

Different methods, but same results? A comparison of Causal Forest and Propensity Score Matching on health disparities between natives and migrants

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Background & Objectives

Conceptual background [1-3]



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, marital status, education (ISCED7), urban or village, no. of children

Excluded: Countries with < 30 migrants

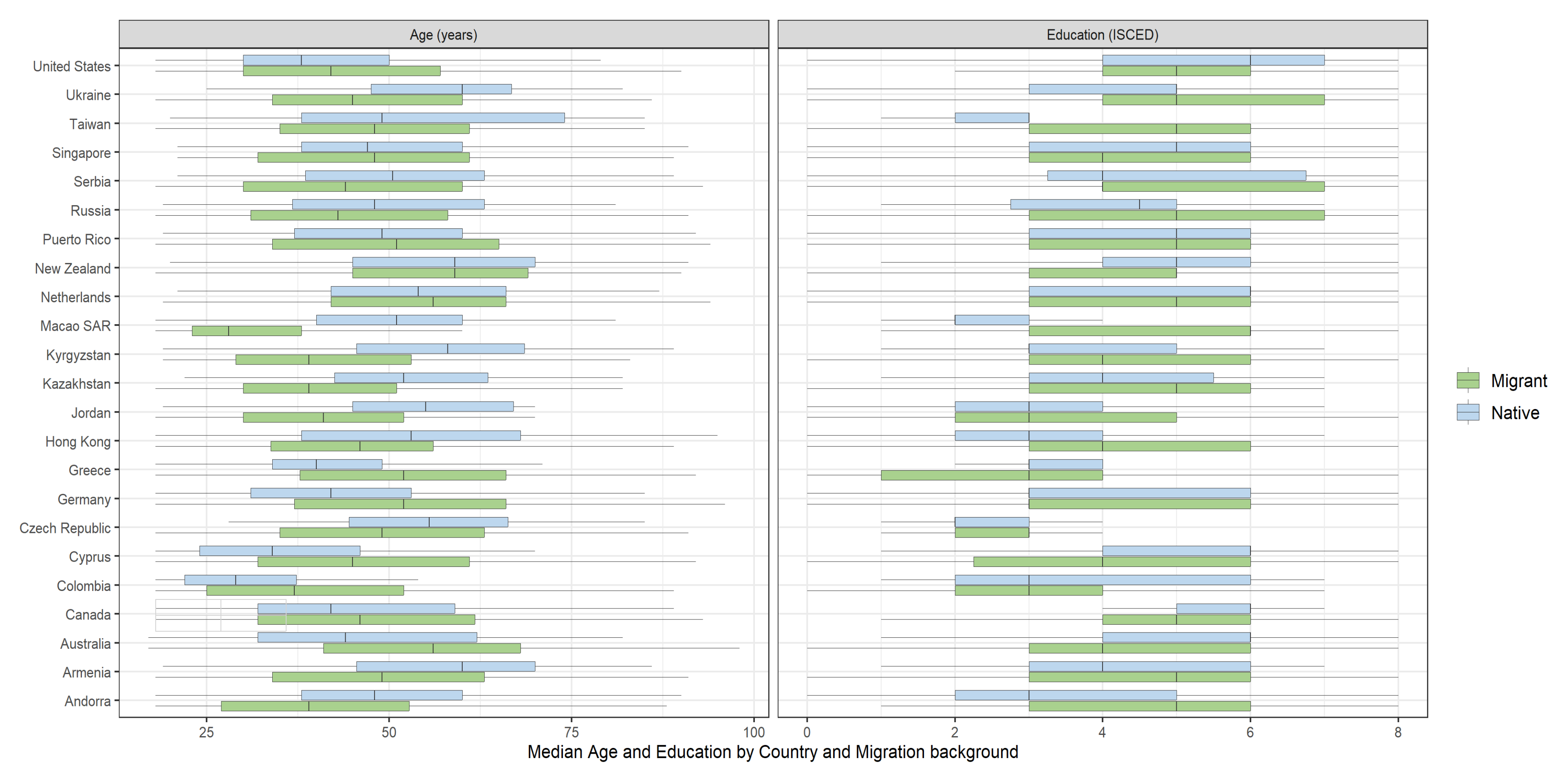
Methods

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

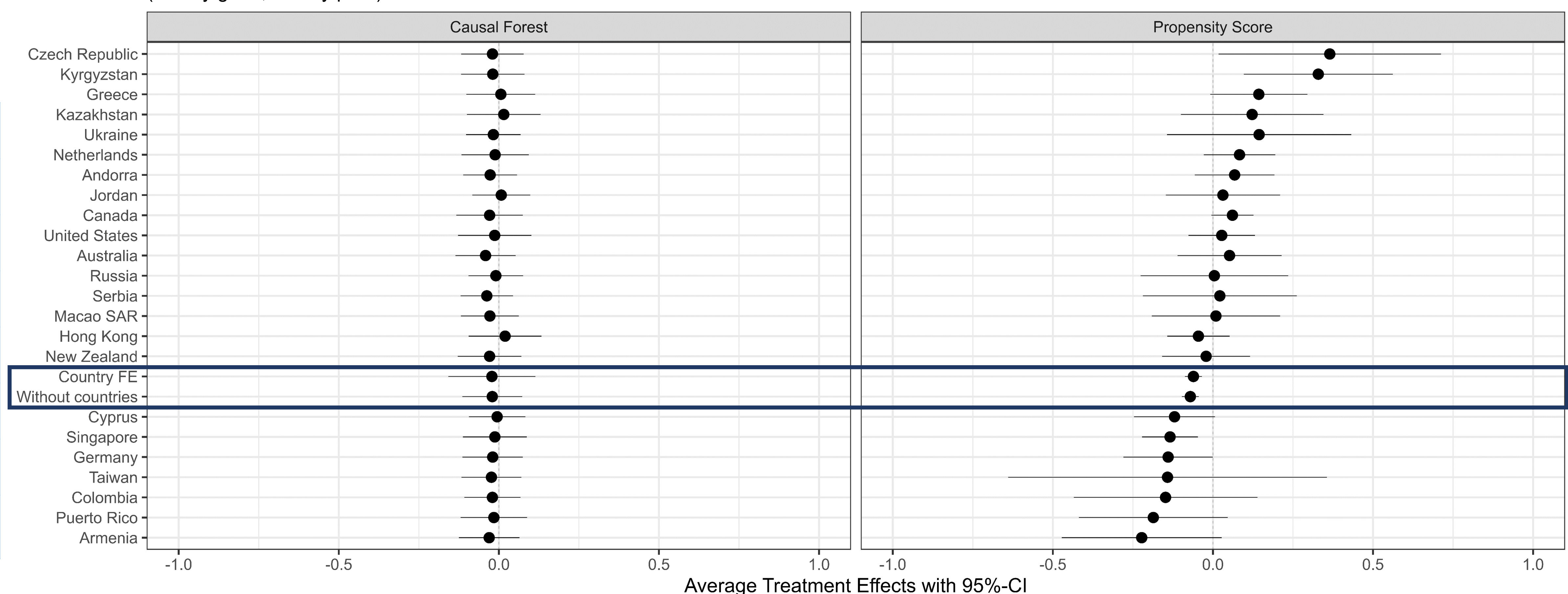


Results

Variable Importance Causal Forest

Variable	Causal Forest	Propensity Score
Gender	0,040	0,014
Age	0,560	0,333
Marital 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]

Comparison ATE of self-rated health (1: very good, 5: very poor)



Discussion

Conclusion

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

Causal Forest 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 forest
- **Multilevel matching:** Allowing for cross-level interactions to influence PS
- Level 2 variables: HDI, GDP, etc.

References

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