



INSTITUTE FOR EMPLOYMENT
RESEARCH
The Research Institute of the Federal Employment Agency

SHOULD I TRAIN OR SHOULD I GO?

ESTIMATING TREATMENT EFFECTS OF RETRAINING ON REGIONAL AND
OCCUPATIONAL MOBILITY

EEA-ESEM 2022

Bocconi University, August 22 - 26, 2022

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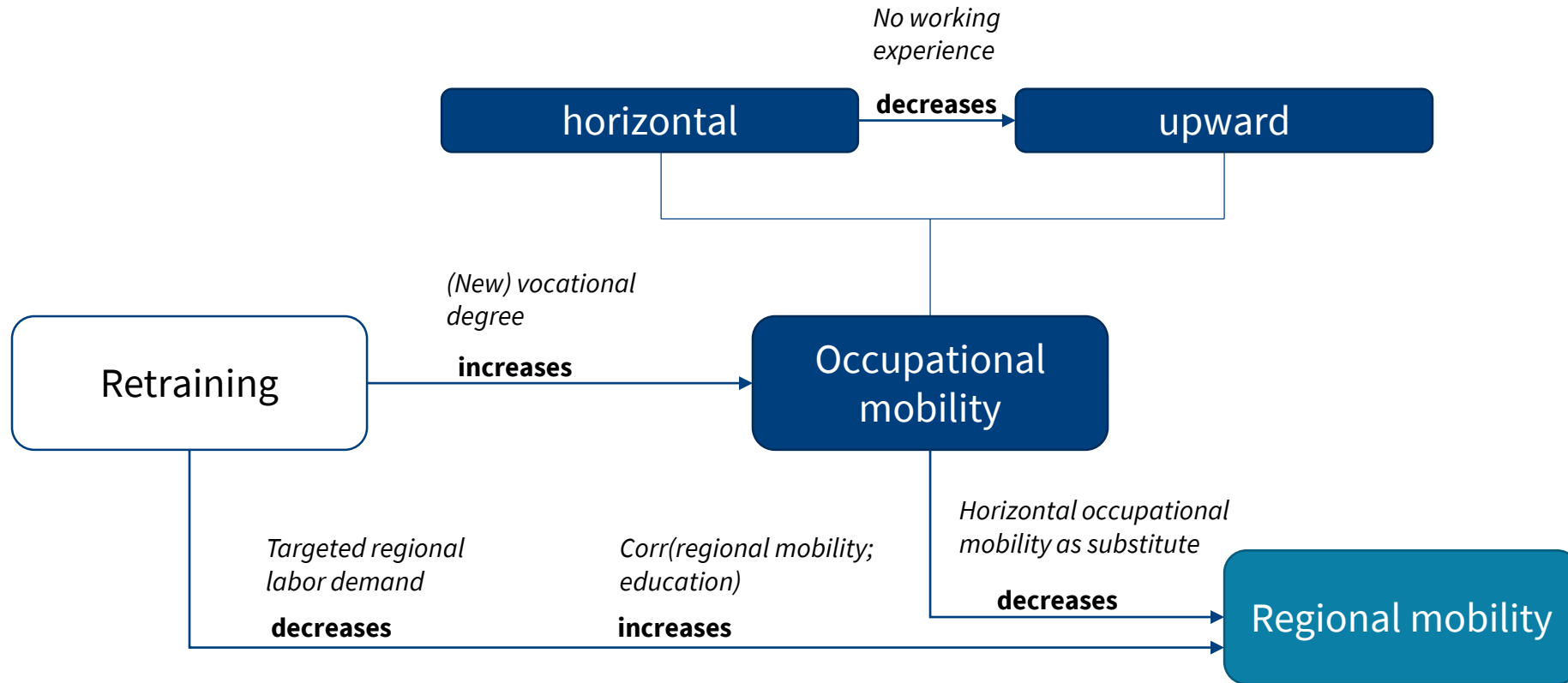
MOTIVATION

- Much empirical evidence for positive quantitative employment effects of subsidized (re)training programs for unemployed workers (e.g. Lechner et al. 2007, Fitzenberger and Völter 2007, Fitzenberger et al. 2008, Doerr et al. 2017, Kruppe and Lang 2018)
- Little is known about qualitative employment effects (e.g. Dengler 2019, Grunau and Lang 2020)
- This paper:
 - Is occupational mobility (through retraining) a substitute for regional mobility?
 - Does retraining increase upward mobility?

INSTITUTIONAL BACKGROUND

- Retraining:
 - Most extensive government sponsored training program (duration of 2-3 years)
 - Leads to a (new) vocational degree
 - About 54.000 entries per year (2019)
- Target groups
 - (unemployed) individuals without a vocational degree
 - (unemployed) individuals who have been in an low-skilled job for at least 4 years since last working in learned occupation

MECHANISMS



DATA

- Administrative data: Integrated Employment Biographies (IEB V15.00.00-201912): all entries into retraining in 3/2013 + random sample of non-participants
- Outcomes: measured in 5th year after (hypothetical) treatment start
 - **Horizontal occupational mobility**=1 if last occupation before entry into unemployment \neq occupation afterwards (2-digit)
 - **Vertical occupational mobility**=1 if position of last job before entry into unemployment $<$ position afterwards (e.g. low-skilled $<$ specialist)
 - **Regional mobility**=1 if worker changes place of residence with a distance of at least 50km

DATA

Table 1: Mean values of selected variables

	Treated	Controls	Difference
Age	35.83	38.18	-2.35***
Female	0.51	0.45	-0.06**
Education			
No degree	0.13	0.11	0.02***
Vocational degree	0.79	0.73	0.06***
High school degree	0.09	0.16	-0.07***
Position last job			
Unskilled	0.44	0.30	0.14***
Skilled	0.48	0.52	-0.04***
Specialist	0.05	0.08	-0.03***
Expert	0.03	0.10	-0.07***
N	11,192	35,932	

METHODOLOGY I

- Modified Causal Forest (Lechner, 2018) to estimate heterogenous treatment effects
- Modified version of Causal Forests proposed by Wager and Athey (2018)
 - Splitting rule takes selection bias directly into account by penalizing splits with a low propensity score
 - Method to aggregate the disaggregated Individualized Average Treatment Effects (IATE) into a number of discrete variables of interest: Group Average Treatment Effects (GATE)

METHODOLOGY II

- Non-participants: Estimation of hypothetical retraining start dates based on an elastic net estimator
- Estimation of ATEs, GATEs (gender, marital status, children, position in last job, vocational degree, age) and IATEs
- Employment in fifth year after (hypothetical) start of retraining as tree building variable

RESULTS

Table 2: Average treatment effects in fifth year after (hypothetical) treatment start

	ATE
Employment	0.135*** (0.009)
Horizontal occupational mobility	0.107*** (0.009)
Upward occupational mobility	0.084*** (0.009)
Regional mobility	-0.021*** (0.005)

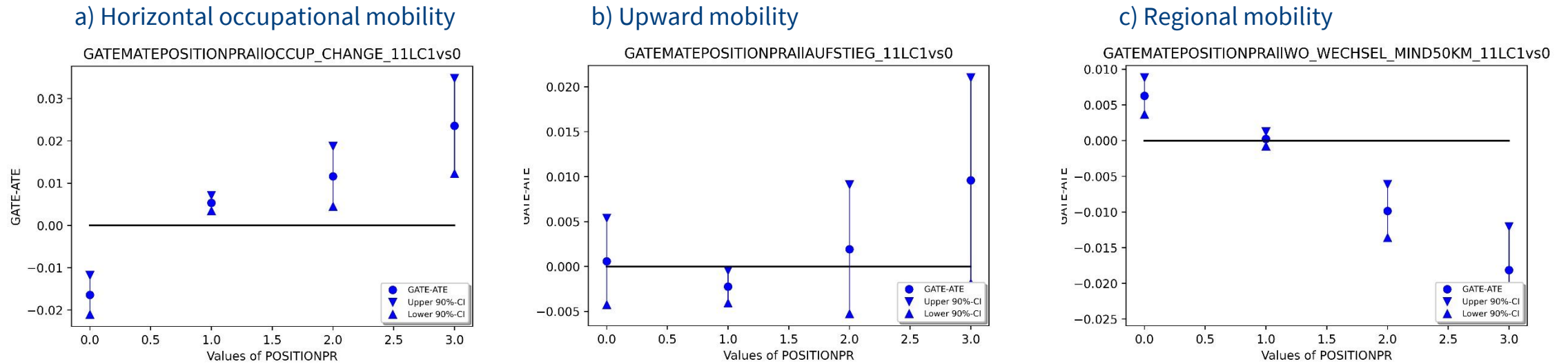
RESULTS

Table 3: Average treatment effects for first employment within 5 years after(hypothetical) treatment start

	ATE
Employment	-0.012 (0.010)
Horizontal occupational mobility	0.111*** (0.001)
Upward occupational mobility	0.089*** (0.009)
Regional mobility	-0.018*** (0.005)

RESULTS – EFFECT HETEROGENEITY

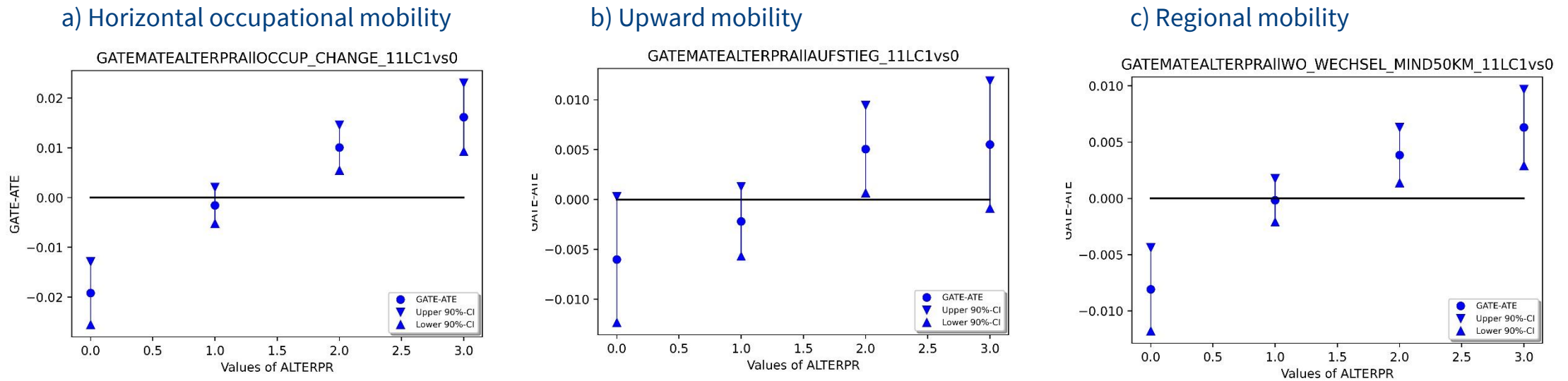
Figure 1: Difference between GATEs and ATE for position of last job before unemployment



0: unskilled, 1: skilled, 2: specialist, 3: expert

RESULTS – EFFECT HETEROGENEITY

Figure 2: Difference between GATEs and ATE for age groups



0: age ≤29 years,
1: age=30-39 years,
2: age=40-49 years,
3: age=50-59 years

FURTHER RESULTS

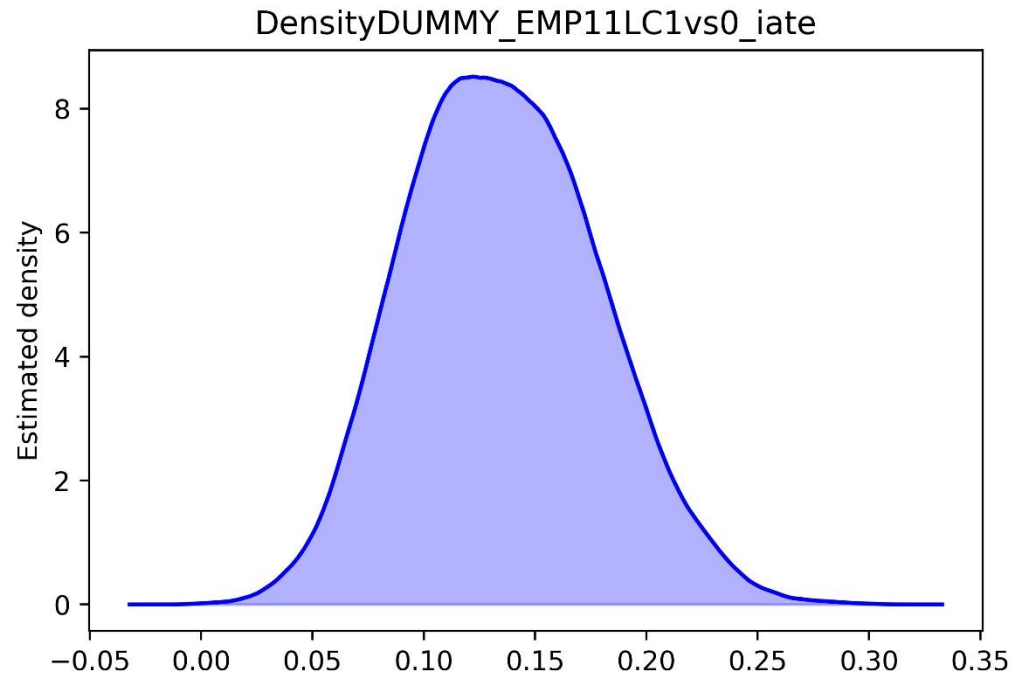
- Not much/no clear effect heterogeneity
 - with respect to vocational degree
 - with respect to marital status and children
- Female participants: higher employment effects, but effects on mobility do not differ between men and women

SUMMARY AND OUTLOOK

- Participation in retraining increases occupational mobility and decreases regional mobility
- Heterogenous effects with respect to different characteristics:
 - Retraining has higher effects on horizontal occupational mobility for workers with higher positions in last job and stronger negative effects on regional mobility
 - Retraining has higher effects on horizontal occupational mobility for older workers and less pronounced negative effects on regional mobility
- To do:
 - Adapt to Dynamic Treatment Assignment
 - Correlation between IATES and individual characteristics
 - Less aggregated occupations for horizontal occupational mobility

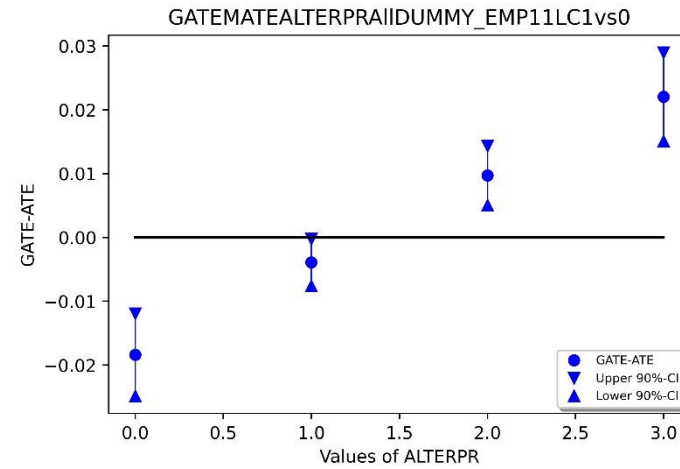
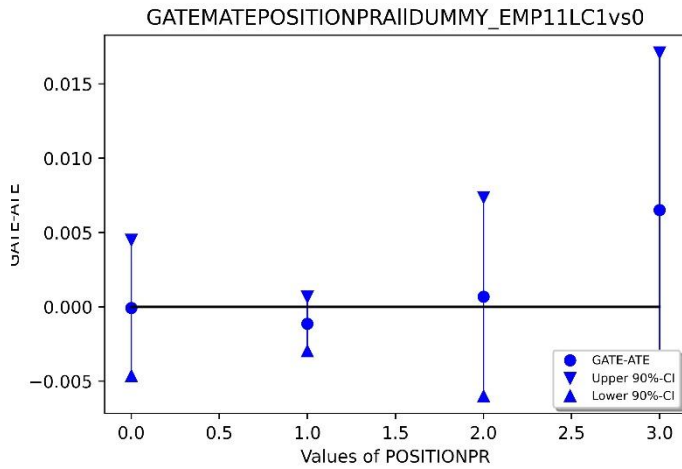
BACKUP

Figure A1: Density IATEs for employment outcome



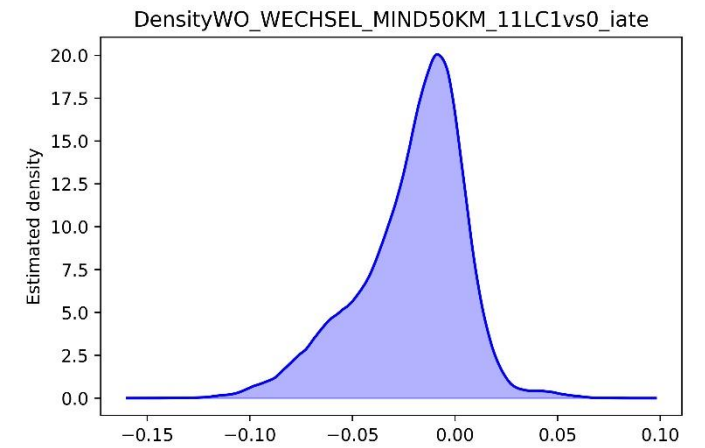
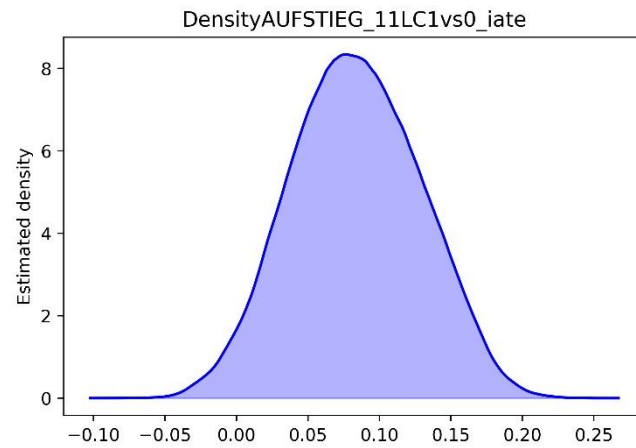
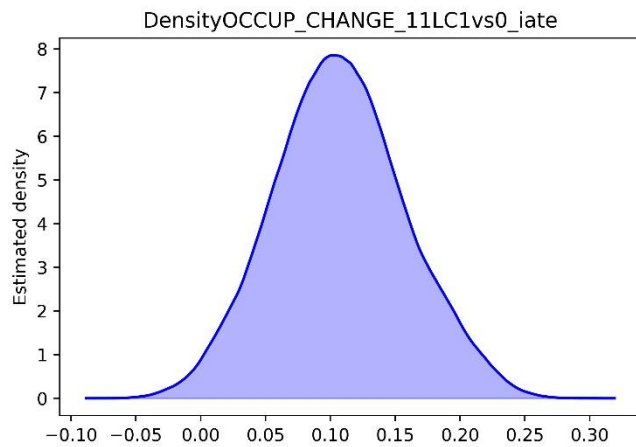
BACKUP

Figure A2: Difference between GATEs and ATE for employment outcome



RESULTS

Figure A3: Density IATEs for mobility outcomes



MECHANISMS

Horizontal occupational mobility:

- Participants receive a (new) vocational degree and take up a job in the newly learned occupation → horizontal occupational mobility
- Participants may obtain a vocational degree in the occupational field in which they were previously employed → no horizontal occupational mobility

Vertical occupational mobility:

- Participants obtain a vocational degree and thus the probability that they will find qualified employment increases → upward occupational mobility
- No work experience when changing profession may reduce effect on upward occupational mobility

MECHANISMS

Regional mobility:

- Occupational mobility as substitute for regional mobility → Retraining reduces regional mobility
- Employment agencies select target occupations for retraining based on regional occupation-specific labor demand → Retraining reduces regional mobility
- Positive correlation between education and regional mobility (e.g. Chetty et al. 2016, Molloy et al. 2011) → Retraining increases regional mobility