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# Different methods, but same results? A comparison of Causal Forest and

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## Propensity Score Matching on health disparities between natives and migrants

## **Background & Objectives** Conceptual background [1-3]

Migrant populations exhibit high cross-country variability in

composition Migration related country experiences characteristics differ in challenges

Direct and indirect policies (naturalisation, integration, labour market)

**Historical** migration dynamics

#### Research question and Hypothesis

To what extent do social determinants of health and health disparities among migrant populations differ in scope and magnitude compared to the native population?

H: Migrant health disparities are not equal across countries.

### Data, Methods & Descriptives

#### **Data**

**World Value Survey** Wave 7 (2017-20)

Outcome: Self-rated

health (1-5) Independent variable: Migrant (yes/no) Covariates: Gender, age, martial status, education (ISCED7), urban or village, no. of children **Excluded**: Countries with < 30 migrants

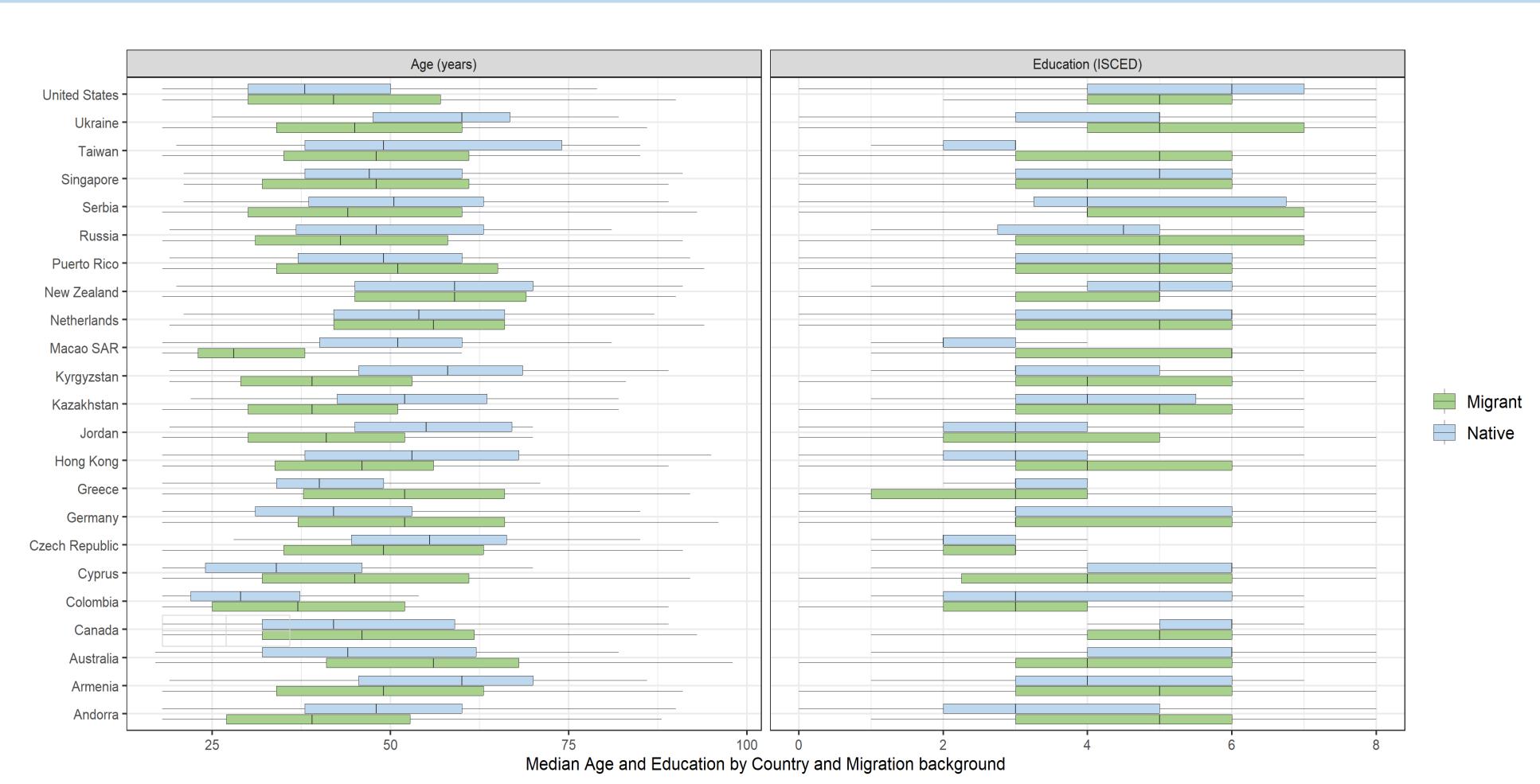
#### Methods

#### **Causal Forest**

- Minimize variance through automatic learning
- Conditional Average Treatment Effects

#### **Propensity Score** Matching

- Stratification Matching
- No. of strata for each country, where covariate balance is maximal

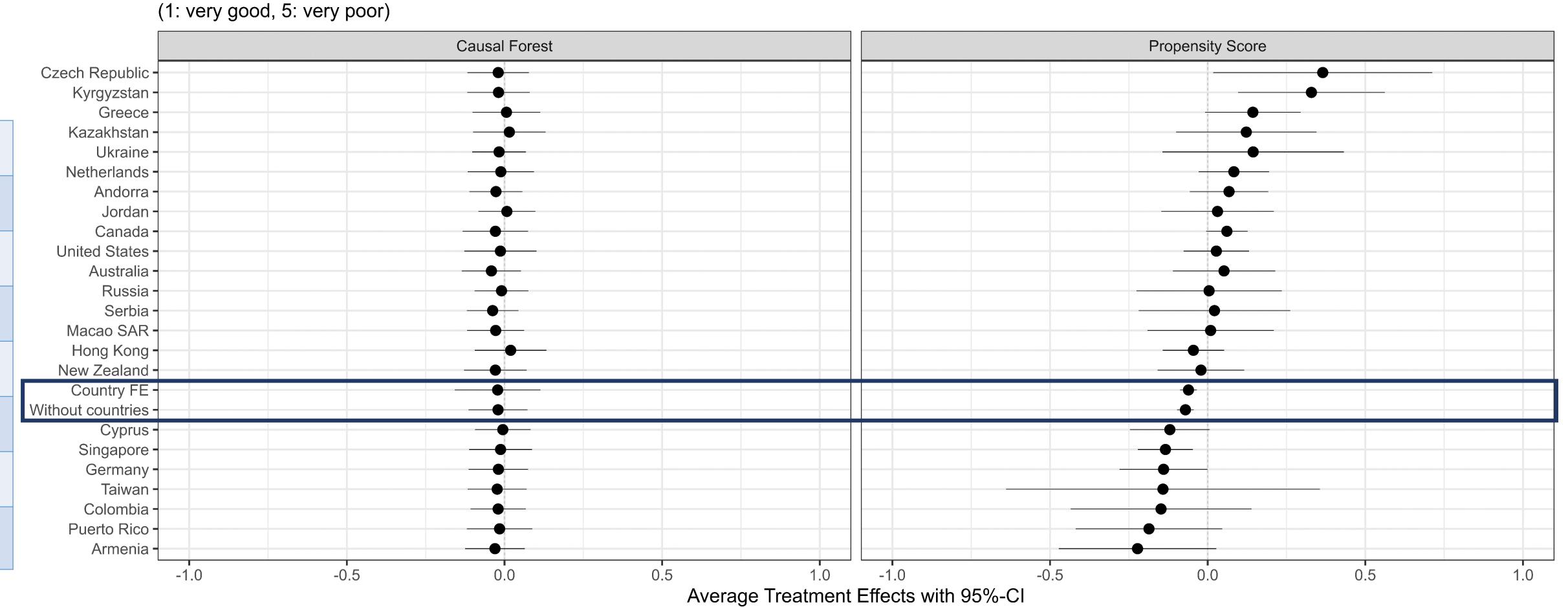


#### Results

Comparison ATE of self-rated health

#### **Variable Importance Causal Forest**

Gender	0,040	0,014
Age	0,560	0,333
Martial status	0,157	0,051
Education	0,154	0,155
Urban	0,012	0,017
Children	0,077	0,054
Country		0,376
95%-CI	[-0,114; 0,073]	[-0,158;0,114]



#### Discussion

#### Conclusion

**Demographic** and sociodemographic profiles of migrants vary over countries

#### **Causal Forrest** does a better job at **reducing** unobserved heterogeneity → precision

### **Propensity Score** Matching reveals more variance between countries

#### Limitations

- Participation bias
- Measurement invariance
- Ordinal health measure
- Only individual level data

## **Next steps**

- > Integrated approach: PS as covariate for causal forrest
- > Multilevel matching: Allowing cross-level interactions to influence PS
- > Level 2 variables: HDI, GDP, etc.

#### References

2 Kaestner, R., and O. Malamud. 2014. "Self-selection and International Migration: New Evidence from Mexico." Review of Economics and Statistics 96 (1): 78–91. 3 Solano, G., & De Coninck, D. (2023). Explaining migrant integration policies: A comparative study across 56 countries. Migration Studies, 11(1), 75-102.

<sup>1</sup> Chiquiar, D., & Hanson, G. H. (2005). International migration, self-selection, and the distribution of wages: Evidence from Mexico and the United States. Journal of political Economy, 113(2), 239-281.