

INEQUALITY OF EDUCATIONAL OUTCOMES: A COMPARATIVE REVIEW OF NATIONAL TRENDS BASED ON THE 2000-2022 PISA

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EQUITY & PISA

The Equity&PISA project is a respond to three broad and interconnected objectives inherent in the relationship between countries' participation in PISA and changes in their levels of socio-economic equity:

- ✓ **to understand whether countries have improved their levels of equality of outcomes since they began participating in PISA**
- ✓ to use PISA data to evaluate the effect of national educational policies
- ✓ to understand how PISA is perceived by educational stakeholders, particularly in its relationship to socio-economic equity

PISA participation



OECD member countries in PISA 2022

Australia
Austria
Belgium
Canada
Chile
Colombia
Costa Rica
Czechia
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Japan
Korea
Latvia

Lithuania
Mexico
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
Türkiye
United Kingdom
United States

Partner countries and economies in PISA 2022

Albania
Argentina
Baku (Azerbaijan)
Brazil
Brunei Darussalam
Bulgaria
Cambodia
Croatia
Cyprus*
Dominican Republic
El Salvador
Georgia
Guatemala
Hong Kong (China)
Indonesia
Jamaica
Jordan
Kazakhstan
Kosovo*
Macao (China)
Malaysia
Malta

Republic of Moldova
Mongolia
Montenegro
Morocco
North Macedonia
Palestinian Authority
Panama
Paraguay
Peru
Philippines
Qatar
Romania
Saudi Arabia
Serbia
Singapore
Chinese Taipei
Thailand
Ukraine
United Arab Emirates
Uruguay
Uzbekistan
Viet Nam

Countries and economies in previous cycles

Algeria
Azerbaijan
Beijing (China)
Belarus
Bosnia and Herzegovina
Guangdong (China)
Himachal Pradesh (India)
Jiangsu (China)
Kyrgyzstan
Lebanon
Liechtenstein
Luxembourg
Mauritius
Miranda (Venezuela)
Russian Federation
Shanghai (China)
Tamil Nadu (India)
Trinidad and Tobago
Tunisia
Zhejiang (China)

Programme for International Student Assessment (PISA)

is a worldwide study by the Organisation for Economic Co-operation and Development (OECD) in member and non-member nations intended to evaluate educational systems by measuring 15-year-old school students' academic performance in mathematics, science, and reading.

It was first performed in 2000 and then repeated every three years. Its aim is to provide comparable data with a view to enabling countries to improve their education policies and outcomes.



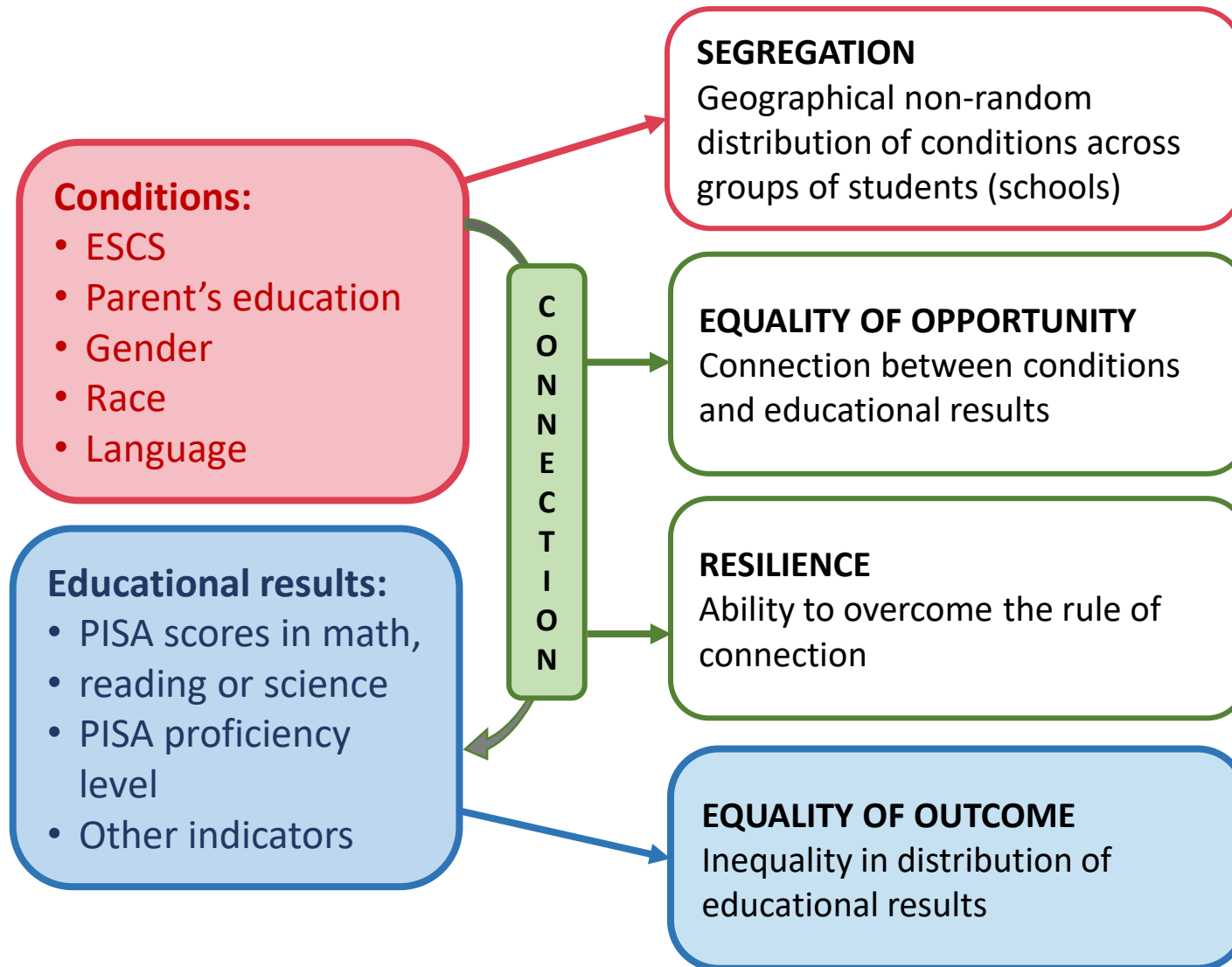
2000	2003	2006	2009	2012	2015	2018	2022
Reading	Math	Science	Reading	Math	Science	Reading	Math
31 countries	41 countries	56 countries	64 countries	63 countries	71 countries	78 countries	82 countries

PISA conducts assessments every three years, and currently, we have data from 8 waves.

THE MAIN GOAL of this study is to monitor the evolution of inequality of outcomes from the beginning of PISA in 2000.

Due to the strong correlations among scores in three different subjects, as well as the indicators derived from these scores, the decision has been made to focus on the **READING SCORE** as an indicator of the educational results of students.

What is Equality of Outcome?



*"If we assume that the distribution of **academic abilities** is the same across countries, then comparisons of **inequality of outcomes** must be attributable to variations in either effort or circumstances and can therefore be informative at a broad level"*

Gromada et al., 2019

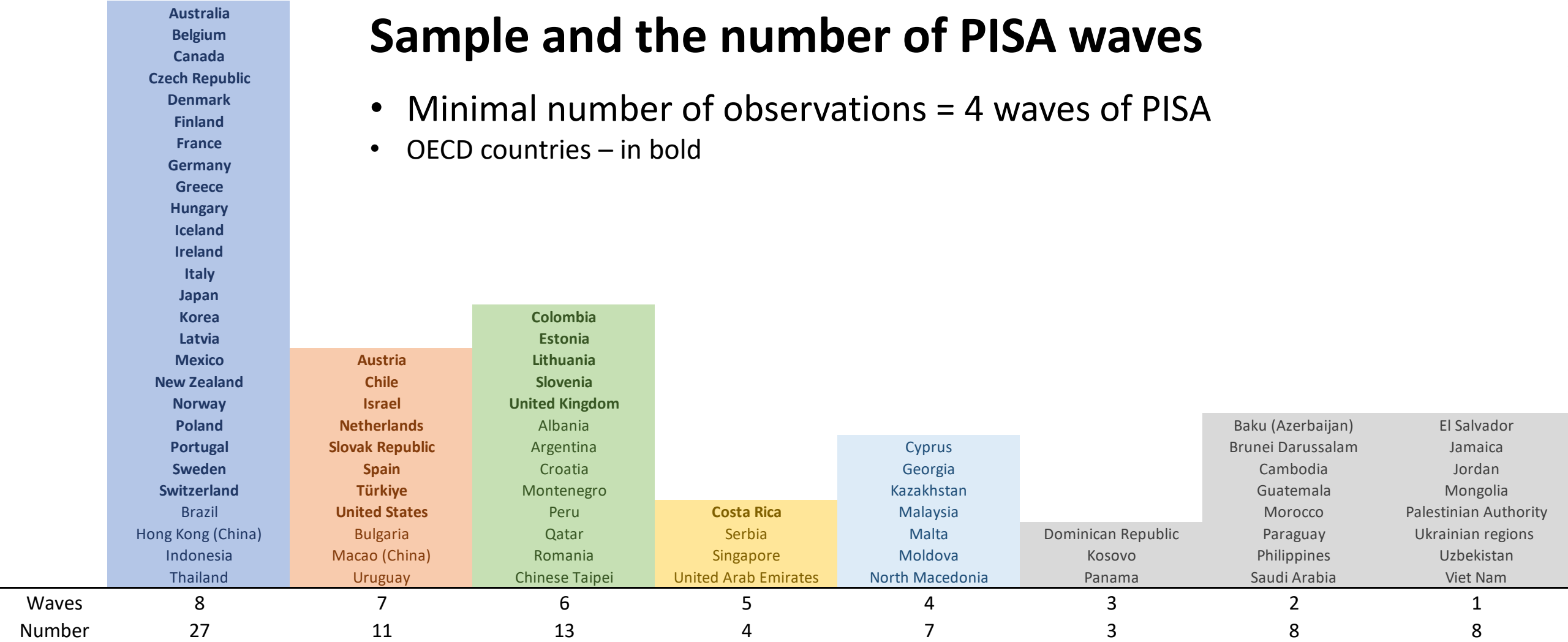


Methodology

- This work aimed to **track the changes in inequality of outcomes since the beginning of PISA**, using the public data published in PISA reports
- We use the national SD of READING score as an indicator of equality of outcomes (Handbook on Measuring Equity in Education, 2018; Gromada et al., 2019)
- Based on the national SD for each year, we use linear regression to build a national trend since the beginning of observations to track the direction and the statistical significance of change
- Aggregated trends based on the year when the countries have joined PISA
- Impact of the COVID pandemic – separate trends for the 2022

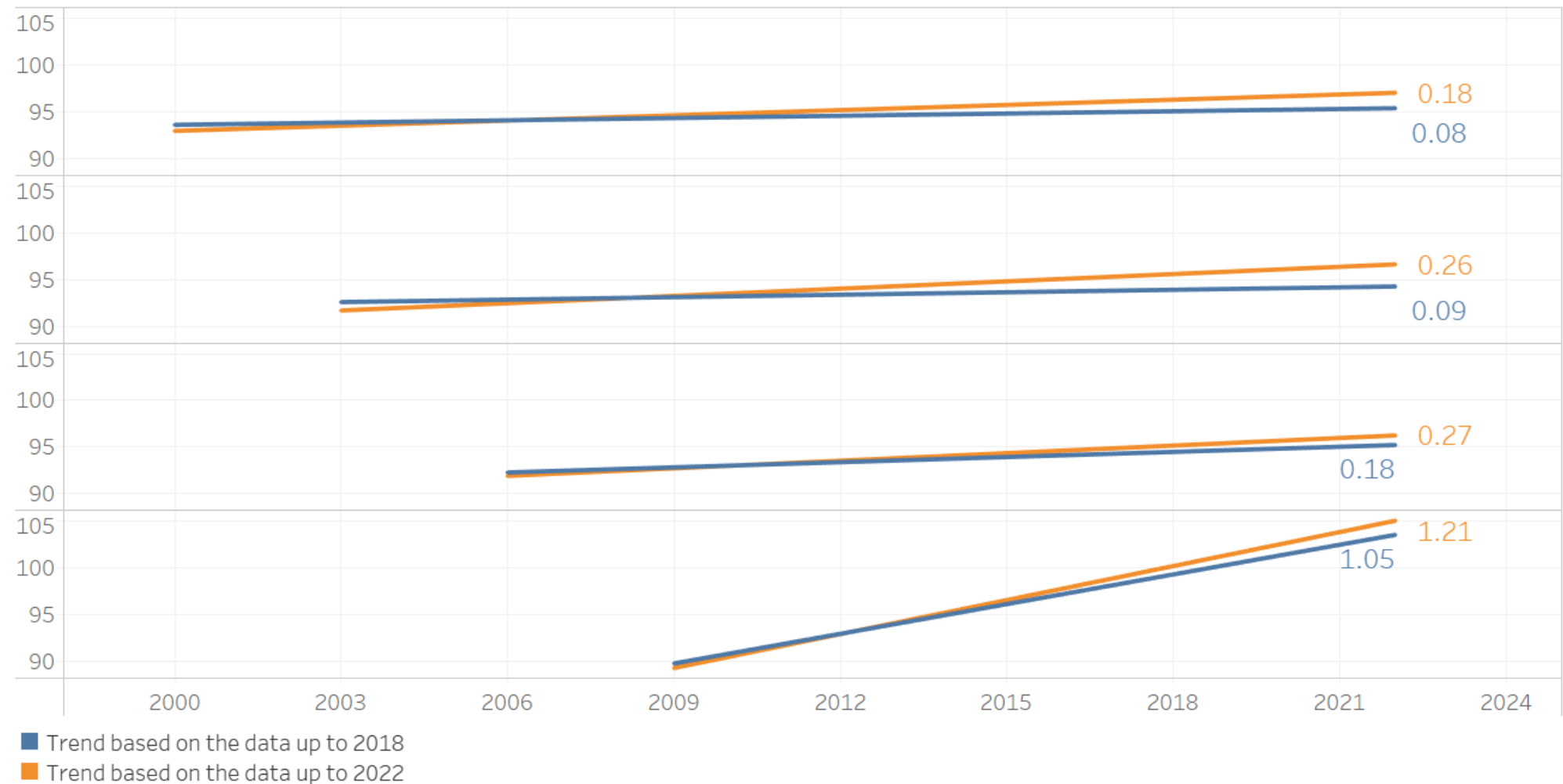
Sample and the number of PISA waves

- Minimal number of observations = 4 waves of PISA
- OECD countries – in bold

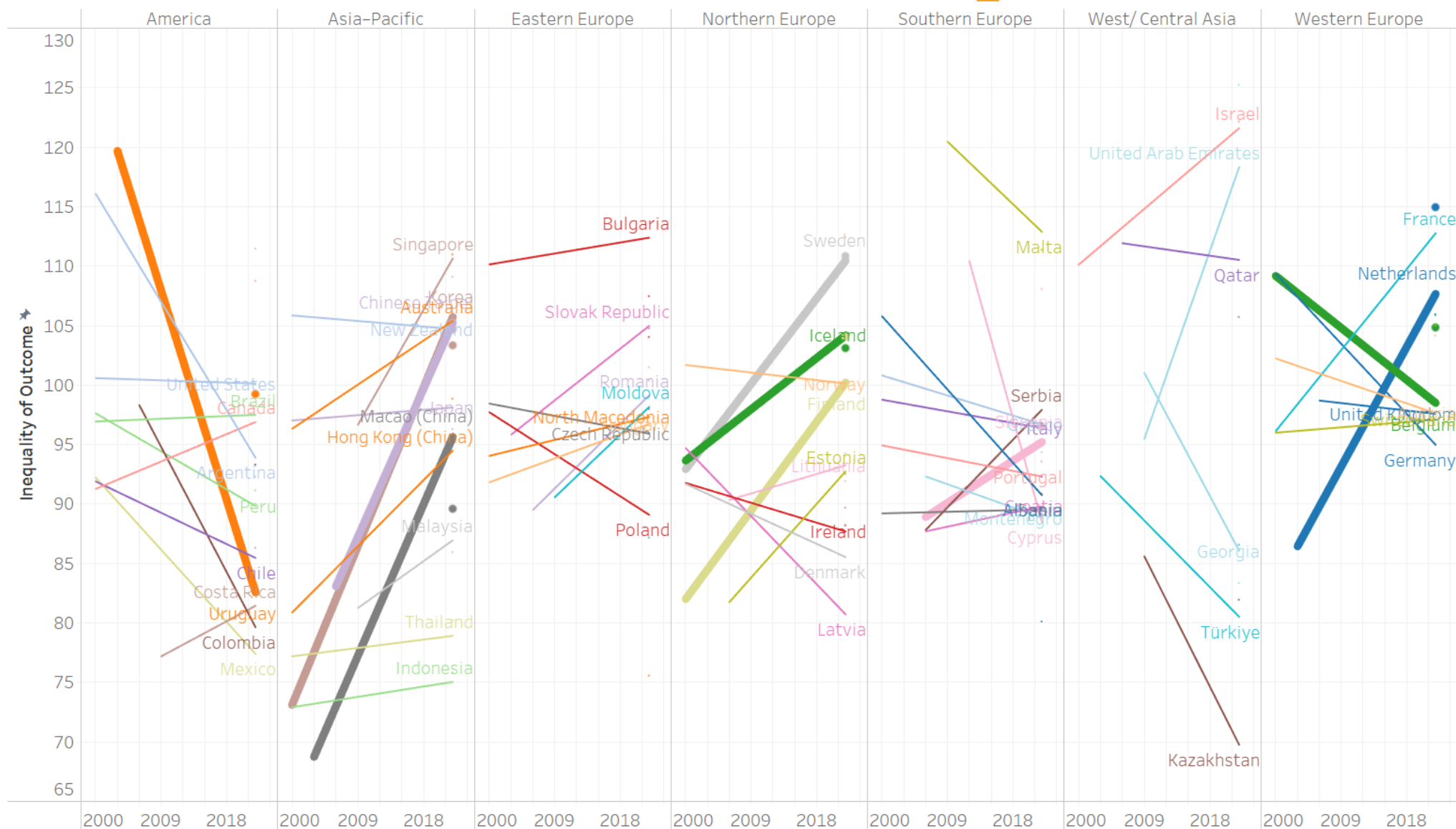


Average trends in inequality of outcomes by cohorts*

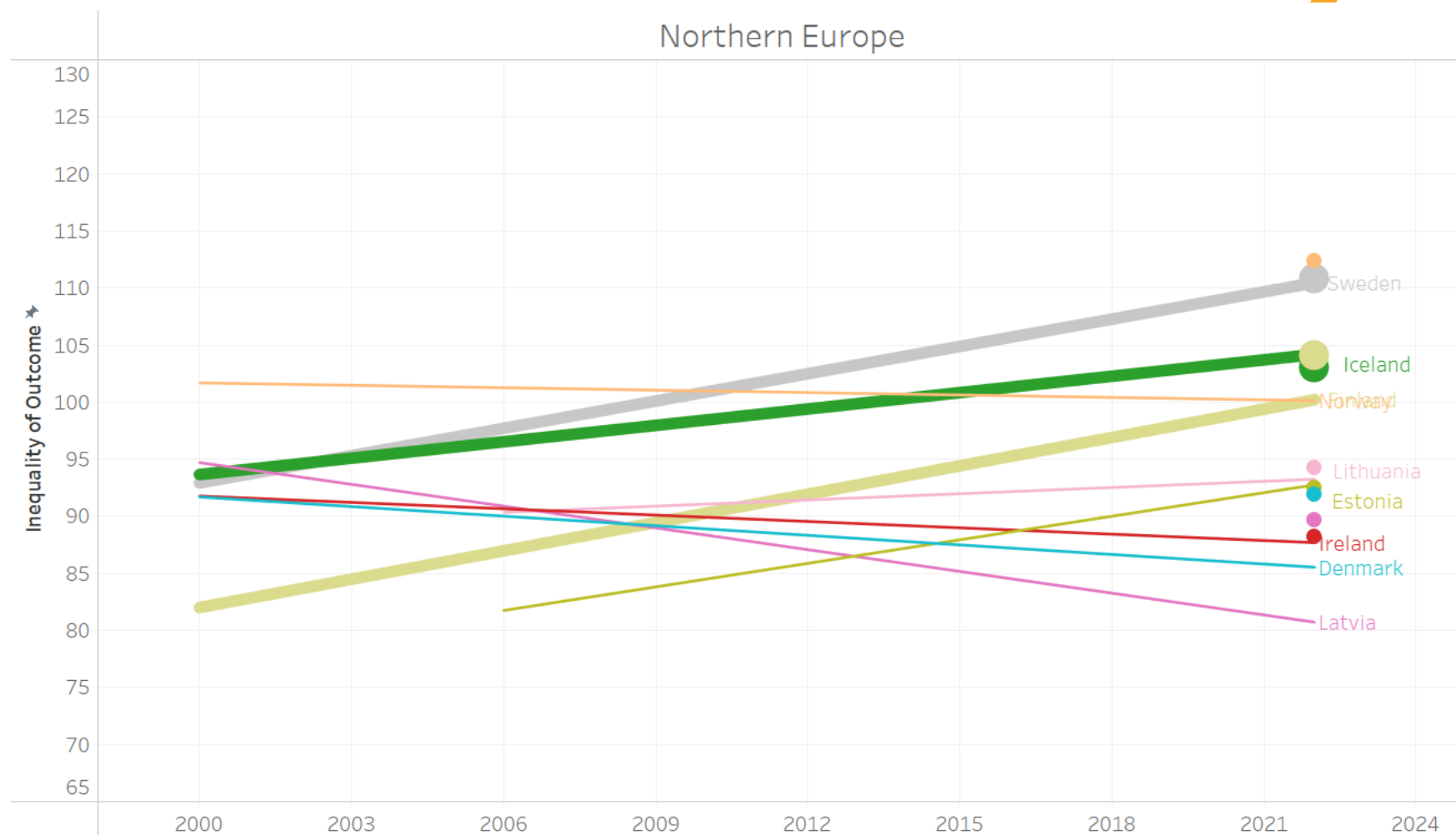
* based on the year when the countries joined PISA



Trends in inequality of outcomes by countries



Trends in inequality of outcomes by regions



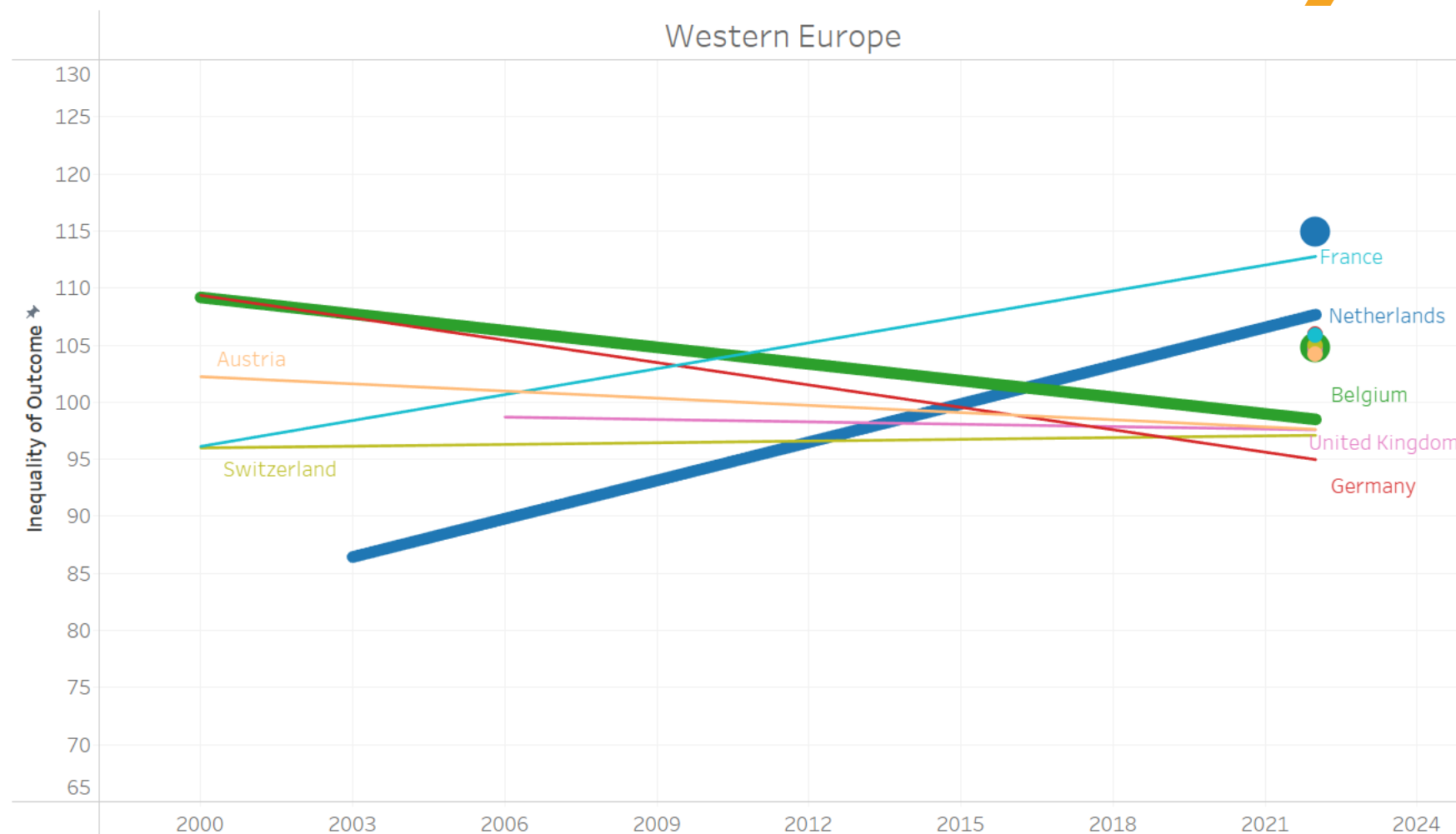
Lines – regression trend of inequality of outcome based on the data from 2000 to 2018.

Dots – observed values of inequality of outcome in 2022.

Differences between the **lines** and the **dots** show the difference between the expected value of inequality of outcome in 2022 and the empirically observed data.

Bold lines – statistically significant trends

Trends in inequality of outcomes by regions



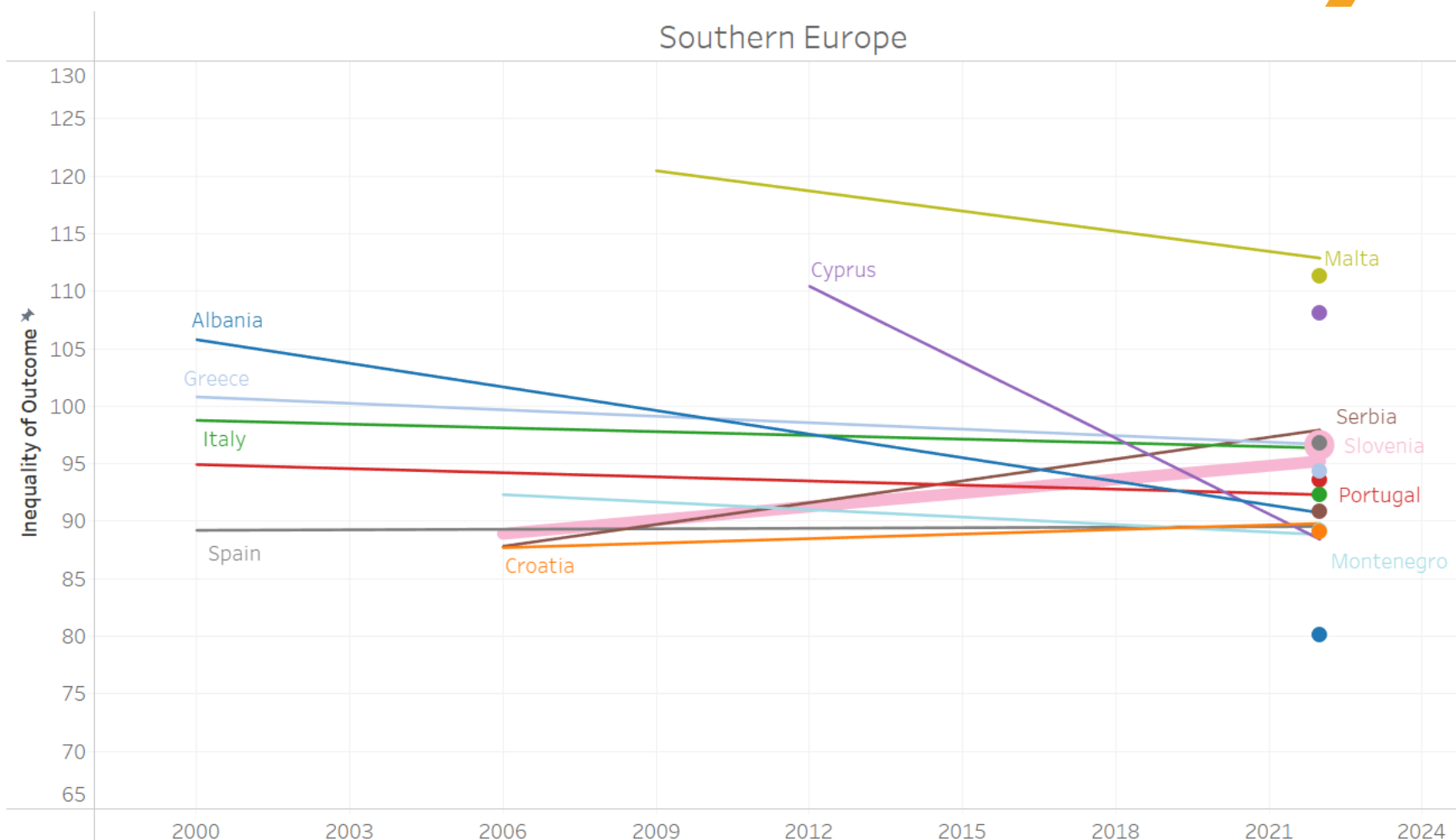
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Trends in inequality of outcomes by regions



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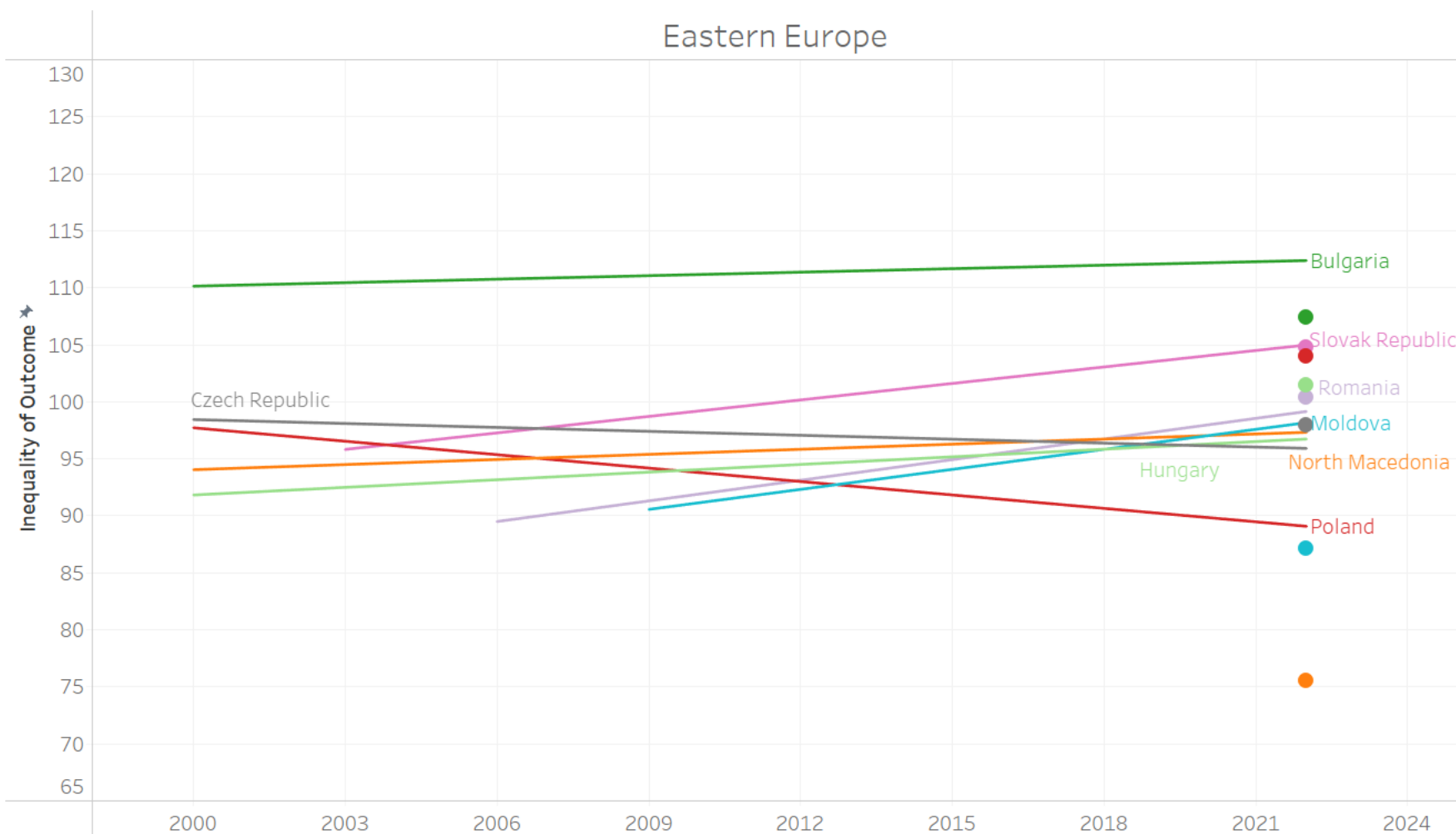
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Trends in inequality of outcomes by regions

Eastern Europe



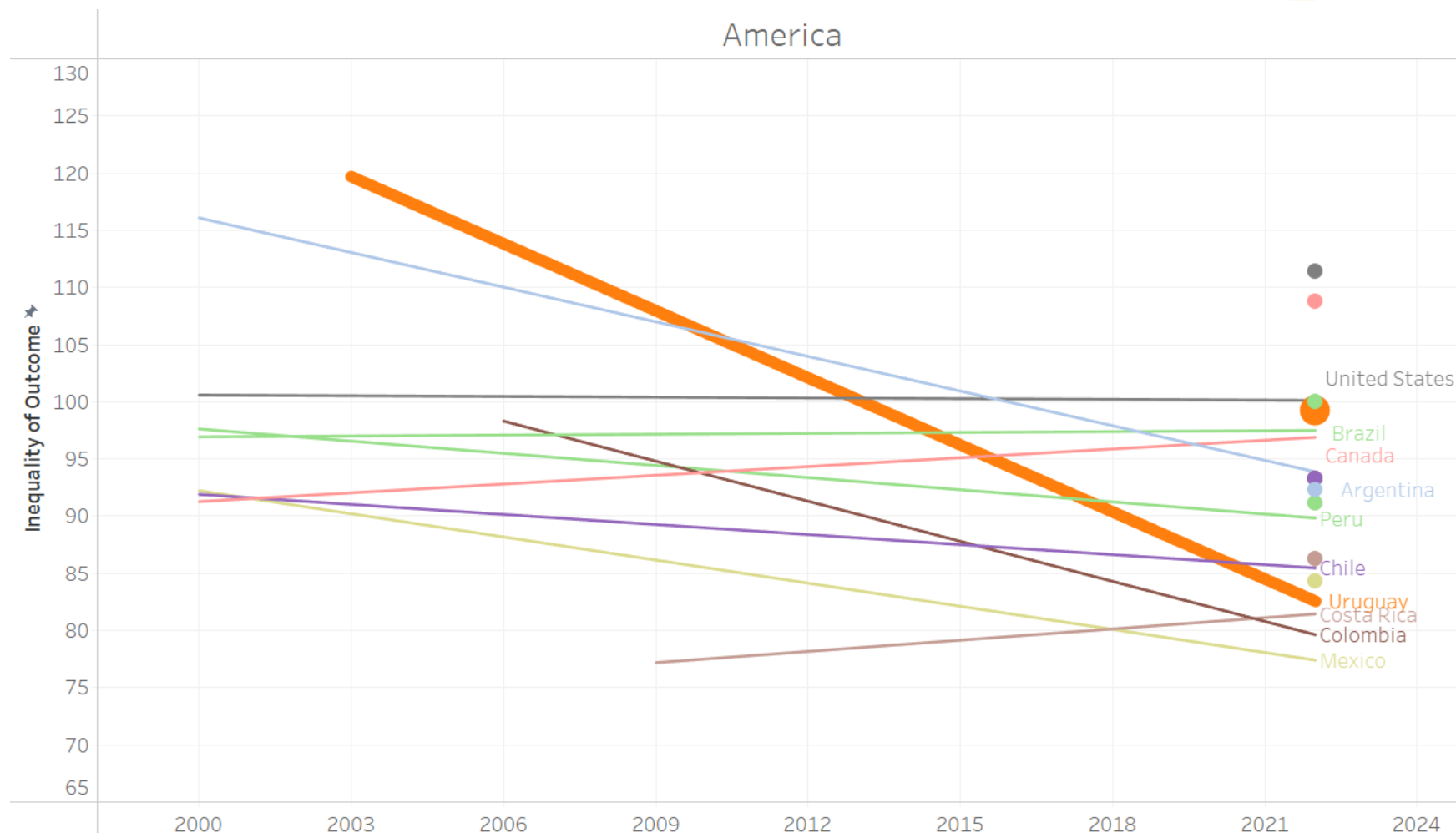
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Trends in inequality of outcomes by regions



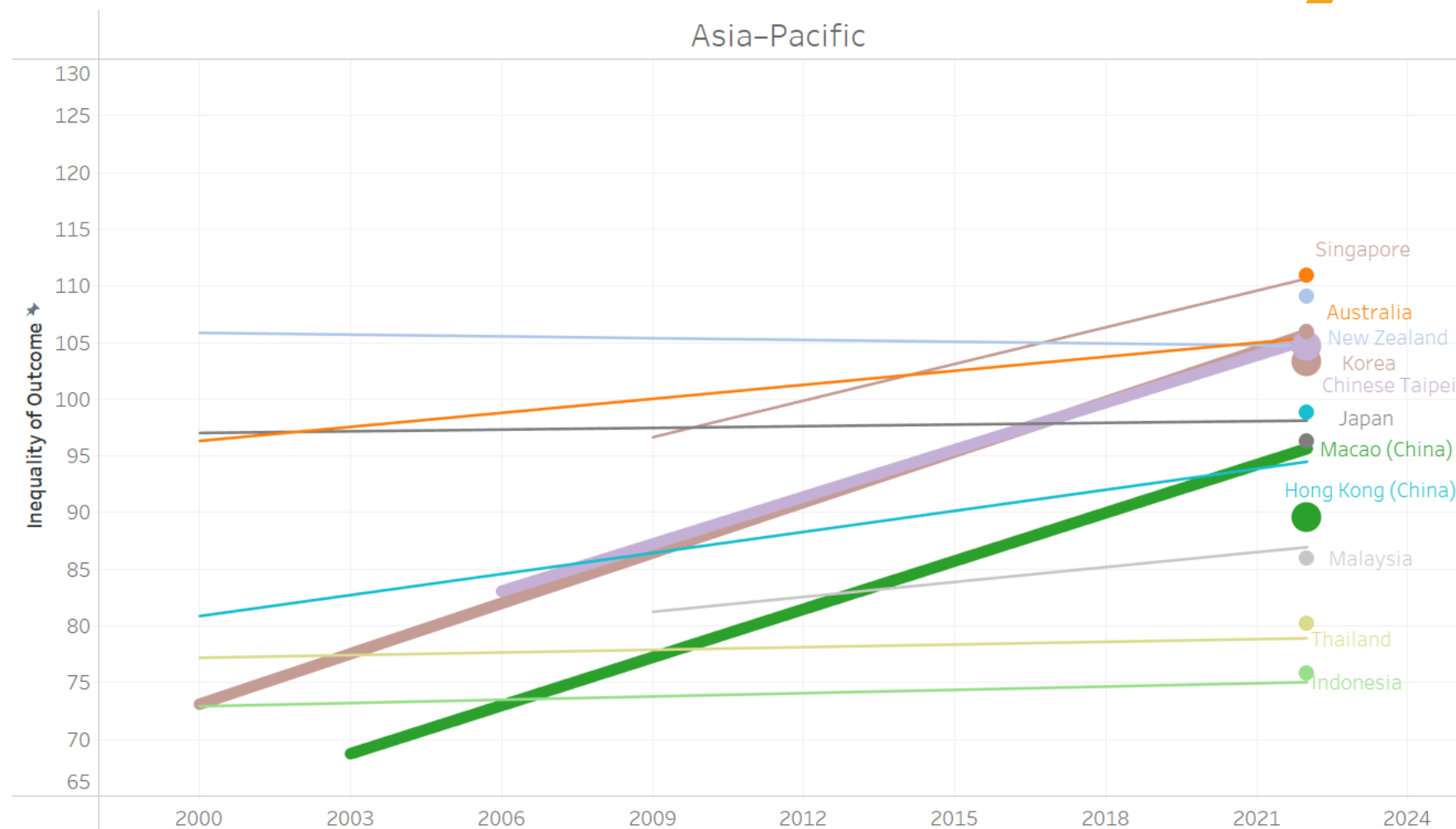
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Trends in inequality of outcomes by regions



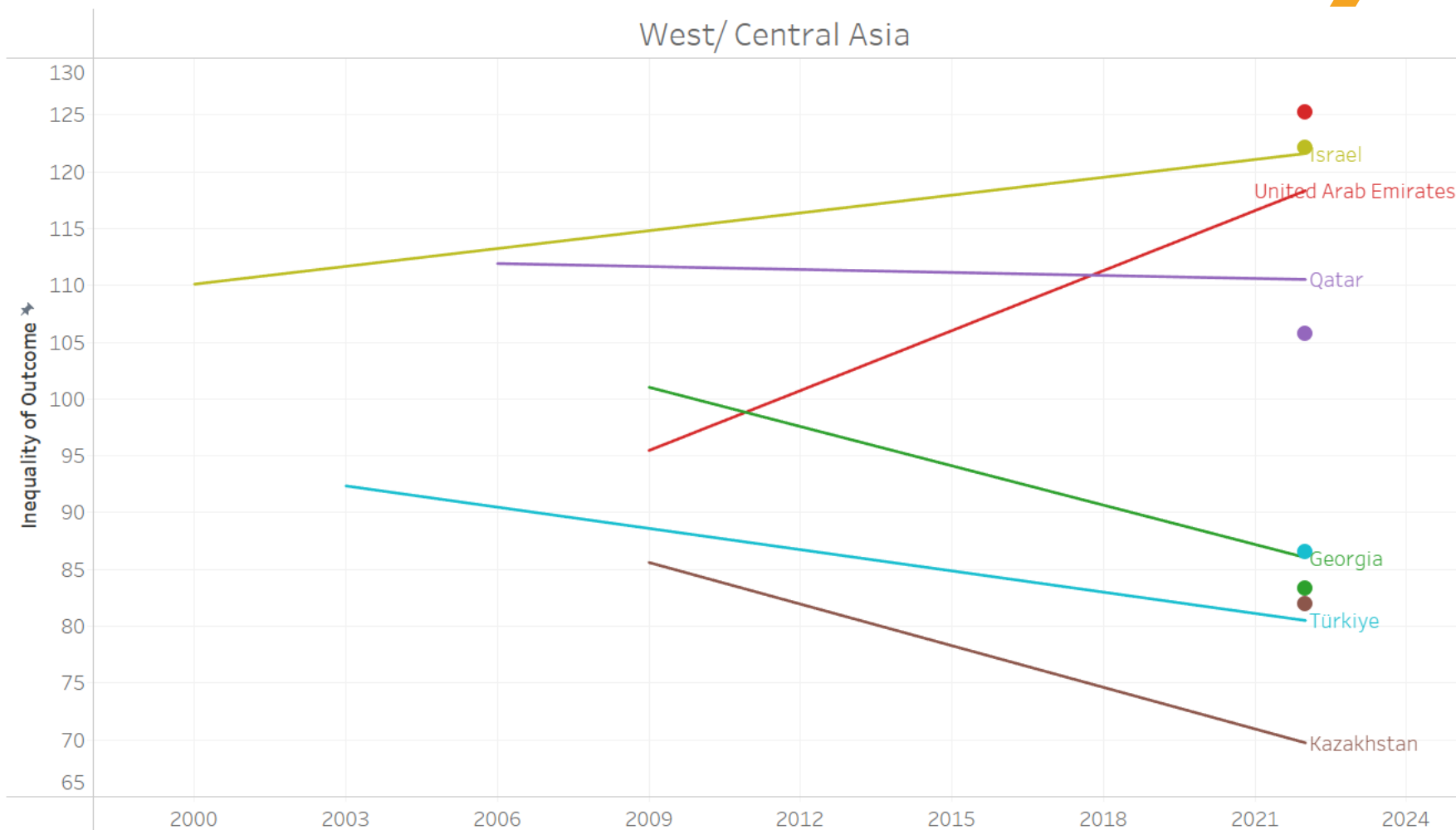
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Trends in inequality of outcomes by regions



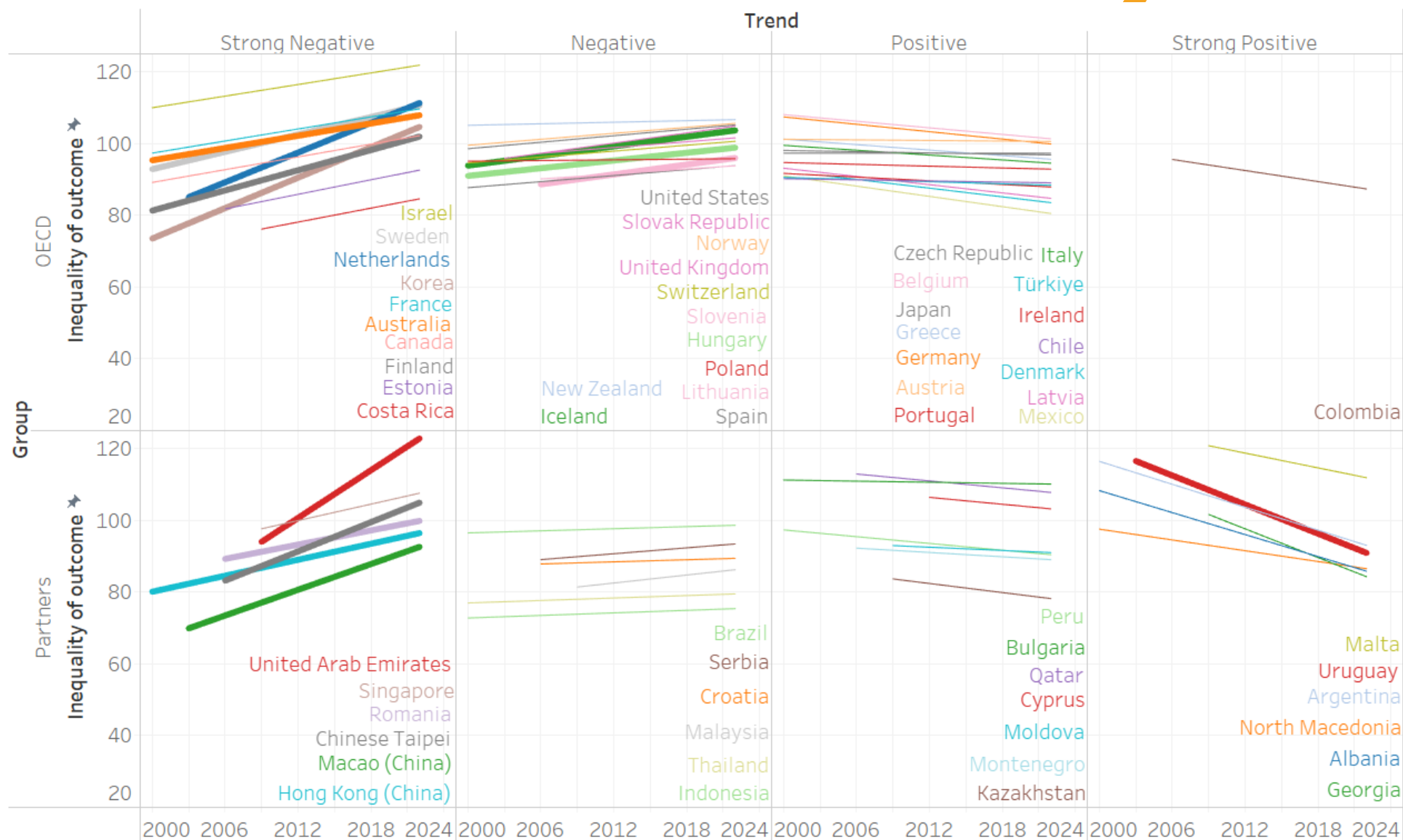
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Trends in inequality of outcomes by regions



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CONCLUSIONS

- No clear patterns by the regions.
- **NO IMPROVEMENT in Equity Trends:** Only 2 countries have statistically significant positive trends in equality of Outcomes. A bigger number of countries with **negative trends**, that increased the gap in educational results.
 - The slope of the trends increases for the countries that entered the PISA study at the later stages, creating for the countries that entered the PISA study at the later stages, and particularly for the countries that entered after 2009.
 - Some of the best performers in the beginning (2000) have significantly **worsened** (inc. Sweden, Iceland, Finland, Macau, Chinese Taipei, South Korea)
- **POST-COVID data** slightly increases inequality (for all trend lines with the different starting points). On the country level, some countries suffered more from the pandemic than others. There are countries where the post-COVID results are much better than expected.
- **Consider Overall Equity Level:** Evaluating changes in equity requires considering the baseline level of equity in each country, providing important context for the interpretations.

These findings contribute to promoting educational equity and informing policymakers and researchers in their efforts towards more inclusive and equitable education systems.

Thank you for attention!



Societies can only stand as democratic and fair to the extent to which they can get rid of their inequities.

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