Conclusion & Key Insights

This project revealed several important insights across pricing, customer behavior, country performance, product trends, and seasonal sales patterns. These findings provide a strong foundation for customer value modeling, segmentation, and future AI/ML-driven analysis.

1. General Sales Analytics

Most Expensive Item

The most expensive recorded item was labeled **"Manual"** and priced at **£38,970**, with a quantity of **–1**, suggesting it may be a return, correction entry, or system error rather than an actual product.

Zero-Priced Products

A large number of items (**61 products**) were priced at **£0**, likely representing data issues, free samples, or promotional adjustments.

Lowest Real Product Price

After removing zero-priced records, the lowest-priced real product was **"PADS TO MATCH ALL CUSHIONS"** at **£0.001**, meaning 100 units could be purchased for a penny.

Financial Entries

Bank charges also appeared at the same minimal price point (£0.001), confirming that the dataset includes some non-product financial entries.

2. Customer Analysis

Top Spenders

Customer 18102 (UK) was the highest spender with a total purchase value of **£598k**, followed by a customer from the **Netherlands** contributing **£523k**.

The top 10 highest-spending customers were mostly from **the UK, EIRE, the Netherlands, and Australia**, showing that the most valuable customers come from mature, high-income markets.

Returns and Negative Values

Customers with the lowest total values showed **negative totals**, representing returns. The largest return was **–£25k**, again from a UK-based customer.

Countries with high purchase volumes also show high return volumes, implying that **more transactions naturally lead to larger return activity**.
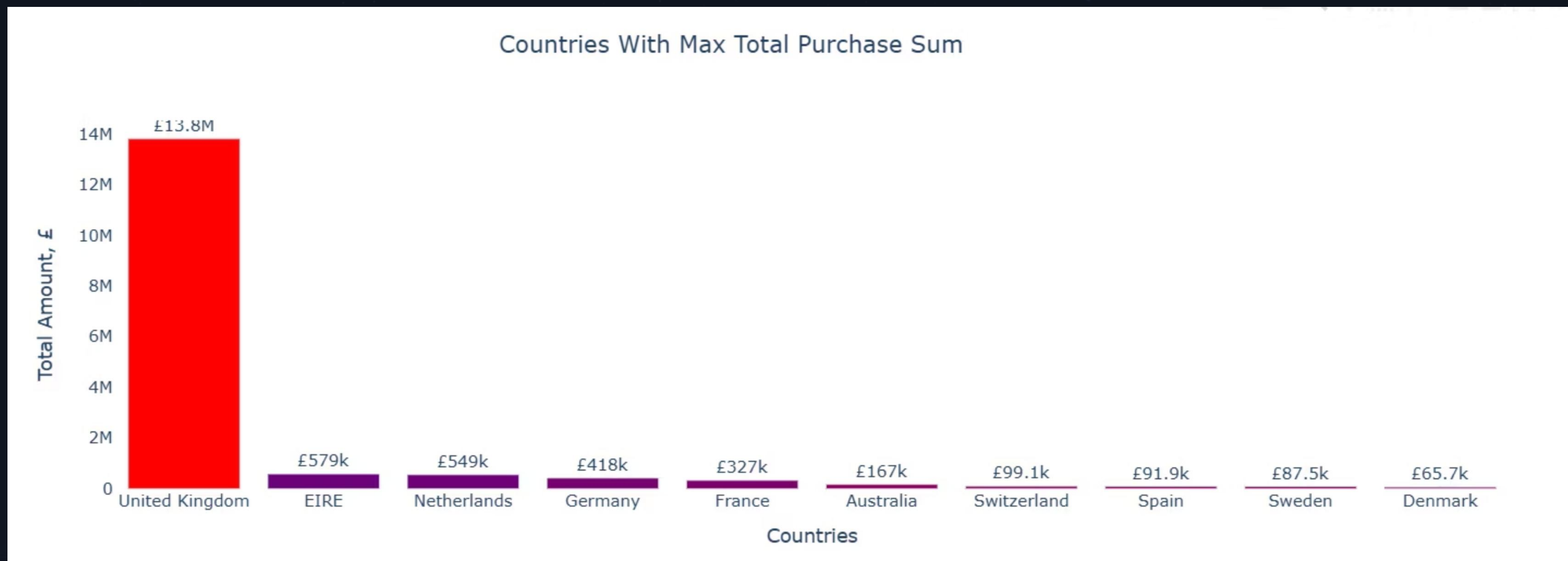
Customers With Max Total Purchase Amount

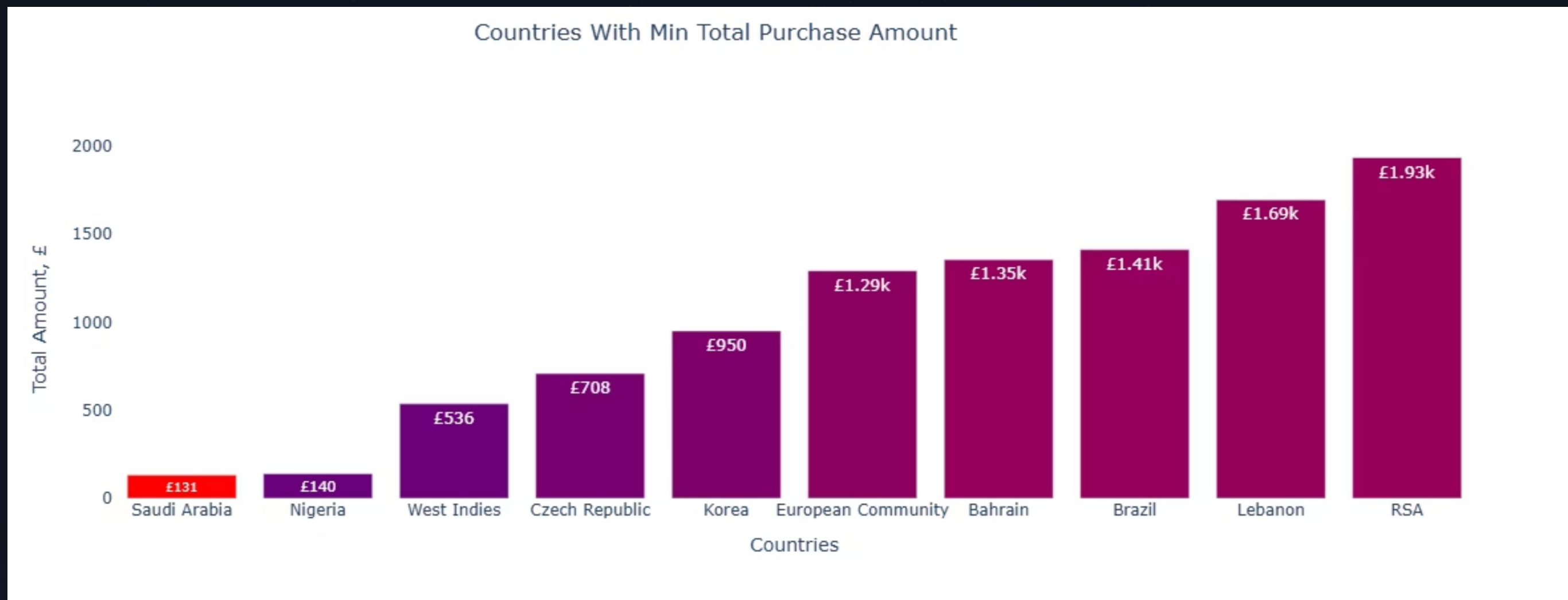Customers With Min Total Purchase Amount

3. Country Analysis: Revenue & Customer Distribution

Total Purchase Amount

- The **United Kingdom dominates** total revenue with **£13.8M**, far ahead of the next highest country, **EIRE**, at **£579k** (23× lower).

- All top 10 revenue-generating countries are **European**, showing a strong geographic concentration of the customer base.

- **Saudi Arabia** recorded the lowest purchase value at just **£131** over two years.

- The **Czech Republic** stands out as an unusual European outlier with very low spending compared to other European nations.

Countries With Max Total Purchase Sum

Countries With Min Total Purchase Amount

Countries With Min Total Purchase Sum

4. Country Analysis: Unique Customer Count

- The UK leads with **5.41k unique customers**, dwarfing the second and third positions — Germany (**107**) and France (**95**).

- Several countries had only **one unique customer** (Thailand, Nigeria, Iceland, Saudi Arabia, Lithuania, and more).

- The **Czech Republic** again appears as an anomaly: a European nation with customer activity similar to low-engagement countries from Asia, Africa, and South America.

- While Iceland's tiny population partly explains its low numbers, **Czech Republic and Lithuania** remain interesting cases for deeper market analysis.
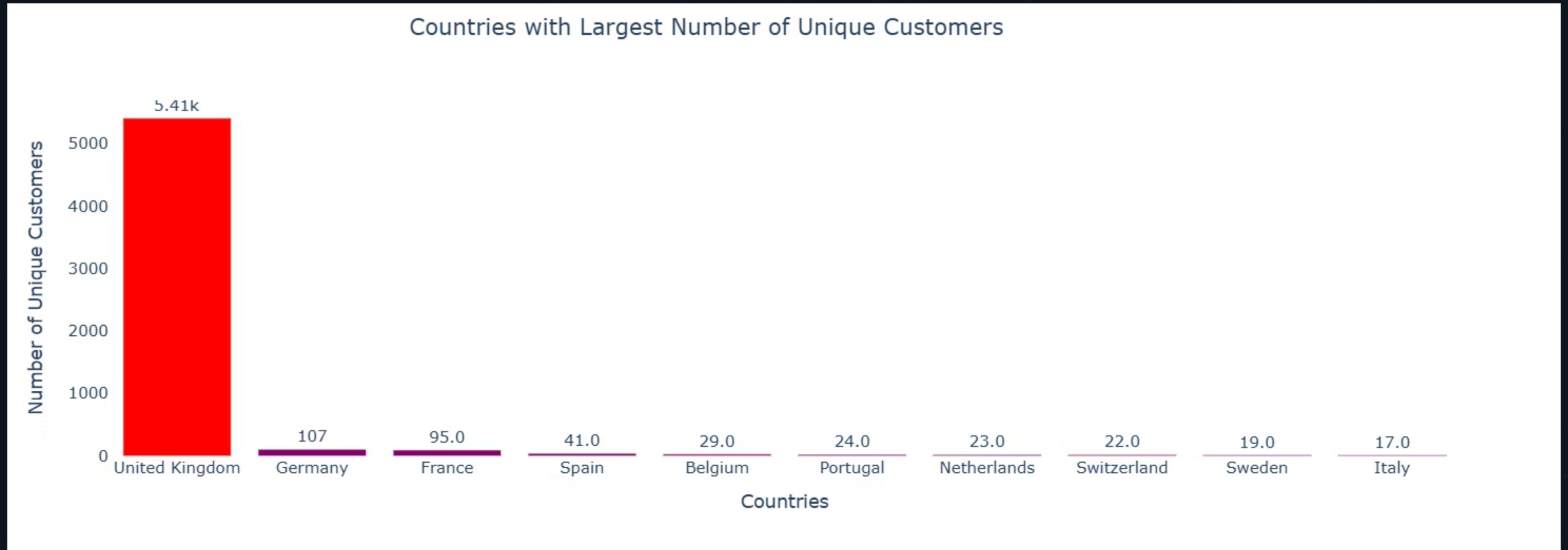
Countries with Largest Number of Unique Customers
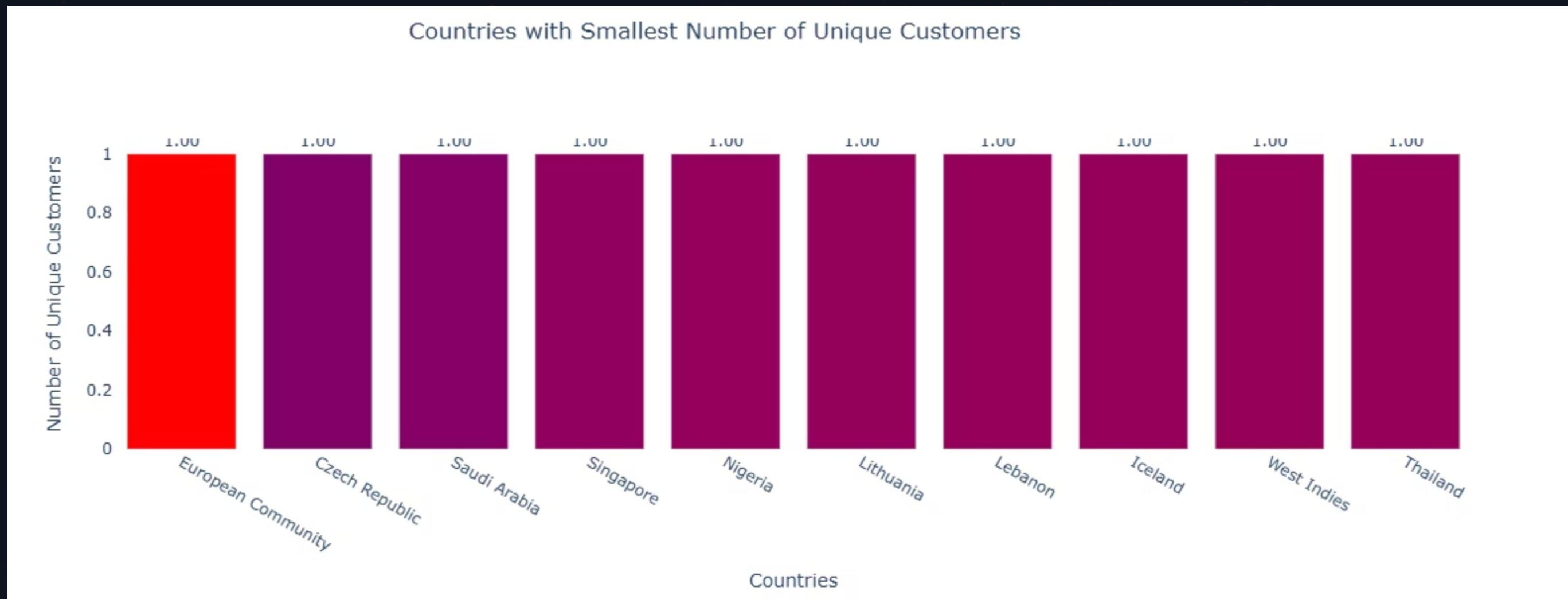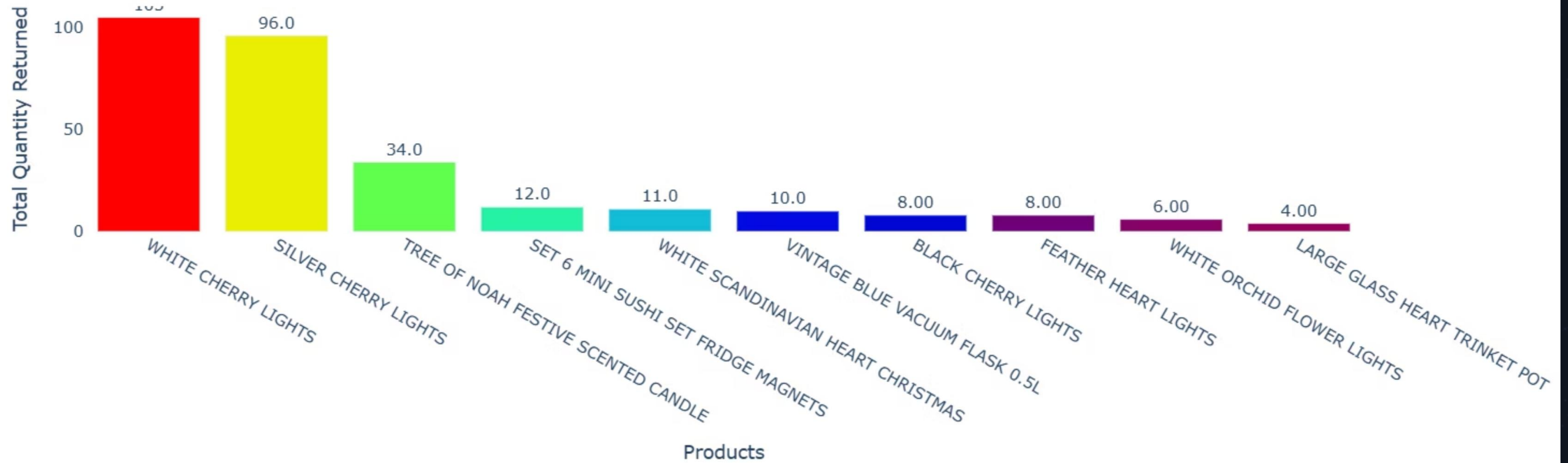
Countries with Smallest Number of Unique Customers

5. Product Analysis: Quantity Sold & Returns

- **World War II Gliders** were the top-selling item with **107k units**, far surpassing other products.

- Most items in the top 10 were **utilitarian household products**: holders, cake cases, purses, and jumbo bags — showing consistent demand for functional goods.

- The product with the most returns was **White Cherry Lights** (105 units returned).

- Items with high return rates were largely **decorative or gift-related products**, suggesting higher dissatisfaction or mismatch between expectation and actual product quality.

10 Bestselling Products

10 Products With Most Returns
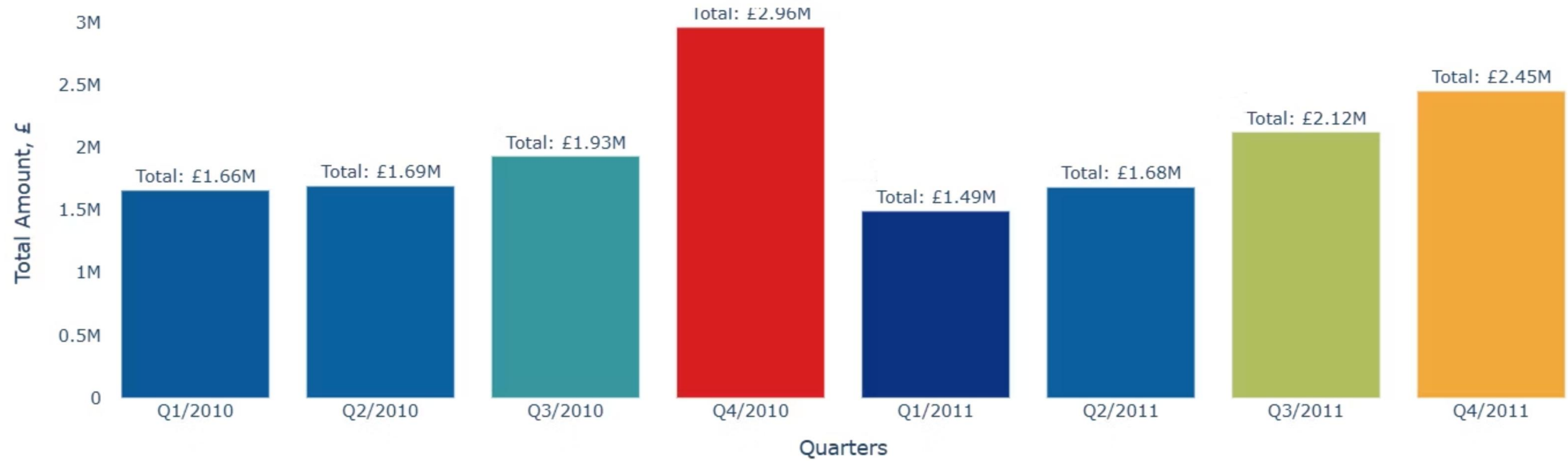
6. Online Sales Over Time

Quarterly Trends

Sales show **clear seasonal patterns**, with strong spikes before Christmas each year. Significant drops occur immediately after the holiday season. The December peak is clearly visible in both years.

Monthly Trends

However, **December 2011 sales were more than 50% lower than December 2010**, indicating a major drop — potentially due to economic conditions, inventory issues, or changes in customer behavior.

Quarterly Sales

Monthly Sales