# Academic Radiologists Look for Help from AI to Meet Demands

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As the supply of clinical radiologists shrinks in the face of growing demand for medical imaging, academic radiologists face growing pressure to fill service gaps—often at the cost of research and education. Like their clinical counterparts, they're looking for AI to help offload routine tasks and reclaim time for innovation and training the next generation.

"In the US, there are around 250 academic radiology departments. Everybody's in the same squeeze," says Paul Kinahan, Vice Chair for Research and Professor of Radiology at the University of Washington School of Medicine. "Probably a couple of dozen are our peers in terms of grant funding and innovating with research. But that number could shrink to 10 or 12 in the next few years."

"The thing that we're realizing is that AI can help the academic radiology side as well as the clinical side," Dr Kinahan adds. "It's not a complete answer by itself, but it can help."

## Imaging Demand vs Radiologist Supply

Over 300 million diagnostic imaging procedures are performed in the United States each year, resulting in a medical imaging market that, according to one estimate, is projected to grow from $140.2 billion in 2024 to $239.74 billion by 2032.[1]

With respect to specific modalities, 84.5 million CT scans were performed in the United States in 2021, a 15.8% increase from the prior year. PET scans are projected to grow by about 23% over the next decade, while US is anticipated to increase 16% over the coming decade.[2]

Population growth is a major driver of future imaging utilization, potentially accounting for 73-88% of increases across all modalities. Indeed, owing to the prevalence of age-related health issues, older Americans are expected to contribute 12-27% of utilization increases.[3]

Meanwhile, more than 80% of health systems are reporting staffing shortages in radiology, shortages that show no sign of easing. The Association of American Medical Colleges' 7th annual analysis of physician supply and demand noted that the shortage of "radiologists and other specialists" could exceed 35,000 by 2034, owing to retirement and various causes of attrition, including burnout. Of some 21,000 radiologists in the United States, more than half are nearing retirement.[4]

## Impacts on Medical Imaging Research

That may seem like a long time off, but clinician scientists like Katy Lowry, MD, an associate professor of radiology at the UW School of Medicine and a radiologist at the Fred Hutchinson Cancer Center in Seattle, are already seeing and experiencing the early signs and symptoms.

"Radiology volumes are high, and radiologists feel it, and there's definitely a tension and a stress of trying to keep up with the clinical work to a point but also having the time to do academic pursuits," says Dr Lowry.

Dr Lowry's research focuses primarily on breast cancer screening and outcomes. A 2022 study led by Dr Lowry highlighted the potential benefits of expanding eligibility for MRI breast cancer screening for people with genetic variants beyond *BRCA1* and *BRCA2*, such as *ATM*, *CHEK2*, and *PALB2*. Her team's study findings led to changes in screening policy that expanded MRI screening to younger patients with these variants.

"This kind of research requires large buckets of time. This is not something you squeeze in an hour here, an hour there, and one day a week, which may be typical for academic radiology," says Dr Kinahan. "That's just enough to keep up with your email and administrative duties, not the consistent effort over years that moves the field ahead."

And while he and Dr Lowry agree that patient care should always be the top priority, room should also be left for research that leads to innovation.

"At the end of the day, the first priority is making sure we have enough radiologists to do the clinical work because we have a commitment to our patients, who always come first," Dr Lowry says. "But you also really need substantial time to think, to meet with your collaborators and have long conversations about the design of your study, the interpretation of your study, and what you're going to do with the findings. Having time to write, having

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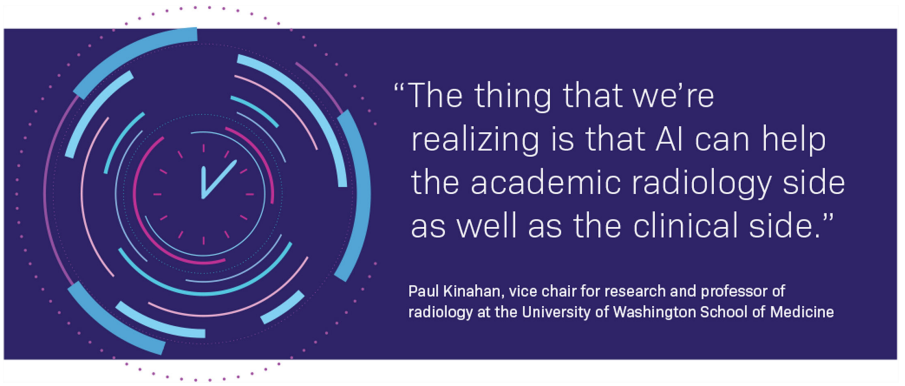


time to get the grant in the first place, is extremely time-consuming."

## Impacts on Teaching

Teaching is also taking a hit from the disconnect between radiologist supply and imaging demand, says Gelareh Sadigh, MD, associate professor of radiology, director of Health Services and Comparative Outcome Research, and vice chair for faculty development at the University of California, Irvine.

Dr Sadigh studies social determinants of health factors that affect patient access to health care, including medical imaging. The most significant impact of growing imaging caseloads on her, Dr Sadigh says, relates to teaching medical students and residents.

"Yes, my main mission is clinical, but I also have an educational mission for the next generation of radiologists," she says, explaining that greater demand for image interpretation leaves her less time to review each case in detail with her trainees.

"In general, if [a finding] is positive, I want to talk about it at least 15 to 20 minutes with the trainee, and not only about that case, but the mimics of that case. But if I have a ton of imaging exams to be read on my list, then I don't have time to talk about all these different things with these residents or medical students that sit with me."

Dr Sadigh adds, "They should be able to learn from the experience."

## AI to the Rescue

Artificial intelligence, by virtue of its ability to automate many tasks handled by humans, has the potential to free academic radiologists from many mundane activities that hinder their goal to innovate and educate, says Dushyant Sahani, radiology chair at the University of Washington School of Medicine.

"I feel that AI has a tremendous promise, but it's not a panacea, and I think the real huge opportunity with AI is on the operation side or the workflow side of radiology," says Dr Sahani. "We have to work smarter and invest in the right infrastructure and technology."

Initiatives are underway at UW and other academic radiology departments to work with AI companies to strategically implement such tools to improve efficiencies, notes Dr Sahani. He cites a particularly strong role for AI in helping to determine the appropriateness of an exam for a given condition, communicating with patients and other physicians, and customizing scans to particular circumstances.

Dr Sadigh agrees, citing examples such as worklist prioritization; automating protocols, lesion measurements, and recommendations; as well as extracting data from electronic medical records and even making patient scheduling predictions (e.g., who's likely to be late or to cancel at the last minute) to help determine when to overbook the schedule.

"I'm just giving you some examples of how this can open up not only my time, but our technologists' time, our scheduler's time, the whole department," she says. "It can definitely help me in terms of now using that time to teach my residents, using that time to talk to referring providers, and participate in the multidisciplinary meetings. It basically opens up these pockets of time during the day as opposed to being swamped by these imaging volumes."

## Keep Pedaling

Radiology's future hinges not only on integrating cutting-edge technologies but on effectively balancing clinical demands with academic priorities. In describing the relationship between clinical and academic radiology, Dr Kinahan cites an analogy he attributes to a former faculty member.

"It's like a tricycle," he says. "The big wheel out front is clinical service, and the two little wheels on the back are research and education. The big wheel drives everything, but it can't move forward without the other two."

By virtue of its growing ability to foster automation, AI holds the promise of freeing up more time for all 3 wheels, to the benefit of the entire tricycle of radiology.

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