



HEALTH DATA QUALITY WORKSHOP THE ECONOMICS OF DIGITAL HEALTH

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WHY SHOULD YOU CARE ABOUT DATA QUALITY?

- Poor data quality is a primary reason for **40% of all business initiatives** failing to achieve their targeted benefits.
- Data quality effects overall **labor productivity** by as much as **20%**.
- As more business processes become automated, data quality becomes the rate limiting factor for overall process quality.
- Business leaders and IT leaders focused on data quality improvement and information governance should:
 - Measure the business value of improved data quality by focusing on business processes, investment decisions and overall productivity.
 - Qualify the business value of improved data quality using business metrics that are correlated with financial outcomes.
 - Share the findings of this research with your finance department to receive feedback and guidance on where to begin identifying opportunities for increased business value from improved data quality.



Source: "Measuring the Business Value of Data Quality", Friedman, T., Smith, M., Gartner, 2011



WAYS OF ESTIMATING DATA VALUE

Economic Value of Information (EVI)

The EVI measures the attributable lift in revenue by applying the information to our business processes.

$$EVI = (Revenue_{(with)} - Revenue_{(without)} - Cost\ of\ Data) \times \frac{T}{t}$$

The formula for the Economic Value of Information (EVI)

- **Revenue(with)** – Revenue generated **with** the data
- **Revenue(without)** – Revenue generated **without** the data
- **Cost of Data** – The cost to acquire, administer, and operationalize the data in relevant business processes
- **T** – The usable life of any datum
- **t** – The period over which the experiment was executed

WAYS OF ESTIMATING DATA VALUE

Market Value of Information (MVI)

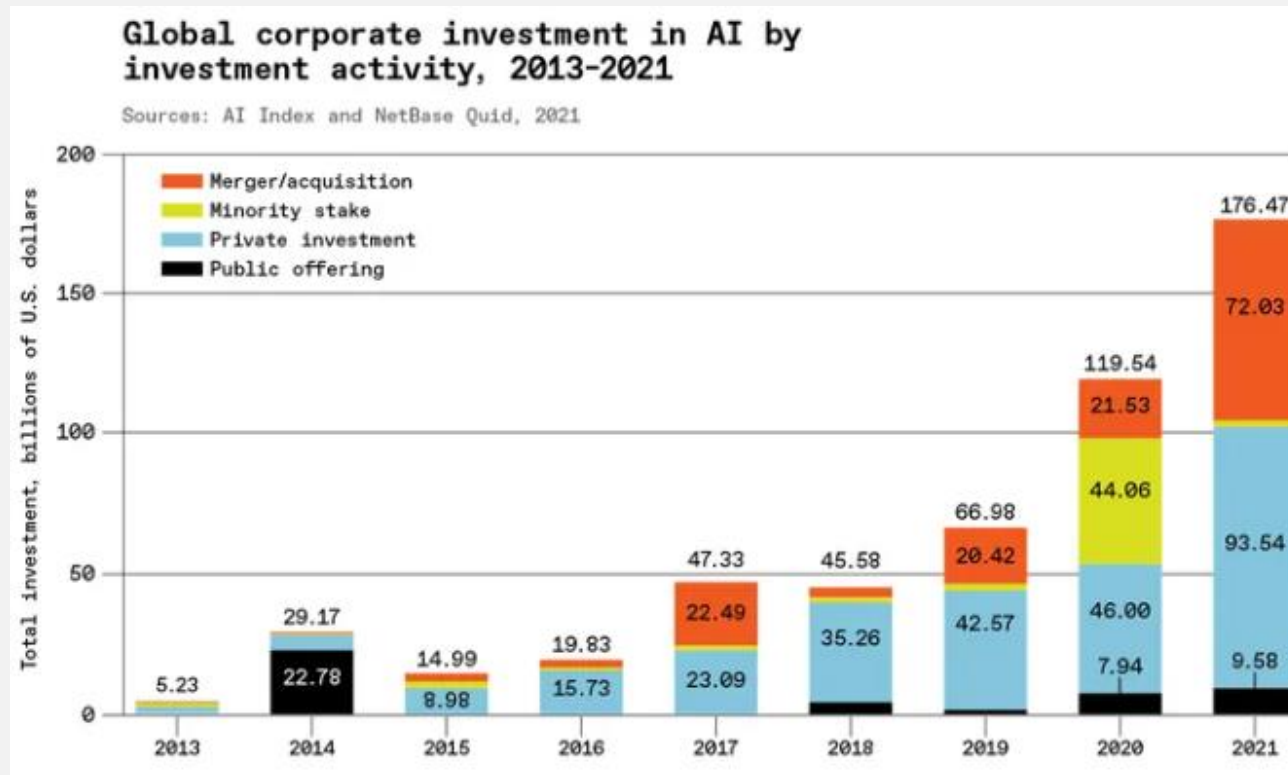
It is becoming increasingly more commonplace to see data monetized as a line of revenue. Data can be licensed directly or on data marketplaces, and it can be bartered or used to negotiate favourable terms. In these scenarios, the MVI is the ideal measure of data value.

$$MVI = \frac{\textit{Exclusive Price} \times \textit{Number of Licenses}}{\textit{Premium}}$$

The formula for the Market Value of Information (MVI)

- **Exclusive Price** — The hypothetical price a customer would pay to get exclusive access to the data
- **Number of Licenses** — The number of potential parties that would license this data for the useful life of the data
- **Premium** — The multiple over any given licensing fee an interested party would pay for exclusive access to the data

CONTEXT - INVESTMENT DYNAMICS

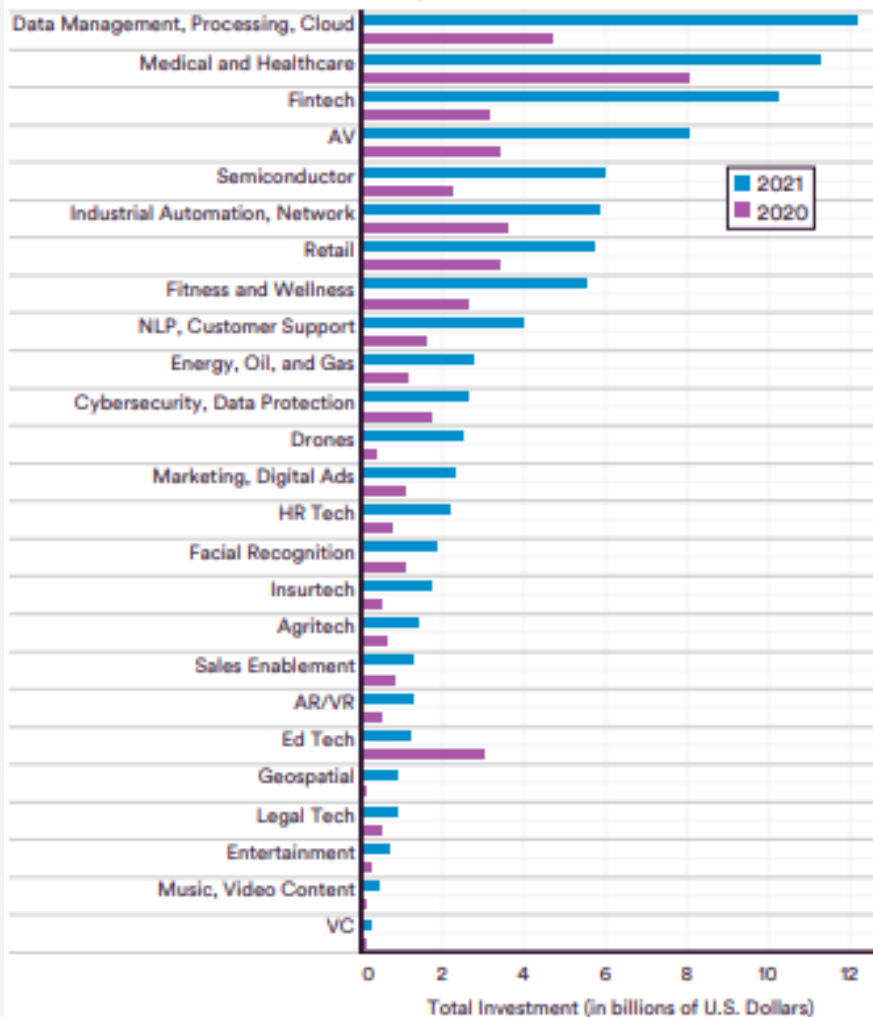


- Private investment driving value gains → 5y CAGR = 32.29%
- Increase in big funding rounds → 4 funding rounds in 2020 over \$500M vs. 15 in 2021!
- More money to fewer companies (# of newly founded firms getting funding dropping since 2018) → the market is starting to consolidate, making it ripe for M&A efforts.

INVESTMENT IN MEDICAL AND HEALTHCARE AI

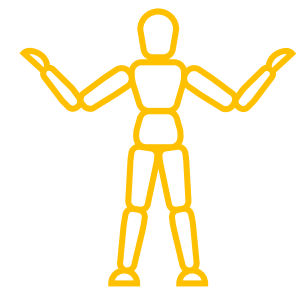
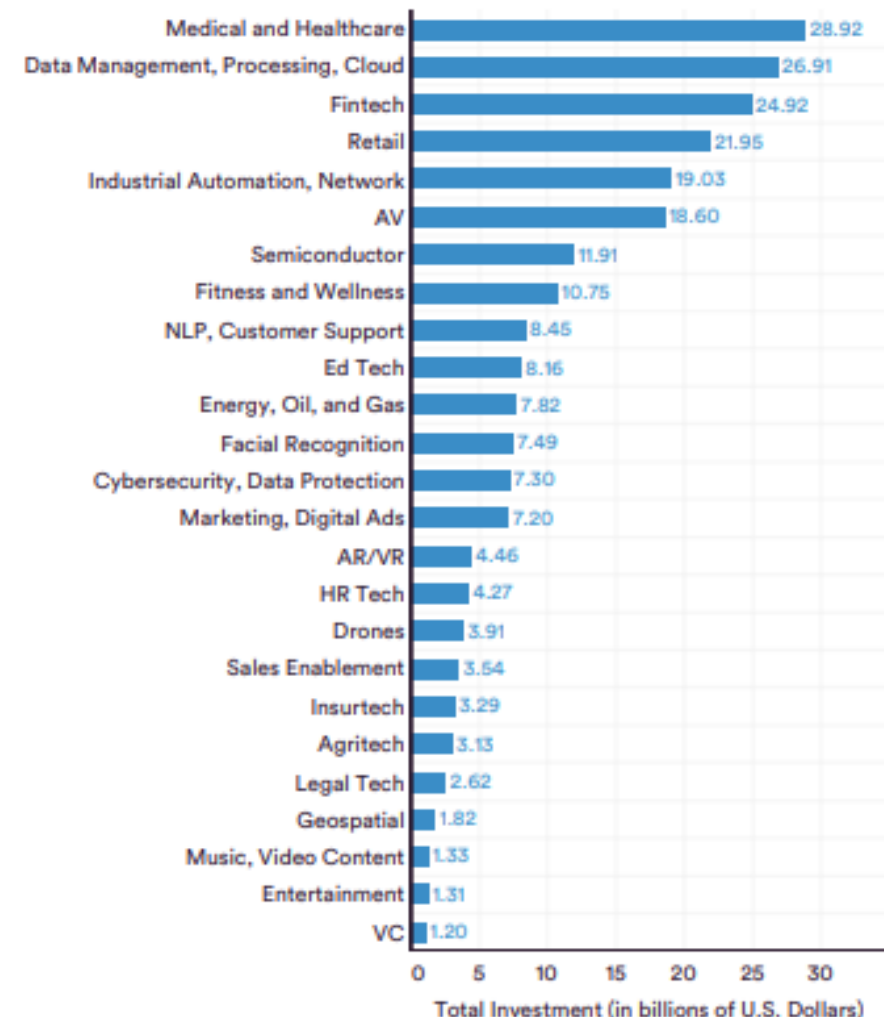
PRIVATE INVESTMENT in AI by FOCUS AREA, 2020 vs. 2021

Source: NetBase Quid, 2021 | Chart: 2022 AI Index Report

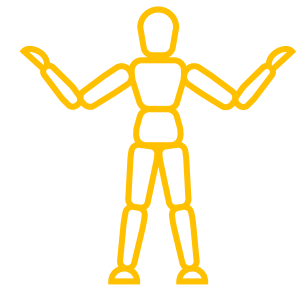
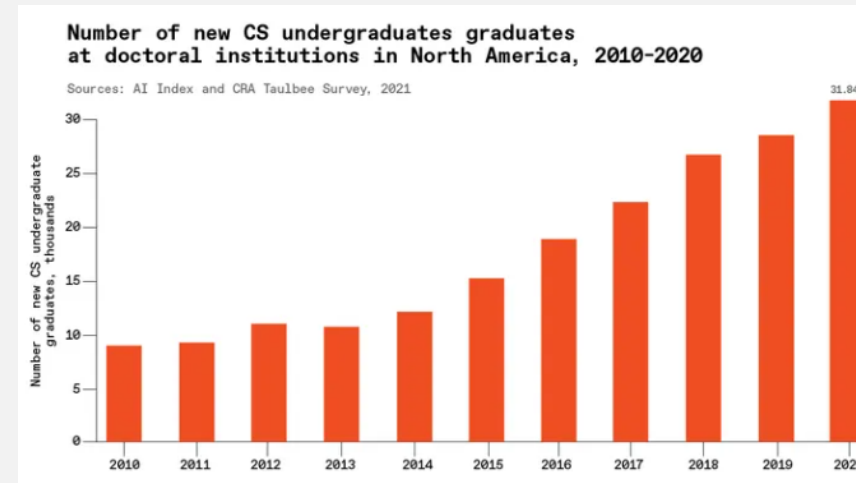
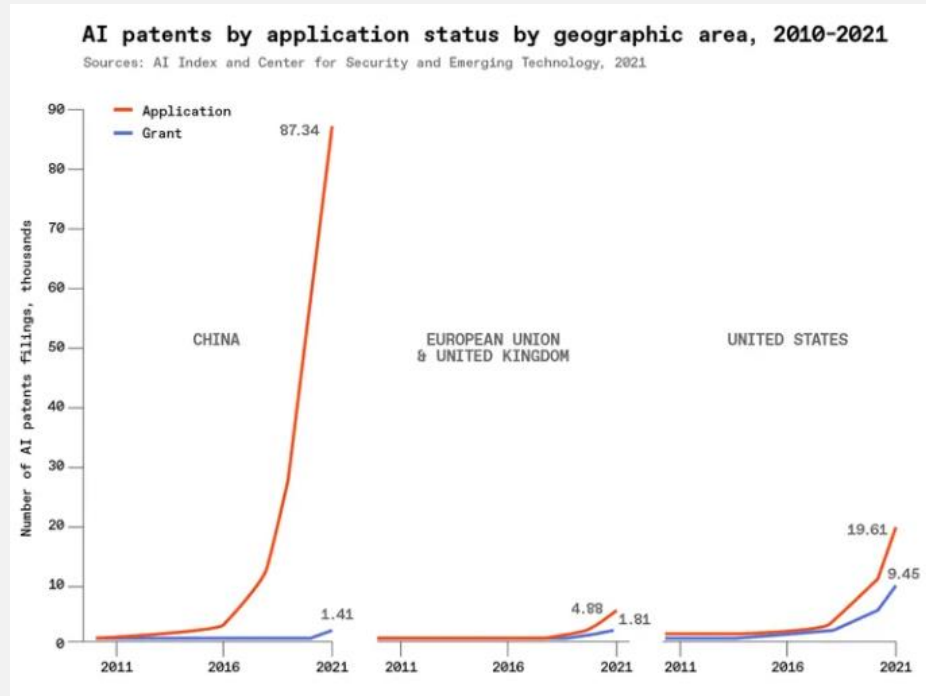


PRIVATE INVESTMENT in AI by FOCUS AREA, 2017-21 (SUM)

Source: NetBase Quid, 2021 | Chart: 2022 AI Index Report



MAPPING THE CURVES: SUPPLY SIDE

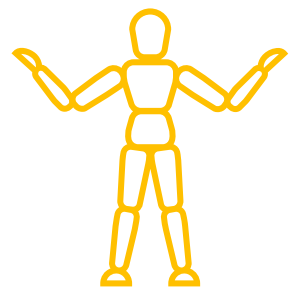
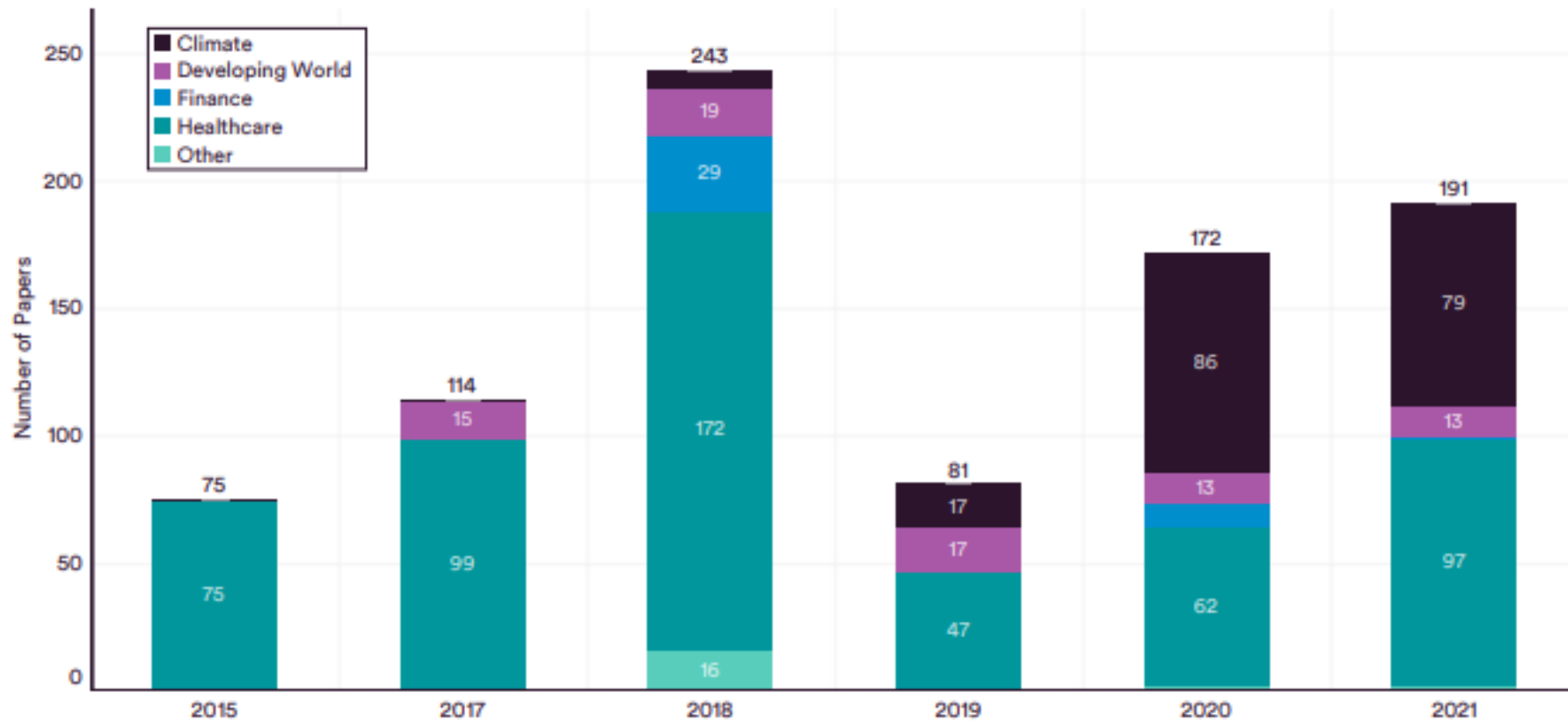


- The market is responding as expected: with investment inflow increasing, relevant supply factors such as human capital and IP are responding positively
- Spillover effects have not yet materialised, rising expectations the best is yet to come

SUPPLY SIDE – HEALTHCARE

NEURIPS WORKSHOP RESEARCH TOPICS: NUMBER of ACCEPTED PAPERS on REAL-WORLD IMPACTS, 2015–21

Source: NeurIPS, 2021; AI Index, 2021 | Chart: 2022 AI Index Report



- NeurIPS is one of the largest AI conferences in the world, and usually a good proxy of the field's academic production
- Strong research interest driven by private-academia partnerships strengthens pipeline



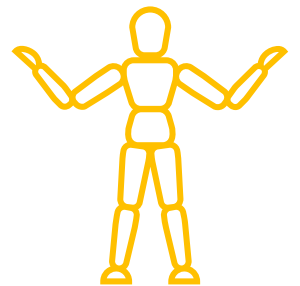
MAPPING THE CURVES: DEMAND SIDE

AI ADOPTION by INDUSTRY and FUNCTION, 2021

Source: McKinsey & Company, 2021 | Chart: 2022 AI Index Report

	Human Resources	Manufacturing	Marketing and Sales	Product and/or Service Development	Risk	Service Operations	Strategy and Corporate Finance	Supply-chain Management
All Industries	9%	12%	20%	23%	13%	25%	9%	13%
Automotive and Assembly	11%	26%	20%	15%	4%	18%	6%	17%
Business, Legal, and Professional Services	14%	8%	28%	15%	13%	26%	8%	13%
Consumer Goods/Retail	2%	18%	22%	17%	1%	15%	4%	18%
Financial Services	10%	4%	24%	20%	32%	40%	13%	8%
Healthcare Systems/Pharma and Medical Products	9%	11%	14%	29%	13%	17%	12%	9%
High Tech/Telecom	12%	11%	28%	45%	16%	34%	10%	16%

% of Respondents (Function)



- Low levels of adoption per function in healthcare represent an opportunity to leverage organisational knowledge and reduce costs whilst improving quality

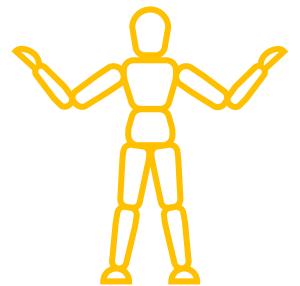
DEMAND SIDE

AI CAPABILITIES EMBEDDED in STANDARD BUSINESS PROCESSES, 2021

Source: McKinsey & Company, 2021 | Chart: 2022 AI Index Report

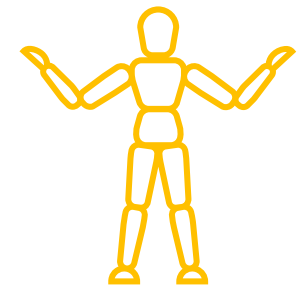
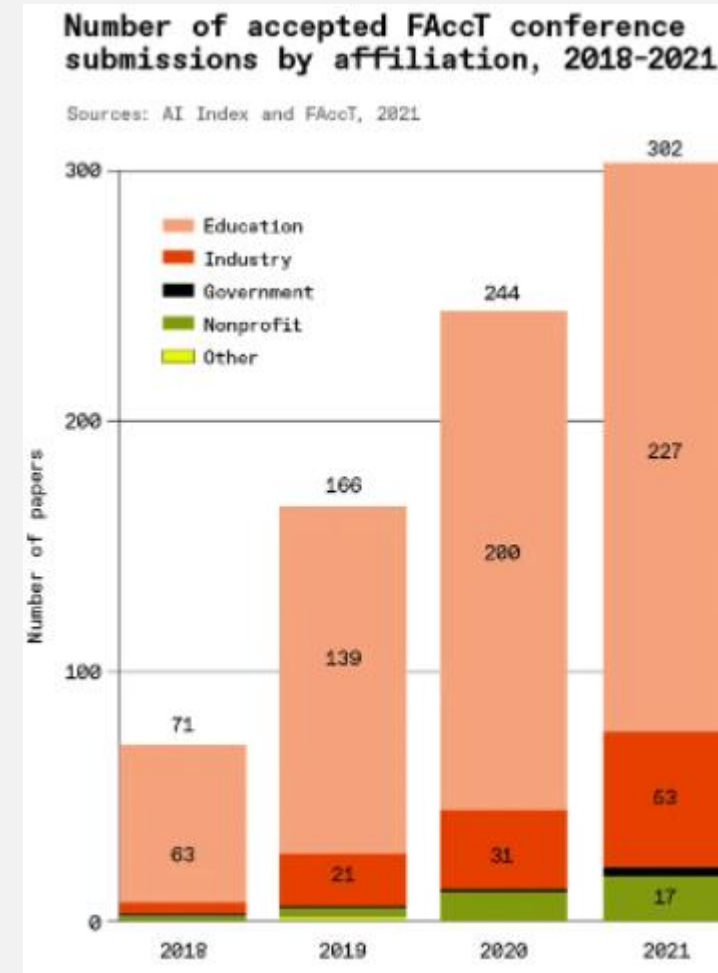
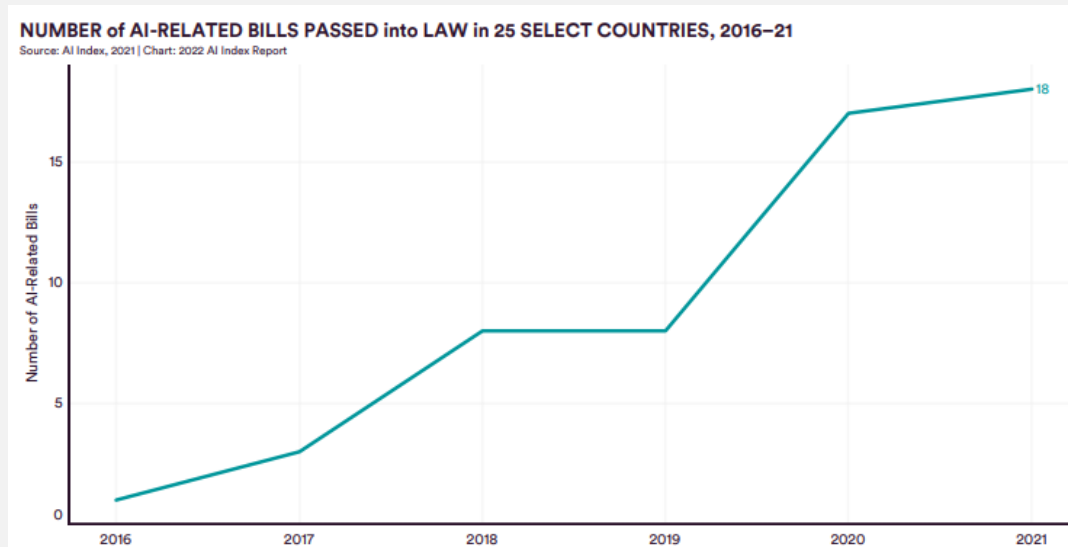
Industry	Computer Vision	Deep Learning	Facial Recognition	Knowledge Graphs	NL Generation	NL Speech Understanding	NL Text Understanding	Physical Robotics	Recommender Systems	Reinforcement Learning	Robotic Process Automation	Simulations	Transfer Learning	Virtual Agents
All Industries	23%	19%	11%	17%	12%	14%	24%	12%	17%	16%	26%	17%	12%	23%
Automotive and Assembly	15%	14%	9%	16%	3%	11%	12%	24%	12%	5%	33%	27%	6%	12%
Business, Legal, and Professional Services	29%	24%	15%	20%	23%	18%	19%	13%	22%	27%	31%	18%	21%	19%
Consumer Goods/Retail	23%	12%	14%	17%	11%	13%	14%	4%	8%	8%	16%	9%	1%	15%
Financial Services	17%	16%	11%	16%	12%	18%	32%	4%	13%	16%	33%	12%	12%	28%
Healthcare Systems/Pharma and Medical Products	30%	25%	12%	19%	10%	8%	26%	28%	22%	13%	28%	22%	19%	31%
High Tech/Telecom	28%	22%	6%	17%	17%	18%	34%	5%	19%	15%	23%	14%	11%	25%

% of Respondents (AI Capability)



- Even though healthcare does relatively well in terms of AI capabilities embedded in SBP, there is ample room ahead for it

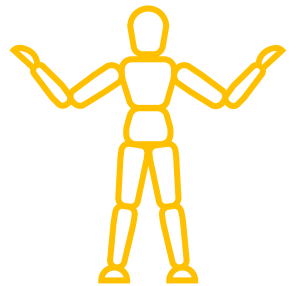
CONTEXT - REGULATION & AI ETHICS



- Increasing presence of AI in all aspects of everyday life as well as societal concerns such as algorithmic bias and explainability are driving regulatory pressures

TAKEAWAY MESSAGES

- If you want to grow your business, manage your data quality → map your processes, work with your team, and continuously identify opportunities
- Investment in AI is growing (~32% yoy) and healthcare is a prime sector for investment
- Supply and demand are healthy and expected to continue so, enabling further business value growth
- Tackling regulatory & ethical challenges is a key success factor going forward
- The MD industry is well-positioned to take advantage of the rewards





THANK YOU!

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