



Keynote

**MARY CURNOCK COOK** CBE

Chair, Dyson Institute of Engineering & Technology

@MaryCurnockCook

Winner of the EPC President's Prize

presented by Prof **JOHN MITCHELL**



@EngProfCouncil

#EANCongress24



# EAN Congress 2024 -Engineers for the future

## Cardiff University June 10th

### Mary Curnock Cook, CBE

#### Chair of the Dyson Institute of Engineering and Technology

## How long it took **100M people** to adopt...

Months

0 100 200 300 400 500 600 700 800 900 1000



Telephones

**75 years**



Mobile Phones

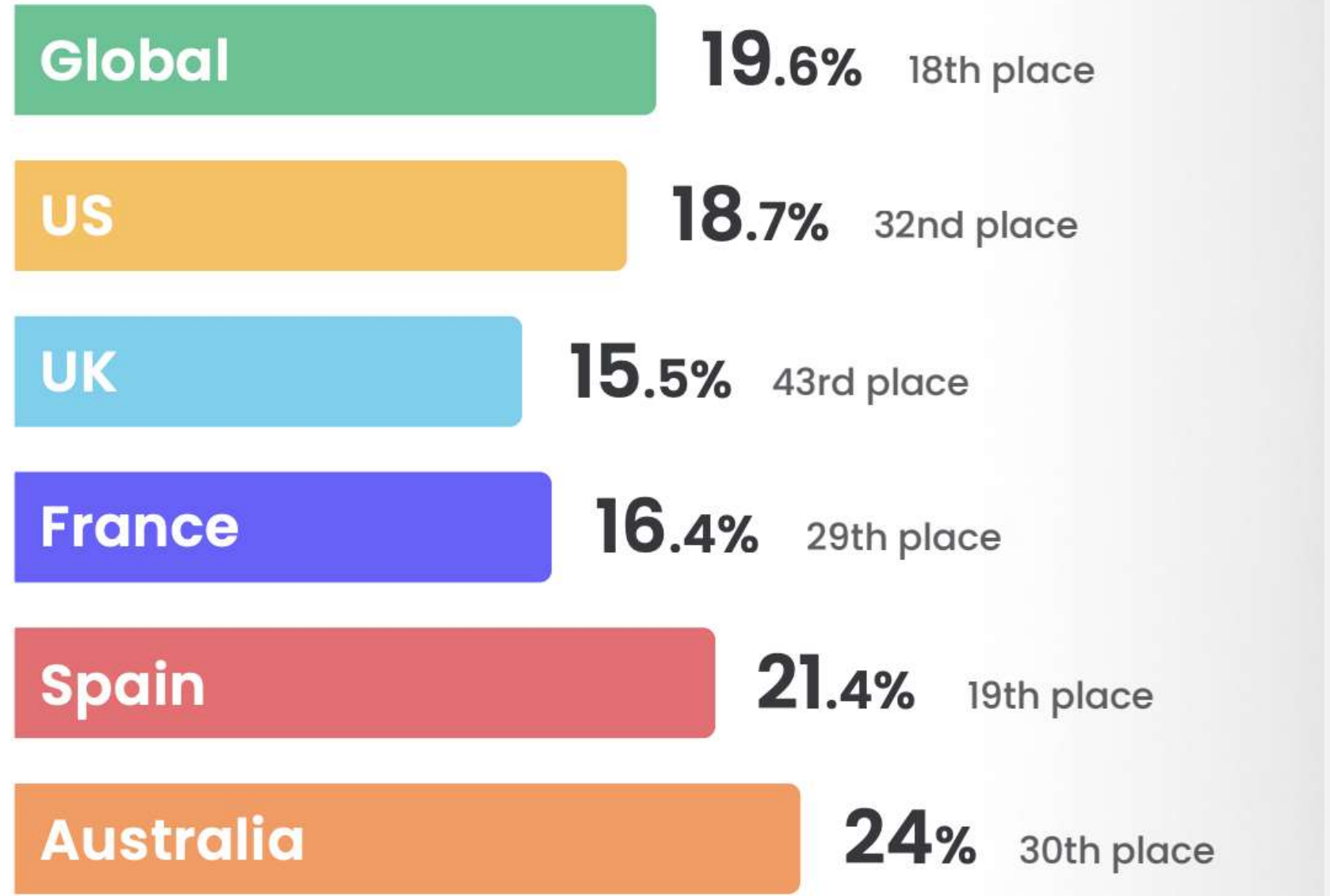
**16 years**



ChatGPT

**2 Months**

Open AI in 2023:  
% of kids using and  
overall website rank



Source: Qustodio

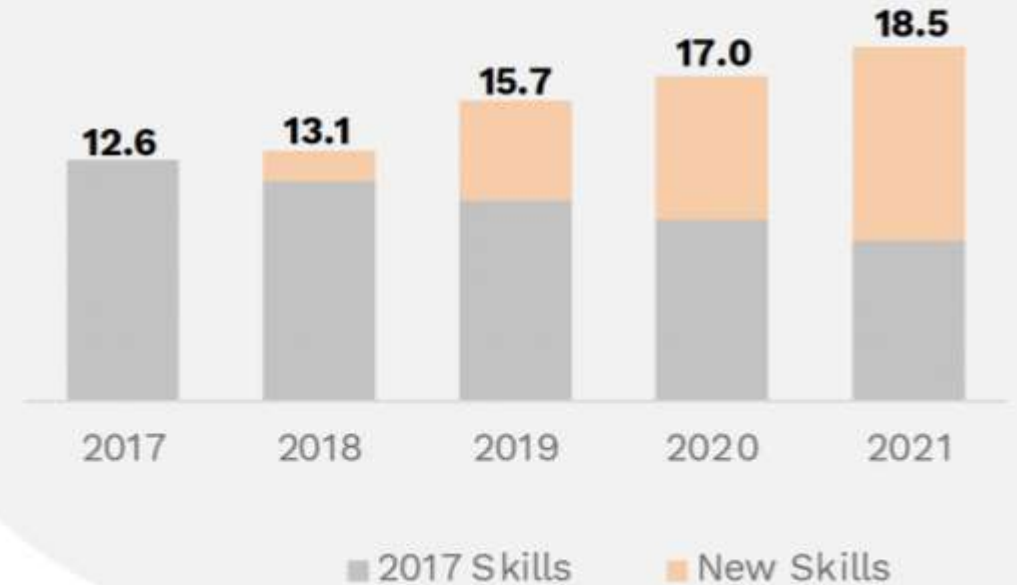


**25%**

Percent of change in skill sets for jobs since 2015.

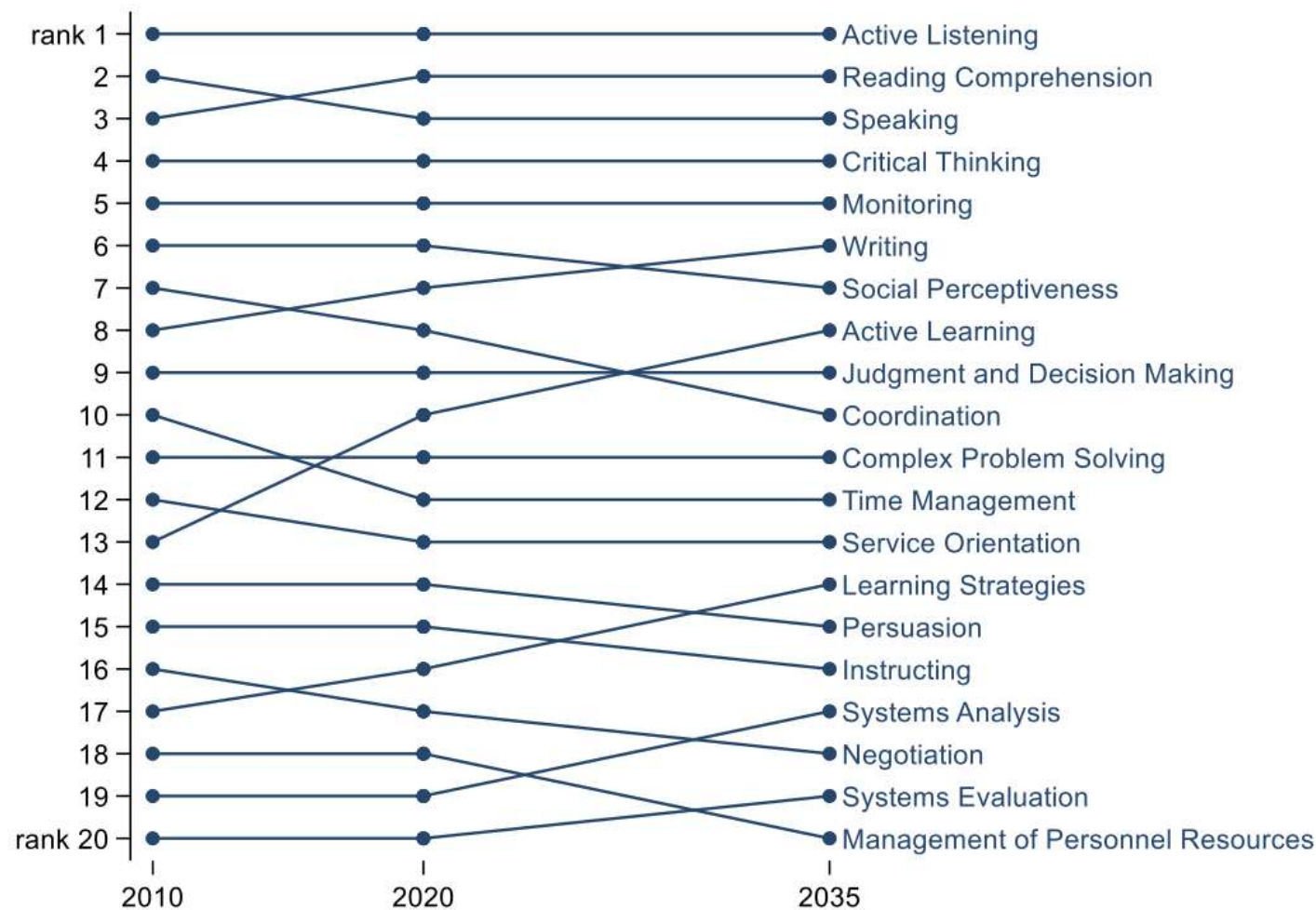
By 2027, this number is **expected to double.**

Average number of skills required for a single job has **increased 10% annually** since 2017



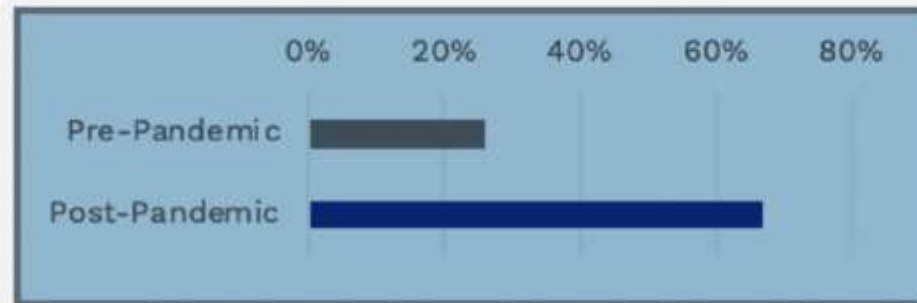
But the core skills aren't changing that much

Figure 23: Top 20 rankings – Skills (skill prevalence measure with linear projections)



Source: Skills Imperative 2035





Percentage of workers **empowered to take advantage of flexible working arrangements** before and after COVID

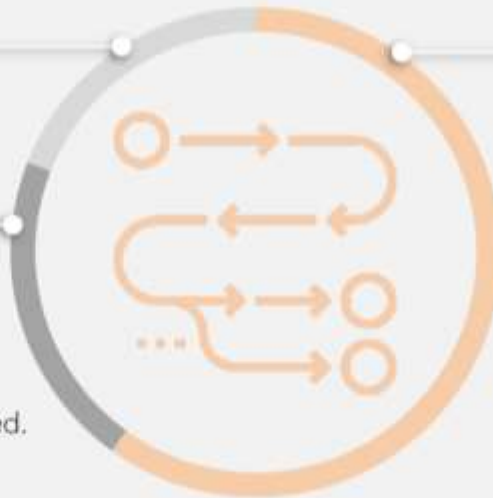
Source: McKinsey & ADP  
Research Institute

Workplaces are leaning away from rigid job structures and hierarchies, and **towards agile, flexible environments.**

### How business executives want to **organize work to create value** in the workplace

**19%**  
**Traditional Work**

**21%**  
**Broadened Work**  
When worker roles and responsibilities are structured around broad problems to be solved or outcomes to be achieved.



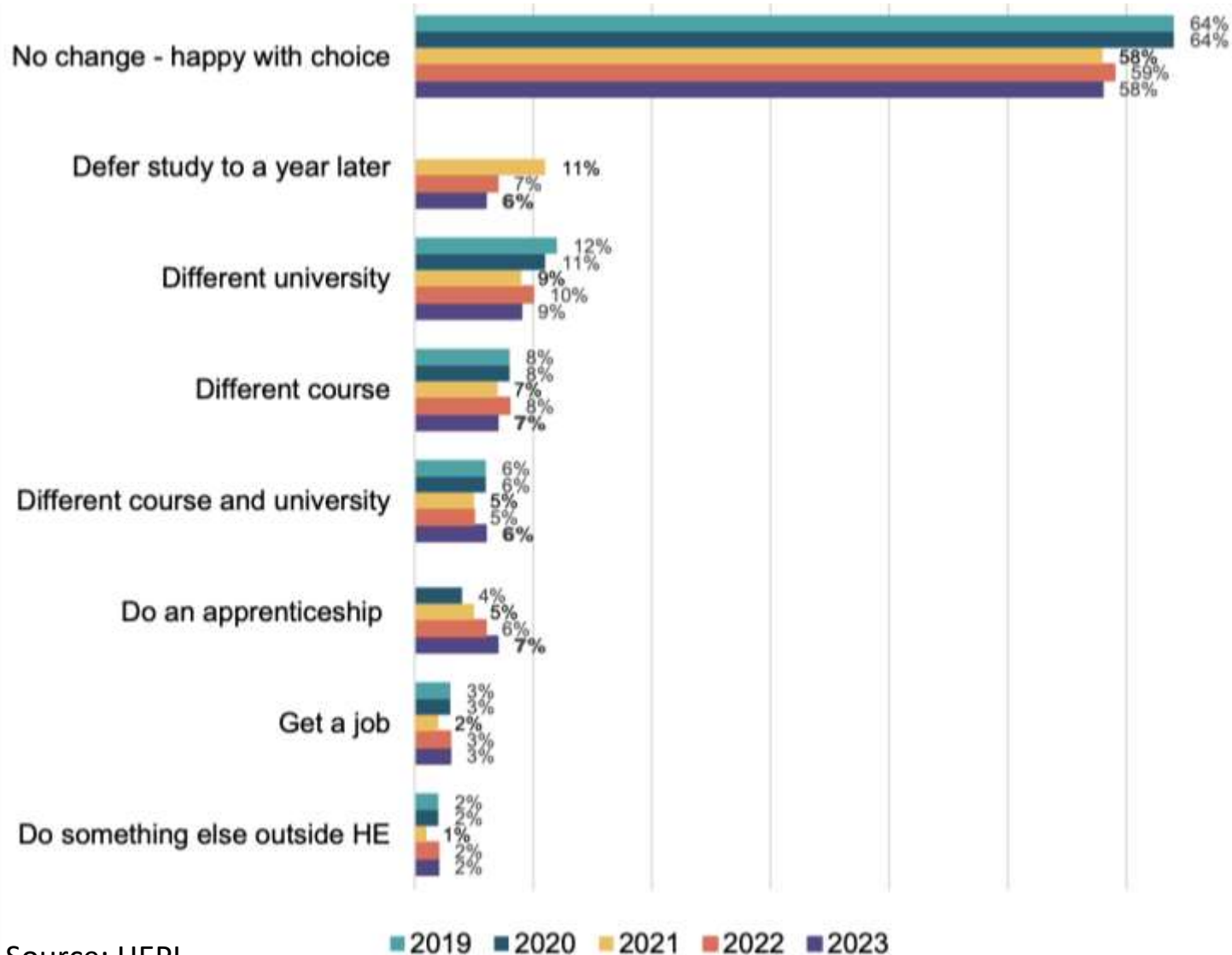
**60%**

of business executives believe **Fractionalized Work** is the best way to create value for workers and the organization.

This is when workers flexibly flow to tasks, assignments, and projects **based on their skills and interests.**

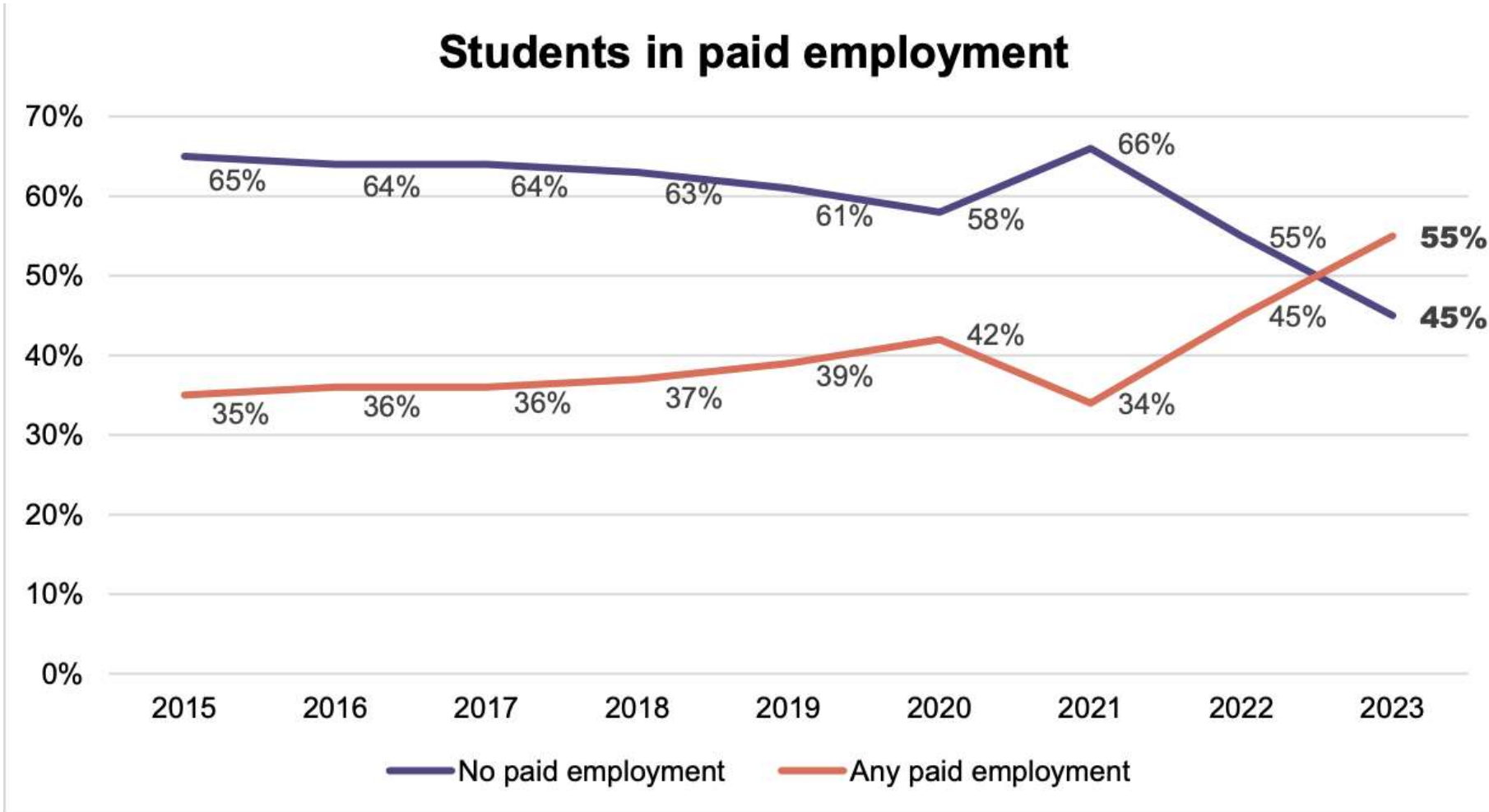


# Would students make the same choice again?



Source: HEPI

42% of students have regrets about their choices in 2023



Significant differences between 2022 and 2023 are in bold.

Source: HEPI



I feel we are all told a magical story of studying exciting things that we love, fun and socialising with friends and peers and leaving with a good job. I feel none of it is true. You have to pay huge sums to attend uni classes where course materials also cost and you could do it all online yourself for free. You have to work evenings after uni to make ends meet so you don't get to socialise.

You have to pay huge rent bills to private landlords to make them richer, while getting deeper in debt, eating poorly and having no assurance of anything above minimum wage when you leave.



"Every week my Tuesday looks like this: up at 2:30am, bus at 3:00, airport at 4:00, frying chicken until the afternoon. This is my regular shift working at KFC in Manchester Airport which suits my university life well. As I do not have any lectures or seminars on Tuesdays, I choose to do my weekly shift then so I can easily balance work and studying. Finding a workplace where you are able to decide what days you work on is really beneficial in the long term, especially as university timetables change every semester.

That brings me to my second part-time job, working as an events steward for a security company. This role is amazing in terms of flexibility, as my company allows employees to pick and choose which events you would like to work at from their extensive list. This is great because it allows me to go to events I am interested in, from festivals to football matches."

**“I don’t know if it’s for every uni, but for sports clubs like hockey, apparently its £150 something ridiculous, if you want to be on the team. I don’t think it’s accessible for everyone.”**

**“Sometimes I miss uni because I’ll prioritise taking a shift over university, just because the amount of rent to pay is crazy and you don’t get enough support for that”**

**“I’ve had to compromise taking classes that I wanted to just because it doesn’t fit with my work schedule”**

More students are working, and working for more hours

1

Engagement in social, volunteering sports and clubs is declining

2

Students' attendance is declining too as they forego lectures and seminars for shifts

3

Engagement with career service suffers

4

More students live at home and commute

5

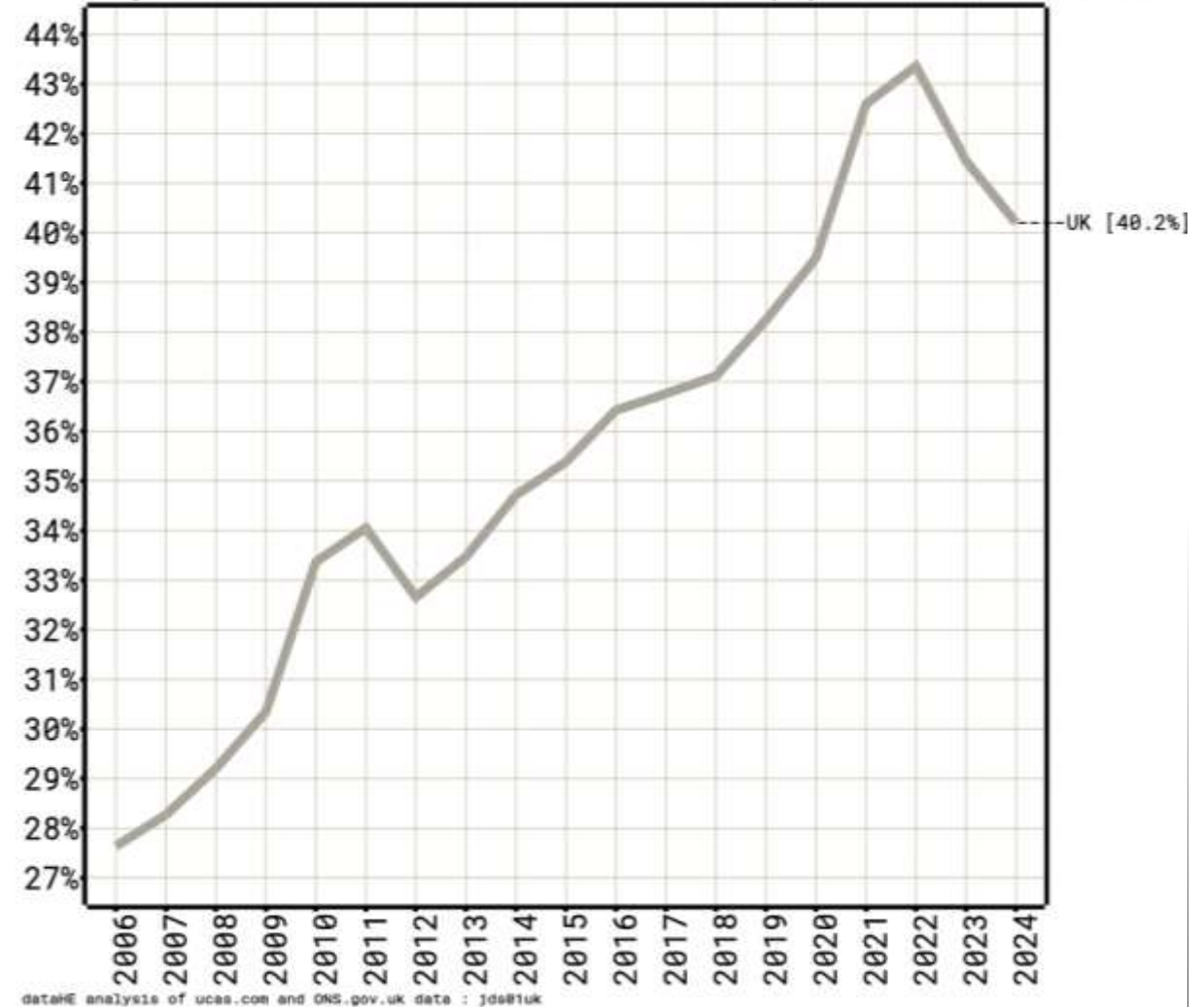
University becomes transactional

6



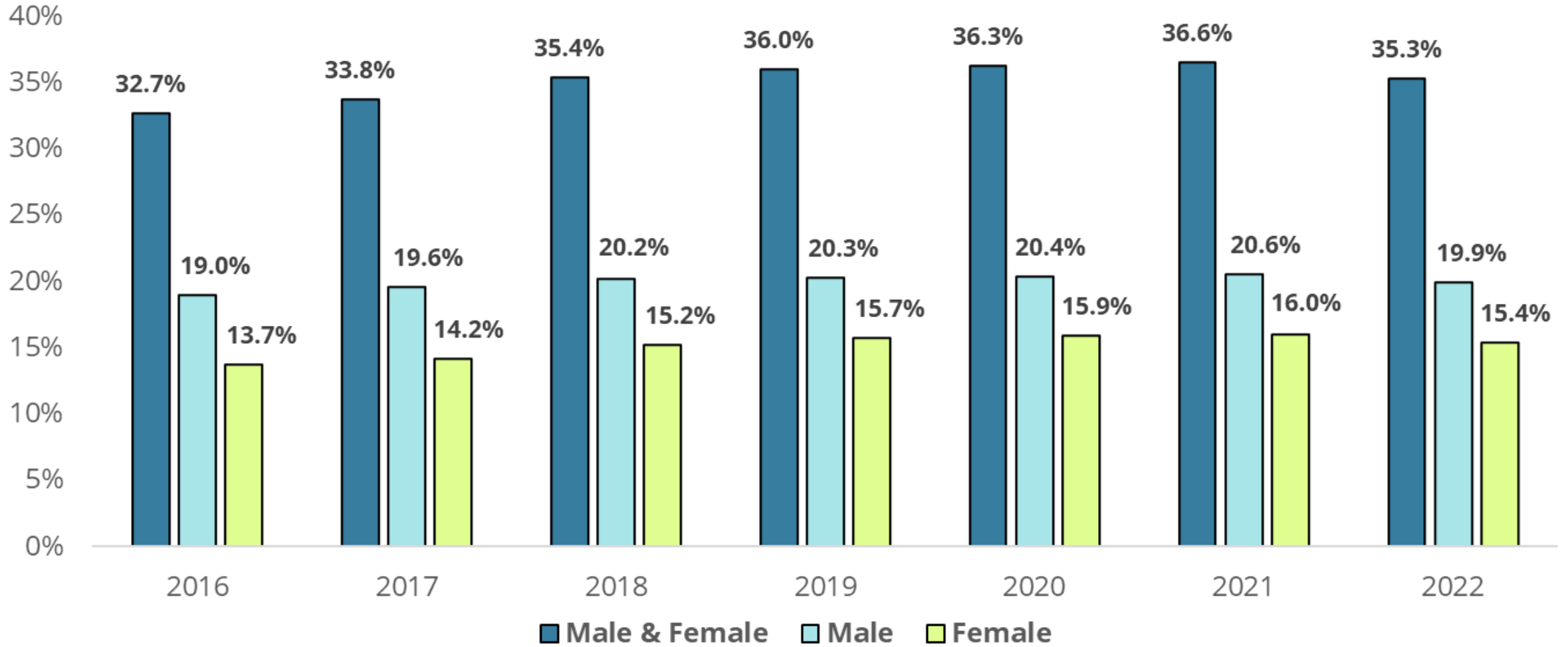
Application rates from 18-year-olds are dropping.

18 year old UCAS application rates  
January deadline UK domiciled [MYE/NPP18 population estimates]



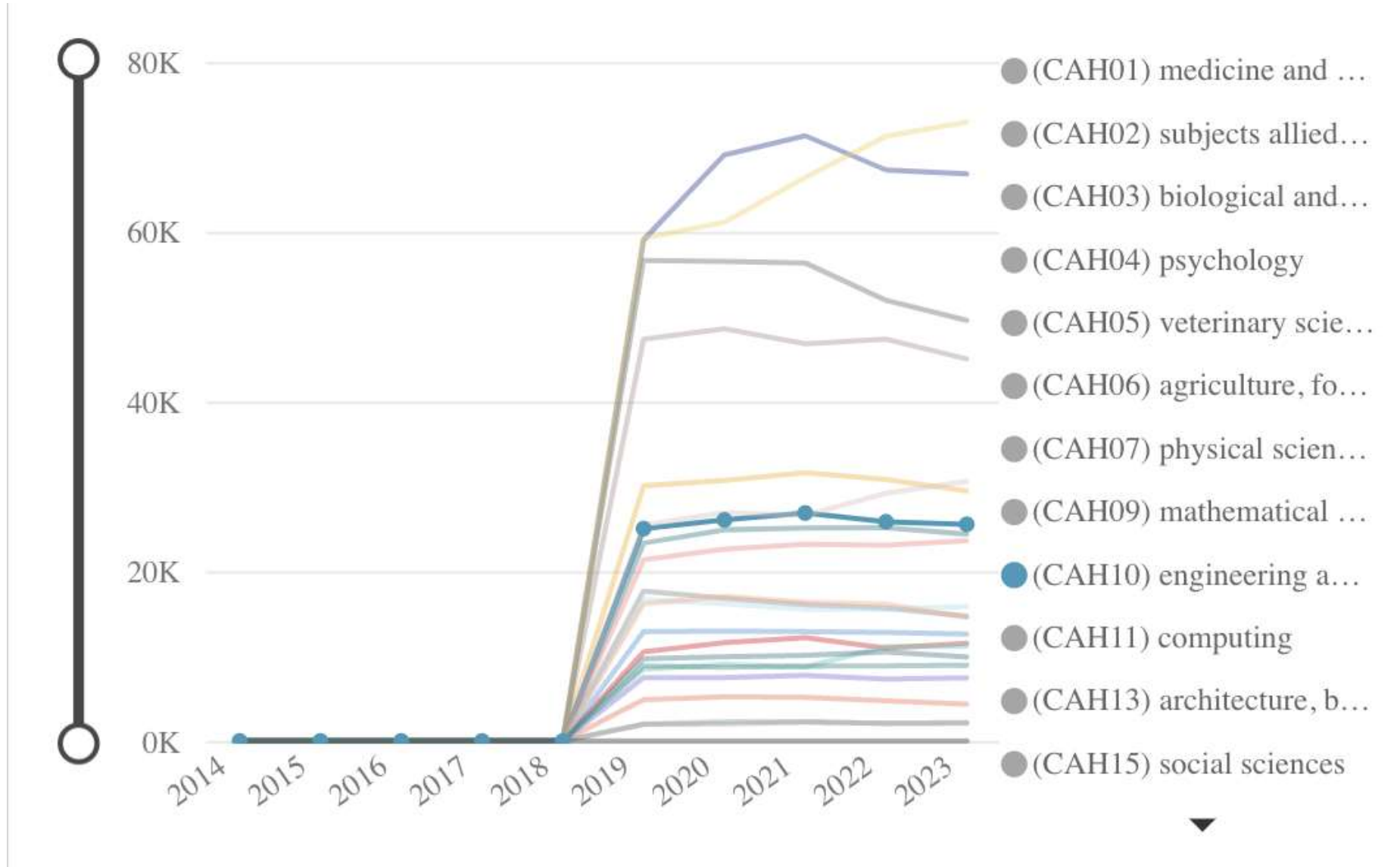
Source: DataHE

# STEM A-Level science entries in England, as a share of total A-level entries



Source: Pearson analysis of JCQ data

# Undergraduate Engineering accepts (UK Domiciled)



Source: UCAS explorer

1

Make skills for  
employability more  
visible

2

Timetabling to  
acknowledge working  
hours

3

Extending careers  
service to cover work  
*during* studies as well  
as *following*  
graduation

4

Flexing the three-year  
"full-time" model using  
Lifelong Learning  
Entitlement (LLE)

5

Making 'switching'  
easy

Typically A-level leavers with straight A's in maths, physics and another subject

1

32% of students are women

2

82% state educated, 10% were entitled to free school meals and 15% were entitled to low income benefits

3

1. Full Taught Degree Awarding Powers

We have been awarded this by the Office for Students, three years after first delivering our independent programme.

2. Outstanding Ofsted grade

In their final report, Ofsted said that the “training provided to apprentices is of the highest standard and helps to create world-class engineers.”



3. Engineering accreditation

IET Accreditation is recognised as a global standard for high quality engineering programmes and independent validation that the Institute is delivering and awarding degrees to a high standard.

**Full DAPS**

**Ofsted  
Outstanding**

**IET Accredited**



2017-2023

BEng Engineering Degree  
Apprenticeship

2024 onwards

MEng employer  
sponsored degree



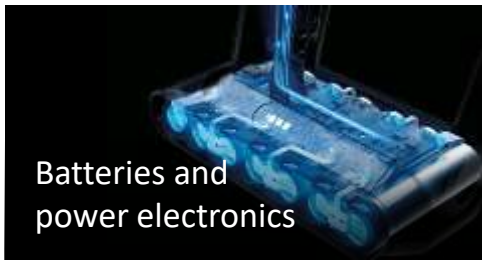
Home

Beauty

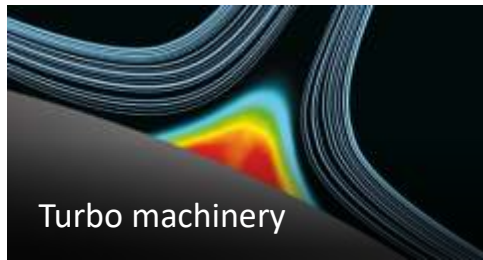
Wearables



Dyson Hyperdymium motor



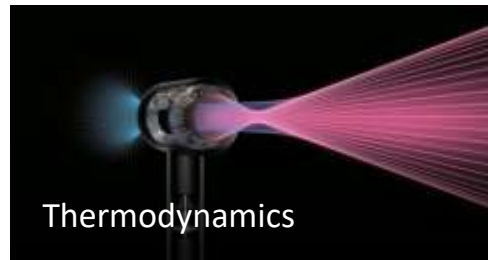
Batteries and power electronics



Turbo machinery



Acoustics



Thermodynamics



Energy storage



Robotics



Software and algorithms



Embedded electronics



Filtration



Biomedical



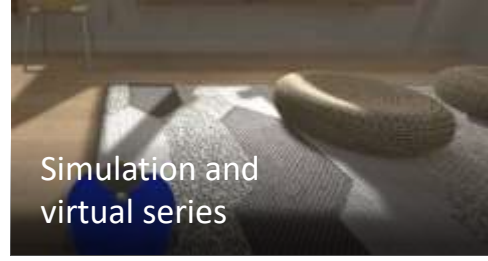
Materials



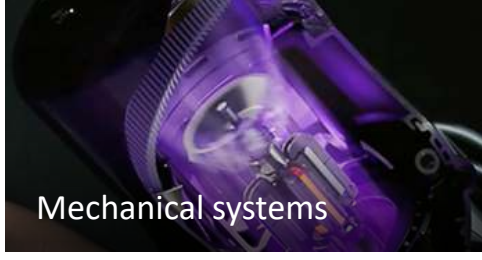
Mechanistics



Connectivity



Simulation and virtual series



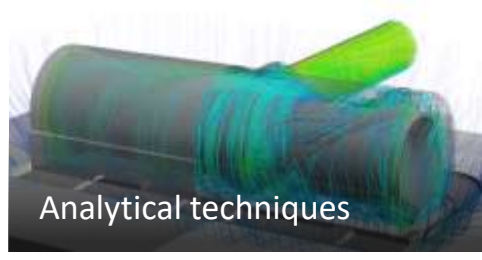
Mechanical systems



Mechatronics



Mobile apps



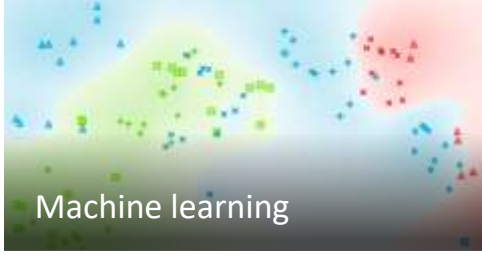
Analytical techniques



Separation systems



Sensor algorithms



Machine learning



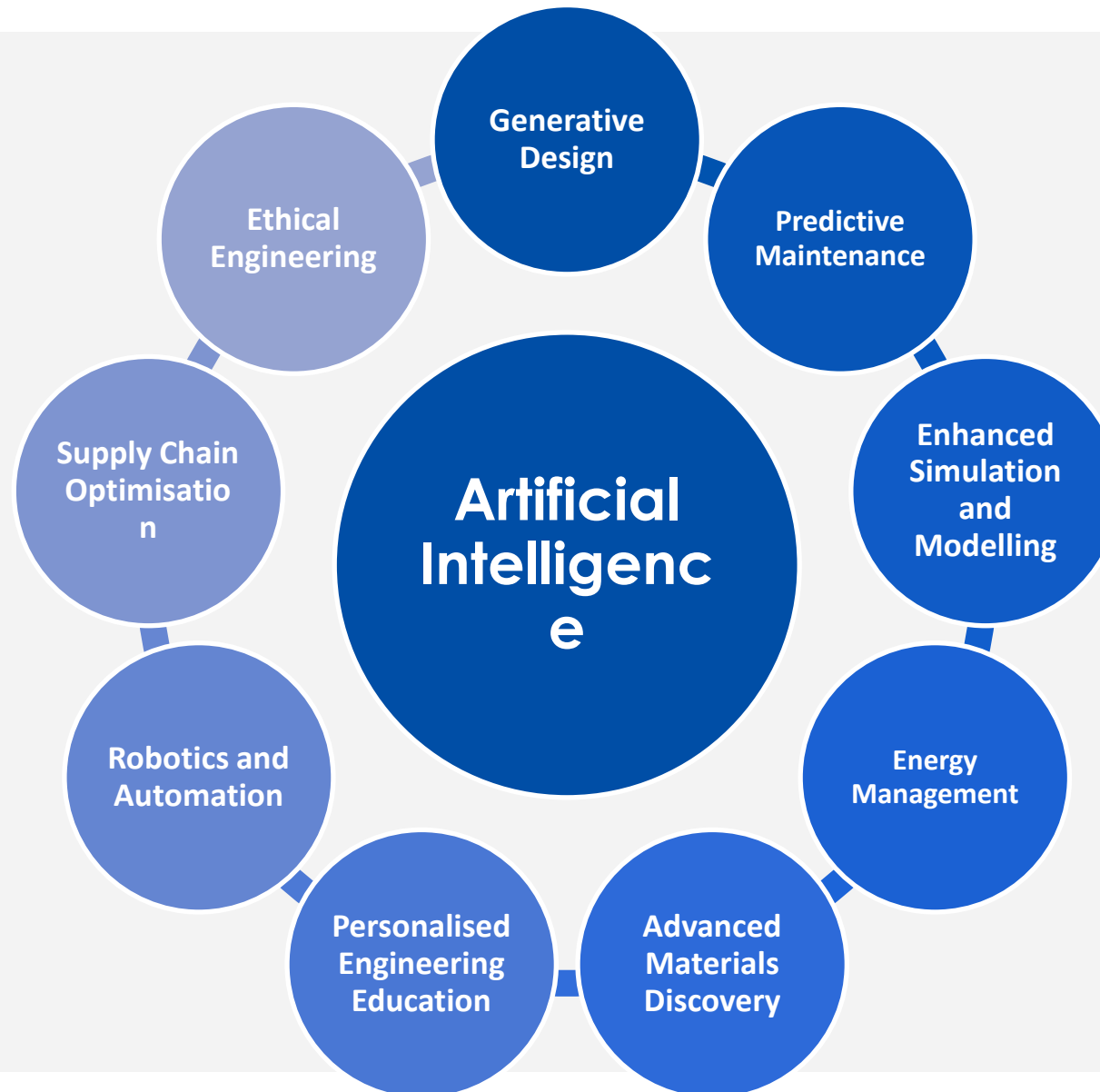
Audio



Pick-up systems



Chemistry and formulations





## Wellbeing and Development days



## Summer Series



## Speaker Series

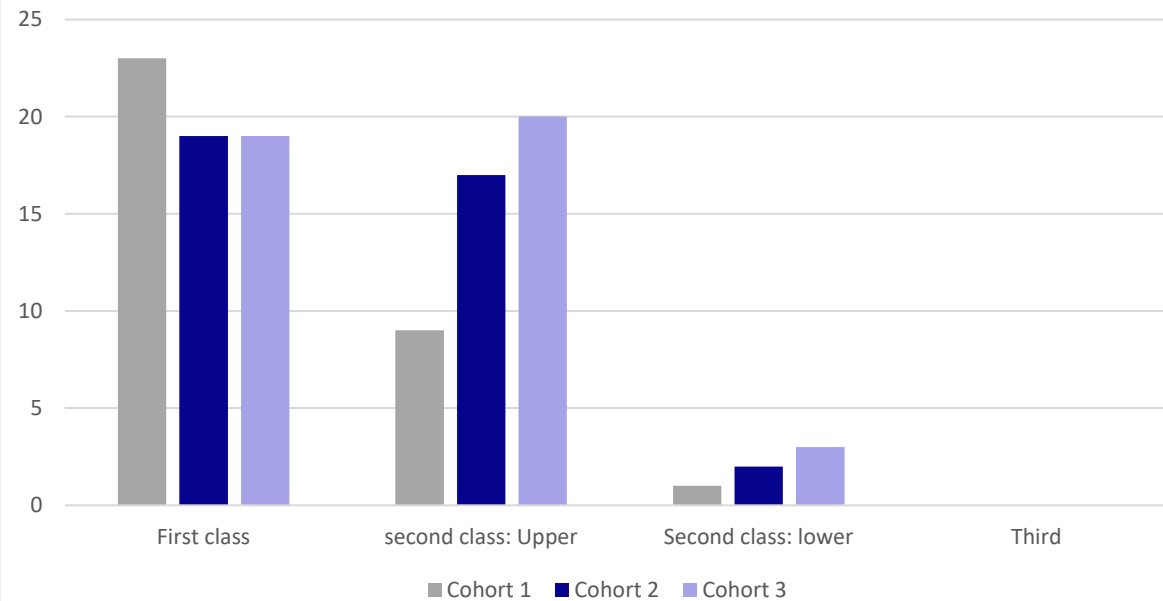


Progression

- 96% of learners have progressed to their next year of study

Outcomes

Degree classifications cohort 1 - cohort 3 (WMG)



Careers

- All graduates have moved into full time employment
- 96% of graduates have moved into engineering roles with Dyson
- Graduates are highly valued by the Dyson business





# Thank you

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