



Understanding Data Science

Prepared for Fran Ayalasomayajula - President of Reach

And the Reach KOL Faculty

Prepared by Amir Ismail and Reena Sangar – Ipsos Healthcare

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What is data science?

Data Science

Data science is the field of study that combines domain expertise, programming skills, and knowledge of mathematics and statistics to extract meaningful insights from data.

Data science practitioners apply machine learning algorithms to numbers, text, images, video, audio, and more to produce artificial intelligence (AI) systems to perform tasks that ordinarily require human intelligence. In turn, these systems generate insights which analysts and business users can translate into tangible business value.

Source: [What Is Data Science Definition | Learn Why Data Science Is Important \(datarobot.com\)](https://www.datarobot.com)



Background

IREACH is aiming to:

- Bring forth the 101's of data science and advance technology
- Assess Machine Learning
- Evaluate XR (VR, MR, AR)

Our Approach

We engage with Reach KOL faculty (n=10) who can provide clarity around the key components of Data Science. Reach Faculty were able to give their insight on the impact of data science in their practice and where opportunities for data science in the healthcare world can exist

Reach Faculty were also able to identify barriers holding back data science adoption as well as assess the future use of data science solutions.



Generally, REACH Faculty understood what data science is, citing that data science is a field of knowledge to extract meaningful insights from data



Top of mind association of Data Science (n=10)

“Leveraging scientific methods, processes, systems and algorithms to extract knowledge and insights from structured and unstructured data.”

Cardiologist

“A research area focusing on the process of acquisition, storage and organization, analysis and visualization of typically large scale data (oftentimes termed "big data").”

Physician

“Is the field of study that combines domain expertise, programming skills, and knowledge of mathematics and statistics to extract meaningful insights from data. ... In turn, these systems generate insights which analysts and business users can translate into tangible business value or therapeutic interventions”

Pediatrician

“The discipline of understanding different types and sources of information/data; the ability to collect, store, harmonize, process, and gather actionable insights and intelligence from the data; the art of telling the story, visualizing the data, making it understandable to spur action and achieve desired goals; and do so in a highly reliable, secure, ethical way.”

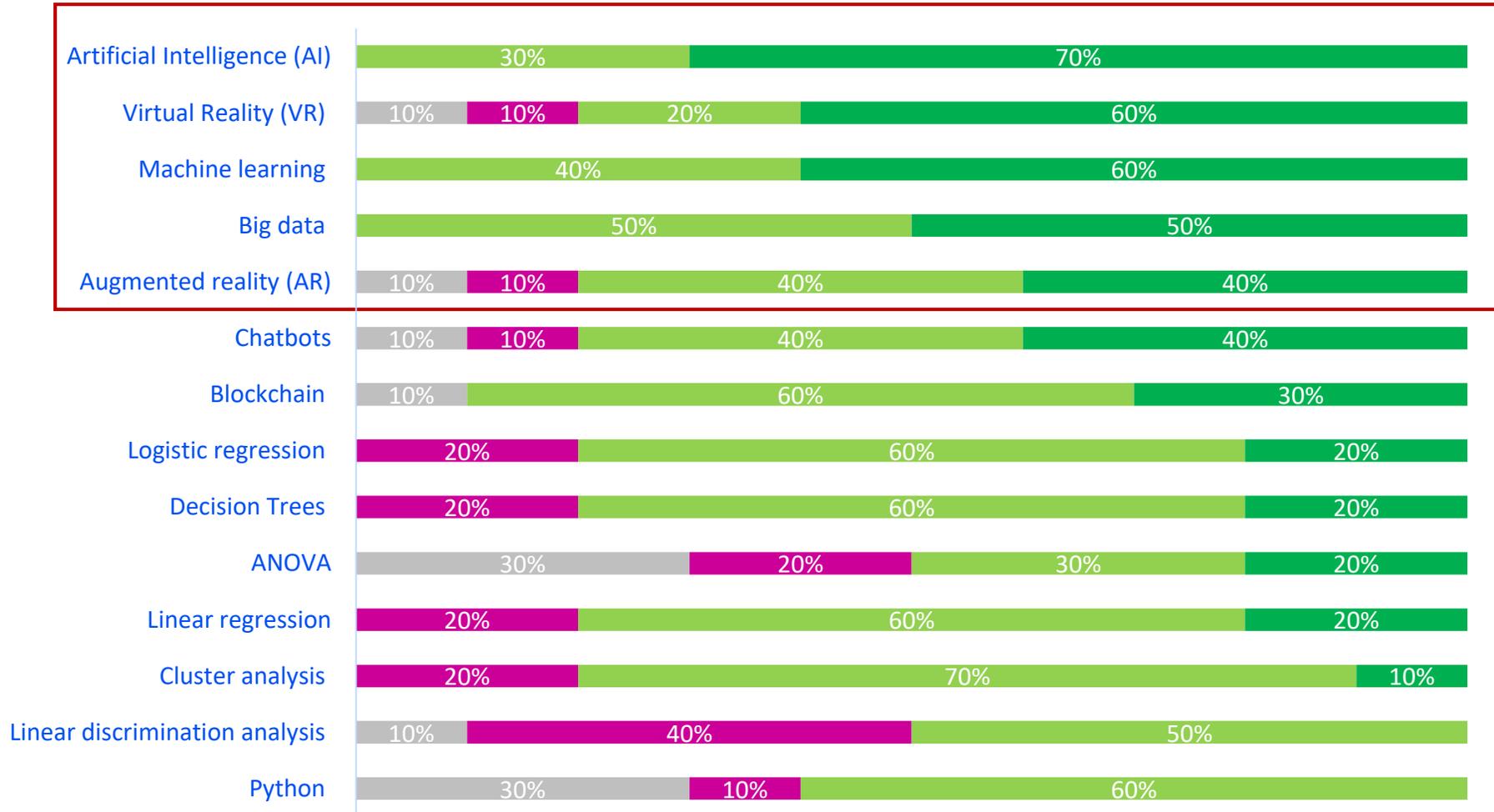
Physician

Q2. How would you define Data Science? Base: (n=10)

REACH Faculty were aware of the main components of data science but struggled with awareness for the technical aspects



Awareness (n=10)



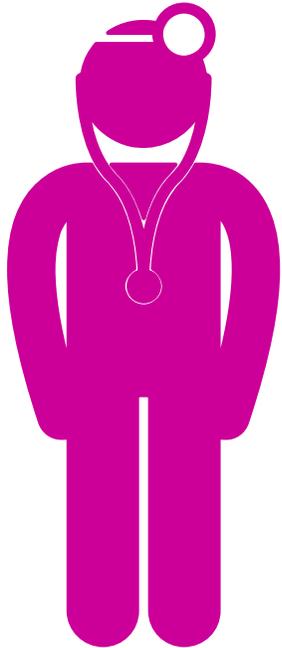
■ Don't know ■ I haven't heard of this concept ■ I have heard of this concept but don't know a lot about it ■ I know a lot about this concept



The majority of KOLs use data science in practice, but those who do not would like access to data scientists and more integration of data science in practice



Use of data science in current practice
(n=10)



7 out of 10 of
the REACH Faculty use
data science in their
current practice

KOLs who do not use data science in their practice have “no access to data scientists” and their systems in hospital do not support the application of data science

“I use data science for developing tools around echo data”

Cardiologist

“I use data science to determine the success of programs driving clinical outcomes, optimizing the design around specific questions and testing hypothesis and reporting out results to drive engagement”

Physician

Q3a. Do you currently use data science in your current practice?

Q3b. How do you use data science in your current practice?





ALL KOLs believe that data science solutions will **increase over the next 2 years**



REACH Faculty believe data science allows physicians to gain better insights and therefore can lead to better outcomes



Impact of data science on current practice (n=10)



“The development and use of complex algorithms to analyze diverse data from IoT health sensors to determine the most appropriate therapeutic responses for a given health problem.”
Physician

“Data science will have an impact as medical images using AI and endoscopy can be used in Gastroenterology”
Gastroenterologist

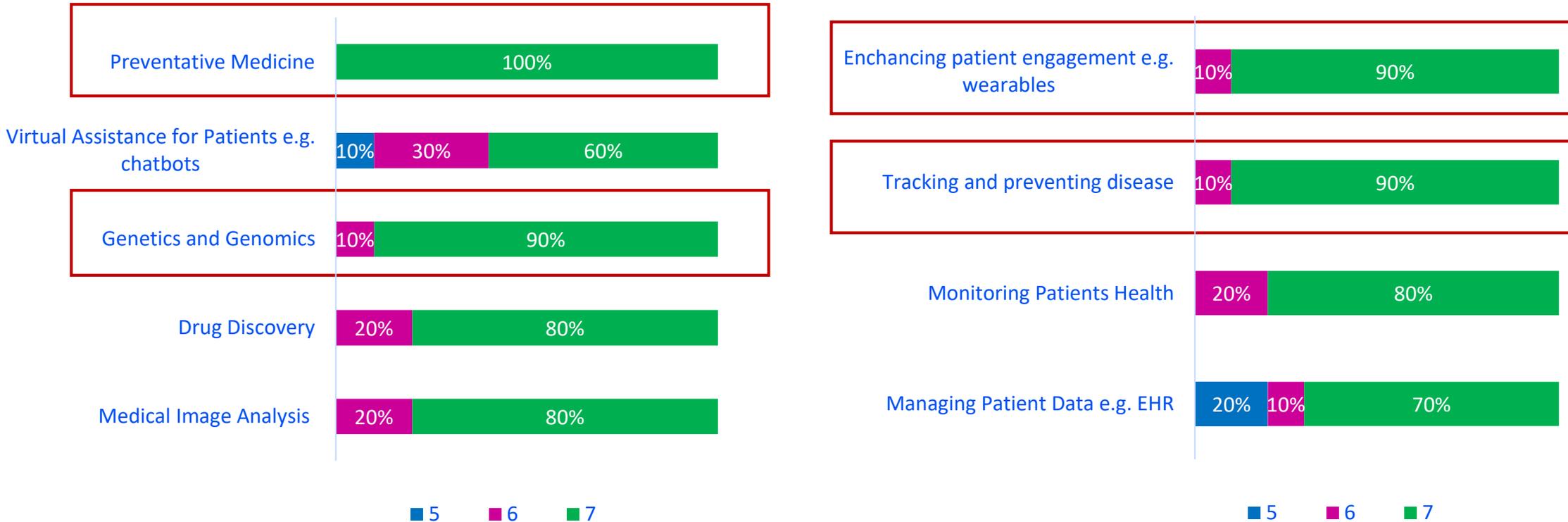
“Data science will have an impact as it will allow me to gain insights into our metrics and behaviour and this of patients”
Physician

Q4a. On the scale below, please rate the impact that data science has on your current practice. Q4b. Please give an example on how data science will have an impact on your current practice



The top opportunities for data science are; preventative medicine, genetics and genomics, enhancing patient engagement and tracking and preventing disease

 Opportunities for data science – Top 3 Box (n=10)



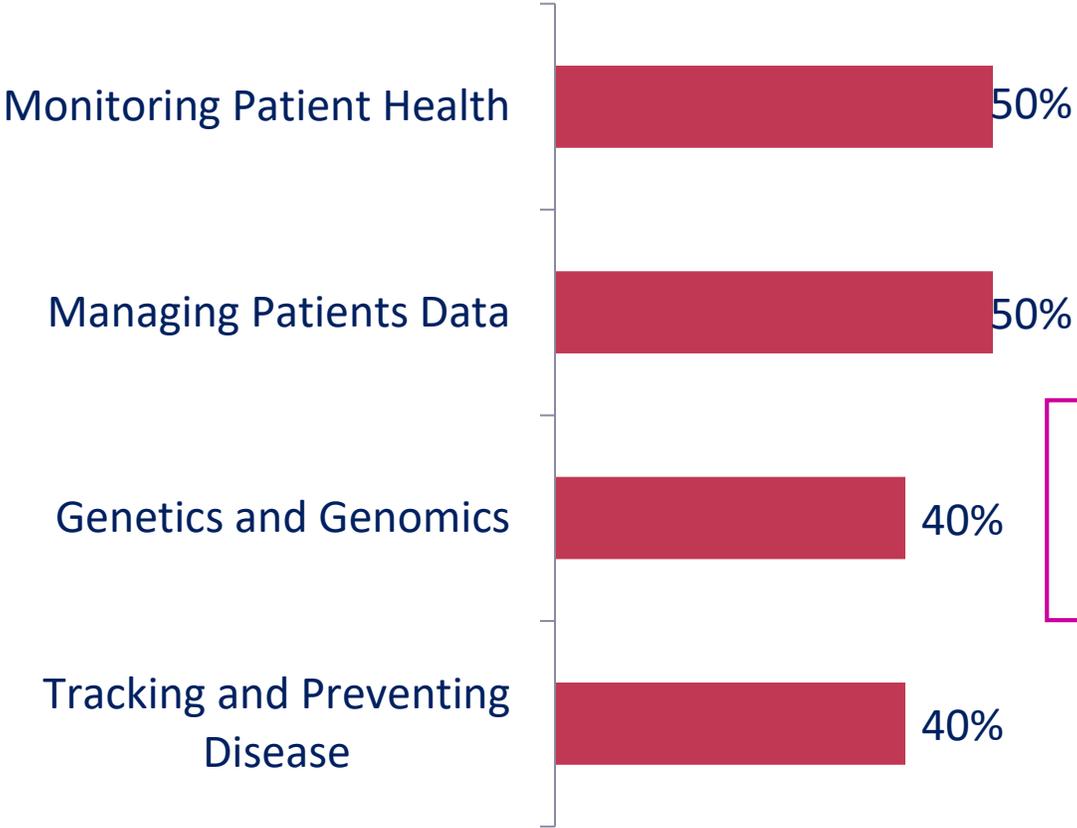
Q5. Please indicate where you think opportunities exist in healthcare which can utilize data science to better healthcare – 7-point scale



The most important opportunities for data science are to monitor and manage patients as well as genetics and genomics as this can underpins all diseases and cures



Top ranked opportunities (Top 3)
(n=10)



“Wearables and smart devices help family and doctors stay up updated on patient's health. It's a rapid shift in the dynamic of healthcare. Using data science to analyze raw data, observed patterns, variations in patient's health, detect concern symptoms and notify medical teams. This helps medical teams to predict possible health issues and provide preventive care and better treatment”
Physician

3 KOLs had 'Genetics and Genomics as their top opportunity for the utilization of data science

“Genetics and genomics underpin all diseases and cures so there is a huge opportunity to utilize data science here”
Physician

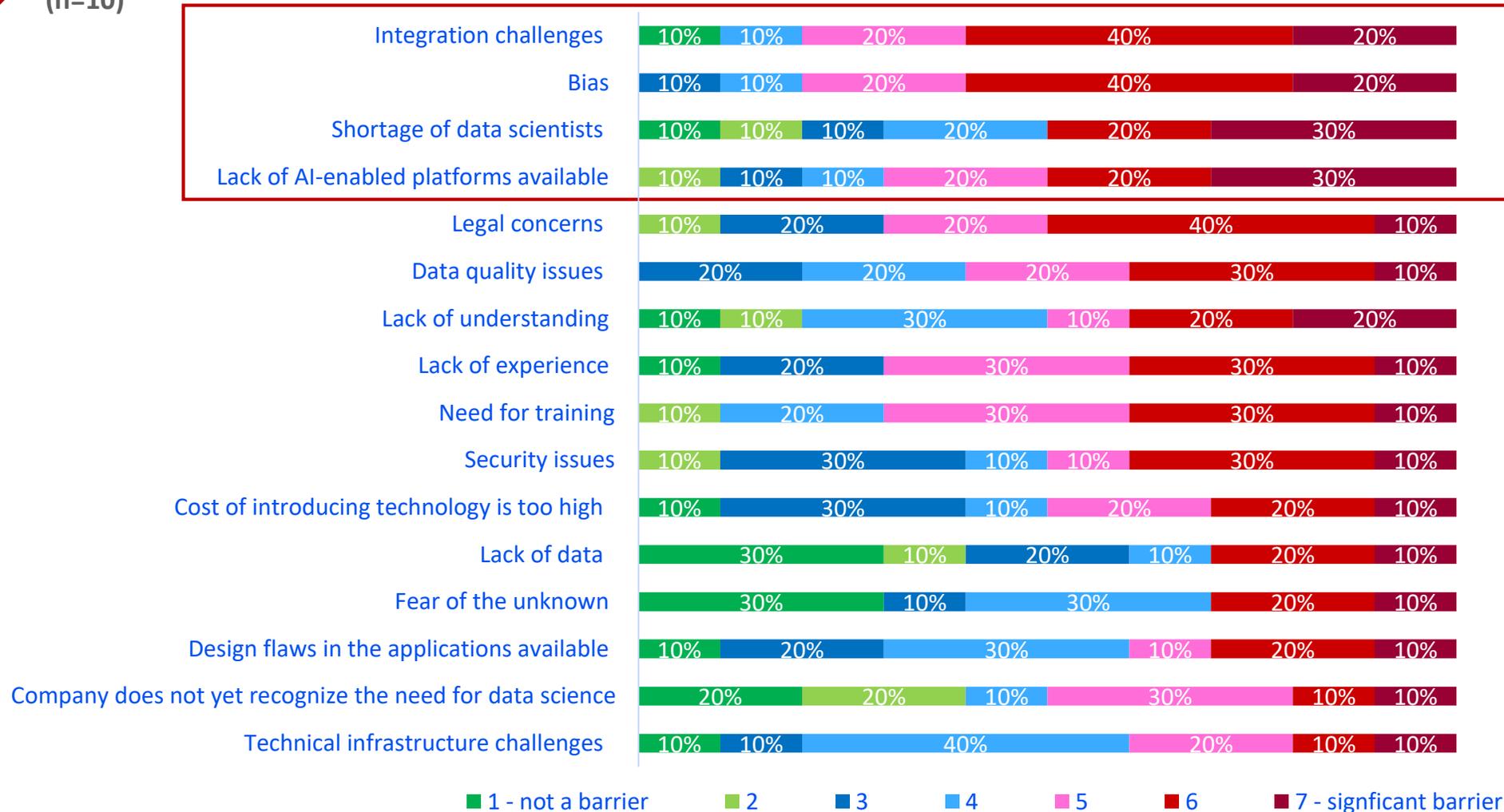
Some KOLs did mention that another opportunity where data science could help is for addressing the Social Determinants of Health



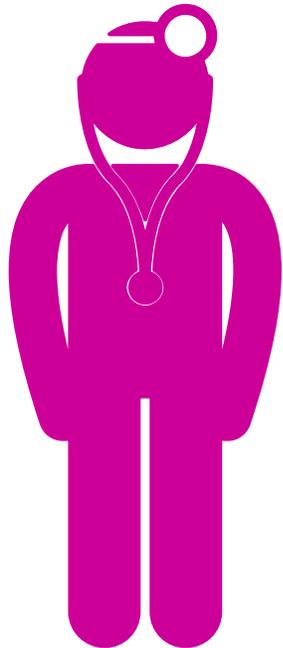
The barriers holding back data science adoption include; bias, integration challenges, shortages of data scientists and lack of AI-enabled platforms



Barriers holding back data science adoption (T2B)
(n=10)

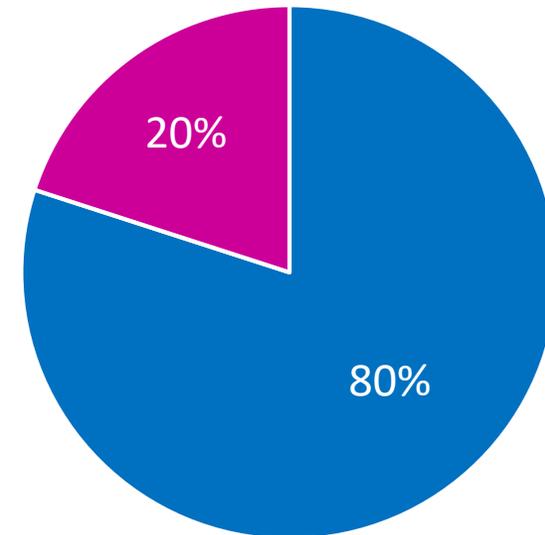


REACH Faculty believe that training on the topic of data science is essential and institutions must do more to provide this



10 out of 10 of the REACH Faculty use believe formal training on the topic of data science is very/extremely important.....

...with **8 out of 10 KOLs** feeling that their institutions need to provide more training on data science



■ Yes ■ No



Thank you.

Reena Sangar
Research Director
Reena.Sangar@ipsos.com

Amir Ismail
Senior Research Executive
Amir.Ismail@ipsos.com

