

# **Native - Immigrant Gaps In Occupational Choices**

## **The Case of Germany**

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**1**

**Introduction**

# Introduction

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- Main Research Question:

*“To what extent can measurable socio-demographic characteristics explain the labor market choices of workers in Germany, with respect to skill level and language intensity of occupation, when workers are assumed as rational decision makers driven by purely utilitarian considerations.”*

- Socio-demographic characteristics: Independent variables
- Labor market choices: dependent variables (skill level and language intensity)
- We assume highest possible occupation is the goal to achieve
- SOEP Data in combination with O\*NET classifications

# Dependent Variables

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## **ISCO-Skill Levels**

International Standard Classification of Occupations, divided in five categories based on skill level, which in turn is defined as a function of the complexity and range of tasks and duties to be performed in an occupation.

## **Language-interactivity skills**

Based on a combination of the ISCO-skill level and the O\*NET Language Skills, resulting in the language interactivity for an occupation.

# Migration Background

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## **Native German**

The individual and their parents are born in Germany

## **First Generation (Direct) Immigrant**

The individual and their parents are born abroad

## **Second Generation (Indirect) Immigrant**

The individual is born in Germany, their parents are born abroad

# Previous Research

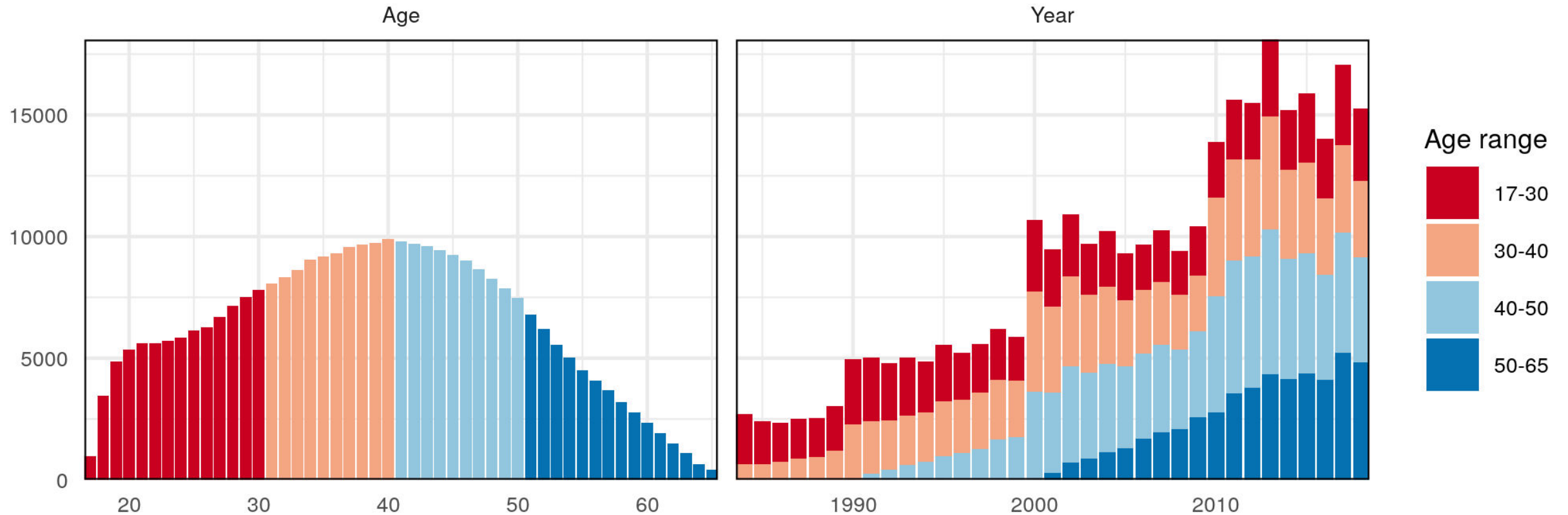
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- Standard Economic Theory: Immigrants and natives are perfect substitutes
- However, task specialization between immigrant and native-born workers has been shown

Author	Focus on task-specialization	All education levels	Sex	Country	Migration background
Chiswick (1978)	No	Yes	Men	United States	First generation, natives
Peri et al. (2009)	Yes	Only less-educated	All	United States	First generation, natives
Amuedo-Dorantes et al. (2011)	Yes	Yes	All	Spain	First generation, natives
Algan et al. (2010)	No	Yes	All	FR, DE, UK	First, second, natives
Our paper	Yes	Yes	All	Germany	First, second, natives

# Immigration to Germany

- 13 percent of people in Germany have a migration background
  - Turkish are 13 percent of it, Polish 10 percent and Russian 7 percent





# Mincer Equation

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$$\ln(\text{earnings}_s) = \alpha + \rho_s + \beta_0(\text{experience}) + \beta_1(\text{experience})^2 + \varepsilon$$
$$= \alpha + \rho_s + \beta_0(\text{experience}) + \beta_1(\text{experience})^2 + \varepsilon$$

## Basic Model

Female

Years of Education

Work Experience

Origin (western/eastern-European or Turkish)

Direct / Indirect Migrant

Language Distance

## Augmented Model

Basic Model's Variables

Education East

Education Abroad

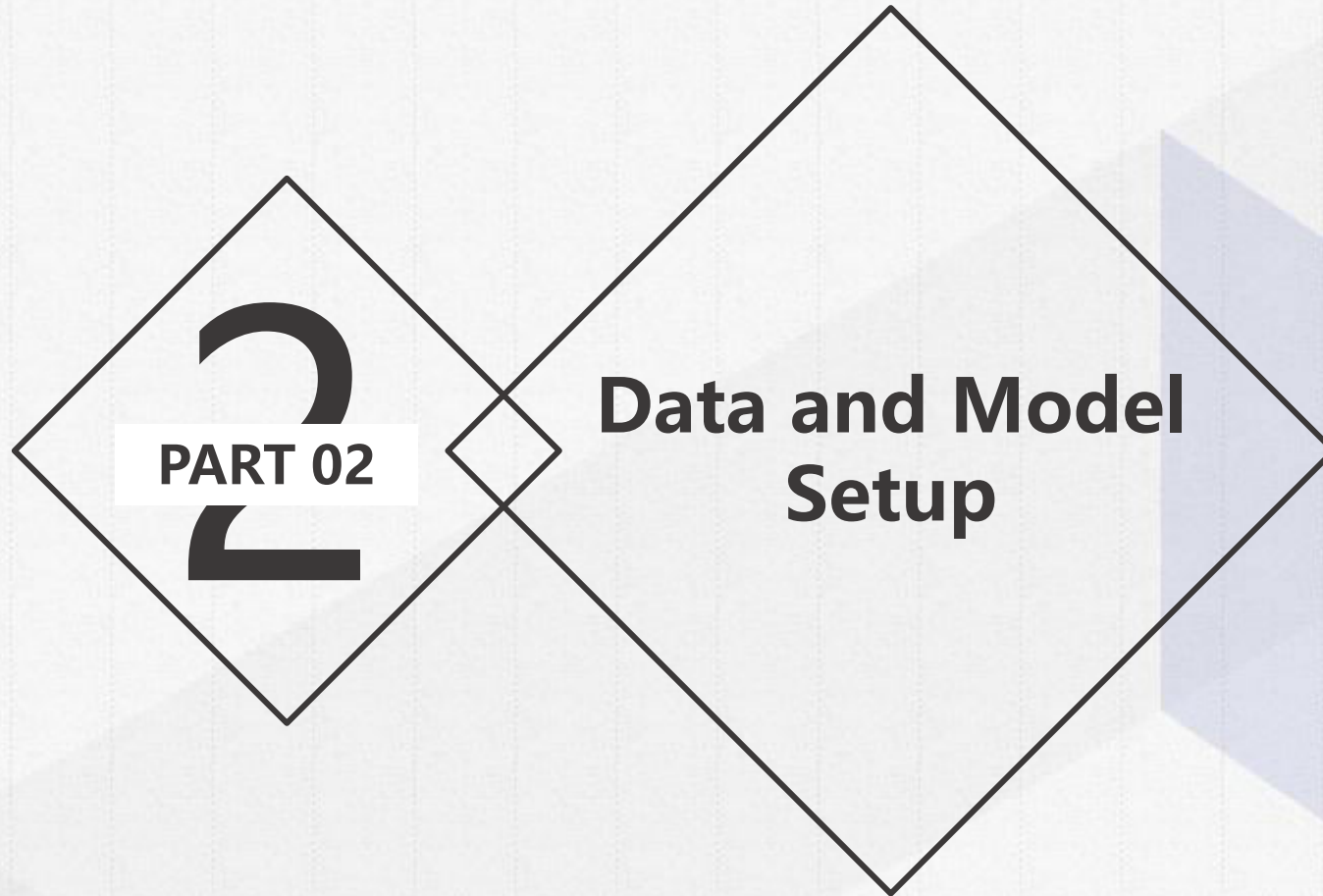
Years in Germany

Married to German

Children

ISCO- or Language-skill Level of Parent

Cohort (Baby Boomer/Gen X/Millennial)



**2**  
**PART 02**

**Data and Model  
Setup**

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# Data

- Migration background and cultural groups
- Occupational classification based on ISCO-08 code/language skills
- Education and working experience

## Multinomial Logit Model

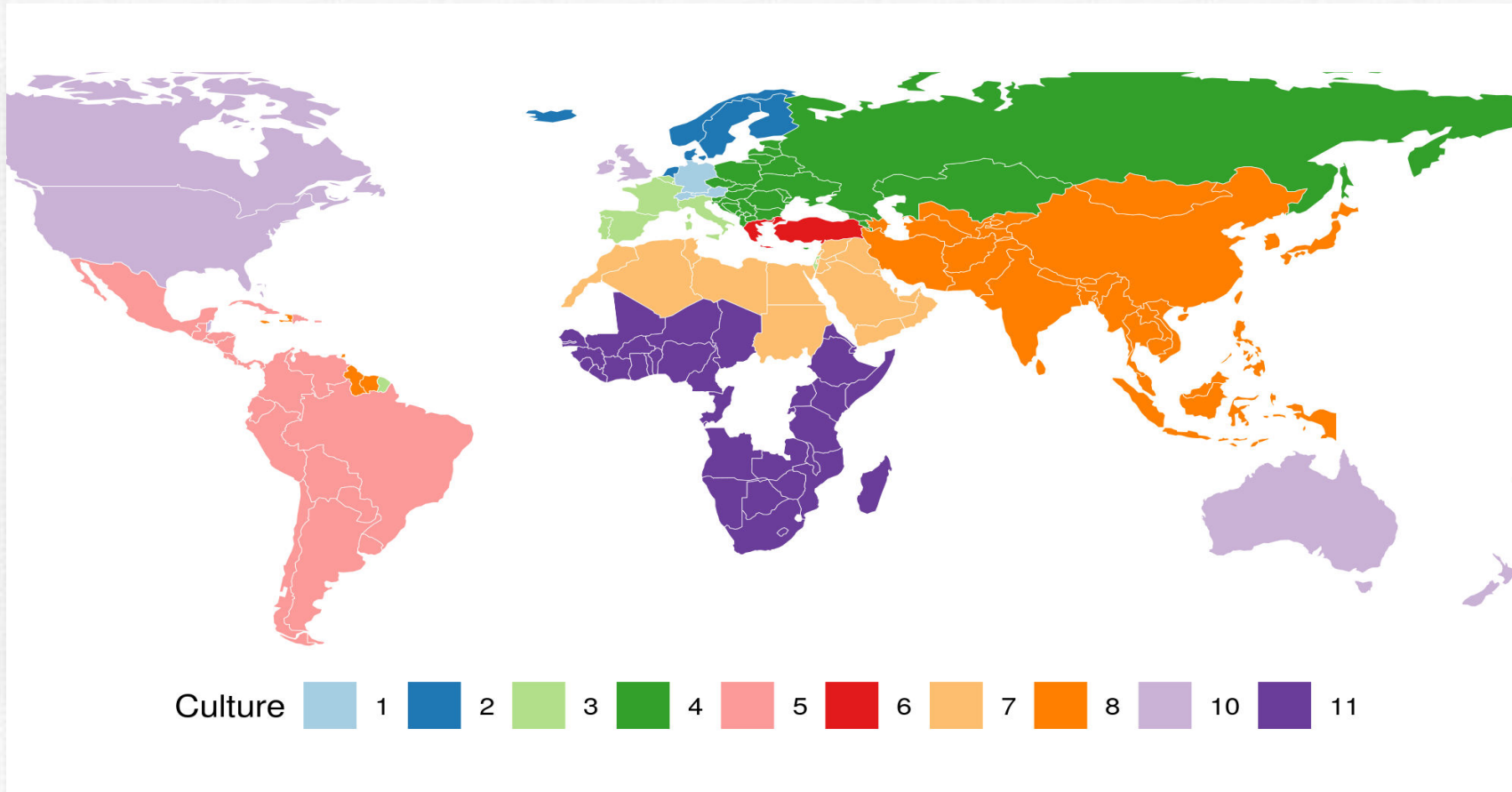
- Utility maximization
- The Marginal Effects

# Migration background

Three big changes in migration background compared to original data

- Only persons being born after 1949 are kept in the sample
- Consider 1.5 generation immigrants as full second-generation (indirect) immigrants
- Changing migration status of children of native Germans and foreigner from natives to “indirect immigrant”

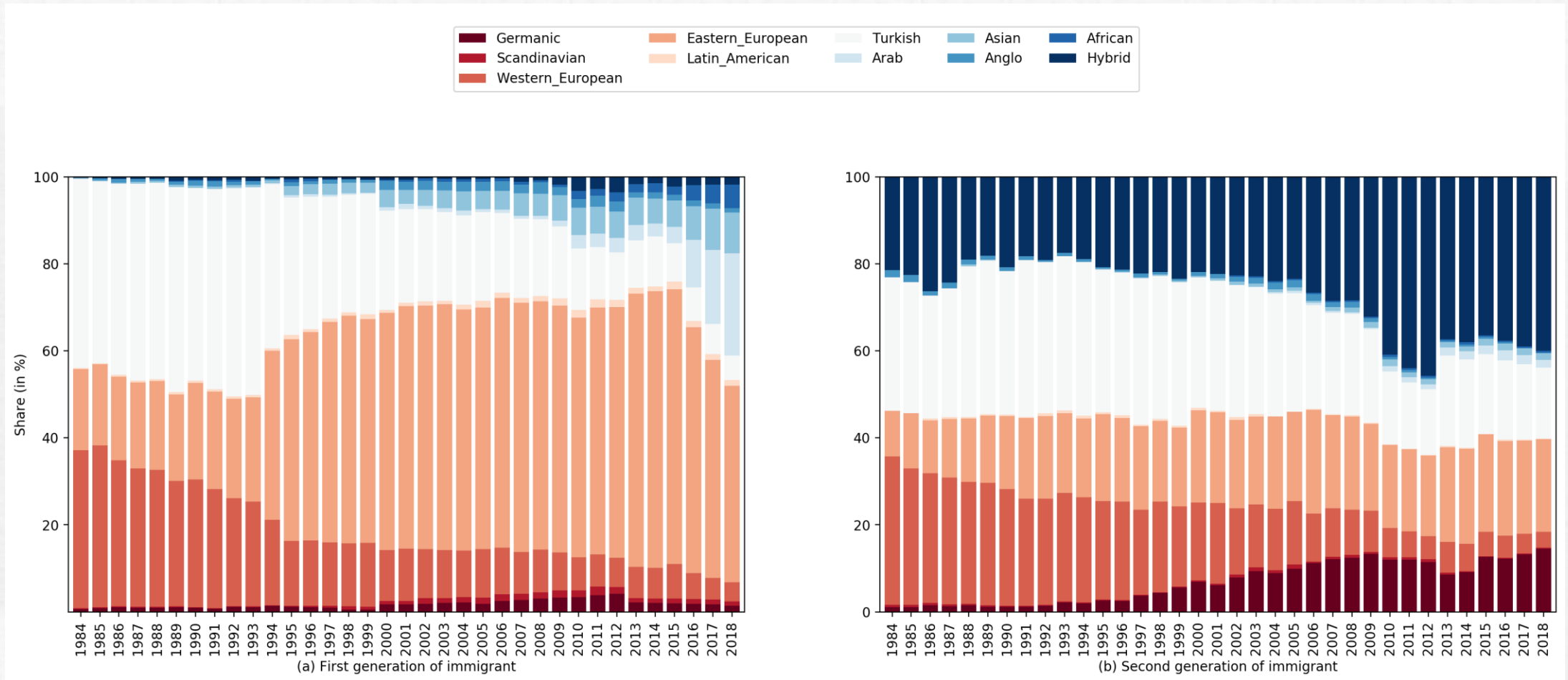
# Cultural groups



Map of cultural clusters.

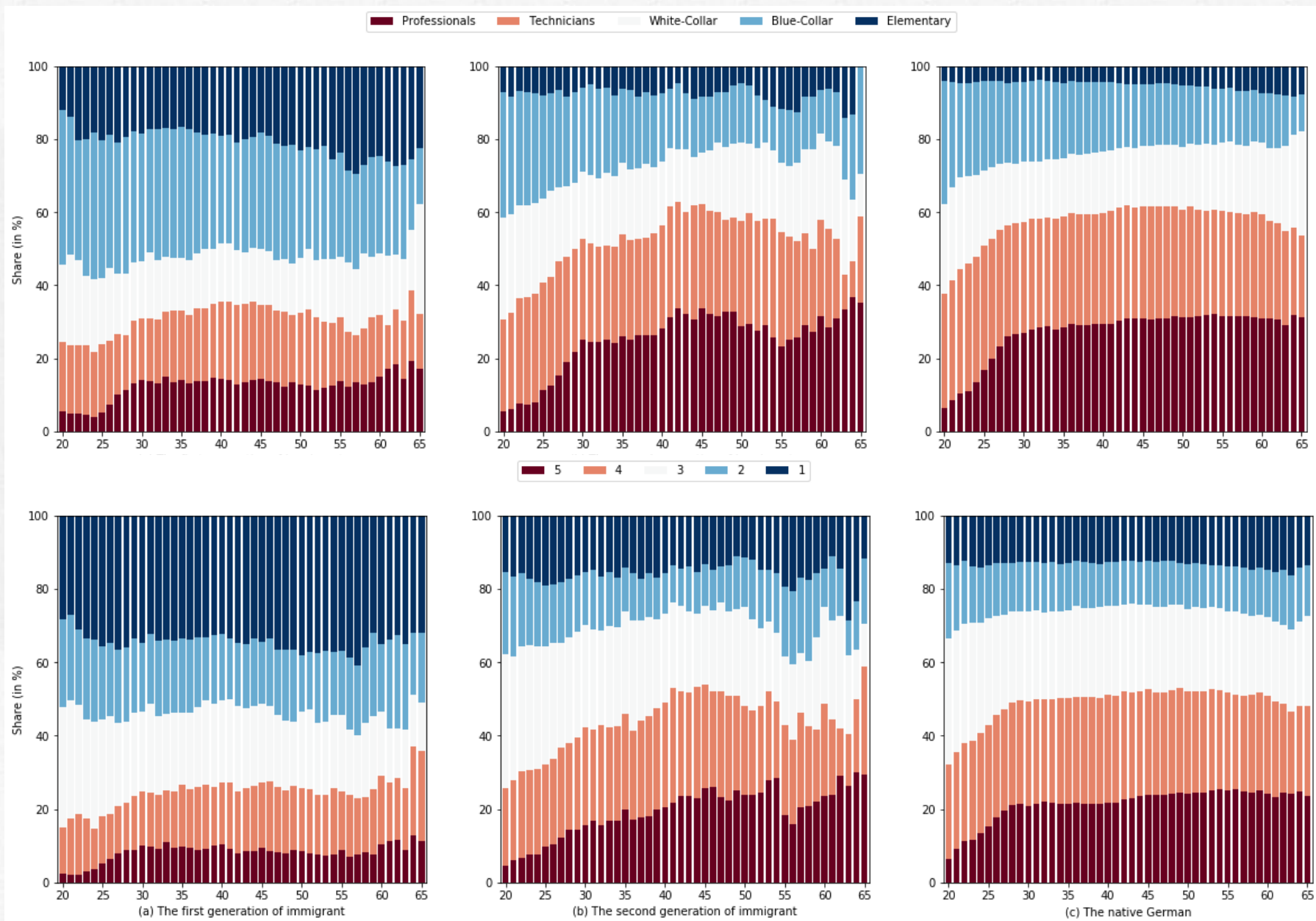
- (1) Germanic
- (2) Scandinavian
- (3) Western EU
- (4) Eastern EU
- (5) Latin American
- (6) Turkish/Greek
- (7) Arabian
- (8) Asian
- (10) Anglo-Saxon
- (11) African.

# Migration background and cultural groups



The first- and second-generations of immigrants by ethnic group (1984 - 2018)

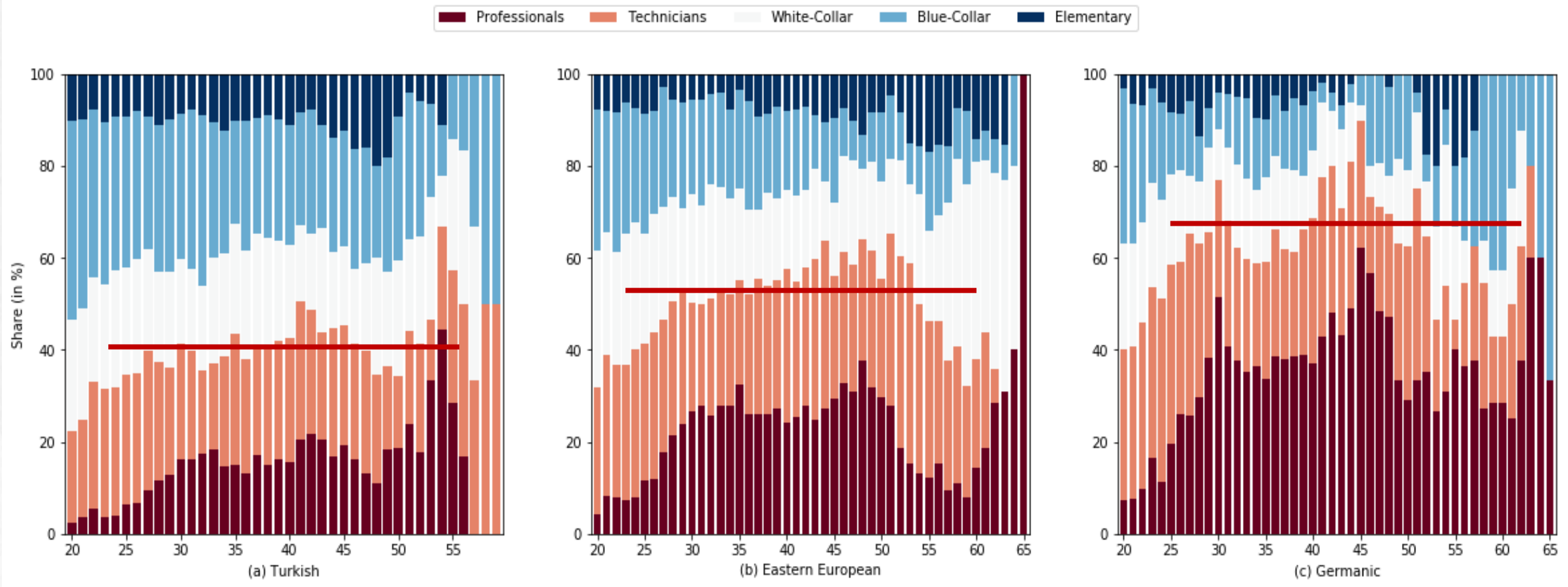
# Occupational classification based on ISCO-08 code/ language skill



ISCO-08

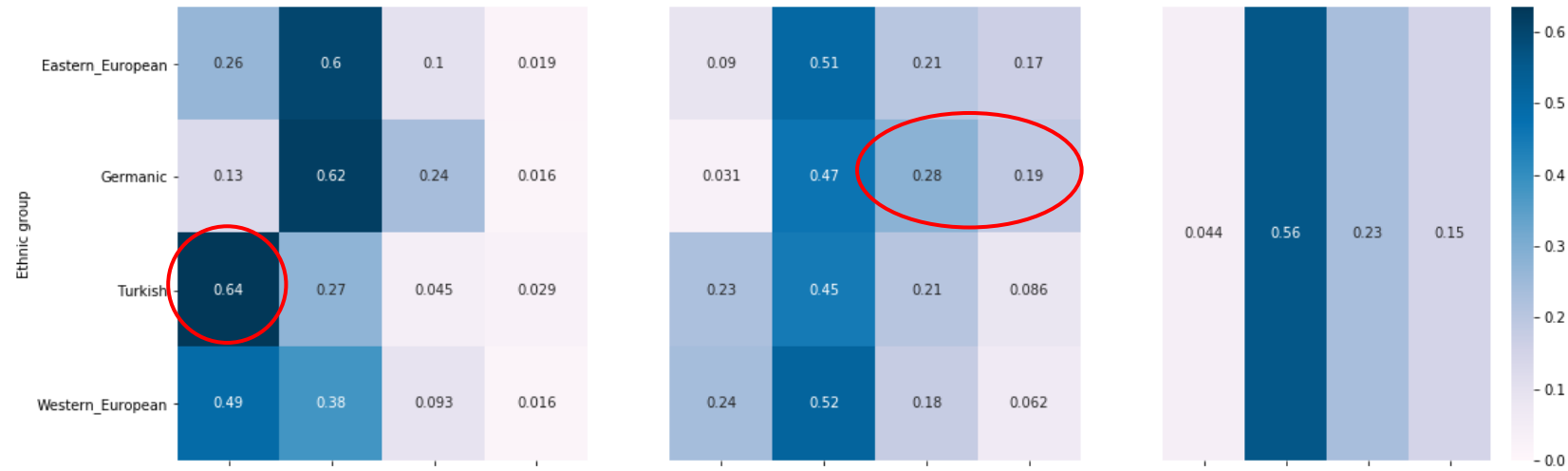
Language Skill  
1) The lowest  
(5) the highest

# Heterogeneity within second-generation immigrants





# Education

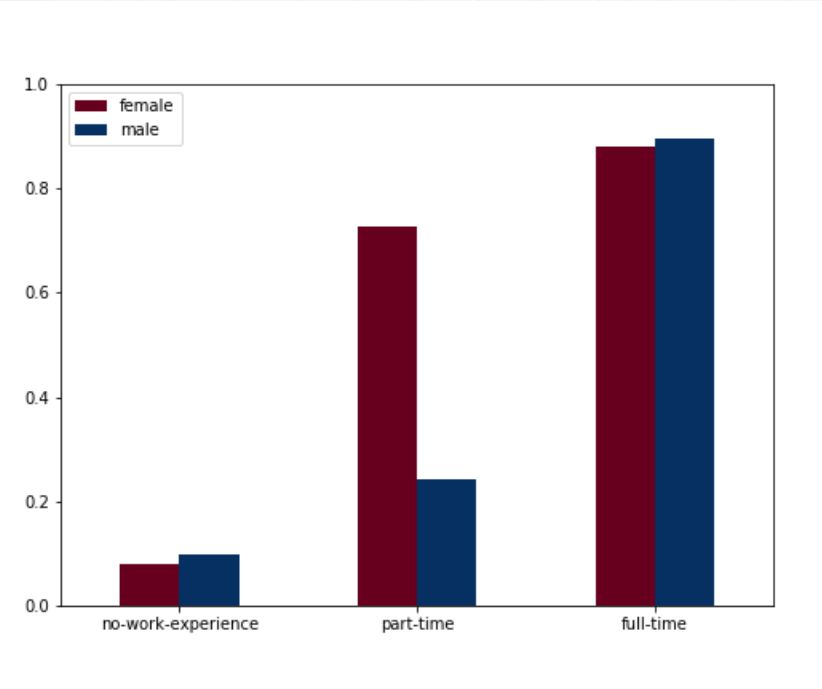


Female

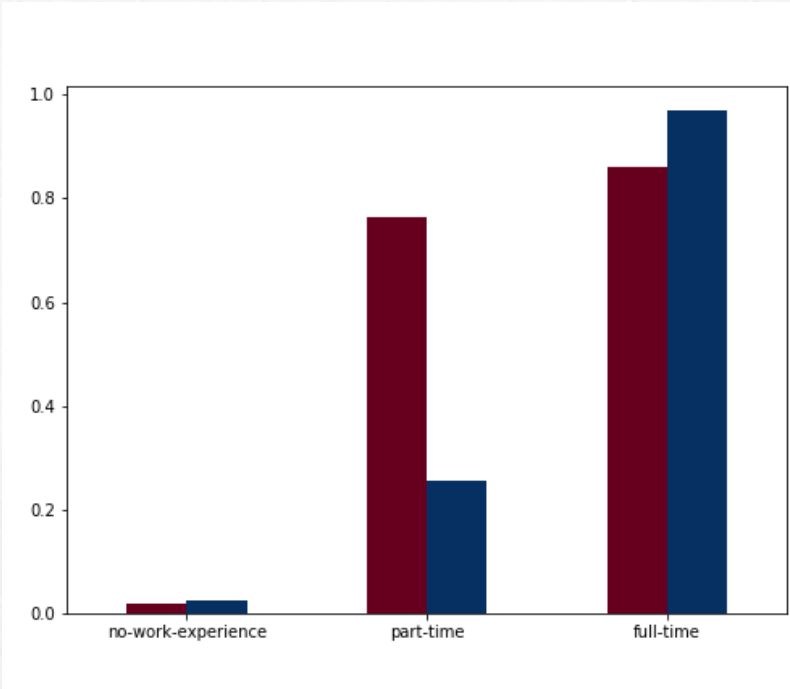


Male

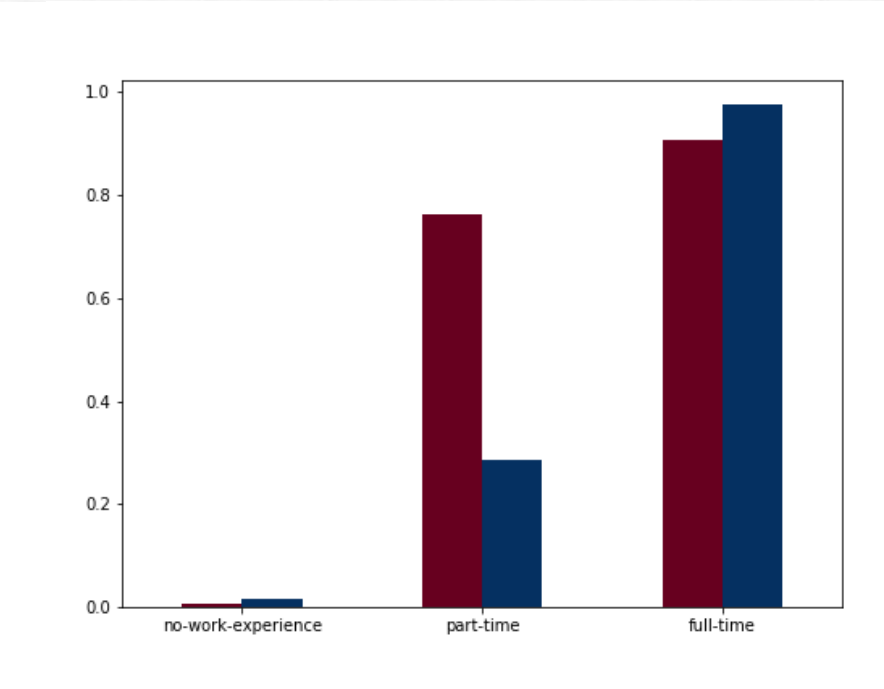
# Work Experience



Native Germans



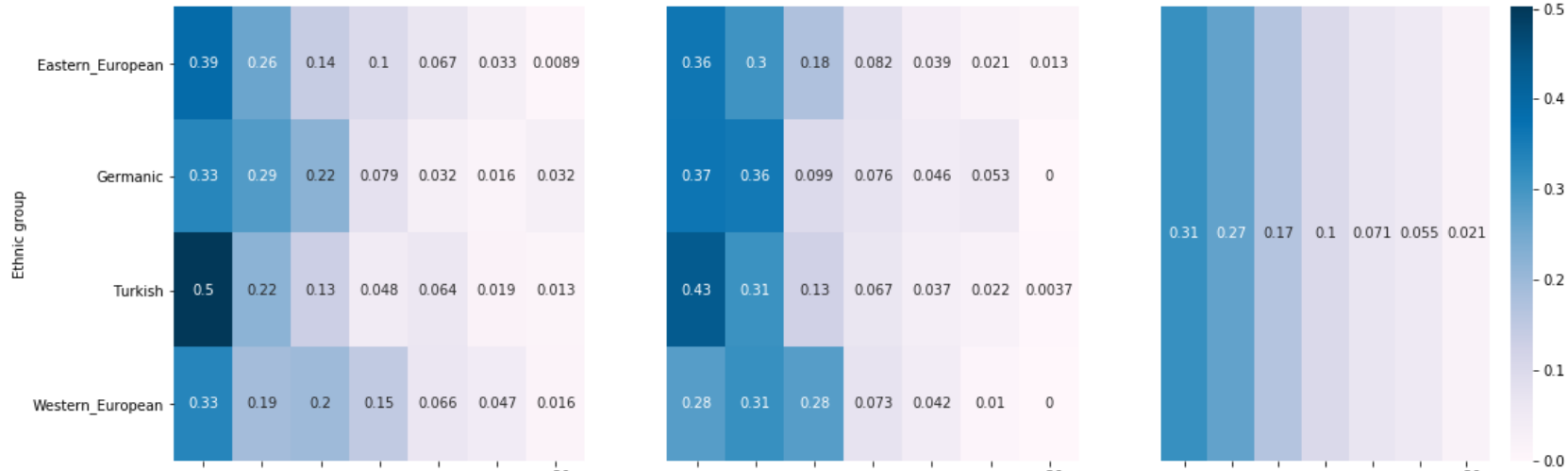
The first generation of immigrants



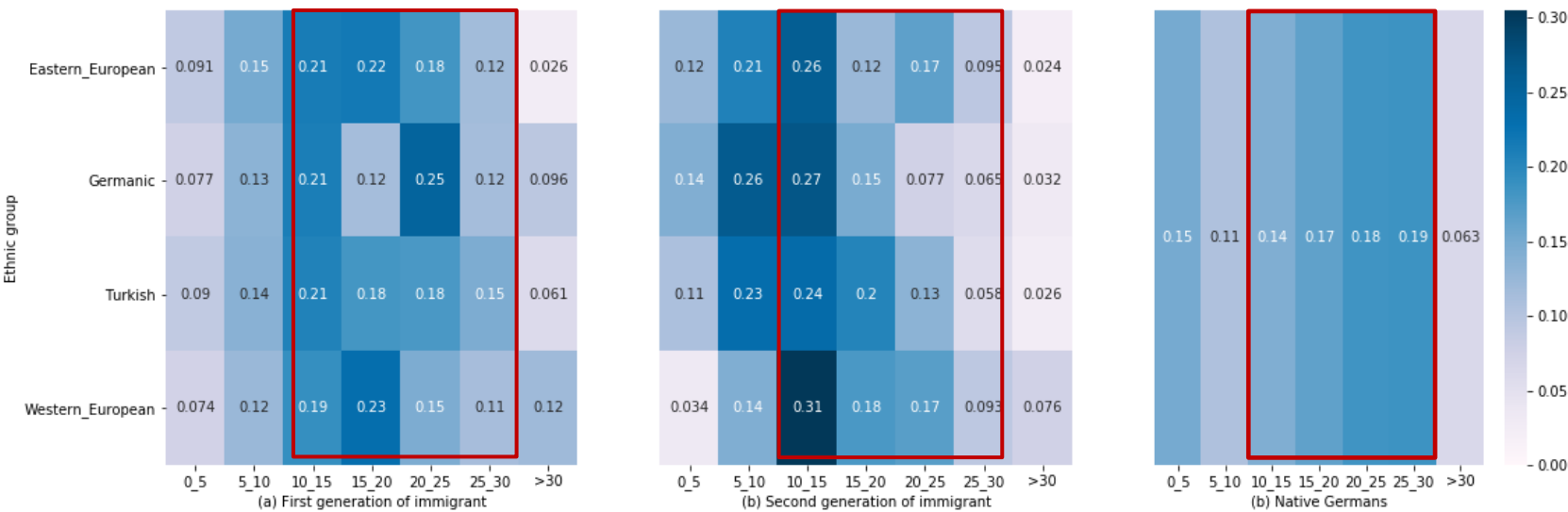
The second generation of immigrants

**The percentage of immigrant and natives having some year of working experience**

# Full-time working experience



Female



Male

# Multinomial Logit Model

Considering an occupational choice model, where individuals can choose between a complete and exhaustive set of  $J + 1$  alternatives

$$U_i(j = 0) = \beta_0 X_i + \epsilon_{i,0}$$

$$U_i(j = 1) = \beta_1 X_i + \epsilon_{i,1}$$

$$\vdots$$

$$U_i(j = J) = \beta_J X_i + \epsilon_{i,J},$$

We observe the revealed preference choice  $j$  if and only if

$$Prob_{i,j} = Prob(U_j > U_k \forall j \neq k) = Prob(\epsilon_j - \epsilon_k < (\beta_j - \beta_k) X_i \forall j \neq k)$$

The normalized log-odds ratio of the logit probabilities is then

$$\ln \left[ \frac{p_{ij}}{p_{ik}} \right] = (\beta_j - \beta_k) x_i$$

# Multinomial Logit Model

- ❑ The coefficient is the effect of treatment on the log-odds of the outcome, not on the probability, which is often what we care about. We want to understand what the model saying in the **probability scale**

Say that the probability of migration in a group 1 is 0.40. The probability of group 2 is 0.20

The odds-ratio is:  $\frac{0.4}{0.2} = 2$ . So, the odds are 2 higher in the group 1. But the relative probability is

The odds-ratio is:  $\frac{1-0.2}{0.4} = 0.375$ . So, the odds are 2.67 higher in the group 1. But the

relative probability is  $0.4/0.2 = 2$

- ❑ we report the Average Marginal Effects(AMEs) of the independent variables
- ❑ we report the Average Marginal Effects(AMEs) of the independent variables



# Two Main Tasks

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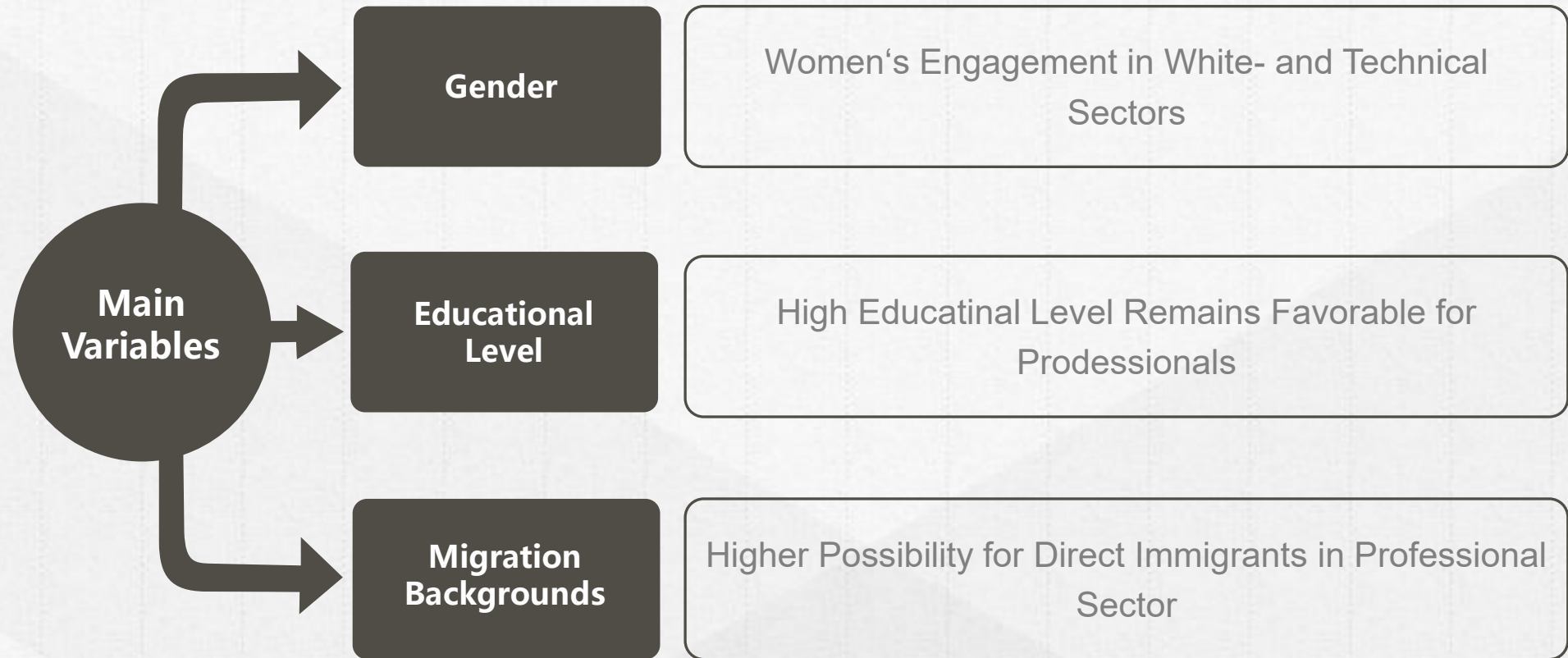
## ISCO-Skills

The dependent variables are divided into 5 categories according to ISCO-08 standards, with Elementary as lowest skill demanding occupation, whereas Professional as the highest.

## Language-Skills

Label 1 to 5 imply the different language levels with 5 as the most intensive. The hypothesis regarding language-interactivity skill is that natives transition to higher language-intense jobs, while immigrants obtain lower language-intense jobs.

# Personal Characteristics-ISCO Skills





# Personal Characteristics-ISCO Skills

Table (6) Average Marginal Effects calculated by the Augmented Model for ISCO Skill

	ELEMENTARY	BLUE-COLLAR	WHITE-COLLAR	TECHNICAL	PROFESSIONAL
Female	0.0240*** (0.00305)	-0.224*** (0.00493)	0.0860*** (0.00479)	0.155*** (0.00623)	-0.0412*** (0.00550)
Years of education	-0.0229*** (0.00119)	-0.0447*** (0.00158)	-0.0143*** (0.00124)	-0.000346 (0.00135)	0.0822*** (0.000852)
Work experience	-0.00309*** (0.000261)	0.00251*** (0.000342)	-0.00201*** (0.000385)	0.000769 (0.000466)	0.00182*** (0.000417)
Direct migrant	0.0511* (0.0206)	-0.0299 (0.0249)	-0.0171 (0.0240)	-0.124*** (0.0280)	0.120*** (0.0329)
Indirect migrant	0.0135 (0.0118)	-0.0286 (0.0213)	0.00161 (0.0202)	-0.0412 (0.0260)	0.0547* (0.0226)

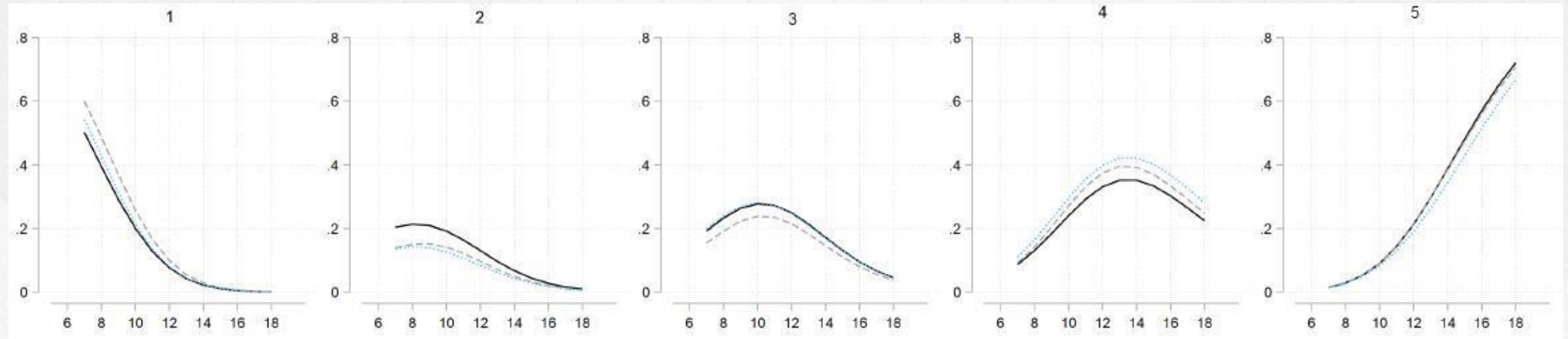
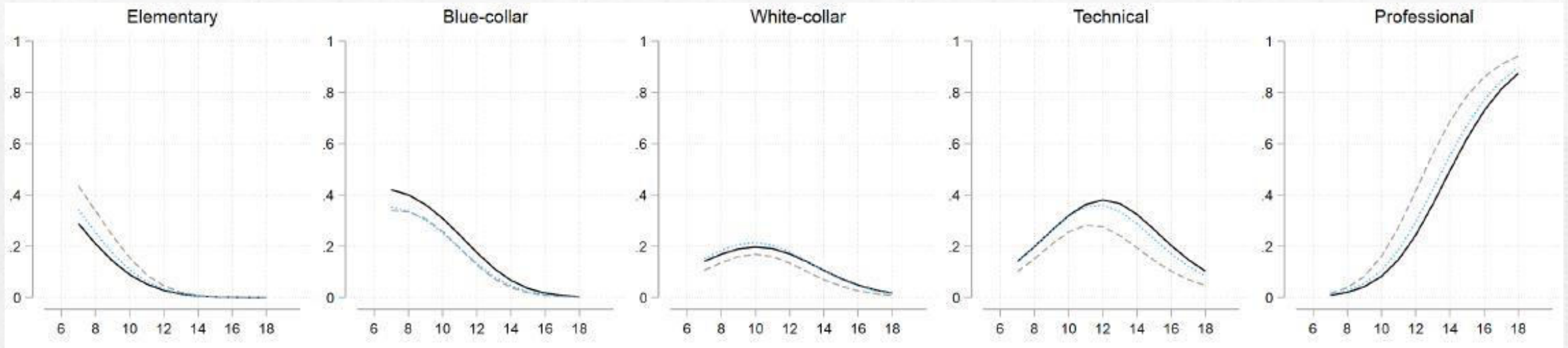
- Working experience is found to be significant but with limited effects

# Personal Characteristics-Language Skills

Table (9) Average Marginal Effects for the Augmented Model for Language Skill Level

	1	2	3	4	5
Female	-0.0610*** (0.00425)	-0.0696*** (0.00444)	0.0125* (0.00564)	0.0801*** (0.00637)	0.0380*** (0.00557)
Years of education	-0.0443*** (0.00160)	-0.0199*** (0.00129)	-0.0163*** (0.00129)	0.0171*** (0.00123)	0.0634*** (0.000870)
Work experience	-0.00155*** (0.000325)	0.0000643 (0.000338)	-0.000476 (0.000421)	-0.0000599 (0.000477)	0.00202*** (0.000432)
Direct migrant	0.0530* (0.0268)	-0.0314 (0.0233)	-0.0443 (0.0286)	0.0228 (0.0368)	-0.0000461 (0.0344)
Indirect migrant	0.0263 (0.0201)	-0.0393* (0.0190)	-0.0149 (0.0243)	0.0528 (0.0273)	-0.0250 (0.0232)

# ISCO- and Language-Skills



Solid=Native Germans; Dashed=Direct Migrant; Dotted=Indirect Migrants

# ISCO-Skills and Cultural Backgrounds

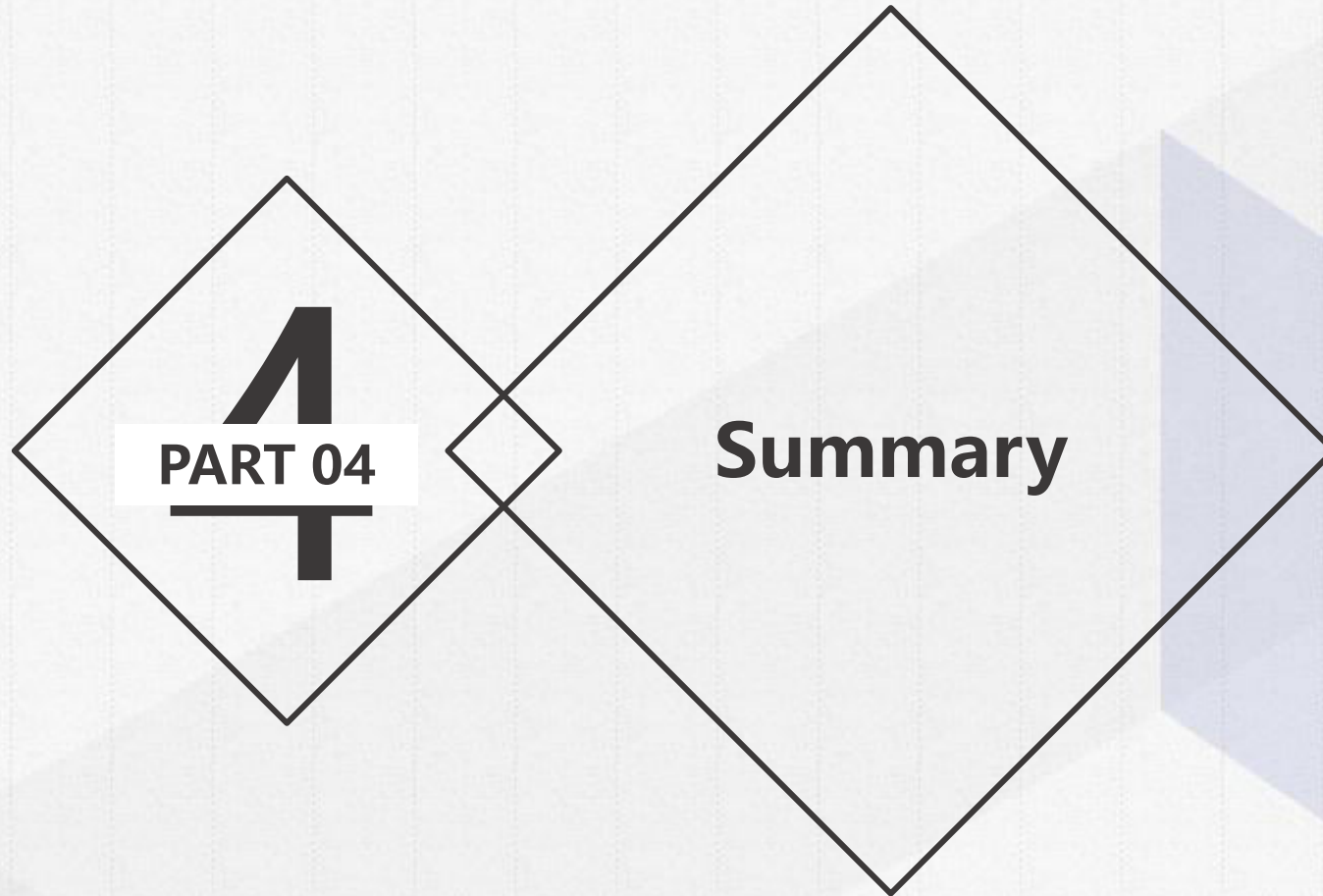
Western European	-0.0155 (0.0110)	0.0103 (0.0257)	0.00639 (0.0244)	-0.0317 (0.0316)	0.0306 (0.0288)
Eastern European	0.00818 (0.0134)	0.0742** (0.0264)	0.0314 (0.0233)	-0.0322 (0.0280)	-0.0815*** (0.0214)
Turkish/Greek	-0.00137 (0.0124)	0.0353 (0.0257)	0.0272 (0.0244)	0.0129 (0.0314)	-0.0740** (0.0238)

- A distinct effect of a person's cultural background on their occupational choice or language skill is not spotted
- There exists evidence that individuals inherit their social status and their position in the occupational distribution, Constant and Zimmermann (2003)

# ISCO-Skills and Parental Influences

Blue-collar parent	-0.0207*** (0.00622)	0.0200* (0.00958)	-0.0292** (0.0110)	0.0170 (0.0146)	0.0128 (0.0137)
White-collar parent	-0.0197** (0.00695)	-0.0175 (0.0106)	-0.00236 (0.0123)	0.0198 (0.0158)	0.0198 (0.0150)
Technician parent	-0.0367*** (0.00645)	-0.0233* (0.00995)	-0.0355** (0.0113)	0.0474** (0.0149)	0.0481*** (0.0141)
Professional parent	-0.0409*** (0.00692)	-0.0462*** (0.0106)	-0.0398*** (0.0119)	0.0290 (0.0155)	0.0979*** (0.0146)

- There exists certain signs of persistence in occupational choice
- The possibilities for children to further engage in the elementary occupation are negative and significant



# Limitations in identification strategy

- ❑ Origin-dummy is not able to get a clear picture of cultural effects on immigrants .(Postepska (2021) )
- ❑ The variable [*years in Germany*] is collinear with migration background
- ❑ We ignore the unemployment outcome

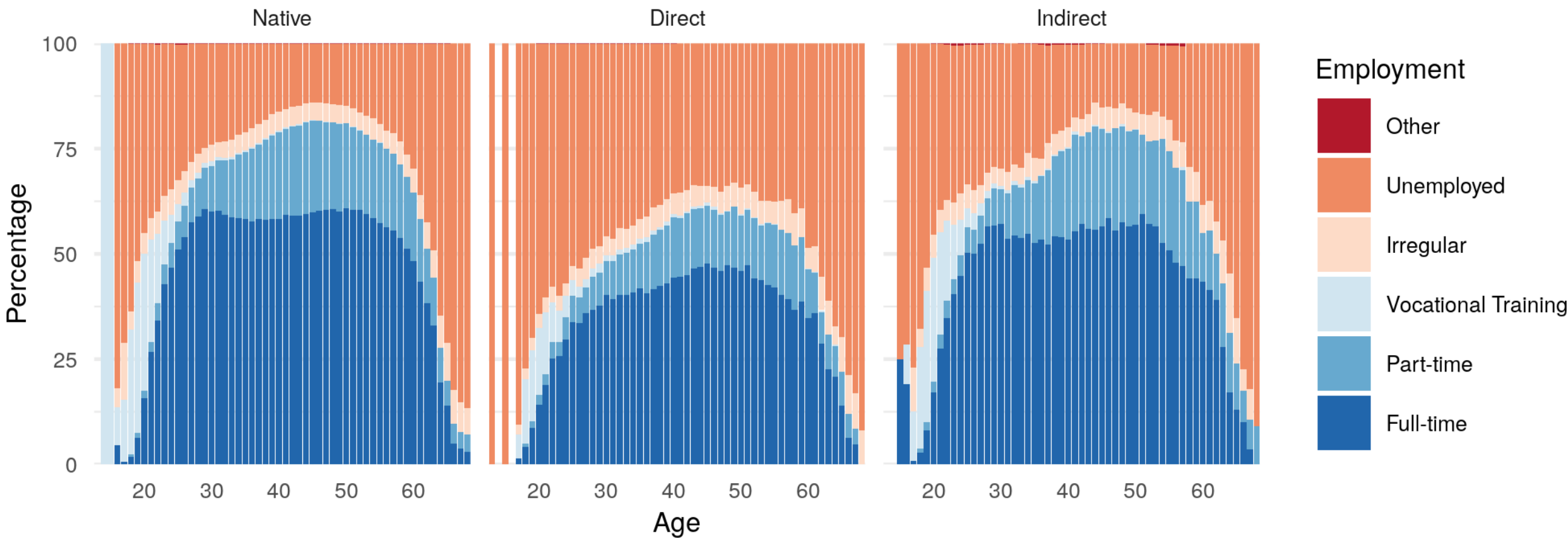


Figure Labor Force Participation by migration background.



# Limitations in model methodology

- ❑ The failure of reduced-form modeling lies in failing to interpret the correlations shown in the model as causation (reverse causation or outside factors)
- ❑ Estimated parameters are not policy invariant
- ❑ Self-selection problem

# Advantages of Structural Estimation

1. Test over explicit mechanisms.
2. Identifies different levels of heterogeneity.
3. Can be used as a reliable tool for policy evaluation.
4. Could take General Equilibrium Effects fully into account.

# Understanding Mechanisms

- In the specific case of Immigration:
  - ❑ Migrants with better language skills and education attainment perform well on the labor market
  - ❑ But how language skills and education causally improve one's career aspect? (By wealth, human capital accumulation, by assimilation effects)
  - ❑ Mechanisms – toolbox for policy development

# Heterogeneity

- Individual heterogeneity

- Unobserved heterogeneity in development of language skills and earnings
- Immigrant purpose and immigrant selection

- External heterogeneity

- Average years of schooling of intra-ethnic group
- Location of the individuals at the city or communal level

# Ex-ante Policy Evaluation

- ❑ Being able to identify a model's primitives, give a natural approach to evaluate (simulate) different outcomes for a very wide range of policies.
- ❑ It is necessary to figure out how parameters change to accurately represent a „new“ policy.
- ❑ What are the effects of immigration on the economic outcomes of natives? (wages of natives, skill composition of the labor force)

# General Equilibrium Effects

Finally, if structural models are fully specified (allow a complete solution to the individual's optimization problem as a function of the current information set), they are able to clearly reflect General Equilibrium Effects, that is:

*„quantitative and qualitative changes in the possible equilibrium states of the economy, driven by changes in relative prices.“*

# General Equilibrium Effects

- For instance:
  - ❑ In small scale experiments, increase in the immigrant doesn't affect native employment. Natives might move out the area to less crowded immigrant neighborhoods.
  - ❑ However, in large scale, across OECD countries the evidence suggests that a 1 percentage point increase in the immigrant share increases native unemployment by 0.3 percentage points.

# Disadvantages of Structural Estimation

- 1. Requires strong mathematical and theoretical assumptions
- 2. Needs high quantities of data
- 3. Is computational expensive



