FÓRUM DA INTERNET NO BRASIL

EVENTO ON-LINE

workshop

Entre médicos e algoritmos: decisões automatizadas na área da saúde

28/7 - QUA - 14 H

youtube.com/nicbrvideos

APRESENTAÇÃO

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unesp UNIVERSIDADE ESTADUAL PAULISTA "JÚLIO DE MESQUITA FILHO"

Mackenzie

Stanford University

COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK


ALPHAGO
00:20:49
Google DeepMind
Challenge Match
LEE SEDOL
00:36:35

Table 2. Physician and Symptom Checkers' Diagnostic Accuracy, Stratified by the Acuity Level and Prevalence of the Conditions Described by the Clinical Vignettes

Vignette Characteristic	No. (%)		Listed, % (95% CI)			
	Vignettes Completed by Human Dx Physicians	Vignettes Completed by Symptom Checkers	First[a]		Top 3[a]	
			Human Dx Physicians	Symptom Checkers[b]	Human Dx Physicians	Symptom Checkers[a]
All vignettes	1105 (100)	770 (100)	72.1 (69.5-74.8)	34.0 (30.7-37.4)	84.3 (82.2-86.5)	51.2 (47.4-54.3)
Acuity level[c]						
High	398 (36.0)	263 (34.2)	79.1 (75.1-83.2)	24.3 (19.1-29.6)	89.2 (86.1-92.3)	39.5 (33.6-45.5)
Medium	376 (34.0)	260 (33.7)	70.7 (66.1-75.4)	37.7 (31.8-43.6)	84.3 (80.6-88.0)	56.9 (50.9-63.0)
Low	331 (30.0)	247 (32.1)	65.3 (60.1-70.4)	40.5 (34.3-46.7)	78.5 (74.1-83.0)	57.5 (51.3-63.5)
Vignette prevalence[d]						
Common	639 (57.8)	457 (59.4)	69.6 (66.1-73.2)	38.1 (33.6-42.5)	83.3 (80.4-86.2)	55.6 (51.6-60.7)
Uncommon	466 (42.2)	313 (40.6)	75.5 (71.6-79.5)	28.1 (23.1-33.1)	85.8 (82.7-89.0)	44.7 (38.4-49.3)

Totals may not add up to 100% owing to rounding.

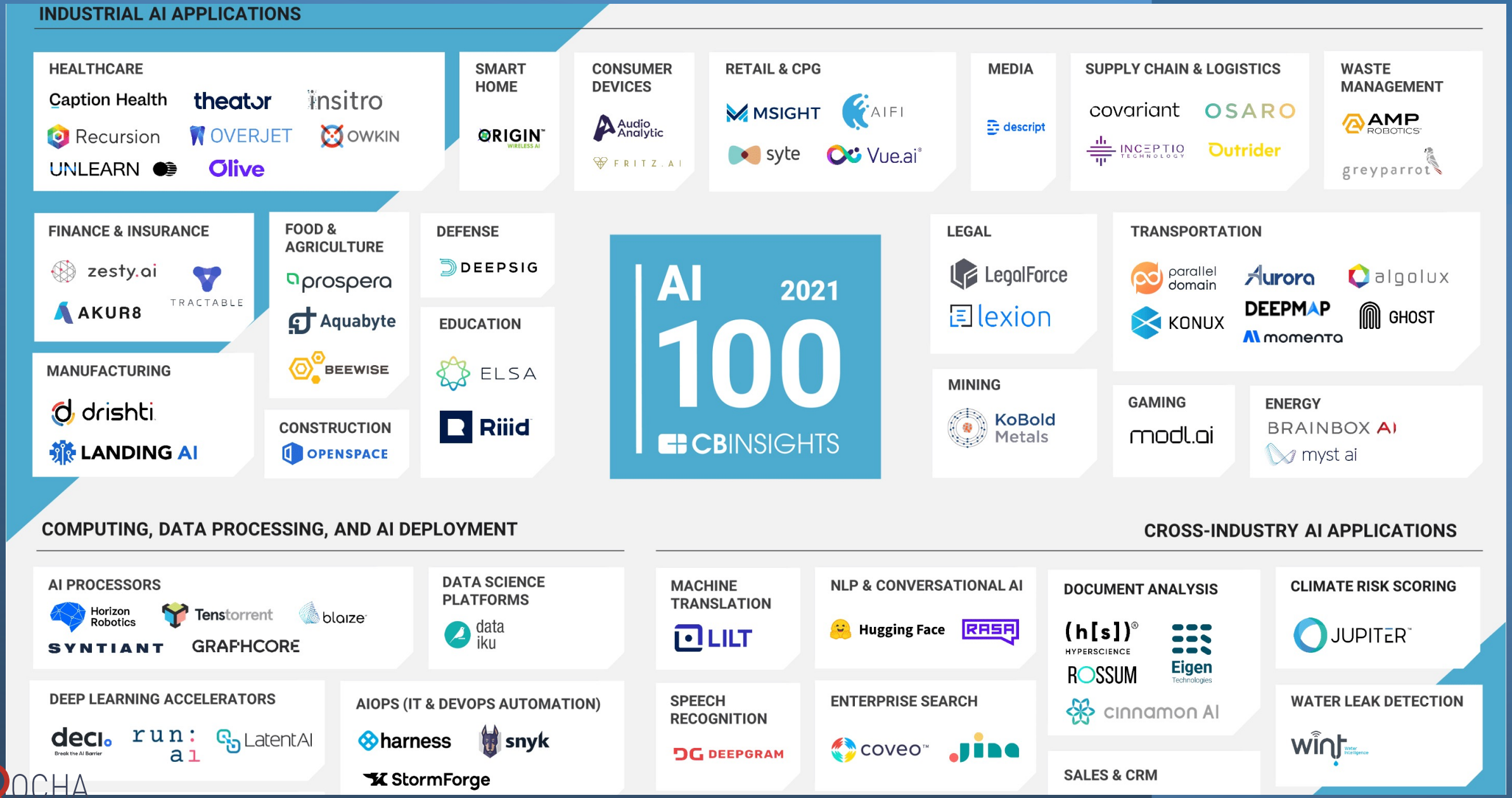
[a] $P<.001$ for all comparisons between physicians and symptom checkers.

[b] Results described by Semigran et al.[4] Full version of clinical vignettes available at: http://www.bmj.com/content/bmj/suppl/2015/07/07/bmj.h3480.DC1/semh025489.ww1.pdf.

[c] Acuity level of vignettes defined by Semigran et al.[4] Differences across physicians and across symptom checkers for this category were statistically significant ($P < .001$).

[d] We defined "common" diagnoses as those that accounted for more than 0.3% of ambulatory visits (or >3 764 082 visits) in the United States in 2009 to 2010. These totals were compiled from data gathered by the Centers for Disease Control and Prevention, the National Ambulatory Medical Care Survey, and the National Hospital Ambulatory Medical Care Survey. Differences across physicians and across symptom checkers for this category were statistically significant ($P < .05$) except for the difference between the rate that physicians listed the correct diagnosis in the top 3 for common vs uncommon vignettes.

Discussion | In what we believe to be the first direct comparison of diagnostic accuracy, physicians vastly outperformed computer algorithms in diagnostic accuracy (84.3% vs 51.2% correct diagnosis in the top 3 listed).[4] Despite physicians' superior performance, they provided the incorrect diagnosis in about 15% of cases, similar to prior estimates



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AI 100 2021
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Caption Health	AI-guided ultrasound	$	75
insitro	AI-powered drug R&D	$	643
Olive	RPA for hospitals	$	459
Overjet	AI-enabled dental imaging and claims review	$	8
Owkin	Federated learning for medical research	$	74
Recursion	AI-powered drug R&D	$	510
Theator	Surgical intelligence	$	21
Unlearn	Digital twin technology for clinical trials	$	15

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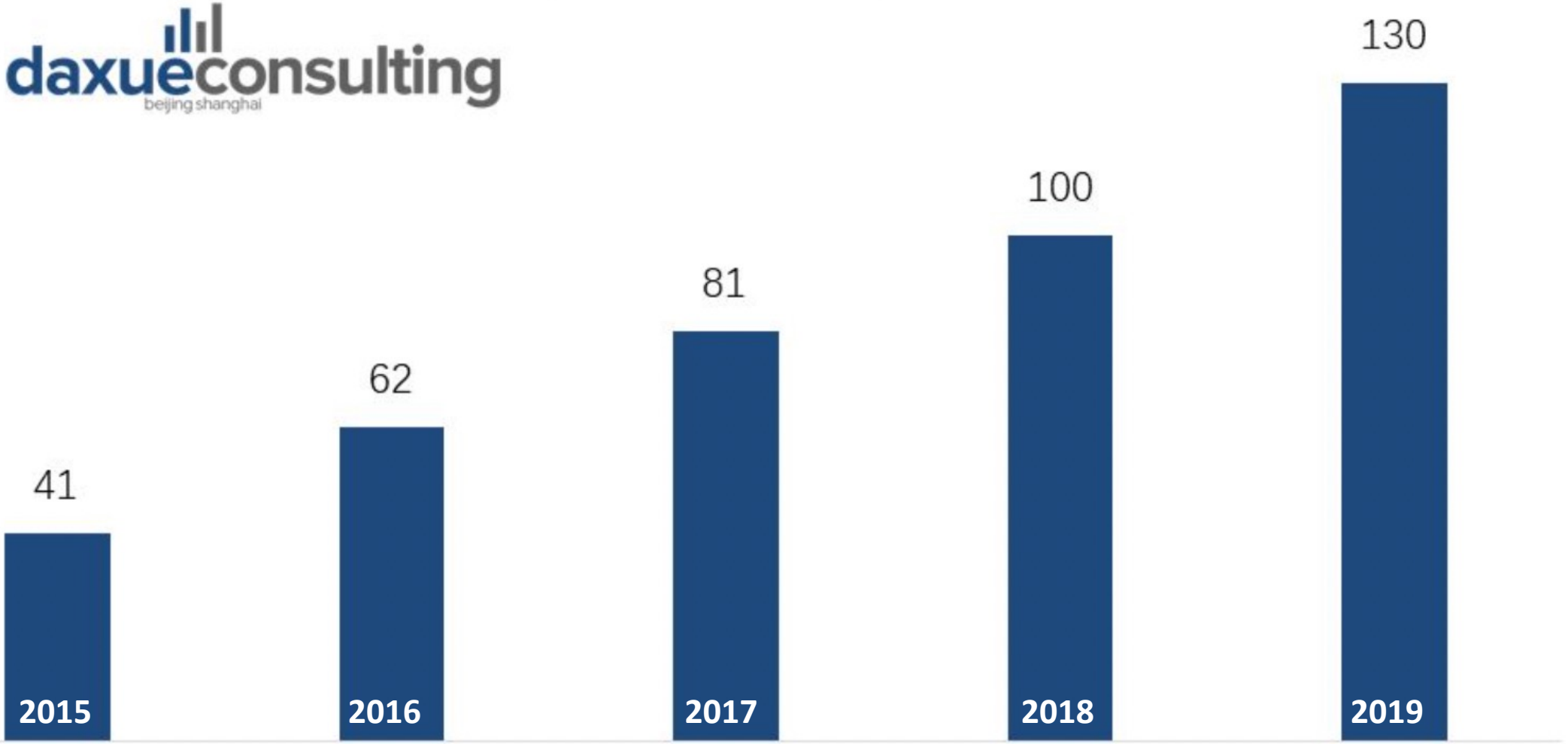
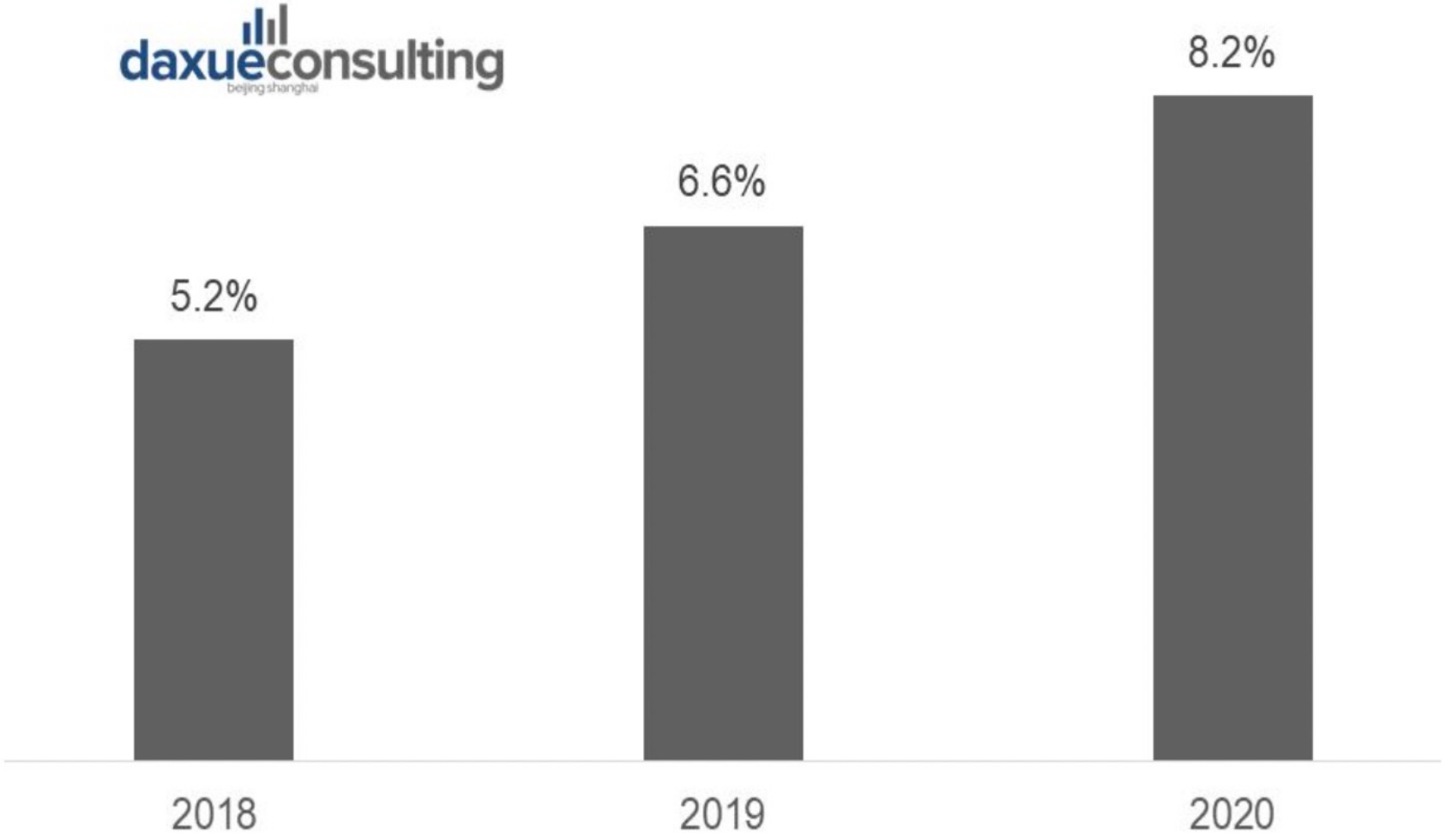
Size of the telemedicine market in China (Million RMB)



https://daxueconsulting.com/telemedicine-in-china/

The penetration rate of China's telemedicine industry



https://daxueconsulting.com/telemedicine-in-china/

https://www.yicaiglobal.com/news/ping-an-good-doctor-to-graft-its-china-business-model-in-indonesia-ceo-says

ttps://francesmarcellin.com/2017/12/13/this-telehealth-cabin-connects-qualified-doctors-with-patients-all-over-the-world/

	1991 - 2000	2001 - 2009	2010 - 2020
WMA/ WHO/UN	**1999**: WMA: Tel Aviv Declaration	**2005:** WHA 58.28 Resolution **2006:** eHealth Global Observatory **2006:** Building Foundations for eHealth **2006:** Project among USA, India and UM for Telemedicine in Afeganistan **2009:** Nova Delhi Declaration	**2009/2010**: WHO: 2 reports with opportunities of development in telemedicine **2012:** Frameworks for eHealth **2012:** National eHealth Strategy **2015**: Moscou Declaration **2016:** Atlas of eHealth country profiles: the use of eHealth in support of universal health coverage **2016:** Global diffusion of eHealth: making universal health coverage achievable: report of the third global survey on eHealth **2018**: Digital Me **2020:** Data, Analytics and Delivery for Impact **2021:** Global Strategy on Digital Health
Brazil	**1997**: Parecer nº 31/97: Petrobras consults CFM about offshore patients	**2001**: Medical Act (CFM nº 1627/2001) **2002**: Parecer CFM nº 36/2002: *Telecare* **2002**: CFM nº 1.638 e 1.639/2002 **2002**: **CFM Nº 1.643 Telemedicine** **2007:** National Telehealth Programm (Portaria MS/GM Nº 2.546) **2009**: Teleradiology (CFM Nº 1.890)	**2010**: Código de Ética Médica **2013**: Emenda ao Ato Médico **2014:** Estratégia de e-Saúde para o Brasil **2016:** Marco Legal da Inovação **2018:** Lei de Proteção de Dados Pessoais (LGPD) **2018:** Decreto Marco Legal da Inovação **2018:** Telemedicina **2019:** Revogação da Telemedicina **2020:** CFM Nº 1756/2020 **2020:** MS Nº 467/2020 **2020:** Projeto de Lei 696/2020 **2020:** Nota técnica ANS

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https://www.dovepress.com/a-comparison-of-telehealth-programs-between-the-usa-and-brazil-a-legal-peer-reviewed-fulltext-article-SHTT

WORLD MEDICAL ASSOCIATION

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Policy / Current Policies / WMA Statement on Augmented Intelligence in Medical Care

A- A+

WMA STATEMENT ON AUGMENTED INTELLIGENCE IN MEDICAL CARE

PDF

Adopted by the 70th WMA General Assembly, Tbilisi, Georgia, October 2019

26th November 2019

https://www.wma.net/policies-post/wma-statement-on-augmented-intelligence-in-medical-care/

RECOMMENDATIONS

That the WMA:

- Recognize the potential for improving patient outcomes and physicians' professional satisfaction through the use of health care AI, provided they conform to the principles of medical ethics, confidentiality of patient data, and non-discrimination.
- Support the process of setting priorities for health care AI.
- Encourage the review of medical curricula and educational opportunities for patients, physicians, medical students, health administrators and other health care professionals to promote greater understanding of the many aspects, both positive and negative, of health care AI.

The WMA urges its member organizations to:

- Find opportunities to bring the practicing physician's perspective to the development, design, validation and implementation of health care AI.
- Advocate for direct physician involvement in the development and management of health care AI and appropriate government and professional oversight for safe, effective, equitable, ethical, and accessible AI products and services.
- Advocate that all healthcare AI systems be transparent, reproducible, and be trusted by both health care providers and patients.
- Advocate for the primacy of the patient-physician relationship when developing and implementing health care AI systems.

https://www.wma.net/policies-post/wma-statement-on-augmented-intelligence-in-medical-care/

World Health Organization

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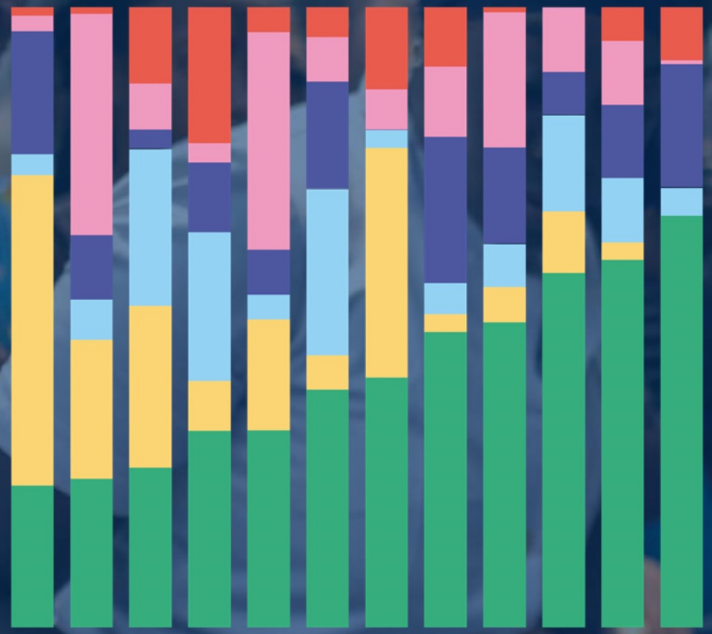


Data, Analytics and Delivery for Impact

IMPROVING MEASUREMENT

FOCUSING ON RESULTS

DELIVERING IMPACT

https://www.who.int/data/ddi

World Health Organization

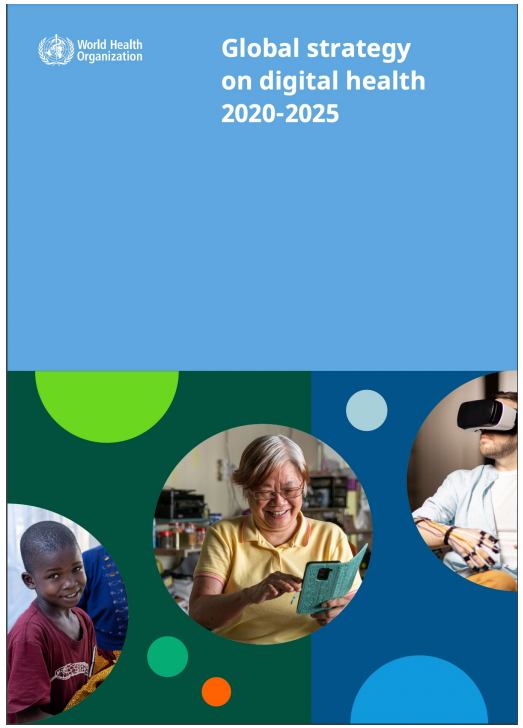
World Health Organization Data Principles

10 August 2020

1. WHO shall treat data as a public good
2. WHO shall uphold Member States' trust in data
3. WHO shall support Member States' data and health information systems capacity
4. WHO shall be a responsible data manager and steward

https://www.who.int/data/ddi

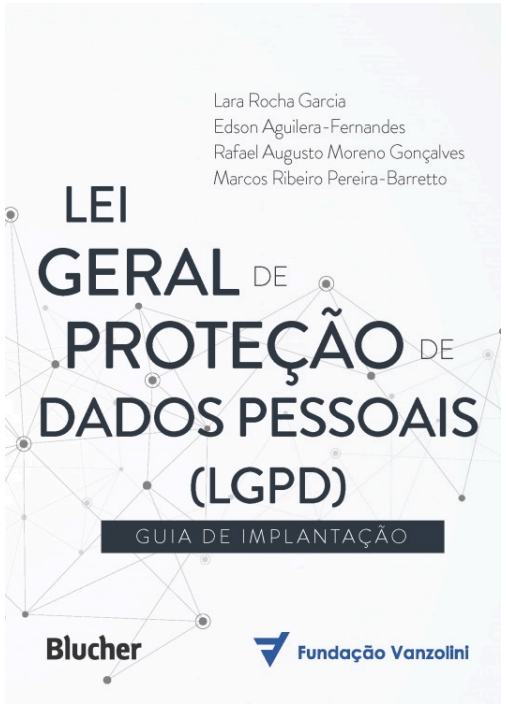
World Health Organization



https://cdn.who.int/media/docs/default-source/documents/gs4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf?sfvrsn=f112ede5_75

Fig. 1. Summary implementation of the action plan

Objectives	Outcomes	Outputs	Policy & Action	Target impacts
SO1 Collaboration and knowledge transfer	Global alignment to address opportunities and challenges	• Global multi-stakeholder collaboration and partnership for impact established • National framework for collaboration and capacity building established • National information centres for disease surveillance established or strengthened	Programs and projects Collaborations, partnerships & networks Coordination mechanisms Guidance	Increasingly appropriate and sustainable digital health ecosystem
SO2 Digital strategy implementation	Strategic vision and integrated action at the national level	• Innovative integration of digital technologies in national health strategies established • Prioritization & sustainable financial models identified and shared • Dynamic digital health maturity model developed and implemented	Legislation, policy and compliance Strategy and investment Infrastructure, services and applications workforce Change management	Cost-effective and efficient health systems and services
SO3 Digital health governance	Actions and investments based on informed decisions	• Global and national framework for governance of digital health is established • Global research agenda on digital health and frontier technology established • Guidelines and frameworks on key areas of digital transformation established	Technical and policy documents Governance and capacity building Scale and implementation Knowledge exchange and learning	Accelerated digitalization of the health and well-being sector
SO4 Human-centred health systems	People empowered to make healthy and health-enabling choices	• People placed at the centre of digital health transformation • Population health management improved • Digital health literacy skills and gender equality and health equity approaches strengthened	Individual and community health Health and well-being Systems and services Capacity building activities	Healthier populations



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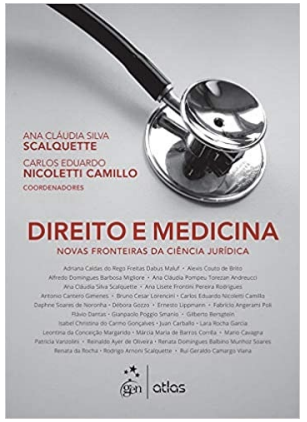

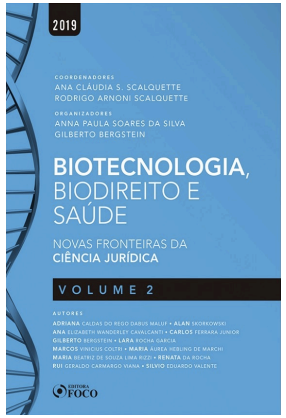

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