Industry perspective on Generative AI in HEOR

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Plan

- Present & Future of AI in HEOR
- Feasibility of using AI for health economic modeling
- Implications
- Challenges or barriers faced by pharma in the adoption of AI

Sell me this pen.
It's AI powered.
EVERY COMPANY
RIGHT NOW

Where will the bottleneck be?

10% increase in success rates of trials

20% reduction in cost and duration of trials

Time to approval accelerated by 1-2 years

Is there enough bandwidth in HEOR?

Ref: https://www.mckinsey.com/industries/life-sciences/our-insights/generative-ai-in-the-pharmaceutical-industry-moving-from-hype-to-reality

Present & Future of AI in HEOR

Evolution? Disruption? → Transformation.

"Past": Experiments with Machine Learning (Analytic AI)

Key question:
Is it possible to analyze huge amounts of data?
(with RWE in mind)

Tusks:
- Screening
- Data extraction

Learnings:
- It works.
- Data formats differ
- "Teaching" is resource consuming

Present: Experiments with Generative AI, Deployment of Analytic AI

Key question:
Is it possible to change how data turns into evidence?

Tusks:
- Evidence generation
- Modeling
- Translation between languages:
  - natural language ↔ programming language ↔ HEOR language

Learnings:
- It works but lacks consistency…

Future: Future is uncertain, but transformative

Key questions:
- How should processes be altered to better leverage the technology?
- Transformation of HEOR roles:
  - *Project Managers → AI Managers?*
- Will GenAI lead to the democratization of HEOR?
  - Generative AI can become a great equalizer to HEOR evidence generation and consumption

Feasibility of using Generative AI for health economic modeling

Breakthroughs in Generative Multimodal AI

- No training, just tune your AI
- AI translates Natural language ↔ Programming language
  - Excel, R, Python
- AI understands information from multiple modalities: text, numbers, images, audio, and video
- AI is now being integrated into standard environments, incl. Excel, Word
- NEW! Model capable of searching web in real-time

Efficiency is improved, but resource utilization is balanced

AI will rather be a cost-effective approach to generating evidence, than dominant

↑ Corpus of evidence	↑ Number of PICOs	↓ Tolerance to uncertainty	↑ Transparency and referencing	↑ Complexity of human validation

Experiment: PICO extraction[1]

682 000 abstracts

3500 days[2]

10 days Retrieving and refining process

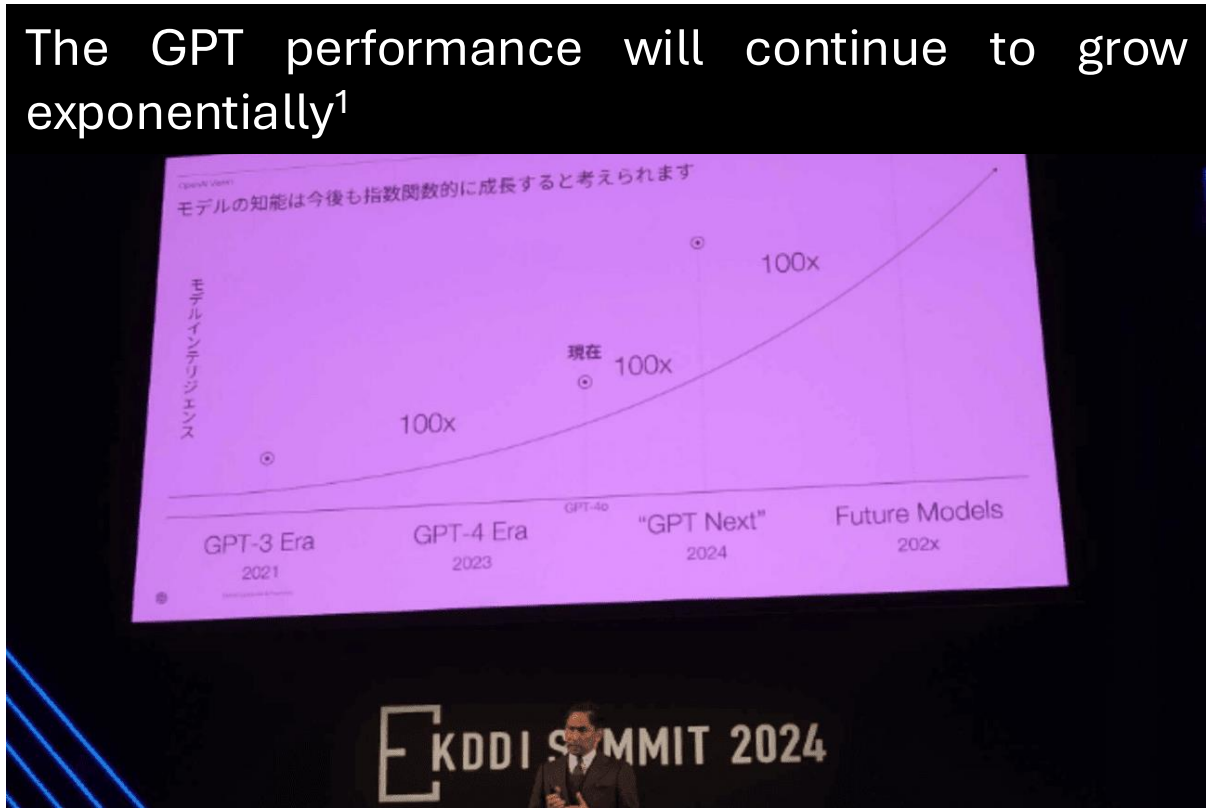
<3 hours Data extraction

Ref: [1]Reason, T. et al, 2024. https://doi.org/10.1007/s40290-024-00539-6; [2]Estimated based on Haddaway N, 2018 https://doi.org/10.1111/cobi.13231.

Will anyone notice exponential growth of HEOR performance?

Probably **yes**, and definitely **not** by everyone.
Industry will just meet again the increased expectations

The GPT performance will continue to grow exponentially[1]



"My dear, here we must run as fast as we can, just to stay in place.
And if you wish to go anywhere you must run twice as fast as that."[2]

Ref: [1]KDDI Summit 2024; [2]Lewis Carroll, Alice's Adventures in Wonderland

History lessons

How have vacuum cleaners changed our lives?

- Free up time?

- Vacuum cleaners have changed our expectations of what "clean" means
  - In early XX no one expected your carpet to be pristine all winter when it only got pulled up and beaten in the spring. Now, some people want to see the vacuum lines all the time.

Challenges faced by pharma in adoption of AI

People
- Insufficient AI literacy
- Lack of available talent and skills
  - Unlearning skills

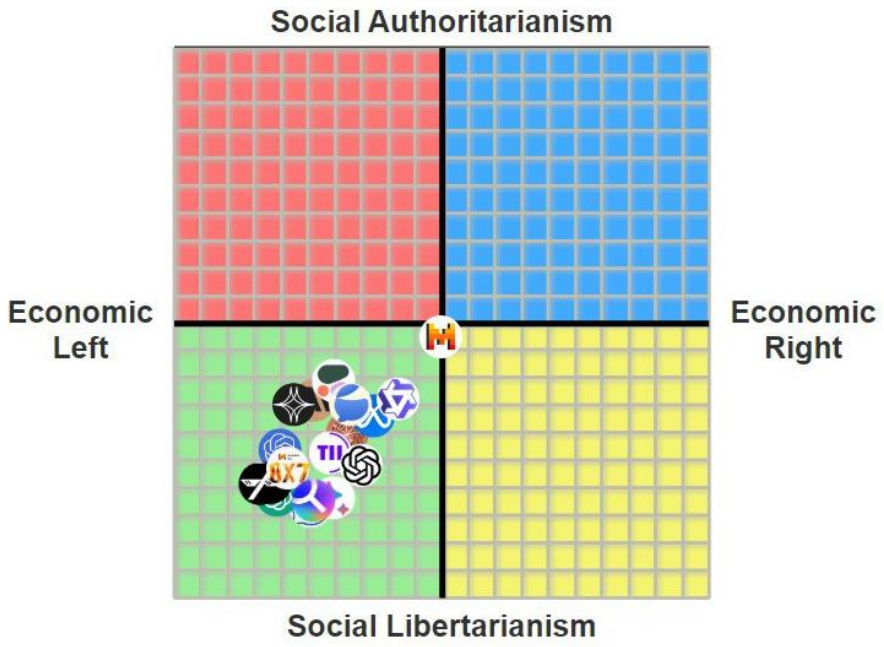
Processes
- Lack of a clear AI case for change
- Reimagining workflows and implementing processes on the go
- AI can become lazy (like human). How to manage?

Grey zone at the Methodological acceptance landscape
- Bias

Medicine = Substance + Information

AI in Industry HEOR =
= Technology + Processes + User

AI Chatbots are **biased** in the **same** way



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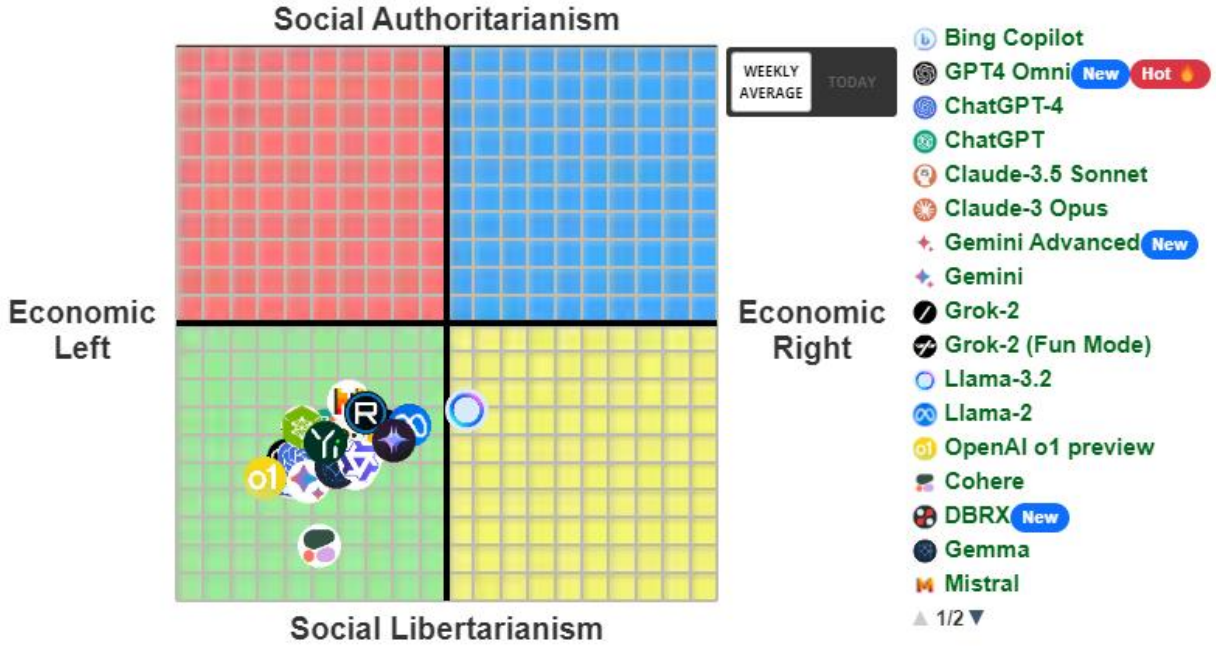

09-Nov-2024

Ref: Monitoring Bias in Artificial Intelligence Chatbots. URL: https://www.trackingai.org, 09.11.2024.

Once AI is deployed in HEOR…

Will there be trust in evidence generated without AI?

Thank you

for your attention