool Program
Oral Presentation at Coe College Research Symposium 2015

Mission of Hope Action Research
Oral Presentation at Coe College Research Symposium 2015

Roommate Matching by Design: A Computational Approach and Analysis
Poster Presentation at Coe College Research Symposium 2014

Roommate Matching by Design: A Computational Approach and Analysis
Oral Presentation at Coe College Psychology Symposium 2014

Evaluation of the CARING Preschool Program
Oral Presentation at Coe College Math Department Colloquium 2014

Evaluation of the CARING Preschool Program
Poster Presentation at Columbia University 2014

IV.   SERVICE

1. Memberships in Professional Organizations

American Statistical Association, ENAR, Society for Clinical Trials, Caucus for Women in Statistics

2. Panels and Service

Panelist for Interested and Admitted Student Days, Big Data Summer Institute, and Fellowship Funding Seminars University of Michigan 2017-2022
Panelist for Coe College Women in STEM Seminar February 2022
Chair for Alumni Career Panel for University of Michigan Biostatistics 70+ Anniversary Celebration 2022
Chair and Panelist for BIRS-CMO Surrogate Markers Workshop on Assumptions, Sensitivity, and Robustness August 2022
Coe College Panel Session on Grad School Application Season October 2022
Joint Mathematics Meetings Math Alliance Panel Session January 2023

3. Referee Manuscripts/Journal Reviews

PLOS-ONE (2018)
The Lancet Psychiatry (2020, 2021, 2022, 2023)
EClinicalMedicine – The Lancet (2020, 2021, 2022, 2023)
Undergraduate Journal of Public Health (2020, 2021)
Biostatistics (2022, 2023)
Statistics in Medicine (2022, 2023)
Biometrics (2022)

JAIMA Open (2022)
Communications in Statistics – Case Studies and Data Analysis (2022, 2023)
Journal of Clinical Medicine (2022)
International Journal of Biomathematics (2022)
The American Statistician (2022)
Environmental Research (2022)
Annals of Applied Statistics (2023)
Health Services and Outcomes Research Methodology (2023)

4. Referee Grant Submissions

Alzheimer's Association Research Grant (2023)

5. Committees

University of Iowa Biostatistics Admissions Committee 2022-Present
University of Iowa Ladies of UI Biostat Mentor 2022-Present
ACTSTAT Conference Organizing Committee 2022-Present
ACTSTAT Student Award Judge 2023
ENAR Society's Regional Advisory Board and Poster Judge 2023
Iowa ASA Committee – Chapter Representative 2023
University of Iowa Biostatistics Dissertation Committees (4)