EMMA E. MCGEE

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RESEARCH INTERESTS

Causal inference, high-dimensional healthcare data, epidemiologic methods, biostatistics, comparative effectiveness research, precision medicine, machine learning, cancer, health disparities

EDUCATION

Ph.D. **Population Health Sciences – Epidemiology** 2024
Harvard University, Boston, MA, USA *(expected)*
Concentrations: Biostatistics and Cancer Epidemiology
Thesis: Identifying effective interventions for cancer survivors using causal inference methods and high-dimensional data *(working title)*
Thesis Committee: Miguel Hernán (Chair), A. Heather Eliassen, Barbra Dickerman
GPA: **4.0**/4.0

M.S. **Epidemiology** 2020
Harvard T.H. Chan School of Public Health, Boston, MA, USA
GPA: **4.0**/4.0

B.A. **Social Research and Public Policy,** Summa Cum Laude 2015
New York University Abu Dhabi, Abu Dhabi, United Arab Emirates (UAE)
Minor: Literature
GPA: **3.99**/4.0

RESEARCH EXPERIENCE

Researcher 2021 – Present
CAUSALab, Harvard T.H. Chan School of Public Health, Boston, MA, USA

Research Associate 2018 – Present
Channing Division of Network Medicine, Brigham and Women's Hospital, Boston, MA, USA

Cancer Research Training Award Fellow 2017 – 2018
National Cancer Institute, National Institutes of Health (NIH), Rockville, MD, USA

Research Assistant in Cancer Epidemiology 2015 – 2017
Pontificia Universidad Católica de Chile, Santiago, Chile

Public Health Consultant 2015 – 2017
Multiple organizations, Santiago, Chile

Undergraduate Investigator 2014 – 2015
New York University School of Medicine, NY, USA, New York University Abu Dhabi, Abu Dhabi, UAE

Epidemiologic Research Assistant 2014
Pontificia Universidad Católica de Chile, Santiago, Chile

Emma E. McGee

Research Consultant 2013

WellDone International, San Francisco, CA, USA

PUBLICATIONS

Working Papers

1. **McGee EE**, Hernán MA, Giovannucci E, Mucci LA, Willett WC, Chiu YH, Eliassen AH, Dickerman BA. Methodological challenges in estimating the long-term effects of lifestyle interventions for cancer survivors.
2. **McGee EE**, Zeleznik OA, Balasubramanian R, Hu J, Kraft P, Rosner BA, Wactawski-Wende J, Williams DR, Clish CB, Avilla-Pacheco J, Willett WC, Rexrode KM, Tamimi RM, Eliassen AH. Differences in metabolomic profiles between Black and White women: Analyses from two prospective cohorts.

Journal Articles

1. Koshiol J, Van De Wyngard V, **McGee EE**, Cook P, Pfeiffer RM, Mardones N, Medina K, Olivo V, Petit K, Jackson SS, Paredes F, Sanchez R, Huidobro A, Villaseca M, Bellolio E, Losada H, Roa JC, Hildesheim A, Araya JC, Ferreccio C. The Chile Biliary Longitudinal Study (Chile BiLS): a gallstone cohort. *American Journal of Epidemiology.* 2021;190(2):196-206.
2. **McGee EE**, Kim CH, Wang M, Spiegelman D, Stover DG, Heng YJ, Collins LC, Baker GM, Farvid MS, Schedin P, Jindal S, Tamimi RM, Eliassen AH. Erythrocyte membrane fatty acids and breast cancer risk by tumor tissue expression of immuno-inflammatory markers and fatty acid synthase. *Breast Cancer Research.* 2020;22(1):78.
3. **McGee EE**, Koshiol J. Comments on "Should we consider gallbladder cancer a new smoking-related cancer? A comprehensive meta-analysis focused on dose-response relationships" [Letter]. *International Journal of Cancer.* 2020;147(2):593-594.
4. Kotsopoulos J, **McGee EE**, Lozano-Esparza S, Garber JE, Ligibel JA, Collins LC, Polyak K, Brown MA, Narod SA, Tamimi RM, Eliassen AH. Premenopausal plasma osteoprotegerin and breast cancer risk: a case-control analysis nested within the Nurses' Health Study II. *Cancer Epidemiology, Biomarkers & Prevention.* 2020;29(6):1264-1270.
5. Lee MH, Gao YT, Huang YH, **McGee EE**, Lam T, Wang B, Shen MC, Rashid A, Pfeiffer RM, Hsing AW, Koshiol J. A metallomic approach to assess associations of serum metal levels with gallstones and gallbladder cancer. *Hepatology.* 2020;71(3):917-928.
6. **McGee EE**, Jackson SS, Petrick JP, Van Dyke AL, Adami HO, Albanes D, Andreotti G, Beane-Freeman LE, Berrington de González A, Buring JE, Chan AT, Chen Y, Fraser GE, Freedman ND, Gao YT, Gapstur SM, Gaziano JM, Giles GG, Grant EJ, Grodstein F, Hartge P, Jenab M, Kitahara CM, Knutsen SF, Koh WP, Larsson SC, Lee IM, Liao LM, Luo J, Milne RL, Monroe KR, Neuhouser ML, O'Brien KM, Peters U, Poynter JN, Purdue MP, Robien K, Sandler DP, Sawada N, Schairer C, Sesso HD, Simon TG, Sinha R, Stolzenberg-Solomon R, Tsugane S, Wang R, Weiderpass E, Weinstein SJ, White E, Wolk A, Yuan JM, Zeleniuch-Jacquotte A, Zhang X, Zhu B, McGlynn KA, Campbell PT, Koshiol J. Smoking, alcohol, and biliary tract cancer risk: a pooling project of 26 prospective studies. *Journal of the National Cancer Institute.* 2019;111(12):1263-1278.
7. **McGee EE**, Kiblawi R, Playdon MC, Eliassen AH. Nutritional metabolomics in cancer epidemiology: current trends, challenges, and future directions. *Current Nutrition Reports.* 2019;8(3):187-201.
8. Jackson SS, Van Dyke AL, Zhu B, Pfeiffer RM, Petrick JL, Adami HO, Albanes D, Andreotti G, Beane-Freeman LE, Berrington de González A, Buring JE, Chan AT, Chen Y, Fraser GE, Freedman ND, Gao YT, Gapstur SM, Gaziano JM, Giles GG, Grant EJ, Grodstein F, Hartge P, Jenab M, Kitahara CM, Knutsen SF, Koh WP, Larsson SC, Lee IM, Liao LM, Luo J, **McGee EE**, Milne RL, Monroe KR, Neuhouser ML, O'Brien KM, Peters U, Poynter JN, Purdue MP, Robien K, Sandler DP, Sawada N, Schairer C, Sesso HD, Simon TG, Sinha R, Stolzenberg-Solomon R, Tsugane S, Wang R, Weiderpass E, Weinstein SJ, White E, Wolk A, Yuan JM, Zeleniuch-Jacquotte A, Zhang X, McGlynn KA, Campbell PT, Koshiol J. Anthropometric risk factors for cancers of the biliary tract in the biliary tract cancers pooling project. *Cancer Research.* 2019;79(15):3973-3982.

9. Echeverría G, Dussaillant C, **McGee EE**, Mena C, Nitsche MP, Urquiaga I, Bitran M, Pedrals N, Rigotti A. Promoting and implementing the Mediterranean diet in the Southern Hemisphere: the Chilean experience. *European Journal of Clinical Nutrition*. 2019;72(Suppl 1):38-46.
10. **McGee EE,** Castro FA, Engels EA, Freedman ND, Pfeiffer RM, Nogueira L, Stolzenberg-Solomon R, McGlynn KA, Hemminki K, Koshiol J. Associations between autoimmune conditions and hepatobiliary cancer risk among elderly US adults. *International Journal of Cancer*. 2019;144(4):707-717.
11. Koshiol J, Bellolio E, Vivallo C, Cook P, Roa JC, **McGee EE**, Losada H, Van Dyke AL, Van De Wyngard V, Prado R, Villaseca M, Riquelme P, Acevedo J, Olivo V, Petit K, Hildesheim A, Medina K, Memis B, Adsay V, Ferreccio C, Araya JC. Distribution of dysplasia and cancer in the gallbladder: an analysis from a high cancer-risk population. *Human Pathology*. 2018;82:87-94.
12. Liu Z, Kemp TJ, Gao YT, Corbel A, **McGee EE**, Wang B, Shen MC, Rashid A, Hsing AW, Hildesheim A, Pfeiffer RM, Pinto LA, Koshiol J. Association of circulating inflammation proteins and gallstone disease. *Journal of Gastroenterology and Hepatology*. 2018;33(11):1920-1924.
13. Liu Z, Kemp TJ, Gao YT, Corbel A, **McGee EE**, Roa JC, Wang B, Araya JC, Shen MC, Rashid A, Hsing AW, Hildesheim A, C Ferreccio, Pfeiffer RM, Pinto LA, Koshiol J. Circulating levels of inflammatory proteins and survival in patients with gallbladder cancer. *Scientific Reports*. 2018;8(1):5671.
14. <u>**McGee EE**</u>*, Echeverría G*, Urquiaga I, Jiménez P, D'Acuña S, Villarroel L, Velasco N, Leighton F, Rigotti A. Inverse associations between a locally validated Mediterranean diet index, overweight/obesity, and metabolic syndrome in Chilean adults. *Nutrients.* 2017;9(8):862.

<u>*Co-first author</u>

Book Chapters
1. Echeverría G, Dussaillant C, **McGee E**, Urquiaga I, Velasco N, Rigotti A (2017). Mediterranean diet beyond the Mediterranean basin: chronic disease prevention and treatment. In: *Mediterranean Identities – Environment, Society, Culture*. Edited by Fuerst-Bjelis B. Rijeka: InTech.

Published Abstracts
1. Koshiol J, Bellolio E, Vivallo C, Cook P, Roa J, **McGee EE**, Losada H, Van Dyke AL, Van De Wyngard V, Prado R, Villaseca M, Riquelme P, Acevedo J, Olivo V, Petit K, Hildesheim A, Medina K, Memis B, Adsay V, Ferreccio C, Araya JC. TU1526 - Distribution of dysplasia and cancer in the gallbladder: an analysis from a high cancer-risk population. *Gastroenterology*. 2018; 154(6):S-952.

AWARDS AND HONORS

Academic Awards and Scholarships

Presidential Scholarship, Harvard University ($18,000)	2020
Dimitrios Trichopoulos Memorial Fund Award, Harvard T.H. Chan School of Public Health ($2,000)	2020
Loan Relief Award, Harvard T.H. Chan School of Public Health ($27,000)	2018
Summa Cum Laude, New York University Abu Dhabi	2015
University Honors Scholar/Founders' Day Award, New York University	2015
Rhodes Scholar Finalist, US District 15, Rhodes Trust, University of Oxford	2014
Full Scholarship, New York University Abu Dhabi ($250,000)	2011

Scientific Awards

Best Thesis Presentation, Harvard T.H. Chan School of Public Health	2020
Best Oral Presentation, Dana-Farber/Harvard Cancer Center Celebration of Early Career Investigators in Cancer Research	2018
Best Student/Fellow Poster, National Cancer Institute Cohort Consortium Annual Meeting	2017
Sponsored Delegate, 16th World Conference on Tobacco or Health	2015

Teaching Awards

Excellence in Teaching, Epidemiology, Harvard T.H. Chan School of Public Health	2021 – 2022
Bok Center Certificate of Distinction in Teaching, Harvard University	2022
Bok Center Certificate of Distinction in Teaching, Harvard University	2021
Certificate of Distinction in Teaching, Epidemiology, Harvard T.H. Chan School of Public Health	2020 – 2021

Artistic Awards

Exhibiting Photographer: End of Year Showcase (Journeys), *New York University Abu Dhabi*	2012
Exhibiting Filmmaker: Fall Art Showcase, *New York University Abu Dhabi*	2012

RESEARCH AND TRAVEL FUNDING

Eric and Wendy Schmidt Center PhD Fellow   2022 – Present

Selected to receive a competitive PhD fellowship recognizing graduate students doing exceptional work in causal inference, machine learning, and human biology. Funded 100% of graduate tuition, fees, and stipend for 2 years.
Role: PhD Fellow
Direct Costs: $100,000

Brian McMahon Travel Award, Harvard T.H. Chan School of Public Health   2023

Received funding to present work on estimating the long-term effects of lifestyle interventions for cancer survivors using target trial emulation and dynamic treatments at the Society for Epidemiologic Research Annual meeting.
Role: Graduate Student
Direct Costs: $1,000

Brian McMahon Travel Award, Harvard T.H. Chan School of Public Health   2022

Received funding to present work on Black-white racial disparities in metabolomics profiles at the Society for Epidemiologic Research Annual meeting.
Role: Graduate Student
Direct Costs: $1,000

Rose Traveling Fellowship, Harvard T.H. Chan School of Public Health   2019

Selected by the chairs of the Departments of Epidemiology and Biostatistics as a recipient of an international fellowship awarded to top postdocs, PhD students, and master's students. Proposal aimed to investigate body fat composition by computed tomography and subsequent breast cancer risk among adults in Iceland.
Role: Principal Investigator
Direct Costs: $5,000

Capstone Research Grant, New York University Abu Dhabi   2015

Received funding to support a study on water pipe tobacco smoking patterns in Abu Dhabi. Research included a survey administered to a random sample of 4,500 students, focus groups, and interviews.
Role: Undergraduate Investigator
Direct Costs: $1,000

Summer Research Grant, New York University Abu Dhabi   2014

Supported by an undergraduate research grant to investigate co-factors associated with *Helicobacter pylori* infection and gastric cancer risk as part of a World Health Organization study located in Chile.
Role: Undergraduate Investigator
Direct Costs: $5,000

Direct costs are rounded to the nearest $1,000 US dollar.

PRESENTATIONS

Invited Oral Presentations	**Estimating the Long-Term Effects of Lifestyle Interventions for Cancer Survivors Using Target Trial Emulation and Dynamic Treatment Strategies** Society for Epidemiologic Research (SER) Annual Meeting, Portland, OR, USA	2023
	Methodological Challenges in Estimating the Long-Term Effects of Lifestyle Interventions for Cancer Survivors Dana-Farber/Harvard Cancer Center Celebration of Early Career Investigators in Cancer Research, Boston, MA, USA	2023
	Identifying Effective Interventions for Cancer Survivors Using Causal Inference Methods and High-Dimensional Data Population Health Sciences Research Talk, Harvard T.H. Chan School of Public Health, Boston, MA, USA	2022
	Disparities in Metabolomic Profiles Between Black and White Women: Findings from Two Prospective Cohorts Metabolomics Working Group, Channing Division of Network Medicine, Brigham and Women's Hospital, Boston, MA, USA	2022
	Racial Differences in Metabolomic Profiles Metabolomics Working Group, Channing Division of Network Medicine, Brigham and Women's Hospital, Boston, MA, USA	2020
	Erythrocyte Membrane Fatty Acids and Breast Cancer Risk by Tumor Tissue Expression of Immuno-Inflammatory Markers and Fatty Acid Synthase Dana-Farber/Harvard Cancer Center Celebration of Early Career Investigators in Cancer Research, Boston, MA, USA	2019
	Plasma Osteoprotegerin and Breast Cancer Risk: A Nested Case-control Study Within the Nurses' Health Study II Dana-Farber/Harvard Cancer Center Breast and Gynecologic Cancer Symposium, Boston, MA, USA	2019
	Nutritional Metabolomics in Cancer Epidemiology Breast Cancer Working Group, Channing Division of Network Medicine, Brigham and Women's Hospital, Boston, MA, USA	2019
	Cigarette Smoking, Alcohol Consumption, and Biliary Tract Cancer Risk: A Pooling Project of 26 Prospective Studies Dana-Farber/Harvard Cancer Center Celebration of Early Career Investigators in Cancer Research, Boston, MA, USA	2018
	Hepatobiliary Cancer Risk Among Elderly US Adults with a History of Autoimmune Disease: A Registry-Based Case-control Study National Cancer Institute, Infections and Immunoepidemiology Branch, Rockville, MD, USA	2018
	Managing Requests for Large Data Projects in REDCap REDCapCon, New York, NY, USA	2017
	Experience in Electronic Data Capture for Cohorts: MAUCO and Chile BiLS	2016

(contributed), Chilean Symposium on Health Informatics, Santiago, Chile

Poster Presentations	**Precision Medicine, Healthy Equity, and Causal Mediation: An Application to Metabolomic Profiles Among Black and White Women** Eric and Wendy Schmidt Center, Broad Institute of MIT and Harvard, Boston, MA, USA	2023
	Disparities in Metabolomic Profiles Between Black and White Women Society for Epidemiologic Research (SER) Annual Meeting, Chicago, IL, USA	2022
	Erythrocyte Membrane Fatty Acids and Breast Cancer Risk by Tumor Tissue Expression of Immuno-Inflammatory Markers and Fatty Acid Synthase Dana-Farber/Harvard Cancer Center Cancer Risk, Prevention, and Early Detection Symposium, Boston, MA, USA	2019
	Plasma Osteoprotegerin and Breast Cancer Risk: A Nested Case-control Study Within the Nurses' Health Study II Harvard T.H. Chan School of Public Health Poster Day, Boston, MA, USA	2019
	The Chile Biliary Longitudinal Study (Chile BiLS): A Cohort Profile Society for Epidemiologic Research (SER) Annual Meeting, Baltimore, MD, USA	2018
	Highlights of Findings from the Biliary Tract Cancers Pooling Project (BiTCaPP) National Cancer Institute Cohort Consortium Annual Meeting, Rockville, MD, USA	2017
	The Chile Biliary Longitudinal Study (Chile BiLS): A Cohort Study Protocol Advanced Center for Chronic Diseases (ACCDiS) Cancer Spring Symposium, Santiago, Chile	2016

TEACHING

Course: Target Trial Emulation. Role: Curriculum Fellow and Head Teaching Fellow   2022 – Present
CAUSALab, Harvard T.H. Chan School of Public Health, Boston, MA, USA
　Leading content development for a course providing hands-on training in causal inference from
　healthcare databases for ~100 participants from industry, academia, and government. Teaching
　target trial emulation, causal inference, estimation of effects in randomized trials and observational
　emulations, g-methods, competing events, and methods to handle and assess potential biases.
　Instructors: Miguel Hernán, Barbra Dickerman, Joy Shi, Sonja Swanson

Exam: Doctoral Qualifying Exam in Epidemiology. Role: Tutor   2023
Harvard T.H. Chan School of Public Health, Boston, MA, USA
　Designed materials and taught 1:1 sessions on advanced quantitative methods for the doctoral
　qualifying exams in epidemiology and other population health sciences.

Course: Quantitative Research Methods in Population Health Sciences. Role: Teaching Fellow   2021 – 2022
Harvard University Graduate School of Arts and Sciences, Boston, MA, USA
　Developed content, wrote problem sets and exams, and led lab sessions for a year-long course for
　~40 PhD students. Taught maximum likelihood estimation, generalized linear models, survival
　analysis, g-methods, sensitivity analyses, instrumental variables, missing data, meta-analysis, etc.
　Instructors: Tyler VanderWeele, Issa Dahabreh, David Canning, Jarvis Chen

Course: Principles of Biostatistics and **Fundamentals of Epidemiology.** <u>Role</u>**: Tutor**   2021 – 2022
Harvard Medical School, Office for Diversity Inclusion and Community Partnership, Boston, MA, USA
    Provided individualized instruction and tutoring in biostatistics and epidemiology for 7 MD/DDS
    fellows selected for Harvard's Commonwealth Fund Fellowship in Minority Health Policy.
    <u>Instructors:</u> Albert Hofman, Stefania Papatheodorou, Marcia Testa

Course: Models for Causal Inference. <u>Role</u>**: Teaching Fellow**   2020 – 2021
Harvard T.H. Chan School of Public Health, Boston, MA, USA
    Led weekly lab sessions for a course including ~70 PhD and master's students. Taught g-method
    for causal inference, instrumental variable estimation, propensity scores, and other methods.
    <u>Instructors:</u> Miguel Hernán, Barbra Dickerman

Course: Core Principles of Biostatistics and Epidemiology. <u>Role</u>**: Head Teaching Fellow**   2021
Harvard T.H. Chan School of Public Health, Boston, MA, USA
    Led a team of 16 teaching fellows in the instruction of ~180 PhD and master's students from 10
    different academic programs. Taught epidemiologic methods, study design, and analyses.
    <u>Instructors:</u> Kimberlee Gauvreau, Elizabeth Mostofsky

MENTORSHIP

<u>Mentee</u>**: Gabriella Forchion**, Undergraduate Student, Howard University   2021
    <u>Role</u>: Mentor and direct research supervisor for a full-time summer research position
    <u>Program</u>: CURE Program, Dana-Farber/Harvard Cancer Center, aimed at increasing diversity in cancer research

PEER REVIEW

Journals: *JAMA Internal Medicine; British Journal of Cancer; International Journal of Cancer; Cancer Epidemiology,*
       Biomarkers, & Prevention
Conference Abstracts: *Society for Epidemiologic Research (SER) Annual Meeting*

SERVICE AND LEADERSHIP

President, Epidemiologic Methods Journal Club   2021 – Present
Harvard T.H. Chan School of Public Health, Boston, MA, USA

Volunteer, Contact Tracing and Vaccine Outreach (Spanish and English)   2020 – 2021
COVID-19 Academic Public Health Volunteer Corps (APHVC) and GOTVax, Boston, MA, USA

Co-Leader, Master's Program Committee   2019 – 2020
Harvard T.H. Chan School of Public Health, Boston, MA, USA

Member, Epidemiology Student Advisory Committee   2018 – 2020
Harvard T.H. Chan School of Public Health, Boston, MA, USA

Member, Harvard Chan Student Club on CANcer: Learn, Interact, Translate (CAN-LIT)   2018 – 2020
Harvard T.H. Chan School of Public Health, Boston, MA, USA

Volunteer, Arabic Language Program   2018

Kalimah Programs for Arabic Language, Culture, and Arts, Rockville, MD, USA

Member, NIH Academy on Health Disparities   2017 – 2018
NIH, Bethesda, MD, USA

Co-Leader, Community Outreach and Service Committee   2017 – 2018
DCEG Fellows Committee, National Cancer Institute, NIH**,** Rockville, MD, USA

Manuscript Editor   2017 – 2018
DCEG Fellows Editorial Board, National Cancer Institute, NIH, Rockville, MD, USA

Board of Directors and Executive Committee   2014 – 2016
QINE Association for Promoting Education Quality (QAPEQ), Abu Dhabi, UAE

Co-Chair   2014 – 2015
Public Health Think Tank Conference, New York University Abu Dhabi, Abu Dhabi, UAE

PROFESSIONAL SOCIETIES

Society for Epidemiologic Research (SER), Member   2021 – Present
American Association for Cancer Research (AACR), Associate Member 2019 – Present

SELECTION OF RELEVANT GRADUATE COURSEWORK

Causal Inference and Epidemiologic Methods	Models for Causal Inference Causal Mediation and Interaction Advanced Epidemiologic Methods Principles of Clinical Trials Advanced Topics in Case-Control and Cohort Studies Measurement Error and Misclassification for Epidemiologists Database Analytics in Pharmacoepidemiology Study Design in Epidemiologic Research Epidemiologic Methods Development
Statistics and Machine Learning	Deep Learning for Biomedical Data Data Science II (*Deep Learning*) Quantitative Methods in Population Health Sciences Applied Regression for Clinical Research Applied Survival Analysis Applied Longitudinal Analysis Social and Biological Networks
Pathophysiology and Cancer	Pathology for Epidemiologists Molecular Biology for Epidemiologists Biomarkers in Epidemiology Research Pathophysiology of Disease Human Physiology Epidemiology of Cancer

TECHNICAL SKILLS

Statistical Software and Markup	R, SAS, Python, Stata Markdown, LATEX
Data Analysis, Epidemiologic Methods, and Statistics	G-methods for causal inference (e.g., parametric g-formula, inverse probability weighting, marginal structural models) Graphical causal models (DAGs, SWIGs) Target trial emulation of dynamic and static treatment strategies Analysis of administrative healthcare claims data Analysis of longitudinal cohort and case-control studies Integration of molecular biomarker data into epidemiologic research Sensitivity analyses Literature reviews Meta-analysis
Teaching	Didactic instruction in causal inference, epidemiology, and biostatistics Development of course materials (e.g., lectures, exercises, statistical code, problem sets, exams, syllabi) Statistical coding instruction in R, SAS, and Stata
Management and Implementation of International Field Studies	Staff training and supervision Questionnaire design, testing, and implementation Development of standard operating procedures and study protocols Quality control of survey and biological data
Electronic Databases and Surveys	REDCap Qualtrics

LANGUAGES

English (fluent), **Spanish** (fluent), **Arabic** (intermediate)