

# Mapping international migration flows

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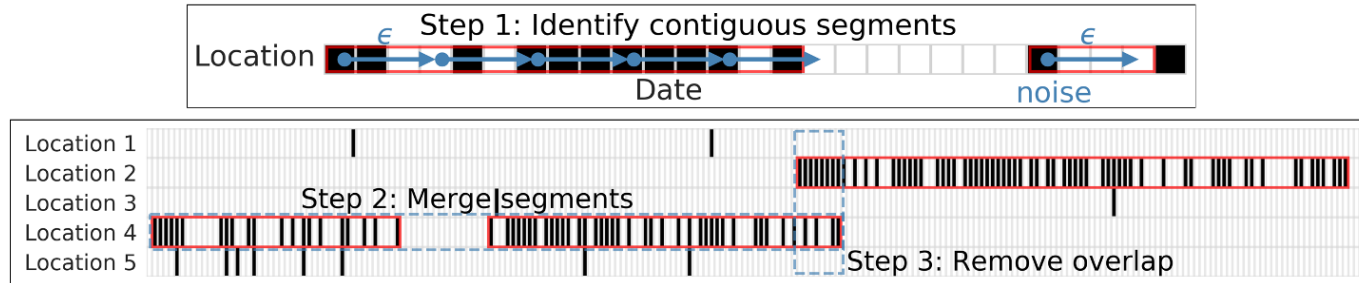
**International Forum  
on Migration Statistics**  
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# Context

- In the last 50 years, estimates of international migrants have jumped from 84M to 281M globally (as a ratio of global population, from 2.43 to 3.6%) (UN DESA 2020).
- The only available dataset about global international migration flow is a 5-year aggregation by Abel and Sander in 2014, which is estimated from migration stock.
- There are several important policy and social science problems that require accurate and timely migration estimates: e.g. how migration changes in response to global crises, impact of covid policies on movement, climate changes and migration changes.

# Definition of migration and detection method

- Definition: Migrants are defined as those people who live in one country continuously for at least 12 months, then move to another country for at least 12 months.
- Method: segment-based detection – a person continuously live in a place for at least 12 months (Chi et al. 2020).



- Weights are calculated at the country level based on the FB user number and census population.

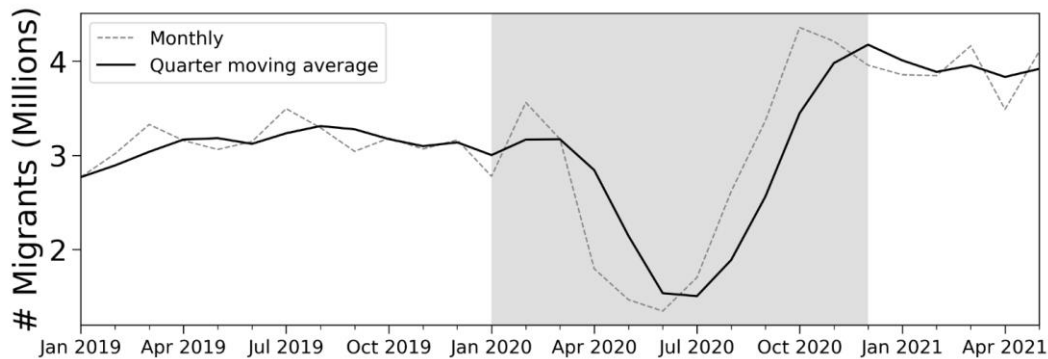
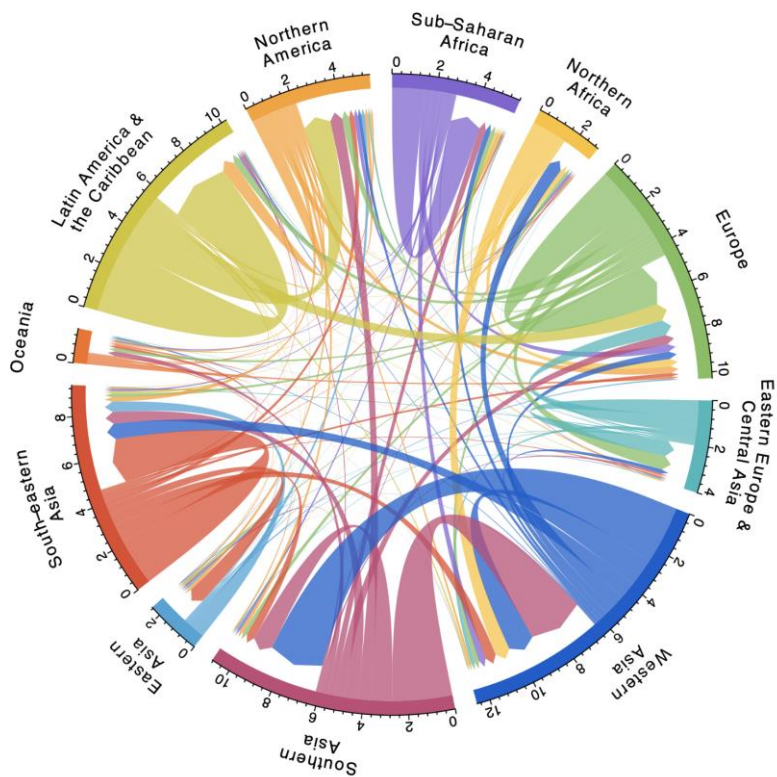
\* Chi, G., Lin, F., Chi, G., & Blumenstock, J. (2020). A general approach to detecting migration events in digital trace data. PLoS one, 15(10), e0239408.

# Data to be shared

- Monthly from Jan 2019 to Dec 2021
- Four columns: country\_from, country\_to, year\_month, num\_migrants
- No age/gender breakdown in the first version

Note: the numbers are added noises from the differential privacy.

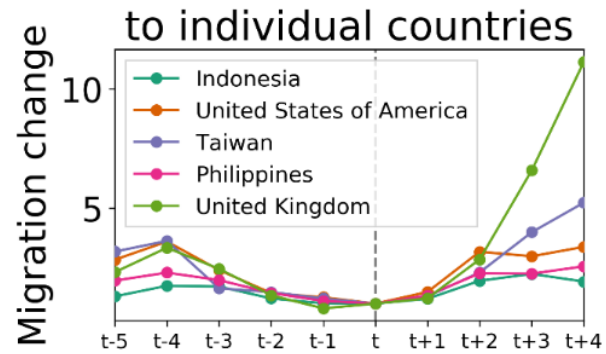
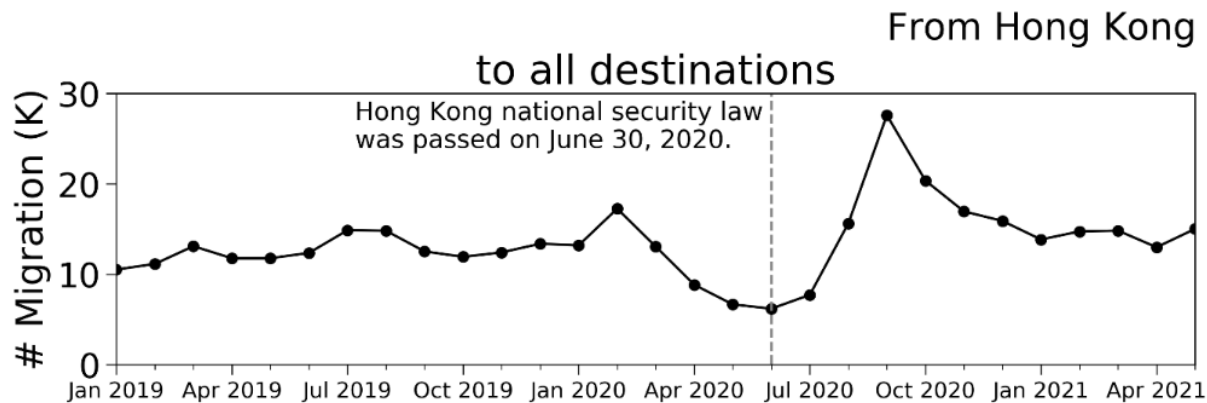
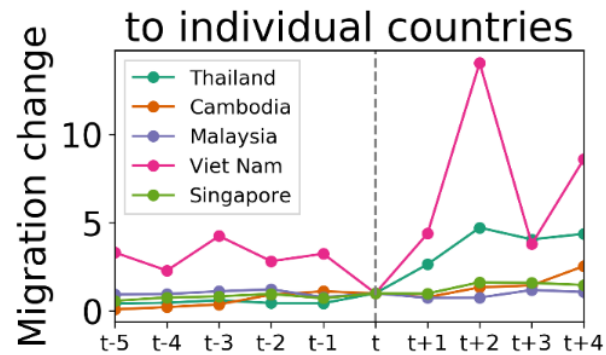
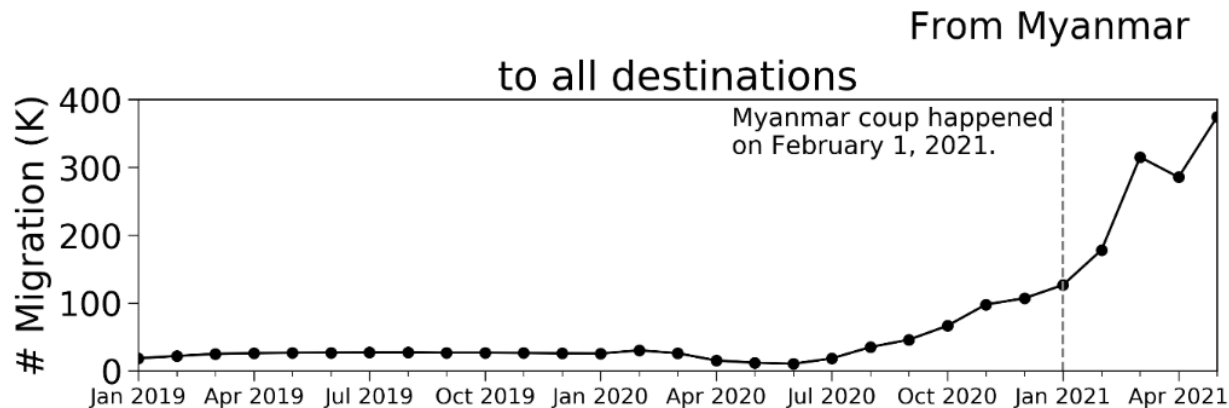
# Overall flow pattern and monthly trend



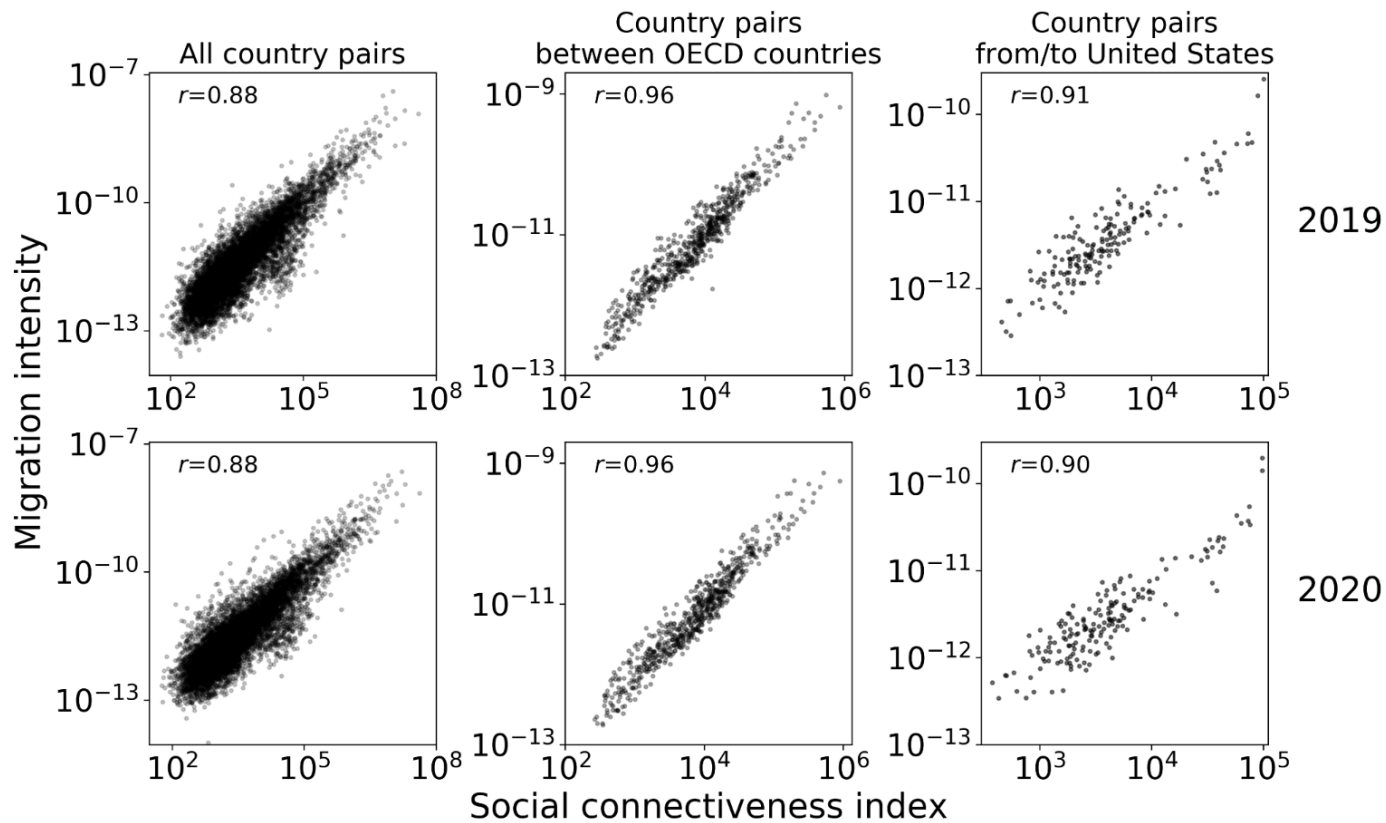
- There are 38M international migrants in 2019 (not including China).
- Covid-19 decreased the number of international migrants by 59.3% (from 3.2M to 1.3M).



# Migration and conflicts



# Migration and Social Connectedness Index

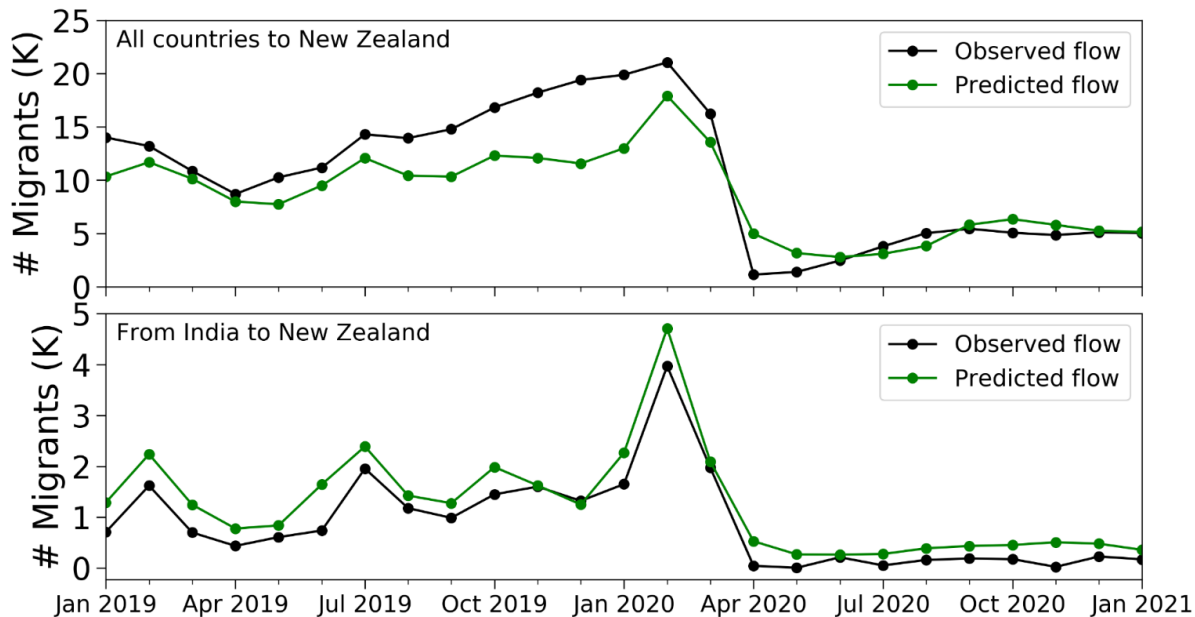
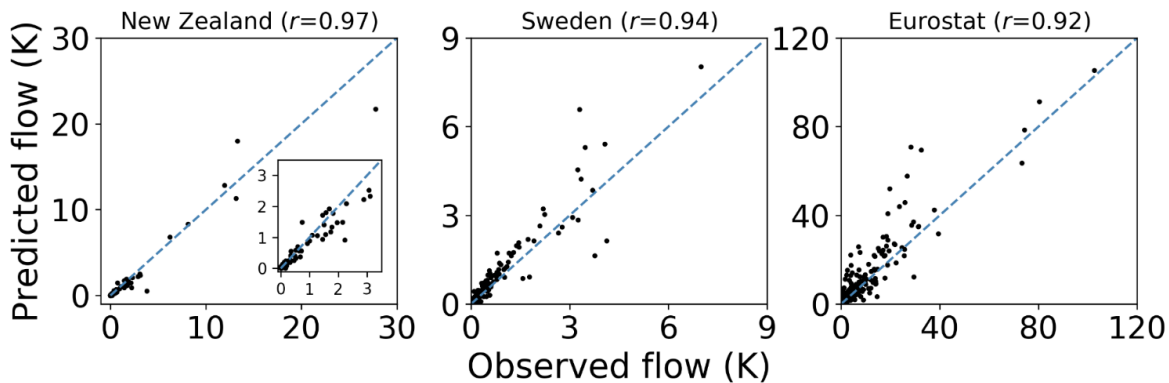




# Validation

## Validation datasets

- New Zealand
- Sweden
- Eurostat
- UN ESCAP



# Validation

Correlations for 2019				
	Eurostat		UN ESCAP	
	euro.n	euro.corr	unescap.n	unescap.corr
N	3387	0.880	178	0.704
N (weighted)	3387	0.902	178	0.712
Log(N)	2514	0.917	178	0.716
Log(N) (weighted)	2491	0.927	178	0.714
Proportion of Migrants	3351	0.871	178	0.872
Proportion of Migrants (weighted)	3314	0.872	178	0.872
Total Outbound	184	0.909	11	0.649
Total Outbound (weighted)	184	0.931	11	0.666
Total Inbound	24	0.993	0	NA
Total Inbound (weighted)	24	0.991	0	NA
Net Migration	24	0.989	0	NA
Net Migration (weighted)	24	0.993	0	NA

Correlations for 2020				
	Eurostat		UN ESCAP	
	euro.n	euro.corr	unescap.n	unescap.corr
N	3006	0.909	163	0.696
N (weighted)	3006	0.906	163	0.698
Log(N)	2216	0.901	163	0.639
Log(N) (weighted)	2196	0.909	163	0.639
Proportion of Migrants	2990	0.842	163	0.823
Proportion of Migrants (weighted)	2957	0.843	163	0.823
Total Outbound	183	0.961	8	0.450
Total Outbound (weighted)	183	0.966	8	0.468
Total Inbound	18	0.968	0	NA
Total Inbound (weighted)	18	0.961	0	NA
Net Migration	18	0.952	0	NA
Net Migration (weighted)	18	0.942	0	NA

Thanks!  
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