



INNOVATION. AUTOMATION. ANALYTICS

**PROJECT ON**

# **Wine Industry Trends Analysis**



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## Project Objective :

- Identify the **most popular and high-demand wine varieties**
- Compare **price variations** across countries, grapes, and vintages
- Analyze **customer review patterns** to understand consumer preferences
- Evaluate **sales performance** to highlight top revenue-generating regions



# Approach :

- Analyzed wine data across different countries, grape varieties, and vintage years.
- Used Python (**Pandas**, **NumPy**, **Matplotlib**, **Seaborn**) for data cleaning and visualization.
- Studied key factors like **Price**, **Total Amount**, **Reviews**, **Grape Type**, and **Country**.
- Created **univariate**, **bivariate**, and **multivariate graphs** to identify trends and patterns.
- Compared **pricing**, **popularity**, and **total sales performance** across different wine categories and regions.



# Containers From Which I have Scraped the Data:-



# Data Cleaning

OLD DF

DATA CLEANING STEPS

- Handling Missing Values
- Removing Duplicate Records
- Treating Outliers / Noise
- Converting Data Types
- Standardizing Formats

NEW DF

	product_name	country	wine_type	short_description	rating	reviews	price_per_bottle	quantity
0	Catalyst by Sparkman Cellars Red Blend 2022	United States	Red blend	Family-Made Washington Red	NaN	NaN	\$39.99 per bottle	12 bottles - \$479.88
1	Bonded Winery No. 2 by The Bundschu Family Son...	United States	Cabernet Sauvignon	Iconic Sonoma Cab Sauvignon	NaN	1 Review	\$54.99 per bottle	12 bottles - \$659.88
2	Pillastro Primitivo 2022	Italy	Primitivo	94-Point Italian Bestseller	NaN	1894 Reviews	\$15.99 per bottle	12 bottles - \$191.88
3	The Black Stump Durif Shiraz 2024	Australia	Durif-based blend	Gold-Medal Aussie Blockbuster	NaN	2199 Reviews	\$16.99 per bottle	12 bottles - \$203.88
4	J Opi Malbec 2024	Argentina	Malbec	The Magician's Signature Malbec	NaN	1111 Reviews	\$16.99 per bottle	12 bottles - \$203.88

Old :-

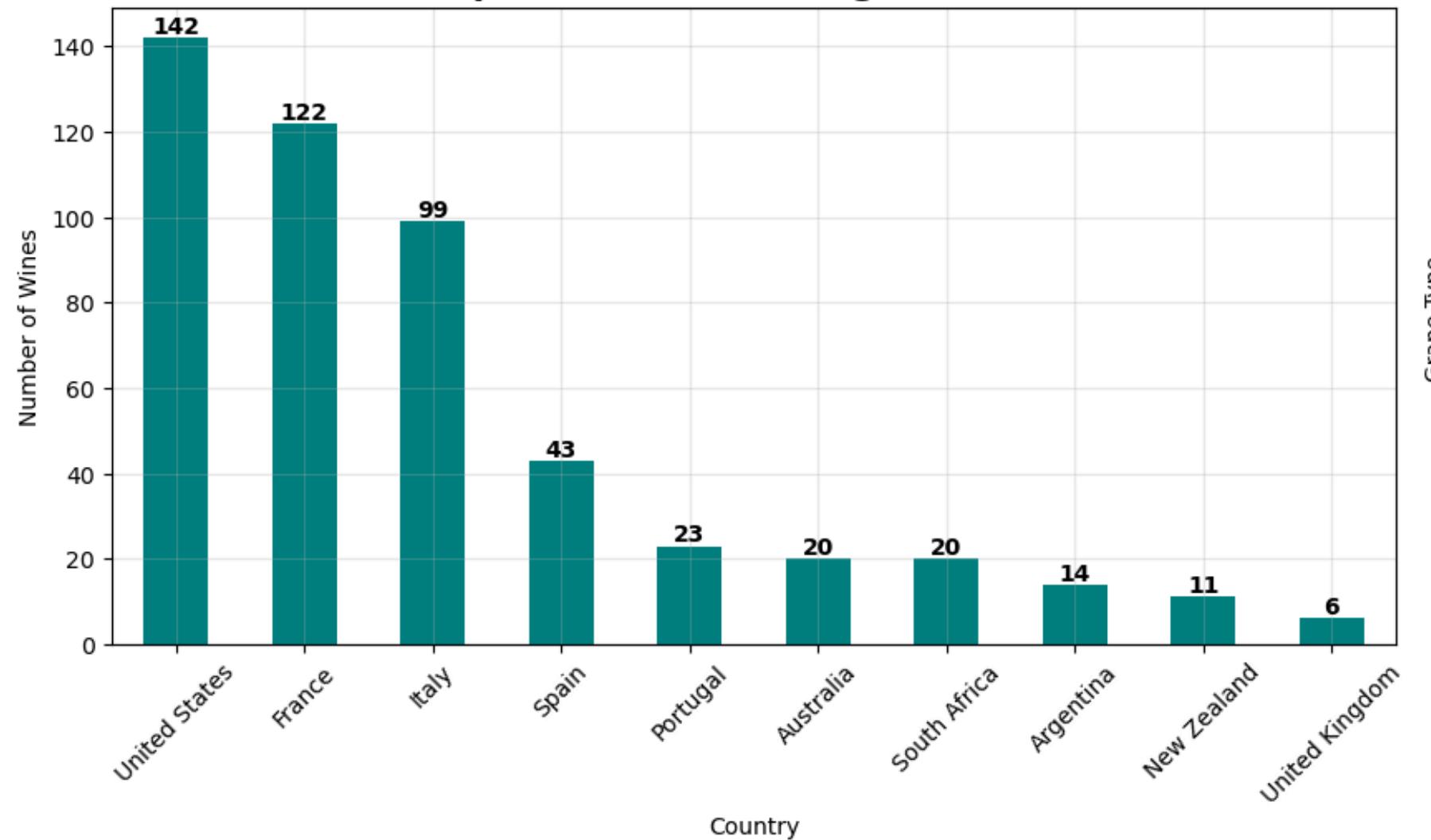
	product_name	country	grapes_type	short_description	reviews	price(dollar)	quantity	year	total_amount(dollar)
0	Bonded Winery No. 2 by The Bundschu Family Son...	United States	Cabernet Sauvignon	Iconic Sonoma Cab Sauvignon	1	54.99	12	2022	659.88
1	Pillastro Primitivo	Italy	Primitivo	94-Point Italian Bestseller	1894	15.99	12	2022	191.88
2	The Black Stump Durif Shiraz	Australia	Durif-based blend	Gold-Medal Aussie Blockbuster	2199	16.99	12	2024	203.88
3	J Opi Malbec	Argentina	Malbec	The Magician's Signature Malbec	1111	16.99	12	2024	203.88
4	Pillastro Primitivo	Italy	Primitivo	Popular Italian Bestseller	1888	15.99	12	2023	191.88

New :-



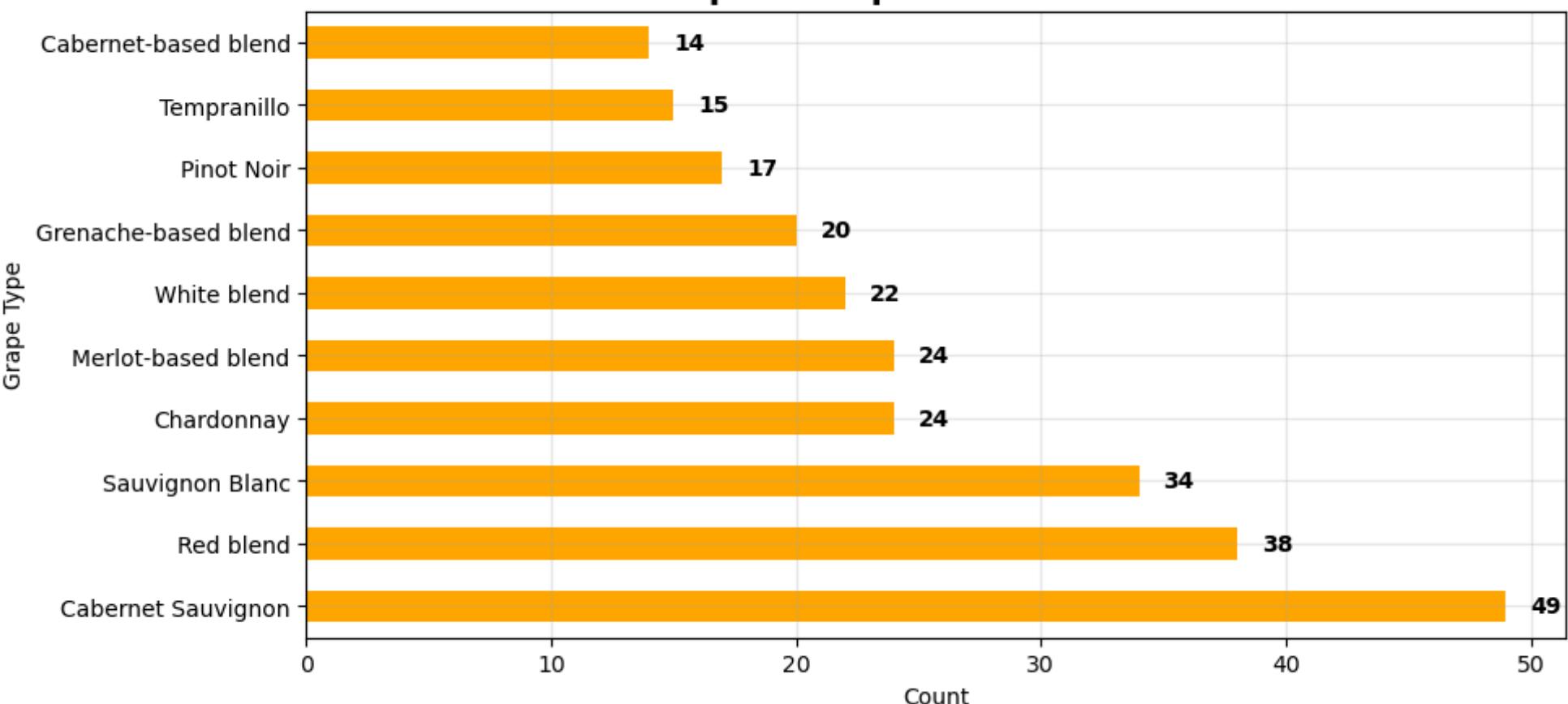
# Univariate Analysis :-

**Top 10 Wine Producing Countries**



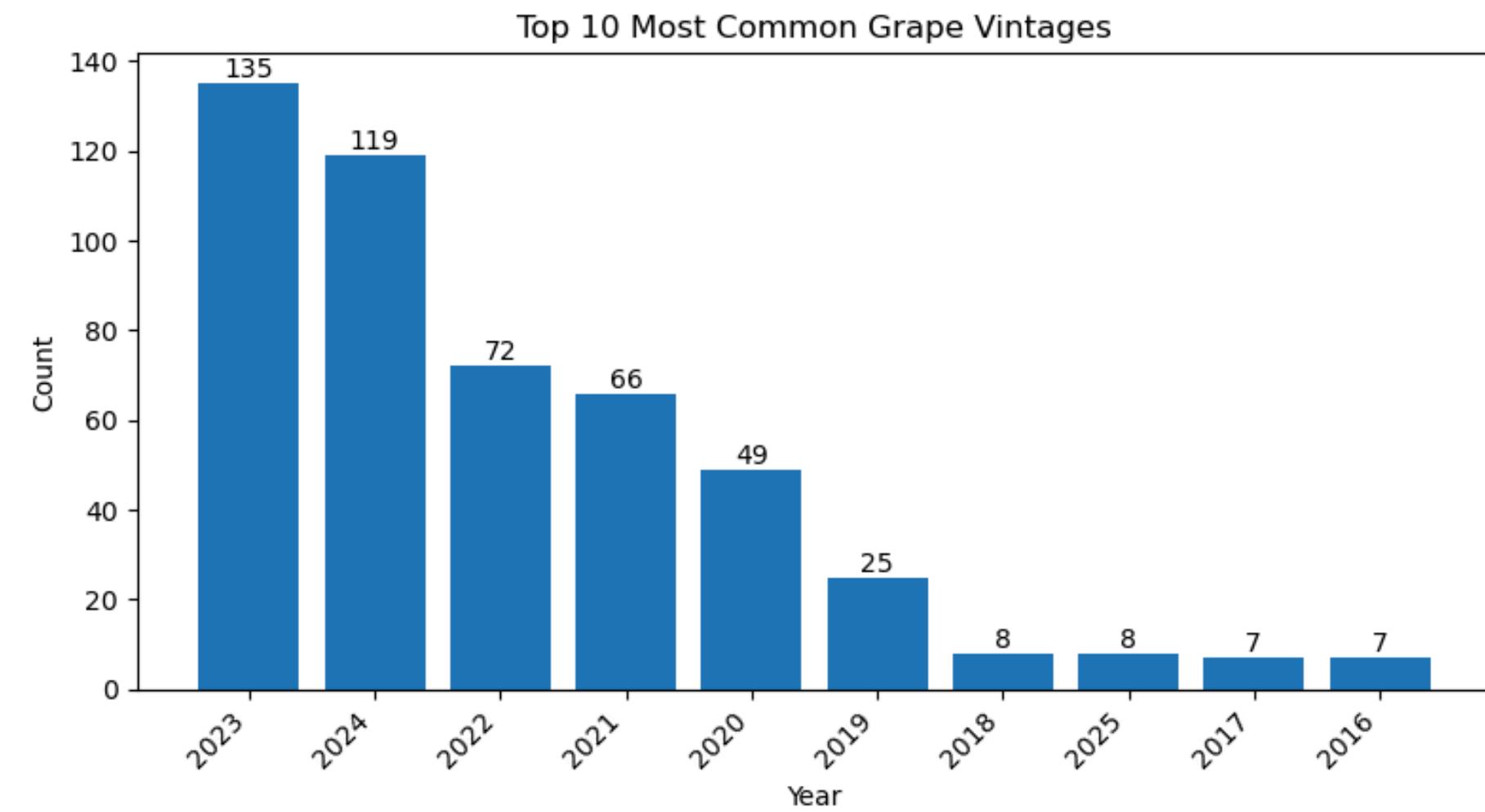
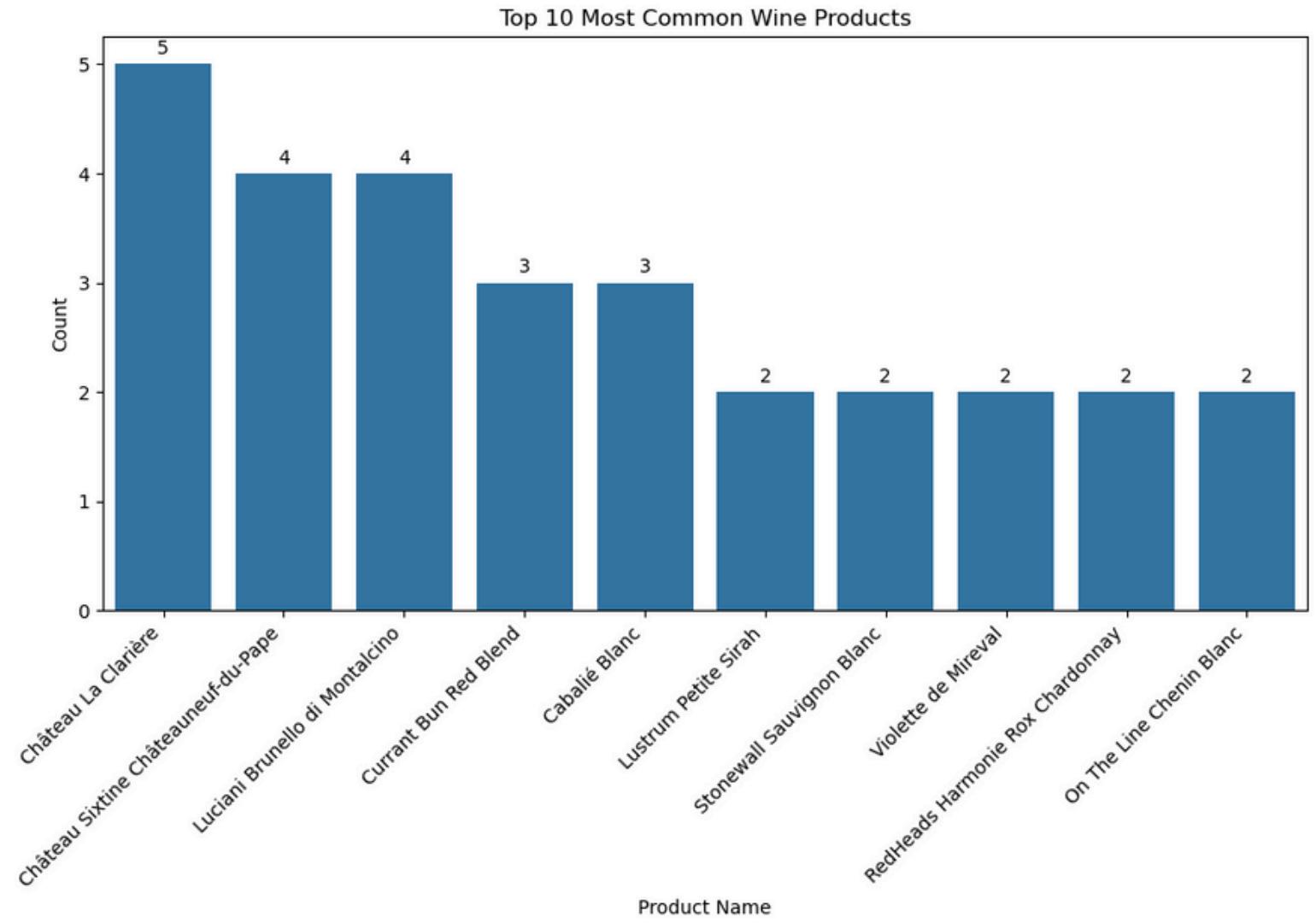
- The **United States**, **France**, and **Italy** are the top wine-producing countries in the dataset.
- The **United States** leads with the highest number of wines, followed closely by **France**.

**Top 10 Grape Varieties Used**



- **Cabernet Sauvignon** is the most commonly used grape variety in the dataset.
- **Red blend** and **Sauvignon Blanc** are also widely used, indicating high popularity.
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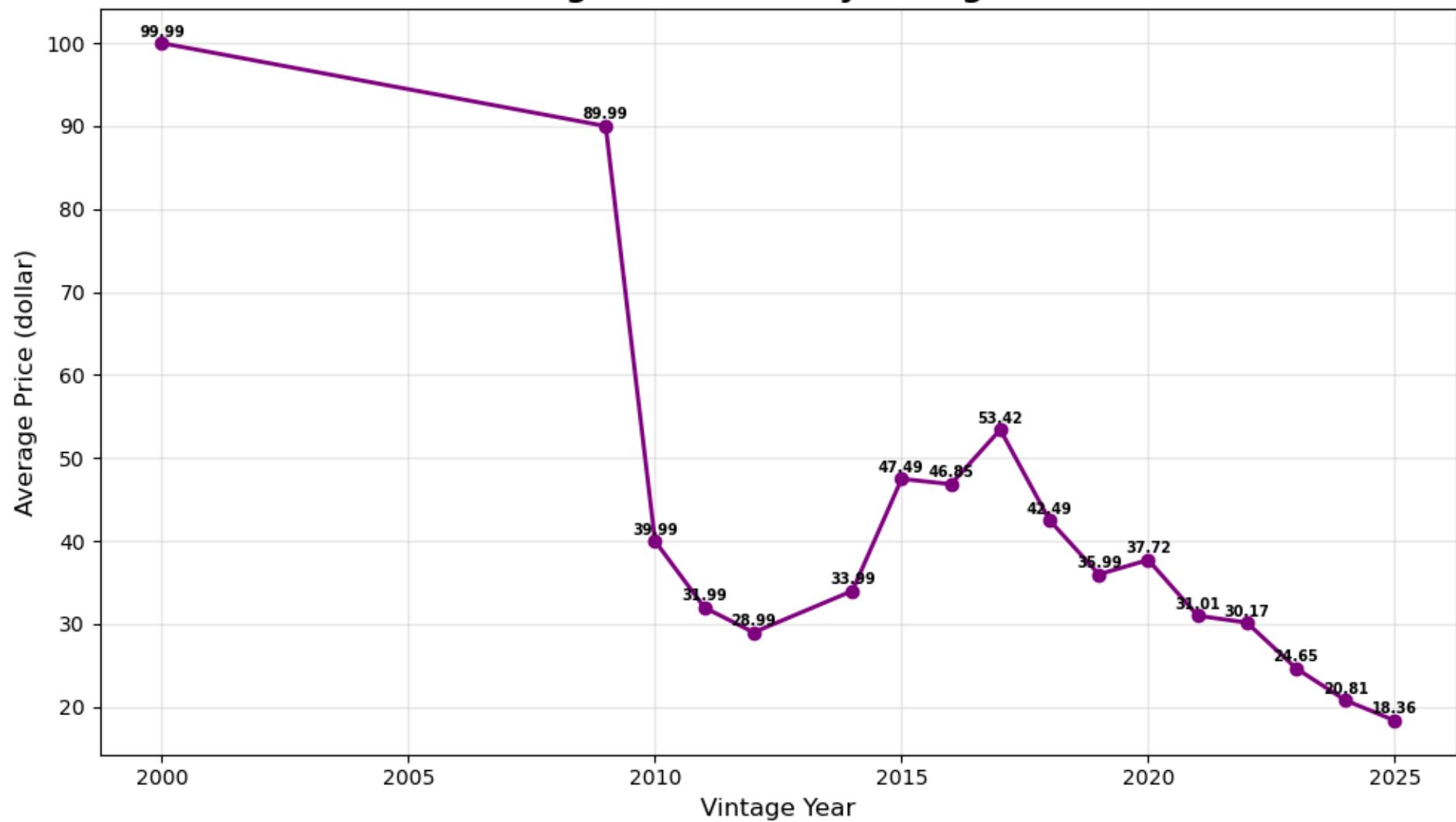
- **Château La Clarière** is the most commonly occurring wine product in the dataset.
- Most products appear only **2 to 4 times**, suggesting the dataset contains a **wide variety** of unique wine labels.

- **2023** is the most common grape vintage, followed by **2024**, showing that most grapes type in the dataset are **recently harvest**.
- **Very few grapes type** come from vintages earlier than **2018**, indicating that **aged grapes type are less common** in this dataset.

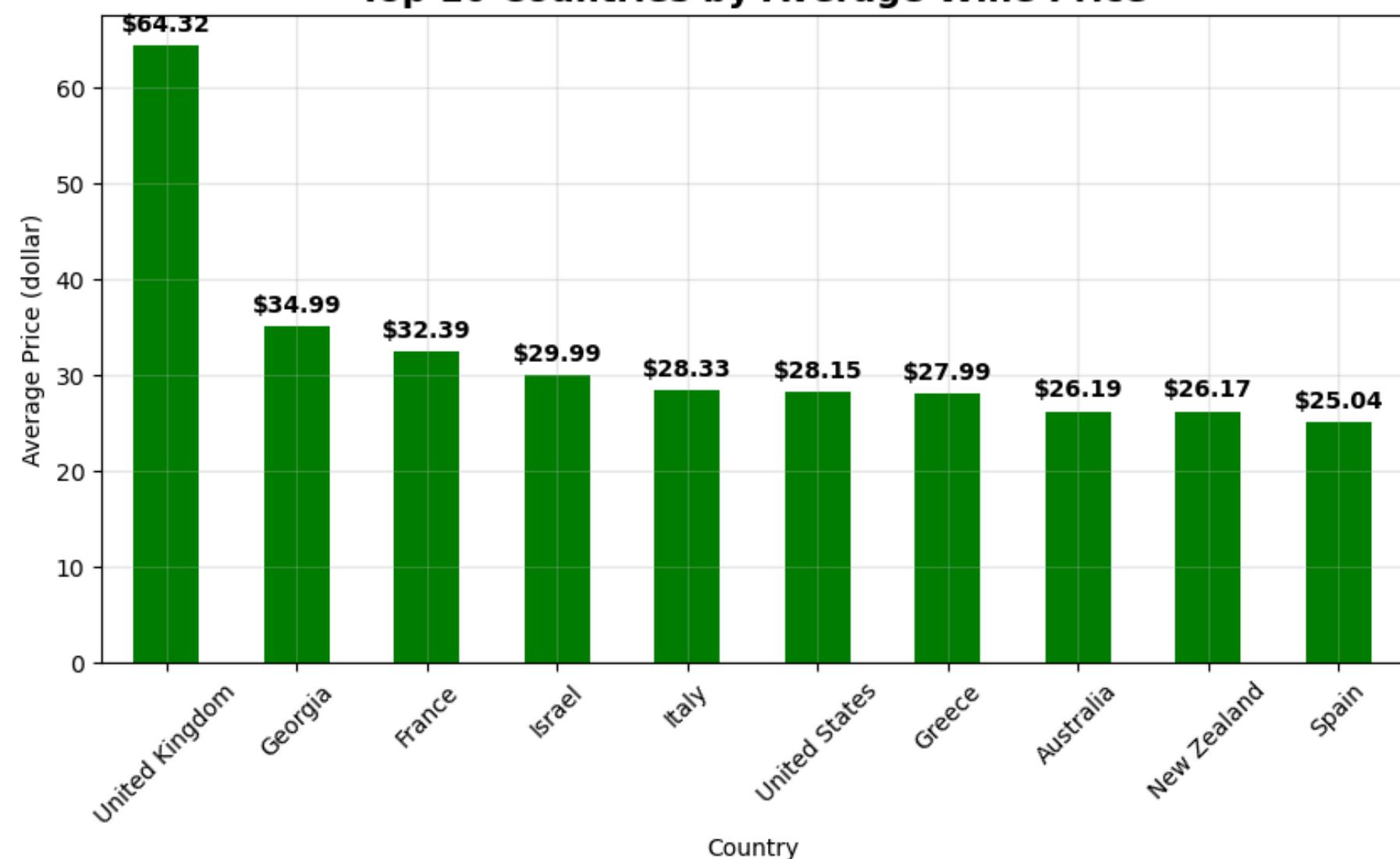


# Bivariate Analysis :-

Average Wine Price by Vintage Year



Top 10 Countries by Average Wine Price

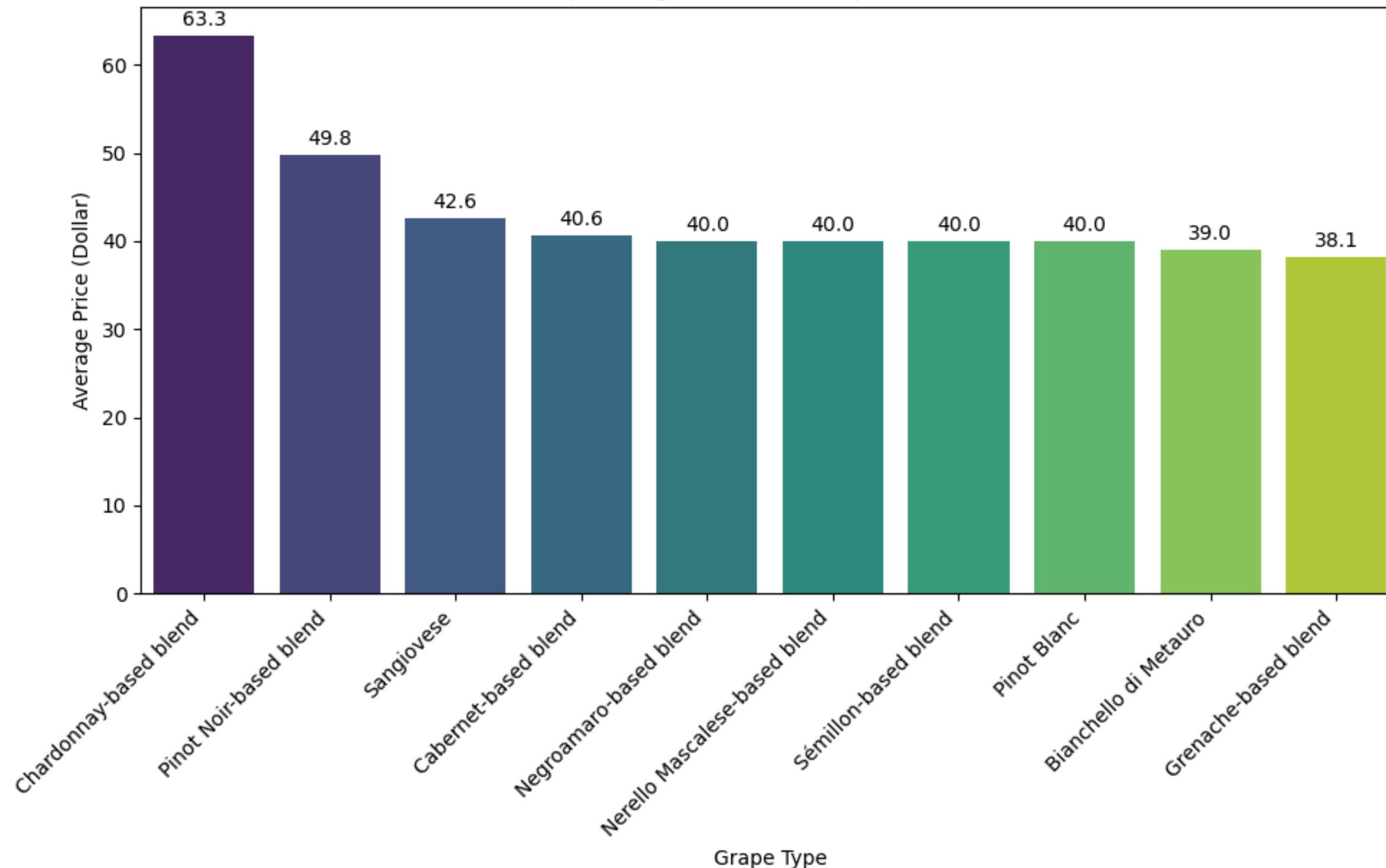


- Older vintages (like **2000** to **2009**) have **much higher average prices**, showing that aged wines are generally more expensive.
- After 2010, the **average wine price noticeably drops**, indicating more affordable and younger wines in recent years.

- The **United Kingdom** has the **highest average wine price**, significantly higher than all other countries.
- Countries like **Georgia** and **France** also show relatively higher average prices, indicating a market for premium wines.



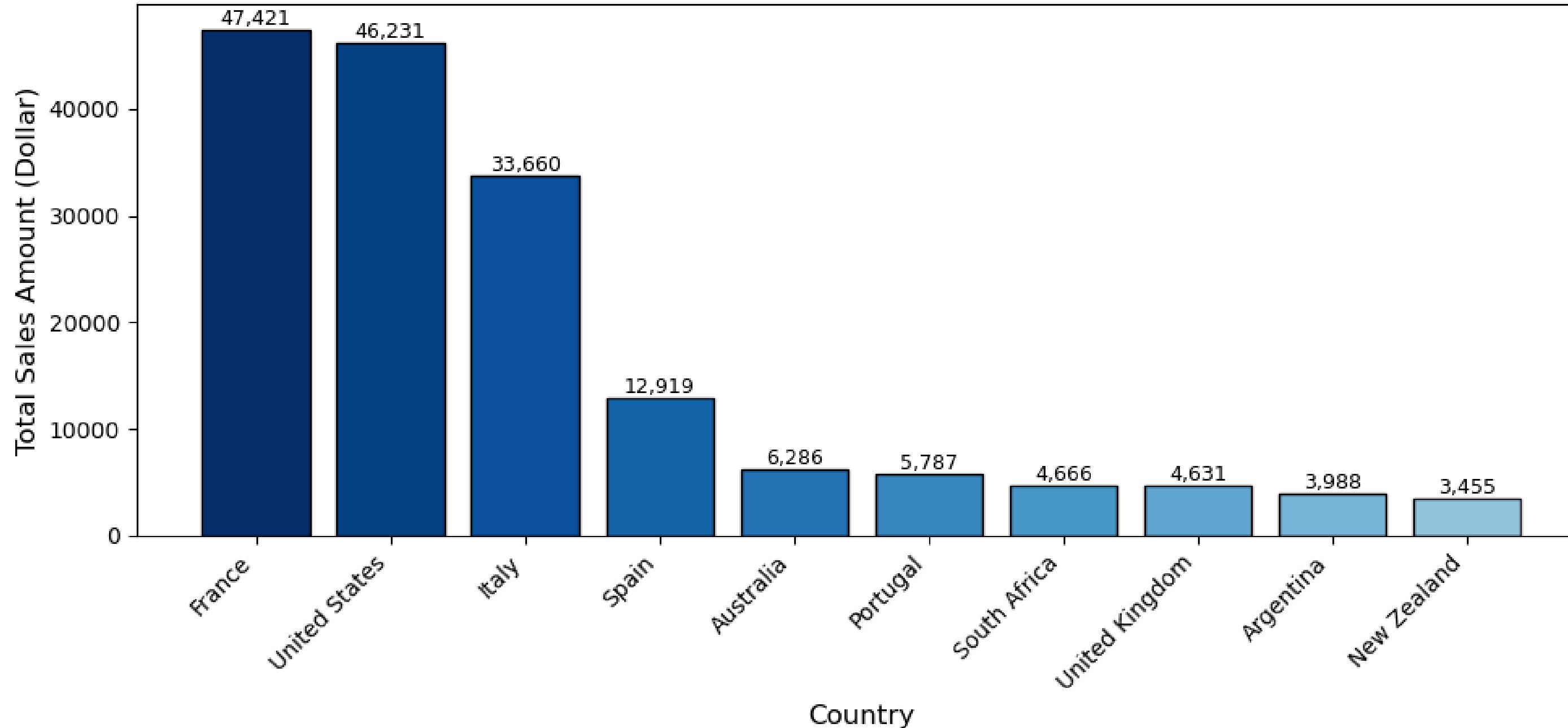
## Top 10 Highest Priced Grape Varieties



- **Chardonnay-based blends** have the **highest average price**, indicating they are positioned as premium wines.
- **Pinot Noir-based blends** also show higher pricing, suggesting strong demand or higher production quality.



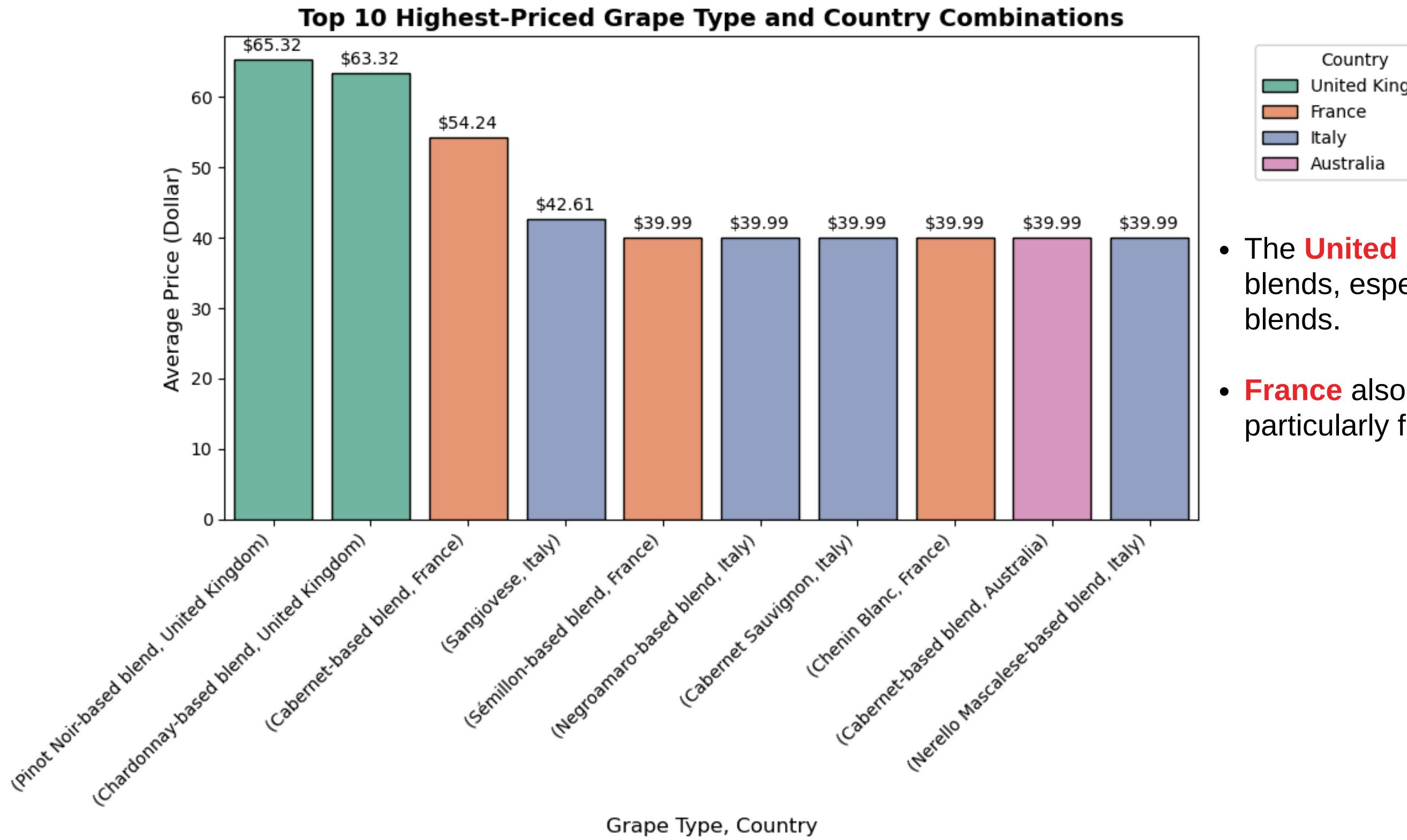
## Top 10 Wine-Producing Countries by Revenue



- France generates the **highest revenue**, showing strong global demand and premium pricing for French wines.
- The **United States** and **Italy** are also major contributors, indicating a strong wine market and production scale.



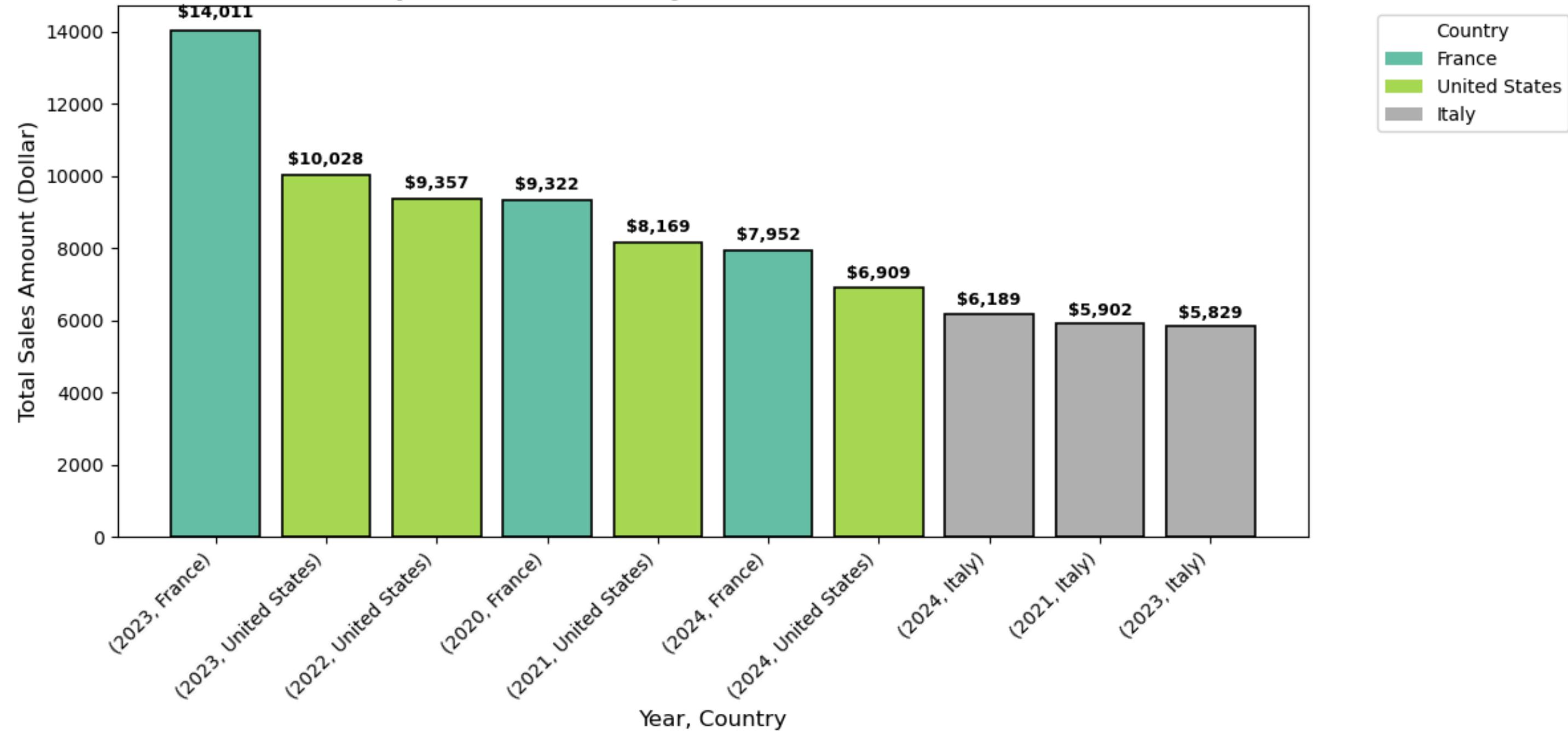
# Multivariate Analysis :-



- The **United Kingdom** has the **highest-priced** grape blends, especially Pinot Noir-based and Chardonnay-based blends.
- France** also appears in the top high-price combinations, particularly for **Cabernet-based blends**.



## Top 10 Year + Country Wine Sales Combinations



- France (2023) has the highest sales, showing strong market demand for recent French wine production.
- The United States also shows consistently high sales across multiple years, indicating stable consumer demand.
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## Insights :

- European countries like **France**, **Italy**, and **Spain** lead the market with **higher-priced**, **top-rated**, and **best-selling** wines compared to non-European regions.



# Conclusion:

- Wines from **France**, **Italy**, and **Spain** stand out for their **quality**, **popularity**, and **premium pricing**, making Europe the leading region in the global wine industry.





**Thank You**

