

Quantifying the impacts of COVID-19 on human mobility from an official statistics perspective

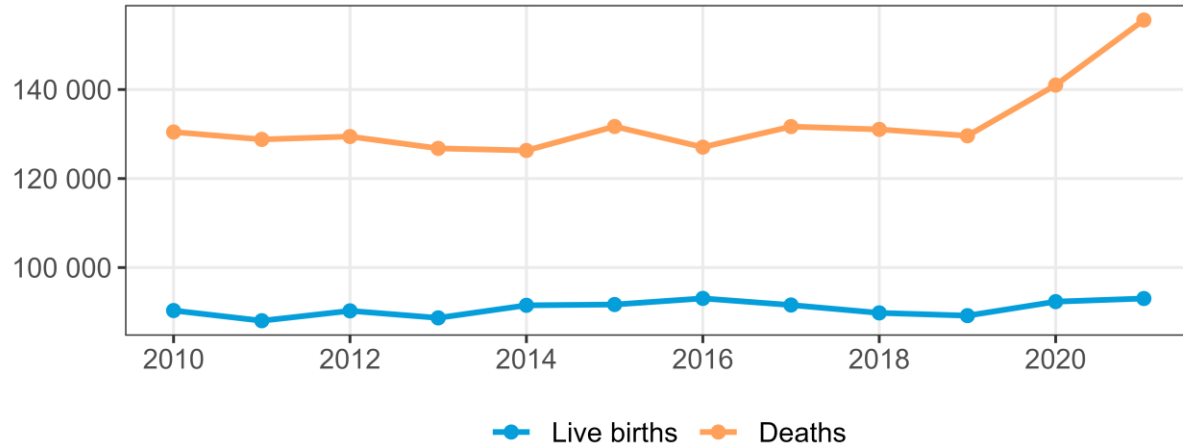
The case of Hungary

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Context

Vital events in Hungary

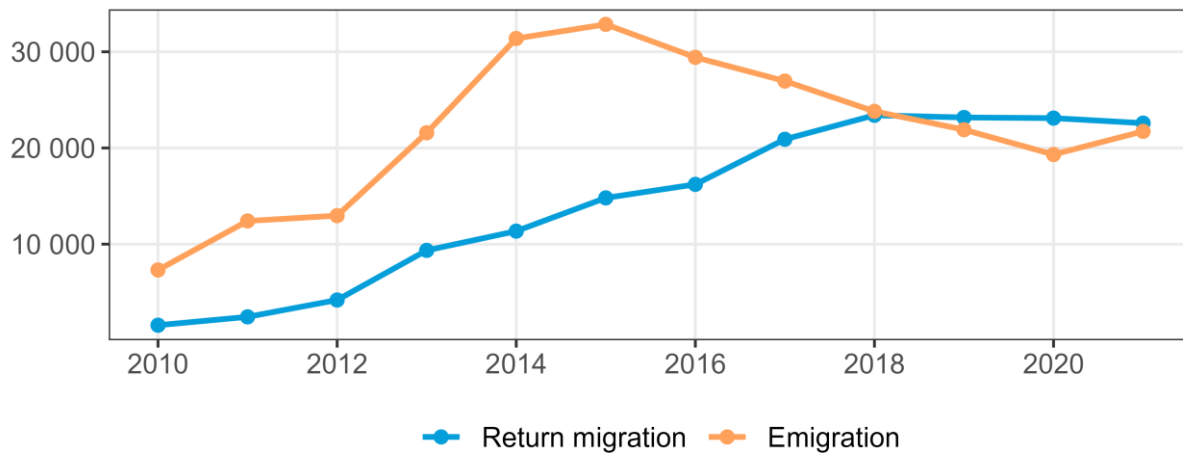


- Increased demand for statistics on the demographic impact of the COVID-19 pandemic.
- Scarce responses of migration statistics due to
 - mere statistical definition (12 months of usual residence),
 - fast-changing patterns of geographic mobility.

- We apply a wider sense concept of mobility (**3 months criteria**) to

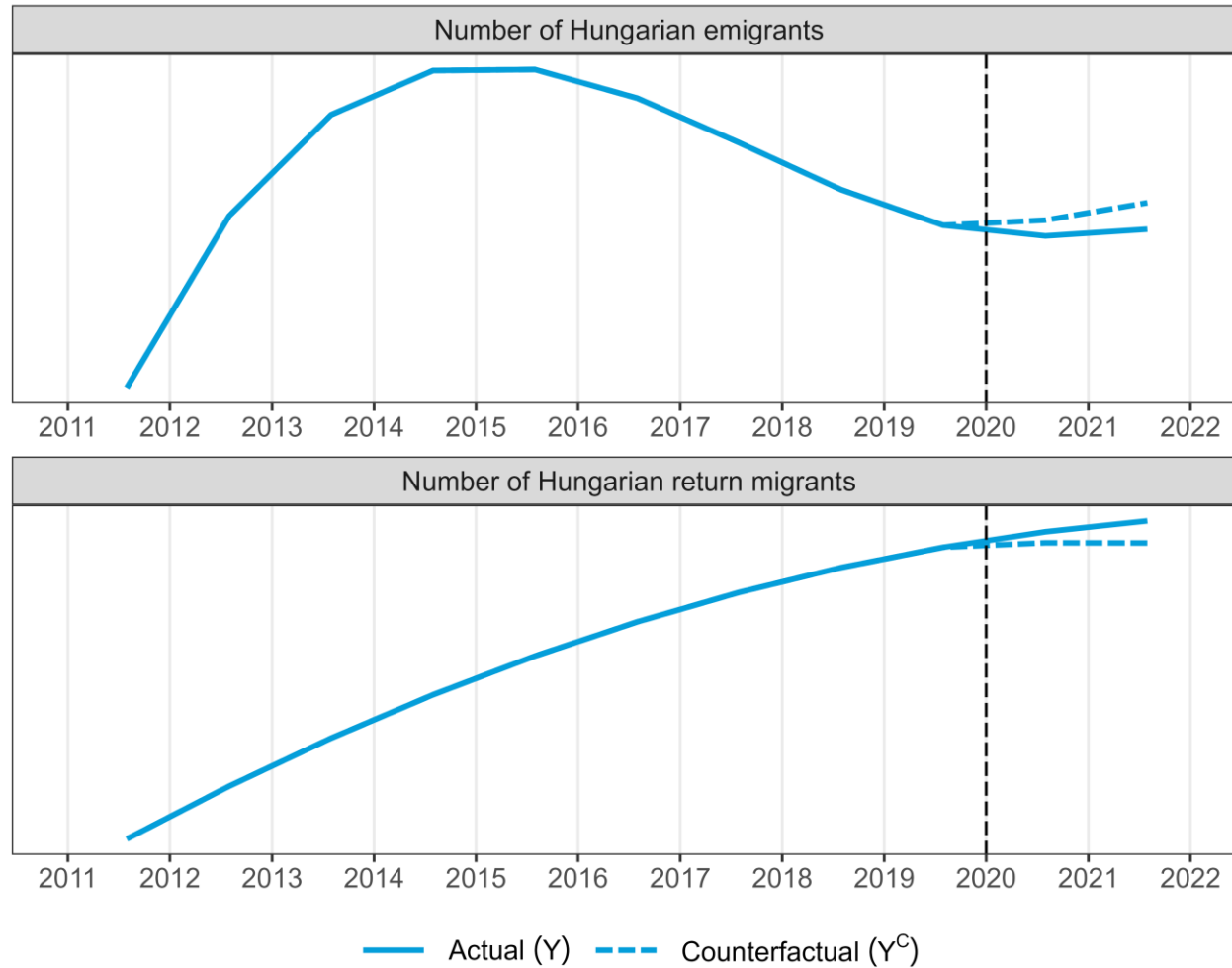
- identify patterns of migration flows including shorter term movements,
- estimate, how those patterns would have evolved without the pandemic,
- compare actual and counterfactual migration flows in interrupted time series analyses.

Migration of Hungarian citizens



How did the pandemic affect migration flows?

Hypothesis about the effect of the pandemic on migration flows



The effect of the COVID-19 pandemic on the number of Hungarian migrants can be expressed as

$$\omega_{T+h} = y_{T+h} - y_{T+h}^C$$

- y : Actual number of migrants
- y^C : Number of migrants in the absence of the pandemic
- T : Date of the outbreak
- h : Time since the outbreak

We assume that

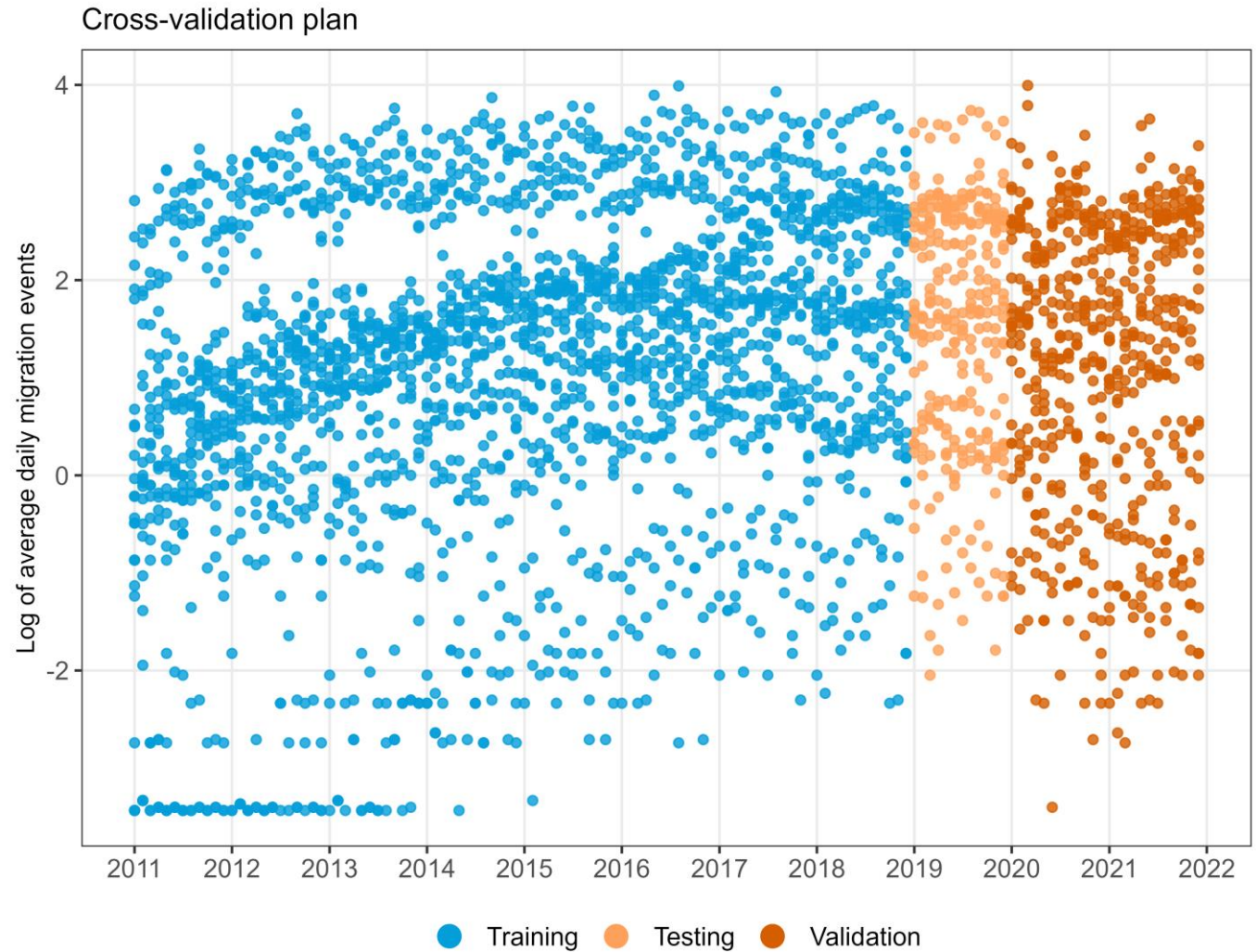
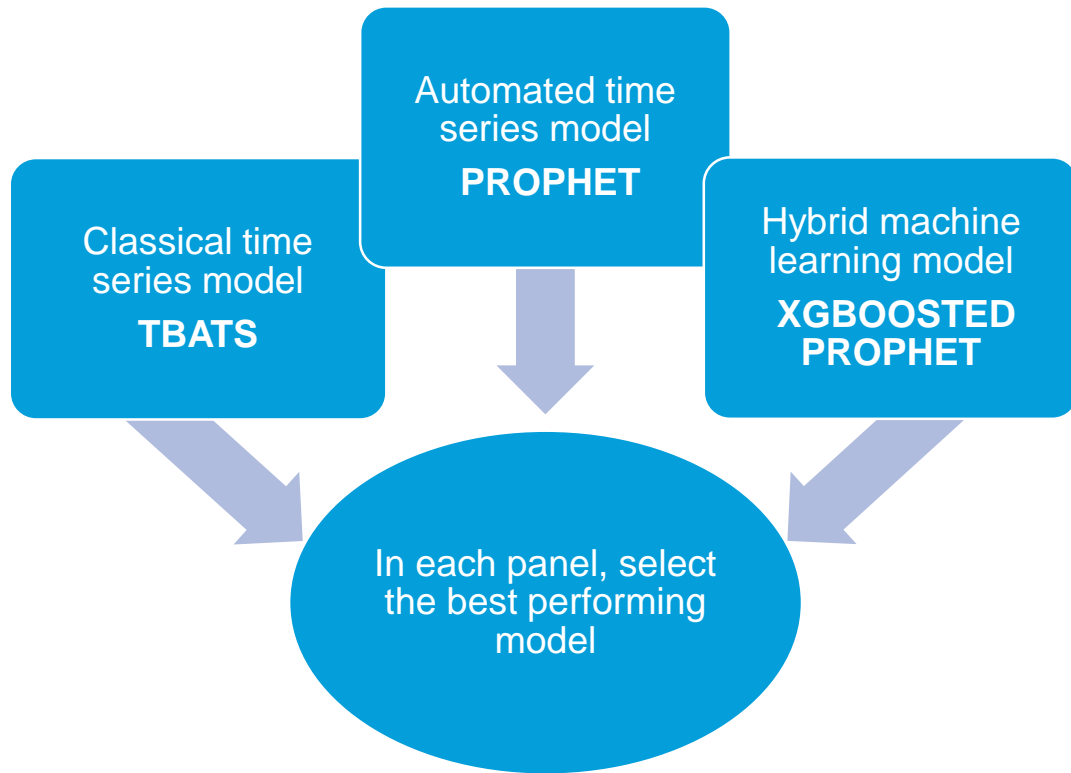
- y_{T+h}^C can be estimated from pre-pandemic migration flows
- T is the 1st of January 2020

Data and feature engineering

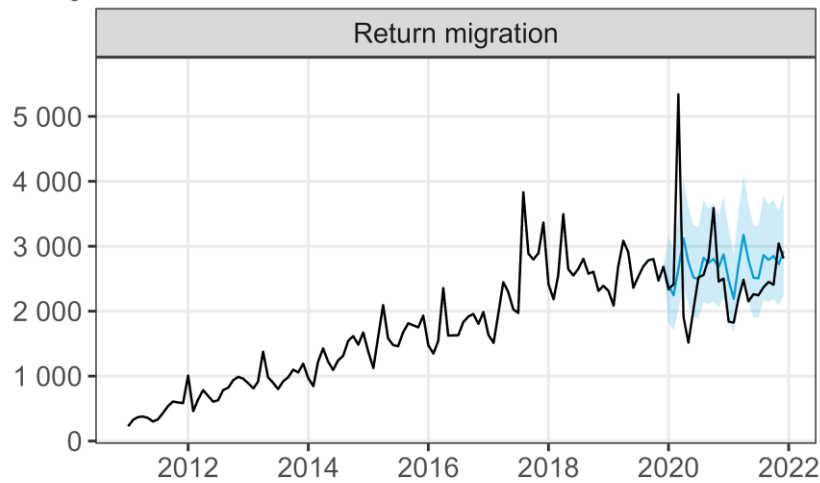
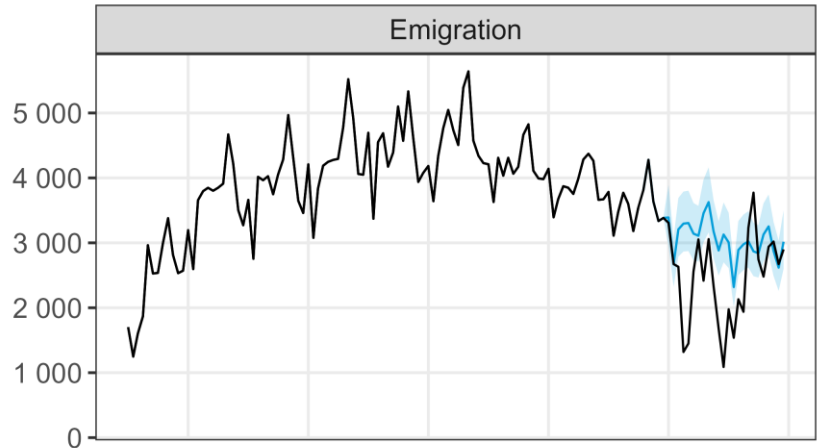
Time series panel based on the microdata from the register of the National Health Insurance Fund of Hungary



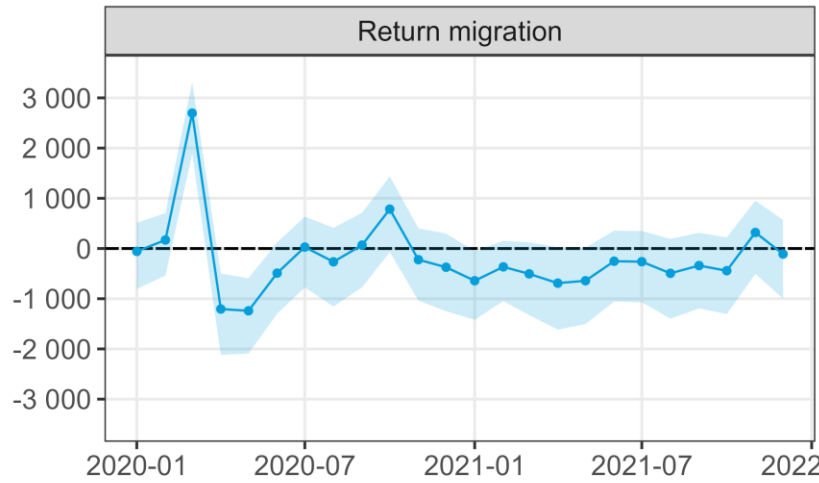
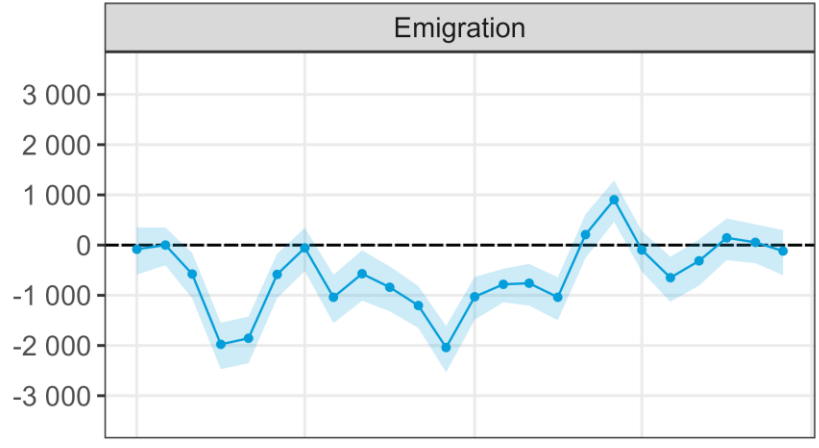
Estimation and model selection



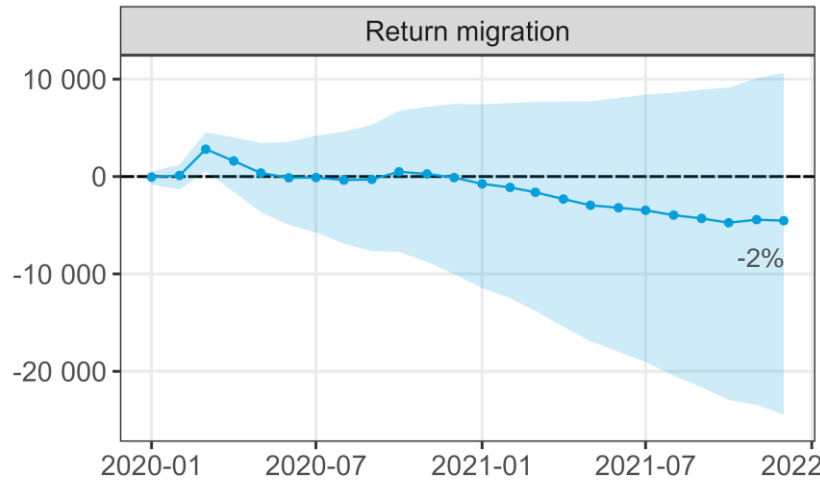
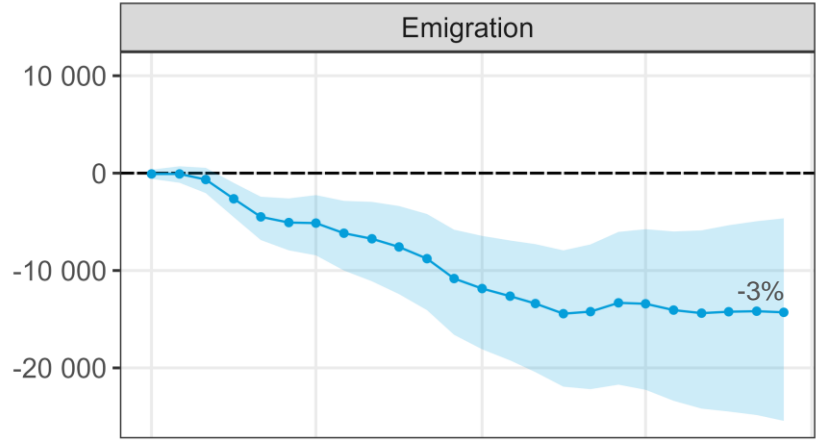
Overall result



— Actual Counterfactual

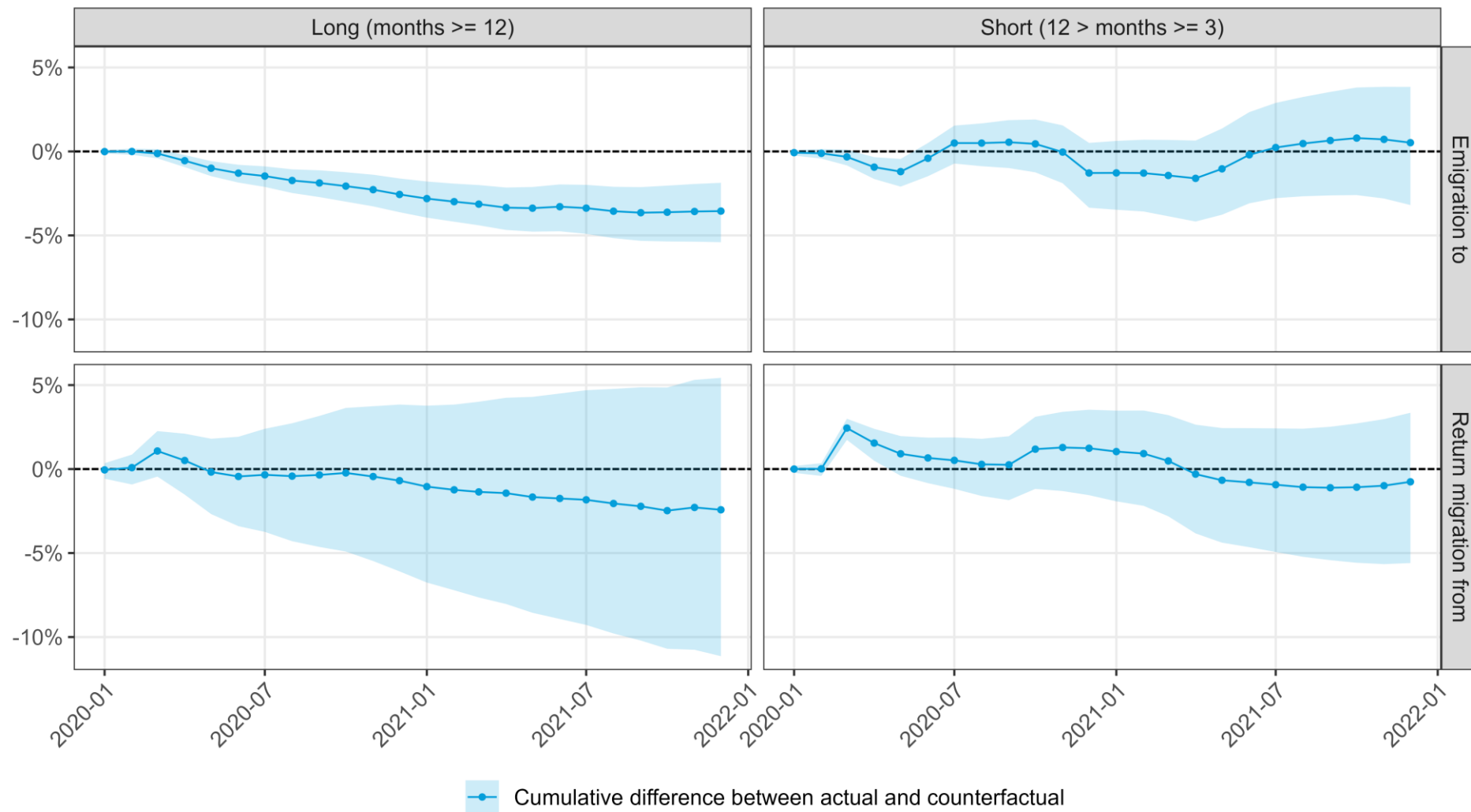


— Difference between actual and counterfactual

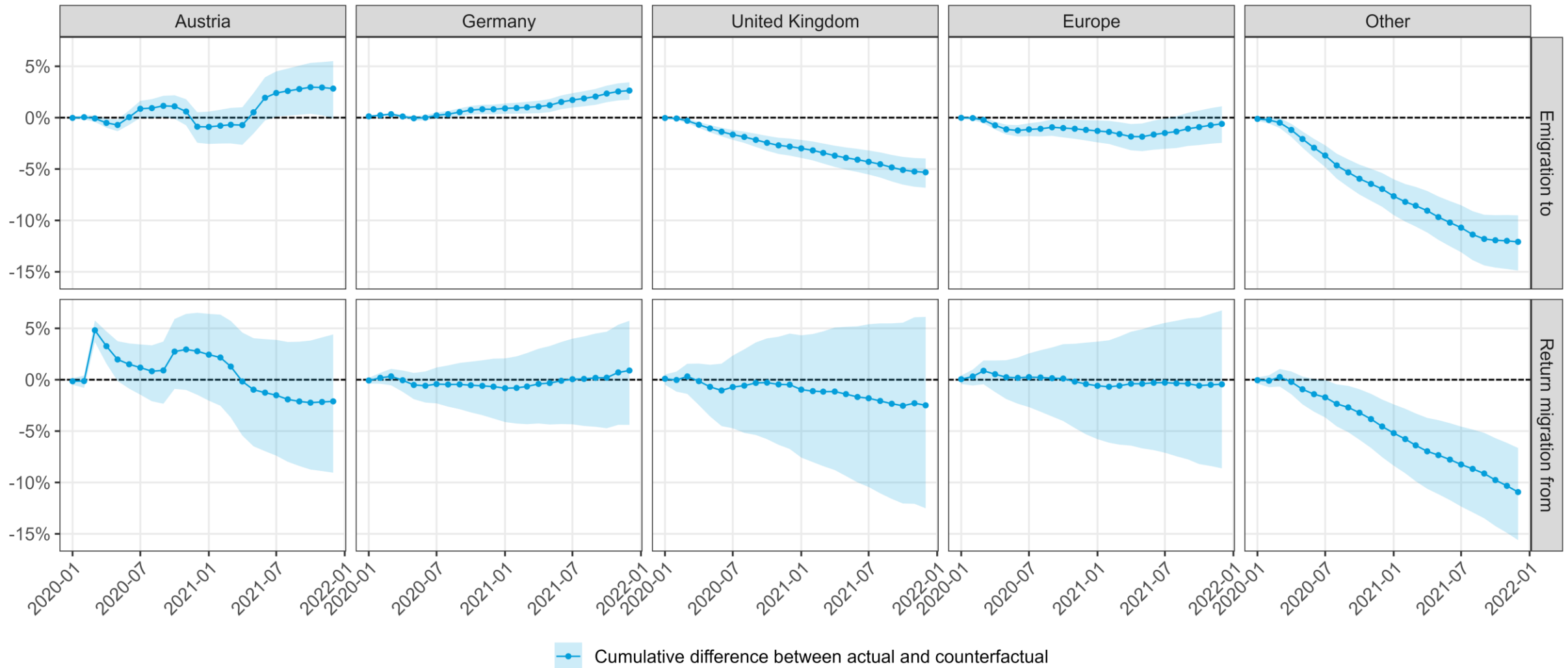


— Cumulative difference btw. actual and counterfactual

Group-specific results (1)



Group-specific results (2)



Conclusion

- Emigration:
 - significant negative effect of -14.3 thousand (-3%)
- Return migration:
 - non-significant negative effect
 - changes in intra-annual dynamics (shock effects)
- Country-profiles demonstrate varying results depending on geographic distance and external factors.
- A more dynamic interpretation of human mobility can bring us closer to fully understand the migratory impact of the pandemics.

Thank you for your attention!

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