

Healthcare + AI

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But First... Let's Play a Game

[Kahoot](#)



What is AI's current role in Healthcare

Generative AI

- **Drug Development**
- **Clinical Trials**
- **Medical Documentation**

Predictive AI

- **Predict Disease likelihood**
- **Personalized Healthcare**

Why is AI important in Healthcare?

Efficiency -

Automation allows for time saving.
Prioritize more important tasks

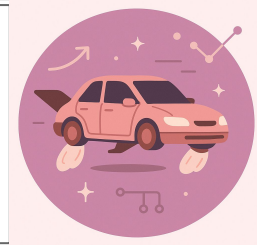


Decision Making

Larger amount of data processing allows for more reasoning behind decisions

Future Innovation

Potential for breakthrough in diagnosis, treatment and personalized care



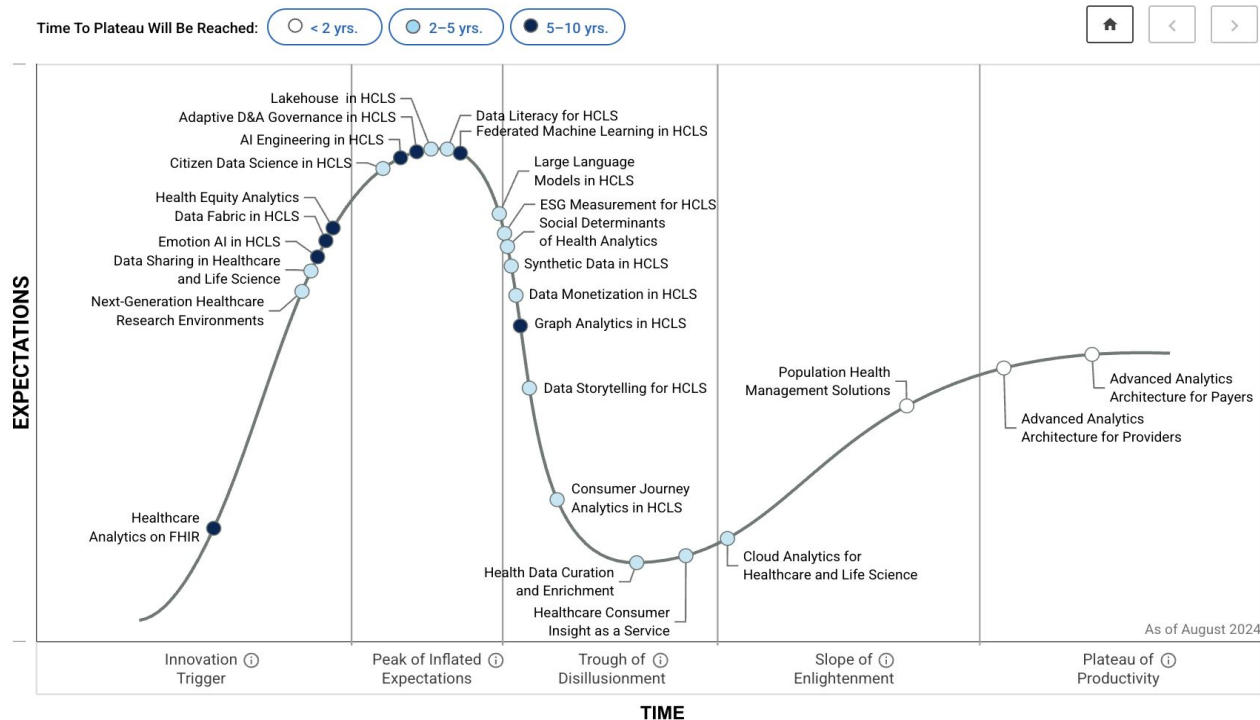
Gartner Hype Cycle for Healthcare Data Analytics and AI, 2024

**Innovation Trigger =
Healthcare Analytics**

**P of Inflation =
AI Diagnostic, Patient
Surveillance**

**T. of Disillusionment
= AI Health Chatbots
Synthetic Data**

**Plateau of
Productivity =
Automated ER
Notetaking**



AI usage in Healthcare



Diagnosis

AI diagnosis from predictive analytics of medical history/symptoms



Health/Drug Statistics

Machine learning accelerates diagnosis and drug development by analyzing vast datasets with speed and accuracy.



Personalized Treatment

AI algorithms can tailor treatment plans to individual patient data, promoting more effective and precise care.



Insurance and Plan Selection

AI tools help patients identify optimal insurance options and help insurers process claims



Research Assistance

AI helps develop patient treatment regimens and new medication



Surgical Assistance

AI in surgical assistance enhances precision and safety by supporting surgeons with real-time data analysis, imaging, and fatigue-free robotic tools.

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Pt 1: Key Applications

Pt 2: AI's Future in Healthcare

Pt 3: Challenges of AI Adoption in Healthcare



Key Applications

Predictive Analysis

AI-powered predictive analytics is transforming healthcare by identifying patterns in health datasets to forecast future outcomes and bottlenecks

Ex) Insurance can use AI to evaluate

- claim legitimacy
- suggested payouts

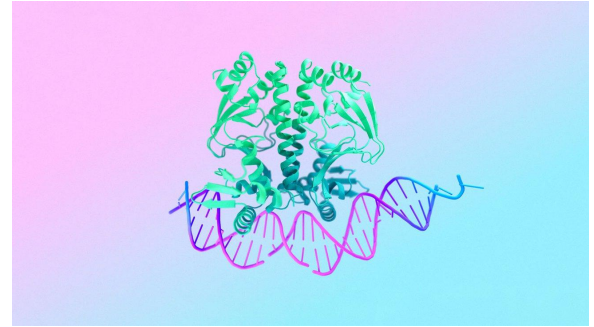
Ex) Clinics can use predictive modeling to see the likely patient load for certain dates/times



Healthcare uses Predictive AI to analyze patient history to predict side effects, patient outcomes and rehospitalization rates

Drug Discovery

AI and Machine Learning can design and predict the potential and power of novel drug compounds for varying diseases



AlphaFold is an AI deep learning model created by Google for the prediction of protein shape and binding regions.

Has predicted nearly every known protein accurately

Ex) Artificial Intelligence and artificial lymph nodes have been used to create and predict antibody strength and shape

<https://www.youtube.com/watch?v=tmdArnBbTXk>

Scheduling and Health Assistants

Artificial Intelligence has been created to save time in patient scheduling and matching with doctors.

ChatGPT understands symptom patterns and groupings and can predict health outcomes (ie Heart Attacks).

Patient scheduling software has been created to cut down on the need for customer service representatives and phone calls



Personalized Treatment



Artificial Intelligence (AI) is revolutionizing personalized medicine by analyzing complex patient data to tailor treatments to individual needs

Recommended Care: Artera uses AI to develop customized prostate cancer treatment plans. ([Time](#))



Identify Likelihoods of Disease: Google's DeepMind developed Deep Variant, an AI model that analyzes genomic data to identify genetic variants linked to disease risk.

AI-integrated medication: FindAir is a smart inhaler system that includes an attachable sensor collecting data on inhaler usage, environmental conditions, and potential asthma triggers



Insurance

Artificial Intelligence (AI) is simplifying complex processes and offering personalized support for insurance.

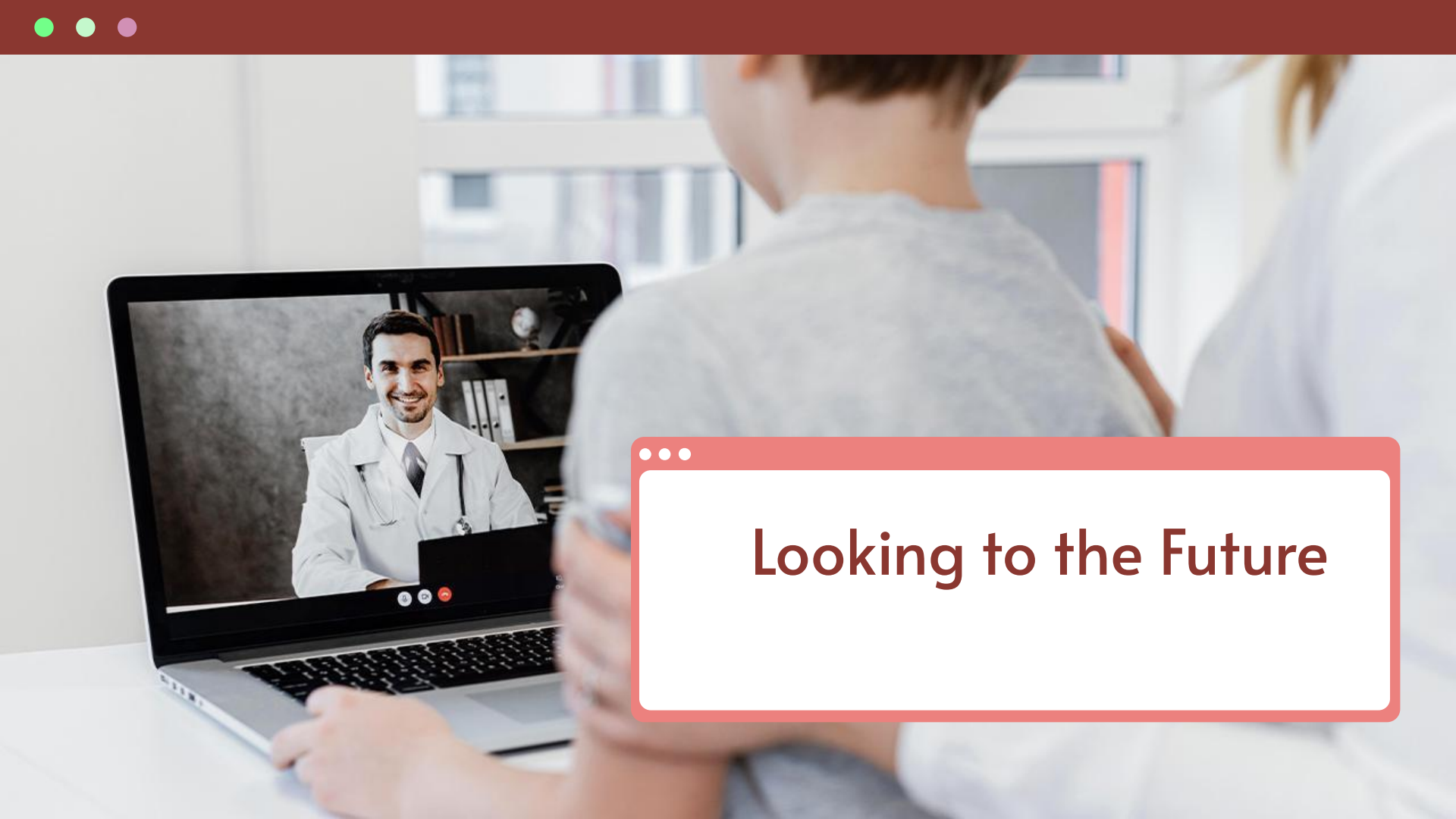


Comparing Insurance Plans: Healthee uses AI to guide employees through benefits selection by comparing plans based on personal needs.

Simplifying Payment: Geisinger (healthcare provider) partnered with PayZen to launch AI-enabled zero-interest payment plans, allowing patients to pay medical bills over time based on personal financial data.



Payment Accuracy: implements AI to detect billing errors and ensure payment integrity.



Looking to the Future

AI Diagnosis

AI and LLMs have the potential to recognize patterns faster than humans. AI can process non visual data like heat, leading to earlier diagnoses



Medtronic's "GI Genius" can detect colon cancer at a 99.7% success rate and 1% false positive.



AI has can identify breast cancer on average two years before traditional methods and can can shorten screening times (Nature)
Issues arise for the unique cases LLMs likely aren't trained on- such as rare cancer cases.

PATIENT CARE

AI Scribes are beginning to replace normal scribes and medical assistants to help doctors.

How do you feel about an AI app storing your medical data

Do you think AI is a inevitably becoming a part of healthcare?



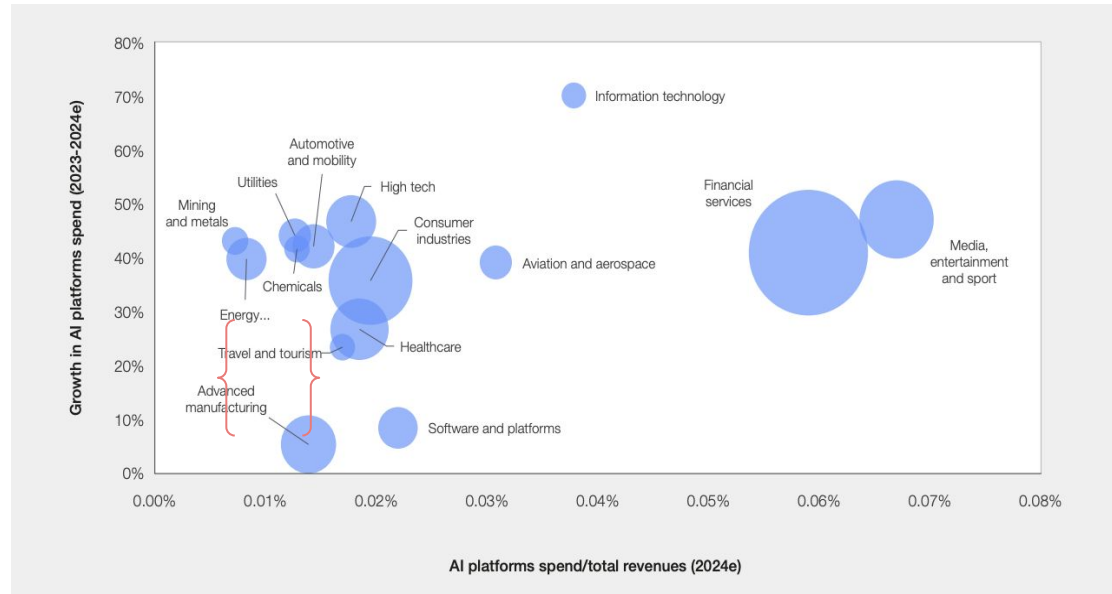


Challenges

Slow Pace of AI Adaption

Healthcare spends significantly less on AI platforms and growth than industries like Media, Aviation, and Financial Services.

AI adoption in financial services exceeds 70%, only 15% of healthcare institutions have scaled AI solutions across operations.
(World Forum Economics)



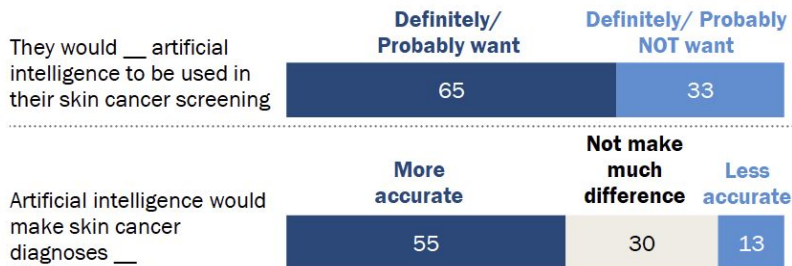
Bubble size: total AI platforms spend (2024e)

Is Slow AI adaption a negative?

Majority Pro-AI

Majority of Americans say they would want AI to be used in their own skin cancer screening

% of U.S. adults who say ...



Note: Respondents who did not give an answer are not shown.

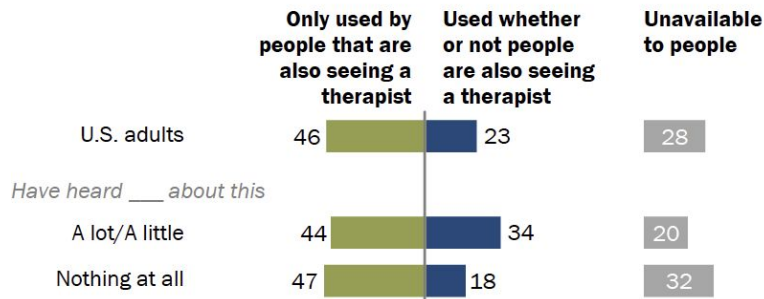
Source: Survey conducted Dec. 12-18, 2022.

"60% of Americans Would Be Uncomfortable With Provider Relying on AI in Their Own Health Care"

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Many in U.S. support limits on the availability or use of AI chatbots for mental health wellness

% of U.S. adults who say artificial intelligence chatbots for mental health support should be ...



Note: Respondents who did not give an answer are not shown.

Source: Survey conducted Dec. 12-18, 2022.

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Is Slow AI adaption a negative?

Majority Anti-AI

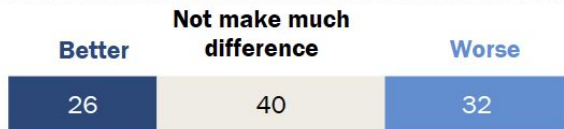
Two-thirds of U.S. adults say they would not want AI to help determine amount of pain medication they get

% of U.S. adults who say ...

They would __ artificial intelligence to help decide the amount of pain medication they would get after a surgery



Artificial intelligence would make patients' treatment for pain __



Note: Respondents who did not give an answer are not shown.

Source: Survey conducted Dec. 12-18, 2022.

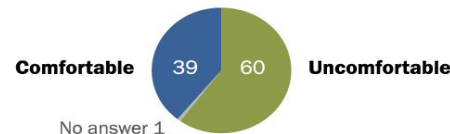
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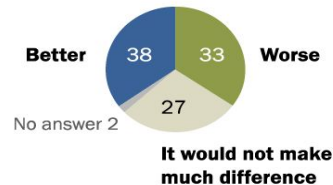
Fewer than half in U.S. expect artificial intelligence in health and medicine to improve patient outcomes

% of U.S. adults who say that thinking about the use of artificial intelligence in health and medicine to do things like diagnose disease and recommend treatments ...

They would feel __ if their health care provider relied on it for their medical care



It would lead to __ health outcomes for patients



Source: Survey conducted Dec. 12-18, 2022.

"60% of Americans Would Be Uncomfortable With Provider Relying on AI in Their Own Health Care"

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AI and Biases Racial Bias

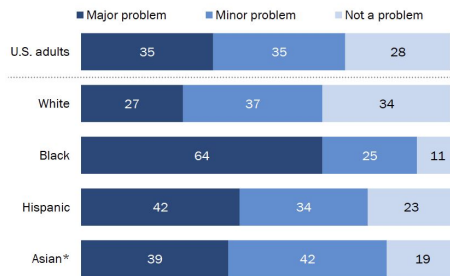
Healthcare already has a reputation for engaging in bias in their treatment of patients

In the survey, 64% of Black adults believe there is a bias on a patient's race, however 51% believe that AI can make it better.

What do you all think?

64% of Black adults say bias based on patients' race or ethnicity is a major problem in health and medicine

% of U.S. adults who say that bias and unfair treatment based on patients' race or ethnicity is a ___ in health and medicine

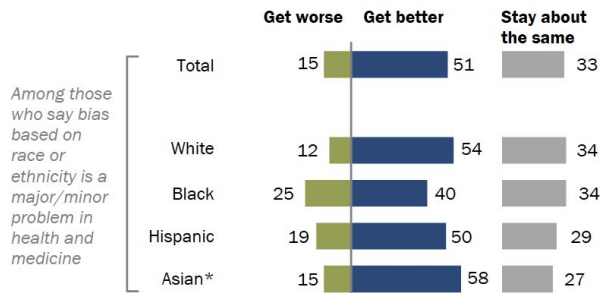


* Estimates for Asian adults are representative of English speakers only.
Note: Respondents who did not give an answer are not shown. White, Black and Asian adults include those who report being only one race and are not Hispanic. Hispanics are of any race.
Source: Survey conducted Dec. 12-18, 2022.
"60% of Americans Would Be Uncomfortable With Provider Relying on AI in Their Own Health Care"

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Among those who see a problem with bias based on race or ethnicity in medicine, 51% think relying more on AI would make the issue better

% who say that if artificial intelligence is used more in health and medicine to do things like diagnose disease and recommend treatments, the **issue of bias and unfair treatment** based on a patient's race or ethnicity would ...



* Estimates for Asian adults are representative of English speakers only.

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Privacy Concerns

Rise of companies such as DAS health and ClearData are made to help prevent cyber breaches for health care by encrypting patient data and monitoring cloud infrastructure continuously.



Data breaches have become common in our digital world. In September of 2017, Equifax experienced a data breach that exposed the personal information of 147 million people. This case and more has caused Americans to fear the vulnerability of AI models to hacking and other data breaches.

