# EMMA E. MCGEE

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## RESEARCH INTERESTS

Causal inference, cancer, machine learning, epidemiologic methods, biostatistics, comparative effectiveness research, administrative healthcare data, 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

**Doctoral Student 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

**Research Consultant** 2013
WellDone International, San Francisco, CA, USA

## PUBLICATIONS

### 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. **McGee EE**\*, 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.

\*Co-first author

**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
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| **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
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| **Excellence in Teaching,** Epidemiology, Harvard T.H. Chan School of Public Health | 2021 – 2022 |
| **Bok Center Certificate of Distinction in Teaching,** Harvard University (x2) | 2021 – 2022 |
| **Certificate of Distinction in Teaching,** Epidemiology, Harvard T.H. Chan School of Public Health | 2020 – 2021 |

Artistic Awards
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| **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 (COMPETITIVE)

**Eric and Wendy Schmidt Center PhD Fellow**      2022 – 2023
Selected to receive a competitive PhD fellowship recognizing graduate students doing exceptional work in machine learning, causal inference, and human biology. Funded 100% of graduate tuition, fees, and stipend.
Role: PhD Fellow
Direct Costs: $50,000

**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

## PRESENTATIONS

| **Invited Oral Presentations** | **Disparities in Metabolomic Profiles Between Black and White Women: Findings from Two Prospective Cohorts**<br>Metabolomics Working Group, Channing Division of Network Medicine, Brigham and Women's Hospital, Boston, MA, USA | 2022 |
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| | **Racial Differences in Metabolomic Profiles**<br>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**<br>Dana-Farber/Harvard Cancer Center Celebration of Early Career Investigators in Cancer Research, Boston, MA, USA | 2019 |

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| | **Plasma Osteoprotegerin and Breast Cancer Risk: A Nested Case-control Study Within the Nurses' Health Study II**<br>Dana-Farber/Harvard Cancer Center Breast and Gynecologic Cancer Symposium, Boston, MA, USA | 2019 |
| | **Nutritional Metabolomics in Cancer Epidemiology**<br>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**<br>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**<br>National Cancer Institute, Infections and Immunoepidemiology Branch, Rockville, MD, USA | 2018 |
| | **Managing Requests for Large Data Projects in REDCap**<br>REDCapCon, New York, NY, USA | 2017 |
| | **Experience in Electronic Data Capture for Cohorts: MAUCO and Chile BiLS**<br>(contributed), Chilean Symposium on Health Informatics, Santiago, Chile | 2016 |
| **Poster Presentations** | **Disparities in Metabolomic Profiles Between Black and White Women**<br>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**<br>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**<br>Harvard T.H. Chan School of Public Health Poster Day, Boston, MA, USA | 2019 |
| | **The Chile Biliary Longitudinal Study (Chile BiLS): A Cohort Profile**<br>Society for Epidemiologic Research (SER) Annual Meeting, Baltimore, MD, USA | 2018 |
| | **Highlights of Findings from the Biliary Tract Cancers Pooling Project (BiTCaPP)**<br>National Cancer Institute Cohort Consortium Annual Meeting, Rockville, MD, USA | 2017 |
| | **The Chile Biliary Longitudinal Study (Chile BiLS): A Cohort Study Protocol**<br>Advanced Center for Chronic Diseases (ACCDiS) Cancer Spring Symposium, Santiago, Chile | 2016 |

## TEACHING

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| **Target Trial Emulation (Curriculum Fellow and Head Teaching Fellow)**<br>CAUSALab, Harvard T.H. Chan School of Public Health, Boston, MA, USA<br>    Leading content development for a summer course providing hands-on training in causal inference<br>    from healthcare databases. ~90 participants from industry and academia are expected. | 2022 |

Instructors: Miguel Hernán, Barbra Dickerman, Sonja Swanson

**Quantitative Research Methods in Population Health Sciences (Teaching Fellow)**      2021 – 2022
Harvard University Graduate School of Arts and Sciences, Boston, MA, USA
> Developed course content, wrote problem sets and exams, and led lab sessions for a year-long PhD-level methods course. Course included ~40 PhD students.
> Instructors: Tyler VanderWeele, Issa Dahabreh, David Canning, Jarvis Chen

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

**Models for Causal Inference (Teaching Fellow)**      2020 – 2021
Harvard T.H. Chan School of Public Health, Boston, MA, USA
> Led weekly lab sessions on g-methods for causal inference, instrumental variable estimation, propensity scores, and other regression approaches. Course included ~70 PhD and master's students.
> Instructors: Miguel Hernán, Barbra Dickerman

**Core Principles of Biostatistics and Epidemiology (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 across 10 academic programs.
> Instructors: Kimberlee Gauvreau, Elizabeth Mostofsky

## MENTORSHIP

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

## PEER REVIEW

**Journals:** *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 |
| | 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 |
| | Principles of Clinical Trials |
| | |
| **Statistics and Machine Learning** | Deep Learning for Biomedical Data |
| | Quantitative Methods in Population Health Sciences |
| | Applied Regression for Clinical Research |
| | Applied Survival Analysis |
| | Applied Longitudinal Analysis |
| | Social and Biological Networks |

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| **Cancer and Pathophysiology** | Epidemiology of Cancer |
| | Pathology for Epidemiologists |
| | Molecular Biology for Epidemiologists |
| | Biomarkers in Epidemiology Research |
| | Pathophysiology of Disease |
| | Human Physiology |

## TECHNICAL SKILLS

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| **Statistical Software and Markup** | R, SAS, Python, Stata |
| | R Markdown, LATEX |
| **Data Analysis and Epidemiologic Methods** | G-methods for causal inference |
| | Analysis of administrative healthcare claims data |
| | Analysis of longitudinal cohort and case-control studies |
| | Integration of molecular data into epidemiologic research |
| | Literature reviews |
| | Meta-analysis |
| **Teaching** | Didactic instruction in epidemiology, causal inference, and biostatistics |
| | Development of course materials (e.g., lectures, laboratory 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)