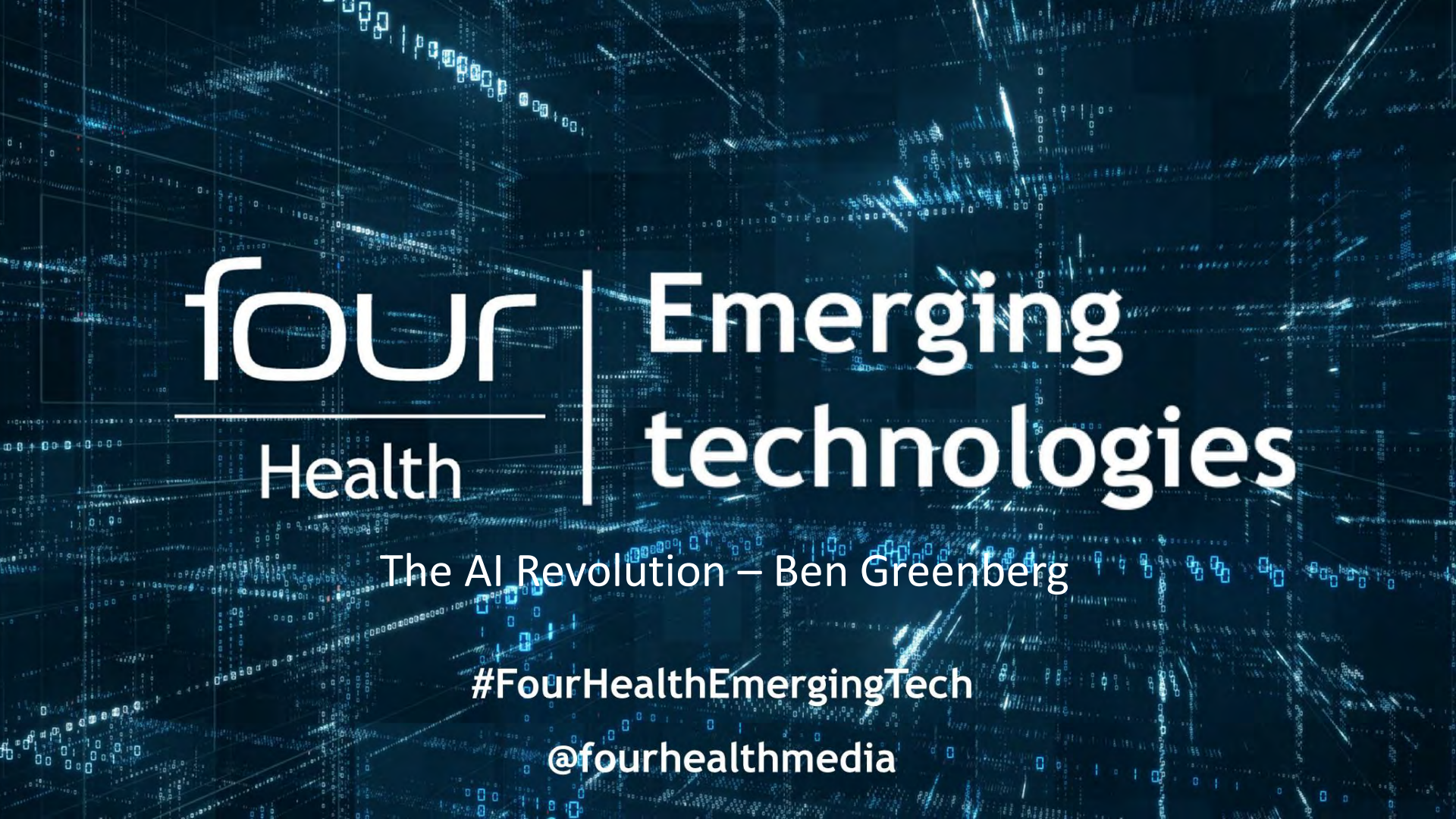
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The AI Revolution – Ben Greenberg
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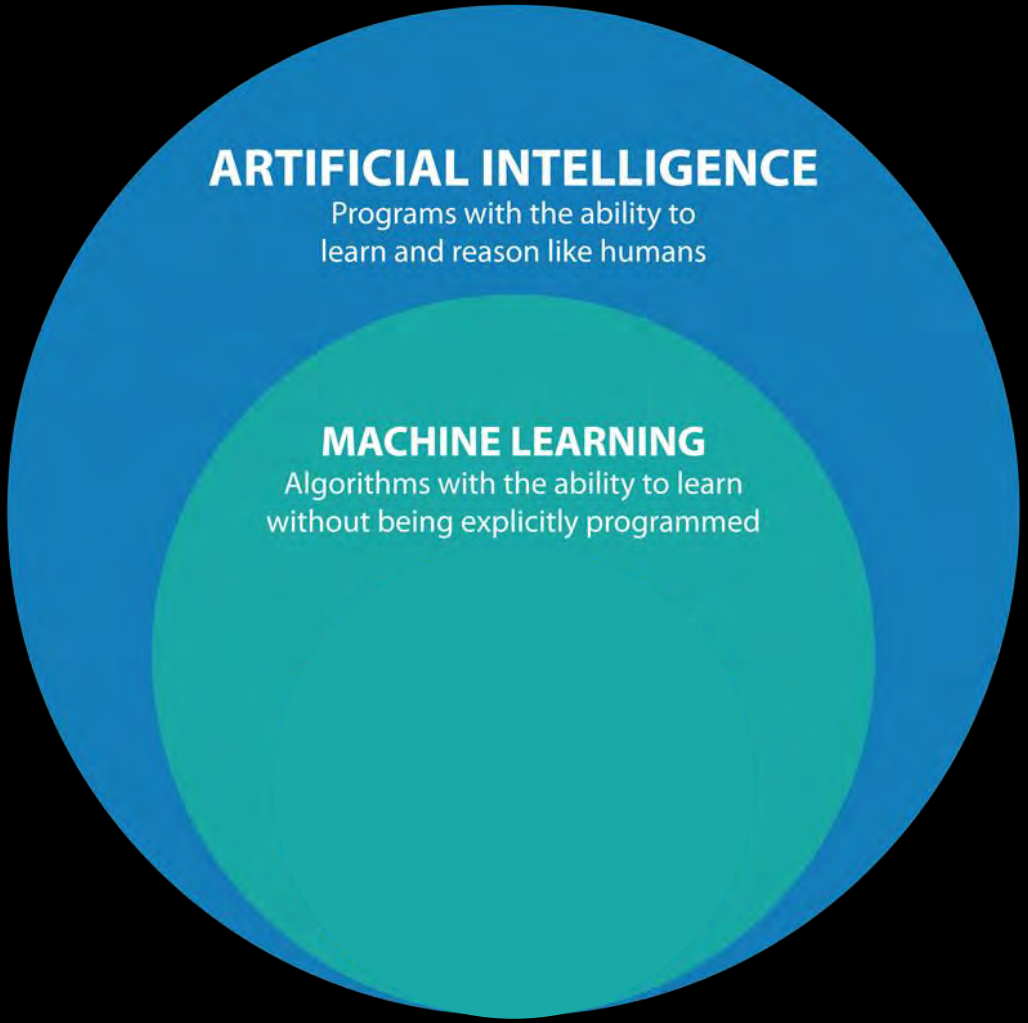
The AI Revolution

What do physicians actually think about AI in Healthcare?

Ben Greenberg |
@BenJGreenberg
VP Product & User Experience
Medscape

ARTIFICIAL INTELLIGENCE
Programs with the ability to
learn and reason like humans


ARTIFICIAL INTELLIGENCE
Programs with the ability to
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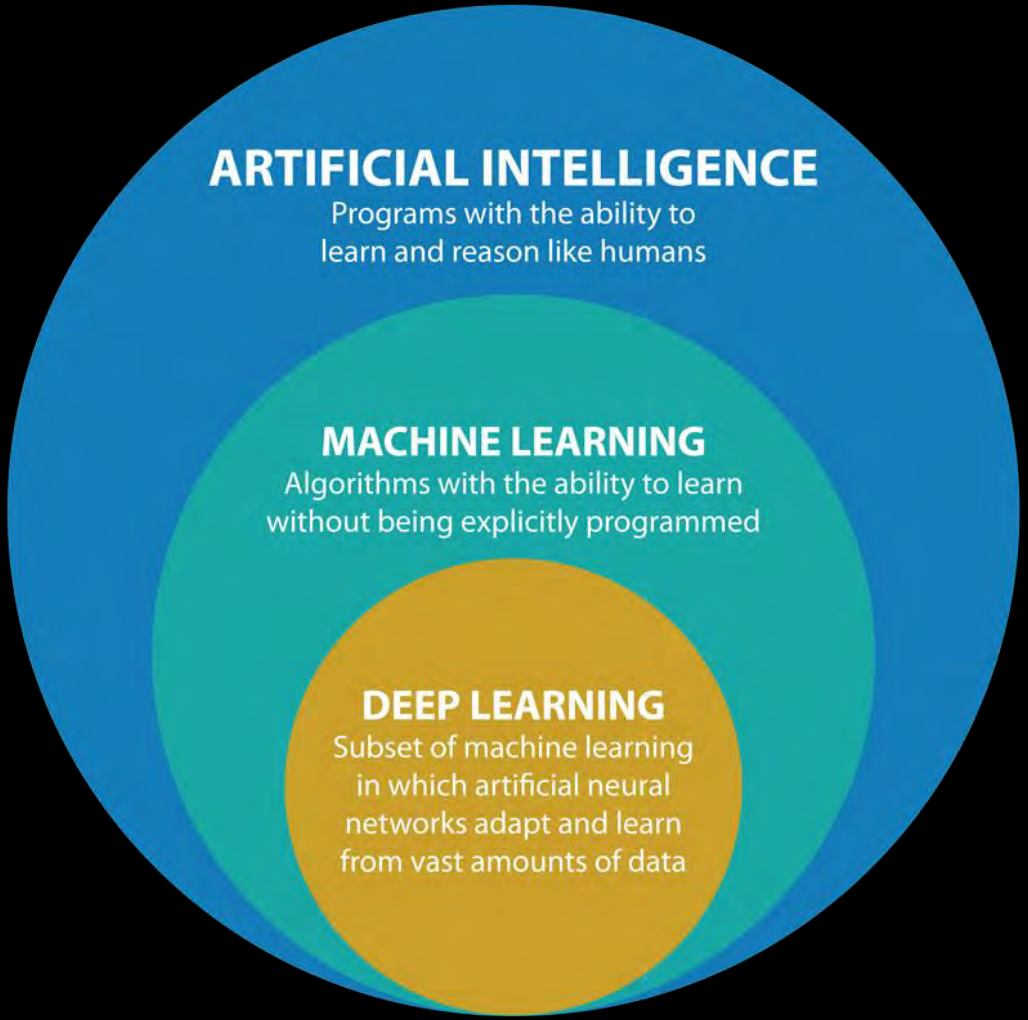
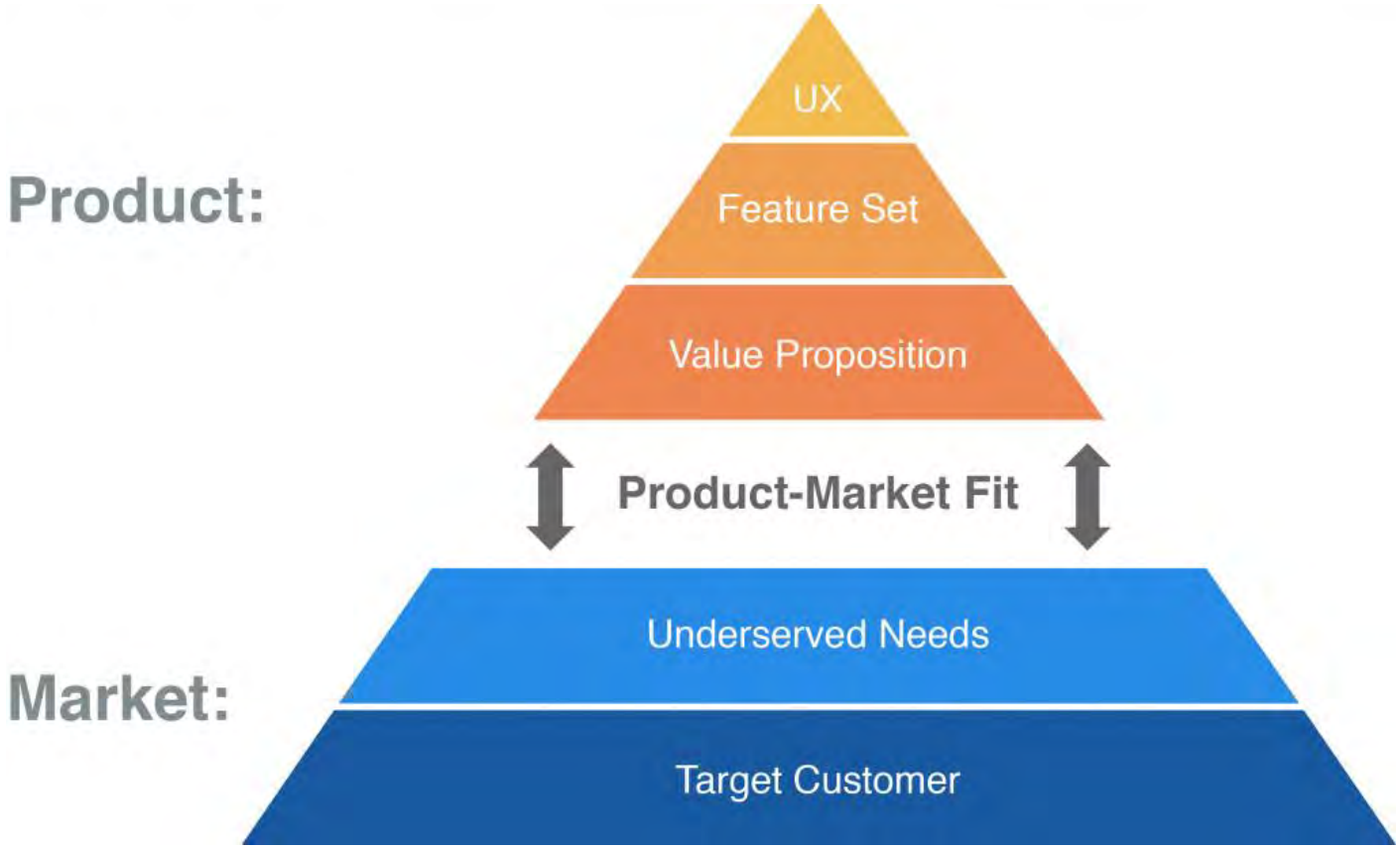
MACHINE LEARNING
Algorithms with the ability to learn
without being explicitly programmed


ARTIFICIAL INTELLIGENCE
Programs with the ability to learn and reason like humans
MACHINE LEARNING
Algorithms with the ability to learn without being explicitly programmed
DEEP LEARNING
Subset of machine learning in which artificial neural networks adapt and learn from vast amounts of data



Credit: https://leanstartup.co/a-playbook-for-achieving-product-market-fit/

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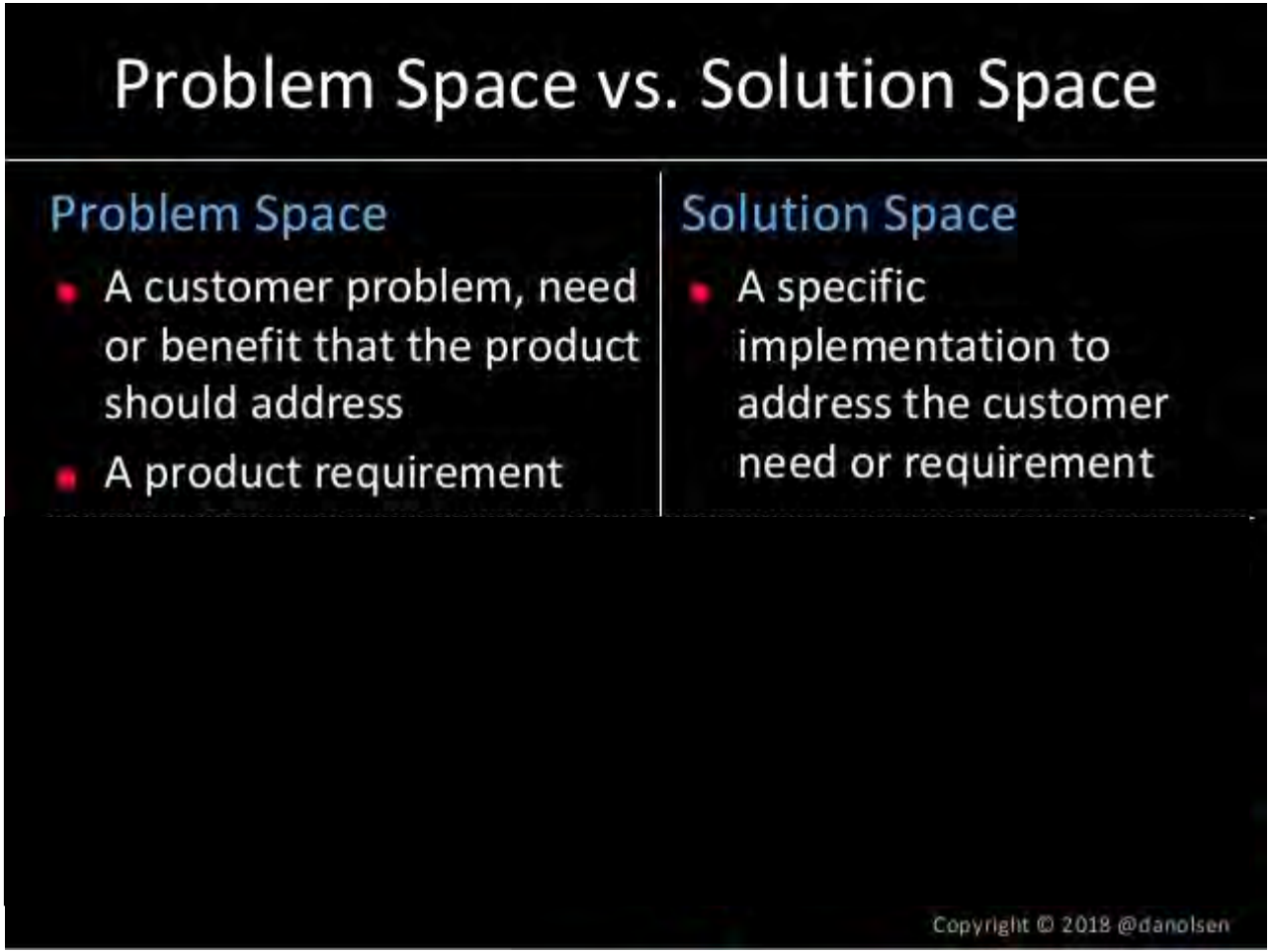

Credit: https://www.slideshare.net/productschool/the-lean-product-playbook-with-dan-olsen

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Problem Space vs. Solution Space

Problem Space

- A customer problem, need or benefit that the product should address
- A product requirement

Solution Space

- A specific implementation to address the customer need or requirement

Example

- Ability to write in space (zero gravity)

Space pen: $1 M R&D cost

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Space pen: $1 M R&D cost

Russians: pencil

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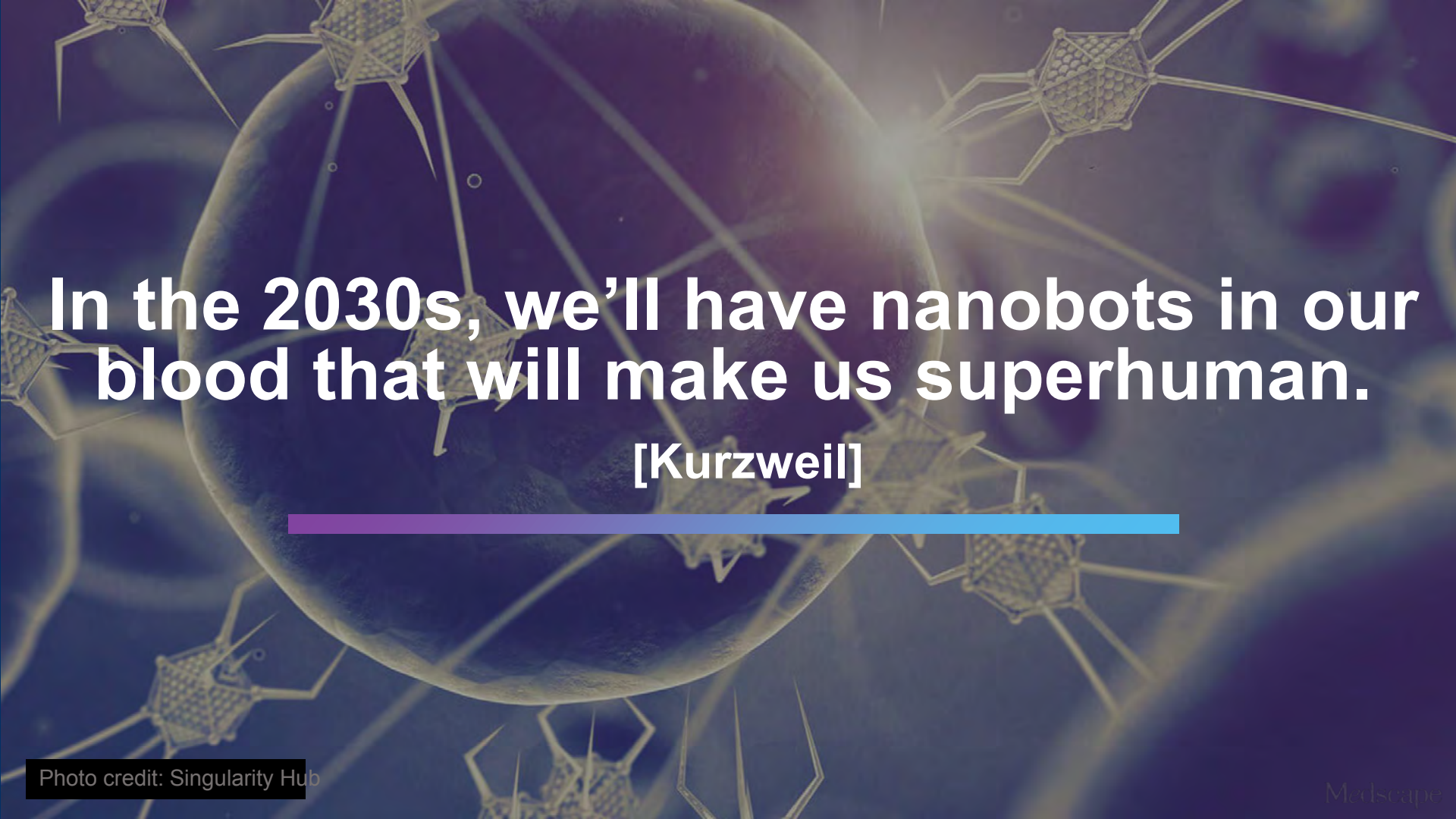
In the 2030s, we'll have nanobots in our blood that will make us superhuman.
[Kurzweil]
Photo credit: Singularity Hub
Medscape

AI's True Medical Potential

- Discover new drugs
- Diagnose rare conditions
- Predict disease
- Perform surgery
- Eliminate administrative duties

Photo credit: Singularity Hub

Medscape

WIRED

Surgery

Robot doctors will 'absolutely' replace surgeons

By **MATT REYNOLDS**
29 Apr 2016

WIRED Health

From helping humans live longer and *hacking our performance, to repairing the body and understanding the brain, WIRED Health will hear from the innovators transforming this critical sector. Find out more about WIRED*

Forbes

Tech / #ChangeTheWorld
JUL 10, 2017 @ 01:00 PM 17,961

Prepare Yourselves, Robots Will Soon Replace Doctors In Healthcare

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Mabu Healthcare Companion

At the company's big event this year, Apple introduced us to a handful of new features designed for the next generation smartwatch

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What happens when automation comes for highly paid doctors

By Matt McFarland July 14, 2017: 11:04 AM ET

Automation has plenty of blue-collar jobs in its crosshairs. But it's not just impacting the average worker.

Radiologists, who receive years of training and are some of the highest paid doctors, are among the first physicians who will have to adapt as artificial intelligence expands into health care.

Radiologists use medical images, such as X-rays, CT scans, MRIs, ultrasounds and PET scans, to diagnose and treat patients. [illegible] field has greatly improved patient care has also driven up health care costs.

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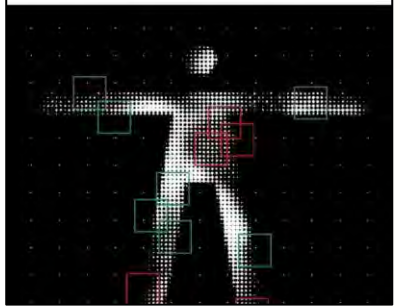
THE NEW YORKER

A.I. VERSUS M.D.

What happens when diagnosis is automated?

By Siddhartha Mukherjee March 27, 2017 12:00 AM



Medscape

Andrew Ng
@AndrewYNg

Follow

Posting with permission. AI people: What would you say to him? I will share my thoughts later.

From: [redacted]
Date: Sun, Jul 9, 2017 at 3:23 PM
Subject: Radiology
To: Andrew Ng

Dear Andrew Ng,

I'm 3 years into specialist radiology training. Should I quit and do something else? Ie. How close are radiologists to being replaced?

Many thanks

Dr [redacted]

9:23 AM - 11 Jul 2017 from Oakley, CA

789 Retweets **1,340** Likes

390 789 1.3K

Methodology

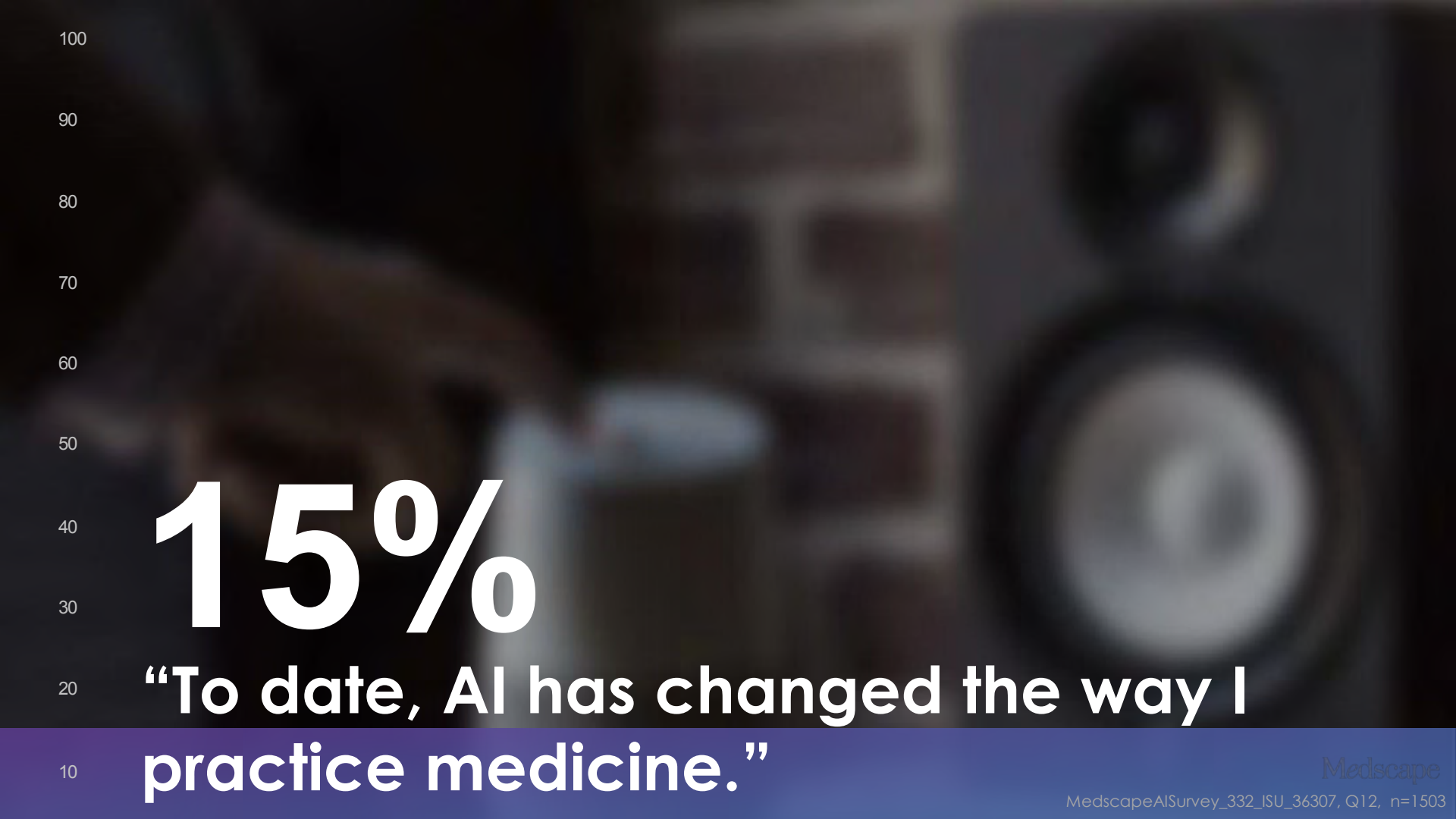
Medscape survey of 1,503 Medscape member physicians, February 1 to 22, 2018.

Surveys were conducted among physicians actively practicing in:

- US (n=500)
- EU5 (n=500)
- LATAM (Argentina, Brazil, Chile, Colombia, Mexico, Peru: n=503).

Surveys averaged 7 to 9 minutes in length. In the US, Medscape members who completed the survey were entered into a sweepstakes that awarded 25 random winners a $100 Amazon gift card. Results are unweighted.

100
90
80
70
60
50
40
30
20
10
33%
“I feel my role could be threatened or undermined in the future by AI-powered software”
Medscape
MedscapeAISurvey_332_ISU_36307, Q11, n=1503

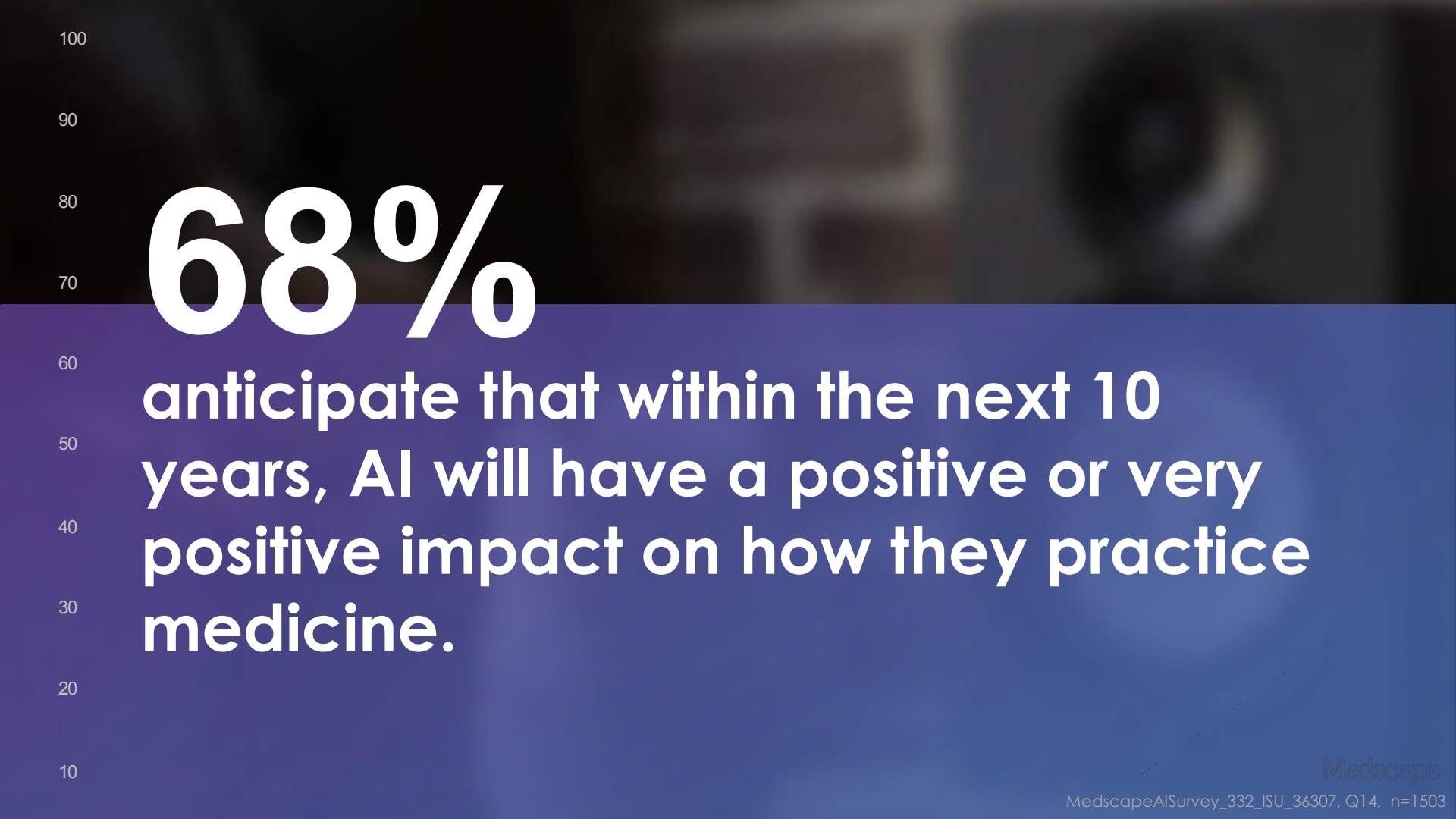


15%

"To date, AI has changed the way I practice medicine."

Medscape

MedscapeAISurvey_332_ISU_36307, Q12, n=1503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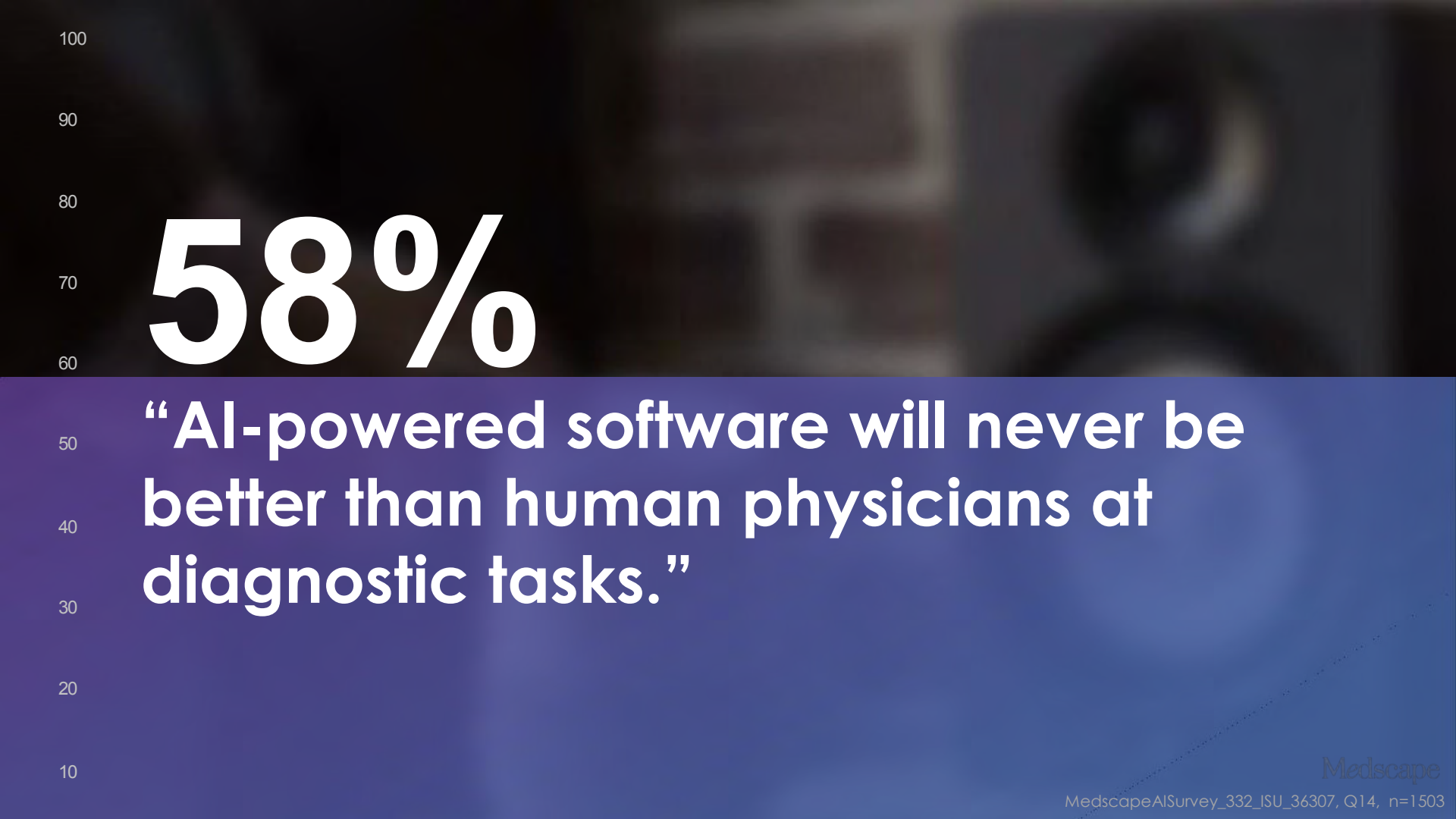
68%
anticipate that within the next 10 years, AI will have a positive or very positive impact on how they practice medicine.
Medscape
MedscapeAISurvey_332_ISU_36307, Q14, n=1503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20
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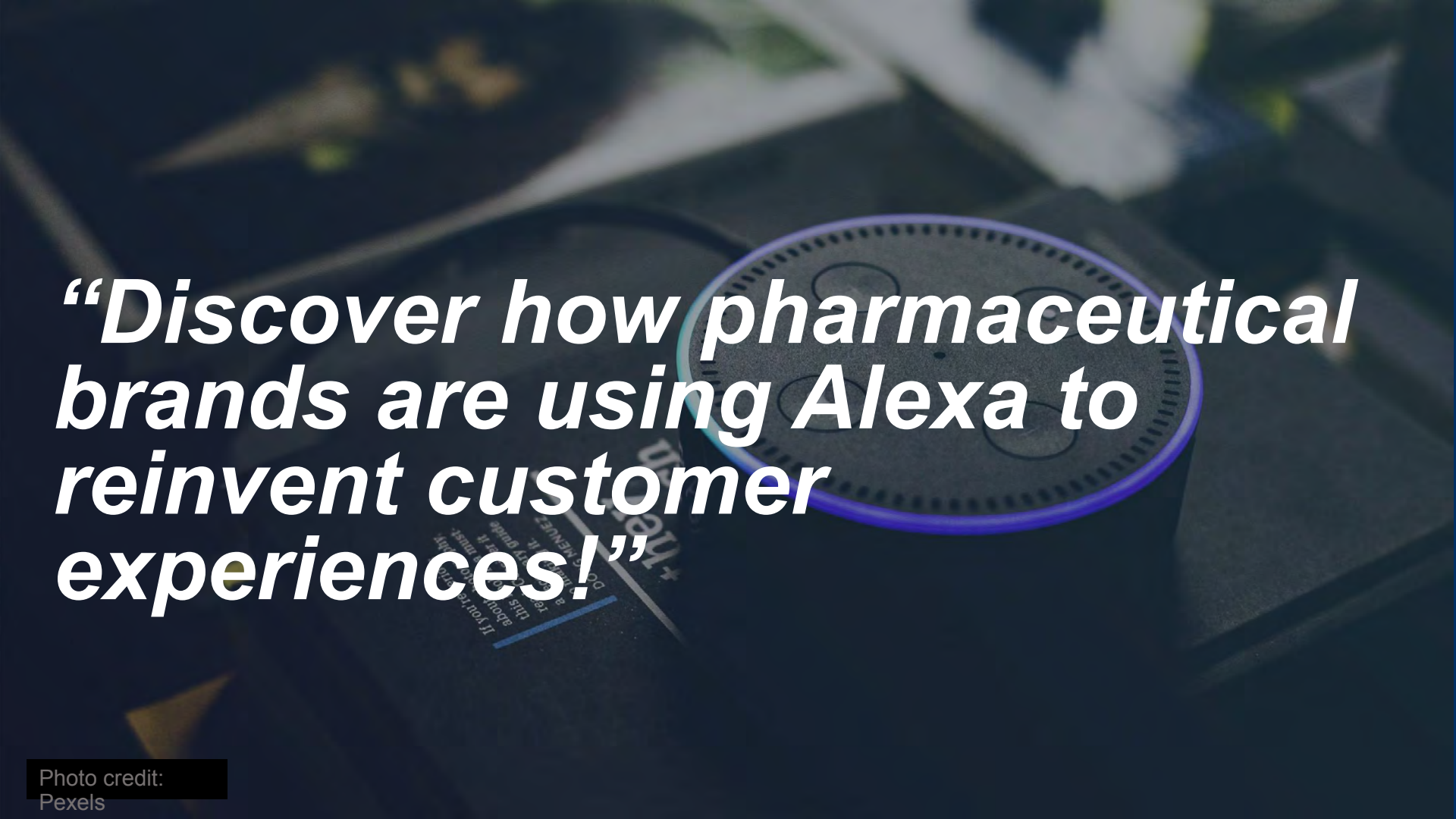
58%
“AI-powered software will never be better than human physicians at diagnostic tasks.”
Medscape
MedscapeAISurvey_332_ISU_36307, Q14, n=1503

“Artificial intelligence will not replace radiologists.
However, radiologists who use AI will replace those who don’t.”
-Dr. Bertalan Mesko

What does it mean for us?

Photo credit: Pexels


“Discover how pharmaceutical brands are using Alexa to reinvent customer experiences!”
Photo credit: Pexels

“In 2018, brands will have to reimagine the experiences they can offer physicians, and fast!”

“Otherwise, they’ll stand no chance of having a meaningful role in the world of the fully realized Internet of Things!”

Benefits Of Voice UI

Photo credit: Pexels

FASTER

Human can speak 140 words per minute vs. type 45

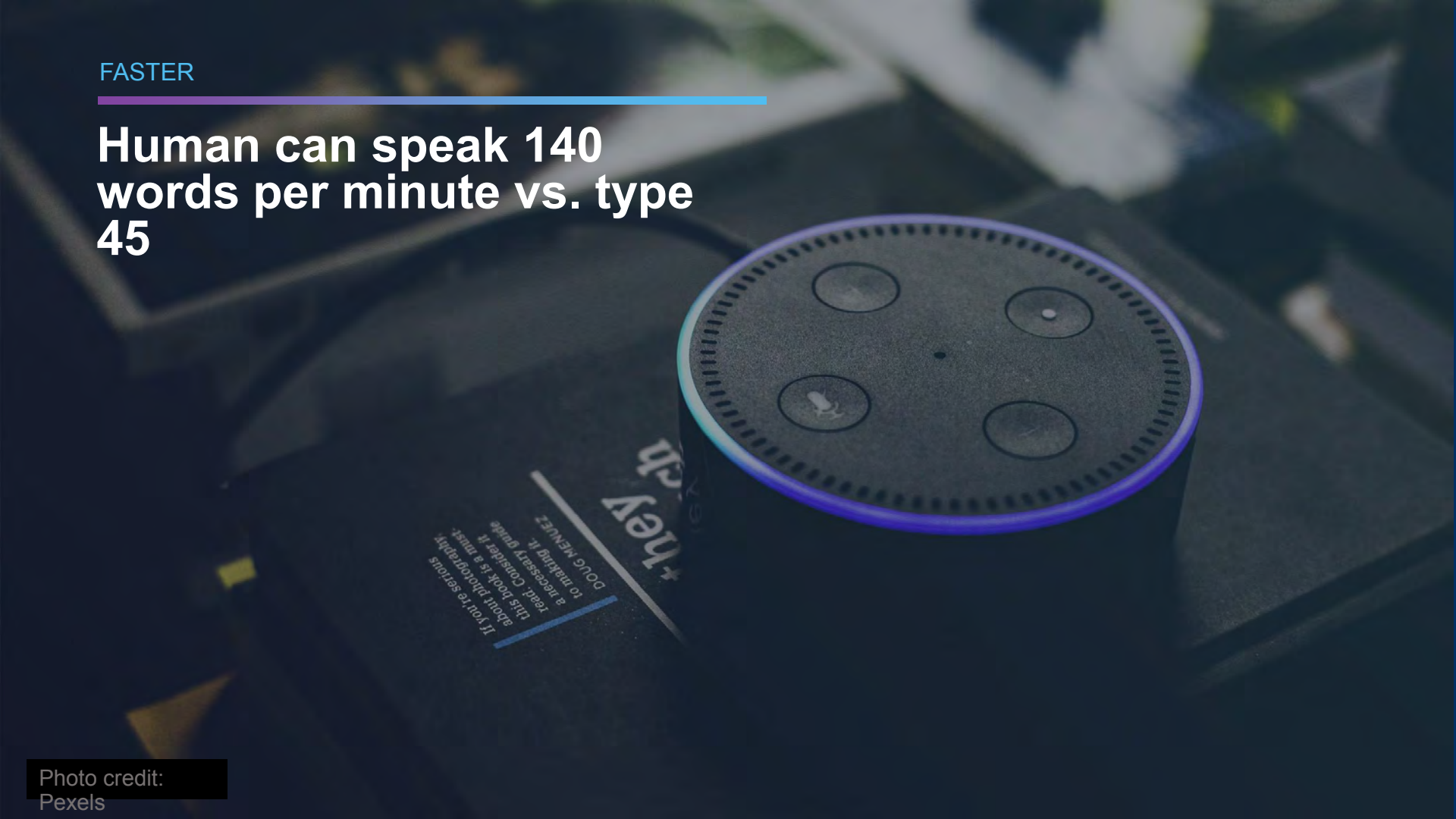


Photo credit: Pexels

FASTER

Human can speak 140 words per minute vs. type 45

EASIER

Convenient and hands-free

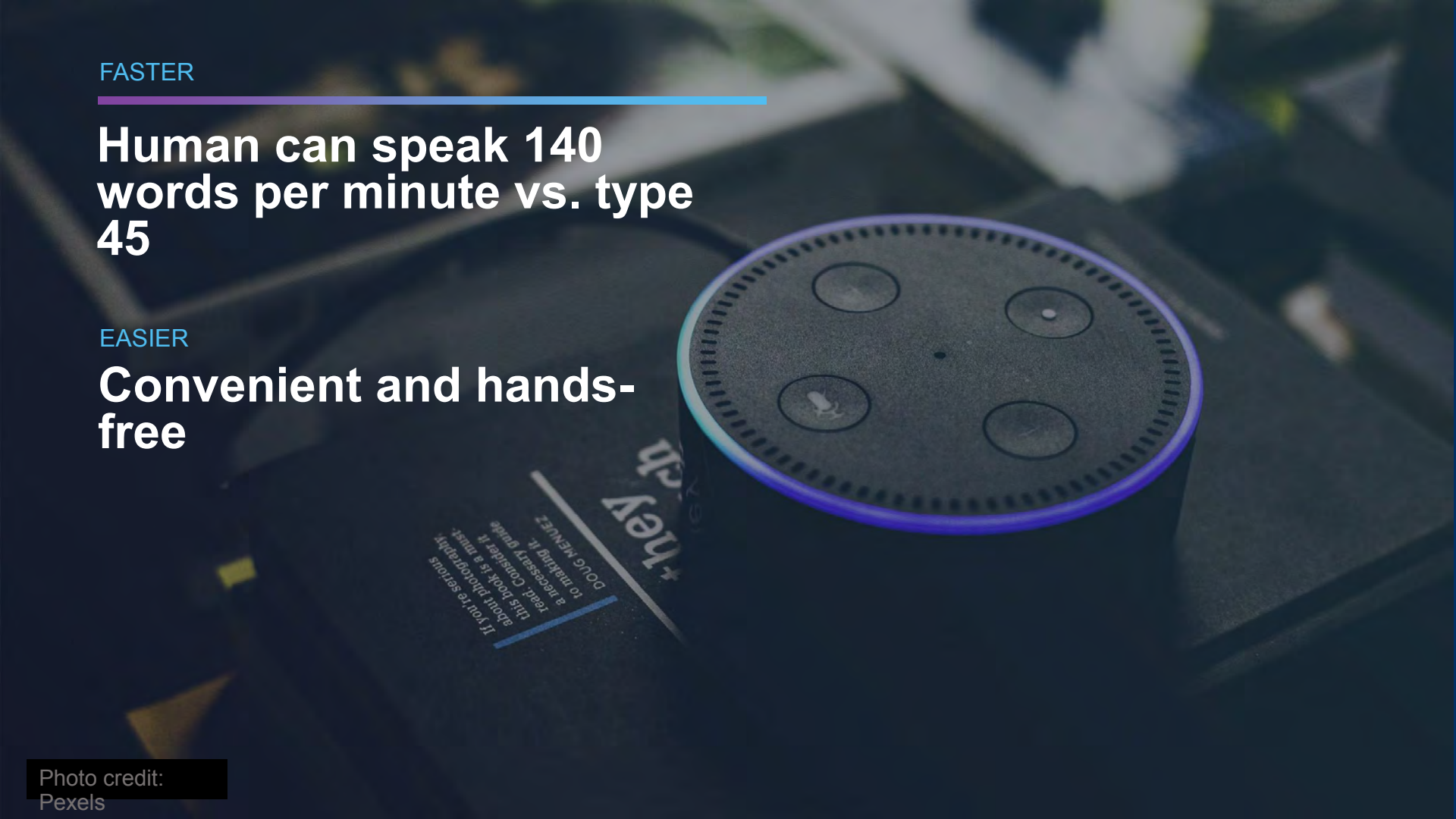


Photo credit: Pexels

FASTER

Human can speak 140 words per minute vs. type 45

EASIER

Convenient and hands-free

MORE EFFICIENT

Random Access vs. Hierarchical Navigation

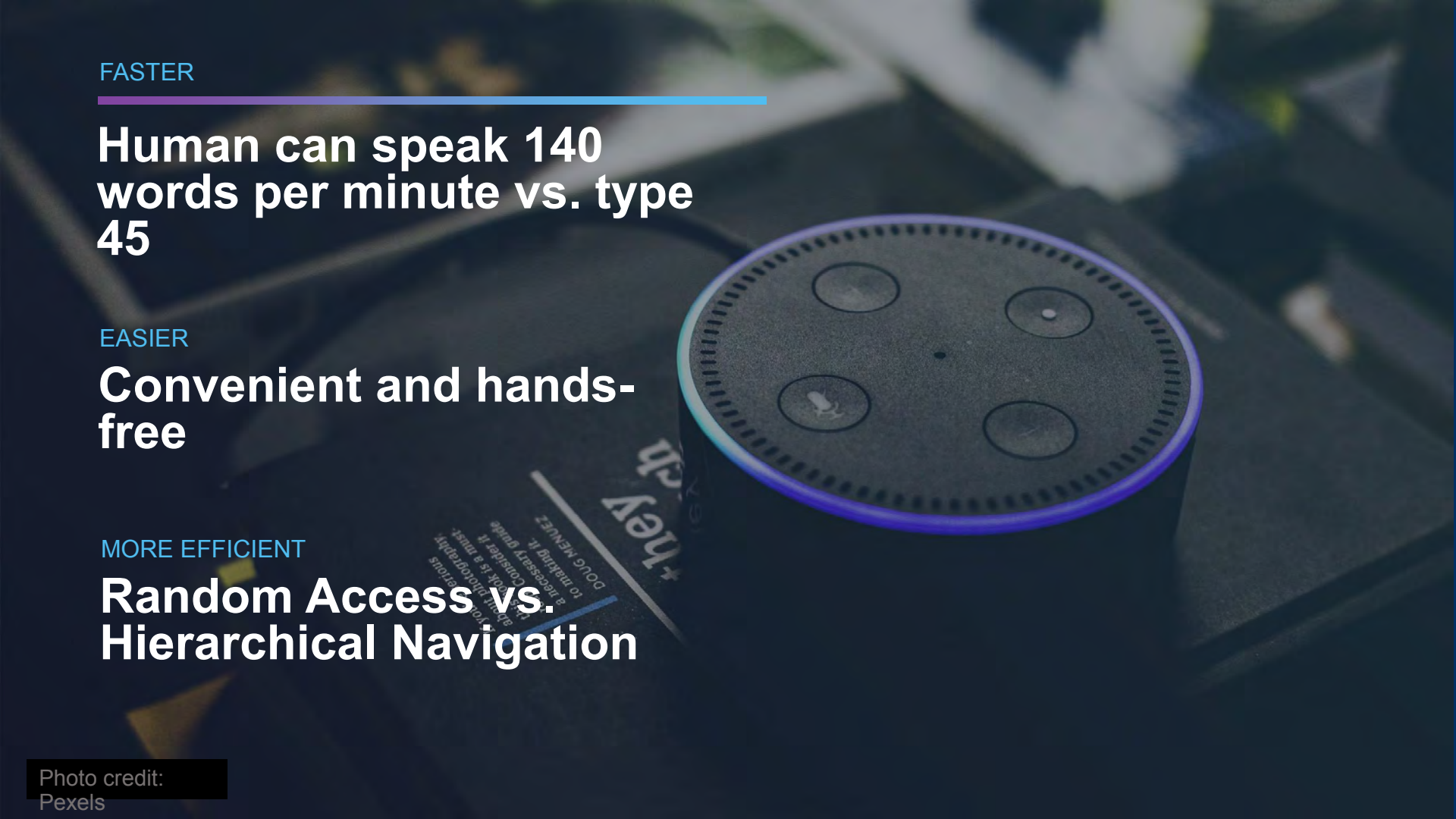
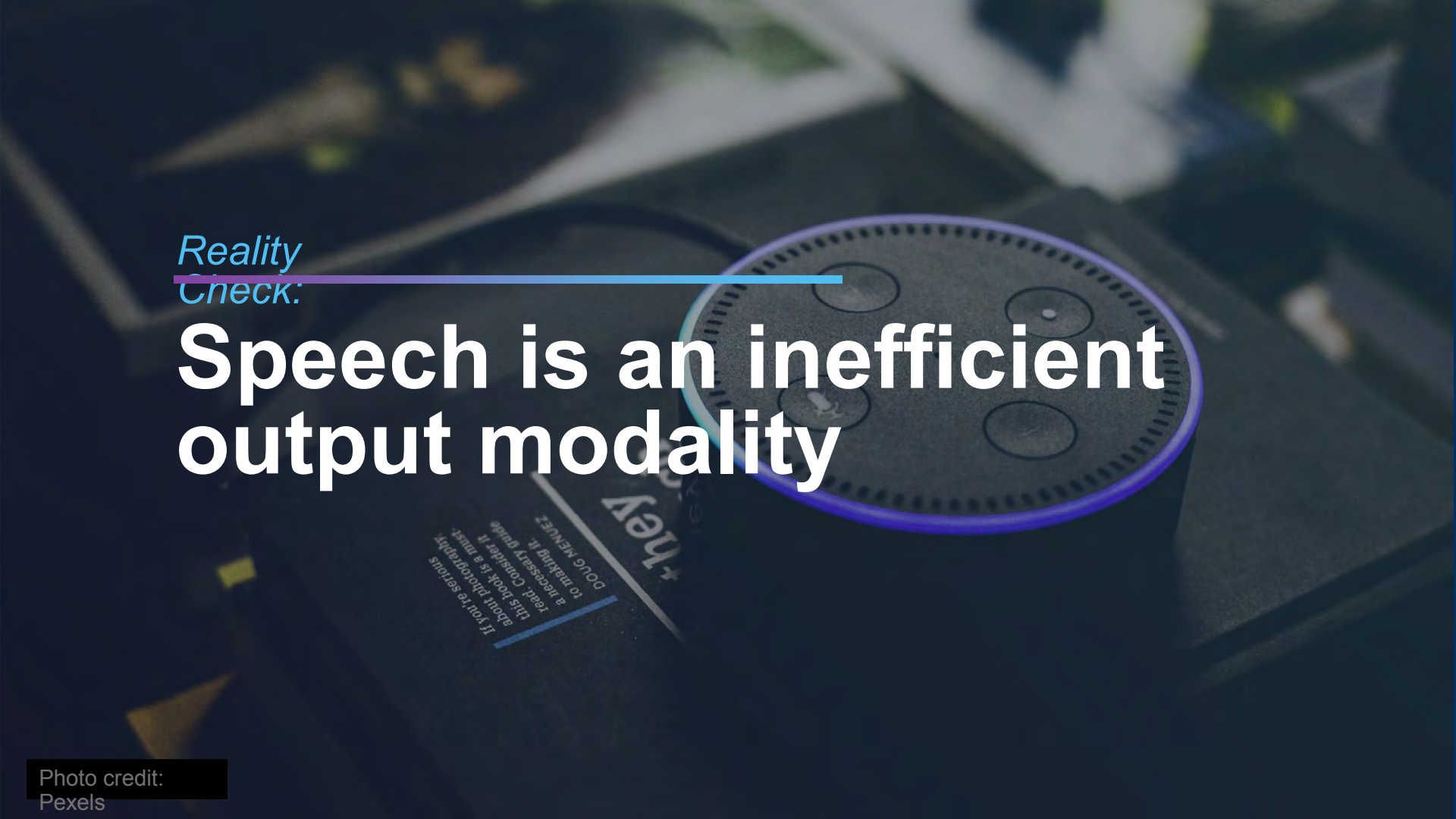


Photo credit: Pexels



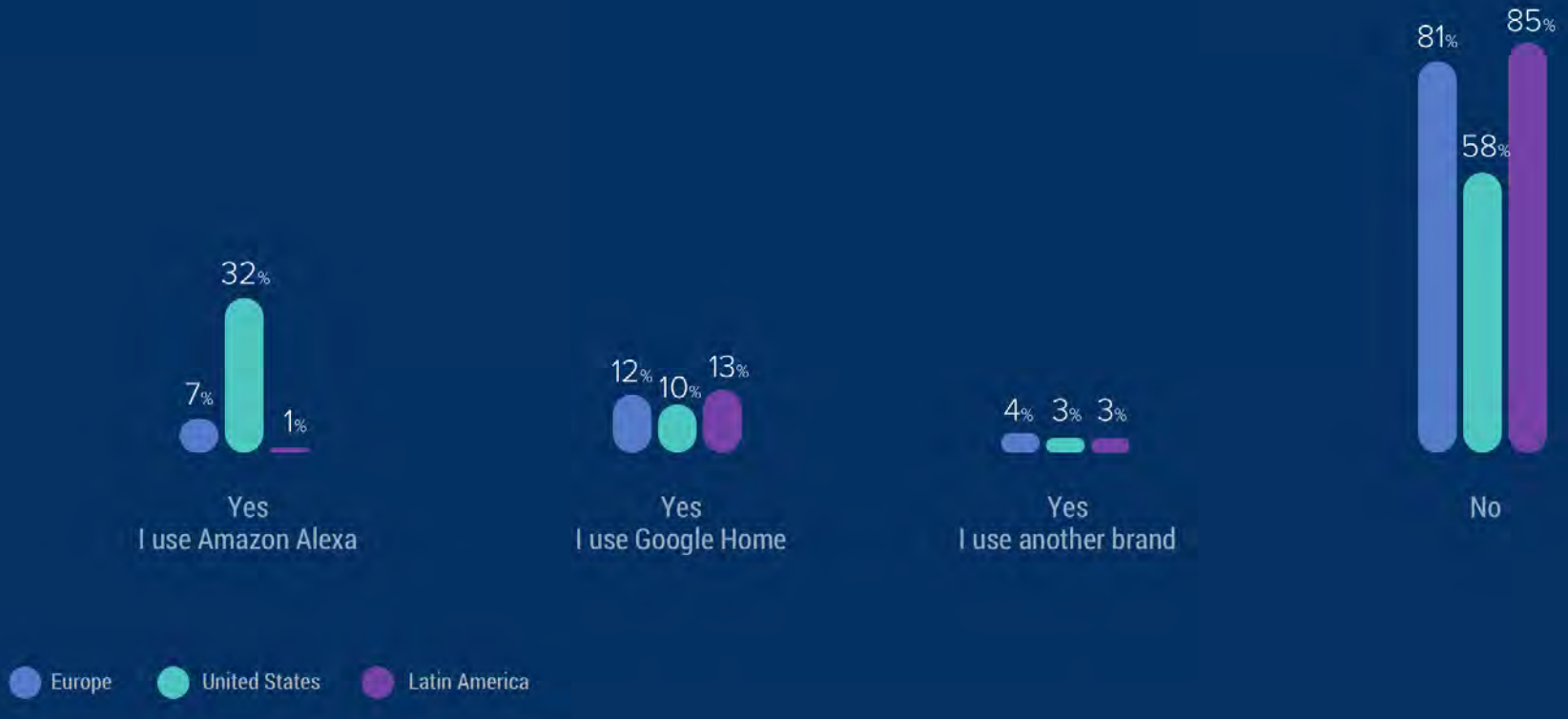
Reality Check:

Speech is an inefficient output modality

Photo credit: Pexels

Do you use a voice-controlled smart speaker at home?

(e.g., Amazon Echo (Alexa), Google Home)



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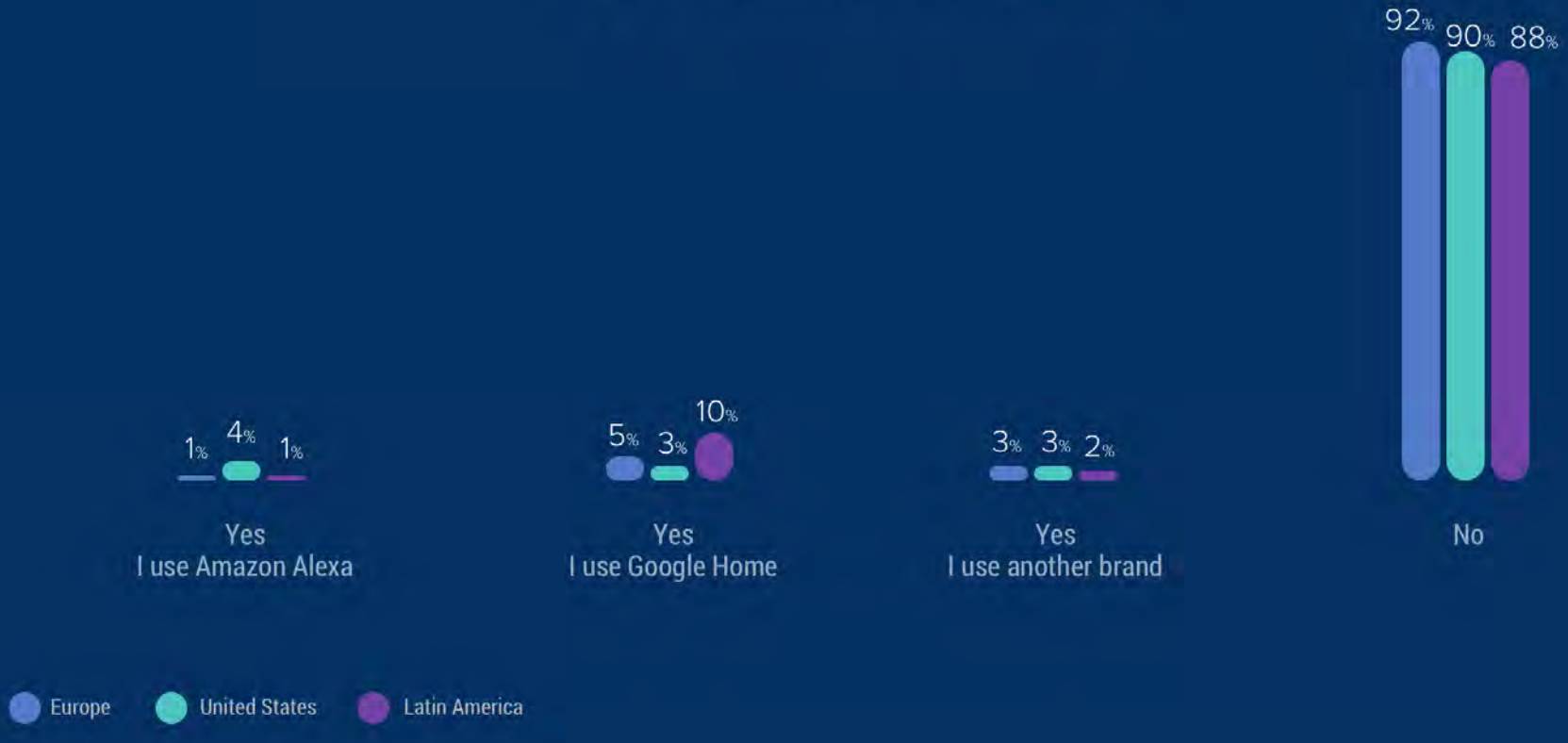
Do you use a voice-controlled smart speaker at work for professional purposes?

(e.g., Amazon Echo (Alexa), Google Home)



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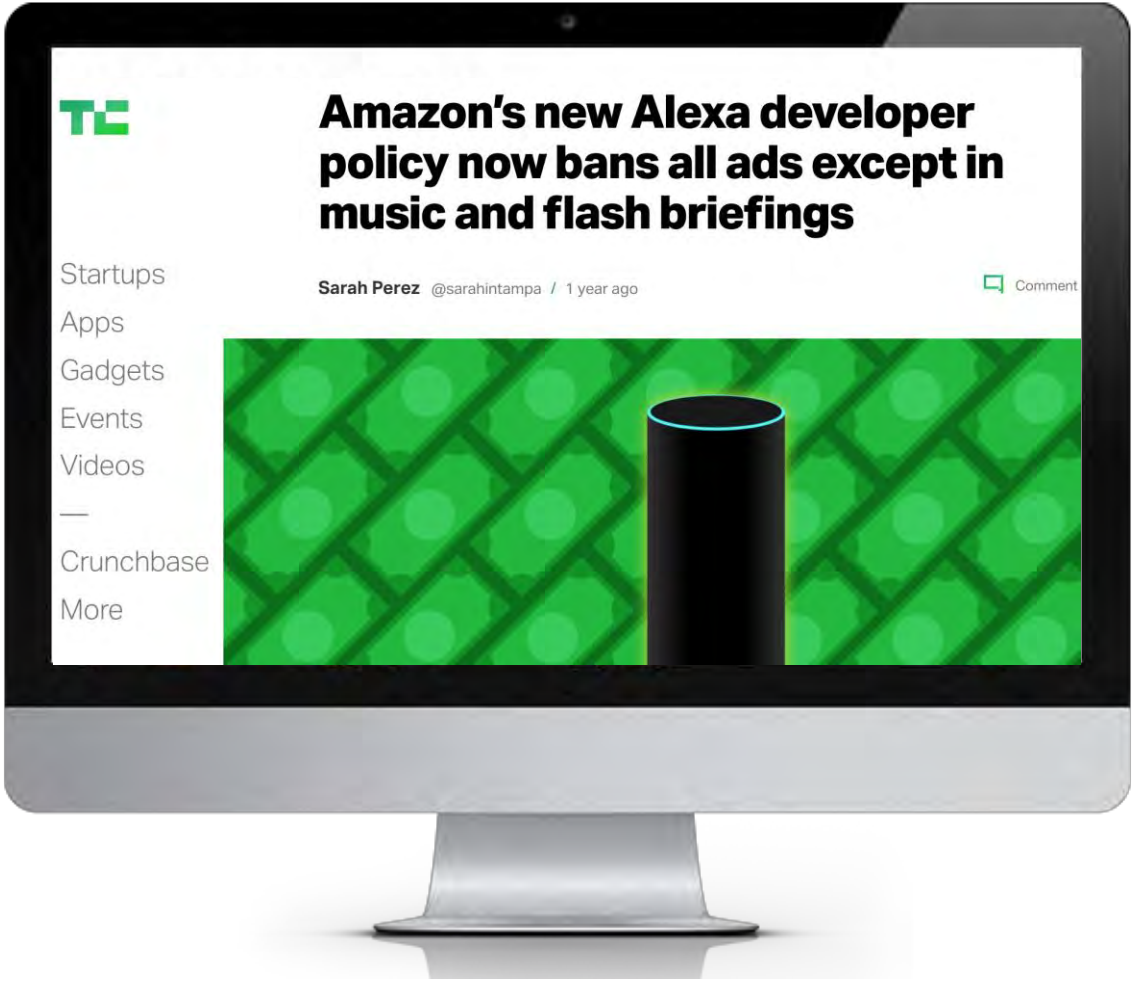
How likely would physicians be to use a voice-controlled clinical decision support system offered by each of the following?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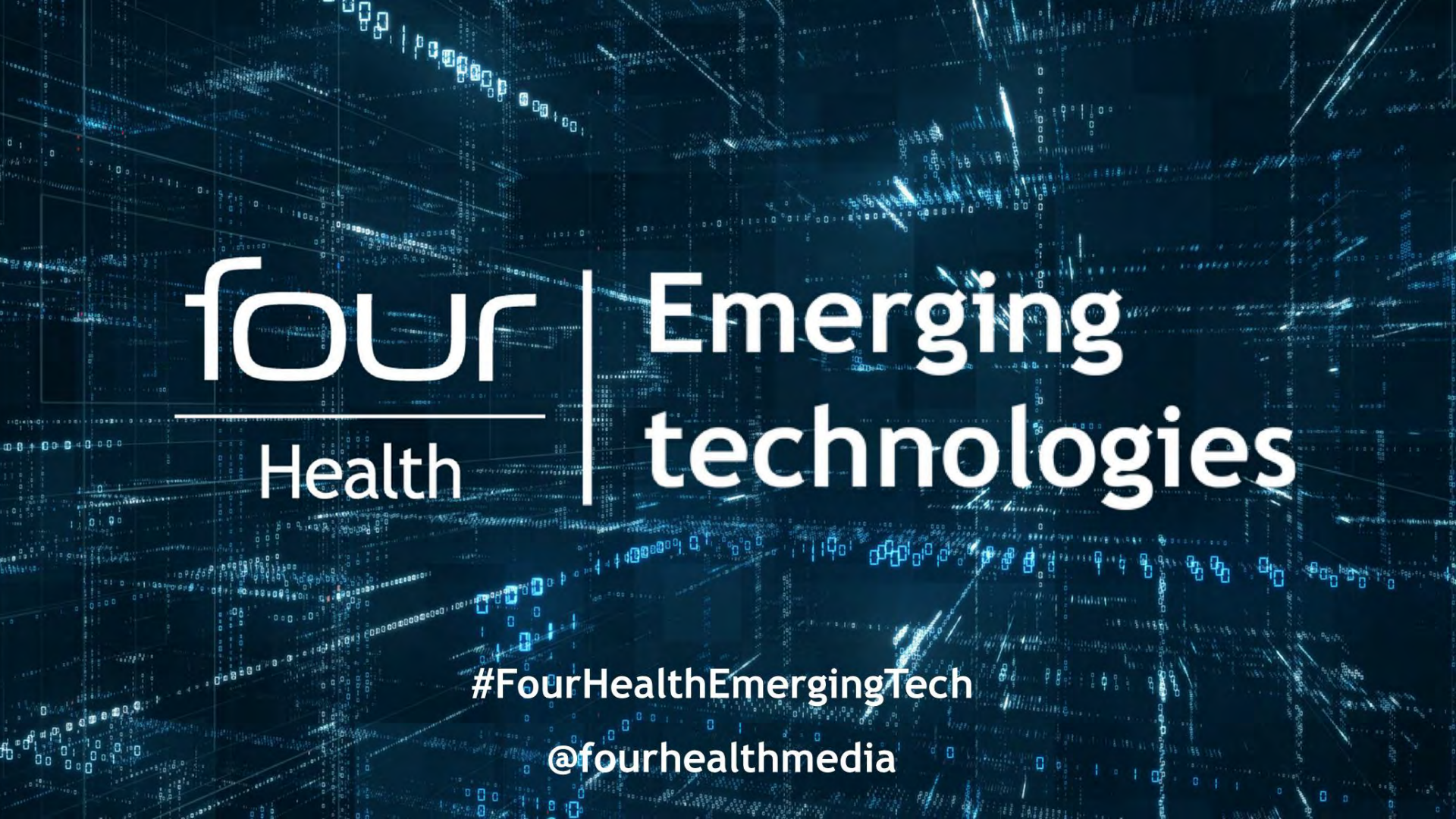
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