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## Comment

David C. Chan Jr.

In their very interesting piece, Sahni et al. estimate the potential impact of artificial intelligence (AI) on healthcare spending. As the authors note, AI has the potential to create more efficient processes and to improve decision making. These potential impacts could lead to productivity improvements, reducing the costs of delivering healthcare while improving outcomes.

The authors bring a unique mix of experience and perspectives from management consulting and economics. Collectively, they draw on industry knowledge and hands-on experience interacting with healthcare institutions seeking to implement AI to improve their processes. With this background, they conduct a costing analysis, breaking down the healthcare industry into five "stakeholder groups": hospitals, physician groups, private payers, public payers, and other sites of care (e.g., dental and home health care). Within each of these stakeholder groups, they further analyze nine domains—continuity of care, network and market insights, clinical operations, clinical analytics, quality and safety, value-based care, reimbursement, corporate

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functions, and consumer—for hospitals and physician groups each and six domains for private payers—healthcare management, provider relationship management, claims management, member services, corporate functions, and marketing and sales.

As the authors state, they mostly draw on insights and experience without relying on experimental or quasi-experimental evidence that most economists would be more familiar with. Based on their analysis, they conclude that AI could lead to 5 to 10 percent lower US healthcare spending, about $200 billion to $360 billion annually in 2019 dollars, within five years and without reducing quality or access. Nonetheless, they note that AI adoption has lagged in the healthcare industry relative to other industries. To explain the lack of adoption, they focus on "managerial challenges," including "legacy technology, siloed data, nascent operating models, misaligned incentives, industry fragmentation, and talent attraction." They note market trends that suggest a mitigation of these challenges and an acceleration in the pace of AI adoption.

As a physician and health economist, the first question I have is the following: What makes technology adoption different in healthcare relative to other industries? Since Arrow (1963) and continuing with Cutler (2010), health economists have produced insights into differences in healthcare relative to other industries and the implications of these differences for productivity. Given the fee-for-service payment system and the high degree of market concentration in the industry, improving efficiency by reducing costs has not typically been the way for healthcare delivery systems to increase profits. As we know from efforts at healthcare reform, change in the industry will need to be filtered through stakeholder groups with powerful informational or institutional advantages. New technologies such as AI will need to be adopted by these stakeholder groups; if adopted, they will naturally be used for the benefit of these groups. If it is not in the best interests of these groups to reduce costs, then cost reduction may not come to fruition even with highly effective technologies.

The managerial challenges that the paper casts are somewhat generic—there seems to be little insight into why "legacy technology" and "talent challenges" should be a bigger barrier in healthcare relative to other industries. Is there a reason why healthcare should have talent challenges relative to other industries? To explain why AI adoption or AI impact has lagged in healthcare relative to other industries, it seems crucial to link these phenomena to underlying economic differences between healthcare and other industries. It may be instructive to review the string of technological tools that have come before AI in the past. For example, health IT has previously been cast as a technology with the potential to reduce costs, saving patients from unnecessary utilization and adverse events. However, despite the availability of health IT systems, less than 5 percent of hospitals adopted a health IT

by 2008, when they were heavily incentivized by federal legislation to adopt health IT products (Jha et al. 2008). Healthcare systems rarely integrated data with other systems, again until legislated to do so (Adler-Milstein et al. 2014). In my view, health IT provides one of many cautionary examples of economic incentives imbedded in institutions and policies shaping the use and the features of a new technology.

Sahni et al. present a useful step forward in envisioning the potential impact of AI on healthcare spending. As they note, they lack citations to existing experimental and quasi-experimental evidence to form the basis of their opinions. The lack of existing evidence is a fine justification for using expert opinion to weigh in on an important question. However, in future work, I would be eager to see the gap filled by a more data-driven approaches, even if the data are simply correlational. Heterogeneity in adoption and in effect is the rule in healthcare rather than the exception. A closer look at the characteristics of healthcare systems that have adopted AI and the effects of adoption on spending and outcomes would likely yield significant insights into the intended and unintended consequences of AI on the healthcare industry as a whole.

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