# Challenges on Academic Path as Female Informatics Scientists

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EUGAIN

About me

- Prof. in Computer Science Babes-Bolyai Univ. Research interests: Software Quality, Empirical Software Engineering
    - Previous experience: Formal Specification, MDA
    - Entrepreneurship & Innovation
- Vice President of Univ. Senate
    - Former vicedean of Faculty of Mathematics and Computer Science
- Romania representative in EUGAIN

- Proud mother of 2 boys (26 and 21)
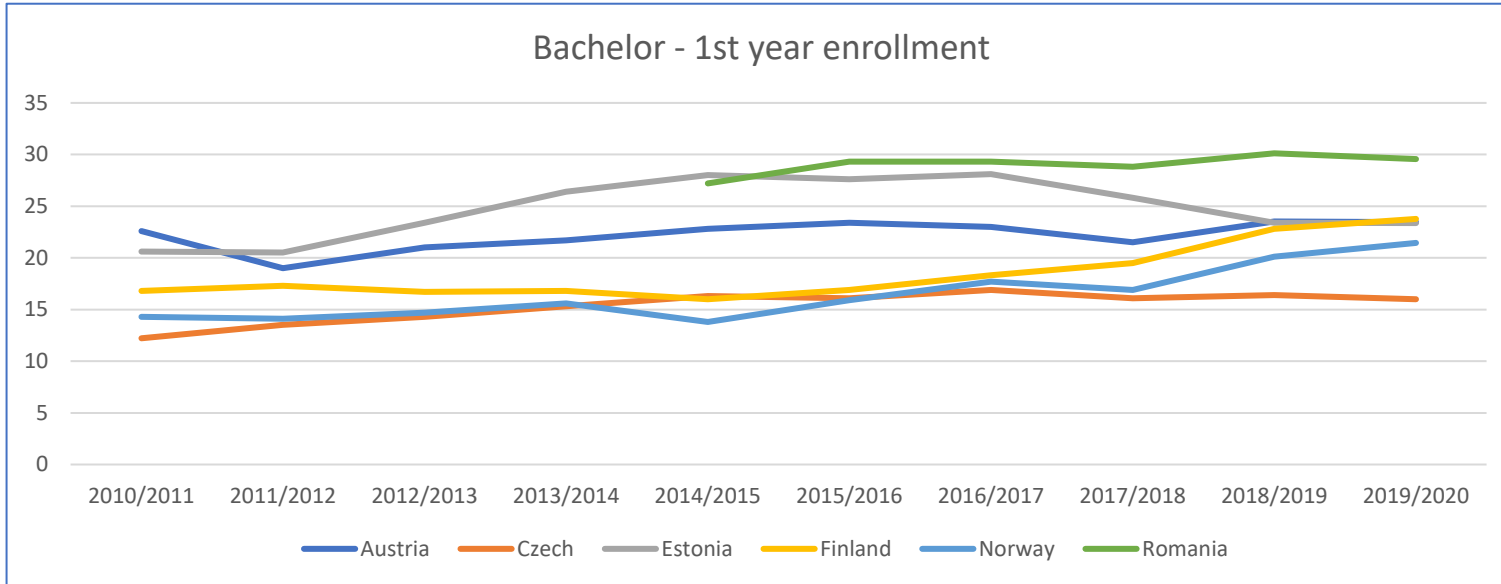- Hobbies: travel, skiing
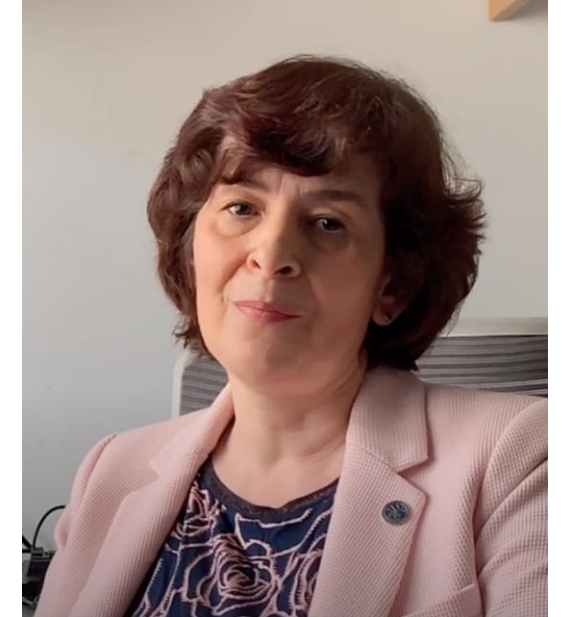
Current status and a few years back
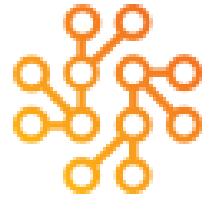
- Effort of Informatics Europe – reports -> Higher Education Data Portal

- Include statistics of students:
  - Bachelor, Master, PhD
  - Enrolled, degrees awarded, total number
  - Gender info
- 10 years, 20 countries

Case study 1: Bachelor

Bachelor - 1st year enrollment

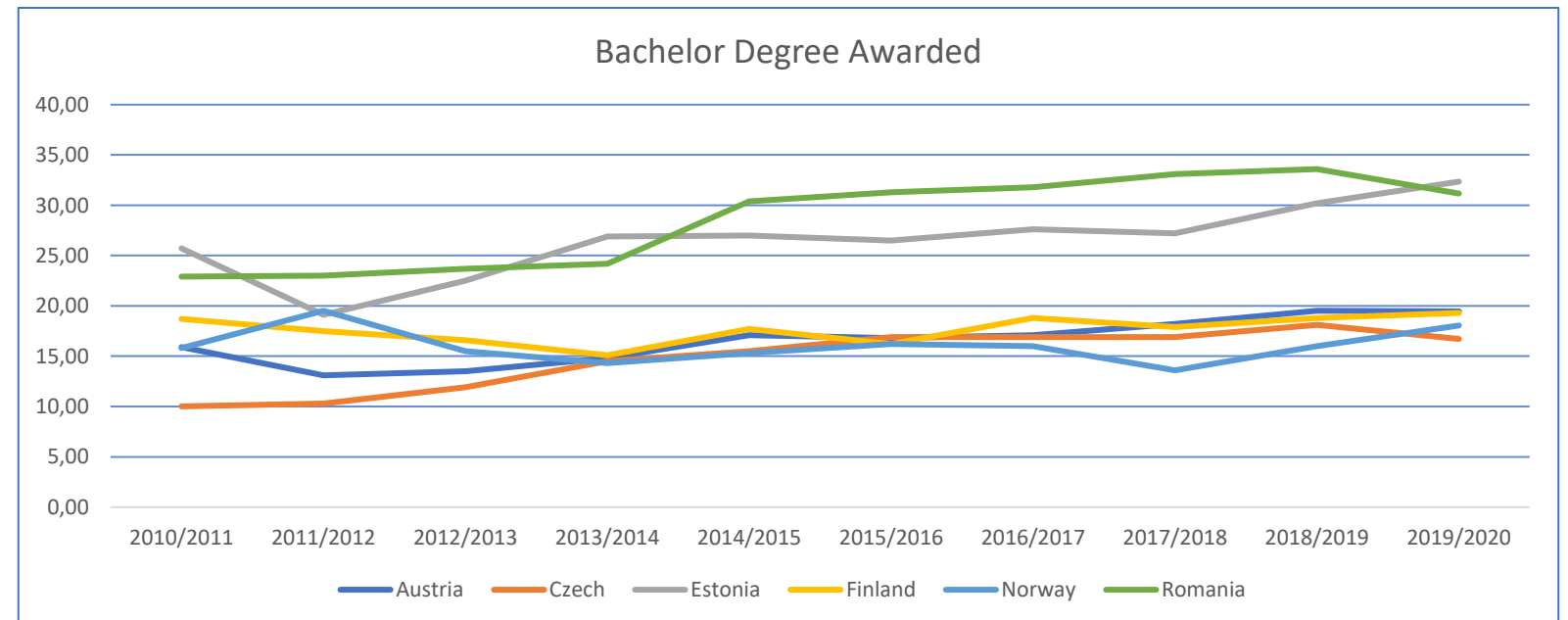Austria — Czech — Estonia — Finland — Norway — Romania

Remarks:
- Increase of female ratio in almost all countries
- Finland, Norway – steep increase from 2016 (why?)
- Estonia – decrease in recent years

Remarks:
- Czech Rep – from 10% to 18,10% (in 2019)
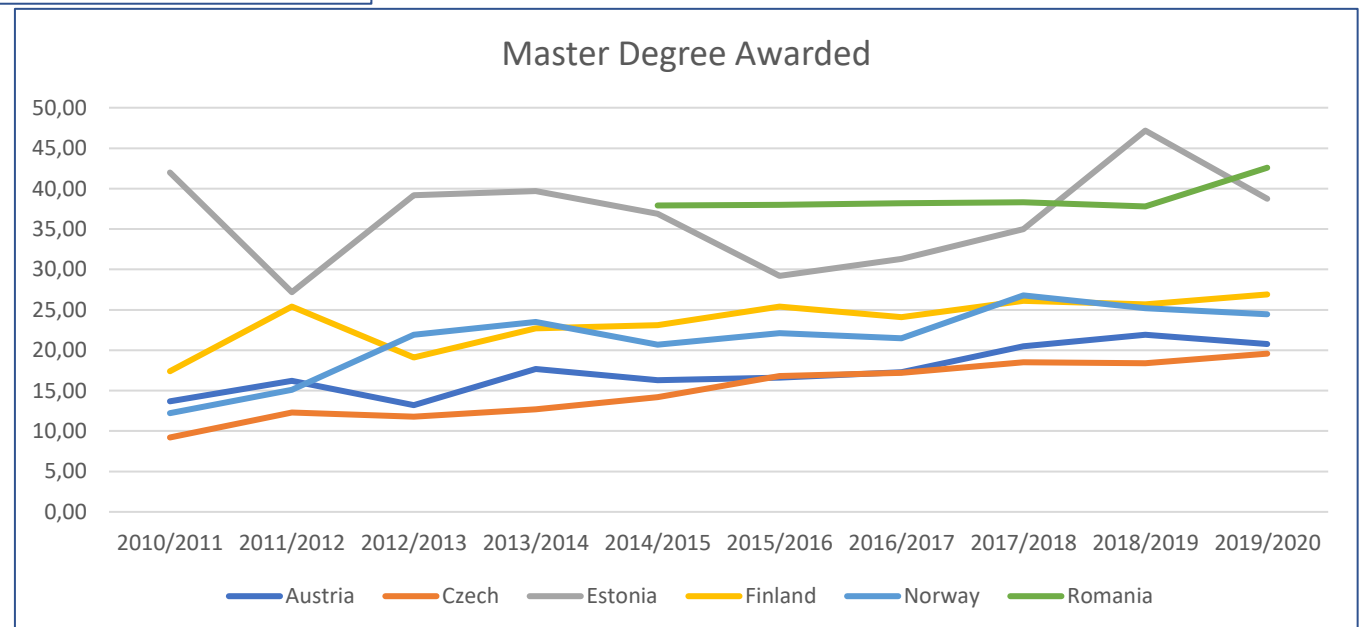- Romania – constant growth (except last year)

Bachelor Degree Awarded

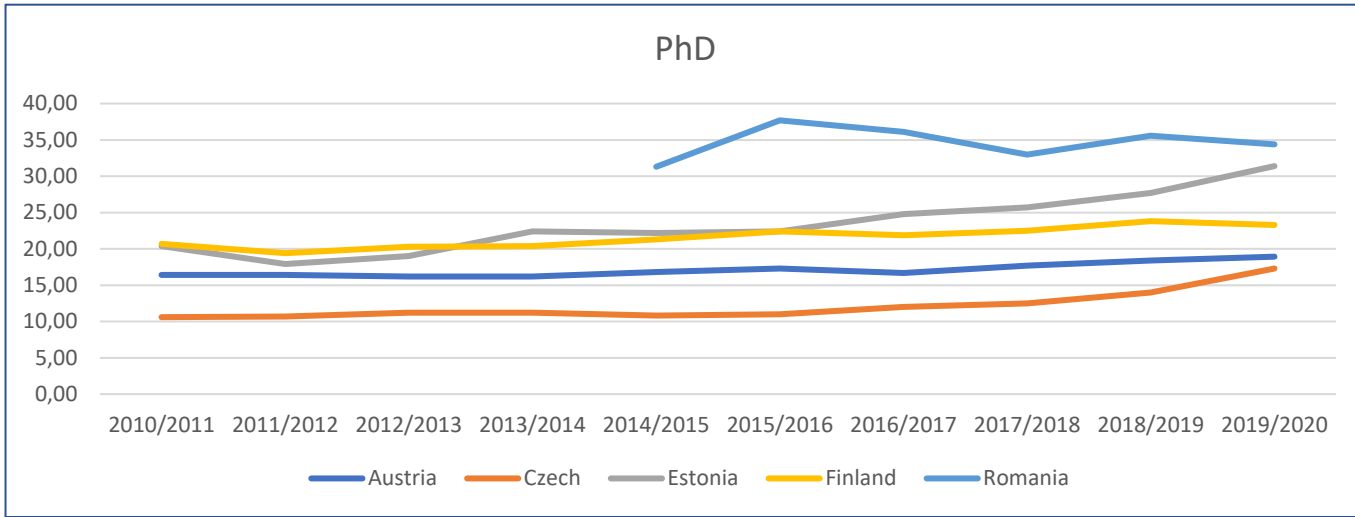Austria — Czech — Estonia — Finland — Norway — Romania

Case study 2: Master

Master
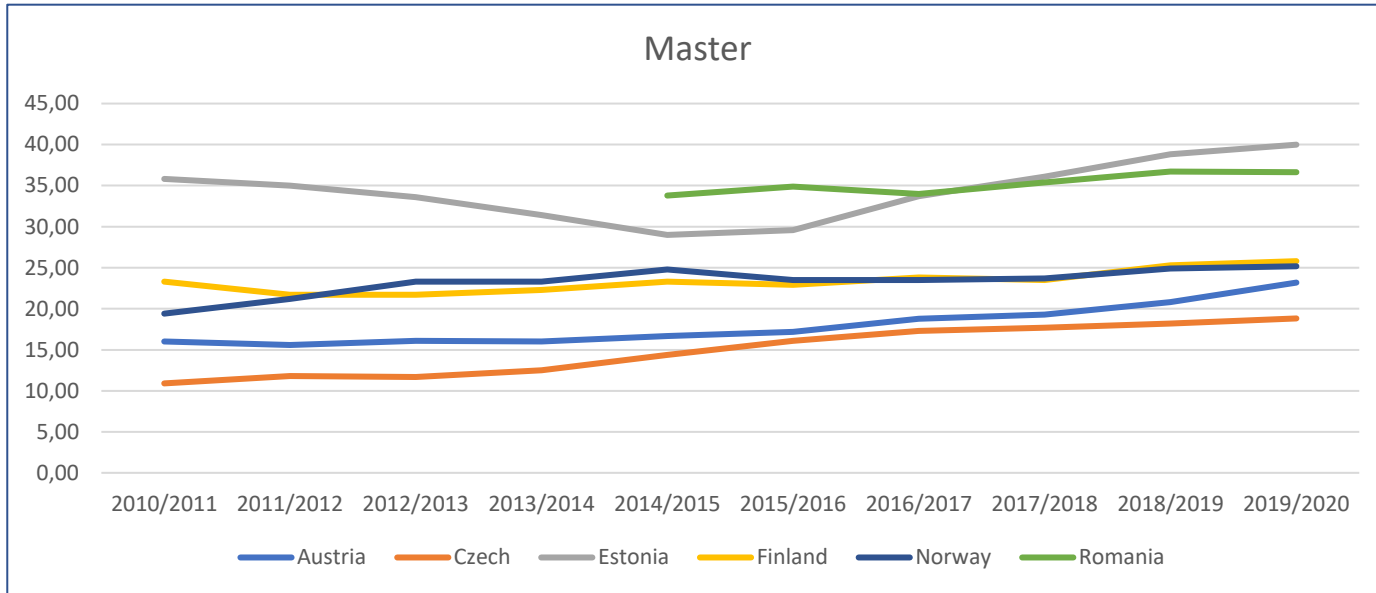
Remarks:
- Czech Rep – from 10,9% to 18,81%
- Estonia – steady growth from 2015

Remarks:
- Almost all countries – improvement

Master Degree Awarded

Case study 3: PhD

PhD

| | 2010/2011 | 2011/2012 | 2012/2013 | 2013/2014 | 2014/2015 | 2015/2016 | 2016/2017 | 2017/2018 | 2018/2019 | 2019/2020 |

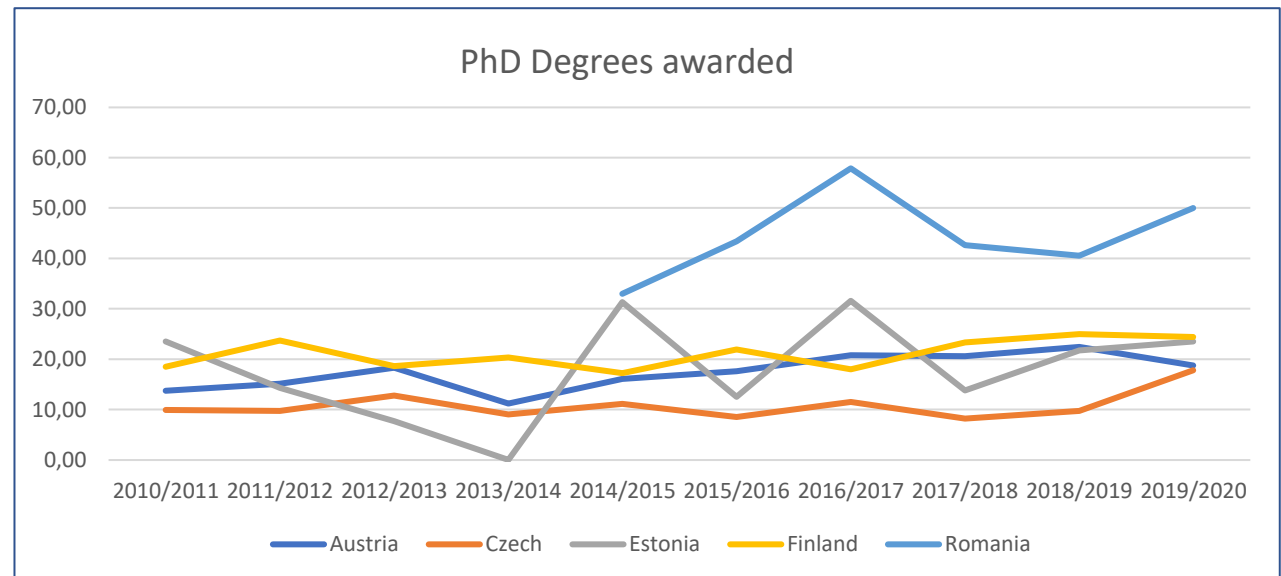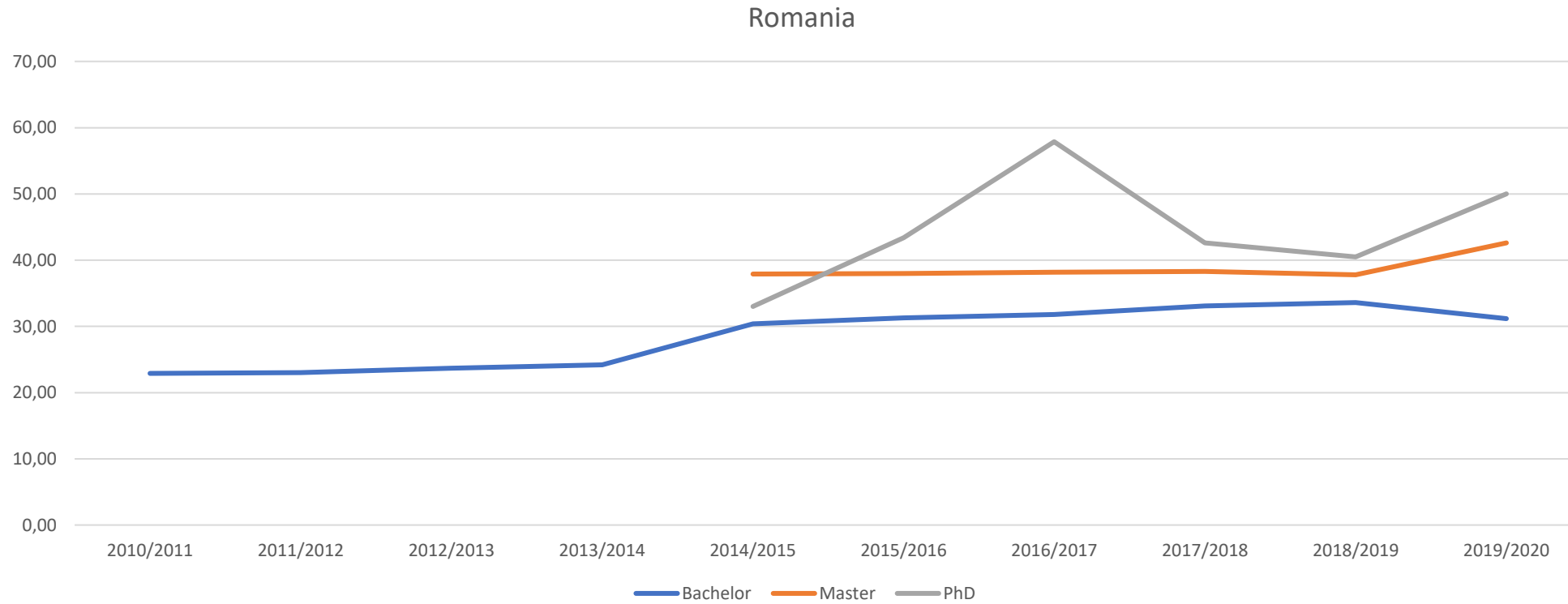Austria — Czech — Estonia — Finland — Romania

Remarks:
- Romania– slight decrease
- Almost constant – between 10-25% (27%)

Remarks:
- No pattern
- ratios are low
- Romania reach the 50% margin

PhD Degrees awarded

Austria — Czech — Estonia — Finland — Romania

Case study 4: Country level

Romania

Career Path

- Bachelor
- Master
- PhD
- Academic Career
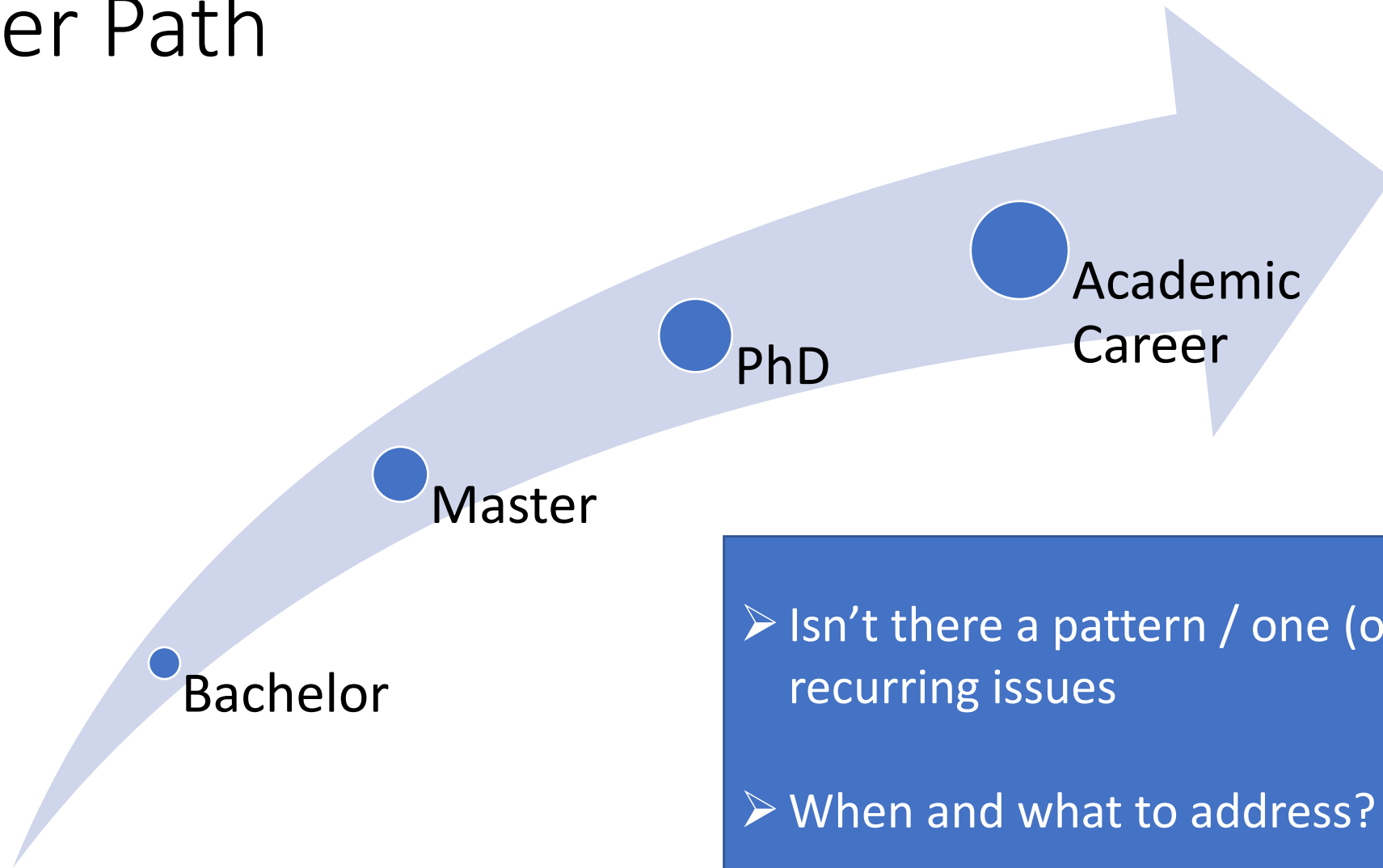
➢ Isn't there a pattern / one (or more) recurring issues

➢ When and what to address?

# Extensive longitudinal study

- Master students

- PhD students

- Academic staff

- Paper: S. Motogna, L. Alboaie, I. A. Todericiu and C. Zaharia, "Retaining Women in Computer Science: the Good, the Bad and the Ugly Sides," 2022 IEEE/ACM 3rd International Workshop on Gender Equality, Diversity and Inclusion in Software Engineering (GEICSE), 2022.
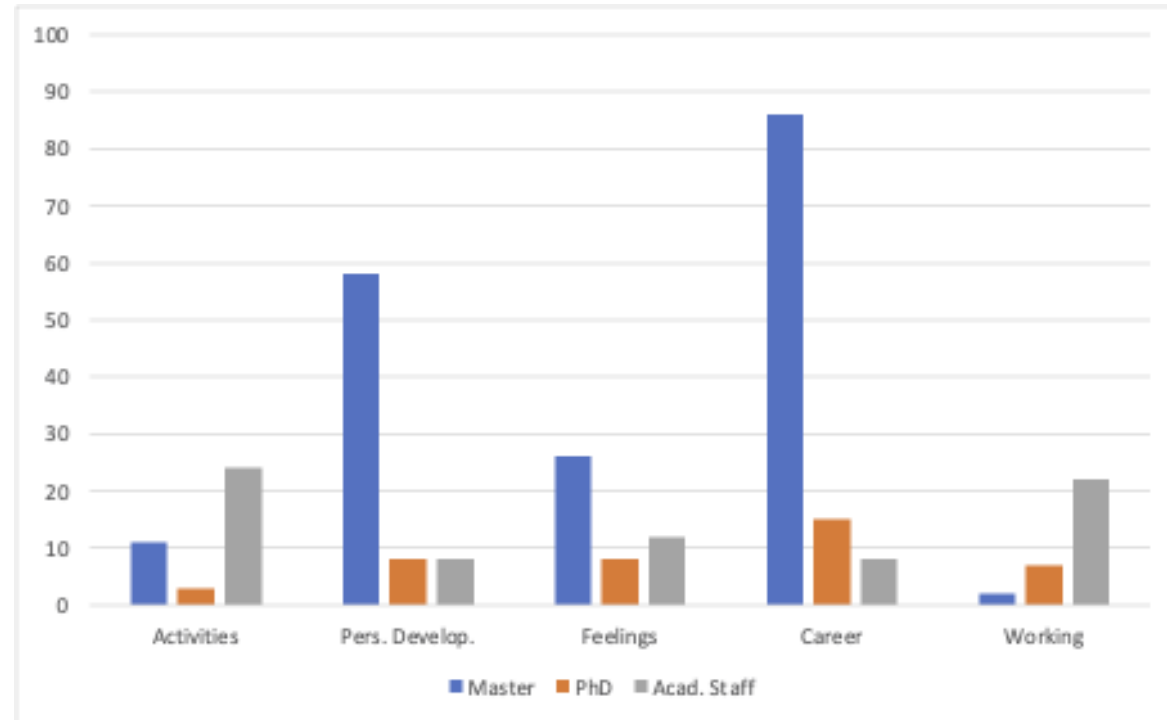 - Questionnaires available

What are the most important factors that attract and sustain women on academic career paths?

- Personal development – master students

- Interest for continuing with a PhD program declines significantly

- Activities: teaching, research, mentoring

- Motivation is different (Master vs. PhD)
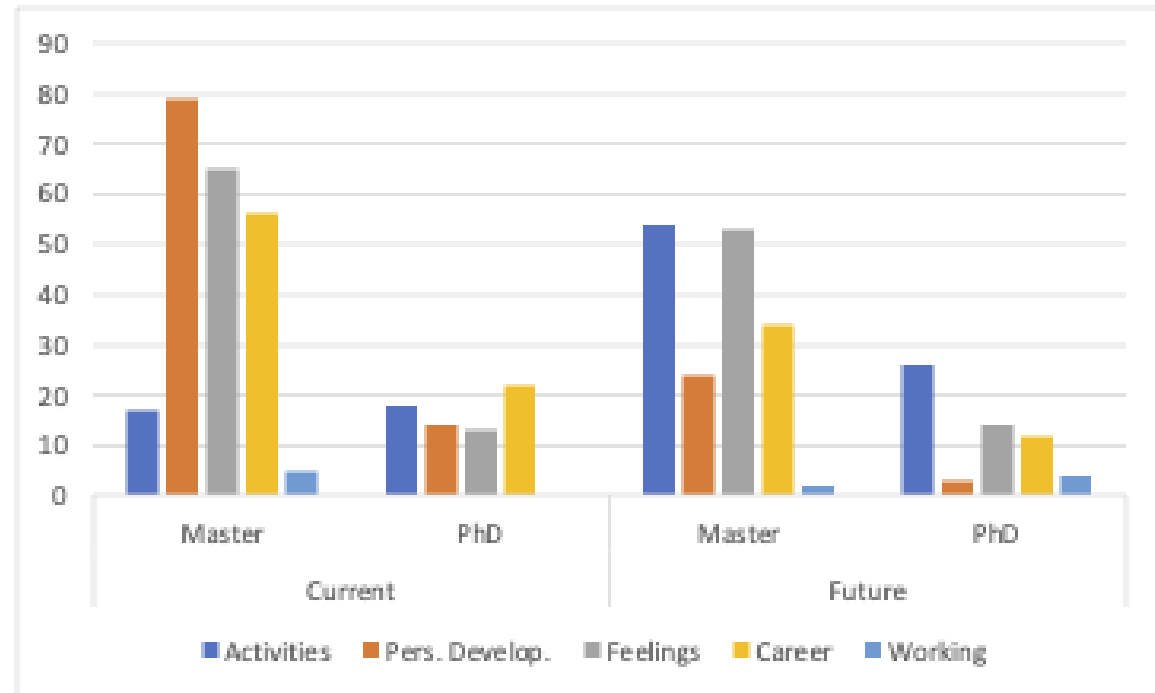
Foreseen advantages of academic career

- Master – career: "*better chances for better jobs*"

- Academic staff - activities (with a majority of 70\% referring to teaching activities - ''*interact with students*'', ''*flexibility to perform teaching activities*"

What are the most important factors that attract and sustain women on academic career paths?

Personal development, career opportunities, research and teaching activities are driving forces, but only if accompanied by desire and passion

Perceived disadvantages of academic career

- An alarming sign is the great number of PhD students (45%) that identified disadvantages of their current career stage

- large majority of complaints are related to workload

- careful look at exposed sentiments: overwhelmed, disappointment, stressed, frustration
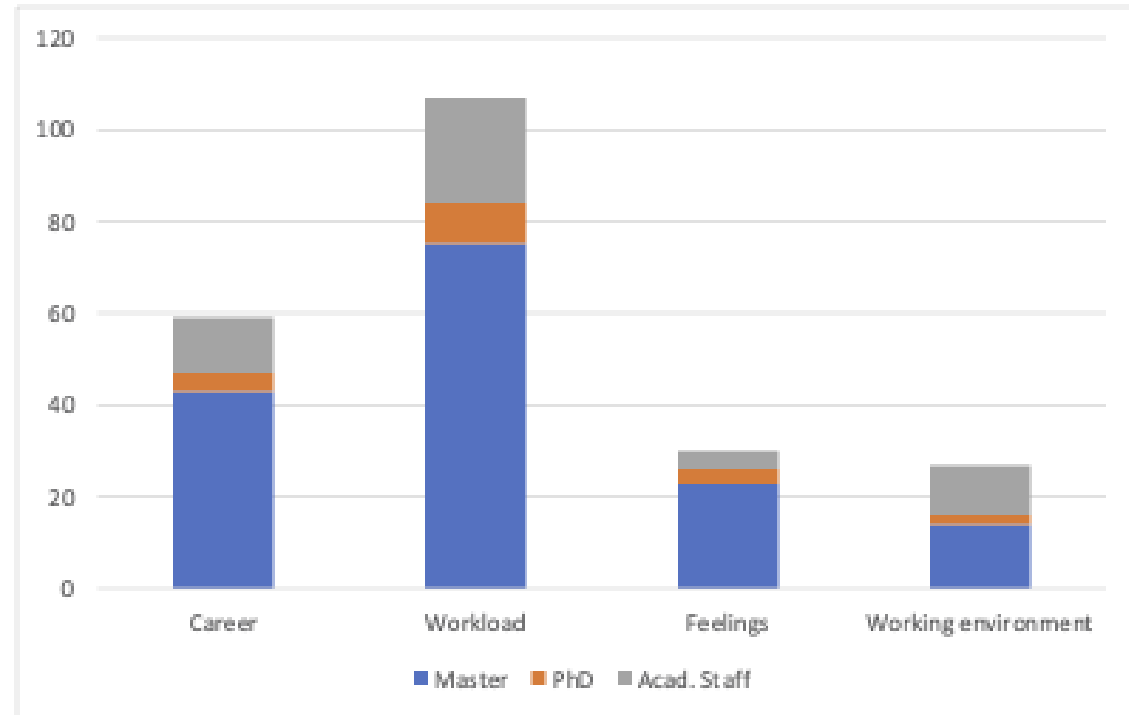
Perceived difficulties of academic career

- *workload, work-life balance, research load, time management were most pressing*

- Factors related to the working environment: *lack of mentoring, lack of collaboration, or bureaucracy*

What are the main issues driving women to drop out of an academic career in CS?

Multitude of disadvantages and difficulties associated with an academic career.
Main risks: financial factors, workload, but also in recurring feelings

Are there ways to improvement?

- Role models matter
  - Show examples / mentoring programs
- Department/faculty/university targeted policies matter

- Take into account: personal development, self esteem
  - Workshops / seminars

- Financial? – general problem for CS domain

Thank you

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