

Institution Address

NCI Shady Grove
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Education

PhD, Statistics, McGill University 2010–2015
 Thesis: Risk Set Sampling in Left-Truncated Survival Data
 Supervisor: Dr. David Wolfson

**Bachelor of Science with First Class Honours,
 Probability and Statistics**, McGill University 2007–2010

Research Experience & Employment History

Mathematical Statistician 2019–PRES.
 Biostatistics Branch
 Biometric Research Program
 Division of Cancer Treatment and Diagnosis (DCTD)
 National Cancer Institute (NCI)
 National Institutes of Health (NIH)

Postdoctoral Fellow 2015–2019
 Biostatistics Branch
 Division of Cancer Epidemiology and Genetics (DCEG)
 National Cancer Institute (NCI)
 National Institutes of Health (NIH)
 Primary Mentor: Dr. Philip Rosenberg

PhD Student, McGill University Dept. of Mathematics and Statistics 2010–2015

Undergraduate Research Assistant, McGill University 2009, 2010

Undergraduate Research Assistant, SUNY Potsdam/Clarkson University Research Experience for Undergraduates (REU) 2008

Peer-Reviewed Publications

† denotes equal contribution.

Best AF, Bowman M, Li J, Mishkin GE, Denicoff A, Shekfeh M, Rubinstein L, Warner JL, Rini B, Korde LA. COVID-19 severity by vaccination status in the NCI COVID-19 and Cancer Patients Study (NCCAPS), *Journal of the National Cancer Institute*, 2023. 115(5): 597-600.
 PMID: 36702472

Korde LA, **Best AF**. Response to Song, *Journal of the National Cancer Institute*, 2023. 115(6): 768.
 PMID: 36975602

Mpody C, **Best AF**, Lee CN, Stahl DL, Raman VT, Urman RD, Tobias JD, Nafiu OO. Current trends in mortality attributable to racial or ethnic disparities in post-surgical population in the United States: A population-based study, *Annals of Surgery Open*, 2023. 4(4): e342.
PMID: 38144482

Rosenberg PS, Filho AM, Elrod J, Arsham A, **Best AF**, Chernyavskiy P. Smoothing Lexis diagrams using kernel functions: a contemporary approach, *Statistical Methods in Medical Research*, 2023. 32(9): 1799-1801.
PMID: 37621099

Litton JK, Regan MM, Pusztai L, Rugo HS, Rolaney SM, Garrett-Mayer E, Amiri-Kordestani L, Basho RK, **Best AF**, Boileau J-F, Denkert C, Foster JC, Harbeck N, Jacene HA, King TA, Mason G, O'Sullivan CC, Prowell TM, Richardson AL, Sepulveda KA, Smith ML, Tjoe JA, Turashvili G, Woodward WA, Butler LP, Schwartz EI, Korde LA. Standardized definitions for efficacy end points in neoadjuvant breast cancer clinical trials: NeoSTEEP, *Journal of Clinical Oncology*, 2023. 41(27): 4433-4442.
PMID: 37433103

Altinas B, Giri N, McReynolds LJ, **Best A**, Alter BP. Genotype-phenotype and outcome associations in patients with Fanconi anemia: the National Cancer Institute cohort, *Haematologica*, 2023. 108(1): 69-82.
PMID: 35417938

McVittie JH, **Best AF**, Wolfson DB, Stephens DA, Wolfson J, Buckeridge DL, Gadalla SM. Survival modelling for data from combined cohorts: Opening the door to meta survival analyses and survival analysis using electronic health records, *International Statistical Review*, 2022.
DOI: 10.1111/insr.125109

Best AF, Malinovsky Y, Albert PS. The efficient design of nested group testing algorithms for disease identification in clustered data, *Journal of Applied Statistics*, 2022.
DOI: 10.1080/02664763.2022.2071419

Mishkin GE, Denicoff AM, **Best AF**, Little RF. Update on enrollment of older adults onto National Cancer Institute National Clinical Trials Network trials, *J Natl Cancer Inst Monogr.*, 2022(60):111-116.
PMID: 36519819

Sankaran H, Finnigan SR, McShane LM, **Best AF**, Seibel NL. Enrollment of adolescent and young adult patients newly diagnosed with cancer in NCI CTEP-sponsored clinical trials before and after launch of the NCI National Clinical Trials Network, *Cancer*, 2022. 128(21): 3843-3849.
PMID: 36089859

de Andrade KC, Khincha PP, Hatton JN, Frone MN, Wegman-ostrosky T, Mai PL, **Best AF**, Savage SA. Cancer incidence, patterns, and genotype-phenotype associations in individuals with pathogenic germline TP53 variants: an observational study, *Lancet Oncology*, 2021. 22(12): 1787-1798.
PMID: 34780712

Bhala S, Stewart DR, Kennerley V, Petkov VI, Rosenberg PS, **Best AF**. Incidence of benign meningiomas in the United States: current and future trends, *JNCI Cancer Spectrum*, 2021. 5(3): pkab035.

PMID: 34250440

Oba L, **Best AF**, Mai PL, Achatz MI, Savage SA, Khincha PP. Utility of interim blood tests for cancer screening in Li-Fraumeni syndrome, *Familial Cancer*, 2022. 21(3): 333-336.

PMID: 34076823

Tolaney SM, Garrett-Mayer E, White J, Blinder VS, Foster JC, Amiri-Kordestani L, Hwang ES, Bliss JM, Rakovitch E, Perlmutter J, Spears PA, Frank E, Tung NM, Elias AD, Cameron D, Denduluri N, **Best AF**, DiLeo A, Baizer L, Butler LP, Schwartz E, Winer EP, Korde LA. Updated standardized definitions for efficacy end points (STEEP) in adjuvant breast cancer clinical trials: STEEP Version 2.0, *Journal of Clinical Oncology*, 2021. 39(24): 2720-2731.

PMID: 34003702

Parcha V, Kalra R, **Best AF**, Patel N, Suri SS, Wang TJ, Arora G, Arora P. Geographic inequalities in cardiovascular mortality in the United States: 1999 to 2018, *Mayo Clinic Proceedings*, 2021. 96(5): 1218-1228.

PMID: 33840523

Mirshahi UL, Kim J, **Best AF**, Chen ZE, Hu Y, Haley JS, Golden A, Stahl R, Manickam K, Carr AG, Harney LA, Field A, Hatton J, Schultz KAP, Bauer AJ, Hill DA, Rosenberg PS, Murray MF, Carey DJ, Stewart DR. A genome-first approach to characterize DICER1 pathogenic variant prevalence, penetrance, and phenotype, *JAMA Network Open*, 2021. 4(2): e210112.

PMID: 33630087

Alter BP, **Best AF**. Frequency of heterozygous germline pathogenic variants in genes for Fanconi anemia in patients with non-BRCA1/BRCA2 breast cancer: a meta-analysis, *Breast Cancer Research and Treatment*, 2020. 182: 465-476.

PMID: 32488392

Spillane S, Shiels MS, **Best AF**, Haozous EA, Withrow DR, Chen Y, Berrington de González A, Freedman ND. Trends in alcohol-induced deaths in the United States 2000-2016, *JAMA Network Open*, 2020. 3 (2): e1921451.

PMID: 32083687

Vasta LM, Nichols A, Harney LA, **Best AF**, Carr AG, Harris AK, Miettinen M, Schultz KAP, Kim HJ, Stewart DR. Nasal chondromesenchymal hamartomas in a cohort with a pathogenic germline variation in *DICER1*. *Rhinology Online*. 3 (3): 15-24.

PMID: 34164613

Wang Y, **Best A**, Fernández-Torrón R, Alsaggaf R, Garcia-Puga M, Dagnall CL, Hicks B, Thompson M, Fernandez AM, Ijurco MZ, Greene MH, Lopez de Munain A, Gadalla SM. Leukocyte telomere length in patients with myotonic dystrophy type I. *Annals of Clinical and Translational Neurology*, 2020. 7 (1): 126-131.

PMID: 31808320

Best AF, Tucker MA, Frone MN, Greene MH, Peters JA, Katki HA. A pragmatic testing-eligibility framework for population mutation-screening: The example of *BRCA1/2*. *Cancer Epidemiology, Biomarkers & Prevention*, 2019. 28(2): 293–302.
PMID: 30692095

Wolfson DB, **Best AF**, Addona V, Wolfson J, Gadalla S. Combining Prevalent and Incident Cohort Data to Estimate the Survivor Function: Application to Myotonic Dystrophy. *Statistical Methods in Medical Research*, 2019. 28(10–11): 3333–3345.
PMID: 30293502

Bhala S, **Best AF**, Giri N, Alter BP, Pao M, Gropman A, Baker EH, Savage SA. Central nervous system manifestations in patients with telomere biology disorders. *Neurology: Genetics*, 2019. 5 (6).
PMID: 31872047

Tota J, **Best AF**, Zubsteg ZS, Gillison ML, Rosenberg PS, Chaturvedi A. Evolution of the oropharynx cancer epidemic in the united states: moderation of increasing incidence in younger individuals and shift in the burden to older individuals. *Journal of Clinical Oncology*, 2019. 37(18): 1538–1546.
PMID: 31026209

Khincha PP, **Best AF**, Fraumeni JF Jr., Loud JT, Savage SA, Achatz MI. Reproductive factors associated with breast cancer risk in Li-Fraumeni syndrome. *European Journal of Cancer*, 2019. 116: 199–206.
PMID: 31212162

Stewart DR, **Best AF**, Williams GM, Hanley LA, Carr AG, Harris AK, Kratz CP, Dehner LP, Messinger YH, Rosenberg PS, Hill DA, Schultz KAP. Neoplasm risk among individuals with a pathogenic germline variant in *DICER1*. *Journal of Clinical Oncology*, 2019. 37(8): 668–676.
PMID: 30715996

Shiels MS, Berrington de Gonzalez A, **Best AF**, Chen Y, Chernyavskiy P, Hartge P, Khan S, Perez-Stable EJ, Rodriguez EJ, Spillane S, Thomas DA, Withrow D, Freedman ND. Premature mortality from all causes and drug poisonings in the US according to socioeconomic status and rurality: an analysis of death certificate data by county from 2000-2015. *The Lancet Public Health*, 2019. 4(2): E72–E106.
PMID: 30655229

Fiesco-Roa MO, Giri N, McReynolds LJ, **Best AF**, Alter BP. Genotype-phenotype associations in Fanconi anemia: a literature review. *Blood Reviews*, 2019. 37: 100589.
PMID: 31351673

Withrow DR, Berrington de Gonzalez A, Spillane S, Freedman ND, **Best AF**, Chen Y, Shiels MS. Trends in mortality due to cancer in the US by age and county-level income, 1999-2015. *Journal of the National Cancer Institute*, 2019. 111 (8): 863–866.
PMID: 31199459

Best AF, Haozous EA, Berrington de Gonzalez A, Chernyavskiy P, Thomas D, Rosenberg PS[†], Shiels MS[†]. Premature mortality projections in the USA through 2030: a modelling study. *The Lancet Public Health*, 2018. 3(8): E374–E385.
PMID: 30037721

Best AF, Hilbert JE, Wood L, Martens WB, Nikolenko N, Marini-Bettolo C, Lochmuller H, Rosenberg PS, Moxley RTT III, Greene MH, Gadalla SM. Survival patterns and cancer determinants in families with myotonic dystrophy type 1. *European Journal of Neurology*, 2019. 26(1): 58–65.

PMID: 30051542

Khan SQ, Berrington de Gonzalez A, **Best AF**, Chen Y, Haozous EA, Rodriquez EJ, Spillane S, Thomas D, Withrow DR, Freedman ND, Shiels MS. Infant and youth mortality trends by racial/ethnic group and cause of death in the United States. *JAMA Pediatrics*, 2018. 172(12): E183317.

PMID: 30285034

Song M, Camargo MC, Weinstein SJ, **Best AF**, Mannisto S, Albanes D, Rabkin CS. Family history of cancer in first-degree relatives and risk of gastric cancer and its precursors in a Western population. *Gastric Cancer*, 2018. 21(5): 729–737.

PMID: 29455268

Best AF, Wolfson DB. Risk-set-sampling of left-truncated survival data. *Canadian Journal of Statistics*, 2017. 45(1): 4–28.

DOI: 10.1002/cjs.11311

Ballinger ML[†], **Best A**[†], . . . , Thomas DM, Savage SA. Baseline surveillance in Li-Fraumeni Syndrome using whole-body magnetic resonance imaging: a meta-analysis. *JAMA Oncology*, 2017. 3(12): 1634–1639.

PMID: 28772291

Shiels MS, Chernyavskiy P, Anderson WF, **Best AF**, Haozous E, Rosenberg PS, Thomas D, Freedman N, Berrington de Gonzalez A. Trends in premature mortality in the USA by sex, race, and ethnicity from 1999 to 2014: an analysis of death certificate data. *The Lancet*, 2017. 389(10073): 1043–1054.

PMID: 28131493

Yang XR, Devi BCR, Sung H, Guida J, Mucaki EJ, Xiao Y, **Best A**, . . . , Dean M. Prevalence and spectrum of germline rare variants in *BRCA1/2* and *PALB2* among breast cancer cases in Sarawak, Malaysia. *Breast Cancer Research and Treatment*, 2017. 165(3): 687–697.

PMID: 28664506

Mai PL, **Best AF**, Peters J, DeCastro R, Khincha P, Loud J, Bremer R, Rosenberg P, Savage S. Risks of first and subsequent cancers among *TP53* mutation carriers in the NCI Li-Fraumeni Cohort. *Cancer*, 2016. 122(23): 3673–3681.

PMID: 27496084

Levesque N, Christensen KE, Van Der Kraak L, **Best AF**, Deng L, Caldwell D, MacFarlane A, Beauchemin N, Rozen R. Murine MTHFD1-synthetase deficiency, a model for the human MTHFD1 R653Q polymorphism, decreases growth of colorectal tumors. *Molecular Carcinogenesis*, 2016. 56(3): 1030–1040.

PMID: 27597531

Meadows DN, Bahous RH, **Best AF**, Rozen R. High dietary folate in mice alters immune response and reduces survival after malarial infection, *PLoS ONE*, 2015. 10(11): e0143738.

PMID: 26599510

Christensen KE, Mikael LG, Leung K-Y, Levesque N, Wu Q, Malysheva OV, **Best A**, Caudill MA, Greene NDE, Rozen R. High folic acid consumption leads to pseudo-MTHFR deficiency, altered lipid metabolism, and liver injury in mice, *American Journal of Clinical Nutrition*, 2015. 101(3): 646–658.
PMID: 25733650

Best A, Kliegl M, Mead-Gluchacki S, Tamon C. Mixing of quantum walks on generalized hypercubes, *International Journal of Quantum Information*, 2008. 6(6): 1134–1148.
DOI: 10.1142/S0219749908004377

Honors and Awards

NIH Director's Award NCI COVID-19 in Cancer Patient Study (NCCAPS) Development (as part of NCCAPS team).	2021
DCEG Outstanding Research Paper by a Fellow Award For: Premature mortality projections in the USA through 2030: a modelling study.	2019
NCI Director's Award (as part of Population Science-Premature Mortality Project Team)	2018
DCEG Fellows Award for Research Excellence	2016, 2017
DCEG Fellowship Achievement Award	2016, 2017
Alex & Charles Pelletier Fellowship	2015
Institut des Sciences Mathématiques (ISM) Fellowship	2013
Schulich Fellowship	2012
McGill Science Undergraduate Research Award (SURA)	2009, 2010
EndMS Research and Training Network Summer Studentship Award	2009

Grants

Canadian Institute of Health Research 2012
Program: Advancing Theoretical and Methodological Innovations in Health Research.
Project Title: Accelerating the Generation of Results from Longitudinal Studies of Aging.
Value: \$191,202. 2012-2015.
Co-Principal Investigators: C. Wolfson, D.B. Wolfson.
Co-investigators (alphabetical order): V. Addona, J. Atherton, **A. Best**, S. Karunanathan, R. Postuma, J. Wolfson.

Scientific Presentations

Oral Presentations (Selected)

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- Innovative practical improvements in biomarker development and evaluation.* AUG 2021
Discussant, Invited session at 2021 Joint Statistical Meetings. Virtual.
- Nonparametric survivor function estimation for a mixture of prevalent and incident cohort data.* MAY 2017
Invited talk, 2017 Conference on Data Science, Precision Medicine and Risk Analysis with Lifetime Data (LIDA). Storrs CT, USA.
- Understanding statistics in the news and media.* APR 2017
Invited talk, 2017 Lungevity HOPE Summit. Washington DC, USA.
- Comparison of correlated-data methods for family-based genetic studies.* MAR 2017
Contributed talk, 2017 Eastern North American Region of the International Biometrics Society (ENAR). Washington DC, USA.
- Survival analysis: comparisons of parametric and nonparametric methods.* JUL 2010
Contributed talk, 2010 Canadian Undergraduate Mathematics Conference. Waterloo ON, Canada.
- Frequentist and Bayesian interval estimation.* JUL 2009
Contributed talk, 2009 Canadian Undergraduate Mathematics Conference. Ottawa ON, Canada.

Posters

- Forecasting cancer incidence and mortality under the age-period-cohort model.* MAR 2019
Contributed SPEED presentation & poster, 2019 Eastern North American Region of the International Biometrics Society (ENAR). Philadelphia, PA.
- Comparison of group testing algorithms for clustered data.* JUL 2018
Contributed SPEED presentation & poster, 2018 Joint Statistical Meetings (JSM). Vancouver BC, Canada.
- Mortality and Cancer Incidence in First-Degree Relatives of Myotonic Dystrophy Type I Patients.* SEP 2017
Contributed poster, 2017 International Myotonic Dystrophy Consortium (IDMC-11). San Francisco CA, USA.
- Population-wide vs risk-based BRCA 1/2 screening in the Washington Ashkenazi Study.* JUN 2017
Contributed poster, 2017 International Cancer Screening Network (ICSN). Bethesda MD, USA.
- Population-wide vs risk-based BRCA 1/2 screening in the Washington Ashkenazi Study.* APR 2017
Contributed poster, 2017 American Association for Cancer Research (AACR). Washington DC, USA.
- Population-wide vs risk-based BRCA 1/2 screening in the Washington Ashkenazi Study.* MAY 2016
Contributed poster, 2016 BRCA Congress. Montreal QC, Canada.

Literature review and quality assessment of survival in Multiple Sclerosis. SEP 2009
Invited poster, 2009 Annual MS Montreal meeting. Montreal QC, Canada.

Teaching Experience

Course Lecturer, McGill University 2014
Course: Principles of Statistics I (Math 203)

Teaching Assistant, McGill University 2012, 2014
Course: Principles of Statistics I (Math 203)

Teaching Assistant, McGill University 2011
Course: Calculus I (Math 140)

Course Assistant, McGill University 2012, 2013
Course: Survival Analysis (Math 686)

Committees, Leadership and Service (Selected)

Editorial Board Member, Journal of Clinical Oncology 2023–PRES.

Editorial Board Member, JNCI Cancer Spectrum 2022–PRES.

Member, NANT DSMB 2022–PRES.

Member, NF112 DSMB 2022–PRES.

Member, ENAR Diversity, Equity, and Inclusion Committee 2022–PRES.

Appointed Member, ENAR Regional Advisory Board 2022–PRES.

Appointed Member, ENAR Nominating Committee 2022–PRES.

Member, NCI-BCSC neoSTEEP Working Group 2021–2023

Member, iMATCH Clinical Trial Diagnostic Selection Working Group 2019–PRES.

Member, ComboMATCH Clinical Trial Molecular Biomarkers and Specimen Management Committee 2019–PRES.

Member, NCI Director’s Award Review Committee 2022

Member, NCI-BCSC STEEP 2.0 Working Group 2019–2021

Branch Representative, DCEG Fellows Board (DFel) 2015–2019

Co-Chair, DCEG Fellows Board (DFel) 2016–2017

Internal Director, Post-Graduate Students’ Society of McGill University 2014–2015

Equity Committee Member, Post-Graduate Students’ Society of McGill University 2013–2015

Steering Committee Member, Post-Graduate Students’ Society of McGill University 2013–2014

Executive Vice President , Graduate Student Association of Mathematics and Statistics (McGill University)	2012–2014
Council Member , Post-Graduate Students' Society of McGill University	2011–2014
Ph.D. Student Representative , McGill University Department of Mathematics and Statistics Committee for Graduate Affairs	2010–2011
Executive Vice President , Society of Undergraduate Mathematics Students (McGill University)	2009–2010
Editor , McGill University Undergraduate Mathematics Journal: the δ - ϵ journal	2009–2010

Manuscript Peer Review (Selected)

Lifetime Data Analysis, Statistics in Medicine, American Journal of Epidemiology, Cancer, International Journal of Cancer, International Journal of Epidemiology, PLOS ONE, Journal of Clinical Oncology, JAMA Network Open, Cancer Epidemiology Biomarkers & Prevention, Biometrics, Preventive Medicine, JNCI Cancer Spectrum, Statistics in Biopharmaceutical Research, Lancet Regional Health - Americas

Memberships

Eastern North American Region of the International Biometric Society (ENAR)	2022–PRES.
American Statistical Association	2016–PRES.
American Association for Cancer Research	2017–2020
Statistical Society of Canada	2012–2015
EndMS Research and Training Network	2009–2015

Technical Skills

R; tidyverse; MATLAB; JAGS; SAS; SPSS; SEER*Stat; Adobe Illustrator, Photoshop, & Acrobat Pro; \LaTeX