

PROMOTION RECOMMENDATION

The University of Michigan
School of Public Health
Department of Epidemiology

Carrie A. Karvonen-Gutierrez, assistant professor of epidemiology, Department of Epidemiology, School of Public Health, is recommended for promotion to associate professor of epidemiology, with tenure, Department of Epidemiology, School of Public Health.

Academic Degrees:

Ph.D.	2012	University of Michigan, Epidemiology, Ann Arbor, MI
M.P.H.	2005	University of Michigan, Epidemiology/Reproductive/Women's Health, Ann Arbor, MI
B.A.	2002	University of Northern Iowa, Biology, Cedar Falls, IA

Professional Record:

2020 – Present	Co-Director, Center for Midlife Science, University of Michigan, Ann Arbor, MI
2016 – Present	Assistant Professor, Department of Epidemiology, School of Public Health, University of Michigan, Ann Arbor, MI
2013 – 2016	Assistant Research Professor, Department of Epidemiology, School of Public Health, University of Michigan, Ann Arbor, MI
2012 – 2013	Assistant Research Scientist, Department of Epidemiology, School of Public Health, University of Michigan, Ann Arbor, MI
2005 – 2012	Research Analyst/Epidemiologist, Department of Epidemiology, Center for Integrated Approaches to Complex Diseases, School of Public Health, University of Michigan, Ann Arbor, MI
2003 – 2014	Research Health Science Specialist, Department of Veteran's Affairs Medical Center, Health Services Research and Development, Ann Arbor, MI

Summary of Evaluation:

Teaching: Professor Karvonen-Gutierrez's didactic teaching is strong. She has been the primary instructor or co-instructor for nine courses since 2017. The classes are EPID503 (2 times), a large, required epidemiology class for non-epidemiology students; PUBHLTH512 (3 times), the replacement for EPID503 taught in both residential and online formats; and PUBHLTH370 (four times), a required undergraduate class on biology and pathophysiology. These have generally been quite large classes. She has had to develop or modify many of these classes from their previous versions. For most of these classes, her teaching evaluations have been outstanding (Q2 scores range from 4.83-5.0). Two classes received considerably lower ratings. This was for the new class (PUBHLTH 512), which was co-taught. The first time it was taught it was not well received. Based on feedback, Professor Karvonen-Gutierrez revised the class substantially, and in the latest offering received outstanding ratings. Evidence of her talent as a teacher includes a nomination by students for the Golden Apple award for teaching in 2020.

She has chaired or co-chaired two completed Ph.D. committees and is the chair of two Ph.D.

committees that are in progress. Professor Karvonen-Gutierrez is actively engaged in mentoring students in research. She has been the advisor for numerous masters students for their capstone projects. For 23 of her 69 papers since 2016, a trainee is listed as the first author.

Research: Professor Karvonen-Gutierrez's research focuses on the impact of aging and obesity on the development and progression of chronic diseases and musculoskeletal outcomes in midlife and during the transition to late life. Her work on physical functioning, disability, and falls was particularly influential in establishing the importance of the midlife period for healthy aging across the life course and resulted in a number of high-impact publications. Substantial limitations in physical functioning and adverse events like falls are common during the midlife period, and these events are associated with increased risk of mortality. Her work has identified adverse inflammatory profiles during the midlife as important predictors for poor physical functioning and falls. Her research has helped characterize changes in bone health across the menopausal transition, and importantly her work demonstrated substantial heterogeneity in bone changes across the menopausal transition despite similar changes in bone mineral density. Her research has made great use of two large prospective cohort studies of midlife women, the Michigan Bone Health and Metabolism Study and the Study of Women's Health Across the Nation (SWAN). She has recently taken over leadership of the Michigan site for SWAN. She is actively engaged in organizing and setting research directions and priorities for SWAN. A notable aspect of her research activities has been the emphasis on high quality primary data collection. In the area of environmental exposures and metabolic outcomes, she has published several papers demonstrating that environmental metal exposure during the midlife are associated with adverse health outcomes including poor adipokine profiles, disordered glucose homeostasis, and incident diabetes.

Professor Karvonen-Gutierrez has demonstrated very good productivity, publishing 113 articles in peer reviewed scientific journals throughout her career. Since 2016, she has 69 peer reviewed publications, of which eight are as first author and 10 are as last author. Her i10-index is 53 and her h-index is 28. Professor Karvonen-Gutierrez's publications have appeared in top journals in the fields of reproductive health, aging, sports medicine, and musculoskeletal health, and her work has been cited over 3,500 times. As well as the publications that Professor Karvonen-Gutierrez has led, she has also often participated as a team scientist and co-author on significant publications arising from the SWAN study. She has presented invited talks on her research at seven different external conferences/workshops within the U.S. since 2016, and at eight different University of Michigan organized conferences. Professor Karvonen-Gutierrez disseminates her research findings not only to specialized audiences of those interested in midlife health transitions, but also to broader clinical and public health audiences. Professor Karvonen-Gutierrez has been successful in receiving funding for her research. She has been continually funded as a principal investigator since 2013. During time in rank, she successfully competed for grant funding, including as the principal investigator of a K01, a multiple principal investigator of an R01, a site principal investigator of a U19, and a co-investigator on nine other grants.

Recent and Significant Publications:

Karvonen-Gutierrez, C.A., Peng, Q., Peterson, M., Duchowny, K., Nan, B., Harlow, S. (2018).

Low grip strength predicts incident diabetes among mid-life women: the Michigan Study of Women's Health Across the Nation. *Age and Ageing*, 47:685-691. PMCID: PMC6108393

- Karvonen-Gutierrez, C.A., Ylitalo, K.R., Peng, M.Q. (2020). Midlife falls are associated with increased risk of mortality in women: Findings from the National Health and Nutrition Examination Survey III. *Arch Gerontol Geriatr*, Jul 25;91:104206. PMID: PMC7854835
- Karvonen-Gutierrez, C.A., Zheng, H., Mancuso, P., Harlow, S.D. (2016). Higher leptin and adiponectin concentrations predict poorer performance-based physical functioning in mid-life women: the Michigan Study of Women's Health Across the Nation. *J Gerontol A Biol Sci Med Sci*, 71(4):508-514. PMID: PMC5014187
- Chandrasekaran, N., Harlow, S.D., Moroi, S., Musch, D., Peng, Q., Karvonen-Gutierrez, C. (2017). Visual impairment predicts poor physical functioning among middle aged women: The Study of Women's Health Across the Nation, Michigan site. *Maturitas*, 96:33-38. PMID: PMC5215835
- Jepsen, K.J., Kozminski, A., Bigelow, E.M., Schlecht, S.H., Goulet, R.W., Harlow, S.D., Cauley, J.A., Karvonen-Gutierrez, C. (2017). Femoral neck external size but not aBMD predicts structural and mass changes for women transitioning through menopause. *J Bone Miner Res* 32(6):1218-1228. PMID: PMC5466474

Service: Professor Karvonen-Gutierrez has provided strong internal and external service. Within the Department of Epidemiology she has served on the Admissions and Search Committees and the Doctoral committee, which she now co-chairs. She also chairs the School of Public Health Junior Faculty Advisory Board. Within the university, she is active on the Research Operations Committee and on the Research and the Education Cores of the Older Americans Independence Center, which she co-leads. Externally, Professor Karvonen-Gutierrez has been on the editorial board of *Women's Midlife Health Journal* since 2014 and was the guest editor for a special issue of the journal in 2019. She has refereed for many scientific journals. She has been a member of a grant review panel for the Department of Defense eight times and has also reviewed grants for the National Institutes of Health (NIH). She is active on committees and within sections of the Gerontology Society of America. Specifically, she has been on the Abstract Review Committee and the Membership Committee for which she now serves as a section chair. Within the SWAN study, she has been a member of the Cross-Cohort Collaboration Steering Committee since 2017.

External Reviewers:

Reviewer A: "The significance of Dr. Karvonen-Gutierrez's area of research, her track record of funding, and her peer-reviewed publications provide clear support that she has achieved this criterion for promotion. Her professional service demonstrates her national recognition as a leader in the field of women's health, aging, and musculoskeletal outcomes. In my opinion, her achievements also meet the criteria for tenure and promotion at [my institution]."

Reviewer B: "Dr. Karvonen-Gutierrez's research has proven that many of the impairments that are very common in older persons, such as falls and disability in activity of daily living also occur frequently in middle life. ... Her work has defined important risk factors for these impairments including sensory impairments, obesity, and metabolic derangements. Her work on bone health, environmental exposures, and metabolic parameters has informed our understanding

of potential mechanistic pathways that lead to disabling impairments. ... Dr. Karvonen-Gutierrez would clearly be promoted to Associate Professor at [my institution]. The basis of this decision would be her scientific impact, as evidenced by her impressive publication record, as well as her success funding her research program.”

Reviewer C: “Dr. Karvonen-Gutierrez has an impressive track record of scholarly productivity on the effects of critical life stages and transitions on metabolic and musculoskeletal health outcomes. Her necessary research is innovative and far-reaching. ... Dr. Karvonen-Gutierrez’s CV, personal statement, and exemplar manuscripts demonstrate that she is a nationally recognized leader in her field and that her achievements meet the criteria for promotion in her department.”

Reviewer D: “I am quite certain that Dr. Karvonen-Gutierrez would be promoted here [at my institution]. Based on what I know of the field nationally, and the sample of epidemiologic scholars I interact with, I would say that Dr. Karvonen-Gutierrez is easily in the top 20% nationally for her level of experience.”

Reviewer E: “In summary, I find that Dr. Karvonen-Gutierrez has met or exceeded expectations for promotion to Associate Professor with Tenure. She is especially strong in teaching. ... Through her research she has gain a national reputation for her expertise and excellence. I support her promotion most enthusiastically.”

Summary of Recommendation: Professor Karvonen-Gutierrez conducts innovative research on women’s health across the life course and leads the Michigan site of the NIH-funded SWAN and co-directs the Center for Midlife Science. She teaches critical required courses in the undergraduate, graduate, and online degree programs and provides valuable service both internally, for the department, school, and university, as well as externally at the regional and national levels. It is with the support of the School of Public Health Executive Committee that I recommend Carrie A. Karvonen-Gutierrez for promotion to associate professor of epidemiology, with tenure, Department of Epidemiology, School of Public Health.



F. DuBois Bowman, Ph.D.
Dean, School of Public Health

May 2022