



# Learning Environments in Vocational Education and Training (VET) – Aspirations, Transitions and Competence Acquisition

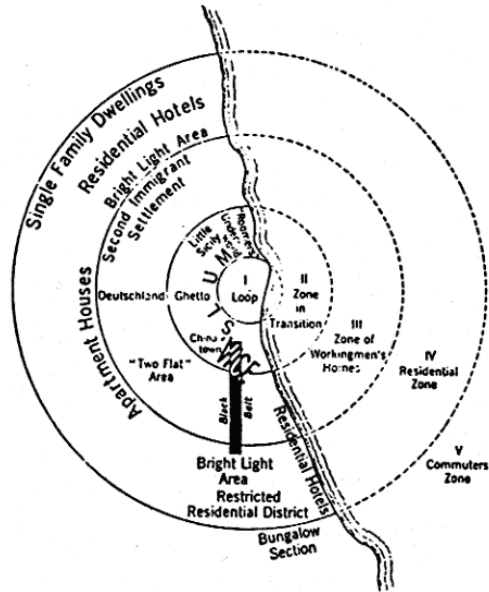
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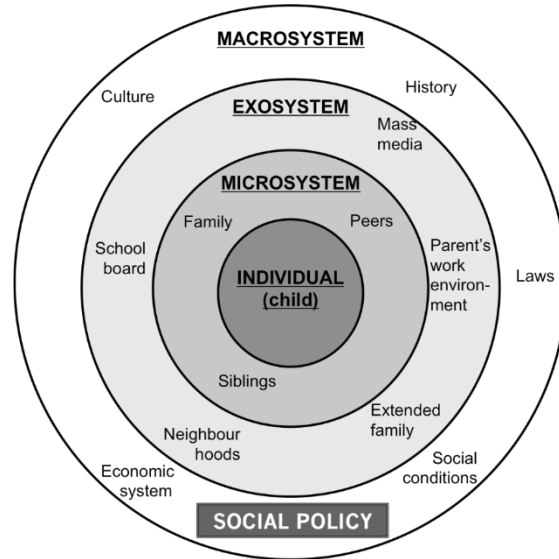
Technequality Conference 25<sup>th</sup>-26<sup>th</sup> (online)

# Motivation

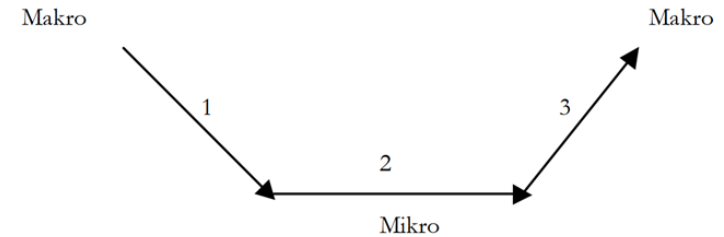
Long tradition of research in social sciences showing that environments in which individuals are embedded in matter for individual outcomes...



Concentric zone model (Park, Burgess & McKenzie 1925: 55)



Social ecological rings (Bronfenbrenner 1979: 214)



The basic macro-micro-macro model (Esser 1993: 98, Coleman 1990: 6ff., McClelland 1961: 47)

# Motivation

Specific environments relevant for VET-related outcomes...



student

# Motivation

Specific environments relevant for VET-related outcomes...



VET schools



student

# Motivation

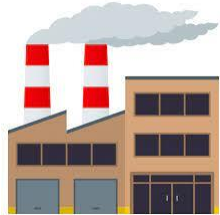
Specific environments relevant for VET-related outcomes...



VET schools



student



Training company

# Motivation

Specific environments relevant for VET-related outcomes...



VET schools



neighbourhood



student



Training company

# Motivation

Specific environments relevant for VET-related outcomes...



VET schools



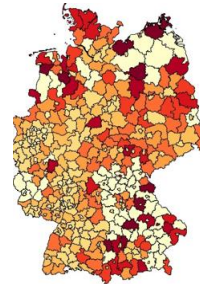
neighbourhood



student



Training company



region

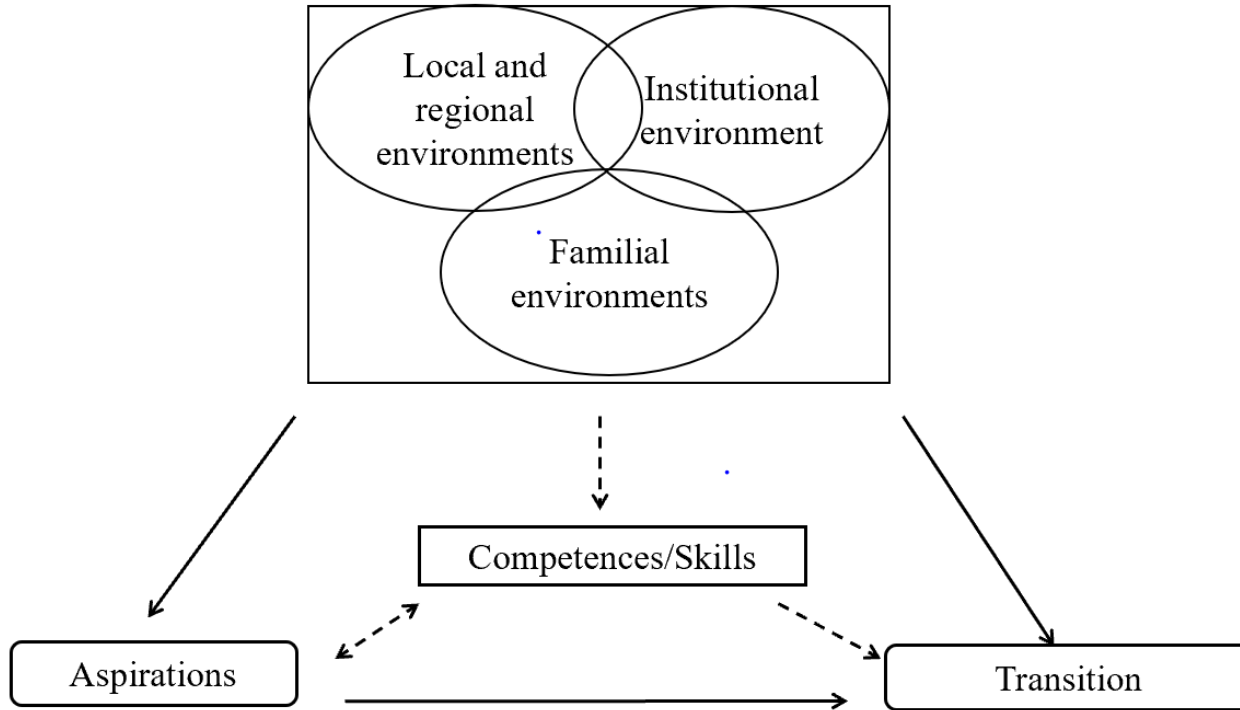
# Research questions

**(How) do environments matter for educational attainment processes in VET?**

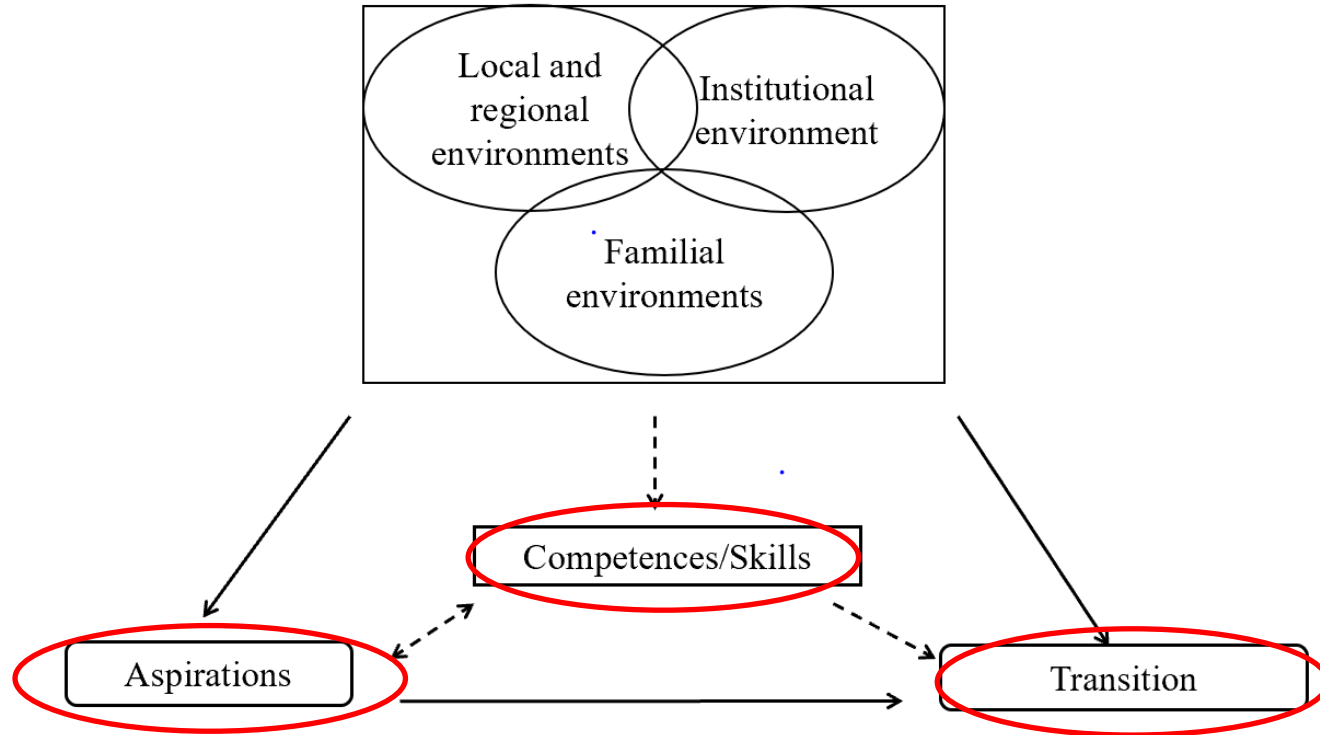
**Which characteristics of environments matter for educational attainment processes in VET?**



# Conceptual model



# Conceptual model



# Conceptual model

## Mechanisms through which environments influence VET-related outcomes

- (secondary) Socialisation
- Social role models
- Social networks
- Normative climate
- (Physical distance to) opportunities
- ...

# Study 1 - TRANSITIONS

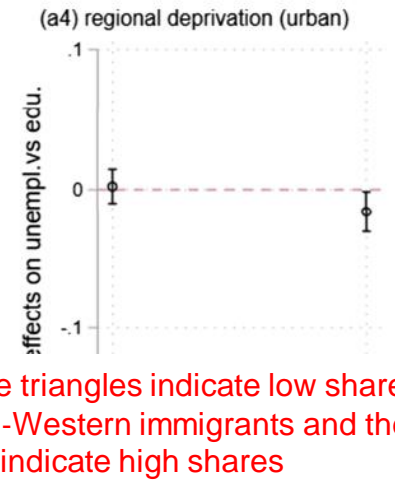
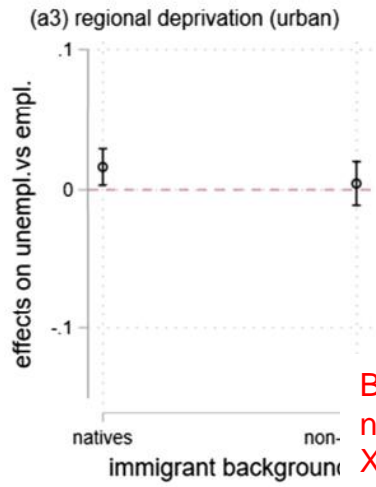
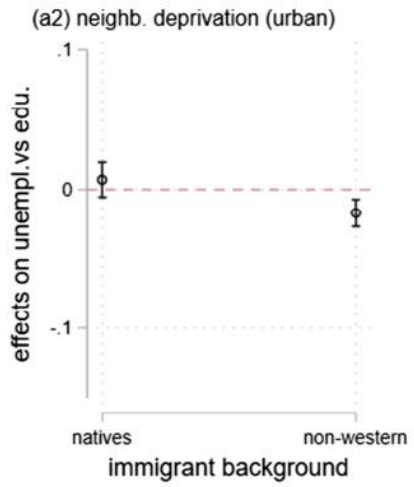
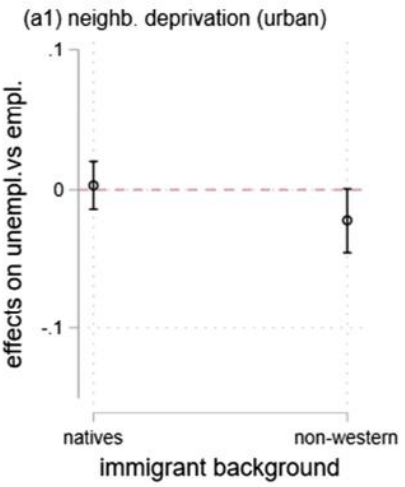
The mediating and moderating role of neighbourhoods and regions on second-generation immigrant youths' school-to-work transitions in the Netherlands (Weßling, K. & C. Meng (2021). *Population, Space and Place*. DOI: 10.1002/psp.2384)

- Limited research analysing effects of different environments simultaneously is limited
- Focus on interrelations between regional and neighbourhood conditions on training to work transitions after VET in the Netherlands
- Focus on adolescents from non-Western immigrant origin
- **Data:** School leaver survey data linked with spatial information from Statistics Netherlands, (N=15,000 VET graduates)
- **Method:** Multilevel linear probability models & mediation analyses

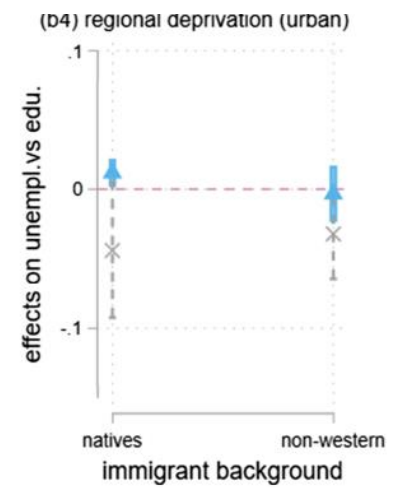
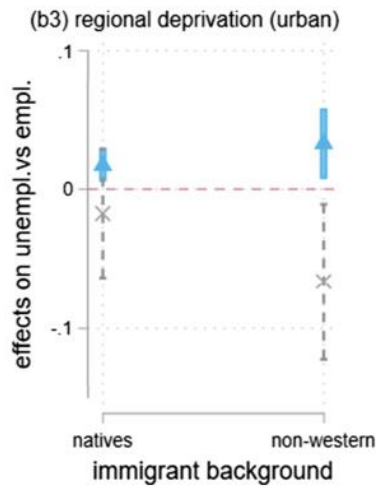
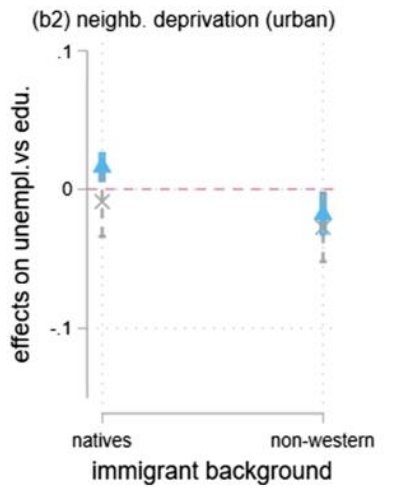
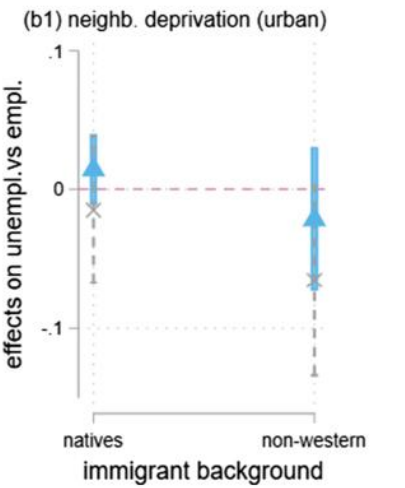
**TABLE 2** Mediation analysis based on linear probability model (LPM)

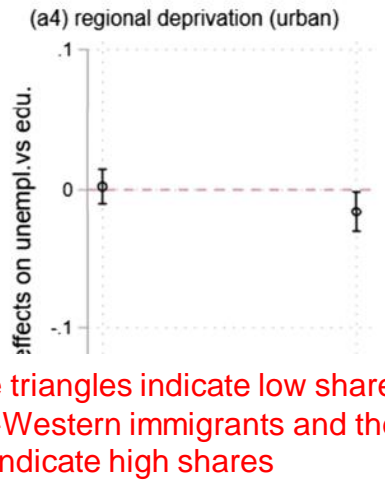
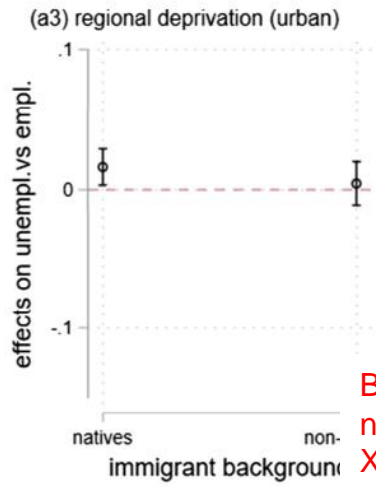
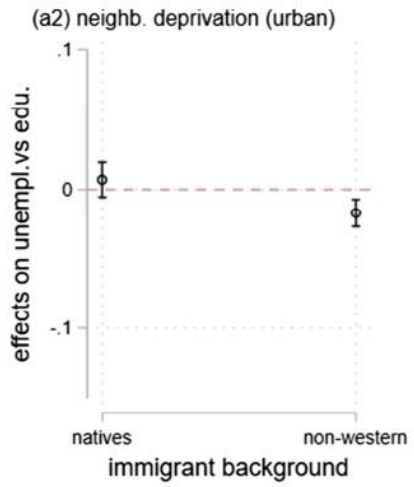
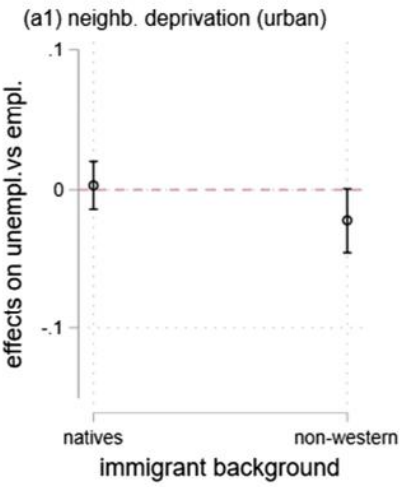
<b>Urban</b>	
<b>(1) unemp vs. emp.</b>	
ACME (average causal mediation effect)	0.023***
Direct effect	0.017***
Total effect	0.040***
% of Tot eff mediated	0.566***
Sensitivity check	
Rho at which ACME = 0	0.014***
<b>(2) unemp. vs. edu.</b>	
ACME (average causal mediation effect)	0.014
Direct effect	0.005
Total effect	0.030
% of Tot eff mediated	0.640
Sensitivity check	
Rho at which ACME = 0	0.005
N	9,908

→ The indirect effect represents 57% of the total effect. The effect of neighbourhood socioeconomic condition on unemployment risk after VET is to large share mediated through socioeconomic condition in the region

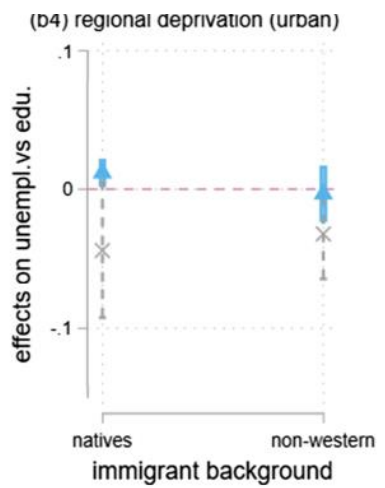
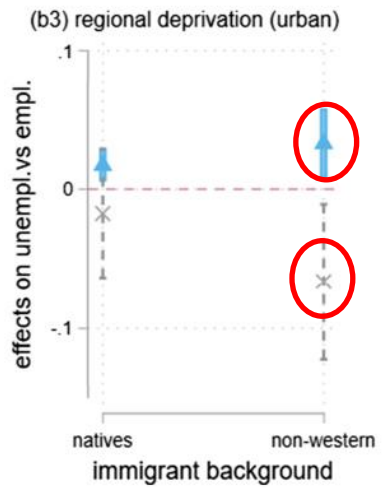
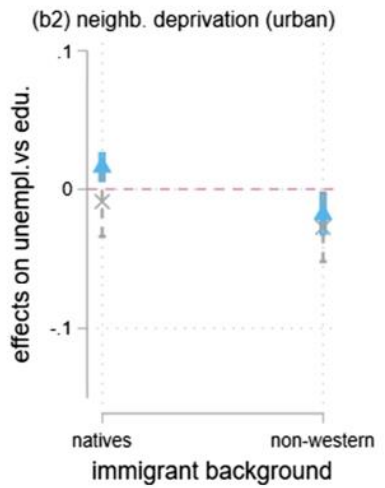
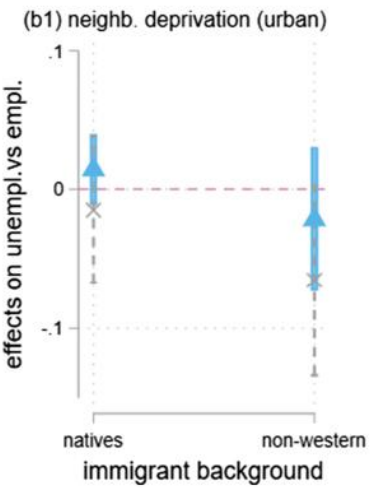


Blue triangles indicate low shares of non-Western immigrants and the grey X's indicate high shares





Blue triangles indicate low shares of non-Western immigrants and the grey X's indicate high shares



# Study 1 – TRANSITIONS

Our results show that:

- Neighbourhood influences diminish/disappear once accounted for the region
- Deprived conditions in urban regions particularly detrimental for adolescents of immigrant descent → However, high share of co-ethnics in neighbourhood reduces unemployment risk of adolescents of immigrant descent



# Study 2 - COMPETENCES

## Introducing competence-based education in vocational education and training: Effects on competence development

- Introduction *competence-based education* (CBE) Dutch VET colleges 2004-2012 → change in curriculum towards more generic competences
- We study role of learning environments in VET on competence development
- We expect CBE-graduates to have higher generic as well as technical competences
- **Data:** ROA Graduate Survey (BVE monitor)

# Study 2 - COMPETENCES

Characteristics of learning environment	Discipline-specific	Basic Generic	Advanced Generic
Activities by professionals in study program			.045** (0.017)
Vocational theories in study program			
Vocational skills in study program			
Generic skills in study program	-.009* (0.04)		
Activities of teachers in study program directed towards practice	.040* (0.019)	.012 (0.018)	.040* (0.016)
Activities of teachers in study program directed towards vocational knowledge			.34** (0.061)
Students acquire knowledge independently			.061* (0.028)

# Study 2 - COMPETENCES

## Introducing competence-based education in vocational education and training: Effects on competence development

Our results show that:

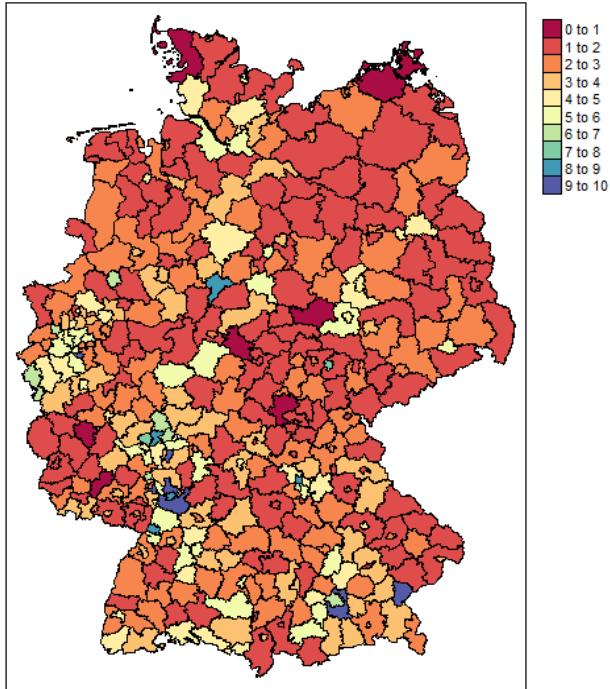
- Generic competences (slightly) positively influenced by introduction of CBE
- However, field-specific competences rather negatively influenced by implementation of CBE

# Study 3 – ASPIRATIONS

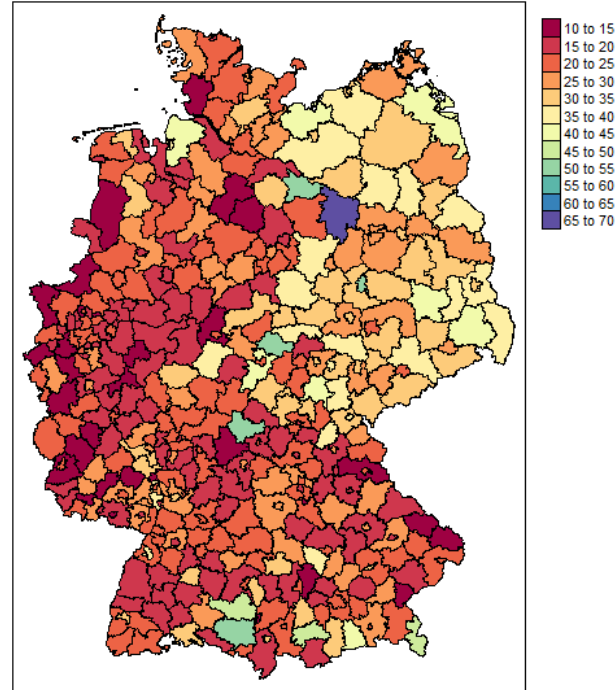
## How does technologisation in the region influence STEM aspirations of boys and girls in secondary school?

- Occupational gender segregation persistent pattern within the German labor market; particular in VET occupations
- We investigate if regional technology intensity can increase the attractiveness of STEM professions for young women
- **Data:** National Educational Panel Study (NEPS-SC3) linked with admin. regional data

# Study 3 – ASPIRATIONS

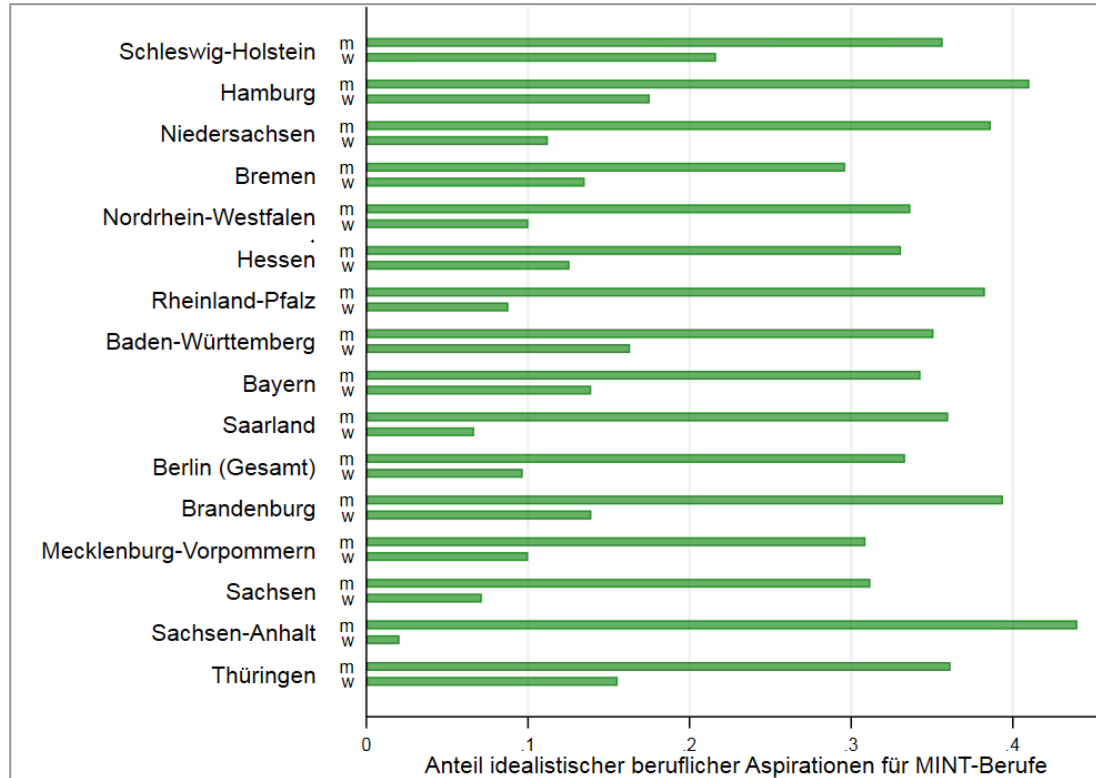


Employees in IT and STEM occupations, data: BBSR, 2021



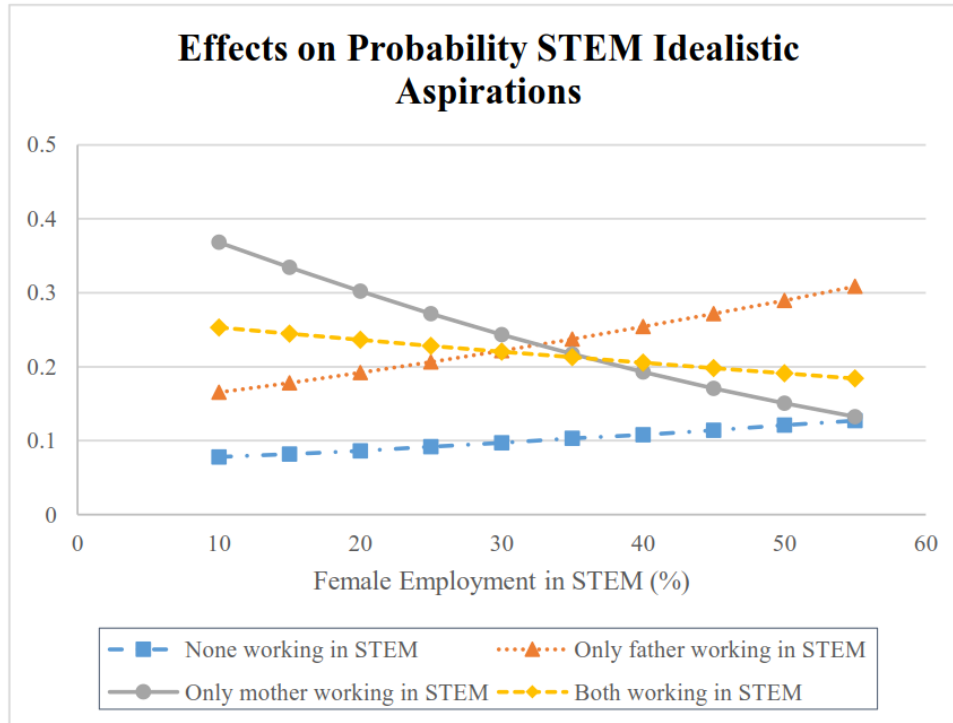
Female employees in IT and STEM occupations, data: BBSR, 2021

# Study 3 – ASPIRATIONS



Data: NEPS SC3, wave 4

# Study 3 – ASPIRATIONS



→ Grey line: If mothers have STEM occupation share of women in STEM/IT occupations in the region becomes less relevant for girls' STEM aspirations

Female students only; Daten: NEPS-SC3; BBSR (2021)

# Study 3 – ASPIRATIONS

Our preliminary results show:

- Strong regional variation in boys' and girls' STEM aspirations
- Interrelation between: STEM aspirations, regional characteristics and familial occupation



# Conclusion & Discussion

I hope I could convince you that:

- Environments/spatial contexts matter!
- There is a lot more to do → especially against background of technological change and digitisation

## Contact

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# Discussion

## Automation risks of vocational training programs and early careers in the Netherlands

by Alexander Dicks, Annemarie Künn-Nelen, Mark Levels, Raymond Montizaan

- 1) Content of measure/timing of measure: Do you really measure (the right) automation risk?
- 2) Why do you expect personality to be a moderator?
- 3) Right target group/outcome? VET graduates are (to some extent) entering the LM when starting VET
- 4) How would results look for unskilled / highly educated?