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THE EU CYBERSECURITY AGENCY

CYBERSECURITY
HIGHER EDUCATION
DATABASE

CYBERHEAD
KEY INSIGHTS

21 | 09 | 2022

QUESTION

How many cybersecurity related programmes are there in Europe?

(Bachelor and Master programmes)

100   200   300

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QUESTION

What would you suggest to a young person that wants to study cybersecurity?

A. To check the local university.

B. To get a computer science degree first.

C. I know a few universities that offer cybersecurity programmes.

D. Hmm... I haven't thought about it ...

CYBERSECURITY HIGHER EDUCATION DATABASE

Crowd-sourced database of cybersecurity related education programmes:
the largest and updated cybersecurity point of reference for citizens looking to upskill their knowledge in the cybersecurity field

Collaboration with EU research projects

120+ cybersecurity programmes

CYBERHEAD

CYBERSECURITY HIGHER EDUCATION DATABASE

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Search for resources, tools, publications and more

TOPICS ▾   PUBLICATIONS   TOOLS   NEWS   EVENTS   ABOUT ▾   WORK WITH ENISA ▾   CONTACT

Home > Topics > Cybersecurity Education and Awareness > CYBERHEAD - Cybersecurity Higher Education Database

CYBERHEAD - Cybersecurity Higher Education Database

Explore Programmes   **+ Add Programme**   FAQ   Statistics   Login

1. Programme Name *

2. Institution Name *

3. Type of programme *

○ Bachelor Degree   ○ Master Degree   ○ Postgraduate Course

4. Delivery method *

○ Online   ○ Classroom   ○ Blended

5. Language *

Choose here ▾

6. City *

7. Country *

Choose here ▾

8. Programme Website URL *

9. Programme Description *

Please provide further information that may be of interest to candidate students. This information should not exceed 400 characters and should be written in the programme's language.

10. When was the programme established? *

2021

Thank you for your interest in the Cybersecurity Higher Education Database, powered by ENISA. If you wish to add an entry to the database, please follow the instructions below.

1. Before starting, you need to make sure the programme is relevant to the scope of the Database. A programme is relevant to the purpose of the database if:

- For a **bachelor's degree** : at least 25% of the taught modules are in cybersecurity topics

- For a **master's degree**: at least 40% of the taught modules are in cybersecurity topics

- For a **postgraduate specialization programme outside the Bologna-degree structure** : at least 40% of the taught modules are in cybersecurity topics and the programme has a minimum of 30 ECTS

A cybersecurity topic corresponds to any of the topics that might fall within the remit of the knowledge areas of the Cybersecurity Curricula 2017 developed by the Joint Task Force on Cybersecurity Education.

Based on the information submitted, ENISA might ask further evidence in order to verify the validity of the entries. The submitter will be informed when the validation has been successfully completed and the programme will be listed in the database. The information provided might be used for follow-up analysis regarding cybersecurity education and skills development.

2. **To successfully add your programme, you need to complete all the mandatory fields marked with *.** However, we suggest to complete as many fields as possible, as courses will be ranked based on the amount of information provided, i.e. courses with all fields completed appear higher on the list.

3. ENISA, in order to analyse and monitor the cybersecurity workforce problem, collects data related to the number of students graduating from or studying towards cybersecurity degrees, to be used for the generation of statistical data. Note that the number of students for each programme will not be publicly listed on the database.

Software Systems and Services Management - Management of Cybersecurity

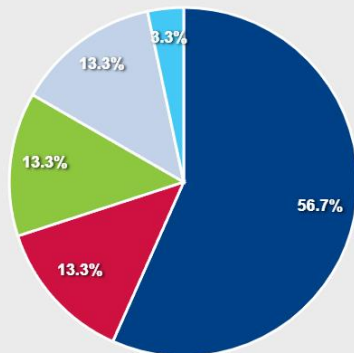Masaryk University
Brno, Czech Republic

Master Degree

🌐 English 📍 Classroom 🖃 Charges Apply

Visit Programme's Website

Share on: f in 🐦

120 Total ECTS ℹ

- Security Computing / Engineering
- Law, Ethics, Policy,Cybercrime
- Organizational, Risk management, Business compliance
- Internship
- Other

Programme Description:

Specialization "Cybersecurity Management" takes into account the aspects of computer data processing beyond the well-defined system perimeters (e.g., critical infrastructure impact), reflected in the area of cyber-security and allowing a specific multi-disciplinary overlap of both technical and social and legal aspects of cyber-security.

Established in:

2019

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CHECK CYBERHEAD!

What would you suggest to a young person that wants to study cybersecurity?

"You can find cybersecurity related programmes based on your preferences in ENISA's CyberHEAD!"

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ANALYSING THE PROGRAMMES
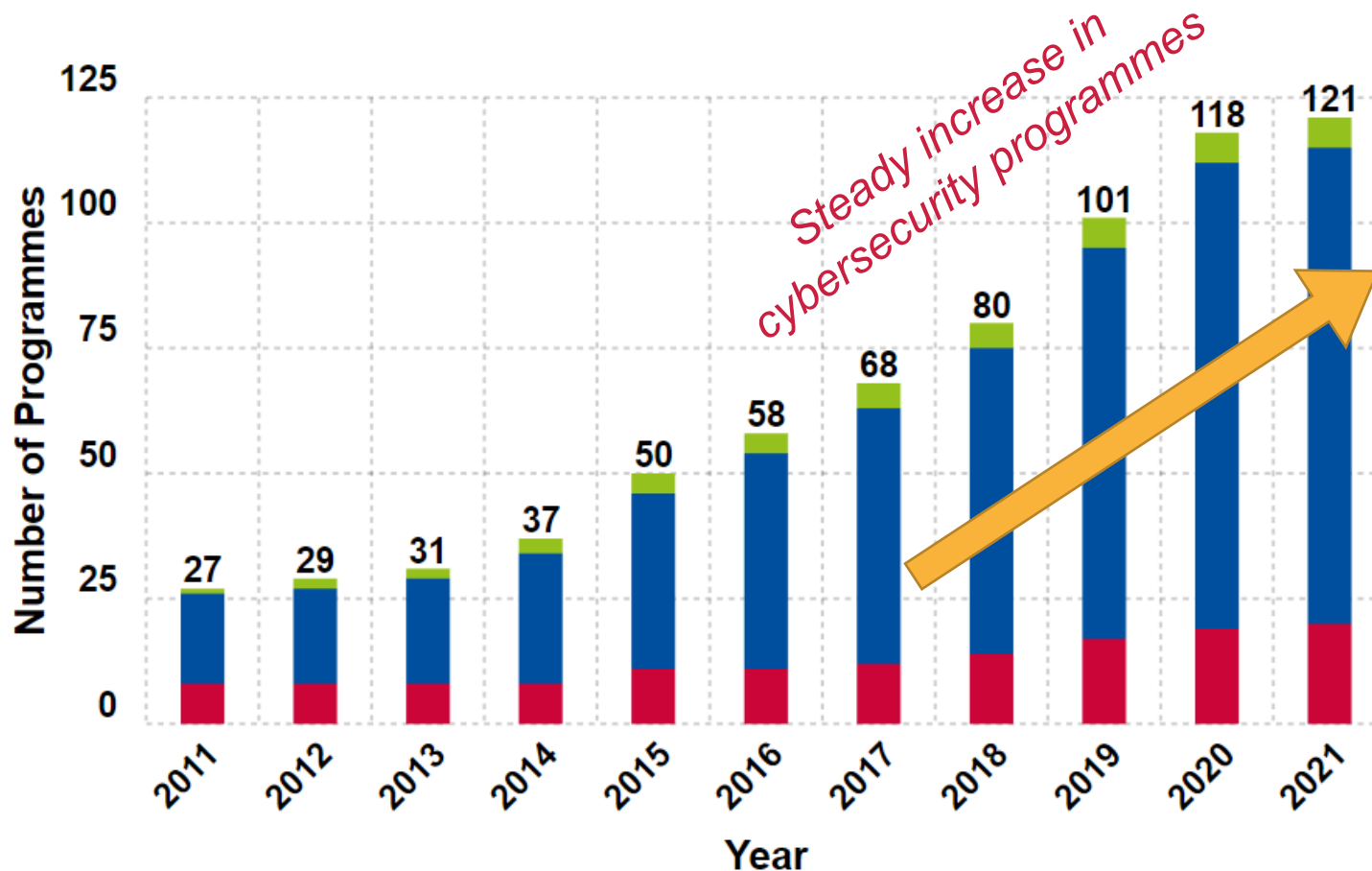
Monitoring the cybersecurity state in Europe

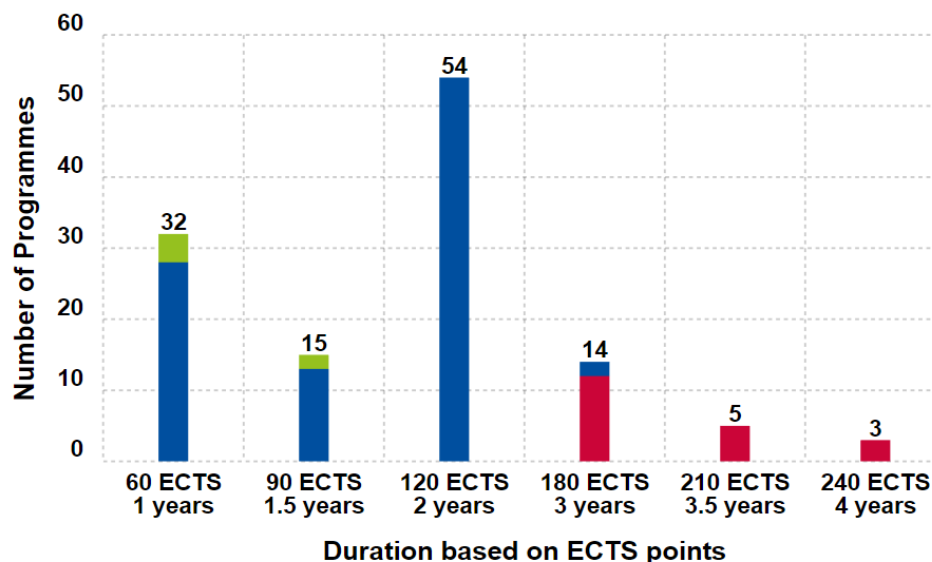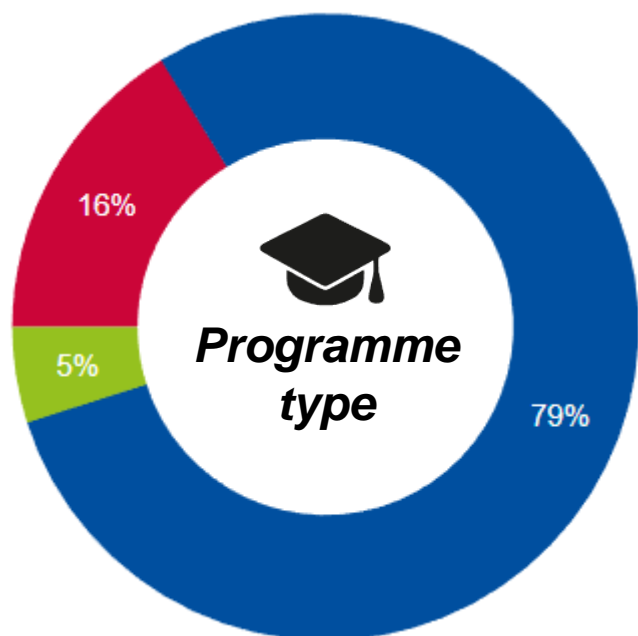# MONITORING THE NUMBER OF CYBERSECURITY PROGRAMMES

CYBERHEAD
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HIGHER EDUCATION
DATABASE

Steady increase in cybersecurity programmes

Number of Programmes vs Year:
- 2011: 27
- 2012: 29
- 2013: 31
- 2014: 37
- 2015: 50
- 2016: 58
- 2017: 68
- 2018: 80
- 2019: 101
- 2020: 118
- 2021: 121

■ Bachelor Programmes (20)   ■ Master Programmes (97)   ■ Postgraduate Programmes (6)

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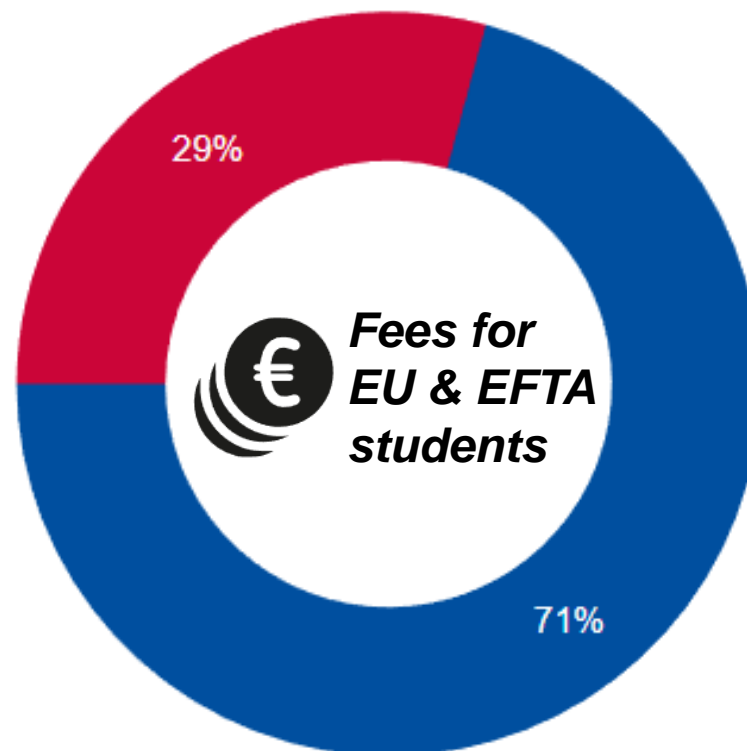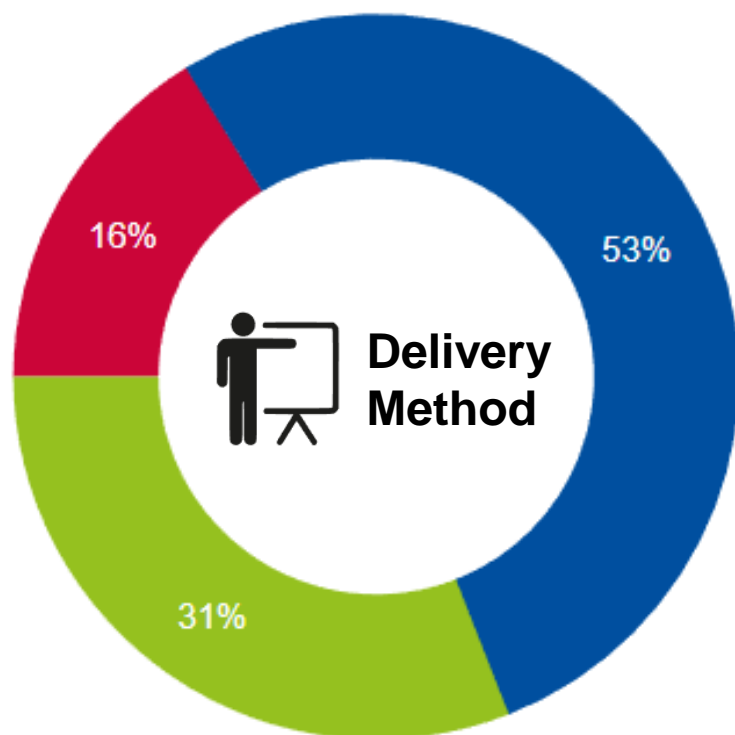
MONITORING TYPE & DURATION OF CYBERSECURITY PROGRAMMES

*Most of the programmes are **Masters** and feature a **2-year** duration (120 ECTS)*

MONITORING THE ACCESSIBILITY OF CYBERSECURITY PROGRAMMES

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Most of the programmes prefer **physical lectures** *and* **apply charges**

Delivery Method

16%
53%
31%

■ Online (20) ■ Classroom (65) ■ Blended (38)

Fees for EU & EFTA students

29%
71%

■ Free (36) ■ Charges apply (87)

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MONITORING THE ACCESSIBILITY OF CYBERSECURITY PROGRAMMES

*Most of the programmes are taught in **English***

Number of Programmes (number & percentage)

Bulgarian: 1 (1%)
Czech: 4 (3%)
English: 50 (41%)
Finnish: 2 (2%)
French: 6 (5%)
German: 10 (8%)
Greek: 5 (4%)
Hungarian: 1 (1%)

Italian: 9 (7%)
Lithuanian: 2 (2%)
Norwegian: 1 (1%)
Polish: 2 (2%)
Portuguese: 5 (4%)
Romanian: 2 (2%)
Spanish: 22 (18%)
Swedish: 1 (1%)

MONITORING COURSES ORIENTATION ON CYBERSECURITY PROGRAMMES

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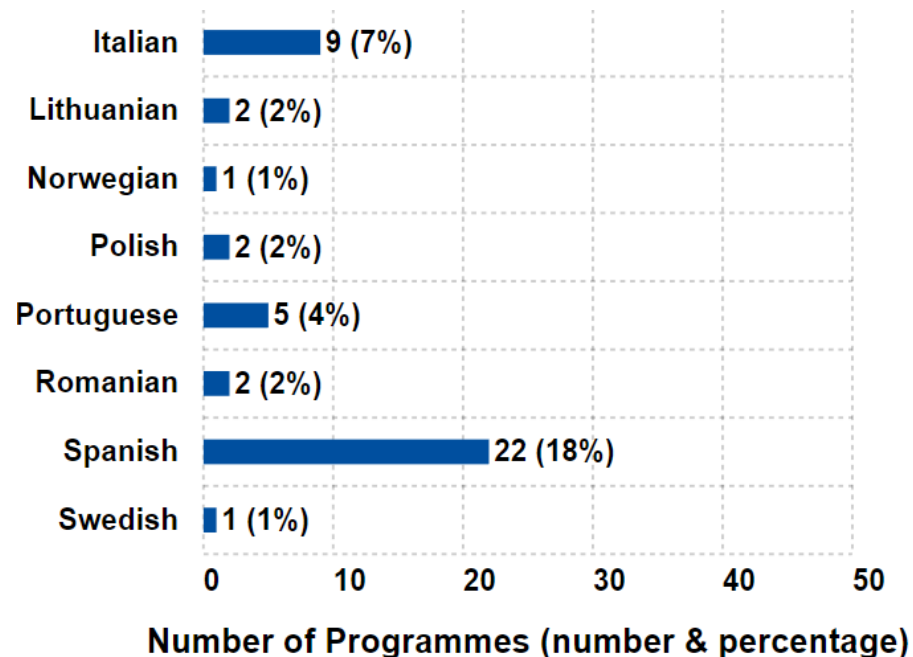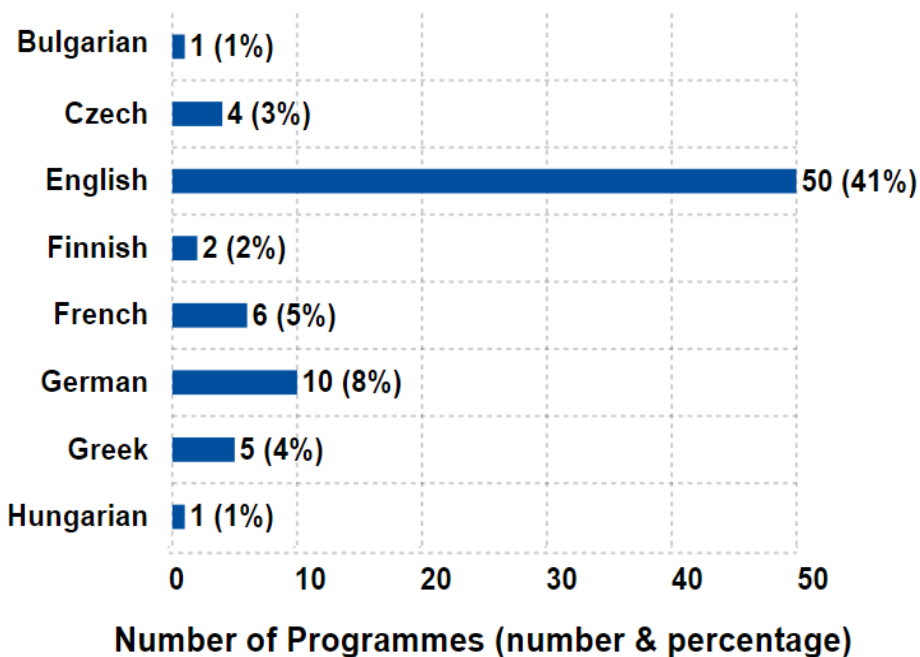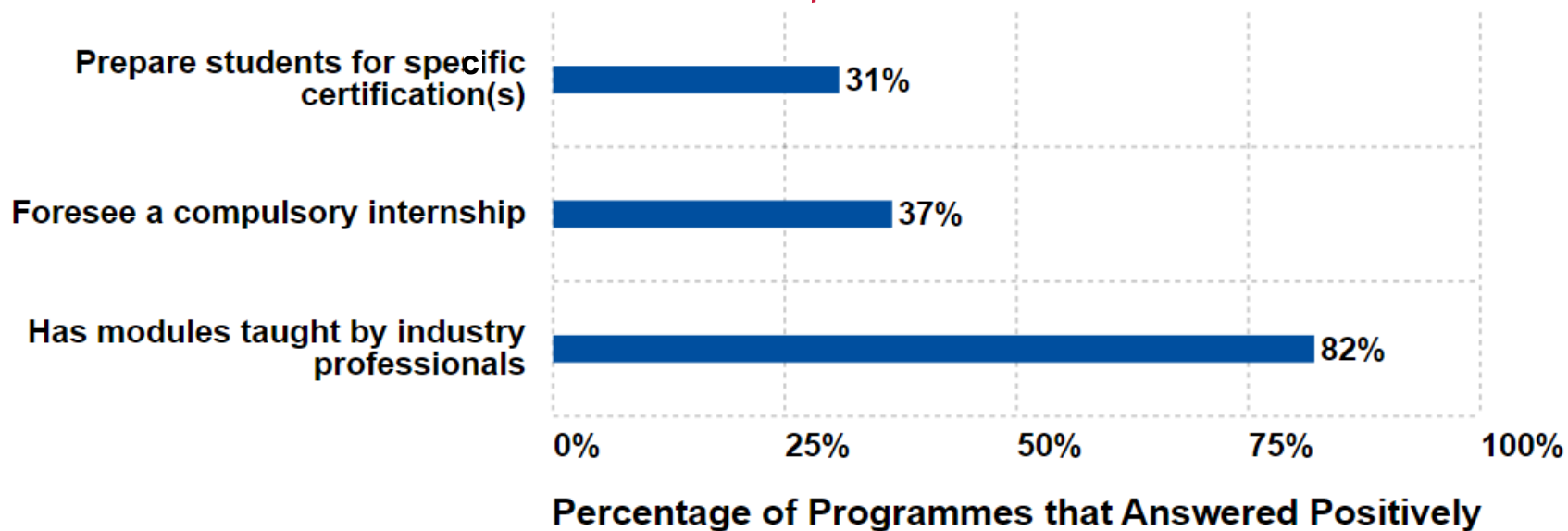
PROGRAMMES AVERAGE ECTS ALLOCATION

Most programmers' content is dedicated to Security Computing/Engineering disciplines

- Security Computing/Engineering
- Law, Ethics, Policy, Privacy, Cybercrime
- Organizational, Risk Management, Business, Compliance
- Internship
- Other

48%
10%
12%
6%
25%

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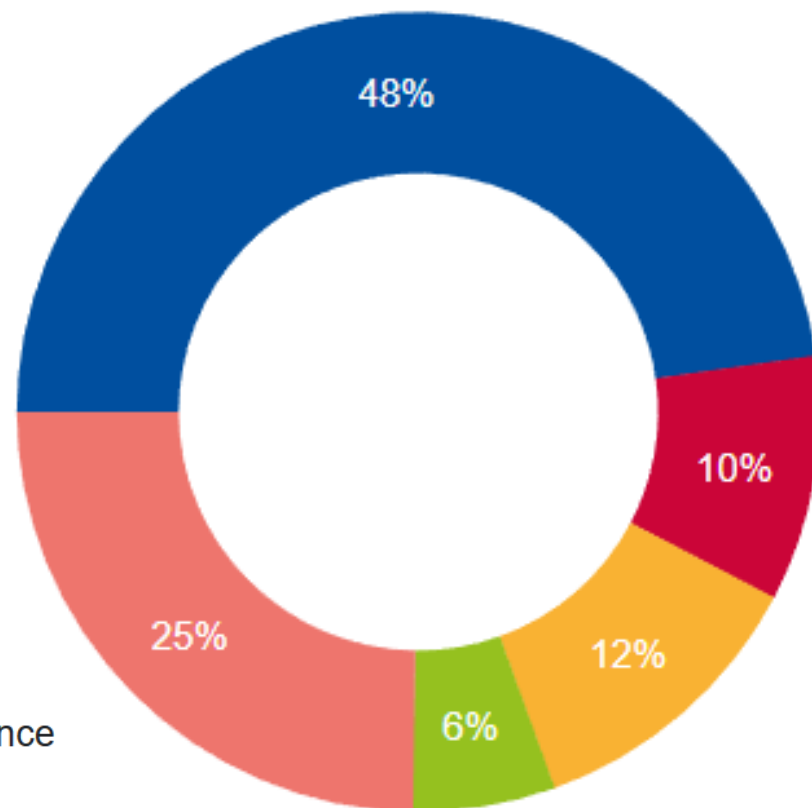
MONITORING PREPARATION FOR THE WORKING ENVIRONMENT

Most programmes contain modules that are taught by cybersecurity professionals

Prepare students for specific certification(s)	31%
Foresee a compulsory internship	37%
Has modules taught by industry professionals	82%

0%   25%   50%   75%   100%

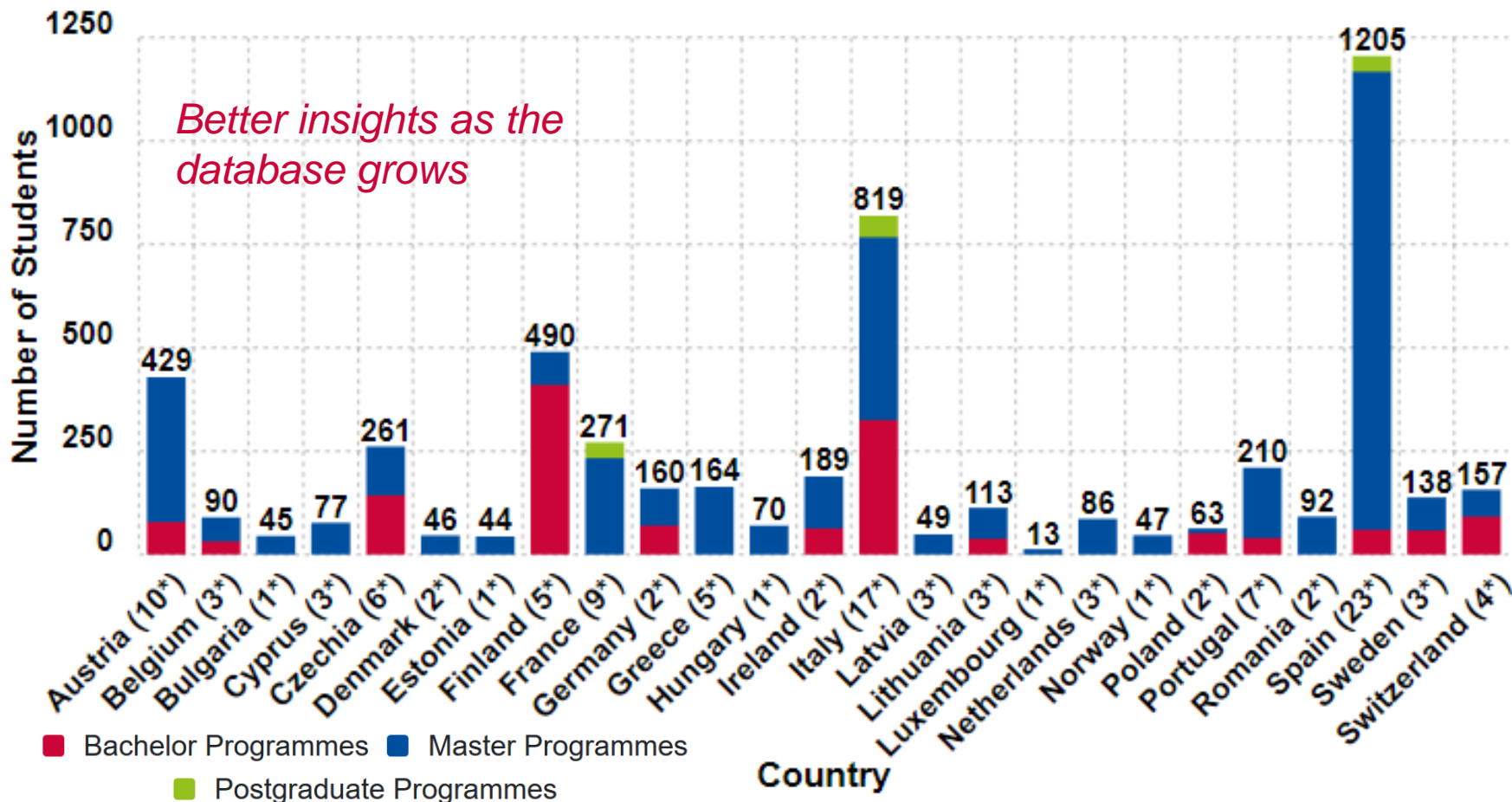**Percentage of Programmes that Answered Positively**

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ANALYSING THE PROGRAMMES

Monitoring enrolments and graduates in Europe

MONITORING ENROLMENTS IN CYBERSECURITY PROGRAMMES
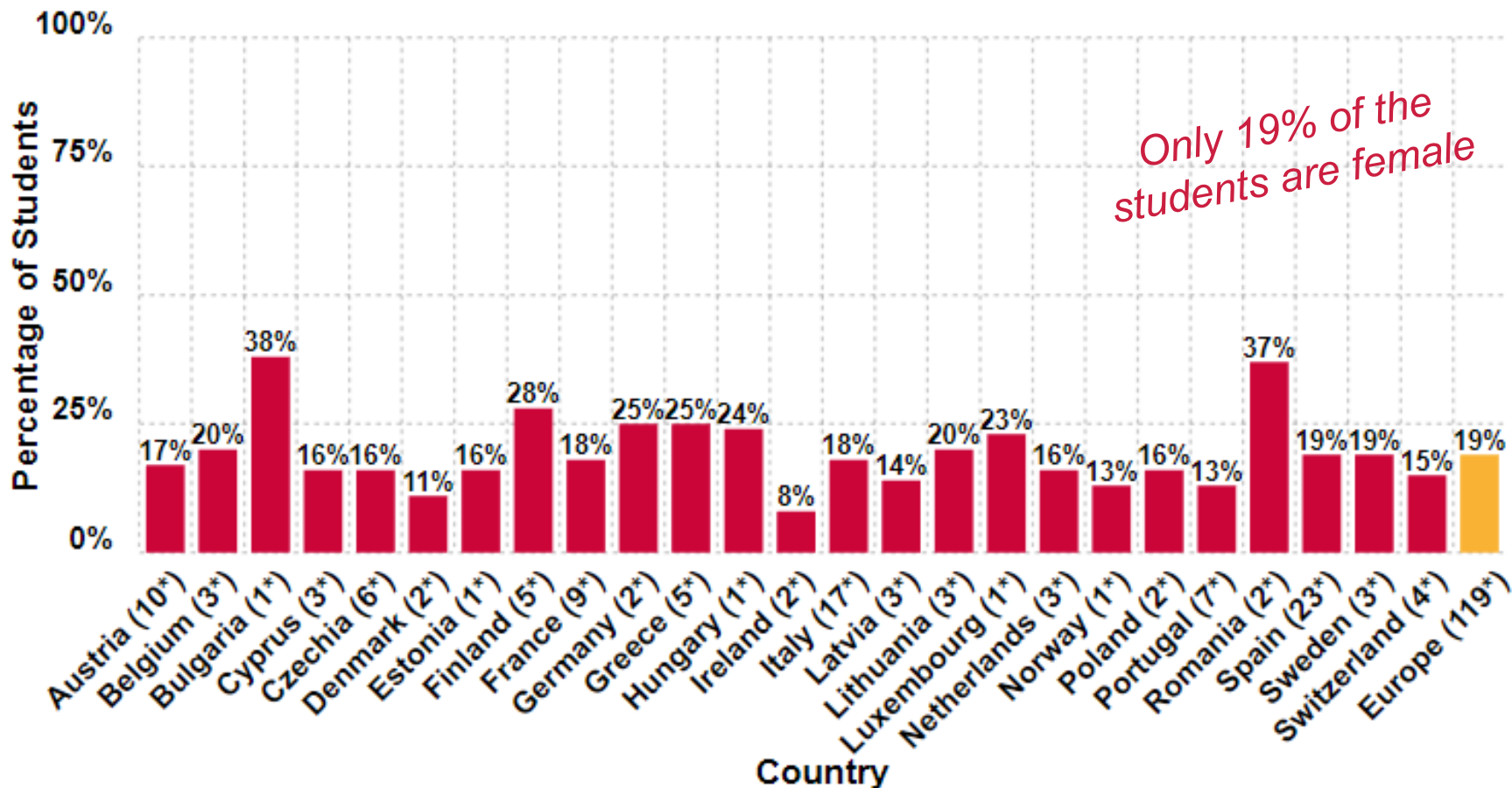
NEW STUDENTS ENROLLED IN 2021 BY COUNTRY

Better insights as the database grows

Number of Students

- ■ Bachelor Programmes
- ■ Master Programmes
- ■ Postgraduate Programmes

Country

Data values by country:
- Austria (10*): 429
- Belgium (3*): 90
- Bulgaria (1*): 45
- Cyprus (3*): 77
- Czechia (6*): 261
- Denmark (2*): 46
- Estonia (1*): 44
- Finland (5*): 490
- France (9*): 271
- Germany (2*): 160
- Greece (5*): 164
- Hungary (1*): 70
- Ireland (2*): 189
- Italy (17*): 819
- Latvia (3*): 49
- Lithuania (3*): 113
- Luxembourg (1*): 13
- Netherlands (3*): 86
- Norway (1*): 47
- Poland (2*): 63
- Portugal (7*): 210
- Romania (2*): 92
- Spain (23*): 1205
- Sweden (3*): 138
- Switzerland (4*): 157

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MONITORING GRADUATES IN CYBERSECURITY PROGRAMMES

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GRADUATES IN 2021 BY COUNTRY

Better insights as the database grows

- ■ Bachelor Programmes
- ■ Master Programmes
- ■ Postgraduate Programmes

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MONITORING THE GENDER BALANCE IN CYBERSECURITY PROGRAMMES

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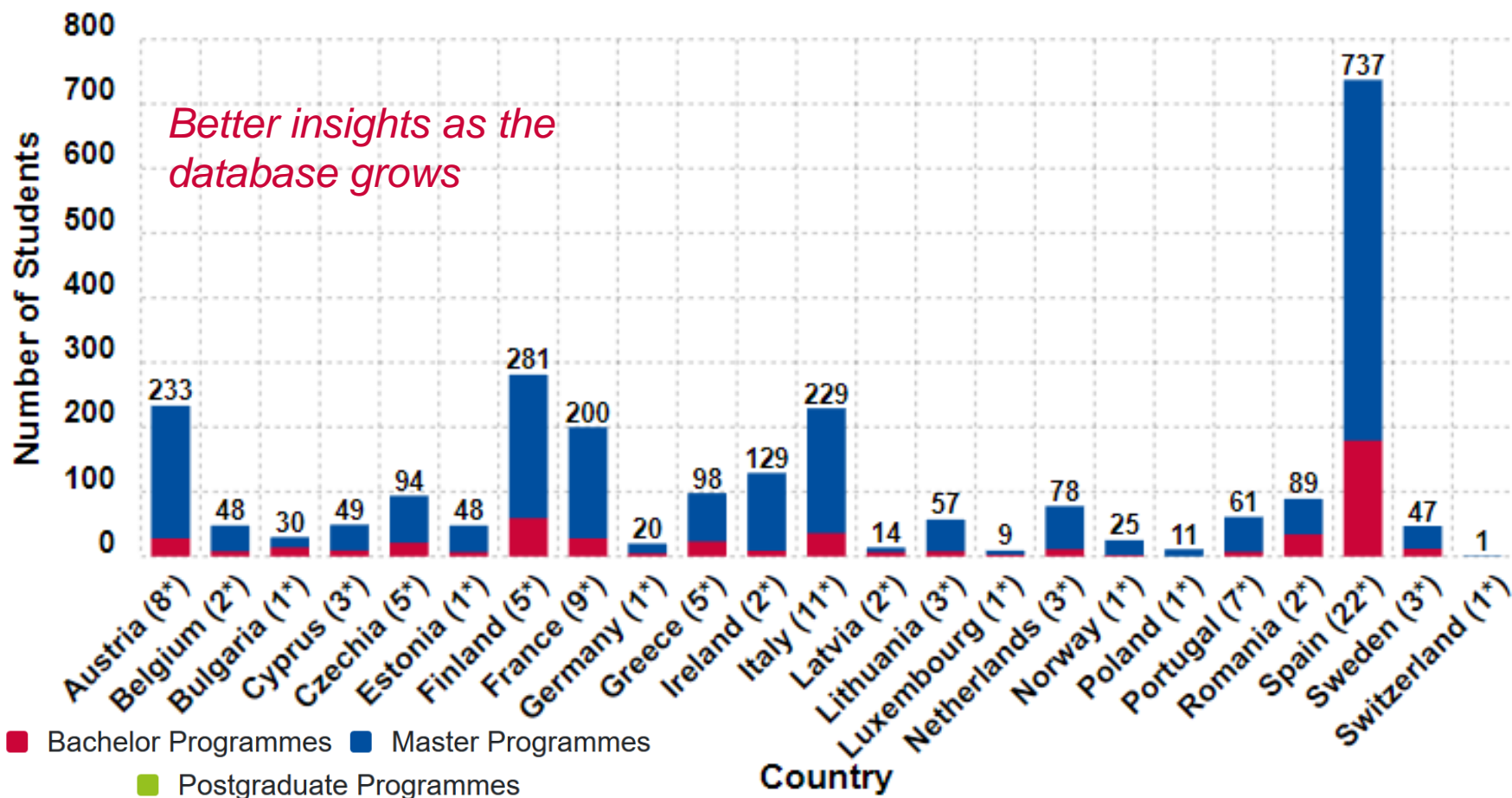
FEMALE PERCENTAGE OF 2021 ENROLMENTS

Only 19% of the students are female

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MONITORING THE GENDER BALANCE IN CYBERSECURITY PROGRAMMES

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FEMALE PERCENTAGE OF 2021 GRADUATES
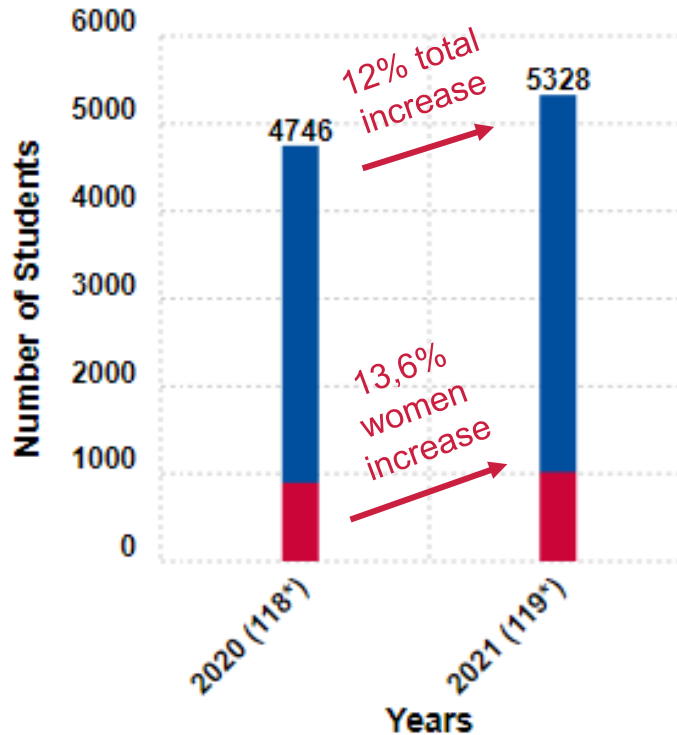

20% of the graduates are female

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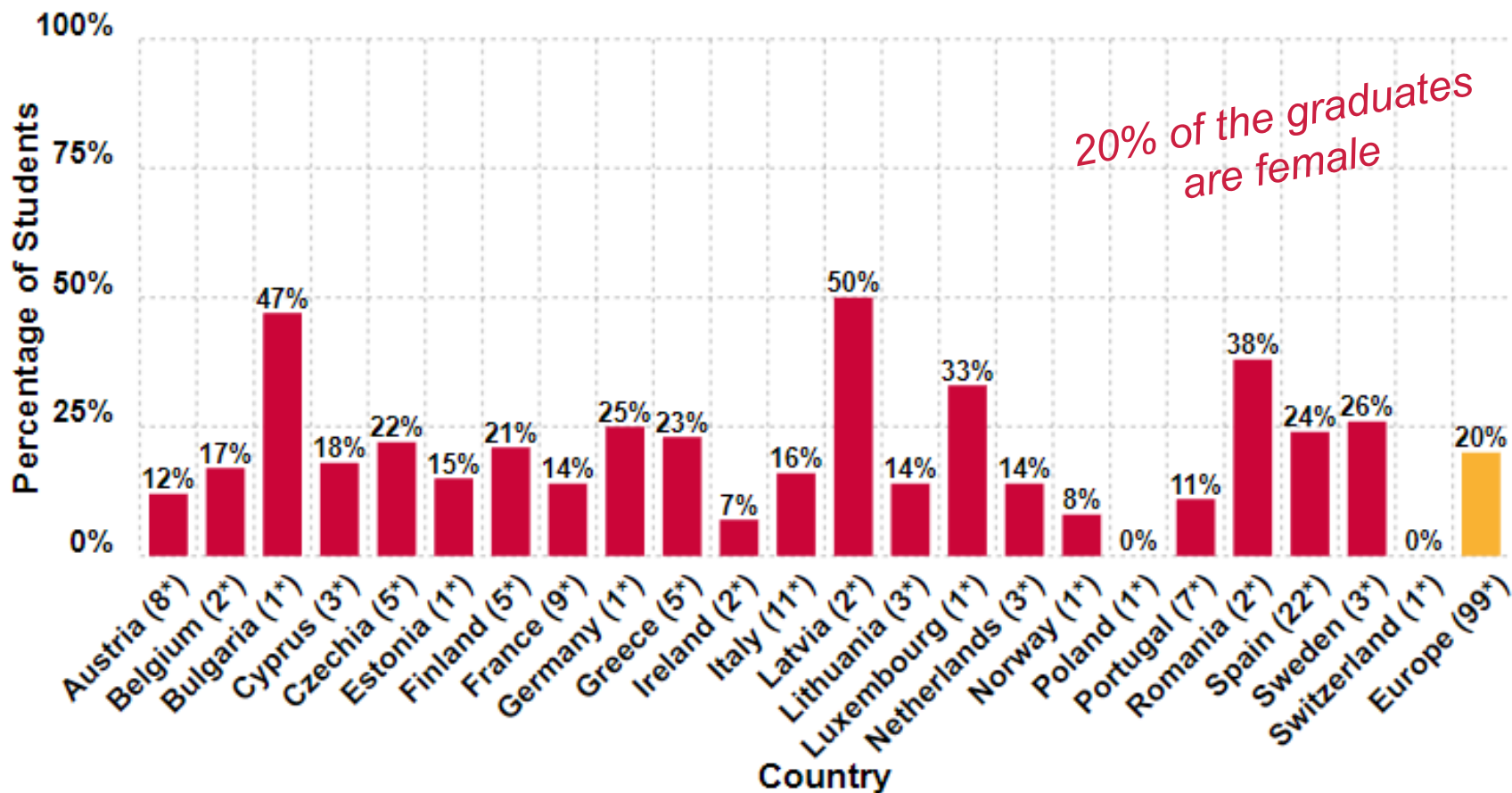
ANALYSING THE PROGRAMMES

Comparison between 2020 and 2021
enrolments and graduates and
estimating the people joining the workforce

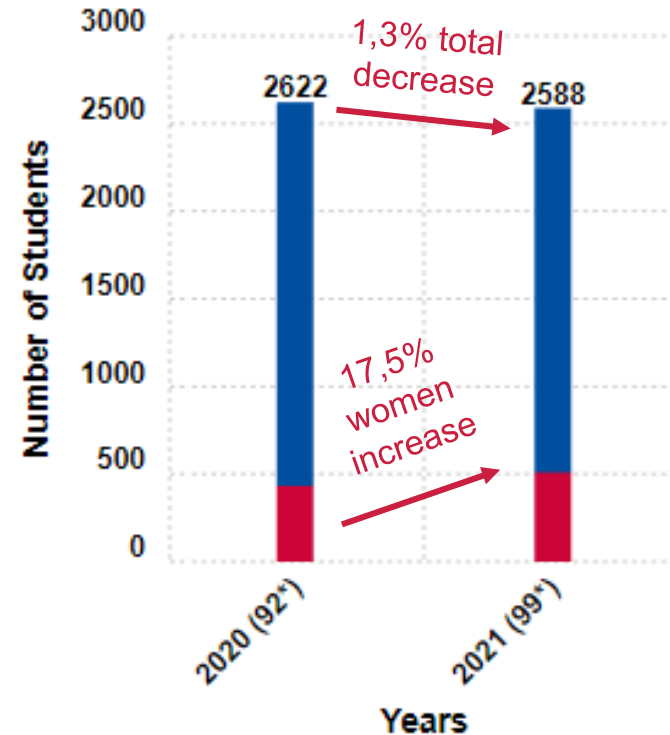# A COMPARISON BETWEEN 2020 AND 2021 ENROLMENTS AND GRADUATES

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ENROLMENTS

■ Female ■ Male

12% total increase

13,6% women increase

4746

5328

GRADUATES

■ Female ■ Male

1,3% total decrease

17,5% women increase

2622

2588

DROP OUT OR DELAY REASONS

- ■ Already working or found a job
- ■ Demanding programme
- ■ Dissertation takes time
- ■ COVID-19 pandemic
- ■ Other reasons
  (family obligations, enrol but never show up, career policy etc.)
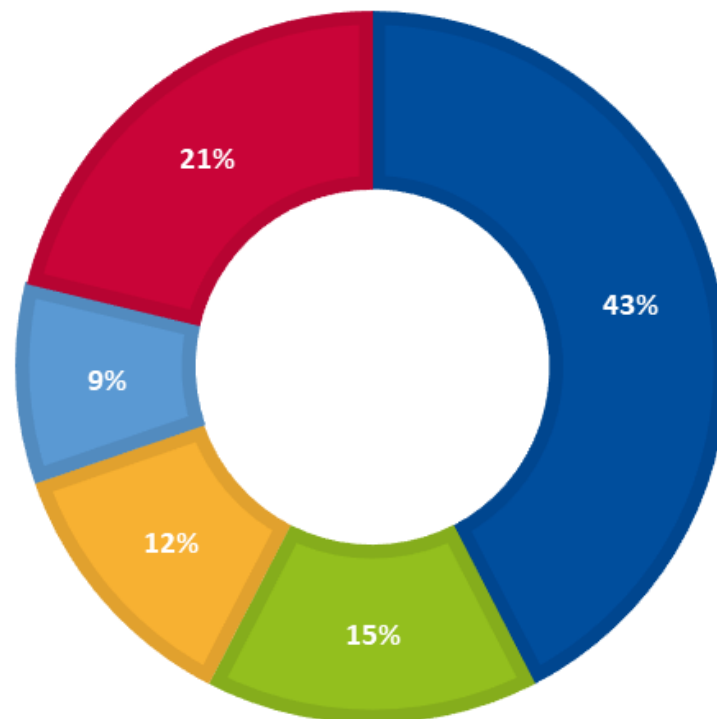
*The top reason as identified by professors is jobs. **Students are already working, or they found a job while studying.***

MONITORING COURSES ORIENTATION ON CYBERSECURITY PROGRAMMES
PROFESSORS' INSIDE STORIES

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" The majority of our **students** (almost all) **are working professionals** – when the pandemic paralyzed the world, our **students were overloaded with their daily tasks** and they did not have time for studies (nor physically, nor mentally). "

" Almost all of our **students are working**, and the **industry workload** has massively **increased in the last years**, leading to less time for studies. "

" The **admission process** is **based** just on an **interview**, which **can not** entirely **reveal the** deep **technical background** of a candidate. "

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CYBERHEAD'S BENEFITS

- **A deeper insight into programmes to:**
  - Address the cybersecurity skills shortage and gap.
  - Estimate the future cybersecurity workforce.
  - Understand the development of skills in Member States.

- **Member States can benefit by:**
  - Assessing the status of their national cybersecurity programmes.
  - Measuring the impact of their national or local initiatives.

- **Higher Educational Institutes can benefit by:**
  - Attracting potential candidates.

- **Students can benefit by:**
  - Searching and finding programmes through a friendly interface according to a variety of requirements (e.g., internships).

NEXT STEPS & IMPROVEMENT IDEAS

Possible next steps and ideas

VISIT CYBERHEAD!

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www.enisa.europa.eu/
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THANK YOU FOR YOUR ATTENTION

European Union Agency for Cybersecurity
Ethnikis Antistaseos 72 & Agamemnonos 14,
Chalandri 15231, Attiki, Greece

+30 28 14 40 9711

info@enisa.europa.eu

www.enisa.europa.eu