Program Bulan Pendidik UPM 2021

COVID-19: From Disruption to Innovation

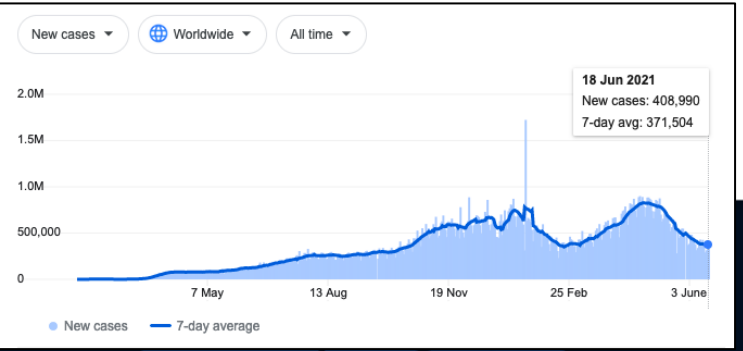
Zamberi Sekawi

October 2021

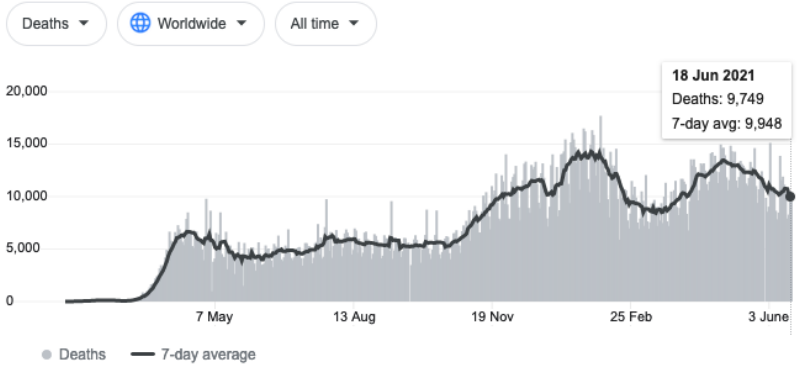
Disclaimer

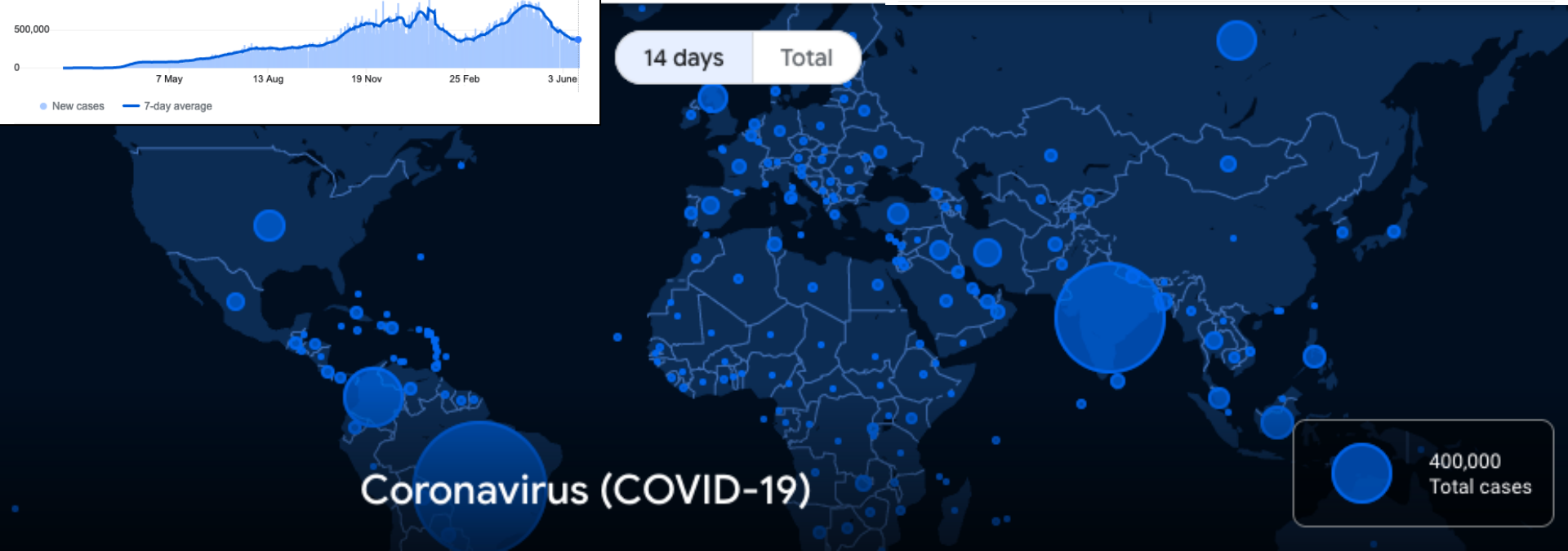
- I am not an expert in education or IT
- I am a clinical microbiologist focusing in virology
- I am a (temporary) administrator/ leader

COVID-19 Global statistic

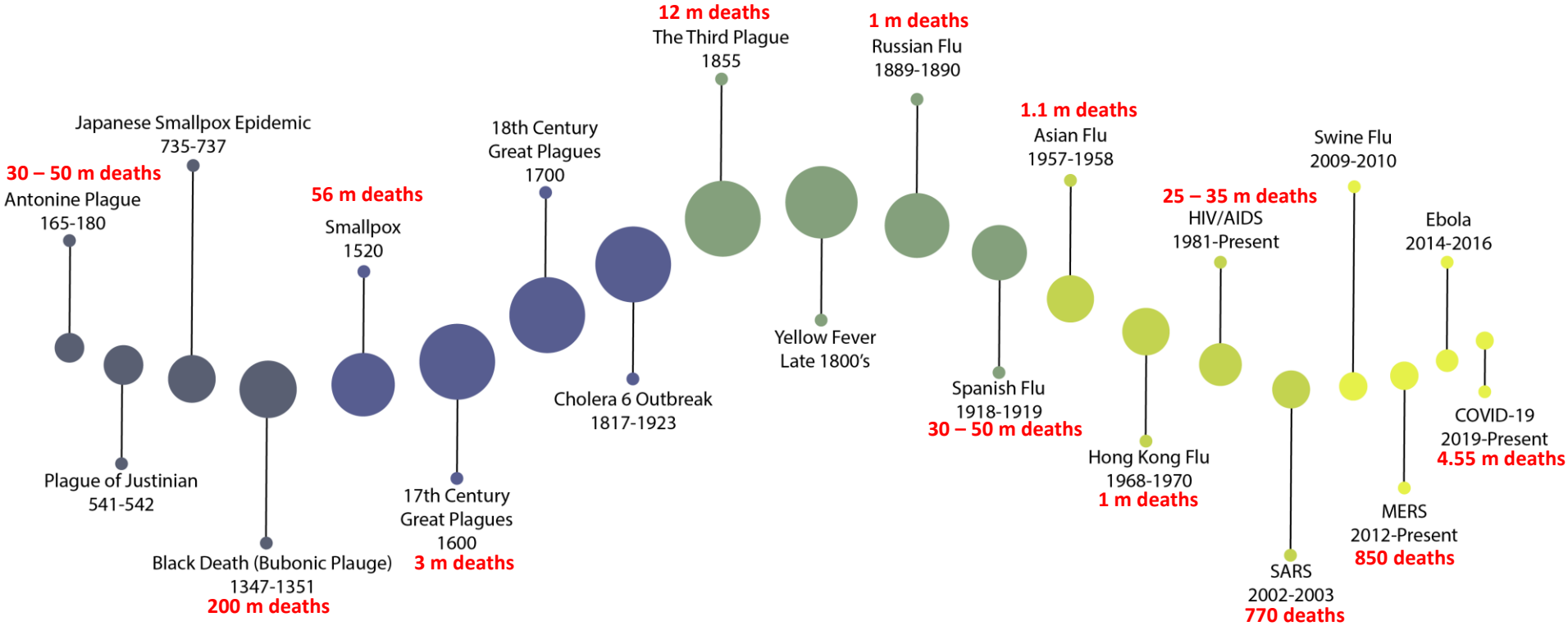


219 million cases
4.55 million deaths
CFR 2.08%





Pandemics in history



https://trinitonian.com/2020/09/10/a-history-of-sports-and-diseases/


武汉 120
Ambu
武汉市急救中心
MYSTERY VIRUS SPREADS
IN WUHAN, CHINA


杨智辉大闸蟹
CHINA IDENTIFIES VIRUS
IN WUHAN OUTBREAK

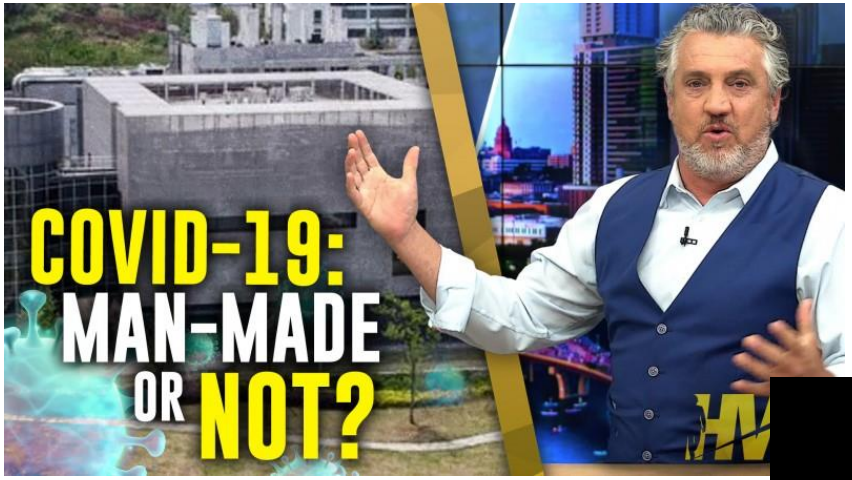

Virus: flights from Wuhan, China
More than 2,300 flights planned
from January 20-27
Domestic flights (2,105)
International (231)
SYDNEY
TOKYO
DENPASAR
(Bali)
SAN FRANCISCO
ANCHORAGE
SINGAPORE
NEW YORK
LONDON
PARIS
ROME
DUBAI
© AFP

衛生福利部疾病管制署
Centers for Disease Control

Check for updates

correspondence

The proximal origin of SARS-CoV-2

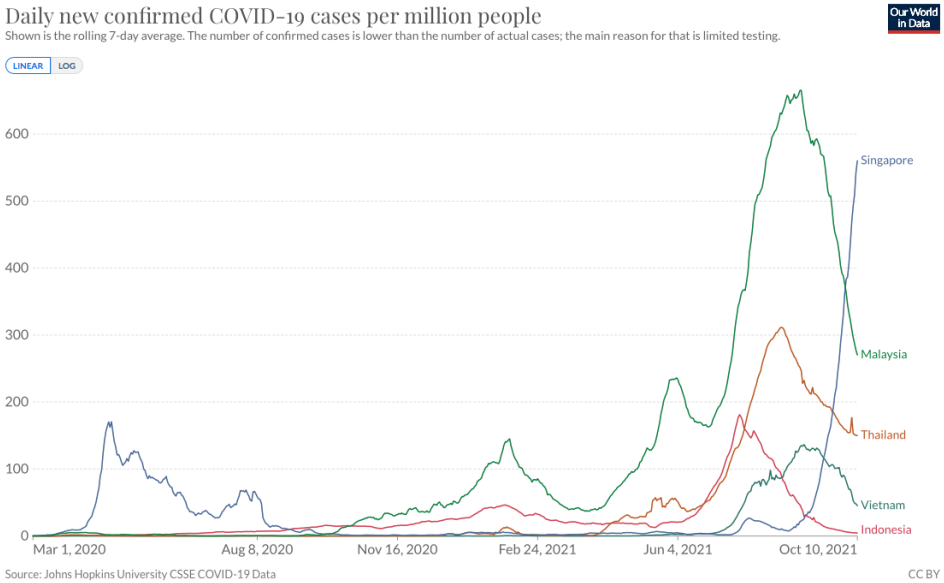


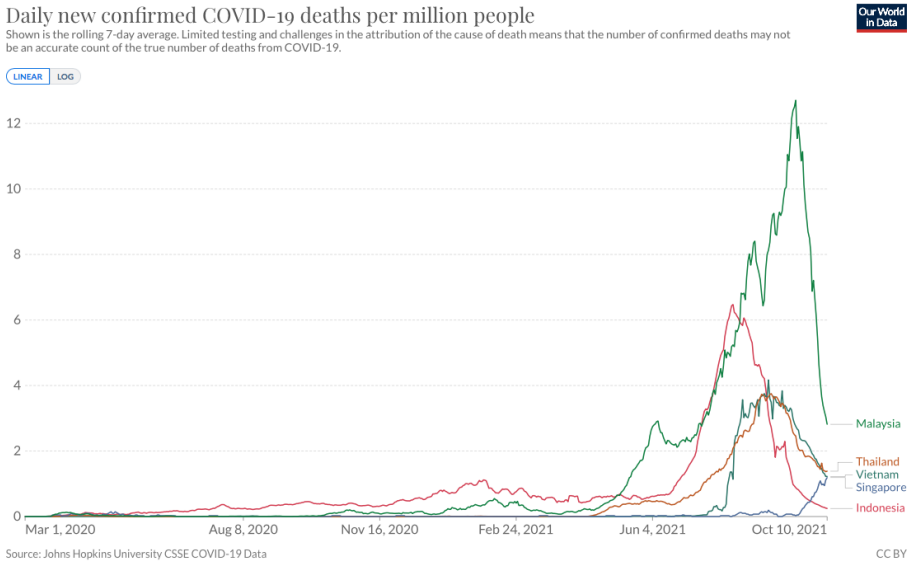
1. SPILLOVER THEORY?
2. LAB LEAK THEORY?

Is the origin from bats?

Is pangolin the intermediate host?

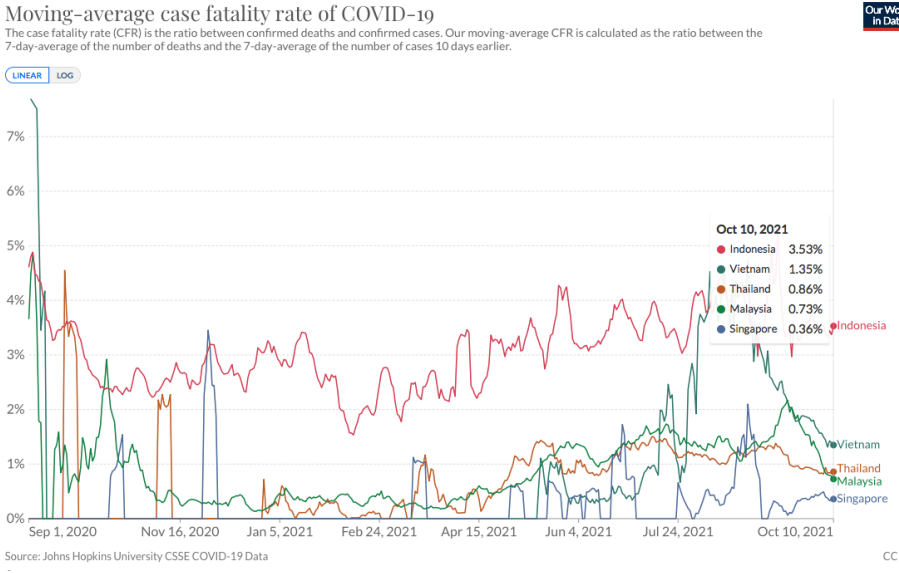
COVID-19 Malaysian statistics

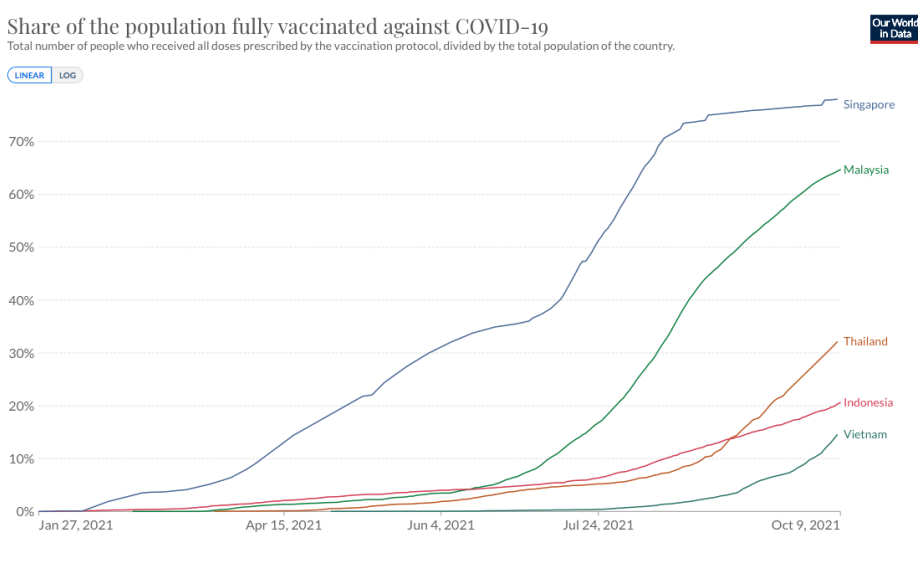




https://ourworldindata.org/covid-overview?country=

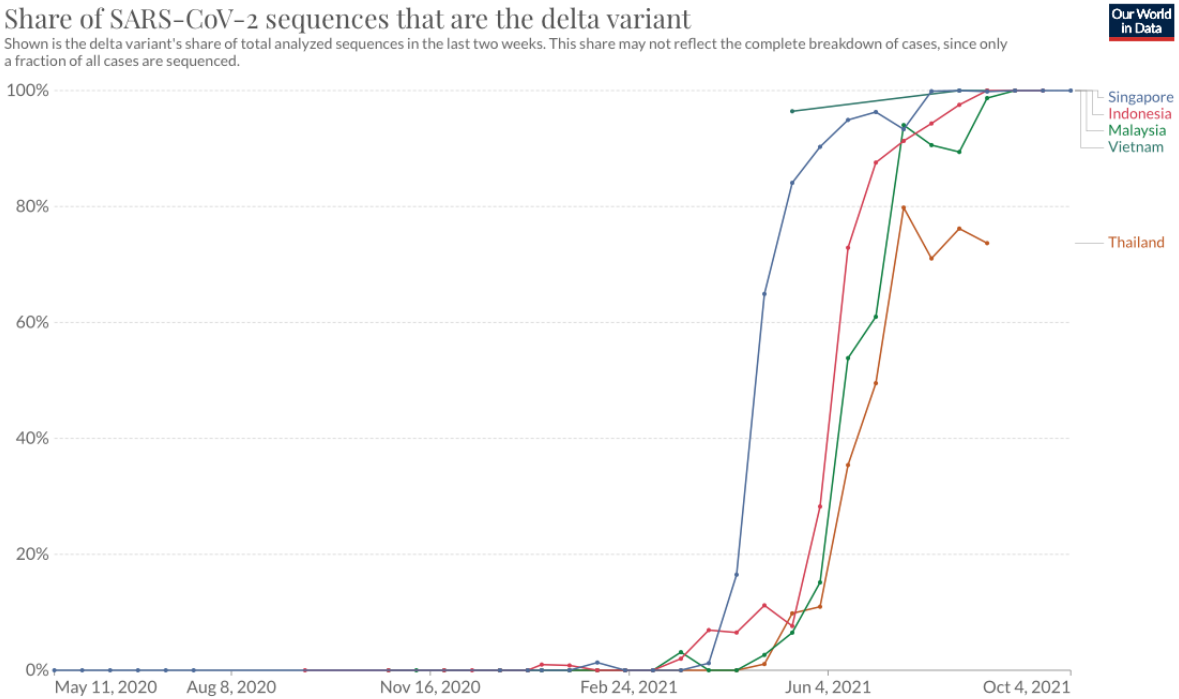
COVID-19 Malaysian statistics





https://ourworldindata.org/covid-overview?country=

COVID-19 Malaysian statistics



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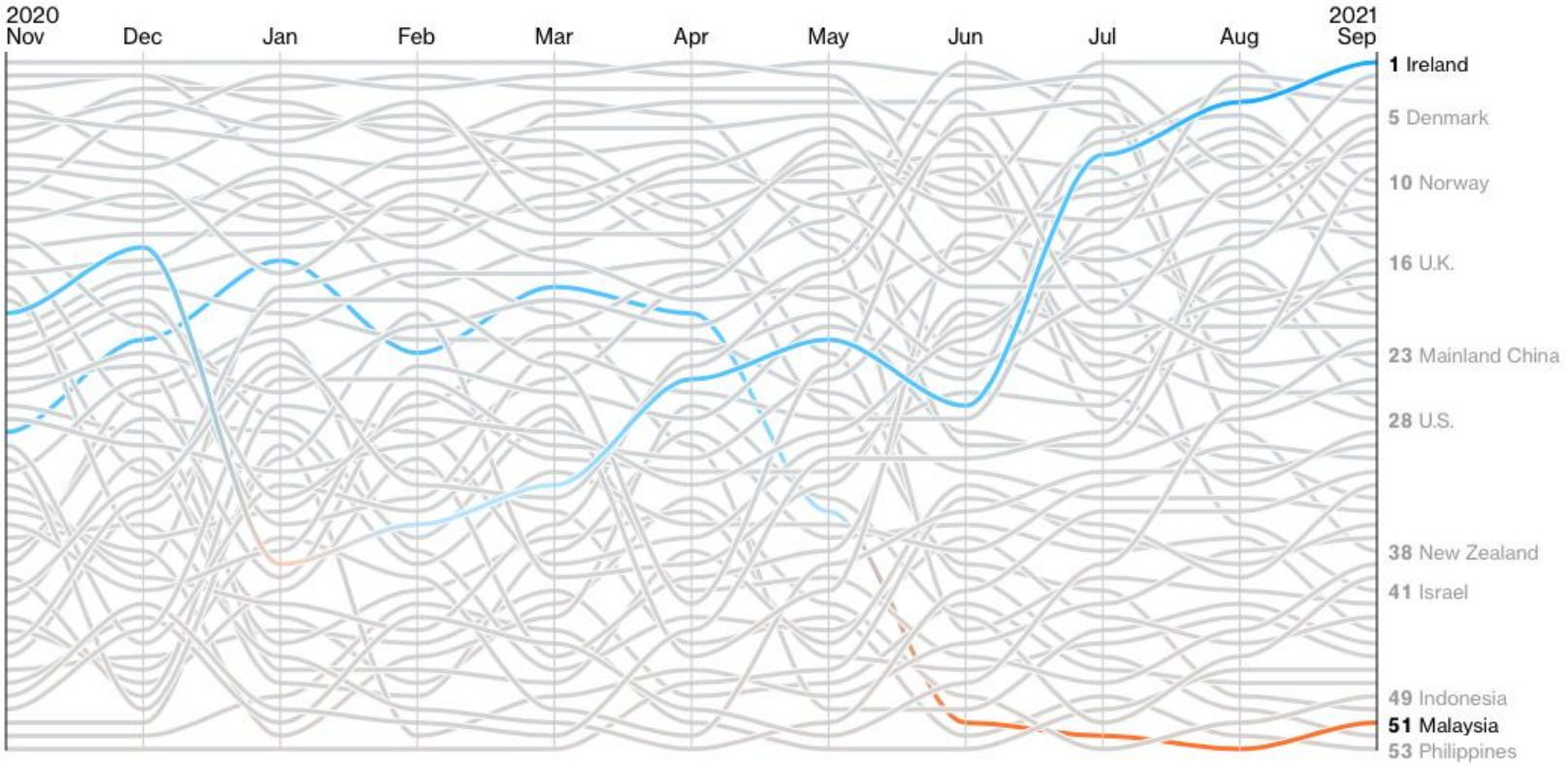
Bloomberg's COVID-19 Resilience Ranking

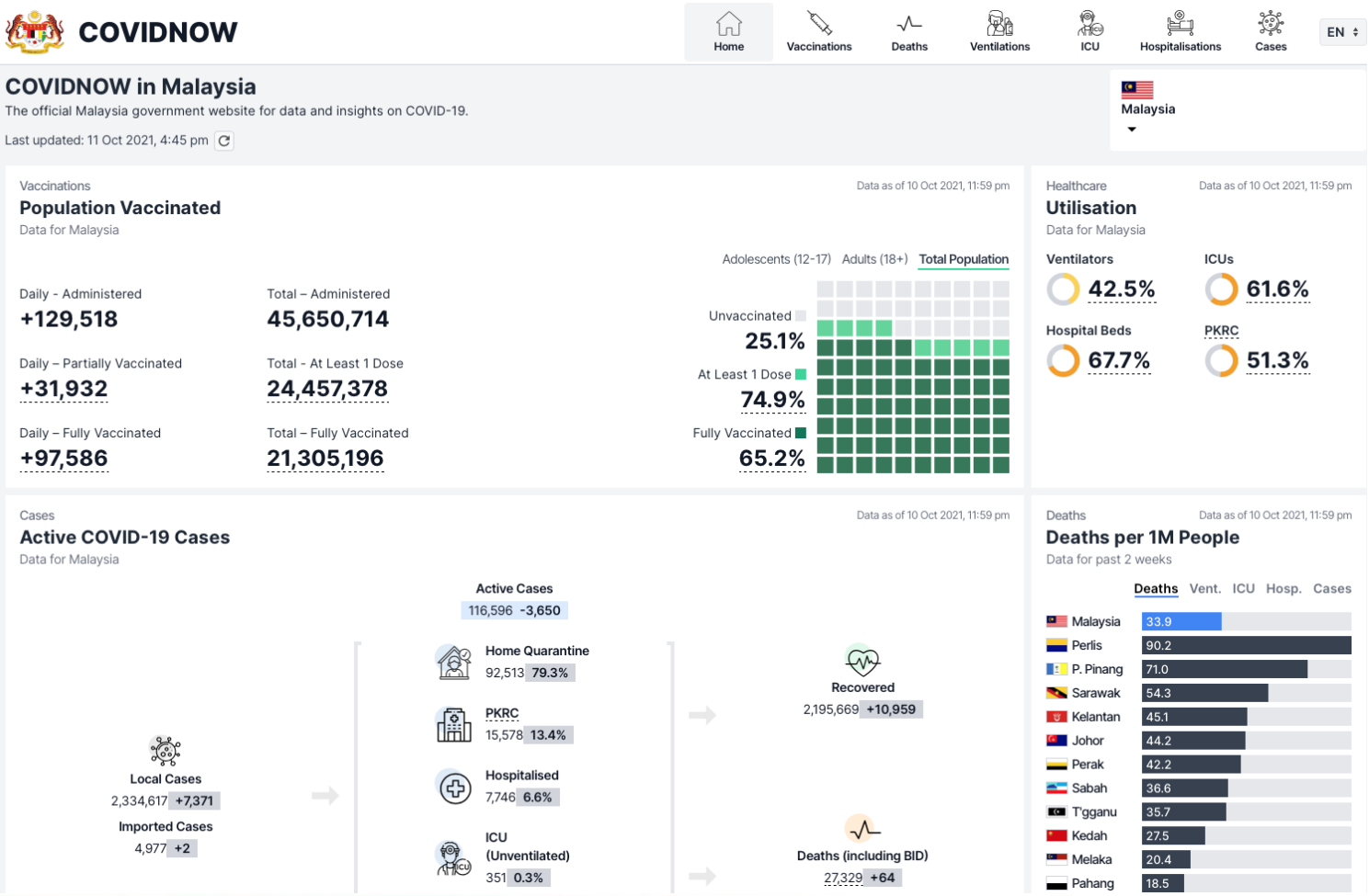


https://www.bloomberg.com/graphics/covid-resilience-ranking/

Bloomberg's COVID-19 Resilience Ranking

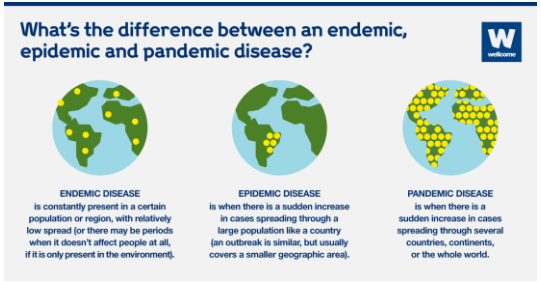
RANK	CHANGE	ECONOMY	BLOOMBERG RESILIENCE SCORE	PEOPLE COVERED BY VACCINES	LOCKDOWN SEVERITY	FLIGHT CAPACITY	VACCINATED TRAVEL ROUTES
1	▲3	Ireland	79.4	72.5%	44	-48.7%	392.5
2	▲8	Spain	78.2	75%	42	-27.6%	392.5
3	▼1	Netherlands	76.4	68%	42	-34.5%	395
4	▼1	Finland	76.1	67.9%	37	-66.1%	394.5
5	▲6	Denmark	75.3	75.8%	24	-43%	204.5
6	▲9	U.A.E.	74.7	92.3%	39	-47.4%	381
7	▲5	France	73.9	72.4%	67	-38.2%	394
8	▲1	Switzerland	73.8	60.1%	44	-44.5%	394.5
9	▲14	Canada	73.8	74.3%	68	-44%	395.5
10	▼9	Norway	73.6	72.1%	39	-32.2%	187
11	▼5	Belgium	73.5	72.3%	43	-34.4%	305
12	▲2	Czech Republic	72.6	55.3%	32	-56%	395.5
13	▼8	Austria	71.8	60.9%	60	-39.6%	389.5
14	▼1	Turkey	71.8	64.7%	64	-15.7%	381.5
15	▼8	Germany	71.5	64.3%	56	-47.6%	395
16	▲6	U.K.	71.1	69.9%	41	-48.4%	332.5
17	▲2	Saudi Arabia	71	60.9%	56	-29.2%	386
18	▲2	Sweden	70.1	65.9%	37	-51.2%	192.5
19	▼11	Singapore	70	80.8%	50	-81.4%	159
20	▼2	Hong Kong	69.8	56.8%	59	-82.2%	262
40	▲6	South Africa	59.1	16.1%	45	-48.4%	359
41	▼5	Israel	57.7	82.2%	56	-57.3%	154.5
42	▼1	Taiwan	56.5	30%	40	-84.9%	154
43	▲2	Iraq	56.3	9.5%	76	-26.9%	363
44	▼7	Nigeria	56.3	1.6%	47	8.5%	260.5
45	▼3	India	56.2	31.3%	71	-24.4%	123
46	▼3	Pakistan	56.1	18.6%	55	-58.9%	360.5
47	–	Argentina	55.5	56.3%	76	-62.2%	136
48	–	Iran	54	26%	70	-18.9%	272
49	▲2	Indonesia	52.4	25.2%	69	-53.8%	255
50	▼1	Thailand	47.6	33.1%	55	-81.2%	219
51	▲2	Malaysia	44.1	64.6%	81	-86%	144
52	▼2	Vietnam	43.7	19.1%	73	-79.9%	144.5
53	▼1	Philippines	40.2	20.1%	75	-73.9%	139

https://www.bloomberg.com/graphics/covid-resilience-ranking/

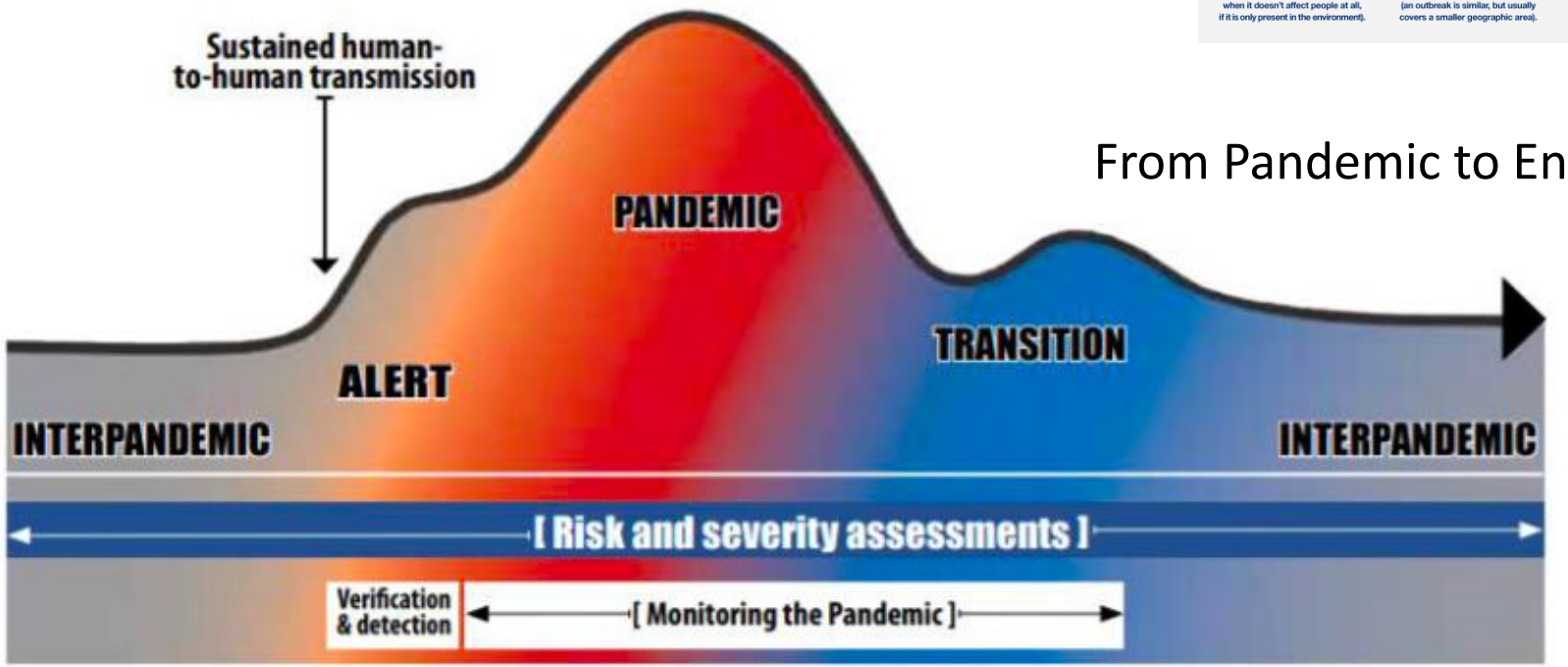


https://covidnow.moh.gov.my

How long is the pandemic?

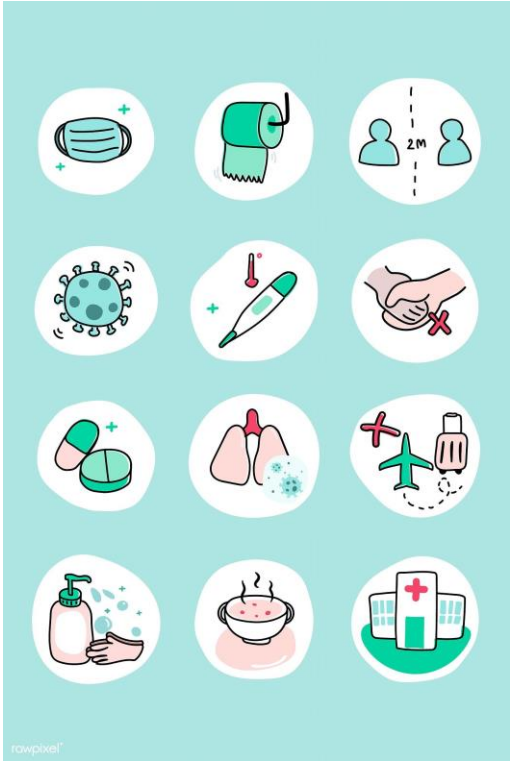


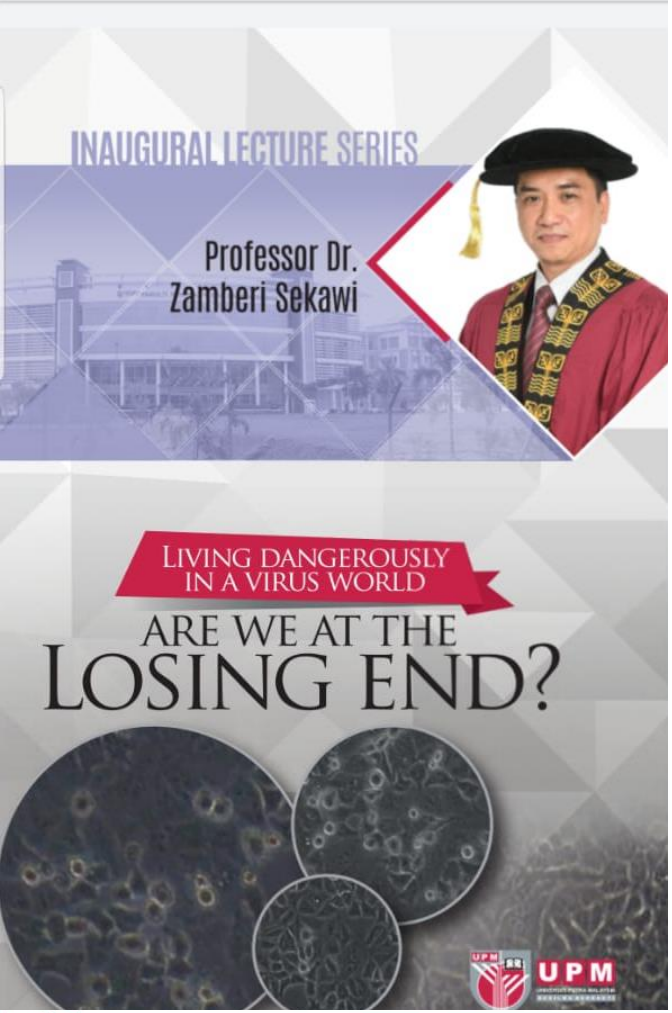
From Pandemic to Endemic



What I learnt from the pandemic?

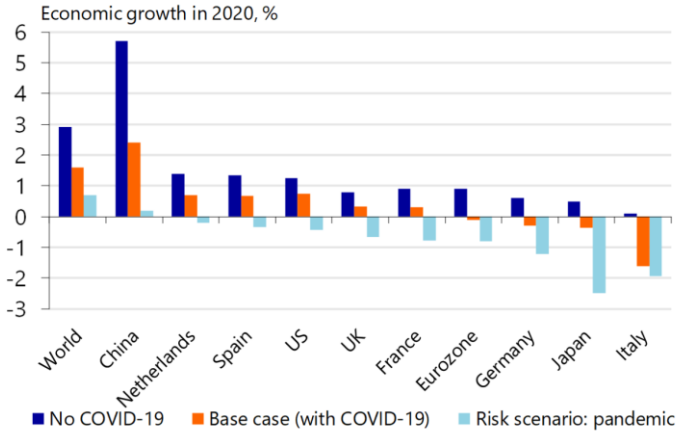
- It is not another bad flu
- Everything is unpredictable
  - Signs and symptoms involving multi-organs
  - Long covid
  - Autoimmune
  - Durability of vaccines
  - “Fast” evolution of variants.
- We are in for a long haul



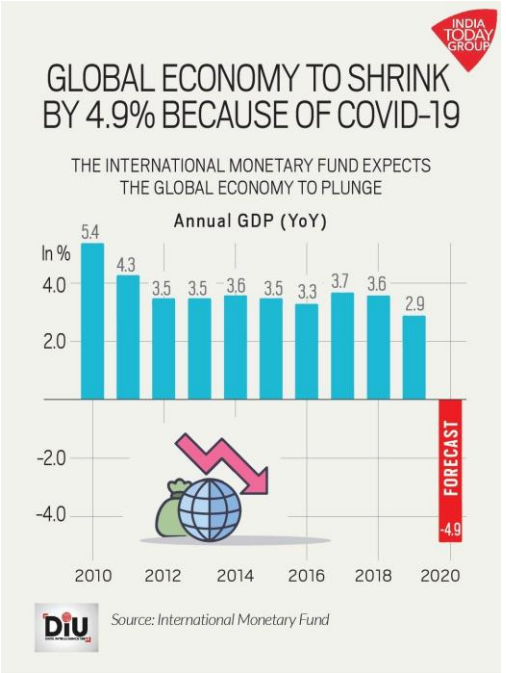


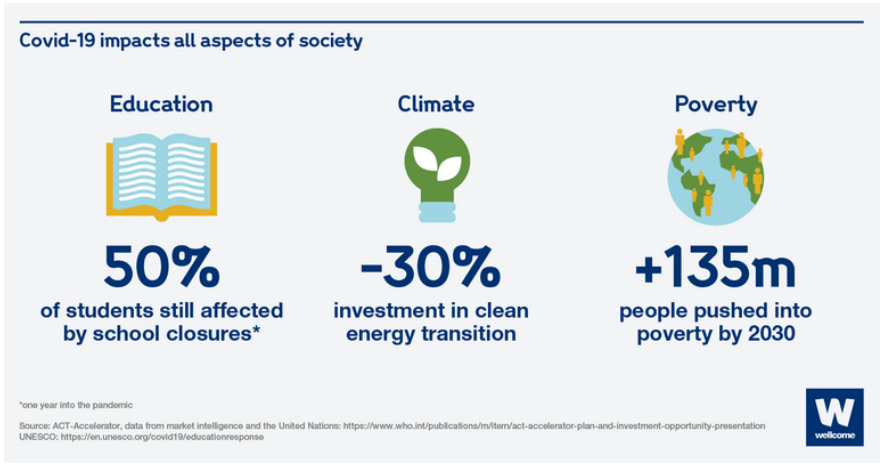
Living dangerously in a virus world: Are we at the losing end?

20 April 2018

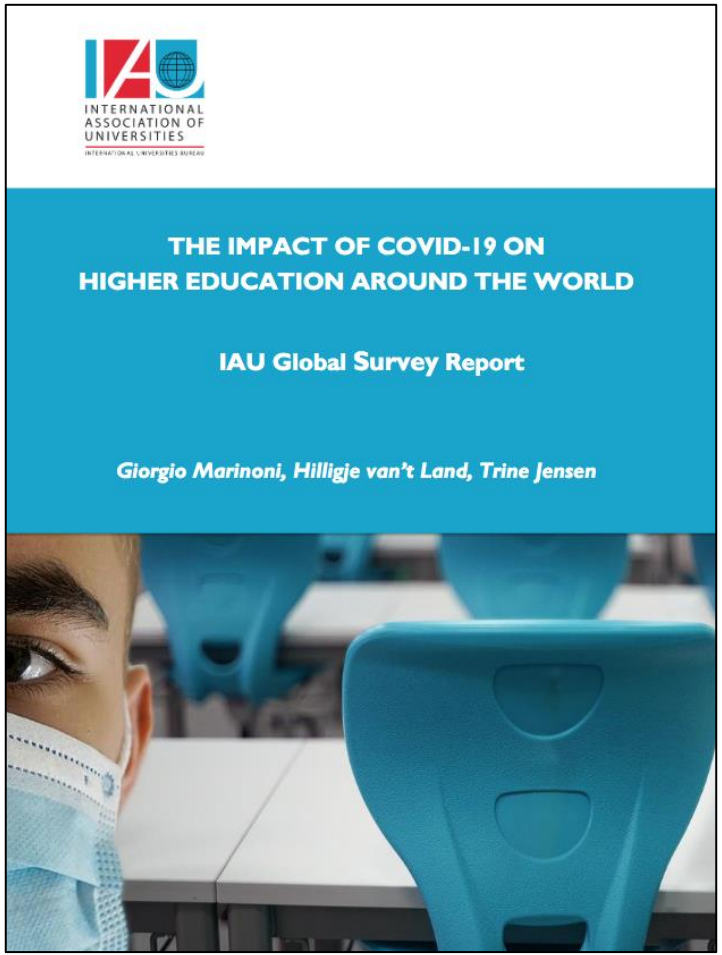


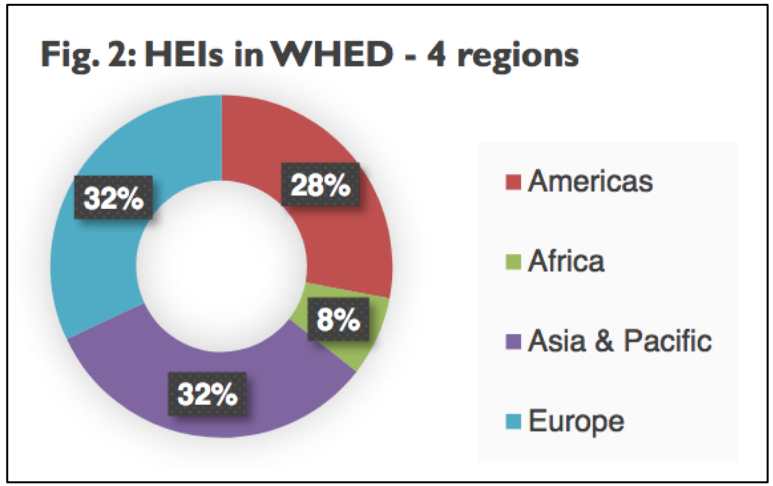
Everyone is affected!

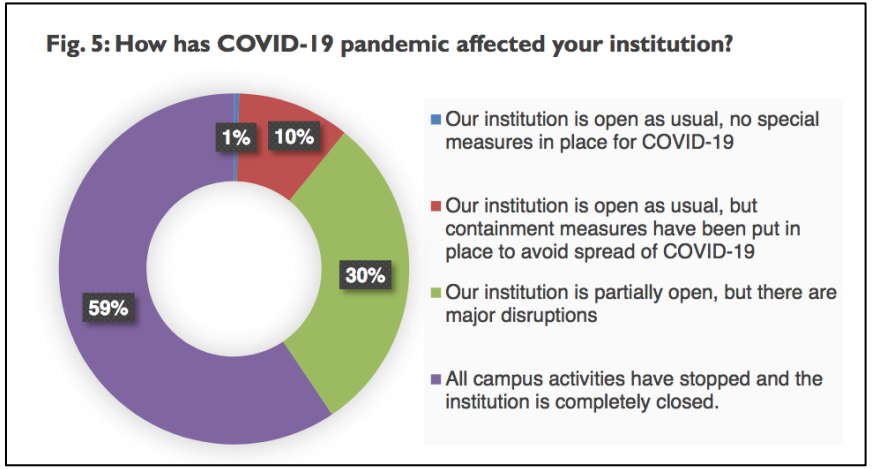




Lives vs livelihoods







https://www.iau-aiu.net/IMG/pdf/iau_covid19_and_he_survey_report_final_may_2020.pdf

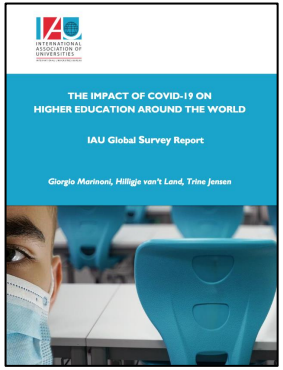
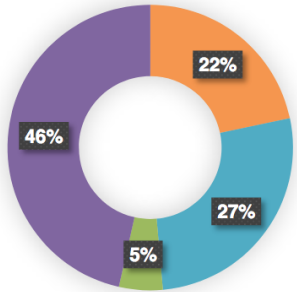
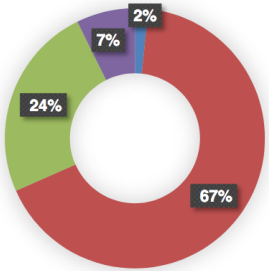


Fig. 7: Do you believe COVID-19 will affect enrollment numbers for the new academic year?



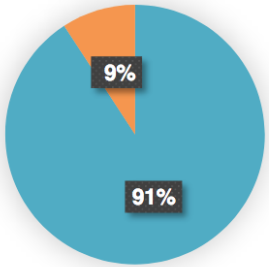
- No
- Yes, but only for international students
- Yes, but only for local students
- Yes, both for local and international students

Fig. 13: How has COVID-19 affected teaching and learning?



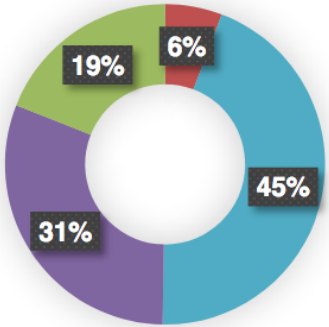
- It is not affected
- Classroom teaching has been replaced by distance teaching and learning
- Most activities are currently suspended but the institution is working on developing solutions to continue teaching and learning, through digital or self-study means.
- Teaching has been cancelled

Fig. 6: Do you have infrastructure in place to easily communicate with students (and staff) for updates and information?



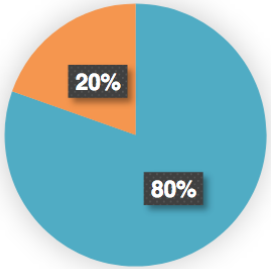
- Yes
- No

Fig. 24: How has COVID-19 impacted on your community engagement?



- It has not affected it
- It has increased our community engagement
- It has decreased our community engagement
- Don't know

Fig. 20: Has COVID-19 affected research at your institution?



- Yes
- No

https://www.iau-aiu.net/IMG/pdf/iau_covid19_and_he_survey_report_final_may_2020.pdf

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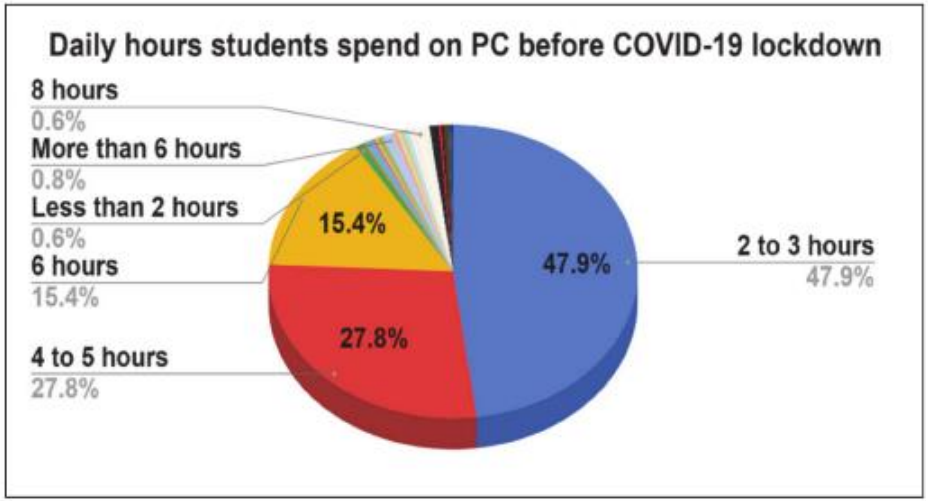
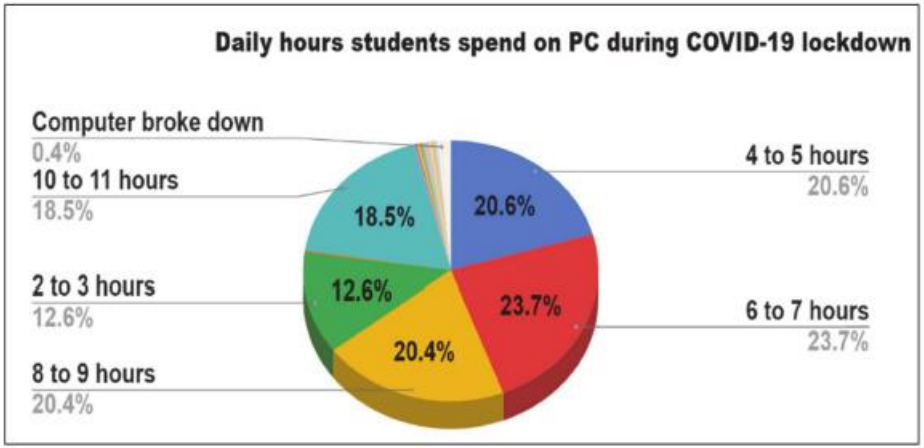
Article

Exploring the Impact of the COVID-19 Pandemic on University Students' Learning Life: An Integrated Conceptual Motivational Model for Sustainable and Healthy Online Learning

Nabil Hasan Al-Kumaim [1,*], Abdulsalam K. Alhazmi [2], Fathey Mohammed [3], Nadhmi A. Gazem [4], Muhammad Salman Shabbir [5] and Yousef Fazea [6]

Figure 1. Summary of challenges due to the COVID-19 pandemic on university students.





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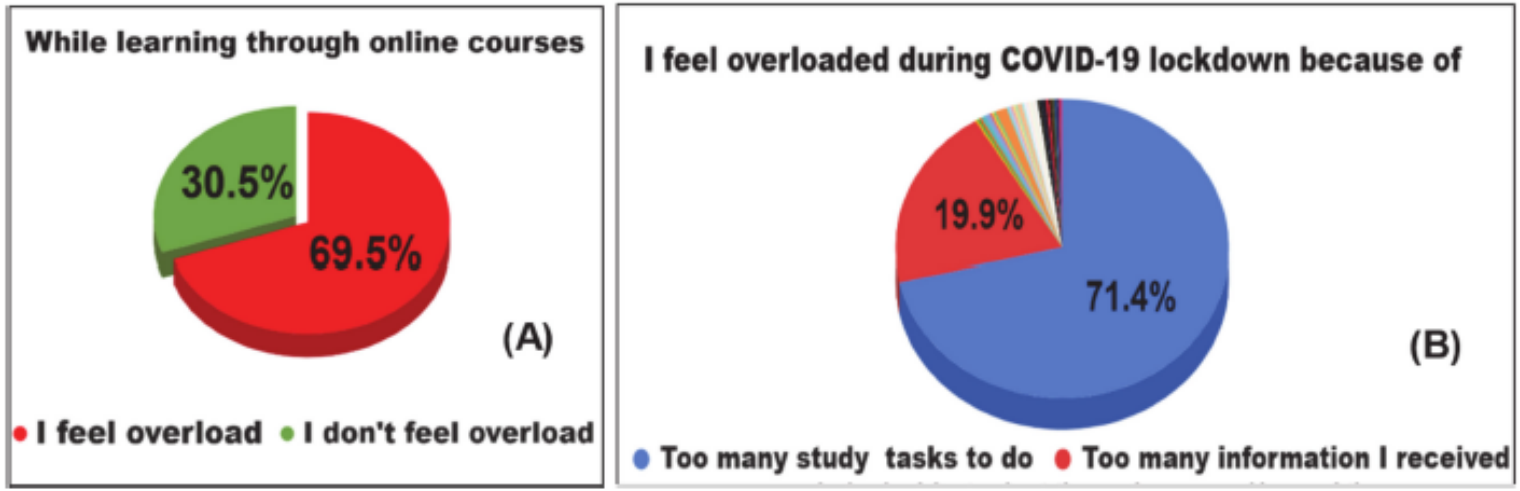

Figure 2. Students overload feeling and causes during online courses. A: Students' overload feeling; B: Causes of information overload during online courses.

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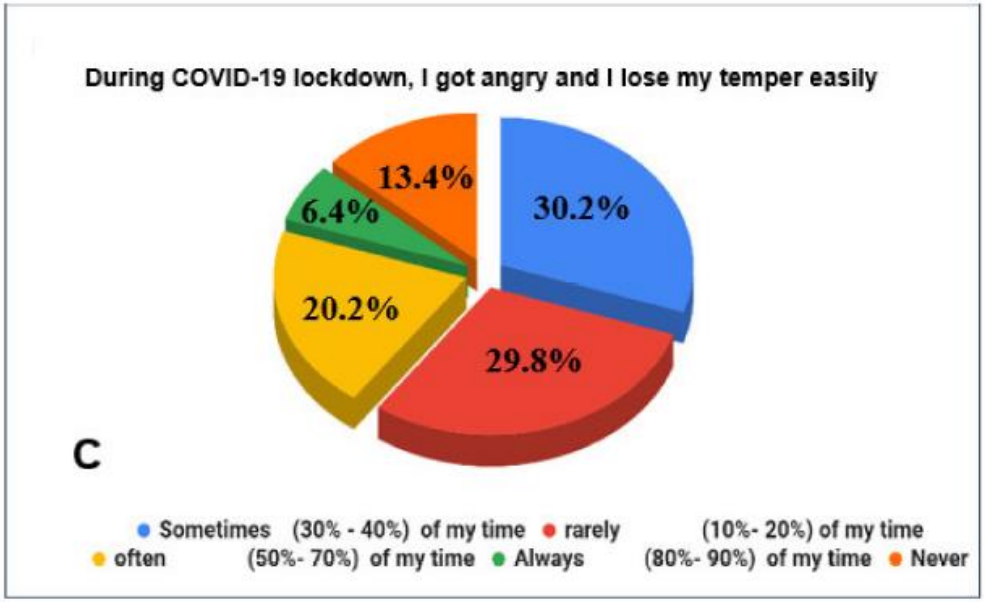

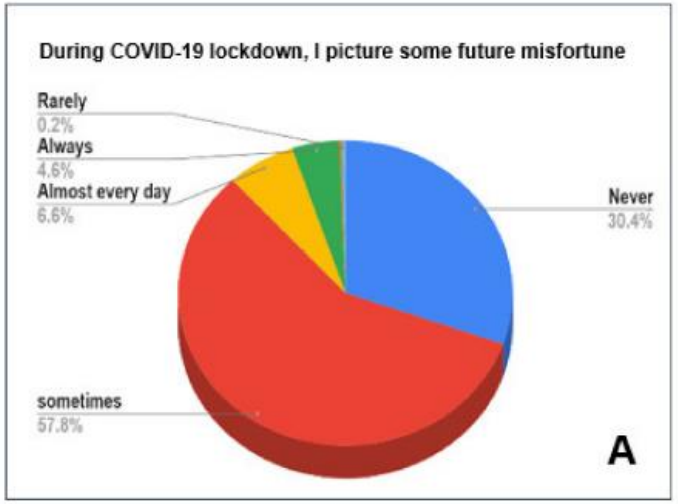

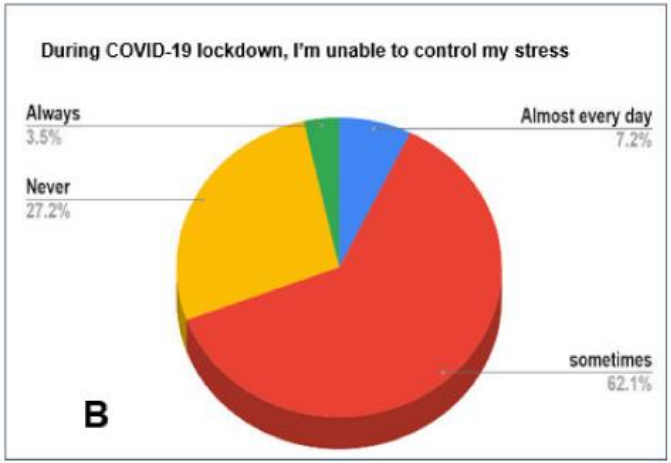

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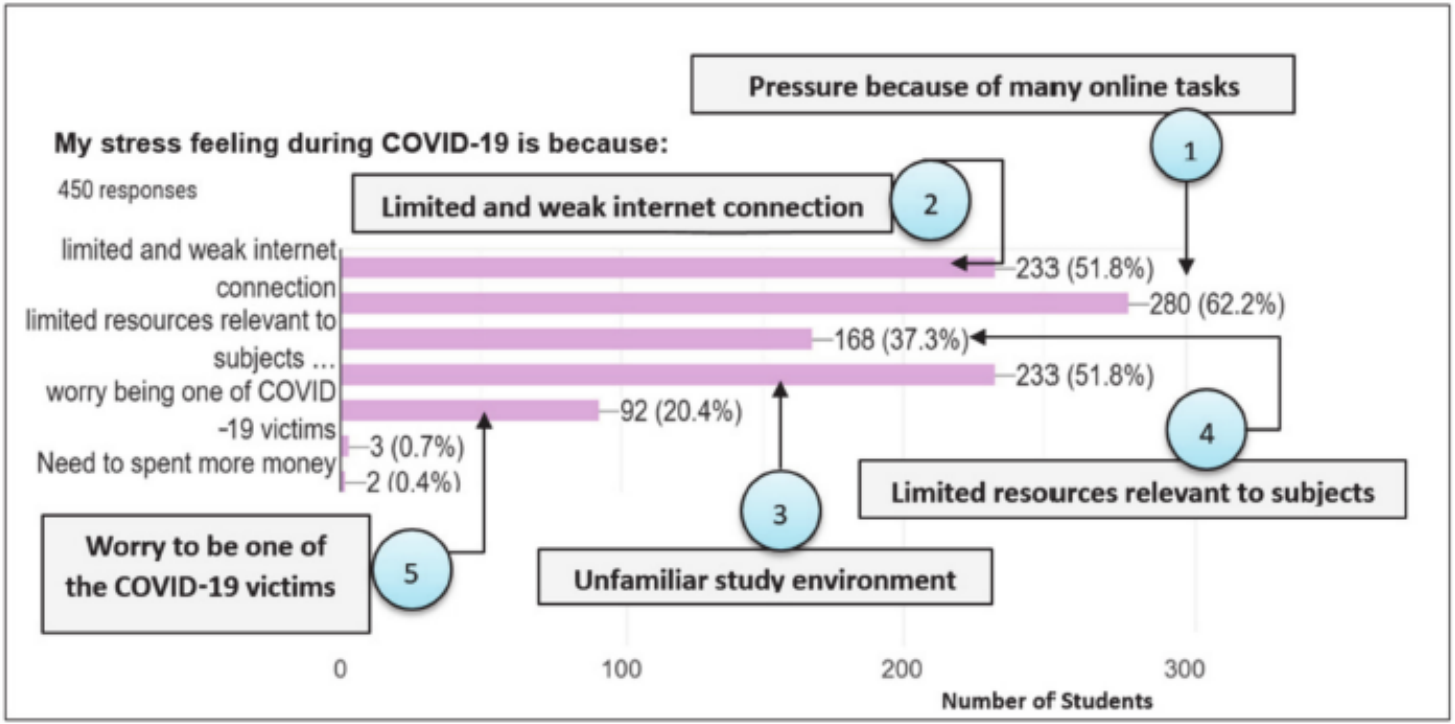

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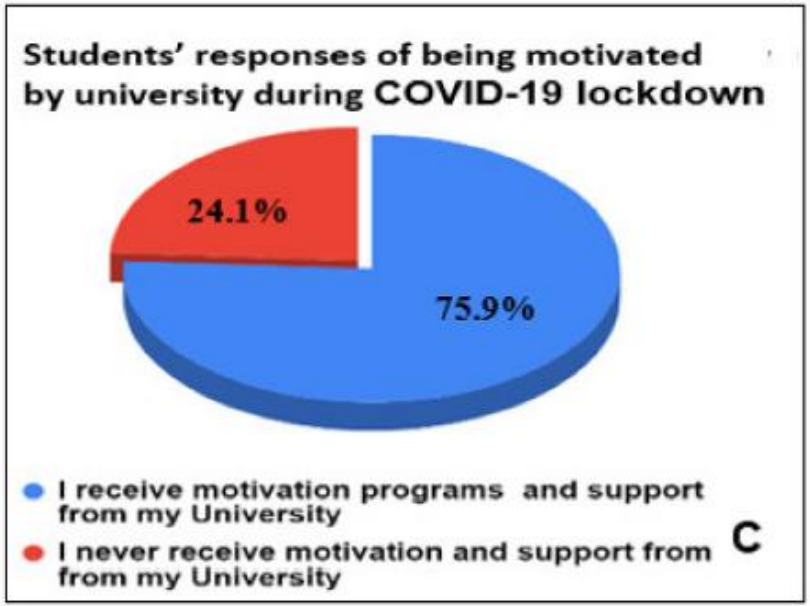

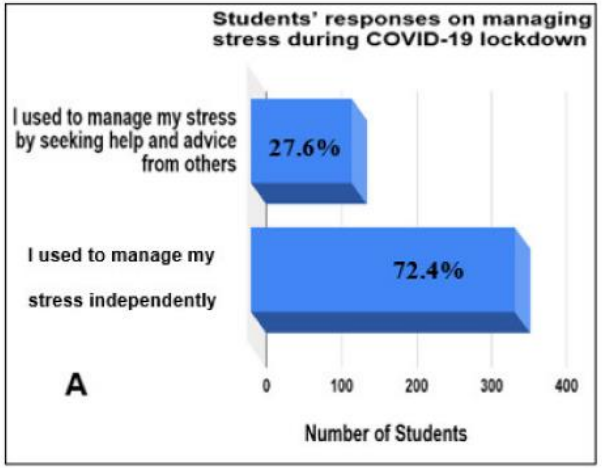

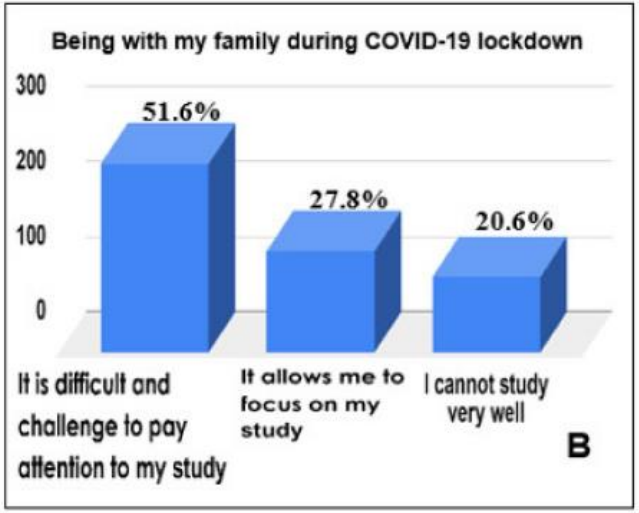

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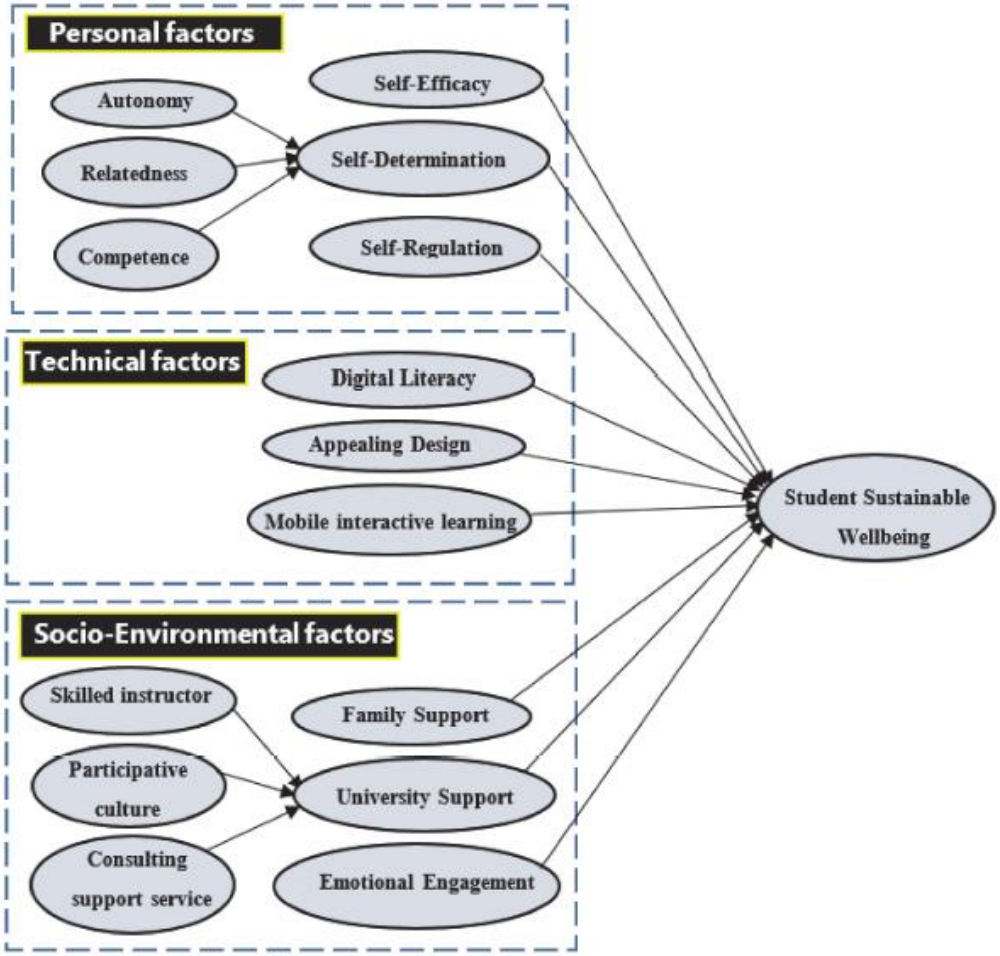
1. Motivate students to develop self-confidence and solve any technical problem.
2. Focus more on quality of online learning platform interface (interactivity, ease of use, and students' enjoyment for completing learning tasks)
3. Assist teachers in updating and redesigning teaching plans.
4. Important role of students' families to assist students in getting a better learning environment.
5. Reduce online tasks provided to students to decrease students' stress level and increase level of sustainable and healthy online learning.



Need to adapt swiftly!

- The current scenario has involved a rapid pedagogical shift;
  - from traditional to online class sessions
  - from personal to virtual instruction
  - From seminars to webinars
- Higher education institutions are undergoing radical transformations driven by the need to digitalize education and training processes in record time with academics who lack innate technological capabilities for online teaching.

https://www.frontiersin.org/articles/10.3389/fpsyg.2021.616059/full

Disruptive educational innovation

- Replaces existing methodologies and modes of knowledge transmission by opening new alternatives for learning.
- New advances in education systems through information and communication technologies.
  - Innovation in teaching methods
    - New learning materials, mechanisms, and spaces;
  - Transformation of students' role
    - The way they absorb and use educational knowledge.

INNOVATION

https://www.frontiersin.org/articles/10.3389/fpsyg.2021.616059/full

New things to learn and re-learn (quickly!)

- Giving lectures by videoconference, sharing material (e.g., slides, videos, presentations), interacting through chats, creating debate forums or workgroups, supervising practical activities, evaluating and tutoring students, recording explanations and making them available to students, etc.
- Synchronously or asynchronously?
- How to maintain students' attention and keep them involved in the course.
- What are the methodologies for the interaction of students and professors, and that engage students in peer collaboration?
- How to make sessions dynamic? Collaborative and formative tools?
- Instructors must design the audiovisual material, plan students' work time, and use the right tools for each activity.

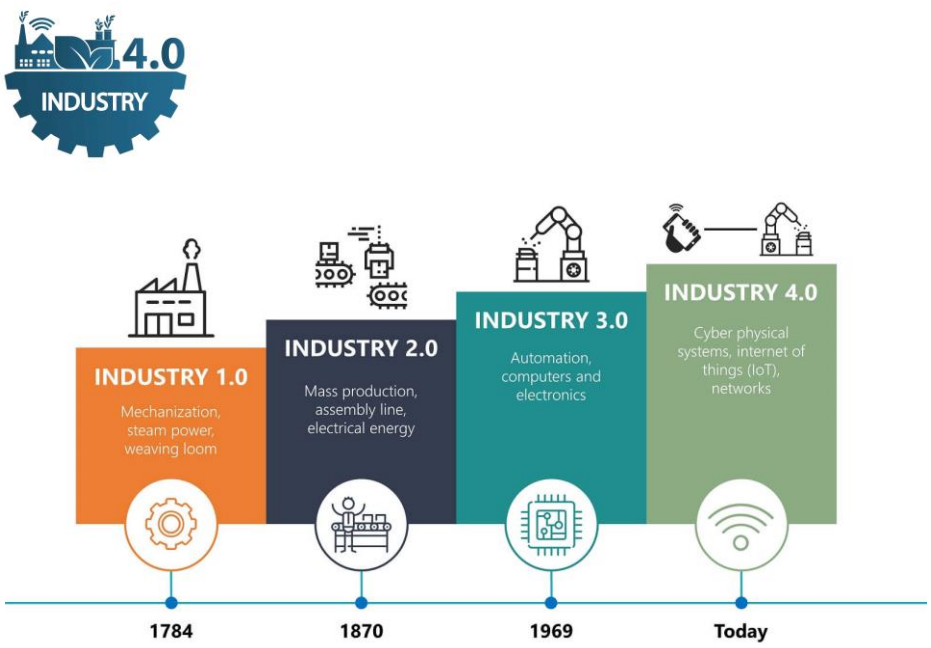
https://www.frontiersin.org/articles/10.3389/fpsyg.2021.616059/full

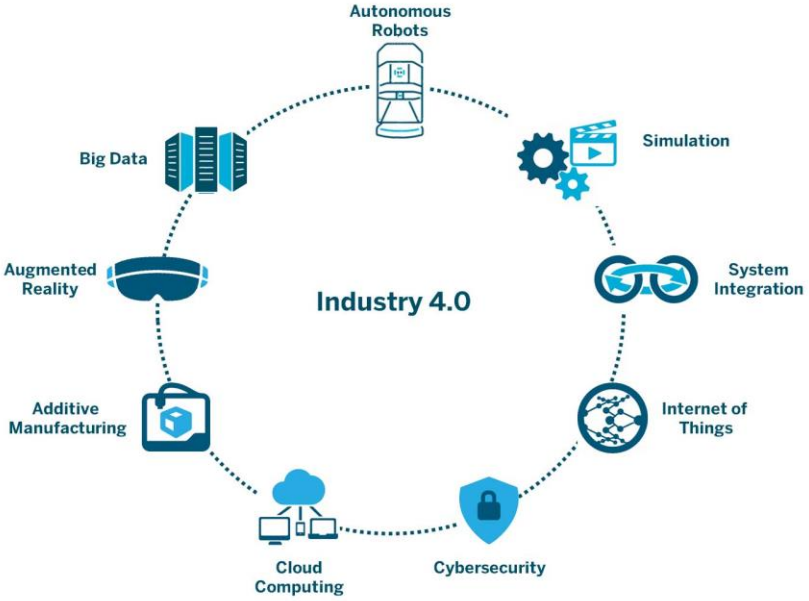
Barriers and Challenges

- Technical problems!
- Stressful for professors!
- Online education can amplify digital divide (including academics).
- Difficult to maintain attention: distractions, boredom, sense of isolation, lack of time to follow different subjects, and lack of self-organizing capabilities.

https://www.frontiersin.org/articles/10.3389/fpsyg.2021.616059/full

Higher Education was already ripe for disruption. Then, COVID-19 happened.





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RESEARCH BRIEFS

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Education In The Post-Covid World: 6 Ways Tech Could Transform How We Teach And Learn

September 2, 2020 Take a look at 20+ other industries and technologies that will shape the post-pandemic world here.

Consumer Products Covid-19 Education Tech

The Post-Covid World

Education In The Post-Covid World: 6 Ways Tech Could Transform How We Teach And Learn

September 2, 2020 Take a look at 20+ other industries and technologies that will shape the post-pandemic world here.

Online learning increases access and invites a wide array of learners

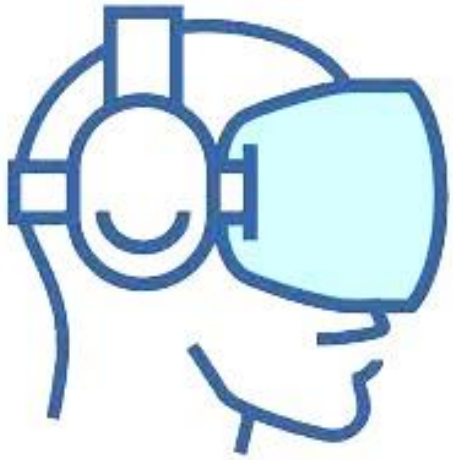
- Online learning will be a core component of education and teaching.
- Learning management systems (LMS) help teachers deliver online lessons, share reading materials, and grade assignments; all in one platform.
- Massive Open Online Courses (MOOCs) are seeing renewed interest as a means of gaining higher education.
- After-school learning and tutoring is picking up.

Education In The Post-Covid World: 6 Ways Tech Could Transform How We Teach And Learn

September 2, 2020 Take a look at 20+ other industries and technologies that will shape the post-pandemic world here.

Virtual and augmented reality increase engagement by bringing learning to life

- VR and AR enhance learning and engagement.
- VR creates immersive 3D environment that a user can explore.
- AR superimposes digital elements such as visuals, sound, and text onto a user's surroundings.
- VR and AR work particularly well for highly technical fields like medicine or military.



Education In The Post-Covid World: 6 Ways Tech Could Transform How We Teach And Learn

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Biometrics and facial recognition could help students stay focused and improve safety

- Scans body parts like eyes, fingerprints, and facial features can help identify an individual.
- Applications include ensuring students are paying attention in class, security and safety of students on campus.
- Facial recognition tech can help track a student's attentiveness through their facial expressions.
  - Students may lose focus, it alerts the students and gives them a pop quiz!
  - When students get bored during a lecture, style of teaching can be modified.

Education In The Post-Covid World: 6 Ways Tech Could Transform How We Teach And Learn

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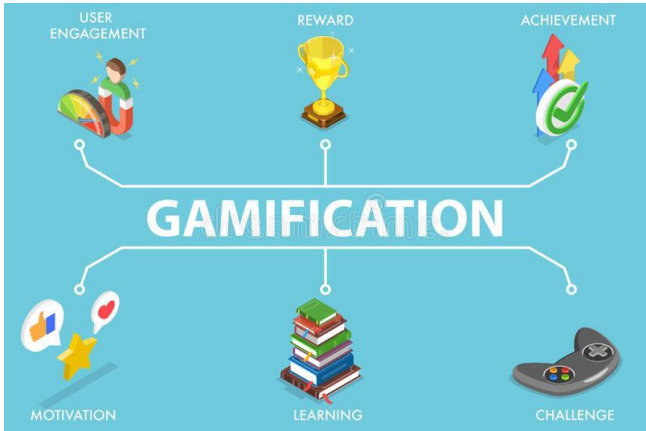
Gamification uses game elements to make learning interactive

- Increase learners' motivation and engagement by incorporating game design elements such as storytelling, problem-solving, badges, levels, and points in educational environments.
- Educators encourage students to face and accomplish various challenges and goals. This promotes higher student engagement and could help students retain knowledge more effectively.
- Students receive instant feedback and foster a spirit of healthy competition among students.



Education In The Post-Covid World: 6 Ways Tech Could Transform How We Teach And Learn

September 2, 2020 Take a look at 20+ other industries and technologies that will shape the post-pandemic world here.

Artificial intelligence enables data-driven decisions to increase efficiency and save costs

- Help personalize learning, improve memory retention, teach languages, or increase accessibility to lessons.
- AI-enabled chatbots can increase student engagement.
- Chatbots can double as teacher's virtual assistant, helping by answering frequently asked questions for students, giving personalized feedback to students, and providing additional learning materials based on a student's individual progress.

Education In The Post-Covid World: 6 Ways Tech Could Transform How We Teach And Learn

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Smart campus tech leverages devices and data for a connected experience

- Smart campus is a digitally connected space, where devices and data come together to provide a more intuitive learning experience to students.
- All devices are connected into a single network.
- Immense technological preparation and planning on the part of the educational institution is required.
- Privacy and tracking are major concerns.

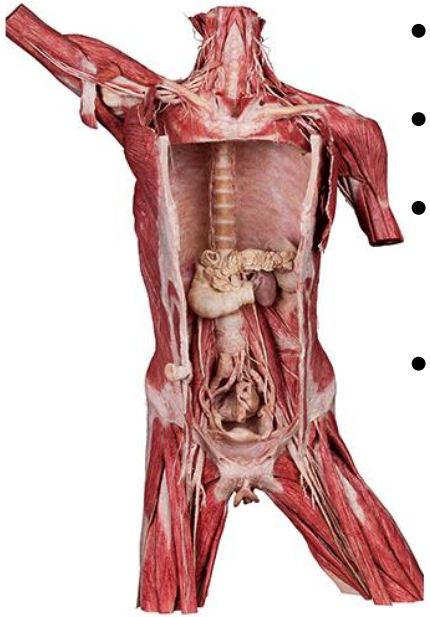
Traditional way of learning Medicine

- Face-to-face lectures and practical sessions
- Real anatomy dissection – skeleton in the closet!
- Textbook
- Real patients
- Go to library to borrow books and search for journals.
- It’s a pain to write a dissertation.

“New norm” way of learning Medicine

- Plenty of educational resources – a finger click away. Force us to rethink medical training.
- Virtual anatomy
- Virtual physiology etc
- Virtual clinical sessions
- Clinical simulations
- Standardized patient/ simulated patient
- Webinar for all
- Virtual community engagement

Teaching anatomy without cadavers



- Using VR and AR.
- 3-D cinematic renderings of CT and MRI scans.
- Plastinations—human cadavers preserved with plastic resins.
- Help students learn anatomy in the context of diseases and clinical practice.

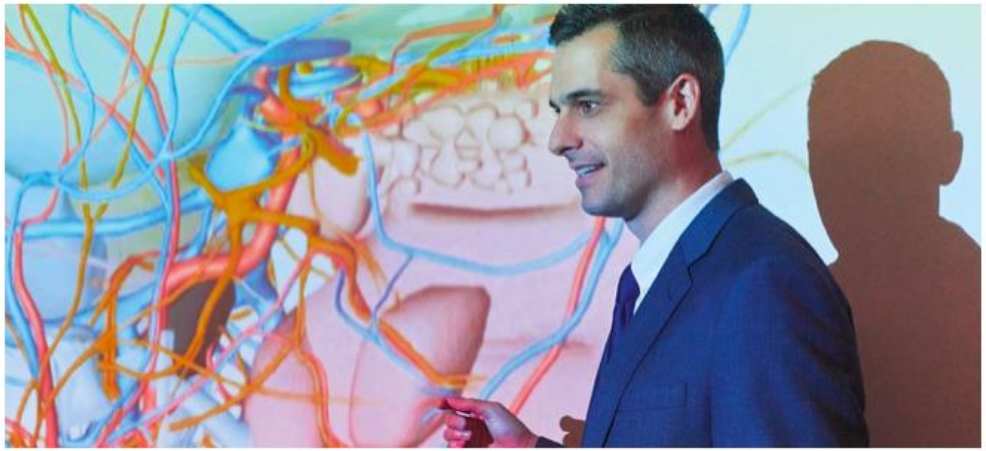
PATIENT CARE EDUCATION & RESEARCH MyChart Patient Login | Patient Forms | Contact Us | Give

NYU Langone Health NewsHub Filter News by Category Search News

EDUCATION, INNOVATION | NYU LANGONE HEALTH MAGAZINE, NYU LANGONE HEALTH MAGAZINE SUMMER/FALL 2018

Using Big Data to Strengthen the Connection Between Medical Education & Patient Care

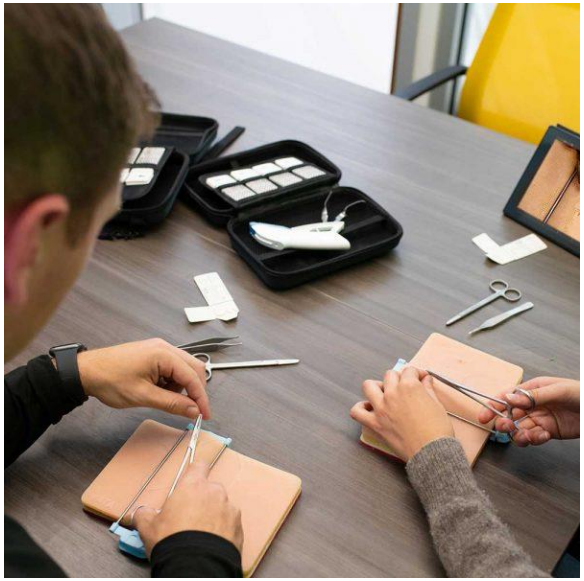
NYU School of Medicine Analyzes Big Data to Track Graduates' Performance in the Real World

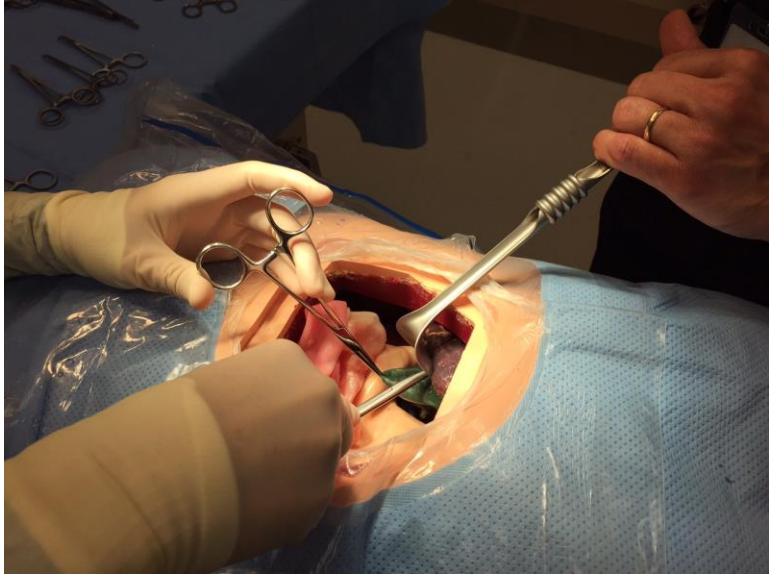


Marc M. Triola, MD, director of the Institute for Innovations in Medical Education and associate dean for educational informatics at NYU Langone. PHOTO: SASHA NIALLA

- Gaining broad access to patient-care data
- Connecting curriculum reforms to physician practice
- Data may change the future of residency training

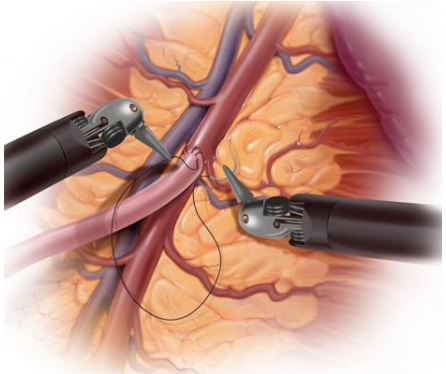
Simulations – way to go!





Digitalisation – health services, training

- Digital health transformation
- Telemedicine and Virtual Consultation
- Role of AI
- MySejahtera
- Global sharing of data
- Remote robotic surgery
- Ease of webinar



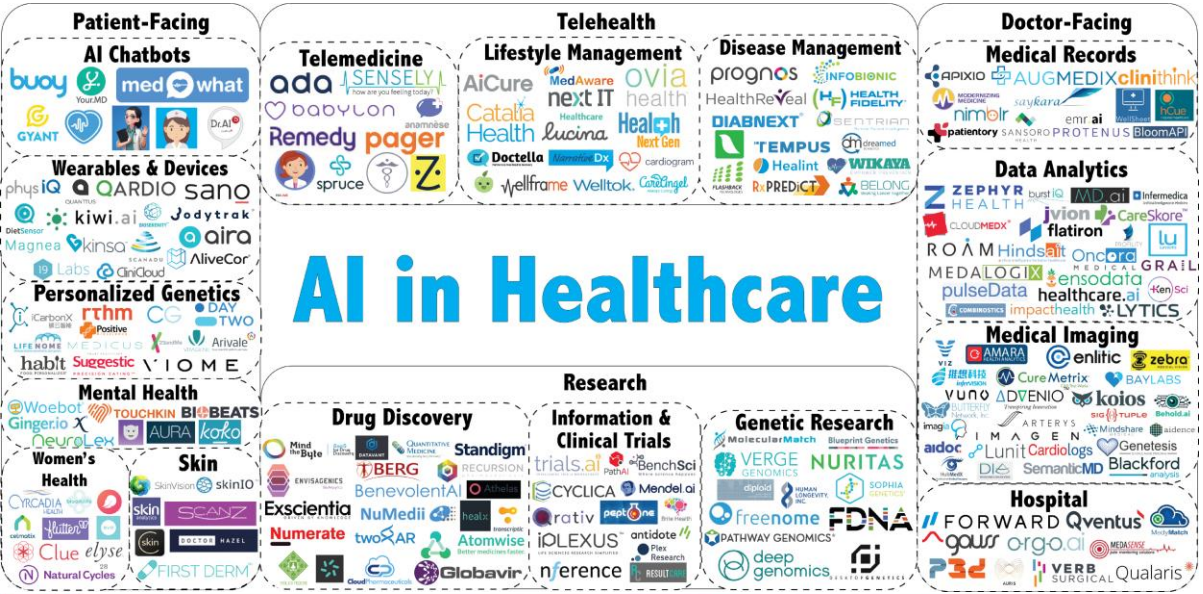
12 Innovations that will change Health Care and Medicine in the 2020s

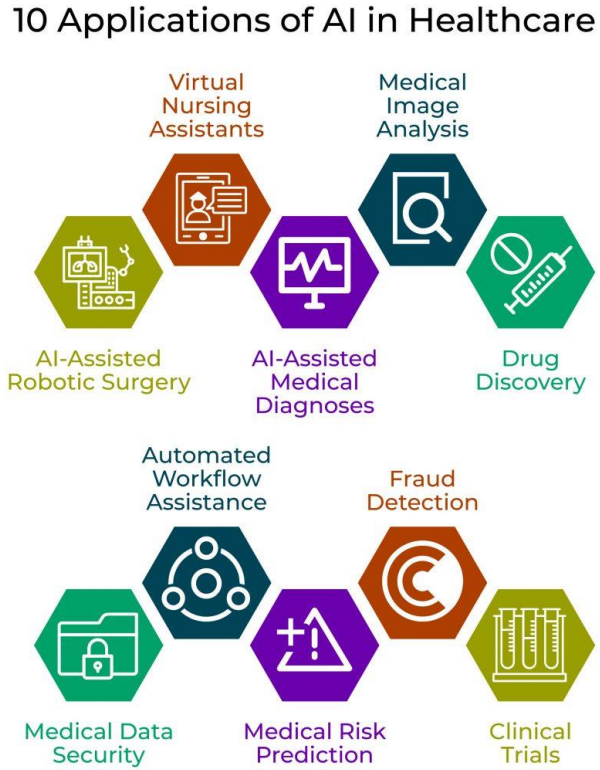
- **Drone-delivered medical supplies**

https://time.com/5710295/top-health-innovations/

12 Innovations that will change Health Care and Medicine in the 2020s

- **The biggest Big Data and AI**





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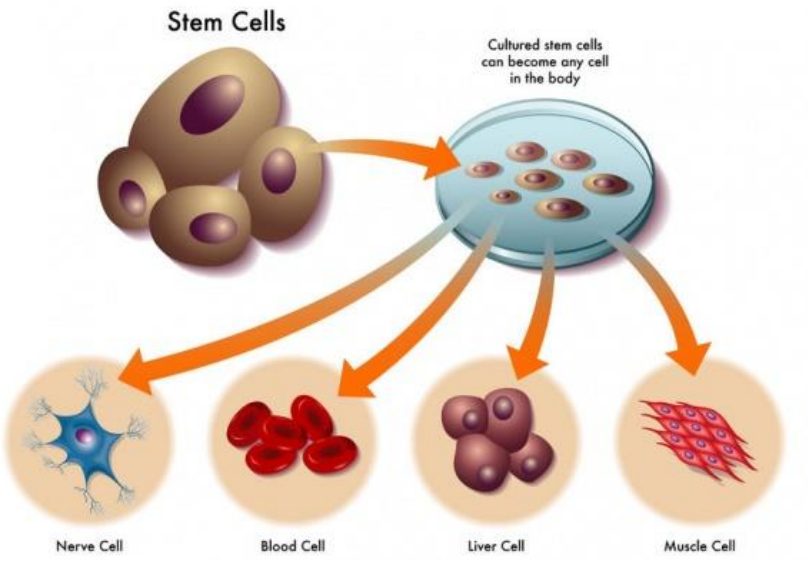
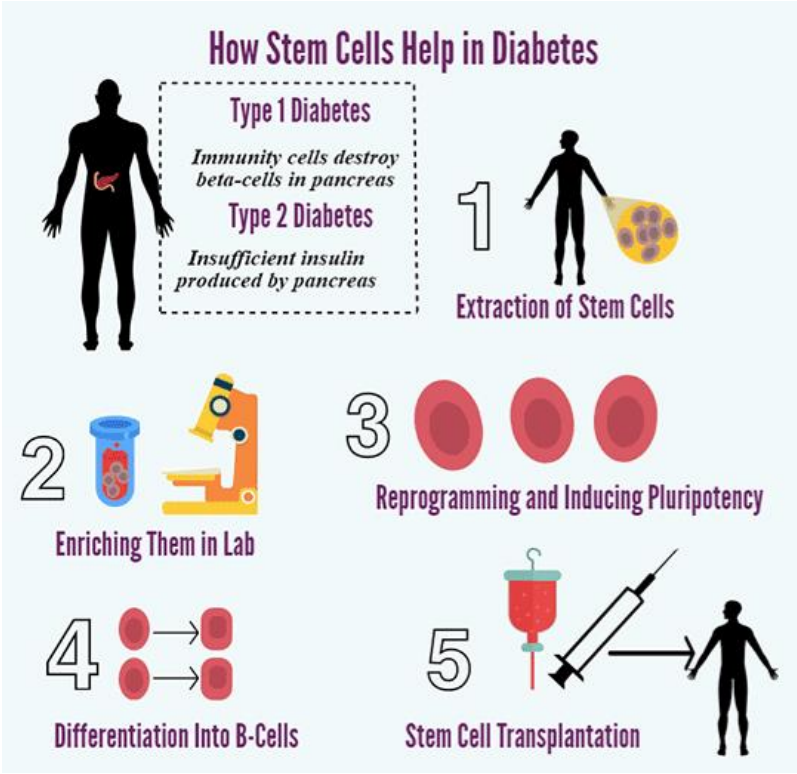
12 Innovations that will change Health Care and Medicine in the 2020s

- **Stem-cell cure for diabetes**





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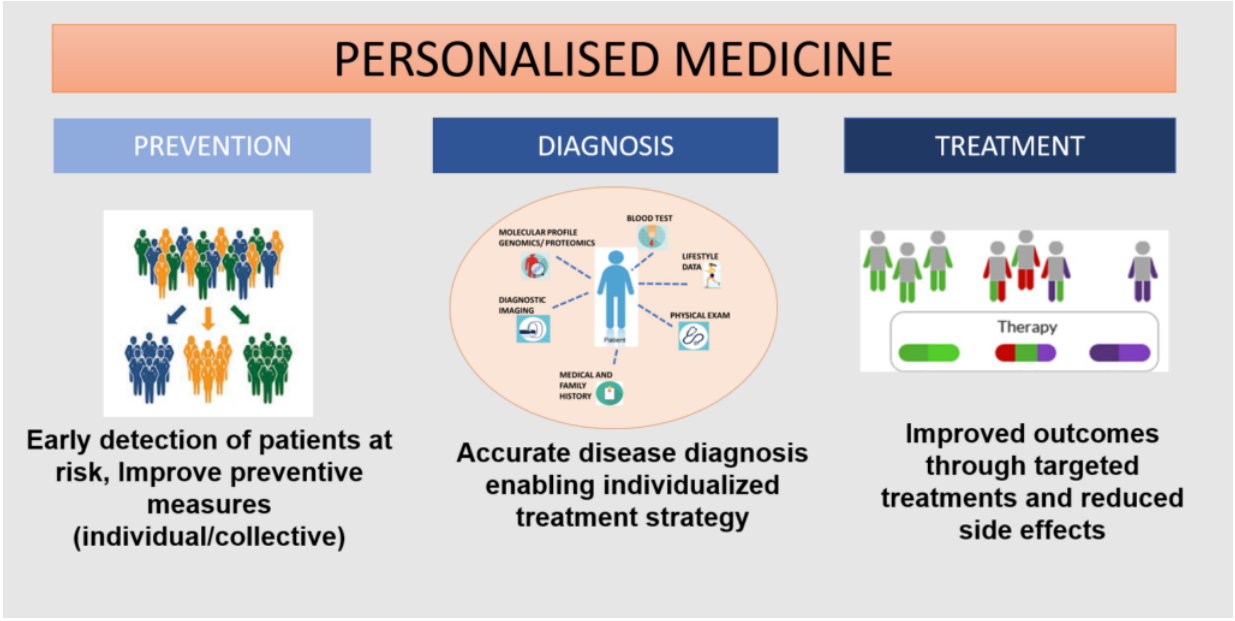
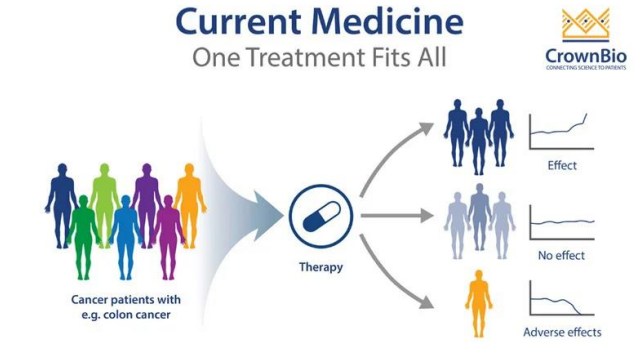
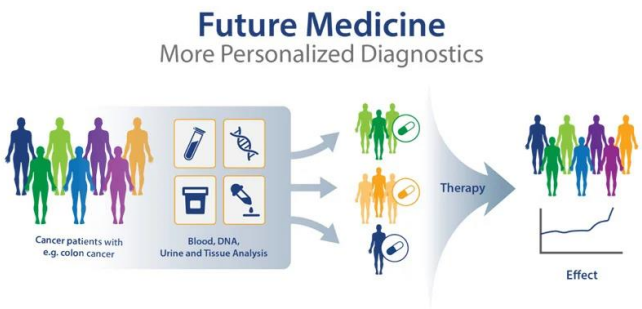
12 Innovations that will change Health Care and Medicine in the 2020s

- **Personalised medicine**







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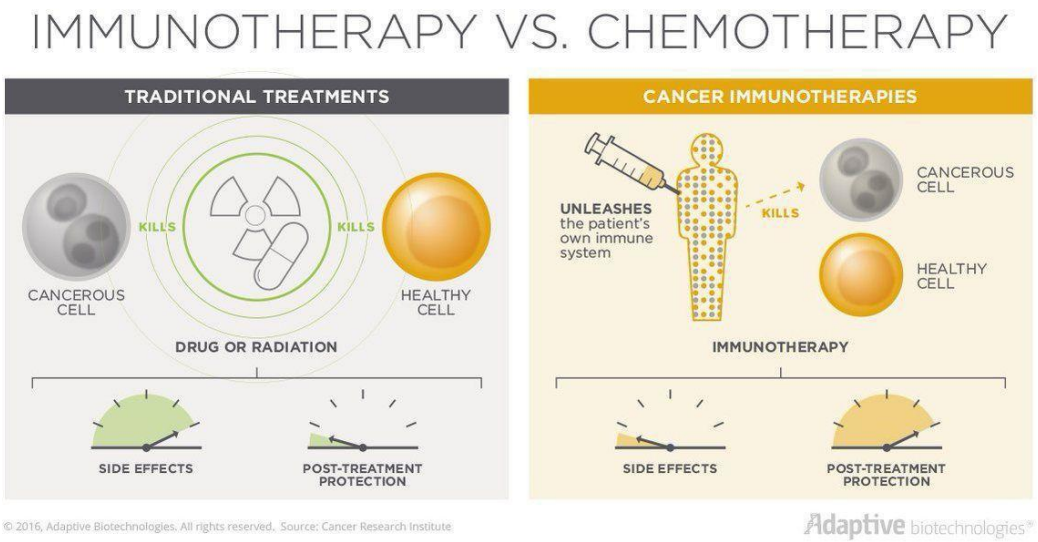
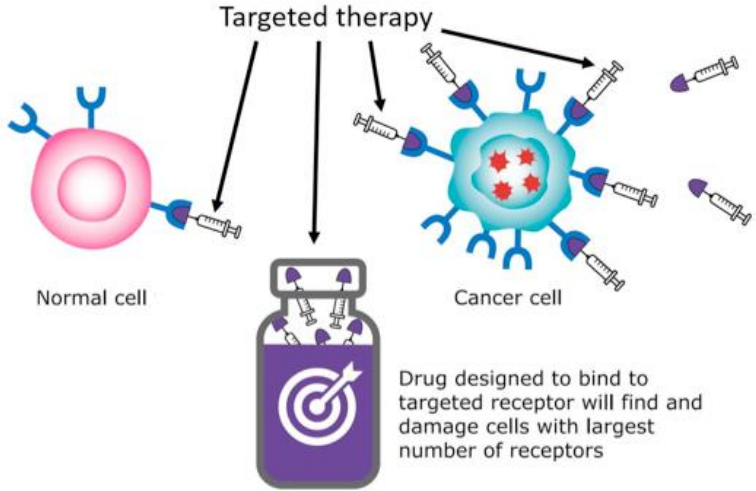
12 Innovations that will change Health Care and Medicine in the 2020s

- **Disruptive approach to cancer therapy**





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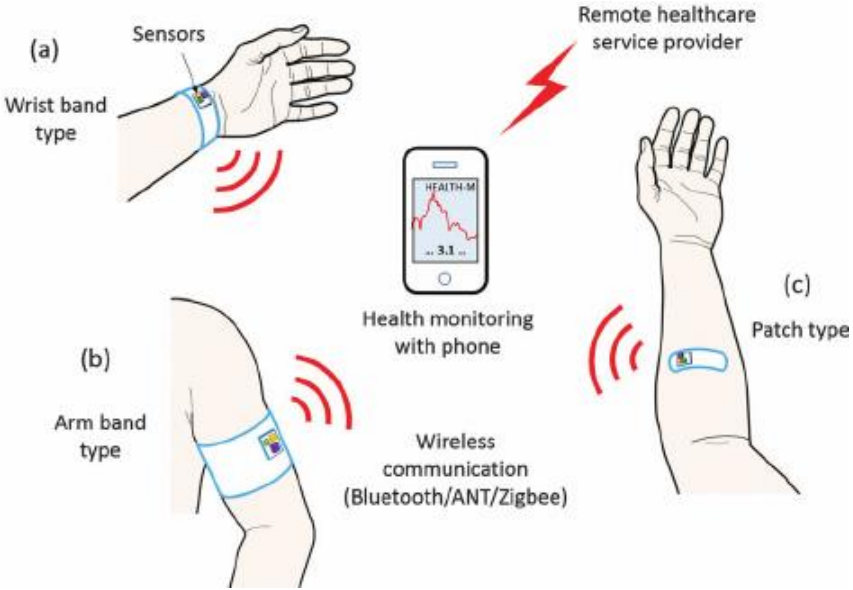
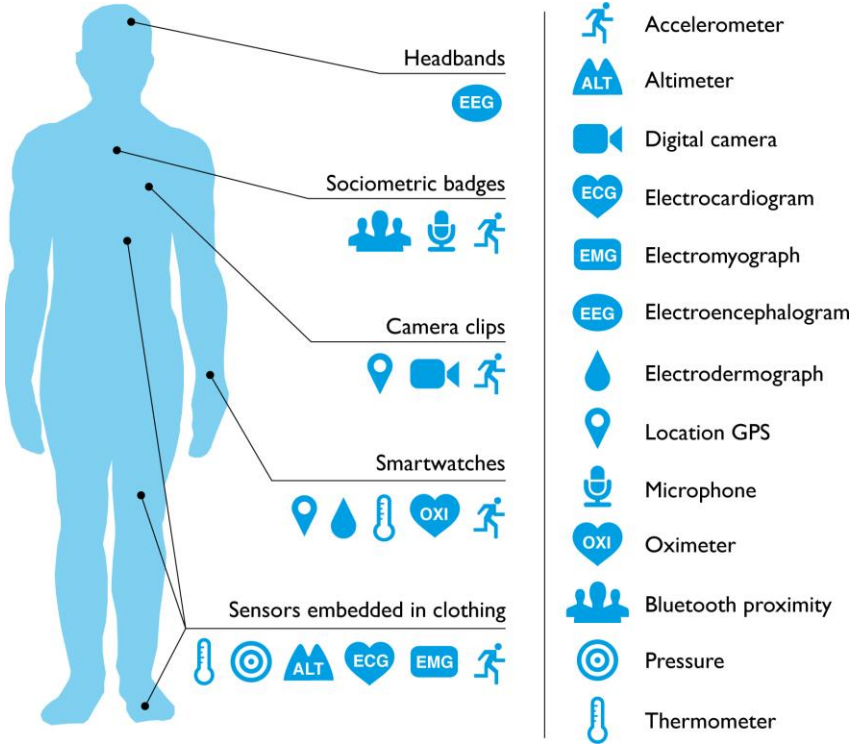
12 Innovations that will change Health Care and Medicine in the 2020s

- **Wearables**





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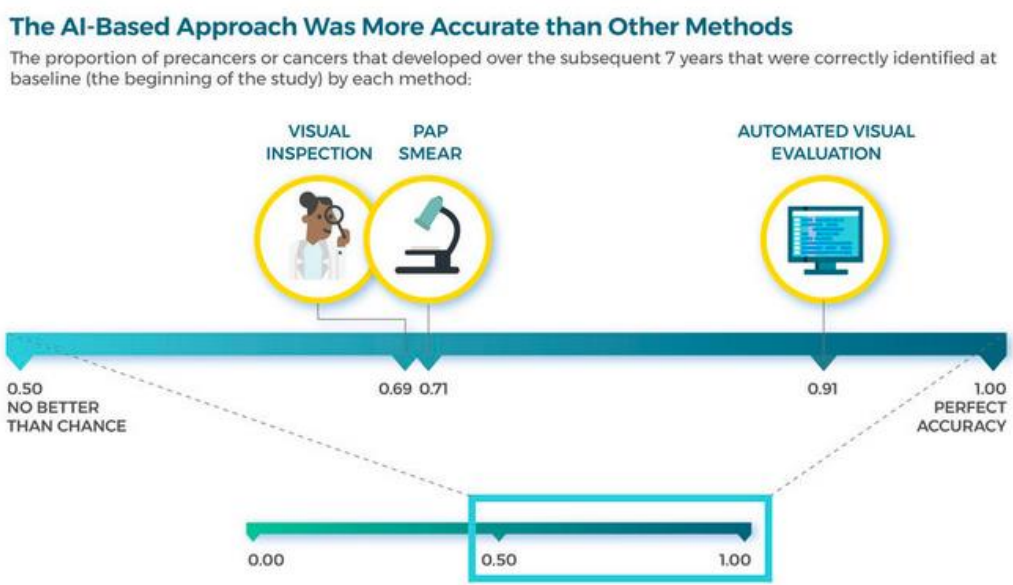
12 Innovations that will change Health Care and Medicine in the 2020s

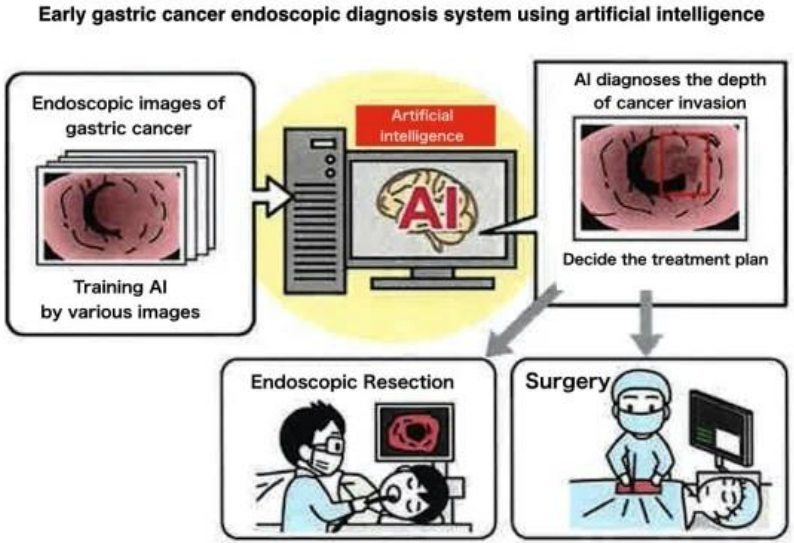
- **Pocket-sized ultrasound**

https://time.com/5710295/top-health-innovations/

12 Innovations that will change Health Care and Medicine in the 2020s

- **Cancer-diagnosing AI**





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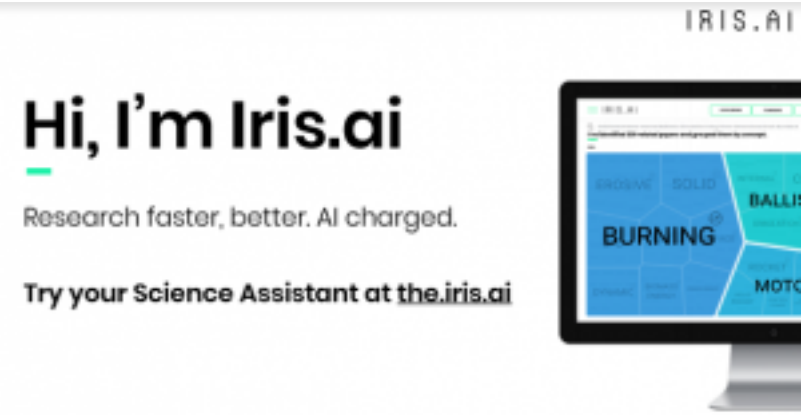
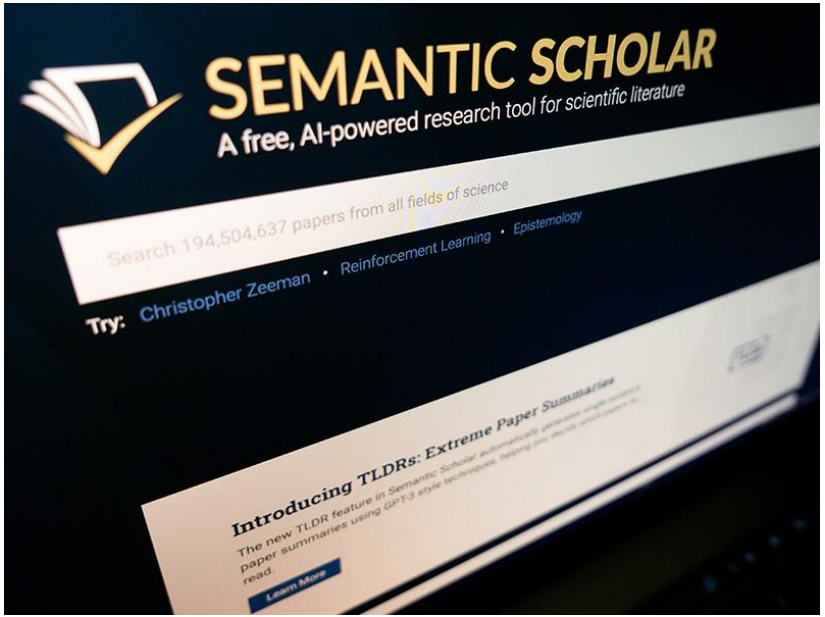
12 Innovations that will change Health Care and Medicine in the 2020s

- **AI to read every science paper**





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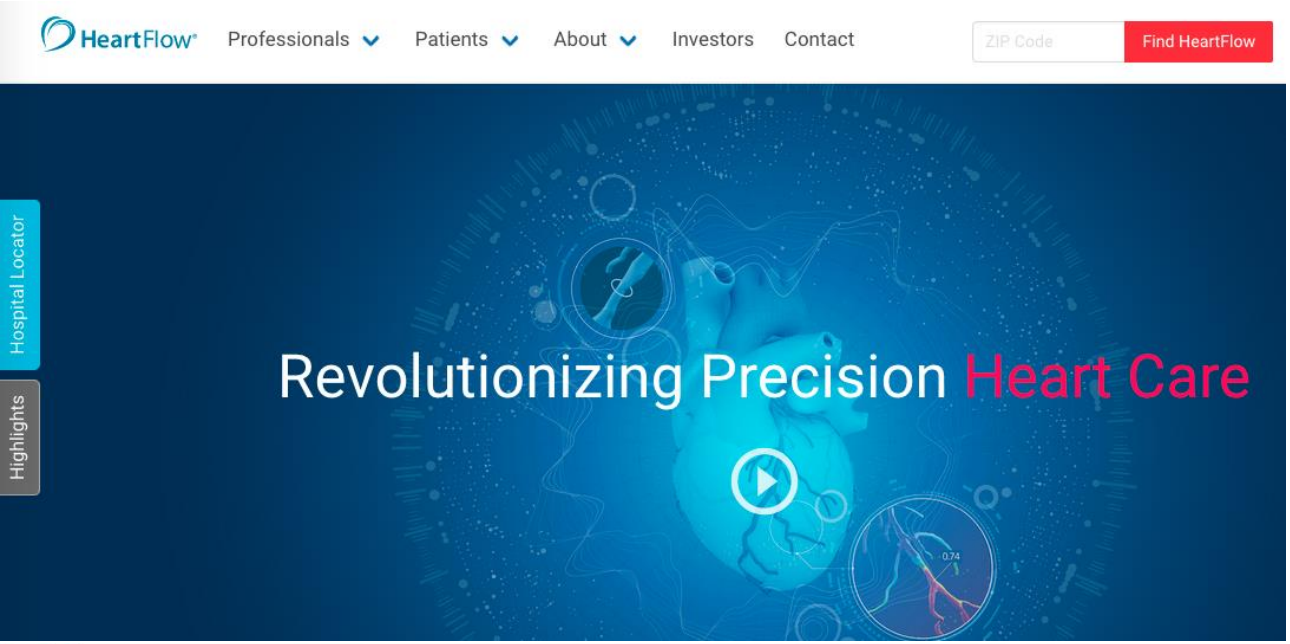
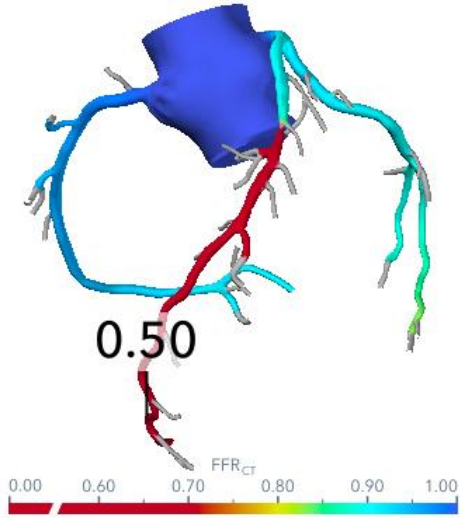
12 Innovations that will change Health Care and Medicine in the 2020s

- **3-D digital hearts**





https://time.com/5710295/top-health-innovations/

12 Innovations that will change Health Care and Medicine in the 2020s

- **Neurorehabilitations and VR**

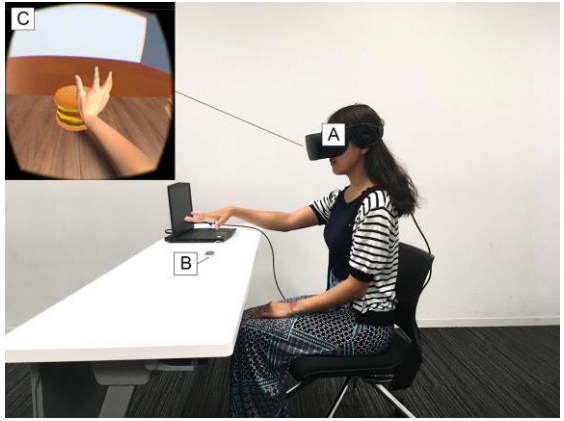
IMMERSIVE REHAB

Digital Therapeutics NeuroRehabilitation Programs

Paralympic athlete and spinal injury patient David Smith is trialling mmersive Rehab's Digital Therapeutics Neurorehabilitation platform.

– "Fun Fair Towers"

– "Time for Jazz"



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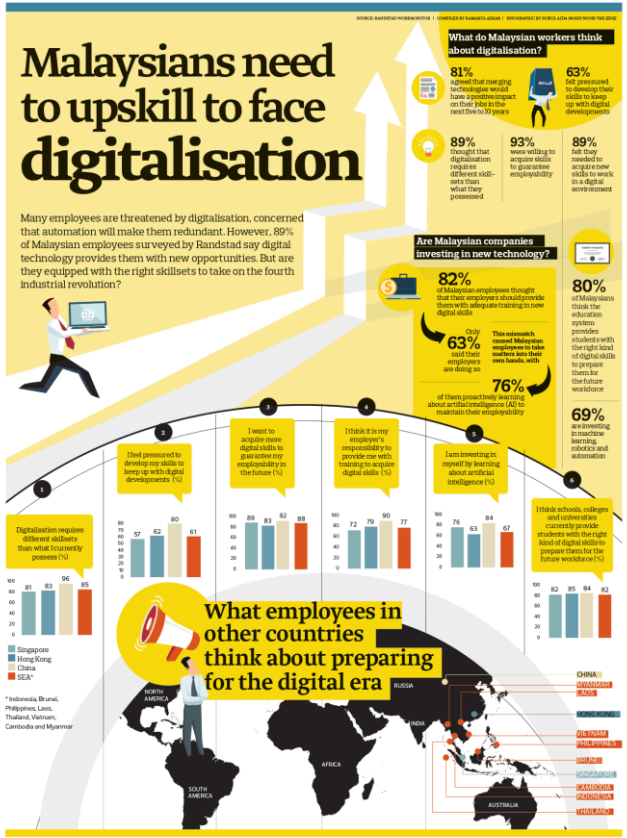


Digital transformation could boost USD100-136bil in GDP by 2025

3 key fundamentals that must be addressed

Fast affordable broadband

Broadband speed is 3 times slower than frontrunners

Talent tailored for digital progress

Only 1 in 5 graduates are in STEM

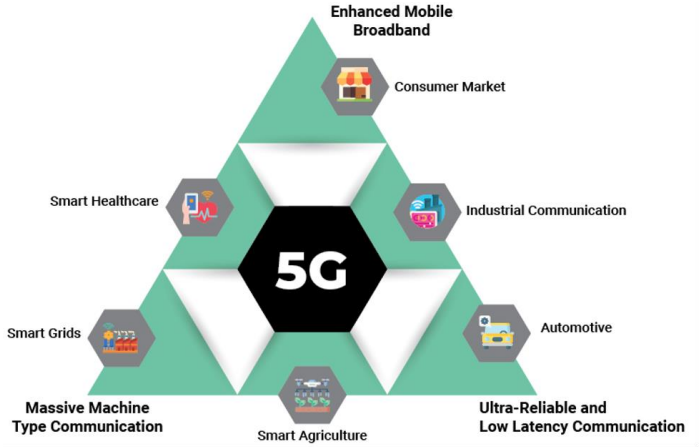
High digital adoption

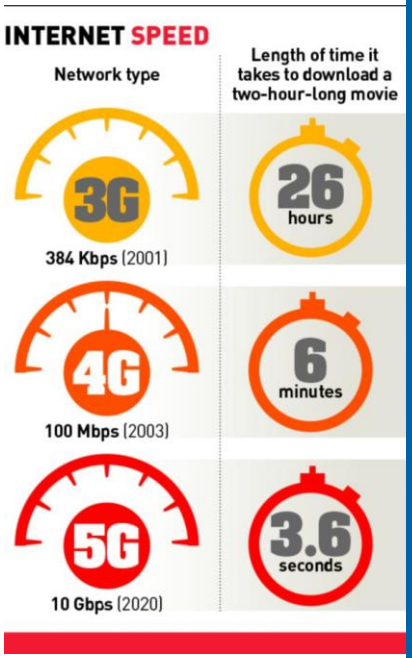
< 40% of the population use internet banking and e-commerce

Modernising regulations, empowering talent and universal access to infrastructure will accelerate Malaysia's digitalisation

Source: Bank Negara Malaysia

Malaysia's digitalisation speeding up, experts say





5G TECHNOLOGY

Fifth generation (5G) connectivity is more than just greater speed and network capacity, it is about the linking of millions of devices, building new services and supporting a broader adoption of applications which will transform the way we live and, how businesses and governments are run.


Greater network capacity

Greater reliability


Extremely fast data speed


Facilitates the creation of innovative services

SPHERES THAT WILL BENEFIT FROM 5G TECHNOLOGY


Agriculture: Precision farming


Automotives: Self-driving vehicles


Education: Virtual Reality classrooms


Healthcare: Remote diagnosis and consultation services


Manufacturing: Robotics

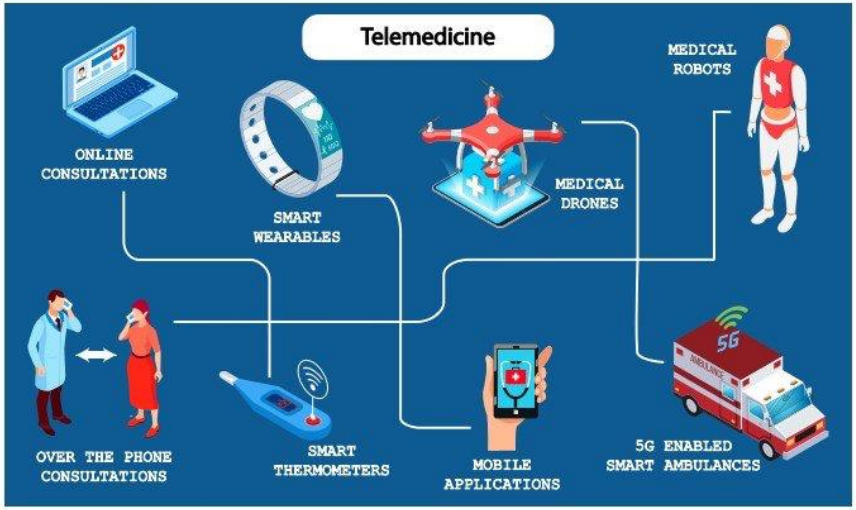

Media and Entertainment


Public safety


Smart cities

Malaysia's adoption of 5G technology is in tandem with the National Fiberisation and Connectivity Plan (NFCP) which aims to provide high-quality and affordable digital connectivity.

Malaysian Communications & Multimedia Commission (MCMC) Bernama Infographics



Elements of a Smart Hospital

Data Gathering & Analytics

- Data is automatically gathered on machines, integrated and analysed
- Machine Learning Software (AI) can extract patterns and predict behaviours

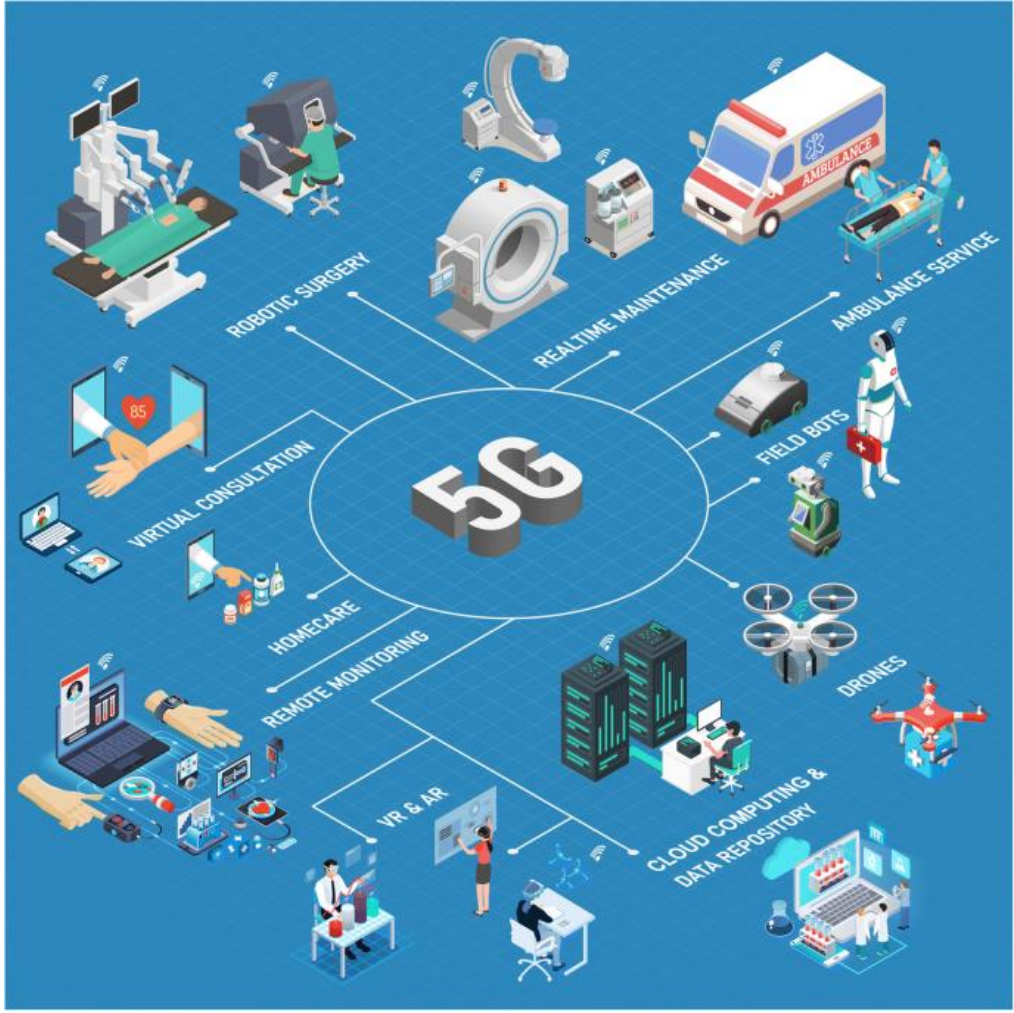
Interconnected Access to Data

- Real-time access to analysed data
- Connecting multiple agents through diverse platforms (phones, tablets, wearables, desktop...)

Autonomous Actions

- Big Data analysis
- Pattern recognition
- Optimized autonomous actions

YCP Solidiance



2021 Digital Quality of Life Index

Global research on the quality of a digital wellbeing in 110 countries (90% of the global population). This study indexes the countries by looking at five fundamental pillars that define the digital quality of life.

Explore ranking

Find a country profile

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
0.8313 index	0.7608 index	0.7562 index	0.7387 index	0.7360 index	0.7192 index	0.7128 index	0.7093 index	0.7071 index	0.7065 index	0.7060 index	0.6983 index
DK	KR	FI	IL	US	SG	FR	CH	DE	GB	NL	JP

Malaysia

Global rank

31st

Global ranking out of 110 countries

Ranking index **0.61**

Rank in Asia

6th

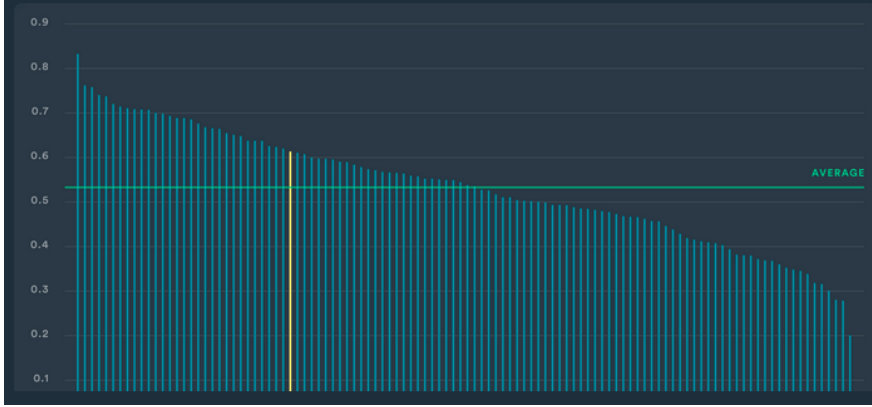
Asia ranking out of 32 countries

10 DQL rank jumped up

Compared to 2020

Internet Affordability rank / index	69th / 0.04
Internet Quality rank / index	47th / 0.52
Electronic Infrastructure rank / index	31st / 0.82
Electronic Security rank / index	21st / 0.88
Electronic Government rank / index	24th / 0.80

Malaysia in DQL global ranking



Best criteria rankings

Cybersecurity Index	Online Services Index	Artificial Intelligence Readiness Index
21st	**24th**	**28th**

Worst criteria rankings

Broadband Speed Growth	Mobile Speed	Broadband Internet Affordability
87th	**74th**	**71st**

Digital Educational Learning Initiative Malaysia (DELIMa)

- MOE's digital education platform aiming at making education accessible for all.
- Free software for all teachers and students supported by Google, Microsoft and Apple.
- Empower and prepare pupils for life-long learning and future skills and competencies that they need to be employable in Malaysia and in the global market.

Moving forward

- Preparing today's students for tomorrow's world.
- Producing health professionals of tomorrow requires re-thinking.
- Should we think of radical transformation of curriculum?
- How do we get our graduates to be tech-ready?
- Technological innovations to be taught in universities? Techpreneurs?

Moving forward

COVID-19 endgame

Therapeutic

Prophylaxis

COVID-19 Vaccine

Vaccine Catch up

Booster dose

“Common cold” coronavirus infection… in children

Herd immunity

Infect – reinfect circle

Protect the high risk

Decreased hospitalization
Decreased deaths
Virus still circulate and mutate

Immune escape Variants

Permanently established in human

Conclusion

- Silver lining of the pandemic
  - The great reset
- Innovations at lighting speed
  - The great digital transformation
- ~~"Publish or perish"~~ "Innovate or perish"
  - The great mindset reset

TERIMA KASIH / *THANK YOU*

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