

The Dynamics of Global and Domestic Essential Commodity Prices

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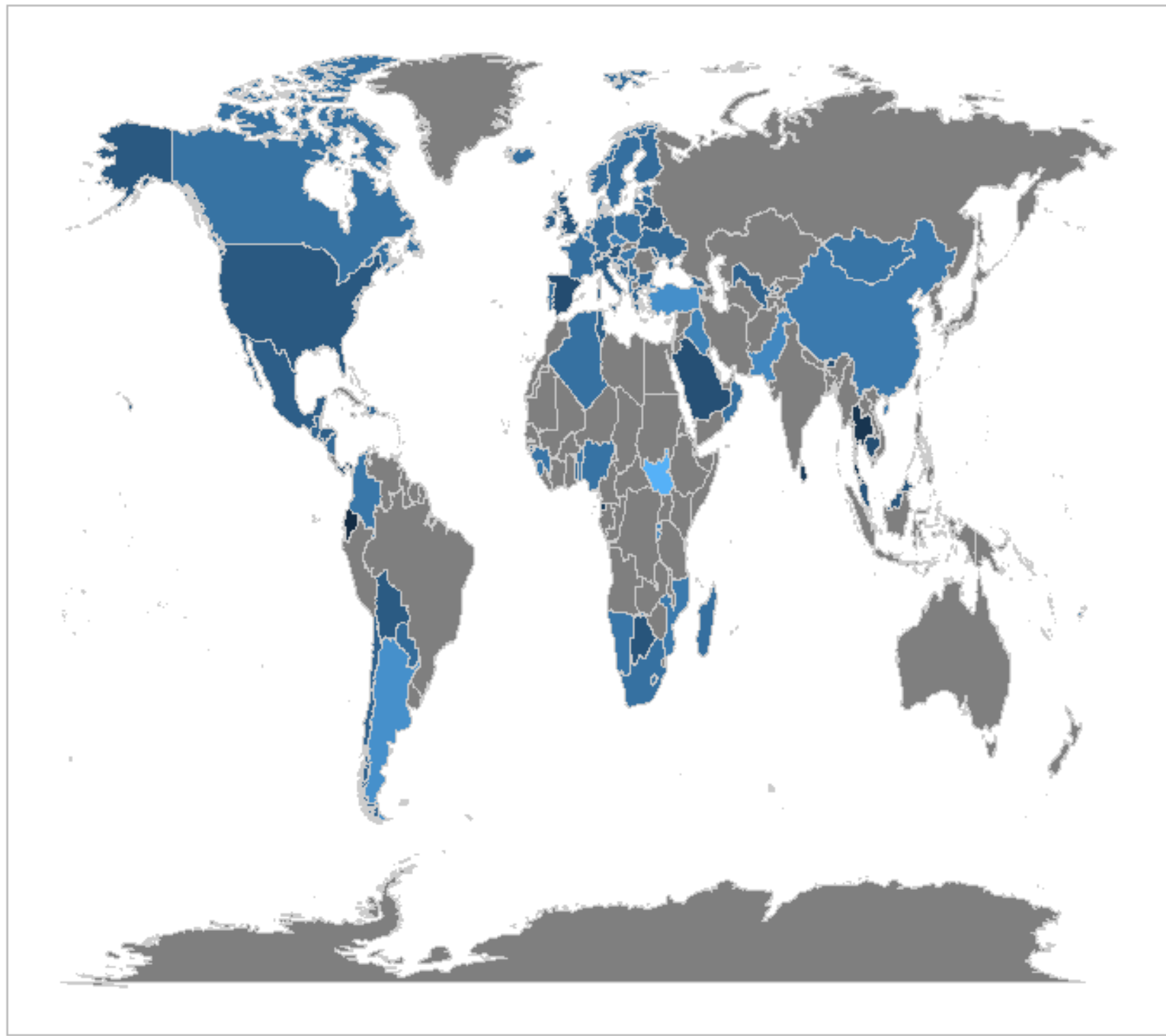
Background

- Essential commodities such as staple foods, vegetable oils, sugar, and dairy products, have a significant impact on the global economy and people's livelihoods.
- Price fluctuations in these commodities can have far-reaching consequences for food security, poverty, and overall economic stability.
- Global and domestic essential commodity prices have undergone significant changes since the beginning of COVID.
- Previous studies have provided insights into the factors influencing essential commodity prices, but there is a need for a comprehensive analysis that combines price trends, driver identification, and predictive modeling.
- The research seeks to fill this gap by providing an in-depth exploration of global and domestic essential commodity price dynamics and offering predictions for future price trends.

Percent Change in CPI

- The below plot shows the percent change in CPI from 2022 to 2023.
- Variations in CPI change are equally distributed around the world except for East Asia.
- East Asia does not show any countries with extreme change in CPI when compared with Africa, Europe and the America's .

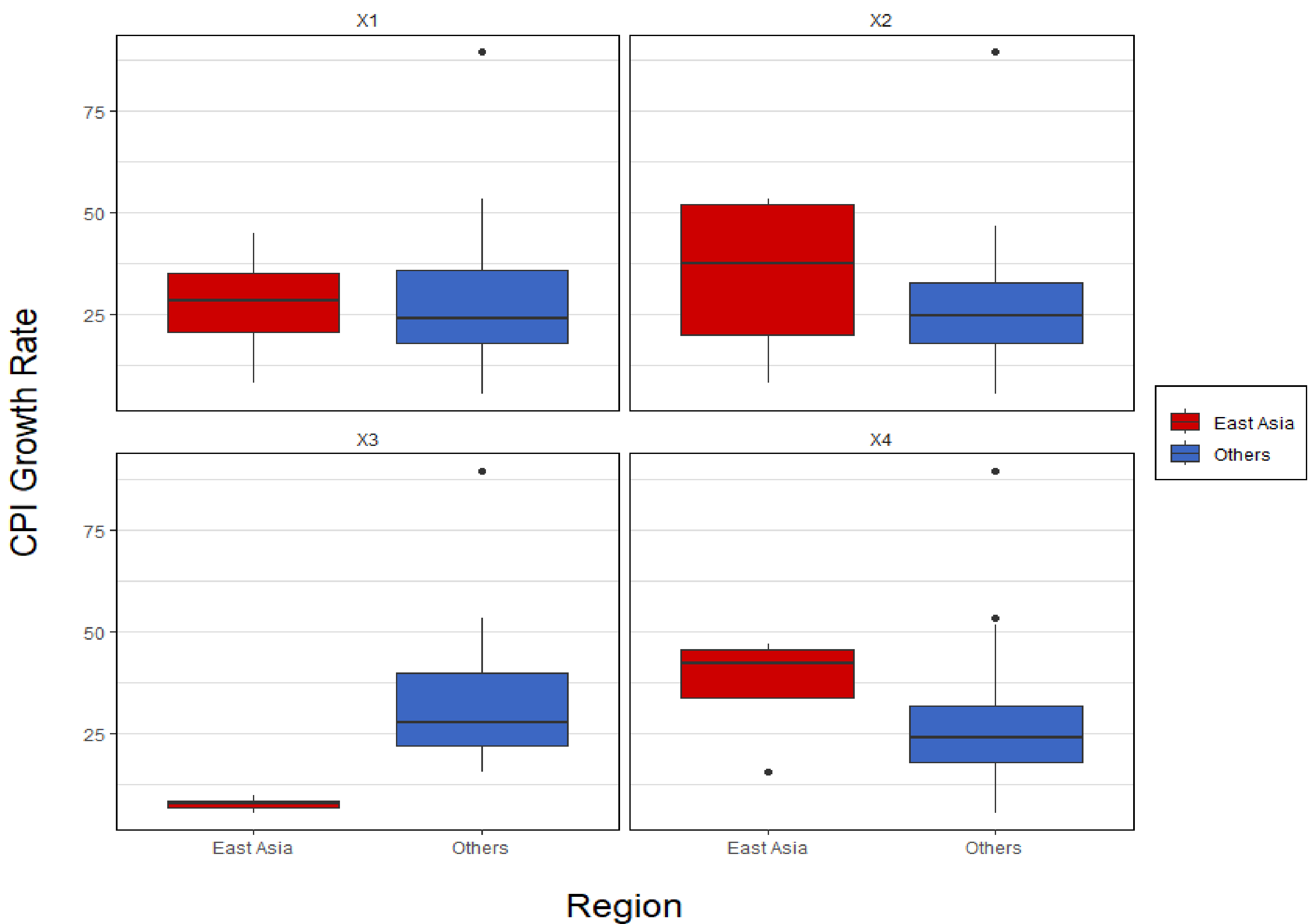
Variation in CPI Change Equally Distributed



East Asia's Food Price Resilience in the Face of COVID-19

- CPI growth can be observed across all regions, with an acceleration in CPI growth rate due to COVID-19 starting in 2020 and continuing through the present time.
- However, analysis demonstrated that not all regions experienced the same amount of acceleration.
- In the plot below, it can be observed that CPI growth in East Asia due to COVID-19 was significantly lower than the CPI growth documented in the rest of the world.
- To illustrate this, we used hypothesis testing, where three fake plots were generated in addition to the real plot by randomly assigning countries to the 'East Asia' region.
- The real plot is easily identified among the randomly generated plots, proving the trend is significant
- In that real plot, the rates were determined by analyzing the aggregated data of the countries from the East Asia region and the data from the rest of the world.

East-Asia and Global CPI Growth Comparison



Conclusion

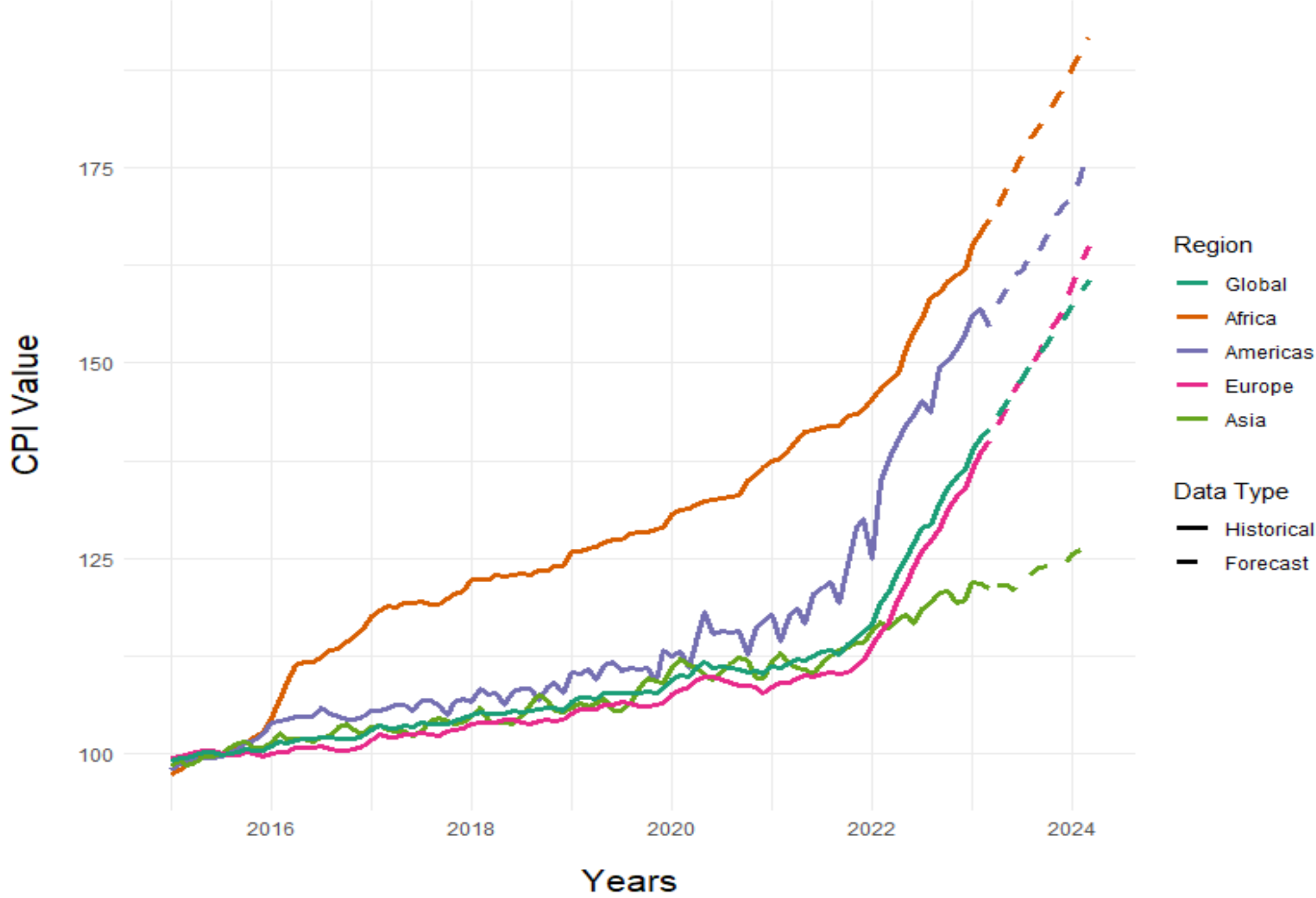
- It's clear from the plots in this poster that CPI values were impacted significantly by COVID-19 starting in 2020 running up through the present day.
- It is equally clear, however, that there was significant variation both between and within regions in the degree to which factors from COVID-19 raised prices.
- East Asia stands out as a being particularly successful in mitigating the impacts of COVID on CPI.

Discussion and Further Research

- We suggest further research and modeling into how other market factors affected the increases in CPI.
- Including, but not limited to, global supply chain, supply and demand, inflation, and government policies and regulations.
- Additional analysis could also shed light on the factors that led to East Asia's unique success in responding economically to COVID-19.

Data Modeling

Forecasted CPI Values to March 2024



- The above plot is a time series model showing how the CPI has changed over time in each region of the world, starting in 2015 and predicting future prices to March of next year.
- It also includes forecasting for each region, reflected in the dashed line segments
- There is significant variation in the trendlines, with all regions besides Africa being roughly grouped, then starting to diverge at the inception of COVID-19
- The CPI increase was most well managed by Asia, which maintained a relatively consistent growth rate through the crisis.

Materials

- The data in these plots comes from the Organization for Economic Co-Operation and Development and the International Monetary Fund.
- This allowed for a detailed and frequently updated collection of CPI values for countries around the world.
- CPI is a measure of market value changes over time. Given a base year where the CPI equals 100, a CPI higher than the base indicates an increase in prices and a CPI lower than the base indicates a decrease in prices.
- Because the focus was on global grocery prices, the CPIs were filtered to food and non-alcoholic beverages only.