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# INTERNATIONAL MOBILITY AFTER THE PhD

Exploring the characteristics and outcomes of UK  
doctoral graduates

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# DOCTORAL CAREERS IN CONTEXT

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- Staggering growth in doctoral education (25% across OECD countries, 2014-19)
- Competitive, over-crowded academic labour market
- Associated with an increasing diversification of doctoral career pathways
  - In most nations, the majority of doctoral holders will leave academia
  - However, academic and research careers remain the preference
- In the UK:
  - Doctoral career pathways are significantly differentiated by institution and discipline
  - Research has focused on sector mobility, not international mobility

# THE DOCTORATE AND MOBILITY

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- Mobility as an economic and political project.
- Doctoral education is a key area of regional harmonisation
  - Bologna Process encouraged the 3 year model
  - Salzburg Principles (2005) on the purpose, experience and content of doctoral education
  - Towards an equilibrium in transitions to the post-doctoral labour market (although national, institutional and subject differences persist)

# THE DOCTORATE AND MOBILITY

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- Mobility as an economic and political project.
- Doctoral education is a key area of regional harmonisation
  - Bologna Process encouraged the 3 year model
  - Salzburg Principles (2005) on the purpose, experience and content of doctoral education
  - Towards an equilibrium in transitions to the post-doctoral labour market (although national, institutional and subject differences persist)
- Cooperation mediated by existing power imbalances:
  - The UK is the most popular destination in Europe for doctoral study
  - Few UK domiciled students opt to study abroad, and therefore have limited international experience

# GRADUATE MOBILITY

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- Most research has focused on **first-degree** graduates:
  - A common but selective experience for graduates in Europe: connected to socio-economic background; language proficiency and prior mobility
  - Assumed benefits include enriched intercultural understanding and language skills, but individual labour market returns are uncertain
  - Frame mobile students from a passive and deficit perspective (push/pull)
- Research on postgraduate graduates focuses on understanding why international PhD and Masters stay in the country of study or return to country of origin after graduation

# RESEARCH QUESTIONS

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**RQ1:** Who are the doctoral graduates from UK HEIs who move abroad six months after graduation?

**RQ2:** What are the early labour market outcomes of mobile graduates?

# THEORETICAL FRAMEWORK

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**HUMAN CAPITAL THEORY**

**SIGNALLING THEORY**

- Two conceptual lenses which take into account:
  - Stratification of higher education and connection to differentiated labour market outcomes
  - Enduring preference for academic and research posts in a crowded labour market
  - Supply and demand side factors

# RESEARCH DESIGN

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Destination  
Dataset

UK-domiciled doctoral

2012/13 to  
2016/17



# DATA

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Student records

Destination of Leavers from Higher Education (DHLE)



2012/13 to 2016/17

DHLE Longitudinal Hancock (2021)

# DATA

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Student records  
Destination of Leavers from Higher Education (DHLE)



2012/13 to 2016/17

DHLE Longitudinal    Hancock (2021)

## Sample selection

1. UK-domiciled doctoral graduates
2. Location of employment 6 months after graduation

n = 33,065

Missing : 3,980 (about 10.7% of UK doctoral graduates)

30.7% informed they were unemployed,  
29.6% reported doing something else (retired, looking after home or family)  
19.8% were engaged in full-time study, training or research  
8.0% were taking time out to travel  
7.0% were due to start a job in the next month.

# DATA

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## UK-domiciled doctoral graduates

### Variables

#### **Socio-demographic background**

Gender  
Ethnicity  
Age (at PhD graduation)

#### **PhD programme characteristics**

Field of study  
HEI type

#### **Motivation and ability**

Main source of fees  
Mode of study

# MEASURING EARLY LABOUR MARKET OUTCOMES

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## Labour market outcomes

1. Salary (logged): annual salary to the nearest thousand (£) before tax.
2. UK Standard Occupation Classification (SOC)  $\implies$  Managerial and professional occupations
3. Standard Industrial Classification (SIC)  $\implies$  HE teaching/research jobs
4. Type of contract  $\implies$  Permanent/open-ended contracts
5. Indicator variable for graduates who started a postdoctoral position.

# MEASURING MOBILITY

Region of employment	Number of cases	Percentage
Central and East Asia	195	0.59
Europe (excluding the UK)	1,265	3.83
Latin America and the Caribbean	65	0.20
Middle East and North Africa	185	0.56
North America	870	2.63
Oceania	205	0.61
South Asia	35	0.10
Southeast Asia	100	0.30
Sub-Saharan Africa	100	0.30
UK (including UK Islands and British Overseas Territories)	30,045	90.88
Total	33,065	100.00

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# STATISTICAL APPROACH

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**RQ1:** Who are the doctoral graduates who move abroad six months after graduation?

Logistic regression models  $P_i(X_i = 1|Z_i)$  Socio-demographic background  
PhD programme characteristics  
Motivation and ability

# STATISTICAL APPROACH

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**RQ2:** What are the early labour market outcome of mobile graduates?

## Inverse-probability weighted regression adjustment

1. Estimate the effect of the covariates on the probability of being mobile using the logistic regression.

$$P_i(X_i = 1|Z_i)$$

1. Predict a particular labour market outcome for (1) graduates who were mobile and (2) graduates who were not mobile six months after graduation. The model is weighted respectively by the inverse probability of moving beyond the UK and the inverse probability of staying in the UK six months after graduation.

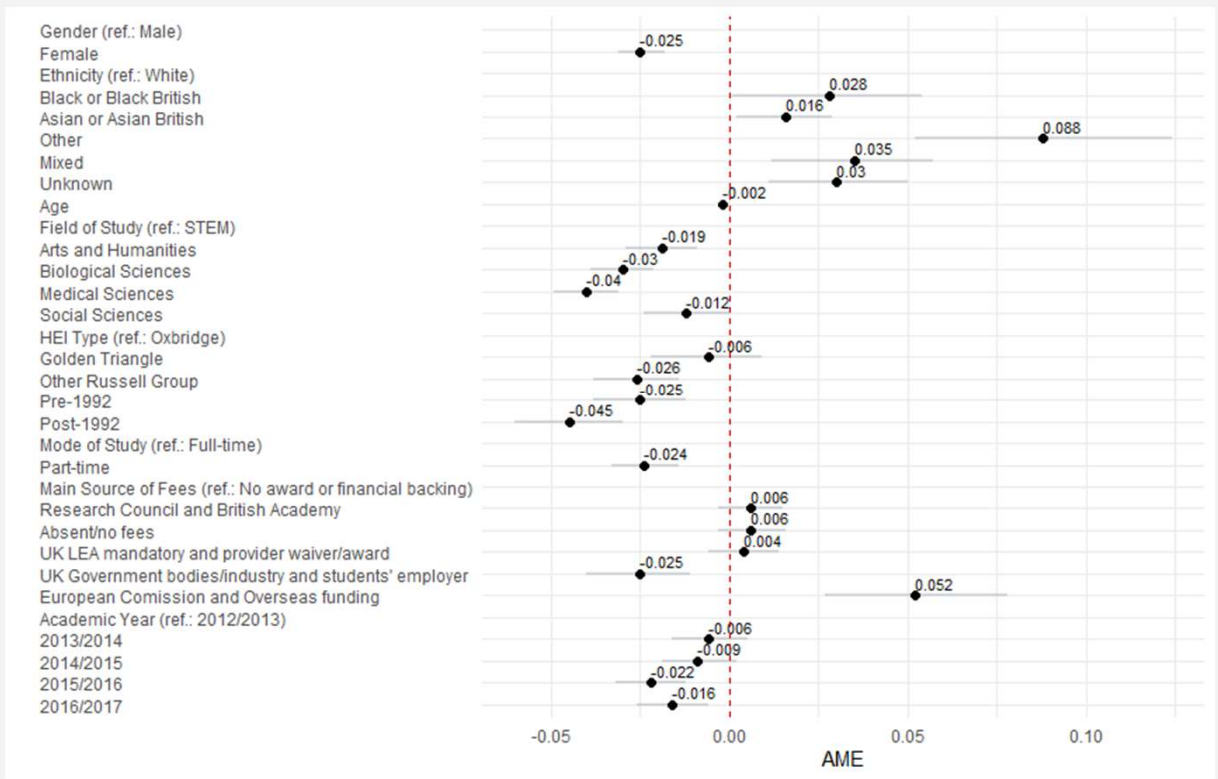
$$Y_{i1} = \frac{\alpha_1 + \beta_1 Z_i + e_i}{P_i(X_i = 1|Z_i)} \quad Y_{i0} = \frac{\alpha_1 + \beta_1 Z_i + e_i}{[1 - P_i(X_i = 1|Z_i)]}$$

1. The difference in the early labour market outcome for mobile and non-mobile PhD graduates - average treatment effect - is estimated by subtracting the weighted mean of mobile and non-mobile doctoral graduates

$$ATE = Y_{i1} - Y_{i0}$$

# FINDINGS

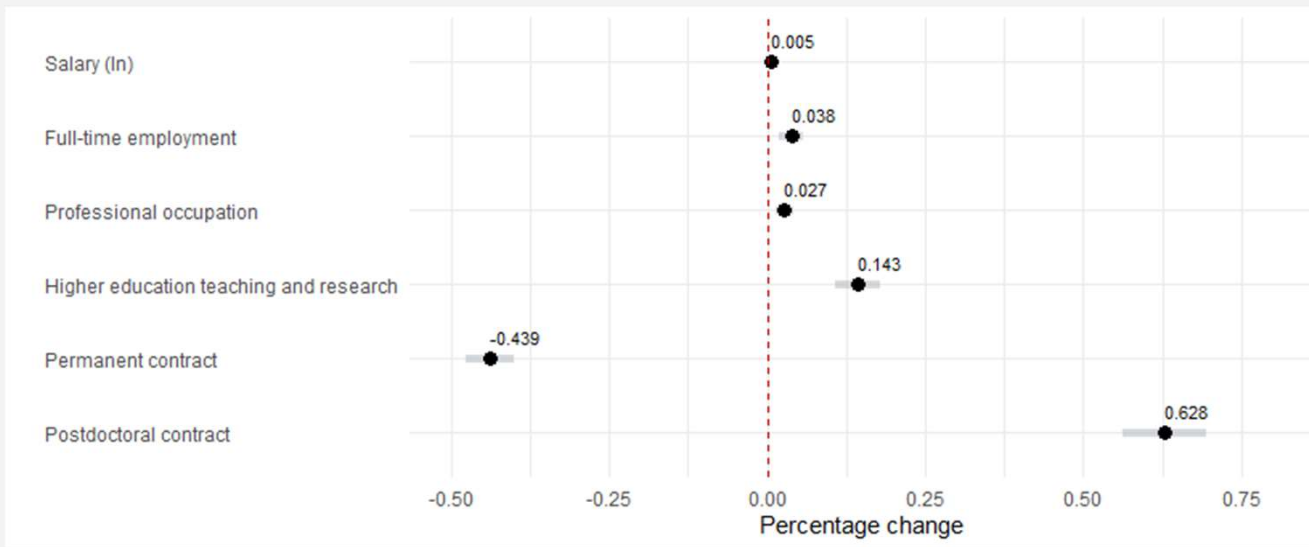
## RQ1: Who are the doctoral graduates who move abroad six months after graduation?





# FINDINGS

**RQ2:** What are the early labour market outcome of mobile graduates?



# FINDINGS

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## RQ1: Who are the doctoral graduates who move abroad three months after graduation?

- Female, white and older graduates had a lower probability of being mobile six months after graduation
- STEM graduates more likely to be mobile
- Institutional stratification plays a role on mobility → Oxbridge graduates have a higher probability of being mobile when compared to post-1992
- EU/Oversea funding is positively associated with the probability mobile.
- Differences in academic year → BREXIT effect?

## RQ2: What are the early labour market outcome of mobile graduates?

- Small difference in salary, occupation and full-time employment.
- Mobile is associated with academic and research job and in postdoctoral contracts
- BUT we found a negative association between mobility and being in permanent/open-ended contracts.

# REFLECTIONS

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- **RQ1: Who is mobile?**
  - Mobility is connected to asymmetrical power differences in terms of individual demographic characteristics, subject and institution - a migratory elite?
  - Mobile PhDs should have relatively easy access to skilled employment in the UK, so why are they choosing to go? Tentative support for human capital theory and signalling *but* qualitative data needed to explore this
  - Mobility could be a reaction to an unappealing UK labour market

# REFLECTIONS

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- **RQ2: Early labour market outcomes**
  - Mobility associated with higher rates of academic and research employment
  - UK is an attractive destination for doctoral study but less so for postdoctoral training opportunities in academia and research
  - Unclear how the enhancements of early mobility will translate in the longer term: how do career paths unfold, does mobility persist, and how do STEM/Oxbridge graduates without mobility experience compare?

# FUTURE RESEARCH PRIORITIES

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- **Longer-term evidence on doctoral career outcomes**
  - Tentative evidence that mobility is valued but global science is mediated by national and institutional policies - informing policy in the context of considerable Brexit uncertainty
- **Qualitative research on agency and decision-making**
  - Are working conditions perceived to be better beyond the UK, is international experience desired, or is mobility about a securing an academic or research career *anywhere* - signalling decisions and human capital investments
- **Further explore disciplinary differences**
  - Supply and demand; training traditions; epistemic cultures

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THANK YOU!

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