KELSEY N. MCDONALD

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SUMMARY OF QUALIFICATIONS

Enthusiastic teacher with experience teaching epidemiology, geography, and geographic information systems (GIS) courses to undergraduates, GIS workshops to a wide audience, and graduate seminars for Urban Systems students. Epidemiologist and geographer with international experience designing, implementing, and analyzing research studies using quantitative methods, such as GIS, spatial regression, and multivariate regression. Experience using large secondary datasets as well as collecting primary data.

RESEARCH INTERESTS

Spatial epidemiology; Social epidemiology; GIS; Environmental influences on health; Health disparities; Obesity; Diabetes; Mental health; Physical activity; Air quality; San Francisco; Ruhr metropolitan region in Germany.

EDUCATION

Ph.D. – Epidemiology 2013

University of Minnesota-Twin Cities, School of Public Health, Minneapolis, MN, USA

- *Committee:* J. Michael Oakes (advisor), epidemiology; Steven Manson, geography; Rich MacLehose, epidemiology; Toben Nelson, epidemiology

M.A. – Geography 2004

San Francisco State University, San Francisco, CA, USA

- *Thesis:* San Pedro Creek Flood Control Project: Integrative Analysis of Natural Hazard Response
- *Advisor:* Nancy Wilkinson

B.A. – German (minor: Management) 1994

University of Minnesota-Morris, Morris, MN, USA

TEACHING EXPERIENCE

Geography Dept., Math, Statistics & Computer Science Dept., Macalester College, St. Paul, Minnesota, USA

Assistant Professor (NTT) 2021, 2023

Course: Health GIS (GEOG 368) – Spring 2023

- Facilitated 12 independent spatial analysis projects for undergraduates after introducing spatial epidemiology methods, such as disease mapping, cluster analysis, and risk mapping, through lectures and lab exercises.

Course: Epidemiology (STAT 125) – Summer (May-Jul.) 2021

- Virtually taught 19 undergraduates about epidemiological study designs, methods, and challenges by engaging them through case studies, research project proposals, applied data analysis, exercises, and lectures.

Visiting Assistant Professor Sept. 2015 – May 2019

Course: Epidemiology (MATH 125) – Fall 2015, Spring 2016, Spring 2017, Fall 2017

- Taught 20-30 undergraduates about epidemiological study designs, methods, and challenges by engaging them through case studies, research project proposals, applied data analysis, exercises, and lectures.

Course: Introduction to GIS (GEOG 225) – Fall 2016, Spring 2017, Fall 2017, Fall 2018, Spring 2019

- Taught 25 undergraduates about geographic information systems (GIS) and basic cartographic principles, and guided through culminating independent group projects.

Course: Medical Geography (GEOG 256) – Spring 2016

- Engaged 30 undergraduates in medical/health geography topics, including global health, disease ecology, health disparities, and environmental justice through discussions, formal debates, and lectures.

Course: Health GIS (GEOG 368) – Spring 2016, Fall 2016, Spring 2019

- Facilitated 10-15 spatial analysis projects for undergraduates after introducing spatial epidemiology methods, such as disease mapping, cluster analysis, and risk mapping, through lectures and lab exercises.

Course: Statistical Research Methods in Geography (GEOG 378) – Spring 2018

- Taught 28 students how to appropriately conduct and interpret statistical analyses of place, including using descriptive statistics, hypothesis testing, correlation, regression, and inferential spatial statistics.

Course: Adv. Geospatial Analysis: Case Study of Dengue Fever Risk on Hawaii (GEOG 394-02) – Spring 2018

- Guided 14 students through a group project to develop a model of dengue fever risk on the Island of Hawaii using ArcGIS Desktop and presenting results in ArcGIS StoryMap format. *(I developed this course.)*

Course: Healthy Spaces: Medical Geography of Green and Blue Spaces (GEOG 394-02) – Fall 2018

- Facilitated discussions on theoretical support and research evidence for the potential effect of natural spaces on health. Provided opportunities to apply this knowledge using focused experiences in green and blue spaces of each student's choosing. *(I developed this course.)*

Urban Systems, University of Duisburg-Essen, Essen, Germany

Co-Instructor and Co-Organizer Apr. – Sept. 2014

Course: Healthy Cities Project Seminar

- Assisted in development of requirements for this graduate-level project-based learning course, which included a geographic assessment and Healthy Urban Development checklist application for a study area.
- Lectured on: Health Indicators and Finding Data (May 26, 2014).
- Provided guidance to the 30 students on their research projects throughout the semester.

Co-Instructor and Co-Organizer Jan. – Mar. 2014

Course: Healthy Urban Development Seminar – Tools and instruments as guides for commenting on development policies, plans and proposals.

- Led development of course outline and project requirements for this graduate-level project-based learning course, which required students to apply a Healthy Urban Development checklist to a specific development project in their native country (Kenya, Ghana, Mexico, and Germany).
- Lectured on: Health Indicators and Finding Data (Feb. 5, 2014), Interpreting Indicator Data (Feb. 26, 2014).

Co-Lecturer Nov. 2013

Course: Urban Systems lecture series "The City as a Complex System?"

- Co-taught two-hour class for 40 students with Dr. Susanne Moebus on studying the effect of the complex urban environment on health.

Centre for Urban Epidemiology, Institute for Medical Informatics, Biometry and Epidemiology, University Clinic Essen, University of Duisburg-Essen, Essen, Germany

Instructor Mar. – Apr. 2014

Workshop: Introduction to GIS

- Taught workshop over four days to internal group of epidemiologists, urban planners, and biostatisticians, and an external epidemiology doctoral student.
- Lectured on GIS concepts and methods, basic cartography, and spatial analysis using ArcMap(10.1).
- Developed exercises using data from the Heinz Nixdorf Recall Study in the Ruhr region.
- Provided assistance to students as they completed exercises and began independent research projects.

Minnesota Population Center, Spatial Core, University of Minnesota-Twin Cities, Minnesota, USA

Instructor Fall 2010 – Spring 2011

Workshop: GIS101

- Taught all-day GIS workshop nine times to approximately 15-20 students per class.
- Lectured on GIS concepts and methods, basic cartography, and spatial analysis using ArcMap(10.0).
- Provided one-on-one assistance as students completed computer exercises using ArcMap.
- Consistently received excellent ratings on participant evaluations.

Lecturer Mar. 2011

Course: Quantitative Methods for Historical Research (HIST 5011)

- Taught two 1.5 hour lectures introducing GIS concepts/methods, the National Historical Geographic Information System and Social Explorer to approx. 15 students.
- Guided students through exercises using online resources for obtaining and/or mapping US Census data.

Graduate School, University of Minnesota-Twin Cities, Minnesota, USA

Student Spring 2010

Course: Teaching in Higher Education (GRAD 8101)

- Developed and taught 50-minute class on epidemiologic study designs with two classmates using problem-based learning focused on mesothelioma in northern Minnesota miners.
- Developed and taught 10-minute individual lecture on descriptive epidemiologic measures using 1854 cholera outbreak in London as case study.

Division of Epidemiology & Community Health, University of Minnesota-Twin Cities, Minnesota, USA

Teaching Assistant Fall 2009

Course: Epidemiological Methods I (PubH 6341)

- Assisted students one-on-one, graded homework and exams for class of 70+ students. Course covered study designs, measures of disease frequency and effect, confounding, effect modification, and bias.

Course: Data Processing with PC-SAS (PubH 6325)

- Taught lab sections, reviewed homework for 20+ students. Course covered importing raw data into SAS, cleaning and manipulating data, and basic analysis.

MENTORING

Macalester College

Student Honors Project Committee Member

- Claire Hofius – Geography (2016)
- Eliza Ramsey – International Studies (2017)
- Julia Morgan – Geography (2018)

Student Internship Faculty Sponsor

- Kyoko Peterson – Math, Statistics, & Computer Science (Spring 2018)
- Gabriel Swinth – Geography (Summer 2018)

Community and Global Health (CGH) Steering Committee Member (2015-2019)

- Provided informal advising to CGH students interested in careers in public health.

Centre for Urban Epidemiology, Institute for Medical Informatics, Biometry and Epidemiology, University Clinic Essen, University of Duisburg-Essen, Essen, Germany

Organizer and Leader of Lab Meeting

- Created and ran weekly lab meeting to mentor doctoral and master students as well as staff researchers working in the Centre for Urban Epidemiology (2014)

RESEARCH EXPERIENCE

Independent Research, Minneapolis, Minnesota, USA

Researcher Nov. 2014 – present

- Ongoing and/or completed research projects: air quality in Minneapolis' Mill District; the Department of Pathology and Laboratory Medicine, Allina Health Labs, Minneapolis, improving diagnosis of pituitary adenomas; the Centre for Urban Epidemiology, University of Duisburg-Essen, examining surrounding greenness and health; the Division of Epidemiology & Community Health, University of Minnesota, examining neighborhood socioeconomic status and health and community-based samples; independent study collecting and analyzing neighborhood air quality, Minneapolis.

Centre for Urban Epidemiology, Institute for Medical Informatics, Biometry and Epidemiology, University Clinic Essen, University of Duisburg-Essen, Essen, Germany

Postdoctoral Fellow Sept. 2013 – Oct. 2014

- Conducted spatial analysis and estimated effects of surrounding greenness on diabetes in Heinz Nixdorf Recall Study participants in Essen, Bochum and Mülheim (Germany).
- Mapped health disparities in the Ruhr Region of Germany for various projects, including in collaboration with the Technical University – Dortmund for a public exhibition entitled *Lebensqualität im Ruhrgebiet – für alle?* (*Quality of Life in the Ruhr Region – for Everyone?*).
- Established GIS database and data protocols, gathered demographic and socioeconomic data, and provided GIS support for center projects using regional and small-area level data in the Ruhr Region.

Division of Epidemiology & Community Health, University of Minnesota-Twin Cities, Minnesota, USA

Ph.D. Dissertation Research 2011 – 2013

- Dissertation Title: *Social Epidemiology and Spatial Epidemiology: An Empirical Comparison of Perspectives.*
- Used California Health Interview Survey (CHIS) data to estimate effect of neighborhood-level education and income on overweight/obesity, type 2 diabetes, and smoking, using social and spatial epidemiology analytic techniques. Compared results of these approaches.

Graduate Research Assistant Spring 2012

- Conducted geocoding and geostatistical analysis using ArcGIS and Stata to examine comparability of administrative health care system records with hypothetical community-representative sample.

Graduate Research Assistant Fall 2010

- Collaborated with Transdisciplinary Research on Energetics and Cancer – Identifying Determinants of Eating and Activity (TREC-IDEA) team to use latent class analysis to identify neighborhood classes and then estimate effect of neighborhood class on adolescent physical activity.

Graduate Research Assistant Fall 2009

- Conducted analysis using Twin Cities Walking Study (TCWS) data to estimate effect of neighborhood walkability on obesity.

Graduate Research Assistant (HIV/STI Intervention and Prevention Studies) Fall 2008

- Developed graphs and conducted data analysis for the Men's INTernet Study II (MINTS-II) using Stata.

Minnesota Population Center, Spatial Core, Minneapolis, Minnesota, USA

Graduate Research Assistant Fall 2010 – Spring 2011

- Provided GIS assistance to different groups throughout the Univ. of Minnesota using GIS software (ArcMap v.9 and v.10). Answered questions, created maps, conducted spatial analyses, provided step-by-step instructions, and/or assisted one-on-one as requested.
- Led teams collecting primary data in the field, performed data cleanup, and conducted basic GIS and statistical analysis (using Stata) for the School Choice Policy Change and Active Commuting to School Study (P.I. John R. Sirard). Study evaluated changes in student mode of transit to/from Minneapolis elementary and middle schools between spring and fall 2010 due to a transportation policy change.

Graduate Research Assistant Summer 2007 – Spring 2009

- Developed method to estimate 1960 population within boundaries of 2000 U.S. Census Public Use Microdata Areas (PUMA).
- Created GIS files and procedures to map Integrated Public Use Microdata Series (IPUMS)-International data.
- Created maps as needed using ArcMap. Geocoded addresses for public health research projects.

PUBLICATIONS

Published Peer-Reviewed Articles

1. **McDonald, K.**, Hearst, M., Farbakhsh, K., Patnode, C., Forsyth, A., Sirard, J., Lytle, L. Adolescent Physical Activity and the Built Environment: A Latent Class Analysis Approach. *Health & Place* 2012;18:191-98.

2. **McDonald, K.**, Oakes, J.M., Forsyth, A. Effect of street connectivity and density on adult BMI: results from the Twin Cities Walking Study. *Journal of Epidemiology and Community Health* 2012;66:636-640.
3. Sirard, J.R., **McDonald, K.**, Mustain, P., Hogan, W., Helm, A. Effect of a School Choice Policy Change on Active Commuting to Elementary School. *American Journal of Health Promotion* 2015;30(1):28-35.
4. Raynor, L.A., **McDonald, K.**, Flunker,D. Exploratory Spatial Access Analysis of Transgender Individuals' Access to Health Care Providers in the State of Minnesota. *International Journal of Transgenderism* 2014;15:129-135, doi: 10.1080/15532739.2014.946196.
5. Oakes, J.M., MacLehose, R.F., **McDonald, K.N.**, Harlow, B.L. Using Administrative Health Care System Records to Recruit a Community-Based Sample for Population Research. *Annals of Epidemiology* 2015;25(7):526-531, doi: 10.1016/j.annepidem.2015.03.015.
6. Orban, E., **McDonald, K.**, Sutcliffe, R. et al. Residential Road Traffic Noise and High Depressive Symptoms after Five Years of Follow-up: Results from the Heinz Nixdorf Recall Study. *Environmental Health Perspectives*. 2016;124(5):578-585. doi: 10.1289/ehp.1409400.
7. Sutcliffe, R., Orban, E., **McDonald, K.**, Moebus, S. The German *Energiewende* – a matter for health? *European Journal of Public Health* 2016;26(4):707-712. doi: 10.1093/eurpub/ckv212.
8. McDonald, W., Banerji, N., **McDonald, K**., Ho, B., Macias, V., Kajdacsy-Balla, A. Steroidogenic Factor 1, Pit-1, and Adrenocorticotropic Hormone: A Rational Starting Place for the Immunohistochemical Characterization of Pituitary Adenoma. *Archives of Pathology & Laboratory Medicine* 2017;141(1):104-112. doi: 10.5858/arpa.2016-0082-OA.
9. Suarez-Lopez, J.R., Hong, V., **McDonald, K.N.**, Suarez-Torres, J., Lopez, D., De la Cruz, F. Home proximity to flower plantations and higher systolic blood pressure among children. *International Journal of Hygiene and Environmental Health*. 2018;221:1077-1084.
10. Friedman, E., Hazlehurst, M.F., Loftus, C., Karr, C., **McDonald, K.N.**, Suarez-Lopez, J.R. Residential proximity to greenhouse agriculture and neurobehavioral performance in Ecuadorian children. *International Journal of Hygiene and Environmental Health*. 2020;223(1):220-227. doi.org/10.1016/j.ijheh.2019.08.009
11. McDonald, W.C., **McDonald, K.N.**, Helmer, J.A., Ho, B., Wang, A., Banerji, N. The Role of T-box Transcription Factor in a Pituitary Adenoma Diagnostic Algorithm. *Archives of Pathology & Laboratory Medicine.* 2021;145(5):592-598. doi.org/10.5858/arpa.2020-0091-OA.

Doctoral Dissertation

1. **McDonald, Kelsey N**. Social Epidemiology and Spatial Epidemiology: An Empirical Comparison of Perspectives. University of Minnesota ProQuest Dissertations Publishing. 2013.

Master's Thesis

1. **McDonald, Kelsey**. San Pedro Creek Flood Control Project: Integrative Analysis of Natural Hazard Response. Master's Thesis. 2004. Unpublished manuscript.

INVITED TALKS

Geography Department, Macalester College, St. Paul, Minnesota, USA

Invited Lecturer Feb. 2013, Mar. 2015

- *Course:* Medical Geography
- Lectured 25 undergraduates on obesity and neighborhood effects (2013), greenness and diabetes (2015).

Math, Statistics and Computer Science Department, Macalester College, St. Paul, Minnesota, USA

Invited Lecturer Mar. 2015

- *Course:* Senior Seminar for Community and Global Health Concentration
- Presented my research on neighborhood effects and obesity to 20 undergraduate seniors.

Institute for Medical Epidemiology, Biometry and Informatics, Martin-Luther University Halle-Wittenberg, Halle(Saale), Germany

Invited Speaker July 2014

- *Title:* Using spatial regression to estimate the effect of neighborhood education and income on overweight/obesity, type 2 diabetes, and smoking.
- Presented findings from spatial analyses in dissertation research.

CONFERENCE PRESENTATIONS

1. **McDonald, Kelsey N.** Measuring Personal Air Quality During an Exceptional Year (Sept. 2019 – Sept. 2020, Minneapolis). 2024 Annual Meeting - American Association of Geographers. *Upcoming April 19, 2024.*
2. **McDonald, Kelsey N.**, Karl-Heinz Jöckel, Raimund Erbel, Dagmar Führer, and Susanne Moebus. Residential Surrounding Greenness and Diabetes Mellitus in Older Adults in Ruhr Region of Germany. 2015 International Medical Geography Symposium. July 9, 2015.
3. **McDonald, Kelsey N.**, Karl-Heinz Jöckel, Raimund Erbel, and Susanne Moebus. Measuring exposure to green vegetation using the Normalized Difference Vegetation Index: Importance of neighborhood scale for health research. 2015 Annual Meeting of the Association of American Geographers. April 24, 2015.
4. **McDonald, Kelsey N.** and J. Michael Oakes. Importance of policy-relevant, exchangeable comparison groups in observational neighborhood effects studies. 2014 International Conference on Urban Health. March 6, 2014.
5. **McDonald, Kelsey** and Steven M. Manson. Using spatial regression to estimate the effect of neighborhood education and income on overweight/obesity, type 2 diabetes, and smoking. 2013 International Medical Geography Symposium. July 8, 2013.
6. **McDonald, Kelsey** and J. Michael Oakes. The possible effect of increasing neighborhood education and income on overweight/obesity, type 2 diabetes, and smoking in San Francisco adults. Poster session. 2013 Annual Meeting of the Society for Epidemiologic Research. June 18, 2013.
7. **McDonald, Kelsey.** Improving identification of neighborhood causal factors for disease using propensity score matching: Neighborhood socioeconomic status and overweight/obesity in San Francisco. 2013 Annual Meeting of the Association of American Geographers. April 11, 2013.
8. **McDonald, Kelsey.** Adolescent Physical Activity and the Built Environment: A Latent Class Analysis Approach. 2011 North American Congress of Epidemiology, Social Epidemiology Spotlight Session. June 23, 2011.
9. **McDonald, Kelsey**. Built Environment and Obesity in the Twin Cities Walking Study. 2010 Annual Meeting of the Association of American Geographers. April 2010.

EMPLOYMENT HISTORY

The Nature Conservancy, Minneapolis, Minnesota, USA

Geographic Information Systems (GIS) Intern Jan. – Dec. 2006

- Created maps for conservation projects. Assembled GIS data for US islands in the Great Lakes.

Government Relations Assistant Sept. – Dec. 2005

Public Policy Research Intern June – Sept. 2005

Wells Fargo, San Francisco, California, USA

E-business Systems Consultant, Online Investments Dec. 2003 – Apr. 2004

E-business Analyst, Investment Internet Services/Online Investments Jan. 2000 – Nov. 2003

Administrative Assistant, Online Brokerage July 1998 – Jan. 2000

LEADERSHIP

Community & Global Health (CGH) Concentration Steering Committee, Macalester College

Steering Committee Member 2015 – present

- Help guide the CGH concentration and plan events for students in the concentration.

Association of American Geographers (AAG) 2013 Annual Meeting
Session Co-organizer 2012 – 2013

- Co-organized series of three sessions on new approaches to neighborhoods and health research for the 2013 AAG annual meeting.

Health and Medical Geography Specialty Group, Association of American Geographers (AAG)
Student Board Member 2010 –2013

- Administered the student paper competition with other student board member and vice-chair, including developing competition protocols and leading coordination of paper reviews.
- Promoted the specialty group.
- Attended business meetings at annual AAG meeting.

CapitolRiver Council, St. Paul, Minnesota, USA
Board Member and Co-chair of Environment, Movement, and Public Realm Committee 2005 – 2006

- Reviewed proposed developments for downtown St. Paul and provided feedback on behalf of the community.
- Organized community events for National Night Out and Earth Day.
- Served on task force to reorganize committee structure and developed committee focusing on sustainability issues.

District Councils Collaborative of St. Paul and Minneapolis, Minnesota, USA
Steering Committee Member 2006

- Worked with other steering committee members to create bylaws and hire staff.
- Facilitated community involvement in planning for light rail and development along Central Corridor between Minneapolis and St. Paul.

Sierra Club, Minneapolis, Minnesota, USA
Co-chair of Sierra Neighborhoods Committee 2005

- Developed program to educate a Minneapolis neighborhood about nonpoint source pollution and stormwater runoff and taught residents methods to minimize impacts at two local events.

World Affairs Council of Northern California – International Forum, San Francisco, California, USA
Steering Committee Member 1998 – 2000

- Helped organize events for young professionals to discuss and learn about international issues.

Treasurer 1998 – 1999

- Tracked expenses and generated reimbursements.

AWARD FUNDING

University of Minnesota-Twin Cities, School of Public Health

- Dean's PhD Scholars Award - $500 Scholarship (2013)
- Dean's PhD Scholars Award - $1500 Scholarship (2012)

Division of Epidemiology & Community Health, University of Minnesota-Twin Cities

- J.B. Hawley Student Research Award - $7500 grant for dissertation research (2012)

UCLA Center for Health Policy Research - California Health Interview Survey

- Student Scholarship - $860 grant for dissertation research using CHIS data (2012)

PROFESSIONAL SERVICE TO JOURNALS

- Invited reviewer, Health & Place
- Invited reviewer, International Journal of Behavioral Nutrition and Physical Activity

- Invited reviewer, International Journal of Sustainable Transportation
- Invited reviewer, Environmental Health Perspectives

PROFESSIONAL MEMBERSHIPS

- Association of American Geographers
- Association of Pacific Coast Geographers
- German Society for Epidemiology (Deutsche Gesellschaft für Epidemiologie) – Workgroups: Health Geography and Social Epidemiology (2013-2023)
- Minnesota Population Center – University of Minnesota, Twin Cities, Minnesota, USA

SKILLS

- Statistical Software Skills: Stata, R, SAS
- GIS Skills: ArcGIS Desktop, ArcGIS Online, QGIS
- Statistical Analysis Skills: linear, logistic, GEE, and spatial regression; propensity score matching
- Project Management
- Languages: English (native), German (proficient), Spanish (beginner)

FOREIGN TRAVEL AND EXPERIENCE

- Germany: Postdoctoral fellowship, Essen (Sept. 2013-Oct. 2014); University of Minnesota, Morris, Winter Semester, Kassel (spring 1993); high school exchange student, Heidelberg (spring/summer 1990); travel throughout Germany on numerous occasions.
- Europe: travel in France, the Netherlands, Austria, Switzerland, Czech Republic, Italy, Denmark, Spain, United Kingdom.
- Latin America: language school and host family stay, Costa Rica (March 2007); language school, Oaxaca, Mexico (July 2006); travel in Mexico City and Yucatan.