UC San Diego Health

Can we deliver high-quality healthcare *without* AI and automation?

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What does American healthcare look like today?

Compared with What? Measuring AI against the Health Care We Have

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The NEW ENGLAND JOURNAL of MEDICINE

"A recent faculty recruit in my department, an expert in artificial intelligence (AI), asked me whether I could recommend a primary care doctor. I assured my colleague that I would promptly provide a set of excellent options to choose from. When I reached out to several doctors who were my contemporaries in medical training, however, I learned that they had all retired. That was not completely surprising, so I tried another tack: I contacted doctors who were of more recent vintage and whom I'd encountered in a supervisory capacity. One of them cheerfully informed me that he was no longer practicing primary care at a teaching hospital affiliated with Harvard Medical School. When I asked him whether he could recommend any high-quality practices, his tone changed, and he said that he couldn't think of any such practices that were accepting patients. Stunned, I widened my search further. I discovered that primary care clinics at some local hospitals, such as Massachusetts General Hospital and Brigham and Women's Hospital, were turning away new patients. I did not end up helping my new colleague and instead suggested contacting their health insurance company for recommendations."

What does high-quality healthcare look like?

AI and automation offer an approach that could help

Assistive AI

Output provides clinically relevant data without deriving a parameter (index, score, classification), and offers no interpretation or conclusion.

Augmentative AI

Output is a quantitative or categorical parameter qualitatively different from the input, more than adding, averaging, or reporting descriptive statistics.

Autonomous AI

Software independently derives parameters and generates clinically meaningful interpretations without concurrent physician or QHP involvement.

AUTONOMOUS AI: LEVELS OF OVERSIGHT

LEVEL I

Recommends a definitive diagnosis or a specific intervention. A physician or QHP must judge whether to implement or reject it.

LEVEL II

Recommends medical management, with a reasonable opportunity to negate the impending action before implementation (e.g., an alert).

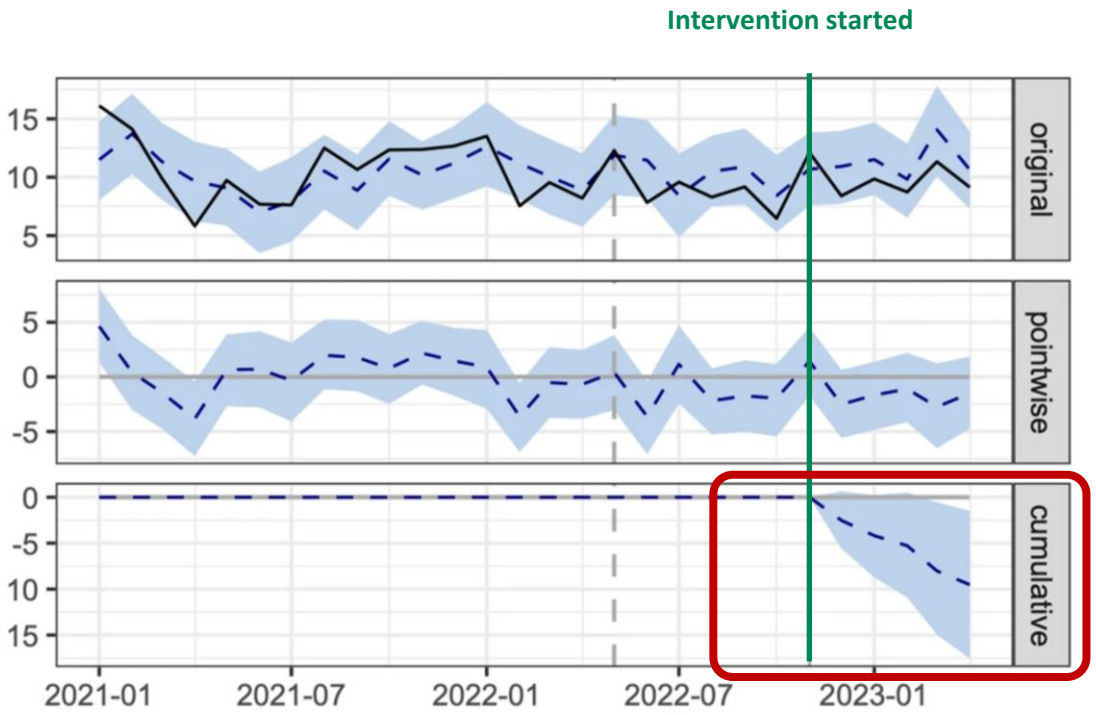
LEVEL III

Initiates management actions automatically and continues under physician oversight unless a clinician chooses to intervene.

Can AI improve population health?

Augmentative AI can save lives in hospitalized patients

COMPOSER
(Boussina et. al. 2024)



Deaths (relative vs. expected)

TREWS
(Adams et. al. 2022)

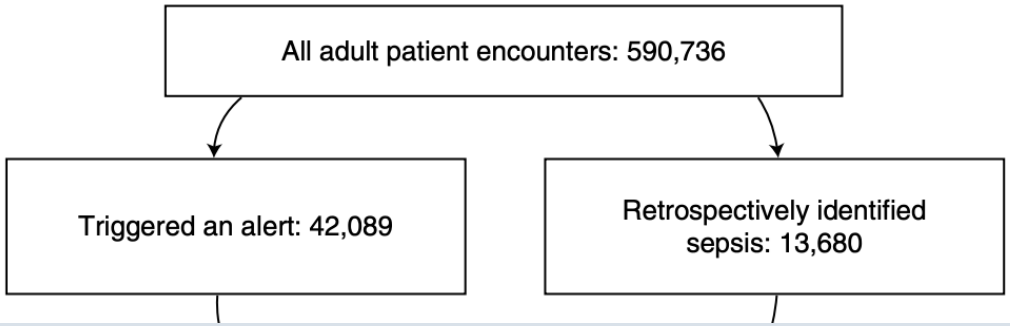
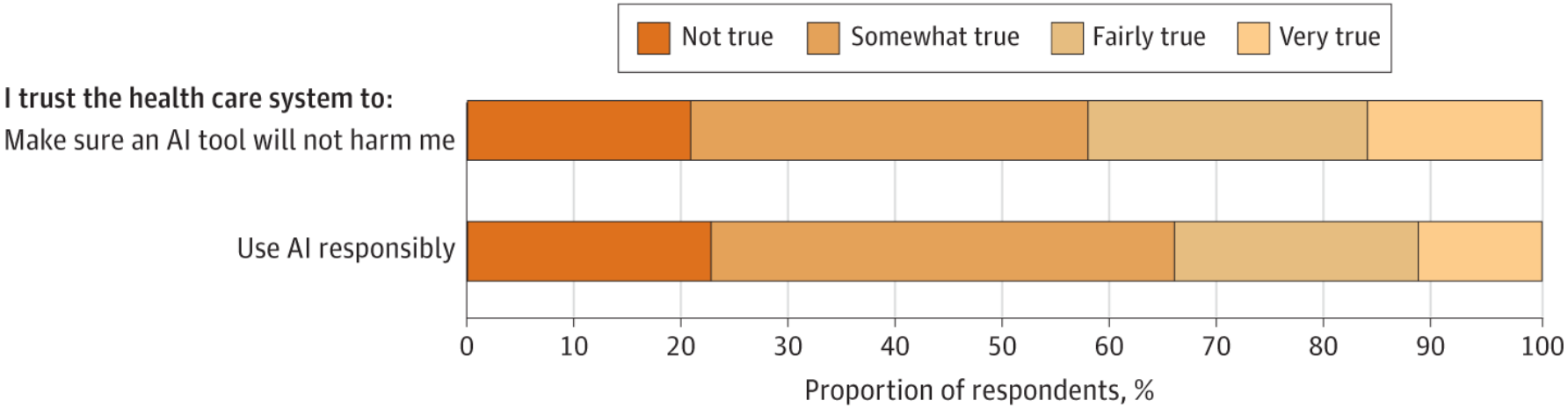


Table 2 | Associations between alert confirmation and patient outcomes

	Treatment	Comparison	ARD or ARR	*P* value[a]
All included	*n* = 4,220	*n* = 2,657		
In-hospital mortality, no. (rate)	617 (14.6%)	509 (19.2%)	ARD −3.34% (−5.10, −1.67%)	<0.001
			ARR −18.18% (−26.31, −9.65%)	<0.001
SOFA progression at 72 h[b]	−0.8 ± 2.7	−0.4 ± 2.9	ARD −0.26 (−0.42, −0.11)	0.001
Median length of stay (h)[c]	156 (99-260)	190 (118-323)	ARD −11.58 (−18.13, −5.03)	0.001
High-risk cohort	*n* = 1,430	*n* = 935		
In-hospital mortality, no. (rate)	422 (29.5%)	320 (34.2%)	ARD −4.50% (−8.31, −0.78%)	0.012
			ARR −13.19% (−22.81, −2.45%)	0.012
SOFA progression at 72 h[b]	−1.5 ± 3.5	−1.2 ± 3.6	ARD −0.38 (−0.71, −0.05)	0.025
Median length of stay (h)[c]	210 (129-351)	246 (155-434)	ARD −14.21 (−32.47, −4.04)	0.127

Can AI improve the experience of care?

Do patients trust health systems to use AI?



"This analysis found low trust in health care systems to use AI responsibly and protect patients from AI-related harms. General trust in the health care system, but not health literacy or AI knowledge, was associated with these perceptions."

Patients regularly use AI to ask health questions…

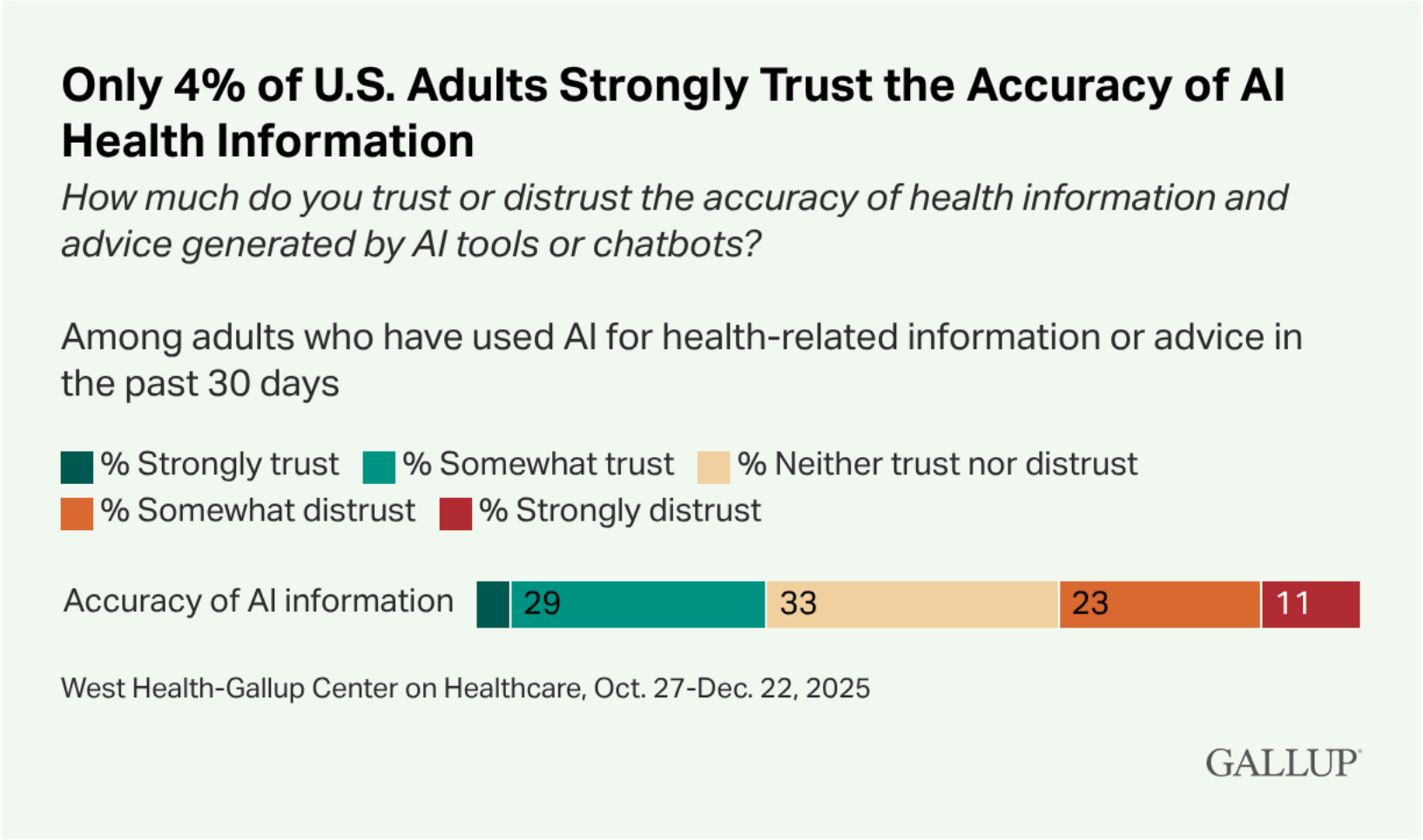
These findings are from a nationally representative survey of more than 5,500 U.S. adults conducted Oct. 27-Dec. 22, 2025, using the Gallup Panel.

More Americans Use AI to Supplement Healthcare Visits Than to Replace Them

About 70% of U.S. adults say they have used an AI tool or chatbot for any purpose, while one in four (25%) say they have used it to gather healthcare information or advice. This aligns with what other studies have found about AI use for health-related purposes.

Those who report using AI for health information or advice in the past 30 days often use it to supplement traditional healthcare experiences, with 59% saying they use AI tools to research on their own before visiting a doctor and 56% using AI to research after visiting a doctor.

…despite their lack of trust in the information



But they trust when health systems *actually* use AI

NEJM Catalyst | Innovations in Care Delivery

COMMENTARY

Ambient Artificial Intelligence Scribes: Learnings after 1 Year and over 2.5 Million Uses

Aaron A. Tierney, PhD, Gregg Gayre, MD, Brian Hoberman, MD, MBA, Britt Mattern, Manuel Ballesca, MD, Sarah B. Wilson Hannay, MD, MEd, Kate Castilla, Cindy S. Lau, MD, Patricia Kipnis, PhD, Vincent Liu, MD, MS, Kristine Lee, MD

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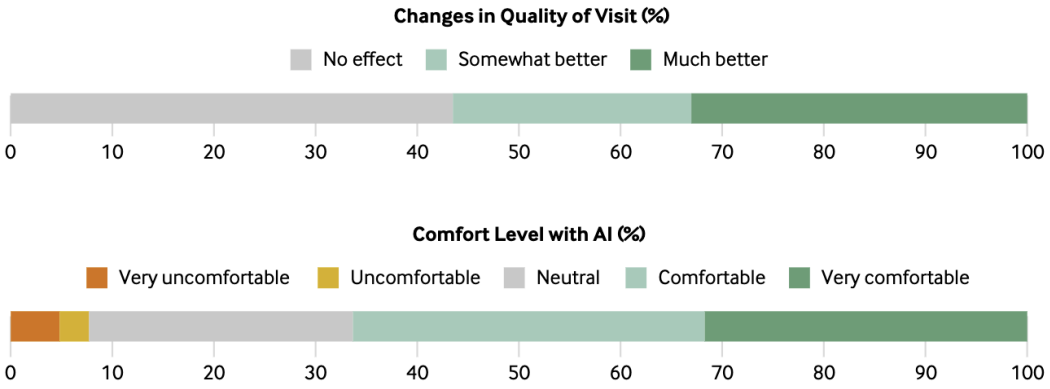
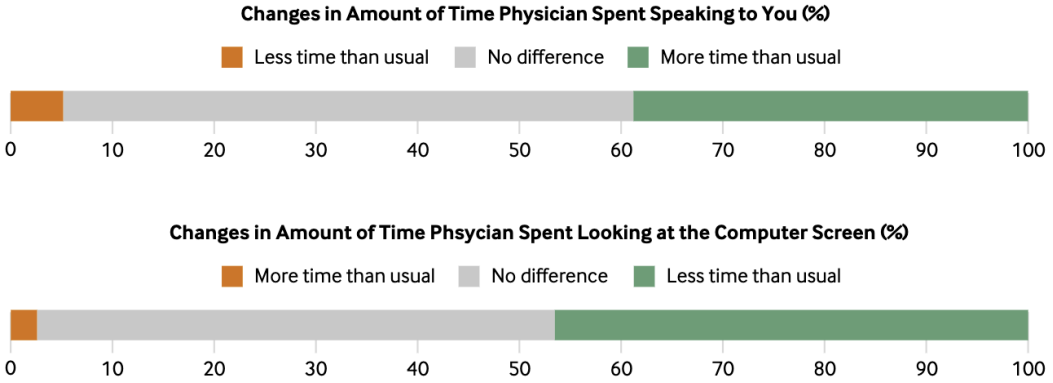
DOI: 10.1056/CAT.25.0040

FIGURE 7

Patient Responses to Changes in Their Visit Due to the Use of an AI Scribe

These charts show patient responses in percentages for changes in the amount of time the physician spent speaking to the patient (less time than usual, no difference, more time than usual); changes in the amount of time the physician spent looking at the computer screen (more time than usual, no difference, less time than usual); changes in the quality of the visit (no effect, somewhat better, much better); and physician comfort level with AI (very uncomfortable, uncomfortable, neutral, comfortable, very comfortable).





What about patient trust in AI in the real world?

Colonoscopy & Endoscopy AI Preparatory Calls

Launched on December 11, 2025

- Over 10,000 calls made
- “This was the smoothest AI involvement I have ever had with a phone call, and I usually prefer talking to a regular, real, normal human being.”

Key Metrics to Highlight	Baseline	Target	To-Date
No-Show & Same-Day Cancel.	10-15%	5%*	6%**
Attempt Outreach	36.2%	100%	100%*
Connected Rate	24.6%		67%

**Benchmarked against top-performing ASCs with extensive outreach operations.*
***6% amongst all attempted patients; 4% for patients that complete their call.*
****La Jolla and Hillcrest (~3,000 calls for 1,600 appointments). East Campus next.*

Can AI improve workforce wellbeing?

Improved wellbeing finding is immediate and sustained

UWisconsin

Afshar et al. *NEJM AI* 2025

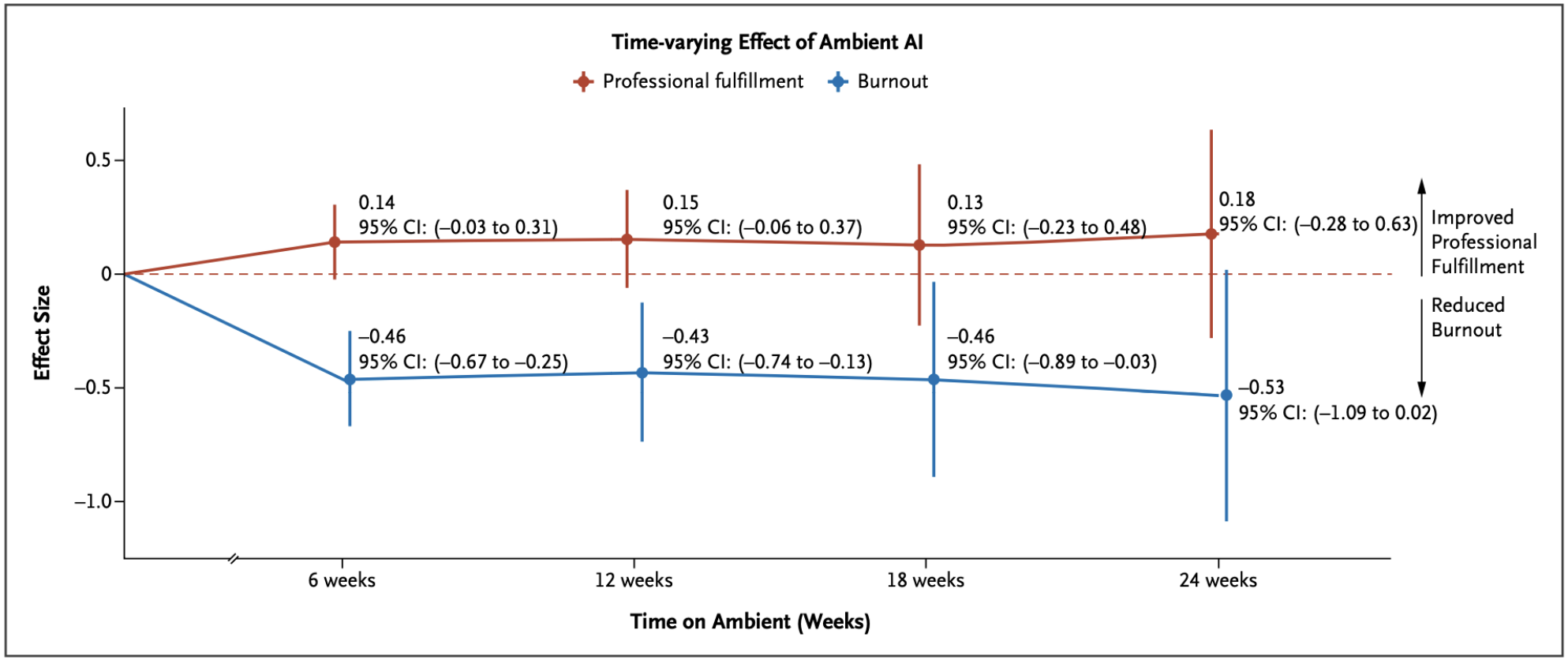
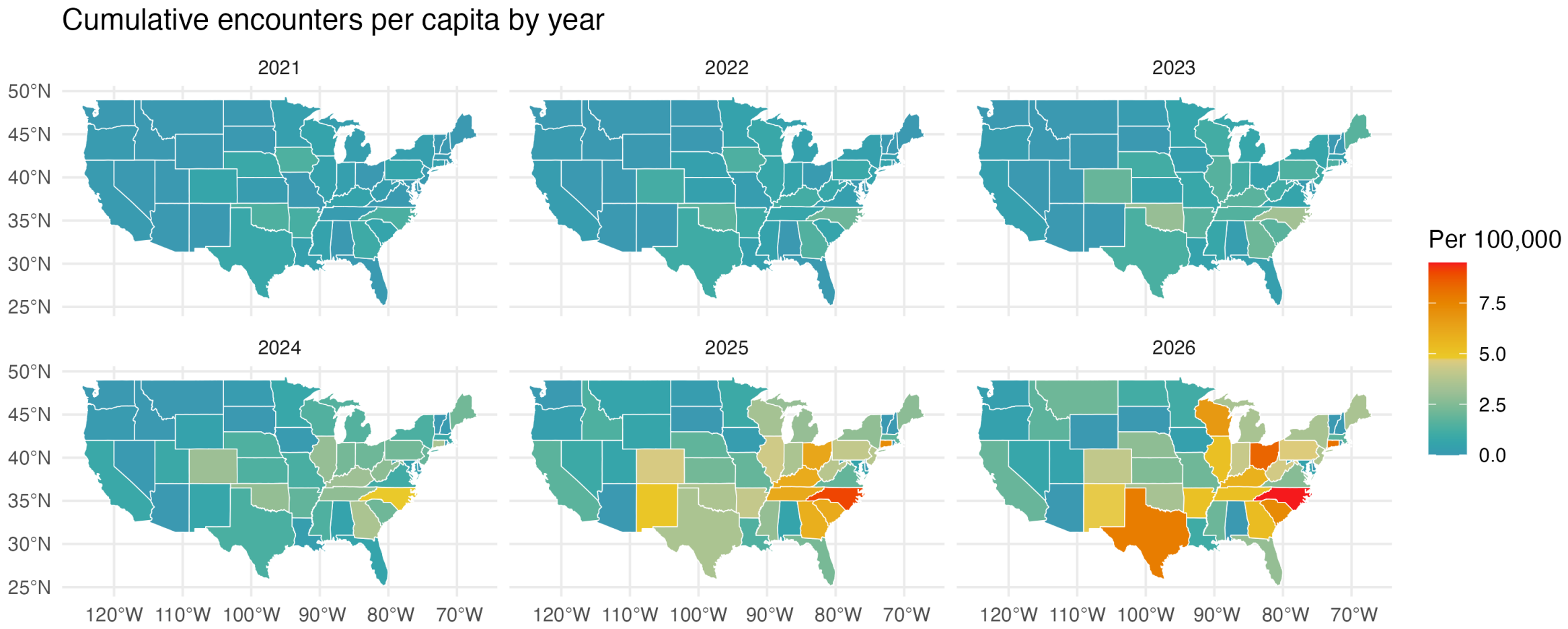


Figure 3. Forest Plot for Time-on-Treatment Effect on Primary Outcome of Professional Well-Being (Subcomponents of Professional Fulfillment and Burnout).

Can AI reduce costs?

Use of AI CPT codes has grown 10-fold over the past 5 years



To reduce costs, we need to learn from other industries

Overcoming the productivity paradox

Paradoxically, the introduction of new clinical technologies has historically increased overall healthcare spending, a trend that has been demonstrated for many general purpose technologies across various sectors[59]. Achieving effective performance and return on investment requires health systems to pair investments with evidence generation and close evaluation to identify early successes and failures. Increasingly subjected to external financial pressures due to market consolidation and changing federal funding, health systems must measure their return on investment from operational AI systems. Unfortunately, recent evidence suggests only 61% of U.S. hospitals performed any local performance evaluation of AI models prior to deployment, suggesting that many health systems lack the expertise or infrastructure required to validate AI performance or assess the value of AI investments[60]. National AI health collaboratives such as the Health AI Partnership, the Coalition for Health AI, and the American Medical Association's newly launched Center for Digital Health and AI can empower resource-limited health systems to leverage peer expertise at other institutions, troubleshoot common problems, and disseminate findings related to operational AI tools[61].

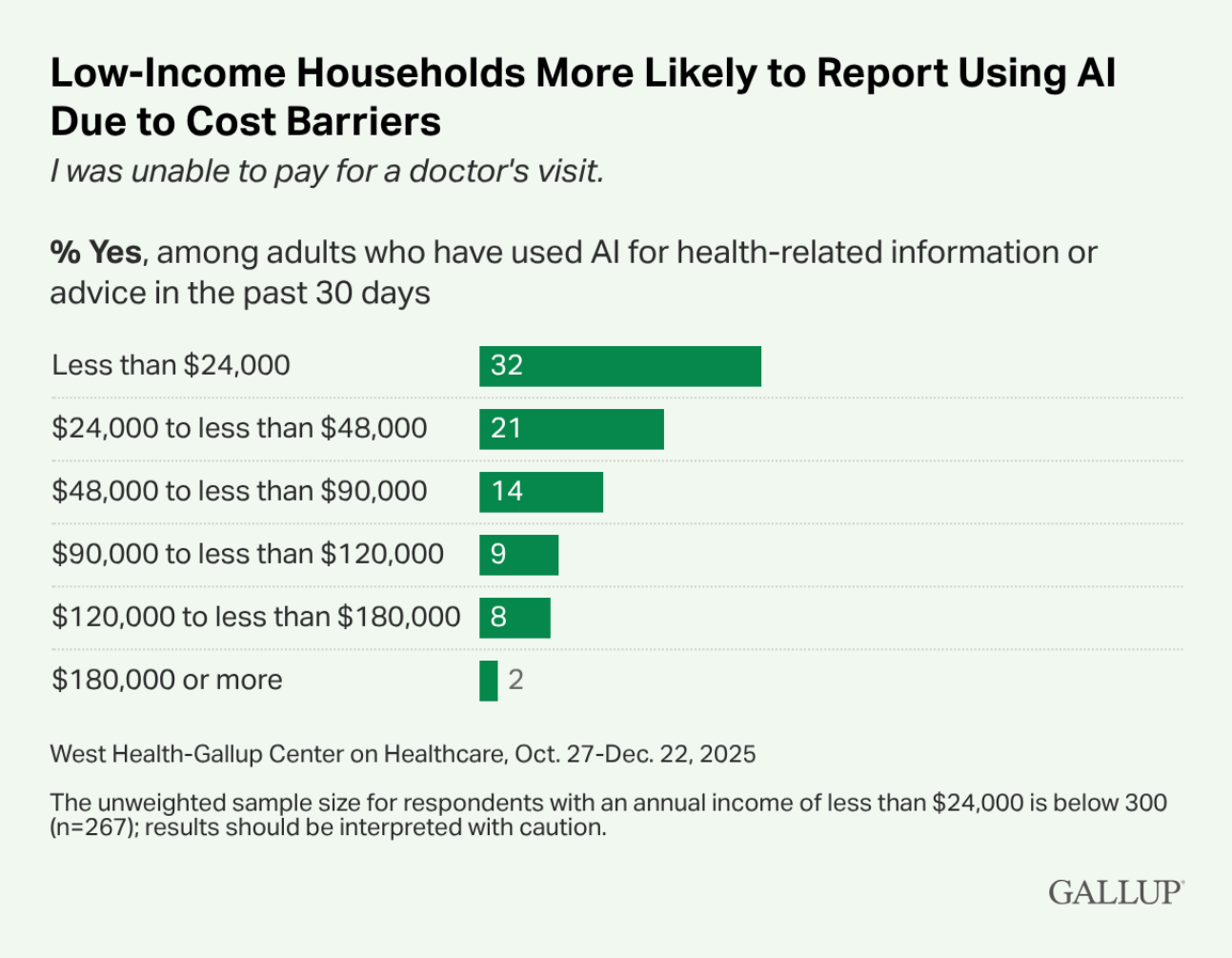
How can we achieve cost savings with AI?

Aligning AI operations with research

Much like how research and development is closely tied to operations in the private sector, academic medical centers must closely integrate AI operations and research[64]. Many institutions have duplicated structures for AI operations and research, even as these two areas of AI expertise become increasingly co-dependent. Given slated reductions in federal research funding, this places researchers at risk of losing access to key AI infrastructure. In the absence of vibrant research ecosystems, health systems run the risk of being reliant on vendors without local expertise to fill this gap. Both the duplication and gap in resources could be resolved through better alignment between AI operations and research within health systems. The learning health system model provides the perfect framework for doing so, ensuring that operational goals are paired with high-quality evidence generation[65]. An integrated AI workflow for both research and operations would also allow health systems to address key concerns surrounding healthcare data privacy and security within a singular, closed system, thereby reducing risk for data leaks or unauthorized access. Integrating research with operations would also expedite research to help maintain alignment with the rapid pace of AI development.

Can AI improve health equity?

Patient use of AI has upended the digital divide



What’s next in AI?

Autonomous AI is entering the space of clinical care

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NEWS RELEASE: Utah and Doctronic Announce Groundbreaking Partnership for AI Prescription Medication Renewals

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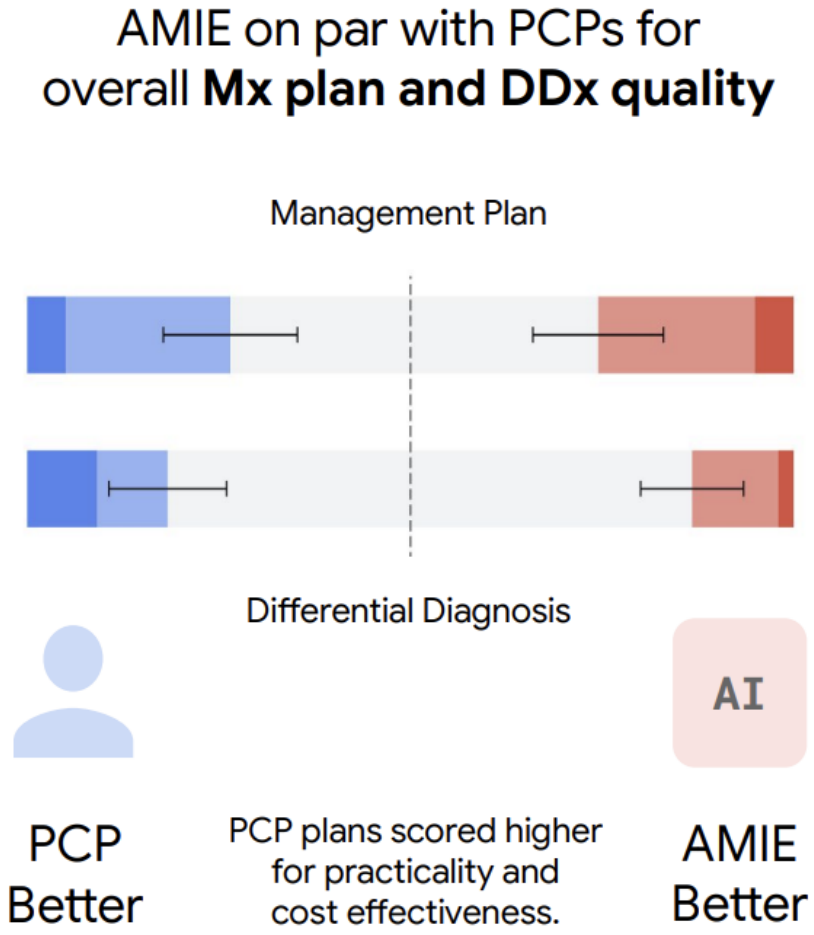
Considerations for the Regulation of Generative AI-Enabled Medical Devices: Discussion Paper and Request for Feedback

BECKER'S HEALTH IT Leadership Finance Health IT Clinical Care Specialties Hubs

Artificial Intelligence Health IT

Who checks patient-facing AI after go-live? UC San Diego Health, Harvard and Anthropic are building an answer

Autonomous AI is being compared against physicians…



Note: This is a preprint.

Google

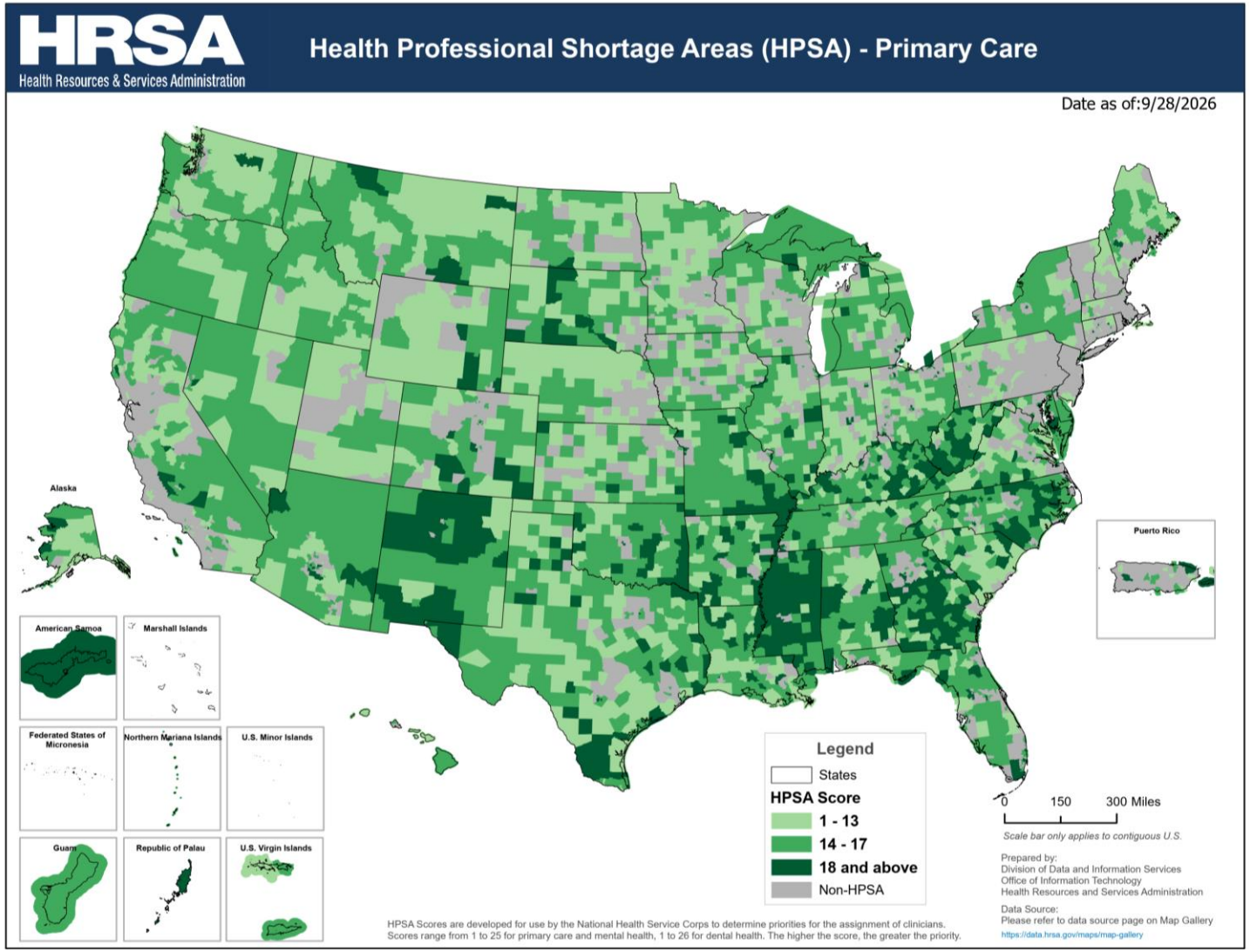
2026-03-09

A prospective clinical feasibility study of a conversational diagnostic AI in an ambulatory primary care clinic

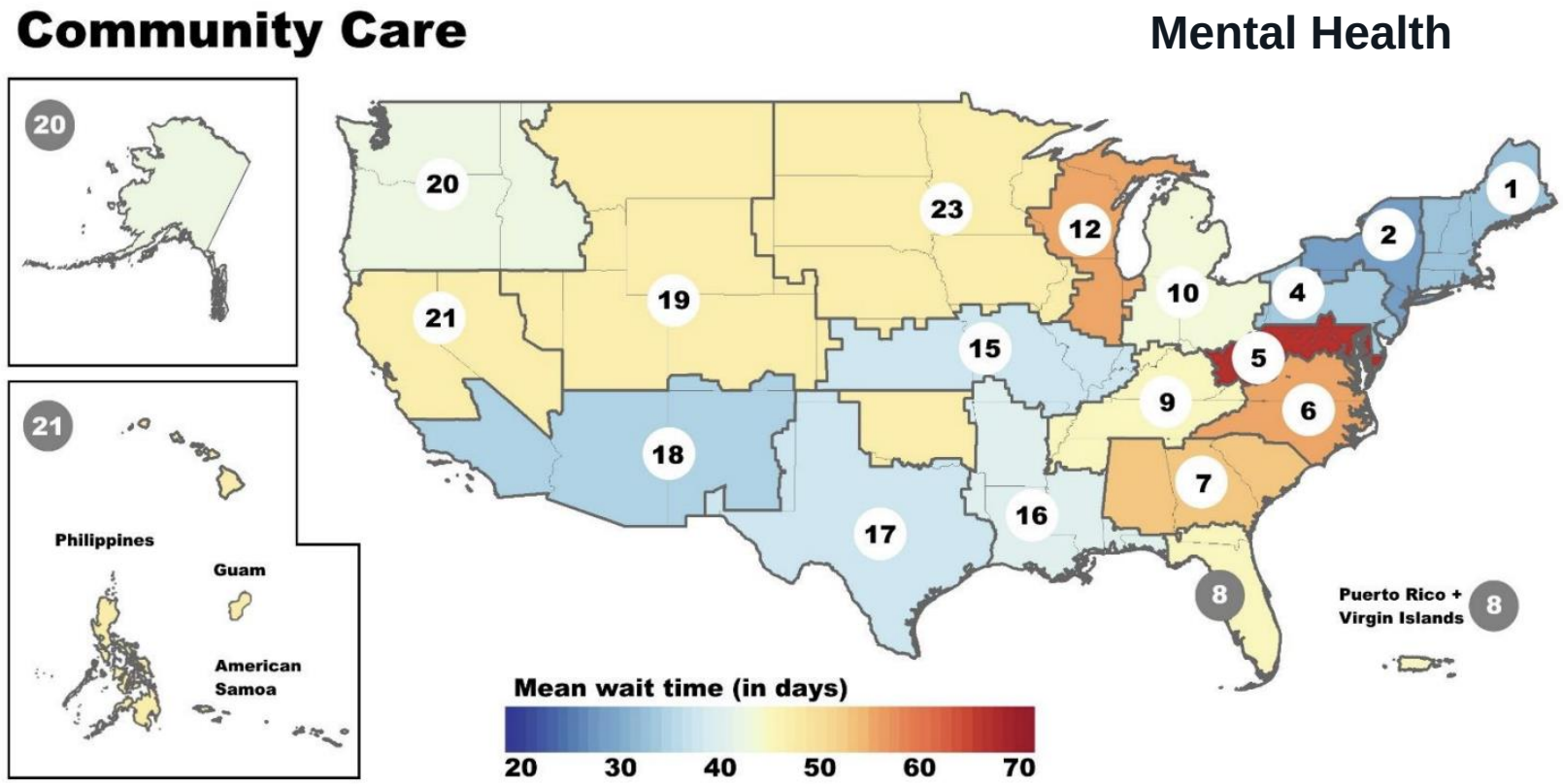
Peter Brodeur[*,3], Jacob M. Koshy[*,3], Anil Palepu[*,1], Khaled Saab[2], Ava Homiar[3], Roma Ruparel[1], Charles Wu[3], Ryutaro Tanno[2], Joseph Xu[1], Amy Wang[1], David Stutz[2], Wei-Hung Weng[2], Hannah M. Ferrera[3], David Barrett[2], Lindsey Crowley[3], Jihyeon Lee[1], Spencer E. Rittner[4], Ellery Wulczyn[1], Selena K. Zhang[5], Elahe Vedadi[2], Christine G. Kohn[6], Kavita Kulkarni[1], Vinay Kadiyala[3], S. Sara Mahdavi[2], Wendy Du[3], Jessica M. Williams[1], David Feinbloom[3], Renee Wong[1], Tao Tu[2], Petar Sirkovic[1], Alessio Orlandi[1], Christopher Semturs[1], Yun Liu[1], Juraj Gottweis[1], Dale R. Webster[1], Joëlle Barral[2], Katherine Chou[1], Pushmeet Kohli[2], Avinatan Hassidim[1], Yossi Matias[1], James Manyika[1], Rob Fields[4], Jonathan X. Li[3], Marc L. Cohen[†,3], Vivek Natarajan[†,2], Mike Schaekermann[†,1], Alan Karthikesalingam[†,2] and Adam Rodman[†,1,3]

[*]Equal contributions, [†]Equal leadership, [1]Google Research, [2]Google DeepMind, [3]Beth Israel Deaconess Medical Center, [4]Beth Israel Lahey Health, [5]Harvard Medical School, [6]Massachusetts General Hospital

…but that only matters if there are physicians available…



…and if those physicians can see you in a reasonable timeframe

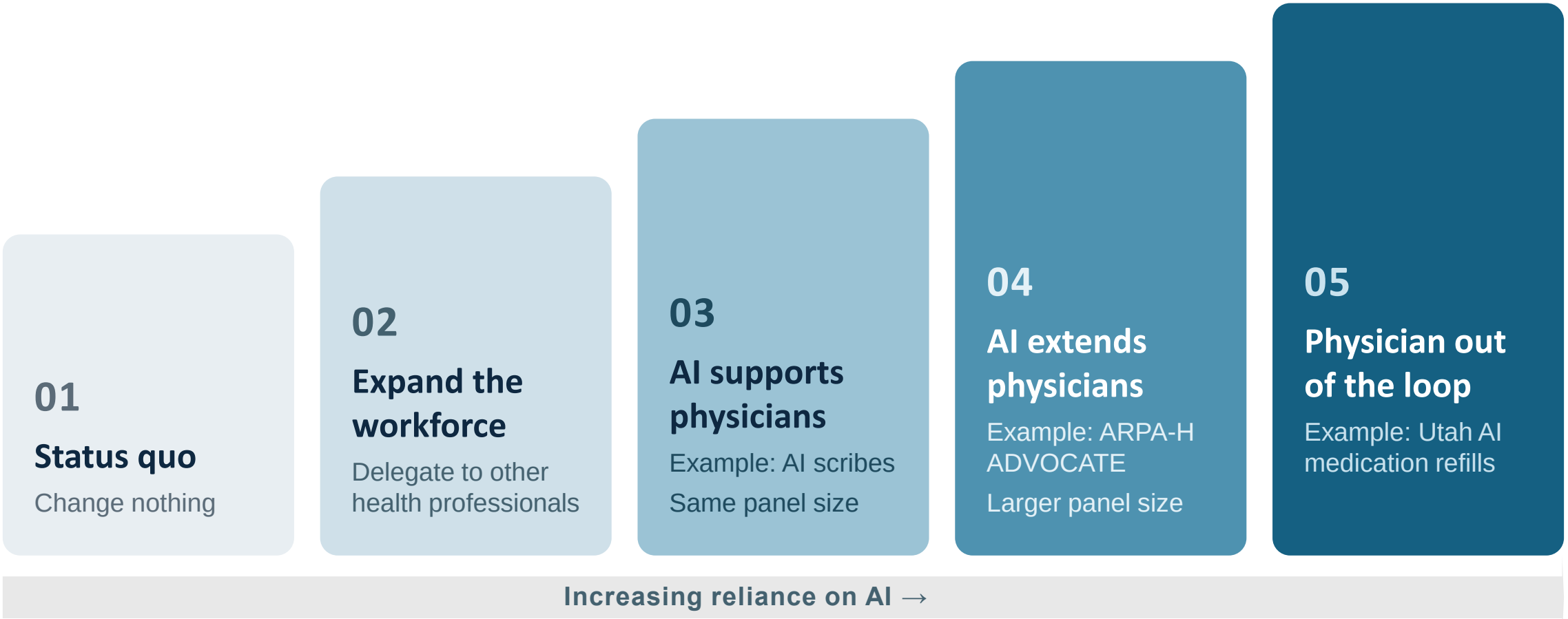


Source: Veterans Health Administration's Corporate Data Warehouse. **Notes:** The circled numbers indicate Veterans Integrated Services Networks (VISNs), which are regional networks of VHA medical centers. The figure presents regression-adjusted estimates of mean appointment wait times, controlling for regional differences in stop code mix.

Can we deliver high-quality healthcare *without* AI & automation?

What role should autonomous AI play in our health system?

Which one would you pick?
(with physicians as an example)



Thank you

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