

NAME

Author's name

DATE

27 June 2025

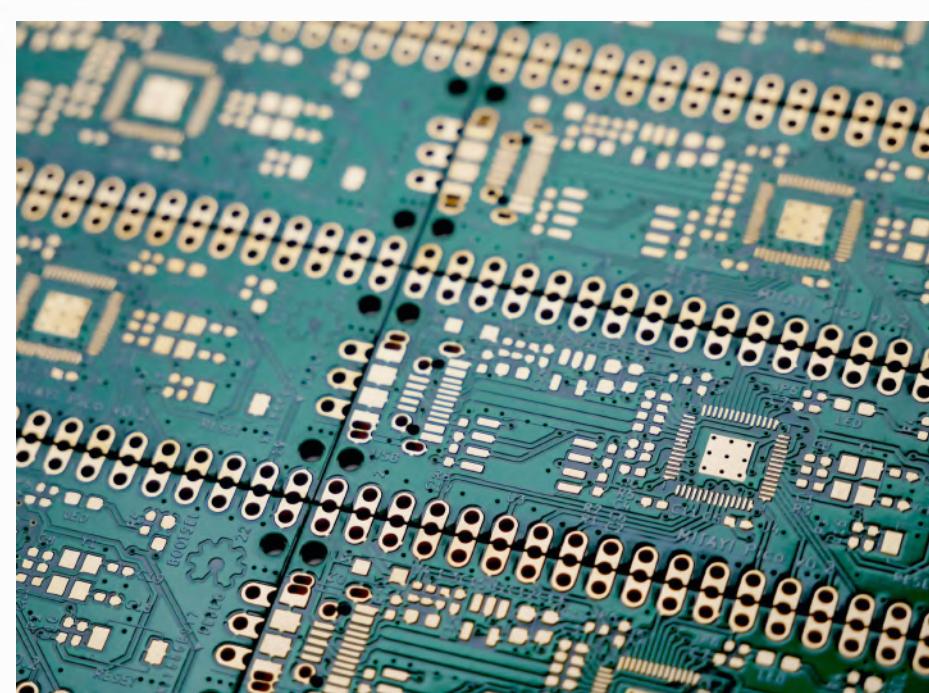
Semiconductor Exports Overview: Trade Insight

PROJECT GOAL



Analyze the export performance of semiconductor products (specifically integrated circuits) by destination country to identify high-value markets and trends using trade data.

Reason



IC IS EVERYWHERE

Leading in every component



PORTFOLIO

Emerging as a key portfolio



WORLD GROWTH

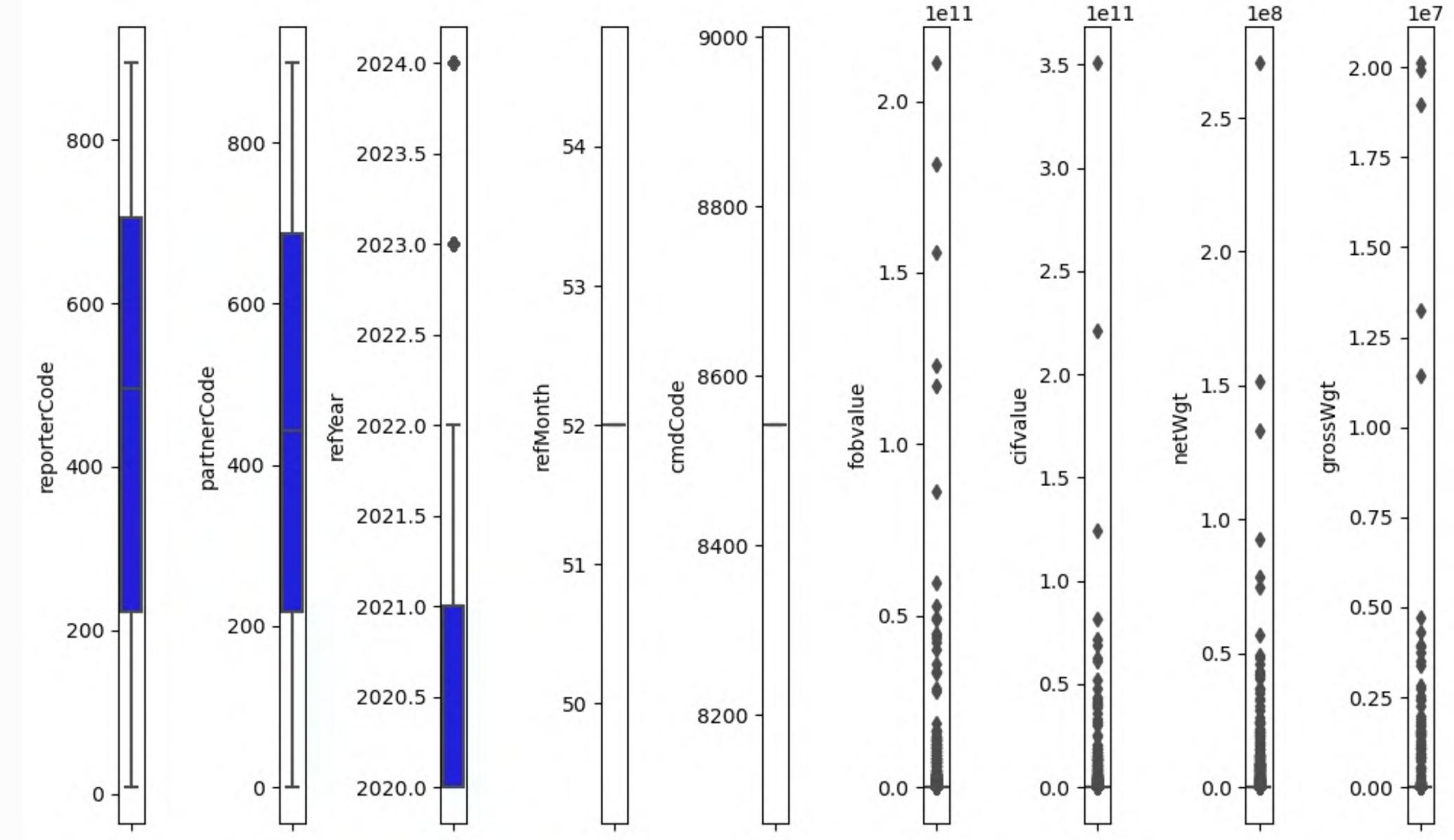
Increasing export contributions

Data Understanding

- Has 47 Columns, 66859 rows
- Eliminate into 14 columns
- fobvalue & cifvalue has missing value >20% → cleaned by removing rows
- netWgt has missing value ~8% → use median
- rows has 23092

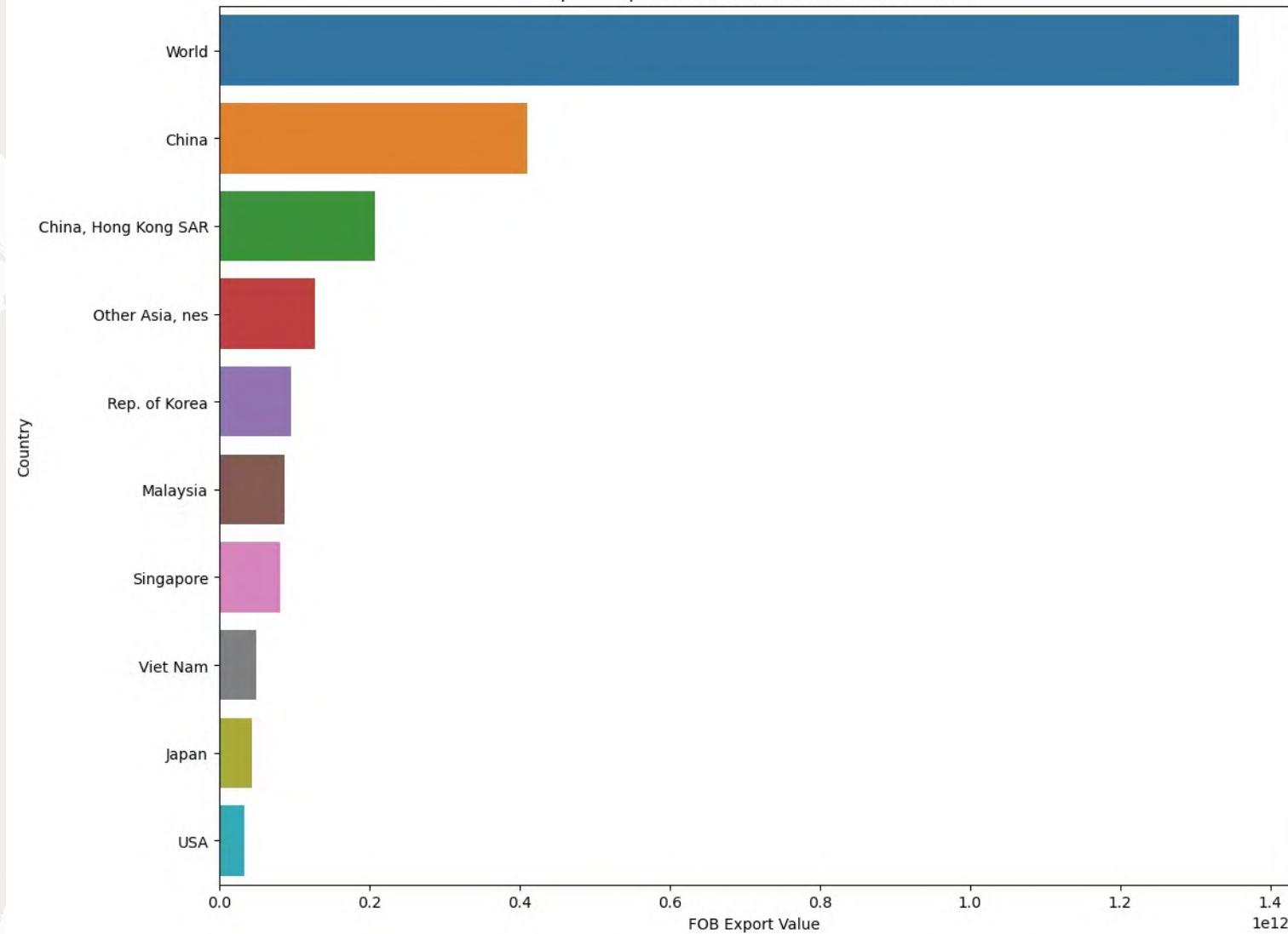
reporterCode	Numeric code for the country/region that reported the trade (e.g., exporting country)
reporterDesc	Name of the reporting country or region (e.g., "Japan", "Germany")
partnerCode	Numeric code for the trade partner country (e.g., the importer)
partnerDesc	Name of the partner country or region (e.g., "USA", "Korea, Rep.")
refYear	Year the trade was reported
refMonth	Month of the trade record (may sometimes represent week number if unusual)
flowCode	Numeric code indicating trade flow: usually 1 = Import, 2 = Export
flowDesc	Trade flow direction – either "Import" or "Export"
cmdCode	Harmonized System (HS) commodity code – classifies the traded product (e.g., "8542" for integrated circuits)
cmdDesc	Text description of the commodity (e.g., "Electronic integrated circuits")
fobvalue	Free on Board value – value of goods at the export point, excluding shipping/insurance costs
cifvalue	Cost, Insurance, and Freight – value of goods including transport and insurance to destination
netWgt	Net weight of the goods being traded (excluding packaging), usually in kilograms
grossWgt	Gross weight of the shipment (including packaging), in kilograms

Outlier Check



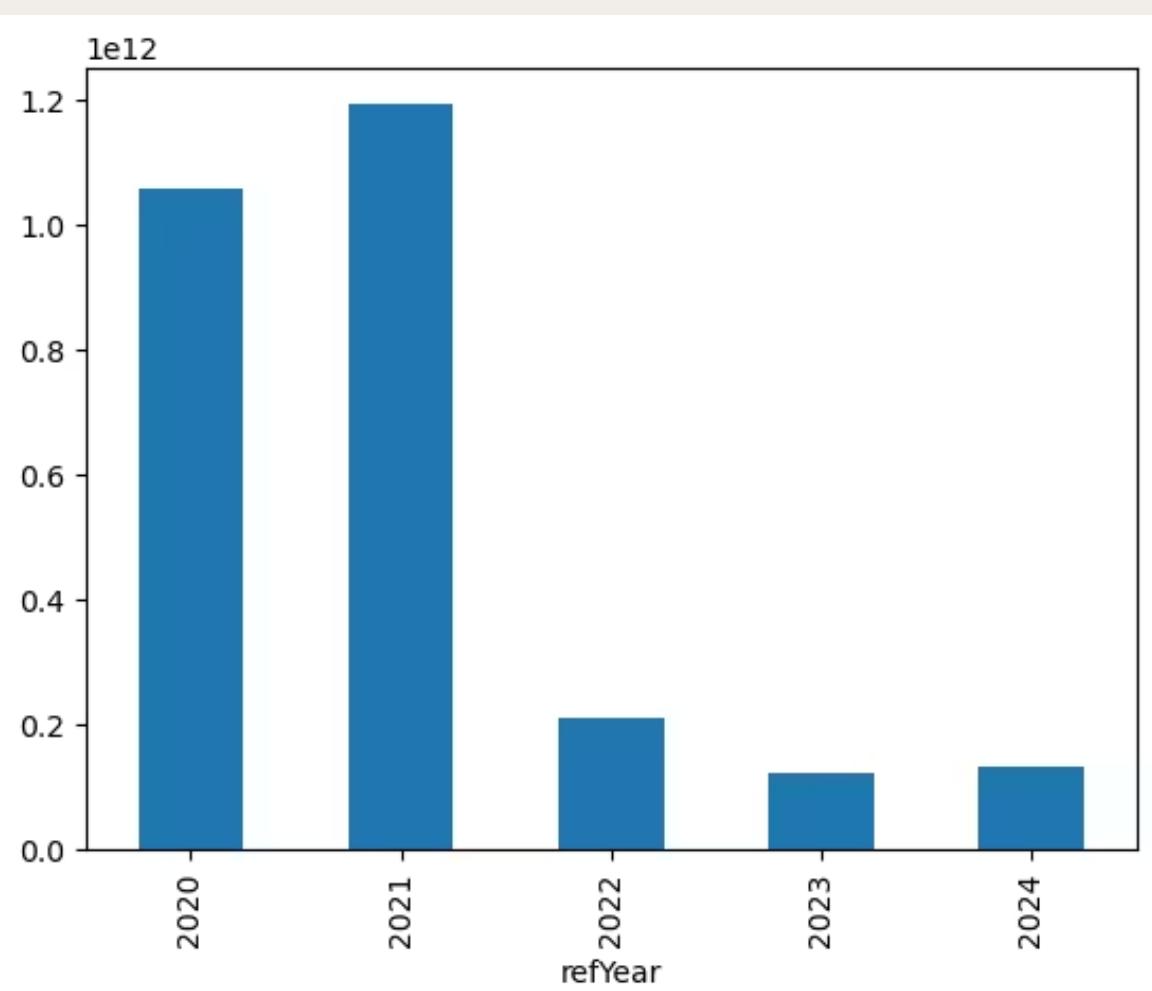
Since the operations value is the part that has outliers, we will keep the outliers, to keep the original information.

Export Value

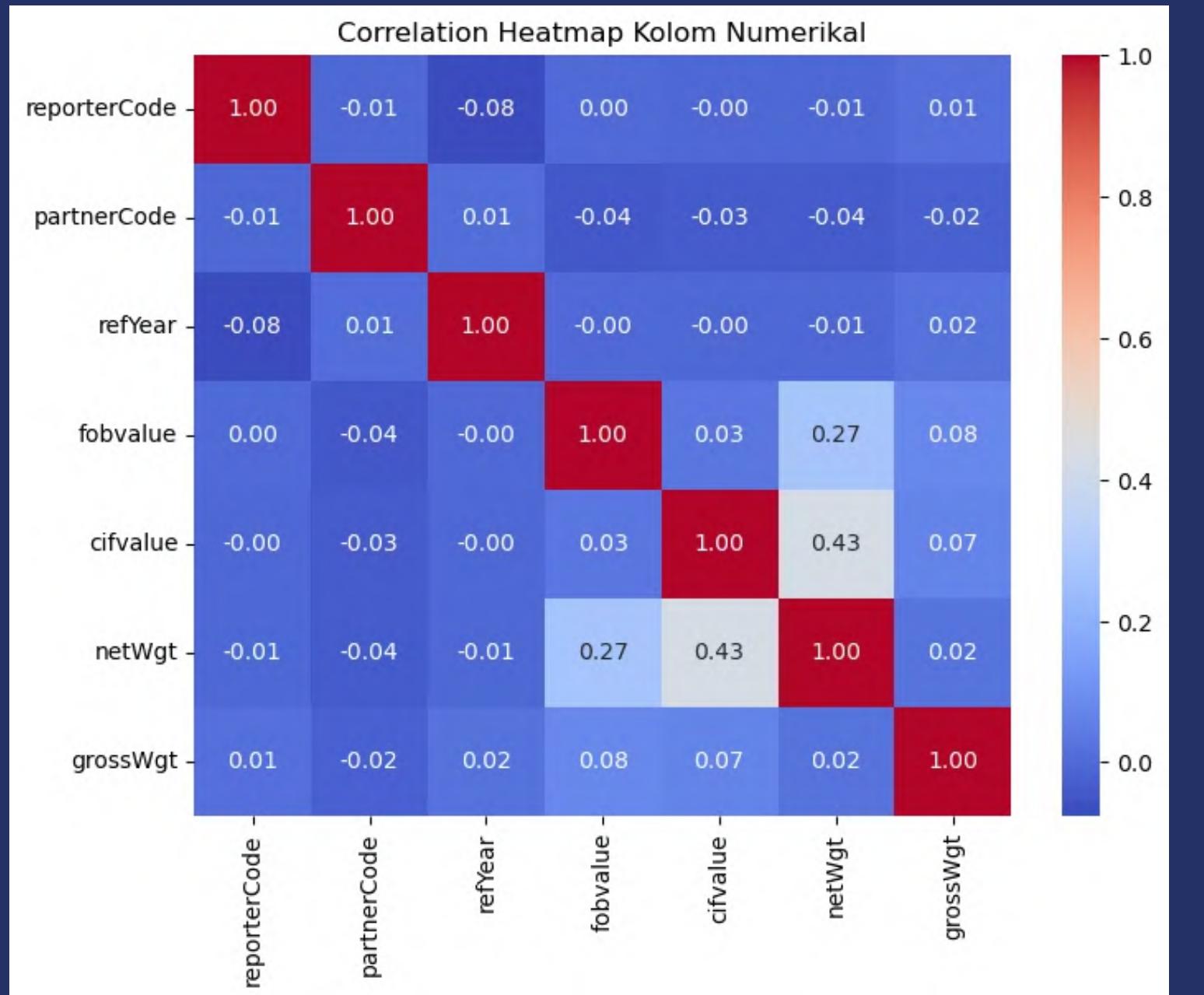


IMPACT OVERVIEW

World export destinations has the highest value.
Have no idea what country.



CHALLENGES AHEAD



Export vs Import values

Data Manipulation

Export value / kg → ??

```
# Ensure Net weight is numeric and avoid division by zero
df_copy_clean['netWgt'] = pd.to_numeric(df_copy_clean['netWgt'], errors='coerce')
df_copy_valueperkg = df_copy_clean[df_copy_clean['netWgt'] > 0]

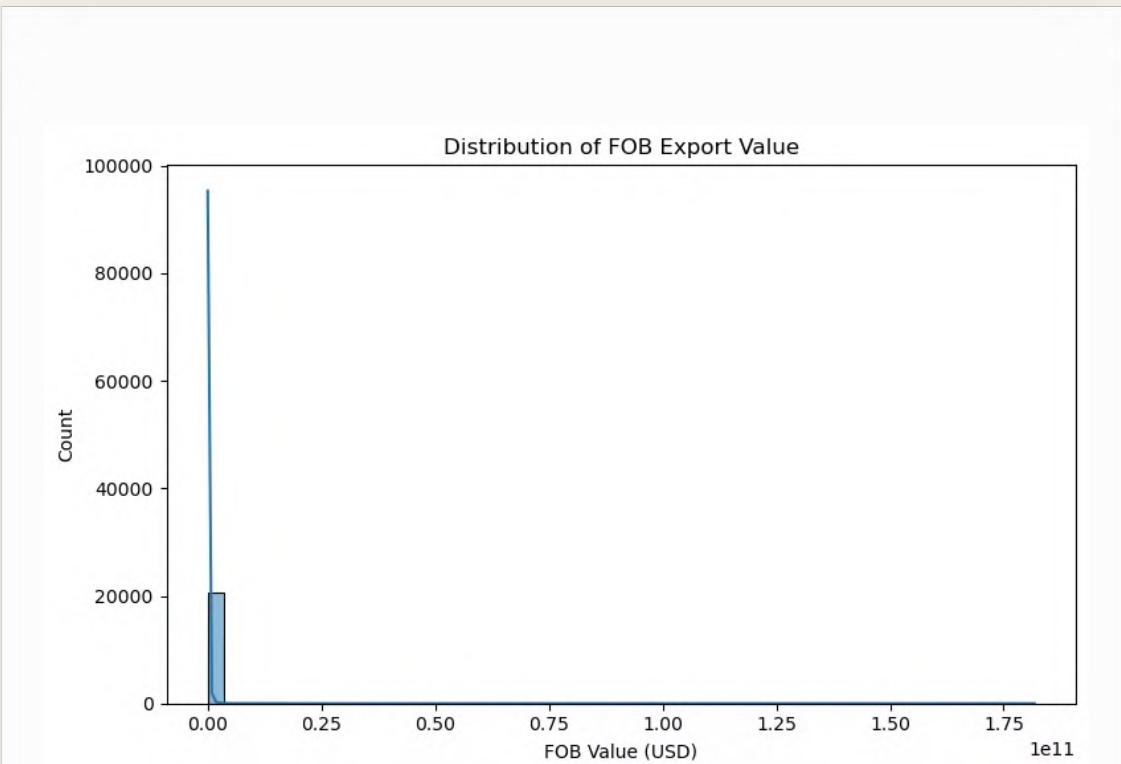
# Create value per kg
df_copy_valueperkg['value_per_kg'] = df_copy_valueperkg['fobvalue'] / df_copy_valueperkg['netWgt']

✓ 0.0s

C:\Users\Admin\AppData\Local\Temp\ipykernel_26016\601020356.py:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
```

CLEANING

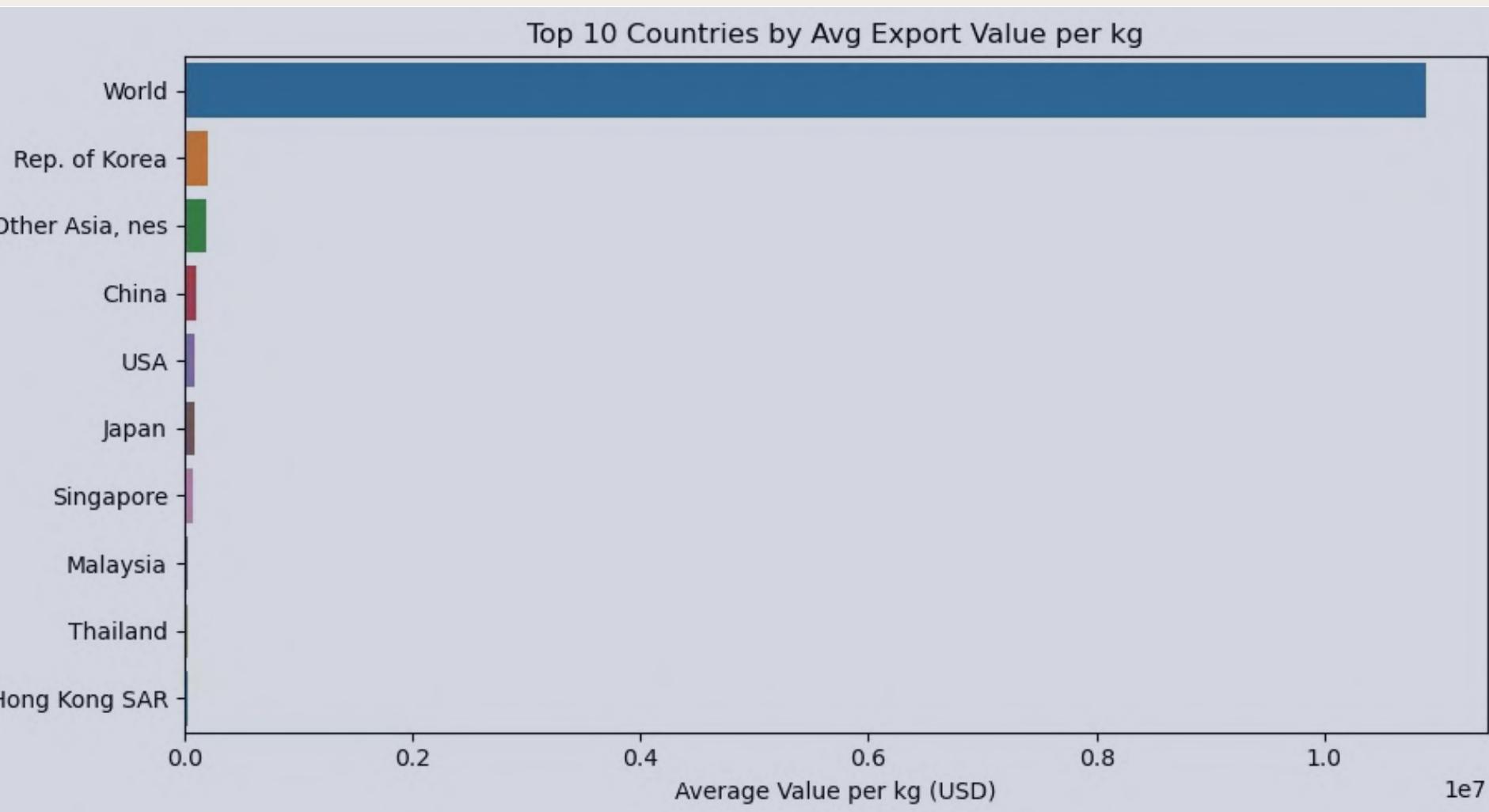
Removed rows with missing/zero
export weight (netWgt or grossWgt)



DATA VISUALIZATION

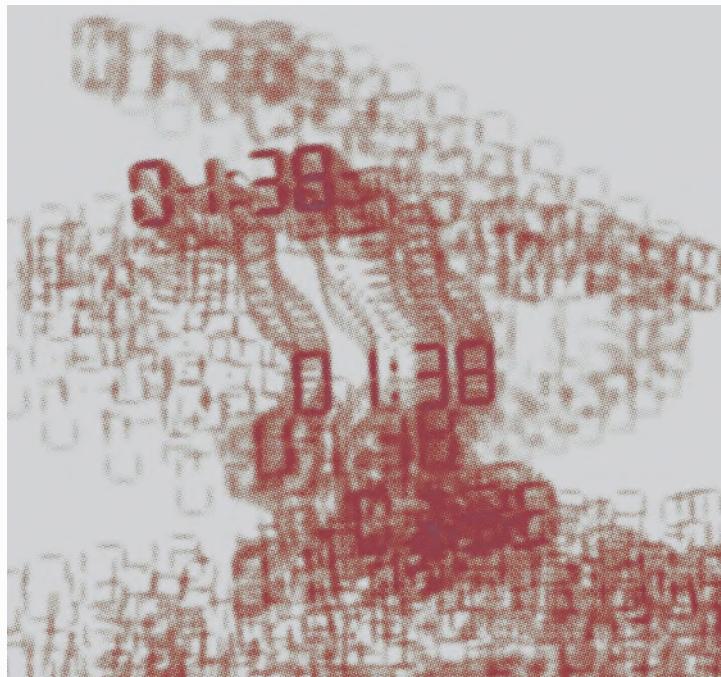
Visualize export insights

DATA MANIPULATION



World appears as a partner
— likely aggregated data,
may skew results

Next Steps

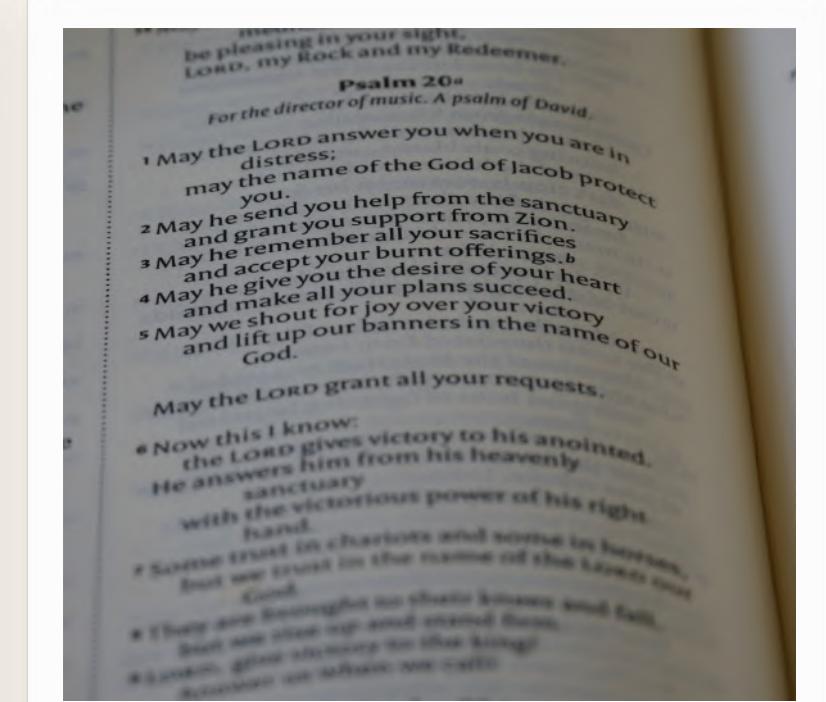


FIX MONTH ENCODING ISSUE

To see the monthly trend chart



DECIDE WHETHER TO DROP WORLD FROM PARTNER DATA



EXPLORE TIME TRENDS AND CLUSTERING

Due to outliers, missing values, and ambiguous encoding, this dataset still needs refinement. However, early trends indicate potential for deeper analysis on export pricing, and partner countries

Thank you





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