aging news

NEWSLETTER OF THE INSTITUTE ON AGING (IOA) | UNIVERSITY OF WISCONSIN-MADISON | Summer/Fall 2025

Midlife in the United States (MIDUS)

is an ongoing multidisciplinary study administered by the Institute on Aging following over 11,000 US residents to understand factors that influence health and well-being across the decades of adult life. Receive updates about recent findings at: *aging.wisc.edu/recent-midus-findings*

Air Pollution Linked to Worse Mental Skills in Older Adults

Climate change is expected to increase air pollution in many places, due to hotter temperatures, less rain, and higher wind speeds. This includes increases in fine particulate matter, known as PM2.5 (particles with a diameter of 2.5 micrometers or less, or $^{1}/_{30^{th}}$ the width of a human hair). PM2.5 originates from various sources, including vehicle exhaust, industrial emissions, and wildfires.

Exposure to PM2.5 is associated with health problems that may accelerate the aging process. This study looked at whether it affects mental skills and functional limitations (ability to carry out normal activities of daily living, such as walking up stairs). Researchers also looked at factors that might explain links between pollution and mental/physical limitations, and whether there were variations by age or sex.

MIDUS data from around 5000 individuals aged 32 to 83 were used. Five year average exposure to PM2.5 was calculated based on participant addresses using data from the Center for Air, Climate, and Energy Solutions, at the beginning of the study and about 9 years later. Other measures included:

- Executive functioning: mental skills involving the ability to pay attention, plan, manage daily life, and control emotions (assessed by phone).
- Functional limitations: how much health limited participant's ability to carry groceries, bend and kneel, walk several blocks, etc. (assessed by self-report).

Conditions that might explain links between PM2.5 exposure and mental and functional abilities, and have previously been linked to air pollution, were also assessed:

- Cardiometabolic disease: group of conditions that often occur together, measured by participant reports of high blood pressure, diabetes, heart trouble, and abdominal obesity.
- Depression: measured by asking whether participants felt sad or depressed for two weeks or more in the last year, and if so, whether they had other symptoms, such as losing interest in most things.

Results showed that:

- Higher PM2.5 exposure was associated with lower executive functioning. The change over 9 years was equal to almost three years of additional aging.
- Results did not vary by age or sex.
- The link between PM2.5 and executive functioning was explained in small part (8.1%) by cardiometabolic disease at the beginning of the study, but it was not significant over time. Depression was not a significant factor.
- Although other studies have shown a relationship between PM2.5 exposure and functional limitations, no significant association was evident in this study.

More research is needed to confirm these results, which suggest that reducing exposure to fine particulate matter may help with successful mental aging. Individuals may want to avoid being outside during periods of elevated air pollution, wear face masks, or install air filters in their homes. Societal measures to reduce pollution, such as enacting clean energy policies and controlling wildfires, may improve the lives of aging adults.

Source: *Grineski, S. E., Cheung, E. S. L., Clark, A. S., & Curtis, D. S. (2025). Fine particulate matter is associated with lower executive functioning in middle-aged and older adults: Cardiometabolic disease as a mediator. Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 80(7), Article glaf104. https://doi.org/10.1093/gerona/glaf104*

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Helping Researchers Engage Older Adults

To foster research reflecting the needs and priorities of older adults, the Center for Aging Research and Education at the UW–Madison School of Nursing has coordinated two community Boards of Older Adults Advisors (BOAAs) since 2022. The boards work with researchers to increase engagement of older adults in scientific research. Advisory boards also help align research with community needs, focus on outcomes that matter to patients, and increase likelihood of finding real-world solutions.

BOAAs can help researchers by:

- Giving input on research design and research questions.
- Offering recommendations on recruitment strategies, study activities, and how to engage people under-represented in research.
- Providing plain-language editing of public materials.

Two Advisory Boards

Researchers can meet with one or both boards to get input:

- Madison BOAA members predominantly identify as Black, with diverse personal and professional backgrounds.
- Rural BOAA members all identify as White, and include military veterans, farmers, and residents of under-resourced communities.

To deepen community involvement and provide resources for researchers, each board created their own research agenda that prioritized the research they believe would significantly improve health for older adults.

Suggested Research Agendas Include:

Aging well in place: How can home environments be made safer to support aging in place? What policies support people to age in place? What impact do property taxes have on aging in place, especially for rural older adults?

Social isolation and loneliness: How can community members be encouraged to take care of each other? What relationship is there between type of housing and isolation (are apartments more isolating)? What are health benefits and risks of pets as individuals age?

Improving communication in healthcare: How can healthcare providers better ask questions and listen? How can they be encouraged to talk to patients, not just the family member accompanying them? How can people better track and describe their health problems to healthcare providers? How can people better determine which problems to tell providers about? How can people advocate for themselves in healthcare settings?

Reducing disparities in healthcare: What role do race, education, income, residence, access to transportation, and prior negative experiences with the healthcare system play in determining access to quality care? How can the health of people who delay seeking care or have trouble accessing the healthcare system be supported? How can medications become more affordable, so cost is not a barrier?

Increasing physical activity: How can people get enough exercise, even if they live in less safe areas or cannot afford health club memberships?

Health promotion, behaviors, prevention: Many people lack the information and support to prevent age-related health issues, or to understand what is normal aging and what are problems that can be treated or prevented. How can people be encouraged to learn about aging throughout their lives?

From Board Members:

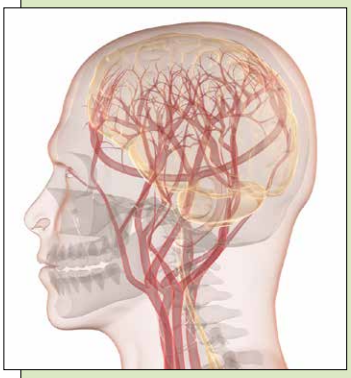
"In the world of research, we usually get asked [for input] after the questions are already formed. So to include us from the very beginning of the process- I just feel it's imperative!"
~ Mary, Madison BOAA member

"How often have you heard, 'I'd like to go to that birthday party,' but the house is not friendly. You may live there and not have a problem. You may not need grab bars in the bathroom. But suddenly, it's like you just uninvited somebody. That is a big part of social isolation."
~Bruce, Rural BOAA member

"I can't see my neighbor. So, if I fall on my driveway, nobody's going to find me. Some researchers talk about technology as the answer, but so many people in Iowa County don't have high-speed internet or cell service."
~Deb, Rural BOAA member

"I have MyChart and I've never been on it. I need information in a different flavor...You can't expect every person to understand the material you give them, if it's not provided in a flavor they can understand."
~ Joann, Madison BOAA member

Females May be More Susceptible to Brain Lesions Earlier in Life that May Contribute to Alzheimer's



Alzheimer's disease (AD) represents a leading cause of disability and mortality worldwide. Brain changes leading to memory impairment may begin decades before a diagnosis of AD, but the precise changes that lead to AD remain unknown. One such change may be alterations in blood flow that damage white matter tissue in the brain. When arteries stiffen with age, it can change the expansion and contraction of the brain's blood vessels that occurs with each heartbeat. This in turn can affect blood flow pulsations within the blood vessels, known as cerebral pulsatility. Elevated cerebral pulsatility is associated with lesions in the brain's white matter, which are linked to dementia.

Previous studies of cerebral pulsatility have considered only a single blood vessel, or have computed a global measure of blood flow in the brain, both of which may overlook differences in brain regions. This study, co-authored by IOA affiliates Jill Barnes (Assoc. Prof., UW–Madison Dept. of Kinesiology), Sterling Johnson (Assoc. Dir., Wisconsin Alzheimer's Institute), and their associates, used specialized MRI brain scans (4D Flow MRI) that better assessed blood flow patterns in specific areas of the brain and is more sensitive to age-related changes. Additionally, this is the first study to look at sex differences in the association between cerebral pulsatility and brain lesions. Estrogen protects blood vessel structure, so females may be at a greater disadvantage of elevated cerebral pulsatility after menopause, when estrogen levels drop.

Study participants were from the Wisconsin Alzheimer's Disease Research Center and included 403 adults aged 45-91 years, who had no mental impairment. MRI results showed:

- Elevated cerebral pulsatility was associated with more white matter lesions, but sex and age influenced the relationship.
- Both males and females showed the association between blood flow and brain lesions in the front of the brain (the internal carotid arteries and the middle cerebral artery).
- Only females showed the association in the back of the brain (the vertebral and basilar arteries).
- In addition, only middle-aged females showed the association in the internal carotid arteries and the right middle cerebral artery.

The results suggest that dysregulation in the brain's blood flow may have greater detrimental effects on the brain's white matter in females earlier in life, which may help explain why more females than males are diagnosed with Alzheimer's disease. Collectively, the results contribute to understanding early changes in brain structure that may underlie the development of AD, so may have implications for treatment to prevent mental decline with aging.

Source: *Moir, M. E., Loggie, N. A., Fico, B. G., Gaynor-Metzinger, S. H. A., Norby, A. M., Zea, R. D., Howery, A. J., Rivera-Rivera, L. A., Eisenmenger, L. B., Wieben, O., Johnson, S. C., & Barnes, J. N. (2025). Biological sex influences relationships between cerebral pulsatility and white matter hyperintensities in aging adults. American Journal of Physiology-Heart and Circulatory Physiology, 328(6), H1306-H1317. https://doi.org/10.1152/ajpheart.00061.2025*

Aging News

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Upcoming Free Public Events

Hosted by IOA • on the UW–Madison campus

35TH
Institute on Aging Annual Colloquium

Reflecting on 30 Years Leading the Institute on Aging
a talk by Carol Ryff, PhD,
plus more speakers,
a Health & Resource Fair,
and a Poster Session.

Thurs., 10/16/25, 8:30-1:30

Eloquence & Eminence Lecture:

House Calls to Health Systems: Reflections from 45 years as a Family Physician

Valerie J. Gilchrist, MD

Tues., 9/23/25, 2-4 pm

aging.wisc.edu/calendar

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All good things are wild and free.
~ Henry David Thoreau

Jim Porter Wins Unsung Hero Award for 30 years of IT Support at IOA

UW–Madison Division of Information Technology recently presented its annual IT Recognition Awards. IOA's own Jim Porter won the Unsung Hero Award for his 30+ years of behind the scenes work enabling IOA research, outreach, and public data sharing. His skills have impacted thousands of researchers worldwide and helped make his colleagues' work lives much more pleasant. Jim was nominated by more than 10 co-workers, who mentioned:

- The scope of his contributions: "Jim provides oversight for dozens of computers, software updates, networks, websites, databases, phones, and printers. All of these require cutting-edge IT capabilities, which he reliably delivers." He provides IT support at multiple locations, at events, and during weekends when study participants are on campus. "Jim handles this odd-hour workload with a smile on his face and zero complaints." He is also the first to volunteer for other tasks– like serving as IOA's representative at professional meetings, taking staff photos, or relocating office furniture.

Jim Porter

- His positive attitude: "Jim is always responsive, pleasant, and helpful." "IT troubleshooting is always handled with a smile on his face and some warm, light-hearted humor." "Everyone receiving technical guidance from Jim has the input delivered with excellence, good will, and efficiency."
- He deserves a standing ovation: "Why Jim's sustained record has gone unsung for so long is perhaps because only he knows the full scope of day-to-day, week-to-week, month-to-month efforts that have facilitated, via the latest technological advances, the work of so many others. Jim is truly a star in the realm of IT support. He overwhelmingly deserves a long overdue standing ovation for 30 years of exceptional contributions."

Jim's response: *"I'm truly honored and, honestly, I was surprised when I received the email stating I'm an award recipient. I would like to thank my amazing colleagues for nominating me for this award. I've been lucky to spend over 30 years doing work I enjoy, alongside people I respect, all in support of the important research and mission of the Institute on Aging and the university. It's been incredibly rewarding to help keep things running– whether that's behind the scenes with networks and systems, or out front supporting our teams and users. We all know it takes a team to keep things moving, and for that I'm grateful for the opportunities to collaborate with so many dedicated and talented folks across campus. Thank you."*