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Where are they going? Register- data-based analysis of doctorate graduates career paths

Michael Hofer (University of Vienna), EUA CDE Annual Meeting, 28 June 2024

Joint work with Lukas Mitterauer-Koch (University of Vienna), Corinna Geppert & Attila Pausits (University for Continuing Education Krems)

Overview

1. We **use register-based data** from the Austrian graduate tracking system (ATRACK) for the ten years after PhD graduation
2. We **model the different career path types** of 25,000 PhDs with at least 3 years of observation (*PhDs := doctorate or PhD graduates*)
3. We **analyse the results** (e.g. percentage in research sector and intersectoral mobility, income and gender differences)



What is register-based graduate tracking? (ATRACK)

- Register-based **analysis and monitoring of career entry and progression** of graduates in the Austrian labor market in the first 10 years after graduation
- **Consortium:** 35 HEIs (21 universities, 14 universities of applied sciences)
- **Lead:** Univ. of Vienna/ Quality Assurance
<https://qs.univie.ac.at/en/analyses/graduate-tracking/atrack-consortium-2022-2027/>
- Cooperation with **Statistics Austria**

Data processing by Statistics Austria:

- Statistics Austria has all necessary data
- Full protection of personal data

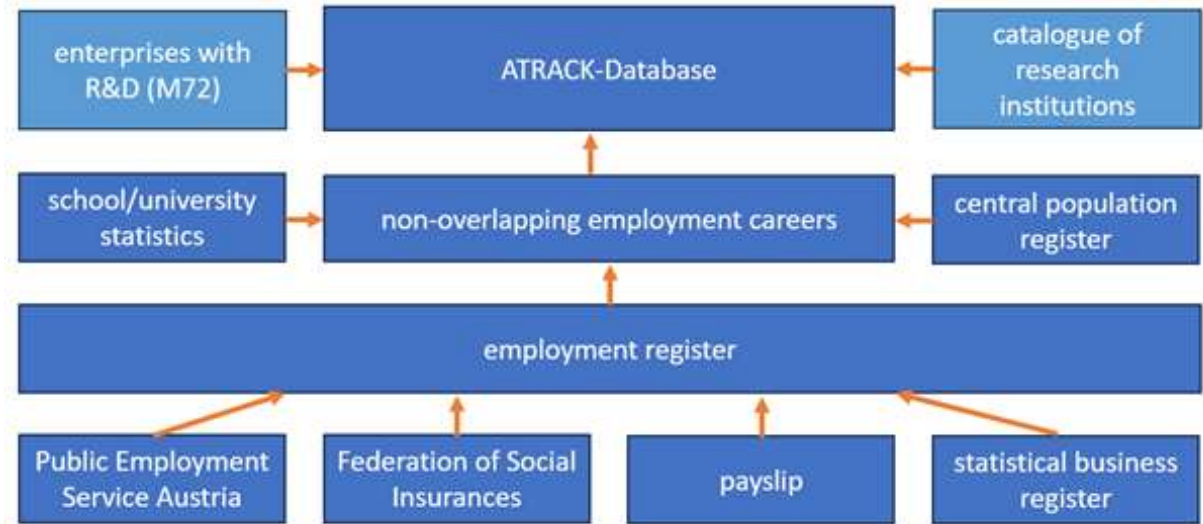
Years 2008-2021:

- 800,000 tertiary graduates in Austria
- 38 million data sets from various registers



Data model to identify PhDs in research sector

PhD classified to work in research sector (HE and R&D) if the workplace is found in the **catalogue of research institutions**



Seven career path types identified in register data

Career path type	Sector	#career paths
(1) Consistently in HE	Research	251
(2) Consistently in R&D		146
(3) Consistently in research sector (with mobility between HE and R&D)		211
(4) (Temporary) return to research sector after 24 months at the earliest		348
(5) Leaving research sector early (key dates 18, 24, or 36 months)		454
(6) Leaving research sector late (key dates 60 or 120 months)		307
(7) Consistently outside research sector	Other	458
Consistently no main residence in Austria		139
Rest category		3,287



Career Path Type 1: Consistently in HE

Employment status 0-120 months after graduation is:

- ERW_H: employed in the higher education sector (HE)
- ERW_F: employed in the research & development sector (R&D) or self-employed
- ERW_A: employed in all other areas or self-employed
- U: interruption, inclusive unemployment, community service/in-person service, parental leave
- KEIN_HWS_AT: no main residence in Austria
- OTHERS: all other labor market statuses, including marginal employment, students, only found in central population register, etc.

0M	6M	12M	18M	24M	36M	60M	120M
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H		
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_A	
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_A
U	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	U	
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	U	ERW_H	
SONSTIGE	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	
U	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H		



Career Path Type 3: Consistently in research sector (with mobility between HE and R&D)

Employment status 0-120 months after graduation is one of the following two:

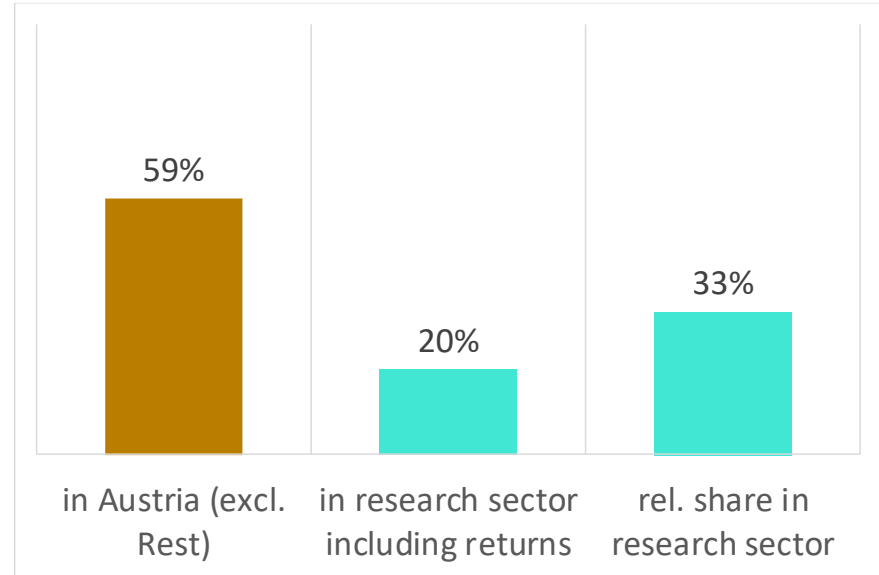
- ERW_H: employed in the higher education sector (HE)
- ERW_F: employed in the research & development sector (R&D) or self-employed
- ERW_A: employed in all other areas or self-employed
- U: interruption, inclusive unemployment, community service/in-person service, parental leave
- KEIN_HWS_AT: no main residence in Austria
- OTHERS: all other labor market statuses, including marginal employment, students, only found in central population register, etc.

0M	6M	12M	18M	24M	36M	60M	120M
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_F	
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_F	ERW_F	
ERW_F	ERW_F	ERW_F	ERW_F	ERW_F	ERW_F	ERW_F	ERW_H
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_F
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ERW_F	ERW_F	ERW_F	ERW_F	ERW_F	ERW_H	ERW_H	
ERW_H	ERW_H	ERW_H	ERW_H	ERW_H	ERW_F	ERW_F	ERW_F
ERW_H	ERW_H	ERW_H	ERW_F	ERW_F	ERW_F		

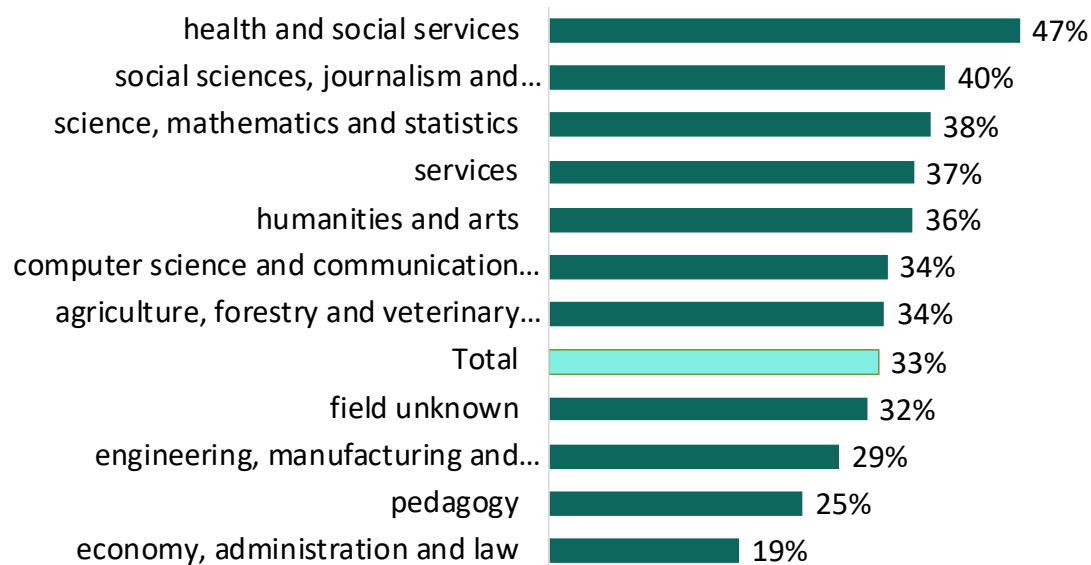


What percentage of PhDs remains in the research sector?

Career path type	%	#
(1) Consistently in HE	12%	2 961
(2) Consistently in R&D	4%	894
(3) Consistently in research sector	2%	400
(4) (Temporary) return to research sector	2%	569
(5) Leaving research sector (18, 24, 36 m.)	6%	1 512
(6) Leaving research sector (60, 120 m.)	2%	548
(7) Consistently outside research sector	31%	7 741
No main residence in Austria	13%	3 301
Rest	27%	6 684
Total		24 610

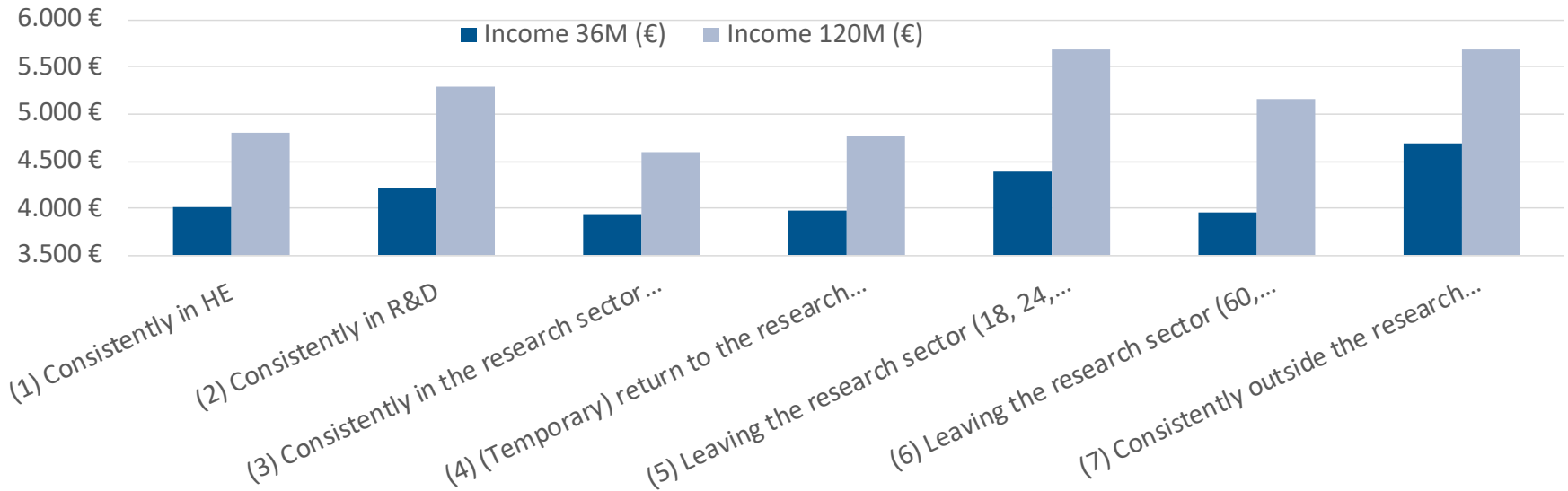


Relative share in the research sector (HE and R&D) according to ISCED-F 2 and ISCED-F 3 classification



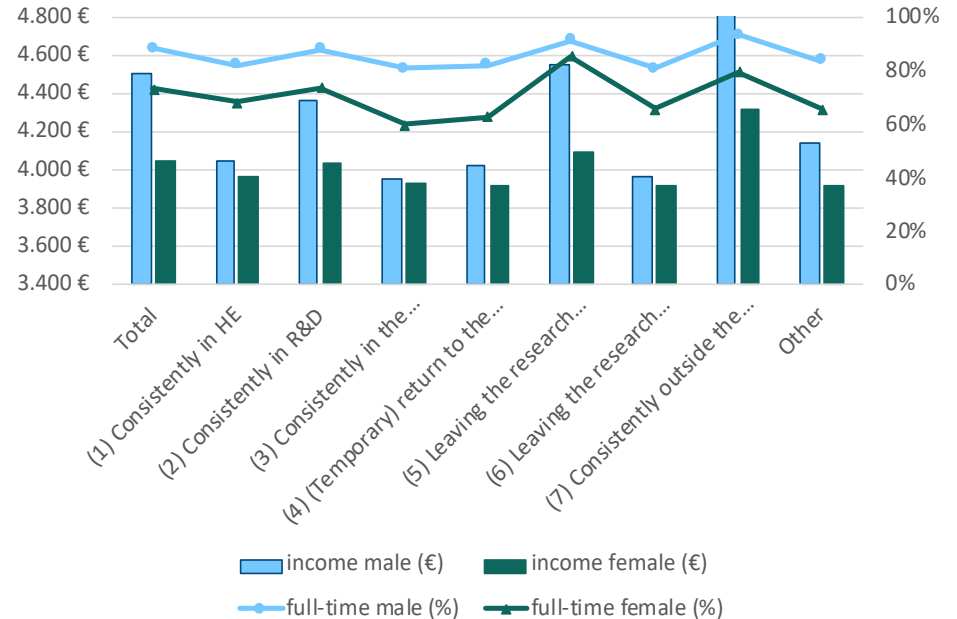
- Highest share (47%) in health and social services
- Lowest share (19%) in economy, administration and law, but looking at ISCED-F 3 level reveals
 - High share (44%) in economy and administration
 - Very low share (12%) in law

Income differences by career type (full-time employment)



Income differences by gender (full-time employment)

- Income difference 36 months after graduation for full-time employment is €465.- in favour of men
- Differences by group vary significantly:
 - €78.- in HE
 - €562.- exclusively outside research sector
 - €455.- early leavers of research sector
- Full-time employment after 36 months
 - 89% of men versus 74% of women (15% diff.)
 - 21% difference in HE
 - 6% difference for early leavers of HE



Discussion

- **Two-thirds of graduates leave the academic sector at an early stage:**
 - PhD programmes must prepare for a variety of careers
- **Attractiveness of the employment outside the research sector** is quite high, because it offers early on in the career
 - permanent employment contracts
 - higher income
- **Research sector shows staying power**, especially the HE sector, where 12% of graduates work, compared to 4% in the R&D sector

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