Informatics Higher Education in Europe: A Data Portal and Case-Study

Elisabetta Di Nitto, Garcia-Varea Ismael, Mehdi Jazayeri, Damian A. Tamburri, Svetlana Tikhonenko

INFORMATICS EUROPE

POLITECNICO MILANO 1863

Context

- European countries are creating informatics education high level programs independently from each other

- Sometimes goals are different and contraddictory

- Need to steer the education system on the long run
  - Need to have proper data to support decision making
  - Need to cope with different data collection approaches in different countries

Educational data portals in the world

- General purpose data portals
  - https://data.gov
  - https://data.europa.eu
  - https://data.gov.au/
  - https://www.data.go.jp/
  - https://dados.gov.br
- Educational data portals
  - https://data-nces.opendata.arcgis.com/
  - http://ustat.miur.it/opendata/
- Educational surveys in USA
  - https://cra.org/resources/taulbee-survey
  - https://www.acm.org/education/ndc-study

INFORMATICS
EUROPE

IE Higher Education Data Portal (IEHE)

- IEHE integrates and reconciles the national data sources in a single European data portal

- Launched in 2019

- Includes information from more than 20 countries

- Is updated every year

https://www.informatics-europe.org/data/higher-education/

Organization

Statistics	**Subjects**	**Institutions & Academic Units**	**Higher Education Systems**
Academic Positions & Titles	**Academic Salaries**	**Download Data (Only For Members)**	

Dynamic data visualization

	Ratio	Ratio	Ratio	Ratio	Ratio
(RU) Austria	1,007	981	938	959	990
(RU) Belgium	140	146	149	155	162
(RU) Bulgaria	957	974	1,002	1,072	1,077
(RU) Czechia	1,974	1,896	1,834	1,785	1,674
(RU) Denmark	368	426	467	524	556
(RU) Estonia	1,077	1,125	1,228	1,264	1,269
(RU) Finland	1,934	1,797	1,693	1,585	1,490
(RU) France	n.a.	n.a.	433	441	444
(RU) Germany	661	716	760	808	852
(RU) Greece	1,286	1,300	1,319	1,438	1,621
(RU) Ireland	523	577	739	721	793
(RU) Italy	810	788	777	799	833
(RU) Latvia	2,225	2,251	2,257	2,297	2,150
(RU) Lithuania	n.a.	n.a.	n.a.	915	1,022
(RU) Netherlands	212	215	217	255	303
(RU) Norway	575	626	683	738	786
(RU) Poland	1,559	1,477	1,511	1,498	1,450
(RU) Portugal	979	930	917	926	922
(RU) Romania	1,156	1,121	1,102	1,150	1,361
(RU) Spain	1,272	1,218	1,118	1,082	1,034
(RU) Switzerland	180	194	205	219	244
(RU) Turkey	486	564	670	n.a.	n.a.
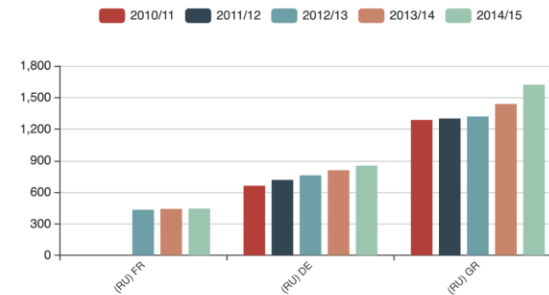
Known usages of IEHE

- Benchmarking against other countries

- Identifying best practices [1]

- Developing policies and strategies [2]

- Advocacy and outreach

[1] European Commission, European Education, and Culture Executive Agency. 2022. Informatics education at school in Europe. Publications Office of the European Union. https://data.europa.eu/doi/10.2797/268406

[2] Letizia Jaccheri. 2022. Gender Issues in Computer Science Research, Education, and Society. In Proceedings of the 27th ACM Conference on on Innovation and Technology in Computer Science Education Vol. 1 (Dublin, Ireland) (ITiCSE'22). Association for Computing Machinery, New York, NY, USA, 4. https://doi.org/10.1145/3502718.3534204

# Case study: Research Universities (RU) vs Universities of Applied Science (UAS)

- RQ1: what are the core differences between the Informatics higher education at traditional RU and UAS at Bachelor's level?

- RQ2: how do the Informatics Bachelor's enrollment and graduation rates differ between the two types of institutions in Europe, paying special attention to gender diversity?

Approach

- Focus on five contries representing 30% of the European population
  - Germany, The Netherlands, and Switzerland: cohexistence of RU and UAS
  - Italy and Spain: only RU
- Preliminary interviews with IE reference points to know about the differences between RU and UAS
  - RU favor research (including applied research)
  - UAS favor the creation of talent for industrial processes and product development
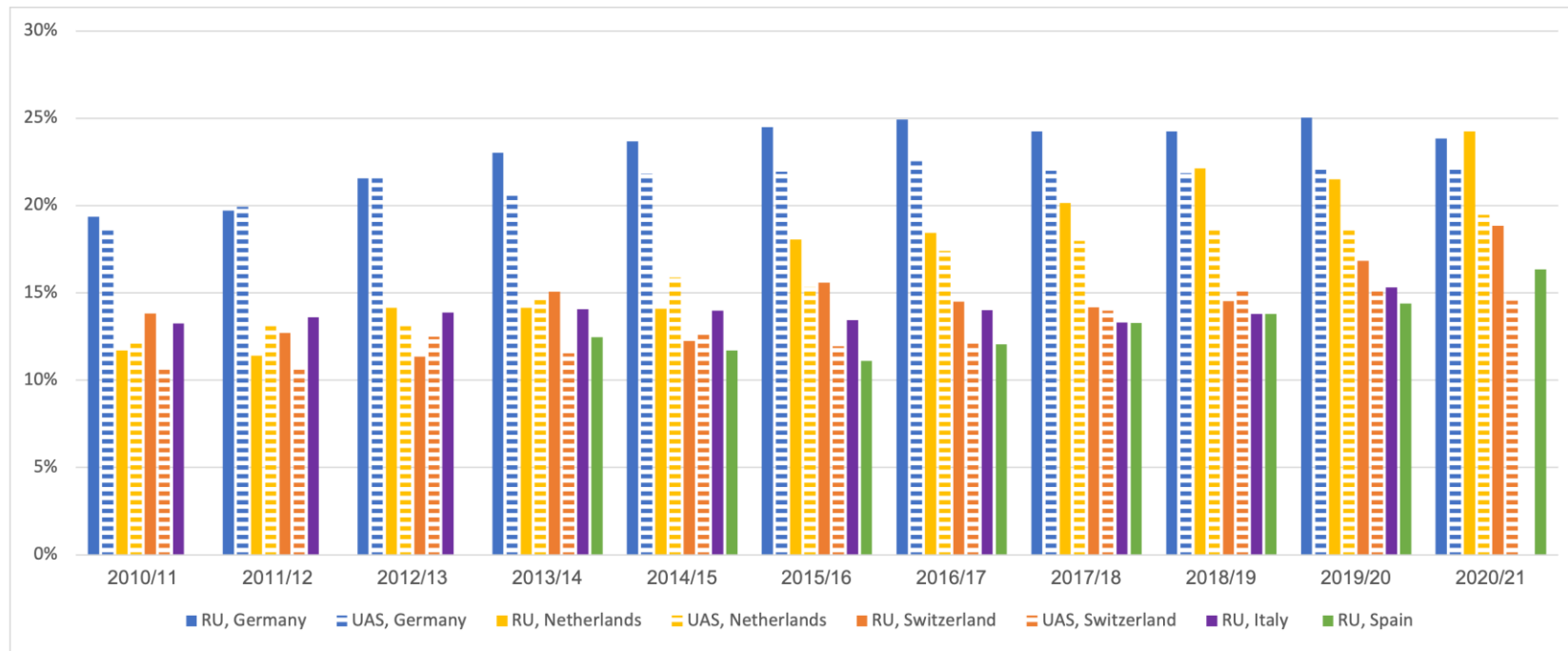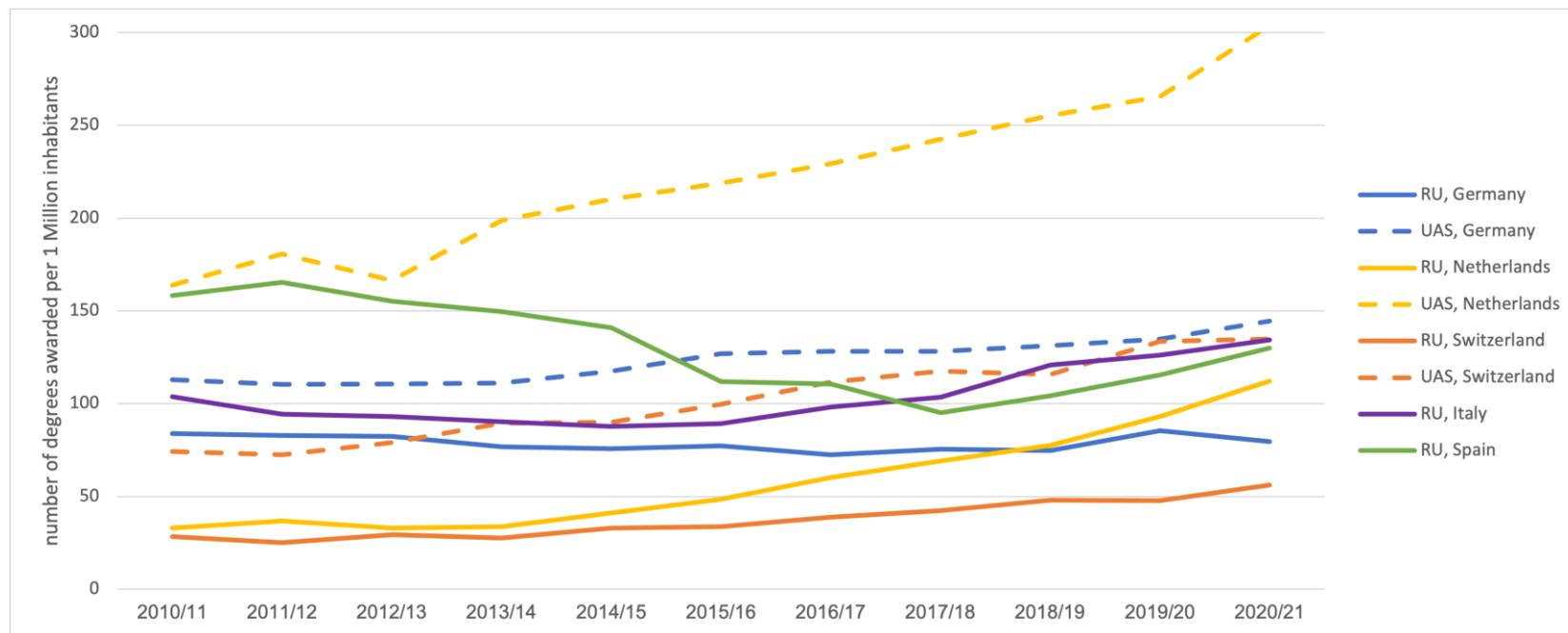
Enrollment rate at the bachelor's level
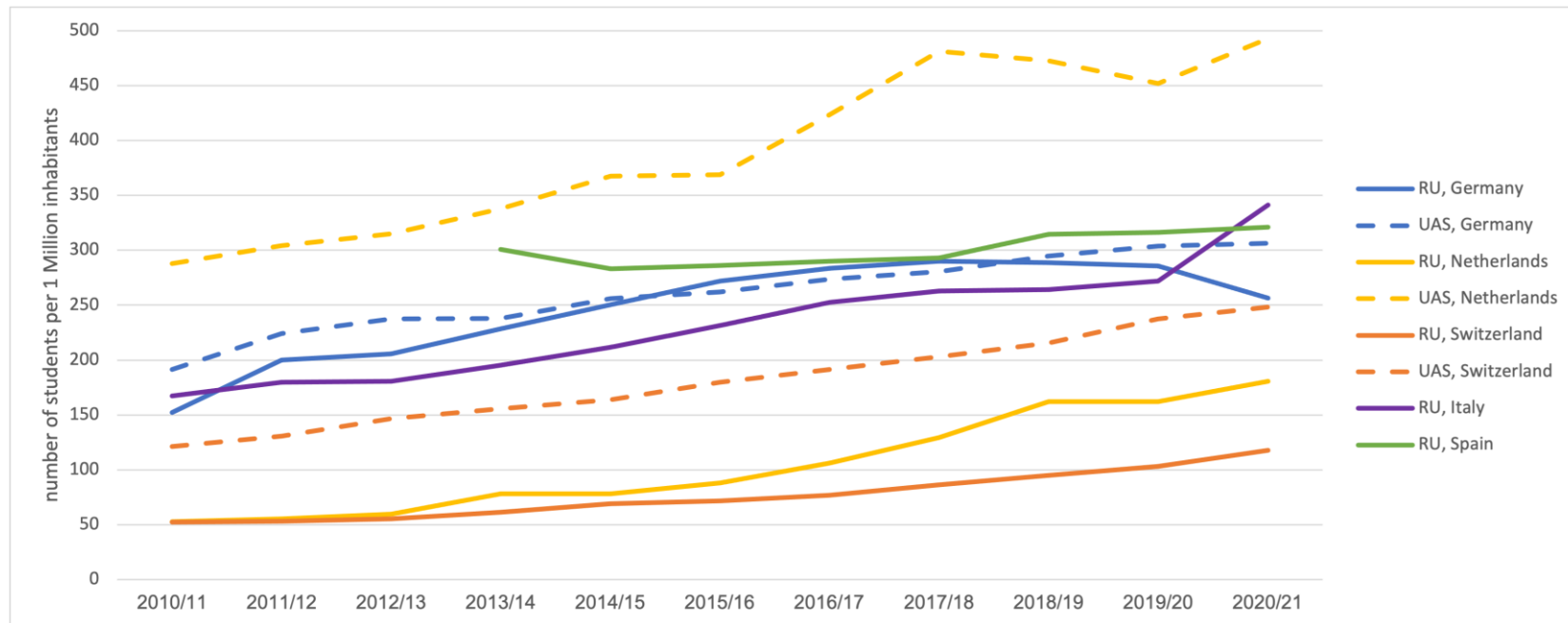
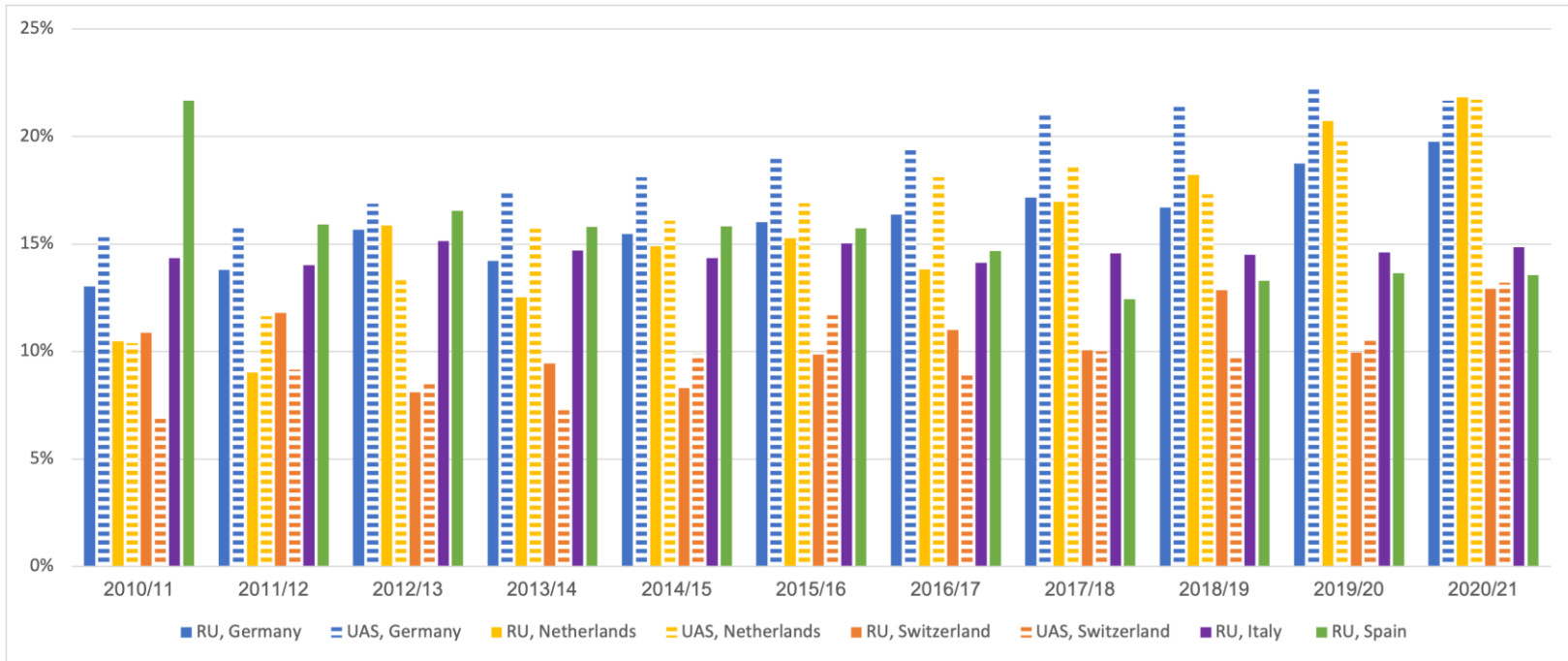# Share of female first-year students enrollment

Distribution of Informatics Bachelor's degrees awarded
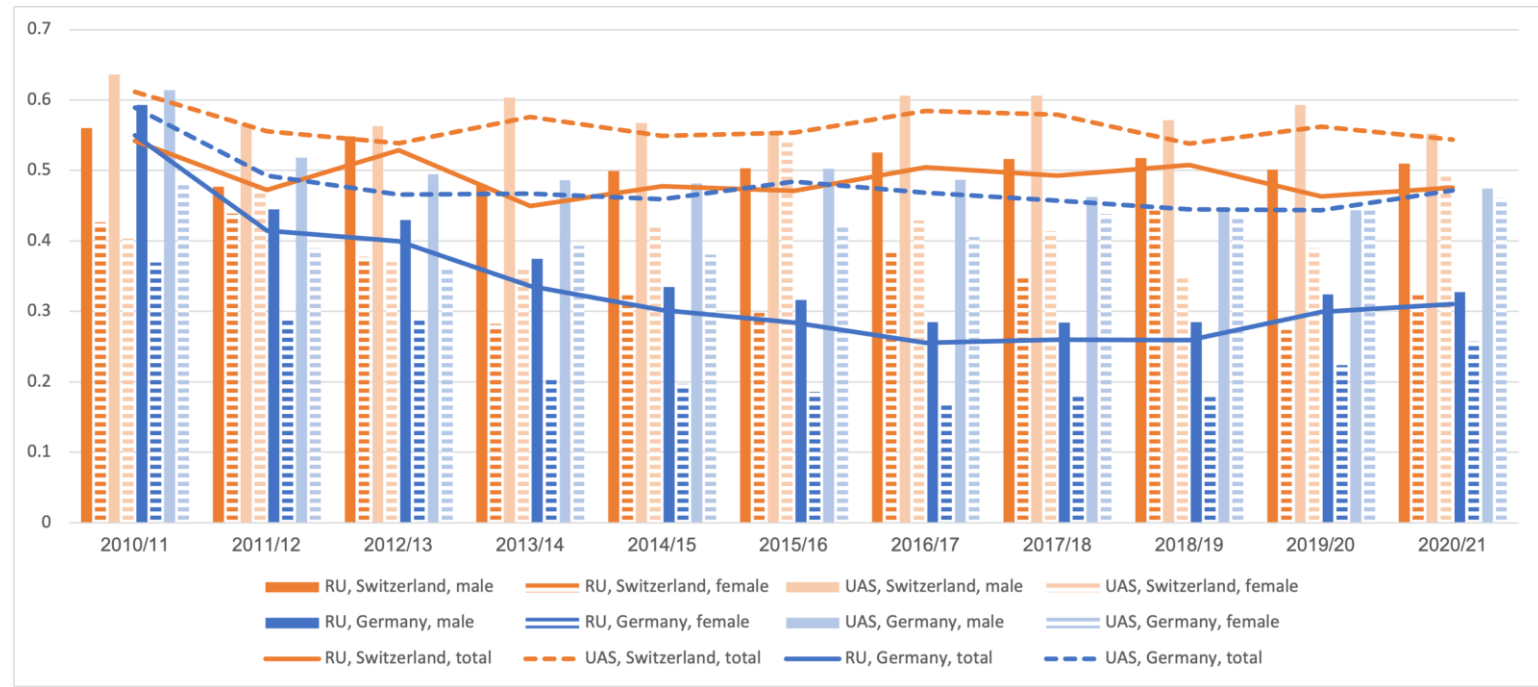
Share of Informatics Bachelor's degrees awarded to women

Ratio between Informatics Bachelor's graduates and new students in Germany and Switzerland

Conclusion

- Only a few countries have fully-instrumented data portals for data-driven educational planning and policy-making

- In Europe, IEHE has the potential to enable European-wide analyses and planning

- What does IEHE need from you
  - To be fed with correct data every year
  - Requirements for new collections of data and new analyses