

AdventureWorks Sales Performance Analysis

Analyzing Transactional Data for Performance and Profit Trends

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Introduction



Overview

- The AdventureWorks dataset is a fictional dataset created by Microsoft for demonstration purposes.
- Represents a hypothetical company, AdventureWorks Cycles, specializing in bicycles and related products.

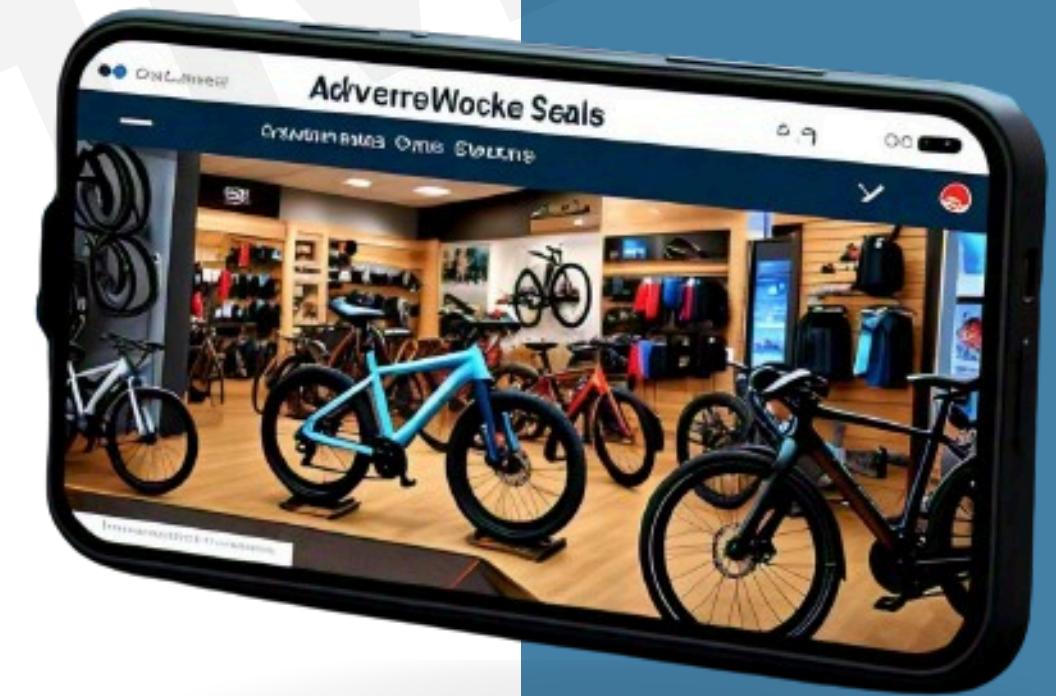


Objective

- Analyzed four years (2005-2008) of transactional data from AdventureWorks Cycles, a fictional manufacturing company, to assess performance and identify profit trends.

Problem Statement

- AdventureWorks Cycles required an analysis of its sales data to identify profitable products, key customer locations, and sales trends.
- The goal was to transform raw data into actionable insights to guide strategic business decisions and enhance performance.



Sales Performance Overview

- **Key Metrics (2005-2008):** Comprehensive analysis of revenue, profit, transactions, and quantities, including percentage changes over time.
- **Revenue and Profit by Country:** Comprehensive annual breakdowns of revenue and profit across various countries.

Product Performance

- **Top Profitable Products:** Identification and analysis of the most profitable products by country and year.
- **Top 5 Profitable Products:** Overview of the top five most profitable products by country for the period 2005-2008.
- **Top and Least Profitable Color:** Insights into the most and least profitable product colors by country and year.

Profitability Insights

- **Profit Contribution by Demographics and Pricing:** Examination of profit contributions segmented by age, gender, and product price.
- **Top profitable Customers:** Overview of the top five most profitable customers from each year FY2005 -FY2008).

Geographical Analysis

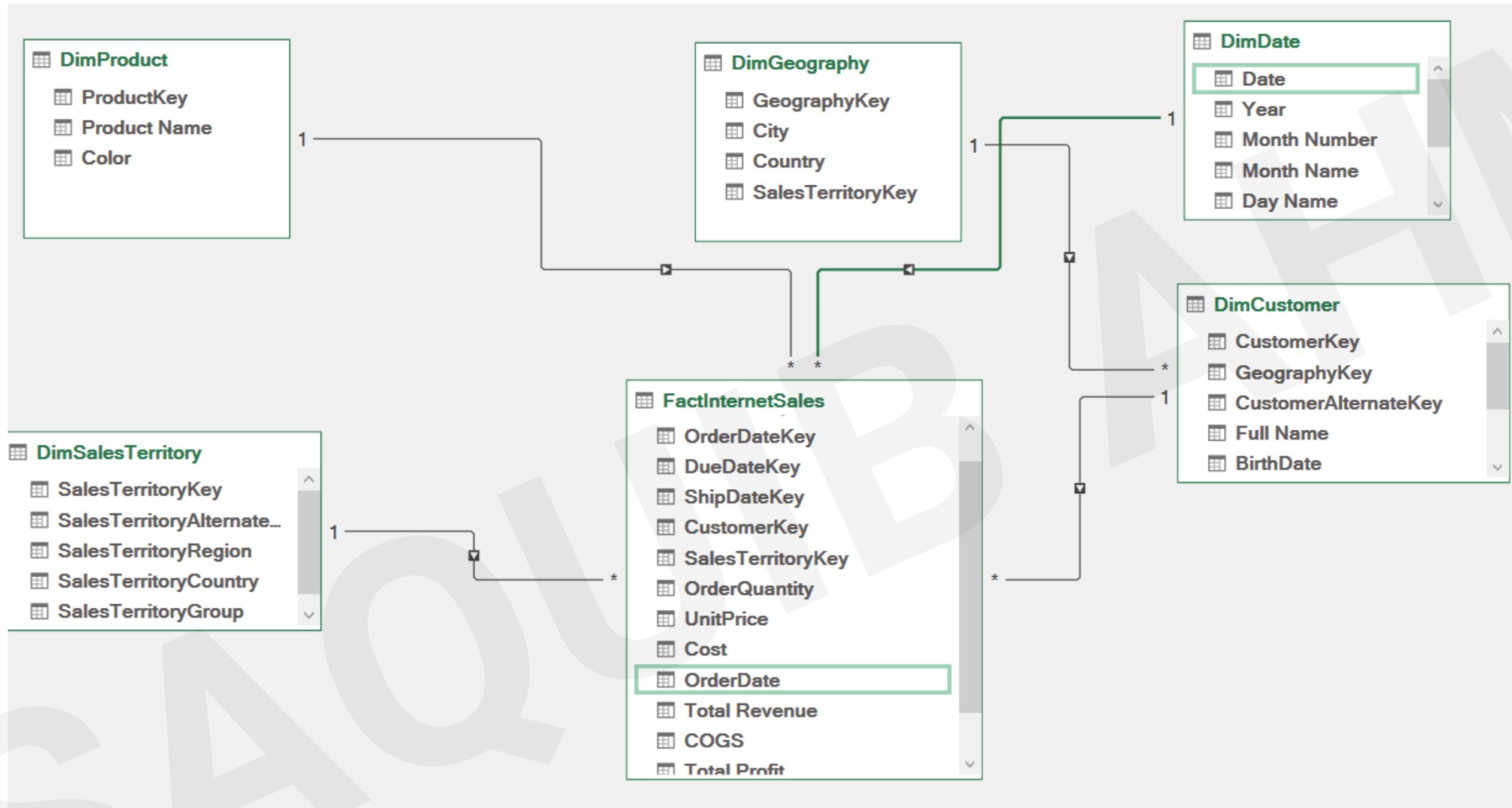
- **Top Performing Countries:** Evaluation of countries leading in sales and profit from 2005 to 2008.
- **Transaction Analysis:** Total transactions and annual transaction volumes by country.

Seasonal Trends

- **Profit Contributions:** Analysis of profit variations by month and week.
- **Weekly and Quarterly Trends:** Examination of profit distribution across weekdays and quarterly profit patterns.

Top Data-Driven Insights

Data Model



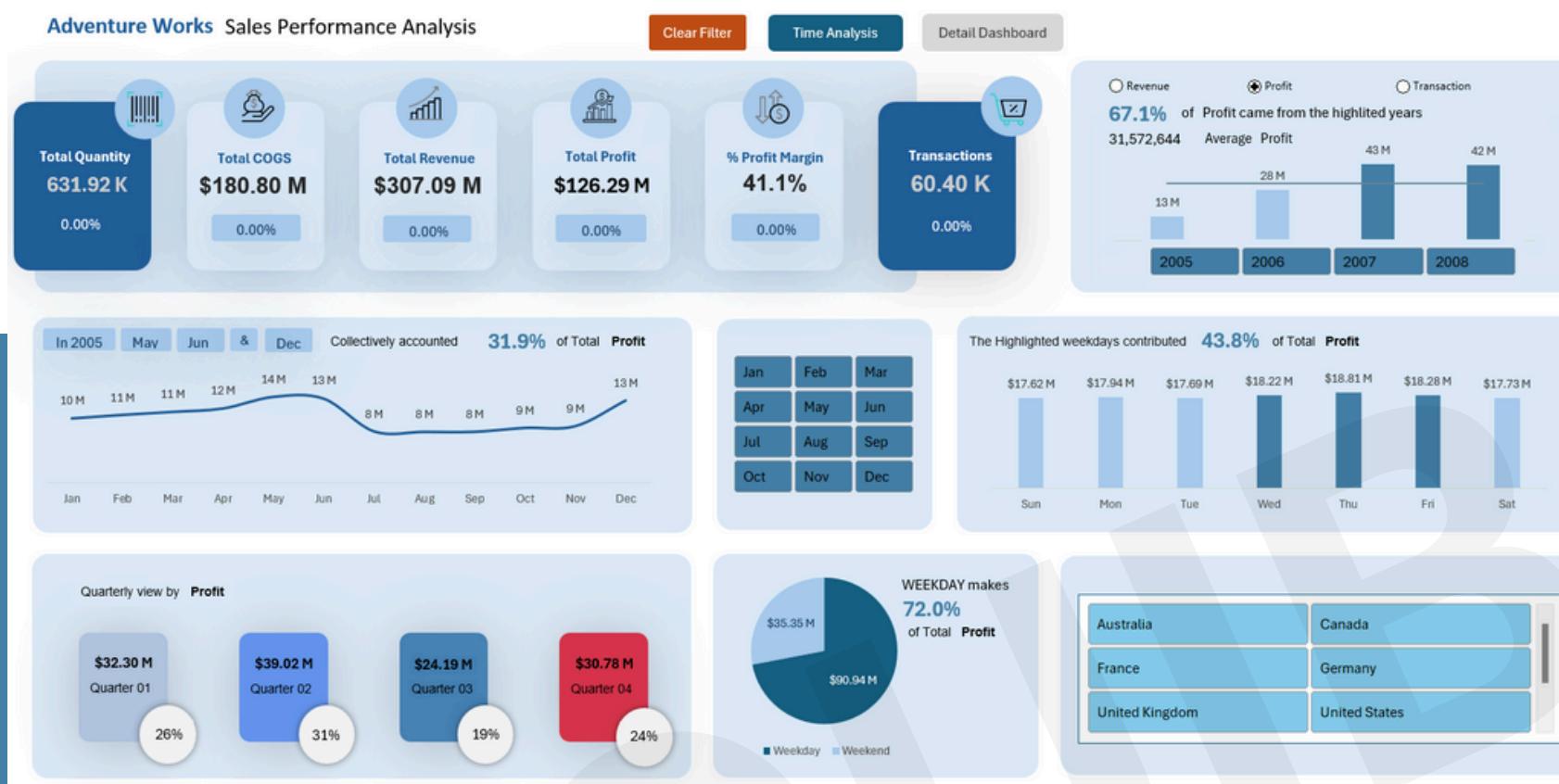
- The data model in Power Pivot for Excel comprises interconnected tables such as **DimProduct**, **DimSalesTerritory**, **DimGeography**, **DimDate**, **DimCustomer**, **FactInternetSales**.
- These relationships enable detailed analysis of four years (2005-2008) of transactional data to assess performance and identify profit trends.

Dax Measures

Manage Measures	
	New
	Edit
	Delete
Measure	Formula
#Customers	DISTINCTCOUNT(FactInternetSales[CustomerKey])
#Transaction	COUNTROWS(FactInternetSales)
% Profit Margin	DIVIDE([Sum of Total Profit], [Sum of Total Revenue].0)
All Products	COUNTROWS(DimProduct)
Average Customer Age	AVERAGE(DimCustomer[Custom Age])
Sold Products	DISTINCTCOUNT(FactInternetSales[ProductKey])
Unsold Products	[All Products]-[Sold Products]

- The DAX measures in this Power Pivot model evaluate transactional data from 2005 to 2008 to assess performance and identify profit trends. Key metrics include total customers, transaction, %Profit Margin, all products, average customer age, sold products, and unsold products.

Dashboard Description



Time Analysis

The first dashboard features a powerful time analysis with KPIs, profit margins, transaction trends, and revenue insights, allowing us to explore sales performance by country, month, year, and quarter, weekday/weekend.

Product Analysis

The second dashboard reveals the top 5 most profitable products, profit distribution by color, product pricing types, and a comprehensive customer and product analysis. Examine profit by product color and pricing types, differentiating between less expensive and expensive items.

Key Performance Indicator

(FY 2005 - FY 2008)



631.92 k

Total Quantity



\$180.80 M

Total COGS



\$307.91 M

Total Revenue



\$126.29M

Total Profit



41.41 %

% Profit Margin



60.40K

Total Transactions



18484

Total Customers



45

Avg. Customer Age



606

Available Products



Sales Performance Analysis

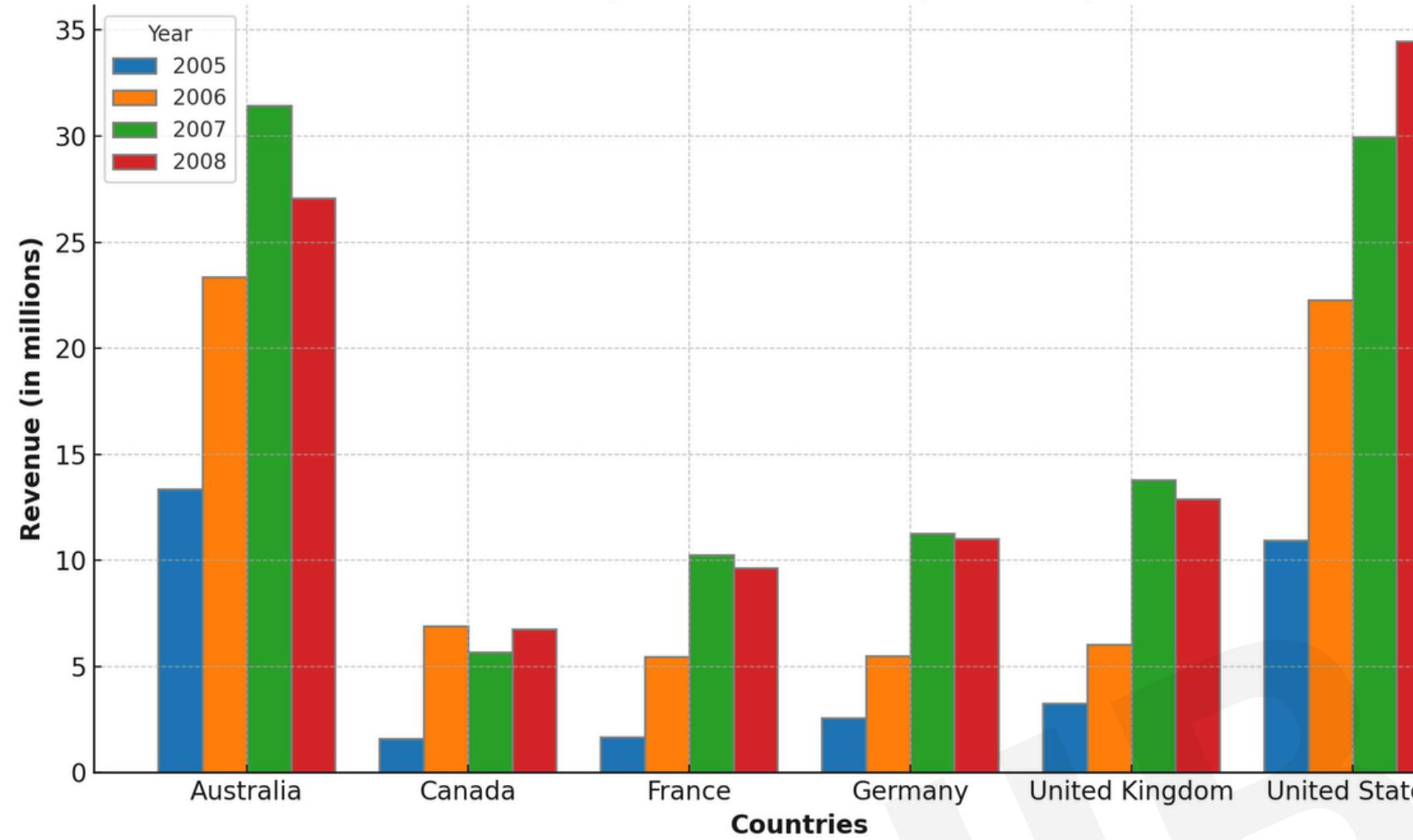


Revenue, Profit, Transactions, Total Quantity and Percentage Changes (FY 2005 - FY 2008)

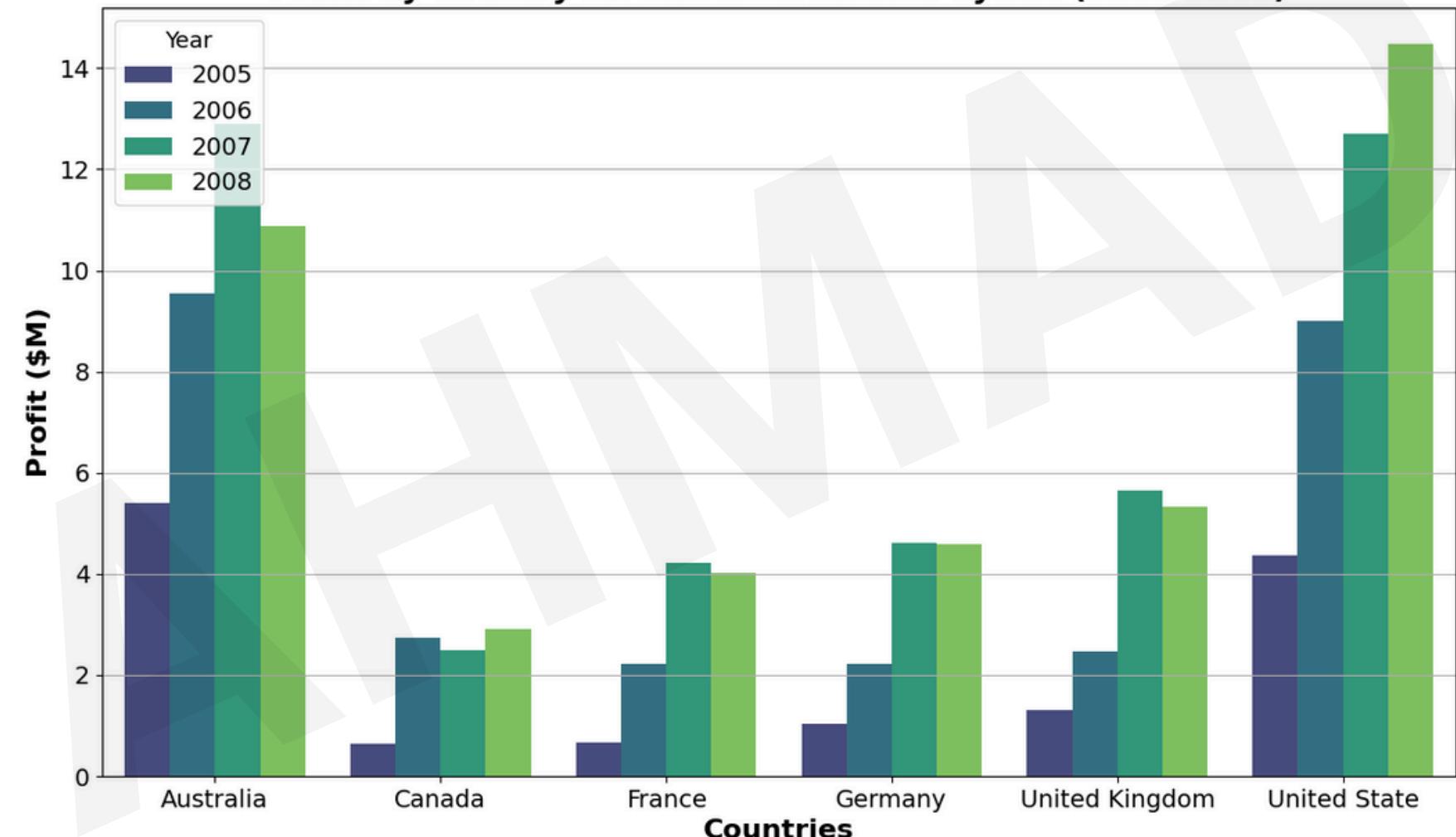
Fiscal Year	Revenue (\$M)	Profit (\$M)	Percentage Change in Revenue (%)	Percentage Change in Profit (%)	Transactions (K)	Total Quantity (K)
2005	\$33.37	\$13.40	-	-	1.01K	10.40K
2006	\$69.48	\$28.18	▲ 35.11%	▲ 35.53%	2.68K	28.41K
2007	\$102.38	\$42.55	▲ 19.41%	▲ 20.32%	24.44K	255.72K
2008	\$101.86	\$42.16	▼ -0.26%	▼ -0.45%	32.27K	337.39K

- From 2005 to 2008 shows strong revenue and profit growth, particularly in 2007, where revenue peaked at \$102.38M and profit at \$42.55M.
- Despite a slight decline in 2008, the significant increase in transaction volumes, from 1.01K in 2005 to 32.27K in 2008, underscores successful market expansion and ability to sustain profitability.

AdventureWorks Cycles Revenue by Country (2005-2008)



Profit by Country for AdventureWorks Cycles (2005-2008)



- Australia:** Strong growth until 2007, followed by a 7.45% revenue drop in 2008, signaling market challenges.
- Canada:** Impressive early growth, but revenue declined in 2007 and 2008, indicating difficulty in sustaining momentum.
- France:** Consistent growth through 2007, with a slight 3.06% decline in 2008, suggesting possible market saturation.
- Germany:** Steady growth with minimal decline (1.05%) in 2008, showing a stable market.
- United Kingdom:** Strong growth, but a small decline (3.36%) in 2008 indicates a slight market adjustment.
- United States:** Continuous, strong growth across all years, marking it as the most resilient market.
- Overall:** While initial growth was strong in all regions, some markets faced challenges in sustaining this momentum, with the United State market being the most robust.

- Australia:** Strong growth until 2007, followed by an 8.51% decline in 2008, indicating market challenges.
- Canada:** Impressive early growth, but profit declined in 2007 and saw a slight increase in 2008, showing difficulty in maintaining momentum.
- France:** Consistent growth through 2007, with a slight 2.72% decline in 2008, suggesting possible market saturation.
- Germany:** Steady growth with a minimal 0.16% decline in 2008, reflecting a stable market.
- United Kingdom:** Strong growth, but a minor 2.59% decline in 2008 indicates a slight market adjustment.
- United States:** Continuous, strong growth throughout all years, marking it as the most resilient market.
- Overall:** Initial strong growth across regions, with some markets facing challenges in sustaining momentum; the United State market stands out as the most robust.



Product Performance

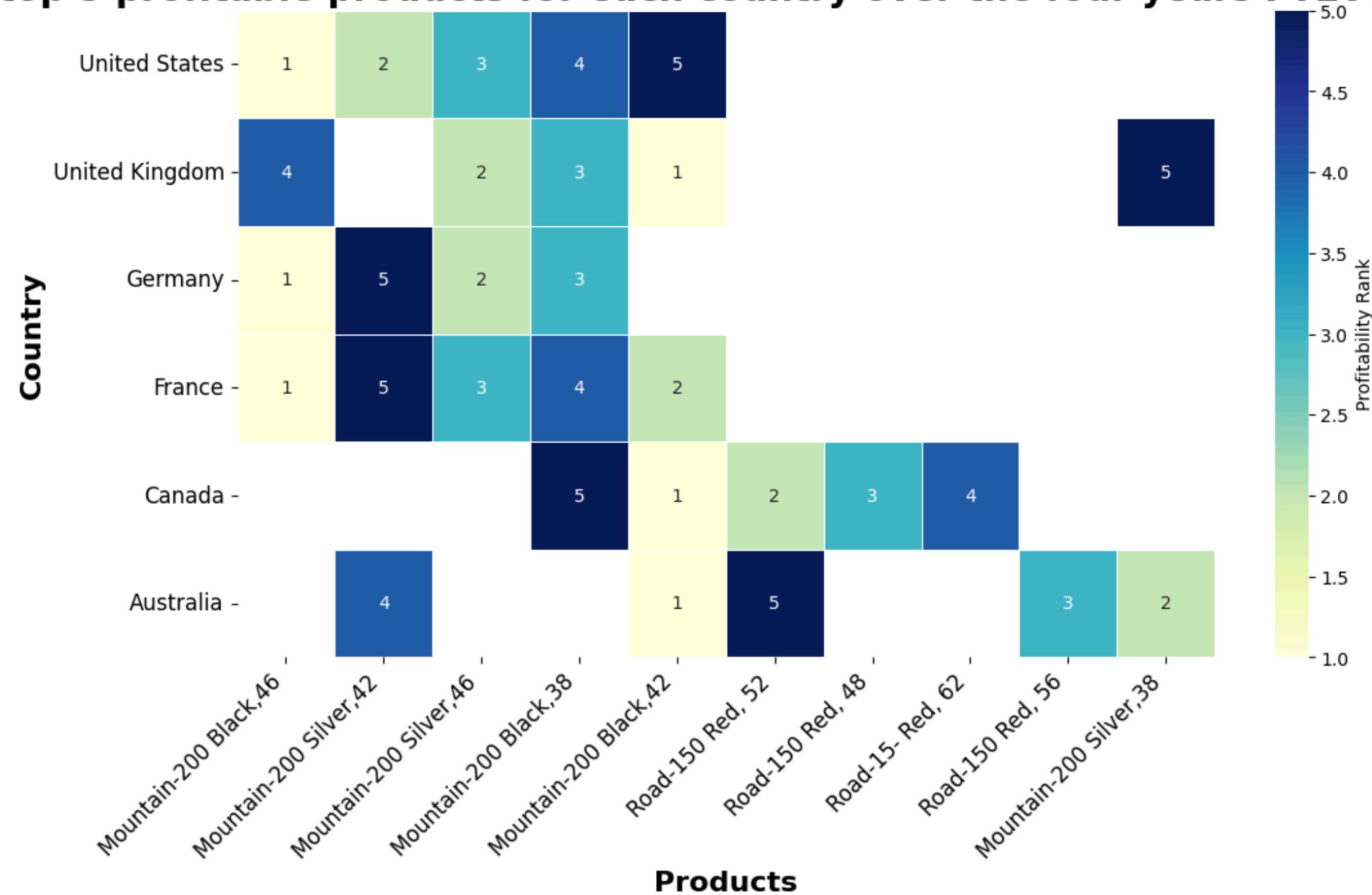


Top Profitable Product by Country in Each Year (FY 2005 - FY 2008)

Country	2005	2006	2007	2008
Australia	Road-150 Red, 62	Road-150 Red, 56	Mountain-200 Silver, 38	Mountain-200 Silver, 42
Canada	Road-150 Red, 52	Road-150 Red, 48	Mountain-200 Silver, 42	Mountain-200 Silver, 42
France	Road-150 Red, 44	Road-150 Red, 44	Mountain-200 Black, 42	Mountain-200 Silver, 46
Germany	Road-150 Red, 44	Road-150 Red, 44	Mountain-200 Black, 46	Mountain-200 Silver, 38
United Kingdom	Road-150 Red, 62	Road-150 Red, 44	Mountain-200 Silver, 46	Mountain-200 Black, 42
United States	Road-150 Red, 62	Road-150 Red, 44	Mountain-200 Black, 46	Mountain-200 Black, 38

List the top 5 profitable products for each country over the four years FY2005 - FY2008

- Dominant Products:** The Mountain-200 series, particularly in sizes 46, 42, and 38, leads as the most profitable across various regions.
- Regional Preferences:** Canada and Australia display distinct preferences with the Road-150 series, indicating regional differences in product demand.
- Global Consistency:** The Mountain-200 Black, size 46, consistently ranks as a top-performing product worldwide, showcasing its global appeal.



Top Profitable Product Colour by Country in Each Year (FY 2005 - FY 2008)

Country	2005	2006	2007	2008
Australia	Red	Red	Black	Black
Canada	Red	Red	Black	Black
France	Red	Red	Black	Black
Germany	Red	Red	Black	Black
United Kingdom	Red	Red	Black	Black
United States	Red	Red	Black	Black

— Red — Black

Least Profitable Product Colour by Country in Each Year (FY 2005 - FY 2008)

Country	2005	2006	2007	2008
Australia				
Canada				
France				
Germany				
United Kingdom	Blue			
United States	Blue			

— Unspecified — White — Blue

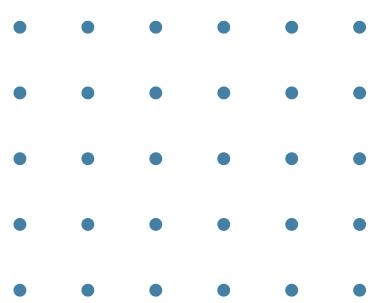


Profitability Analysis

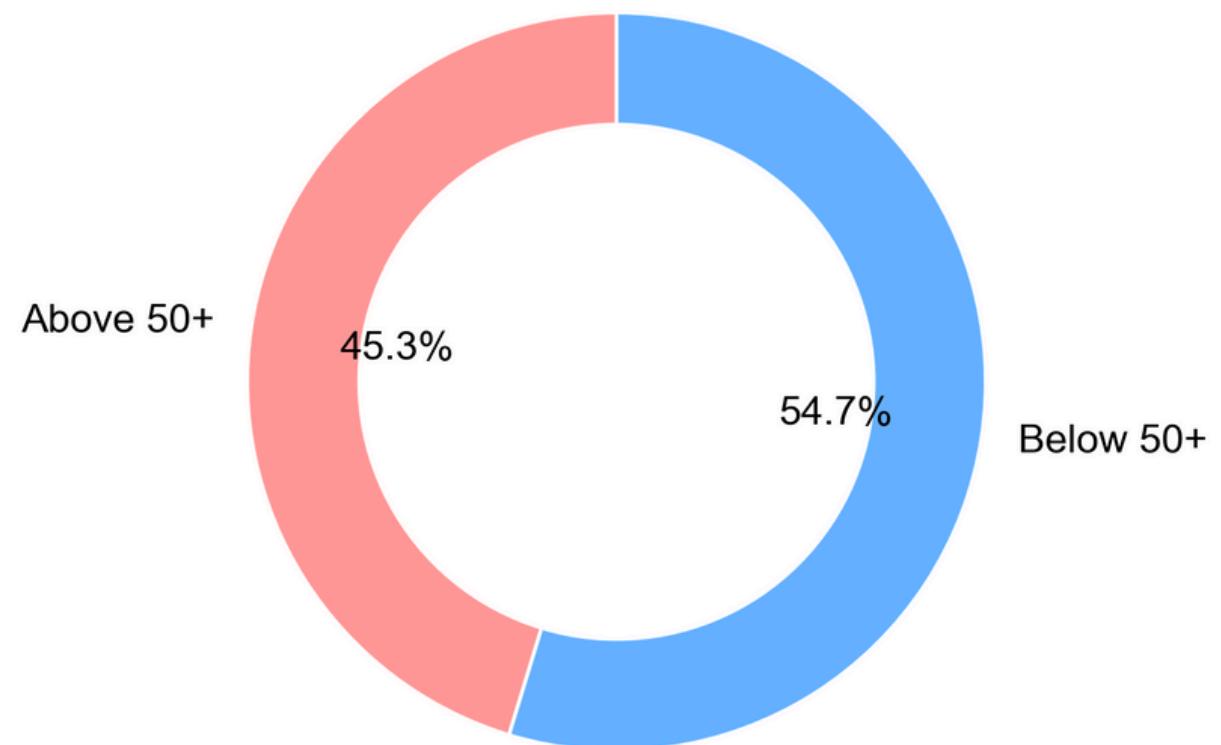
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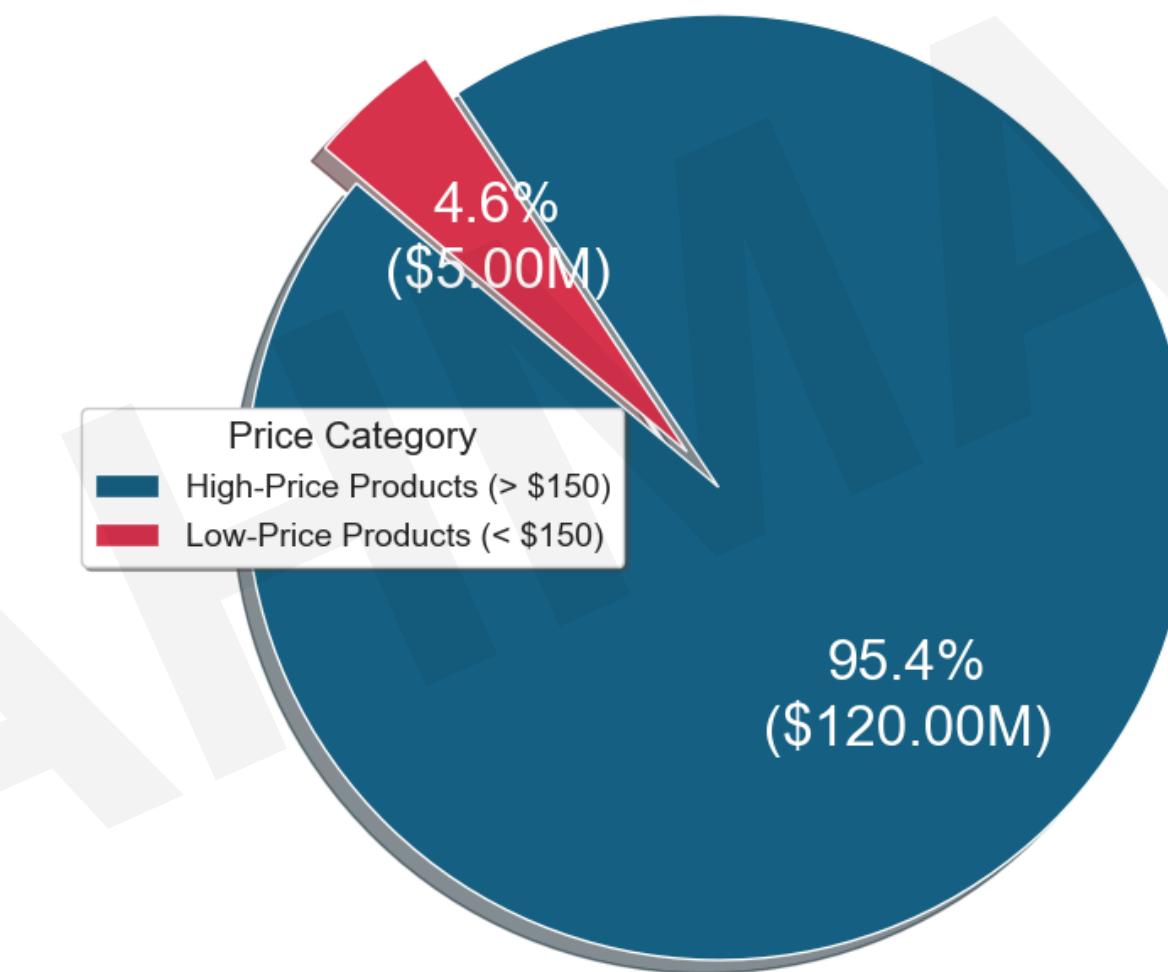
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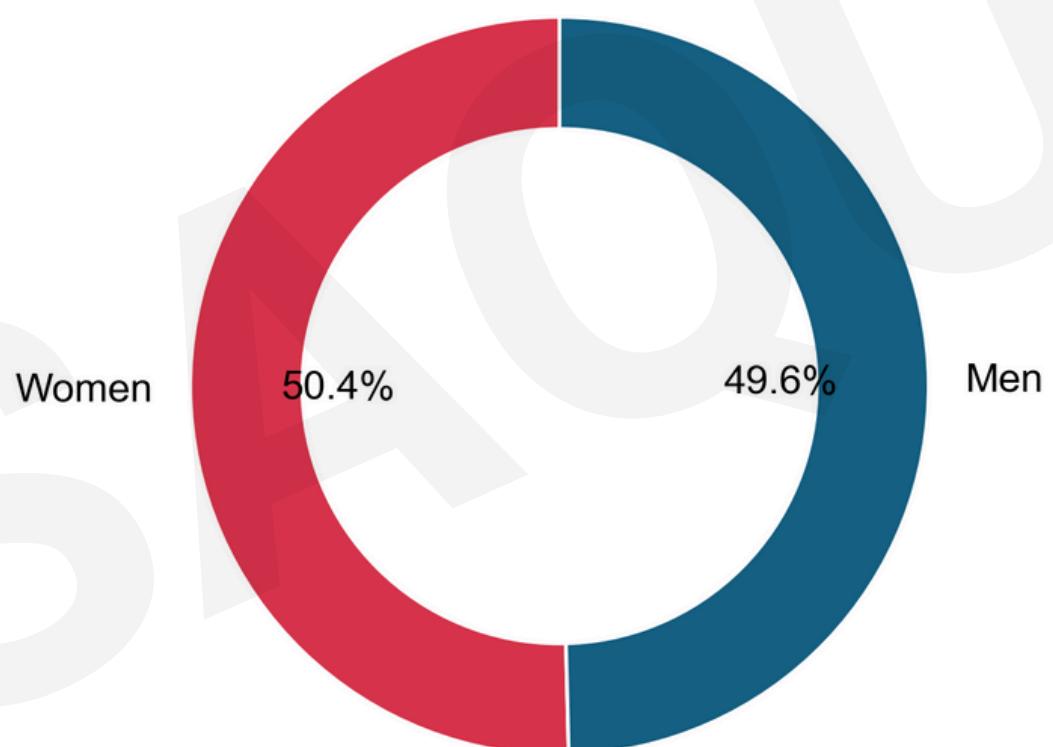
Profit Contribution by Age (FY 2005-FY 2006)



Profit Contribution by Product Price (FY 2005 - FY 2008)

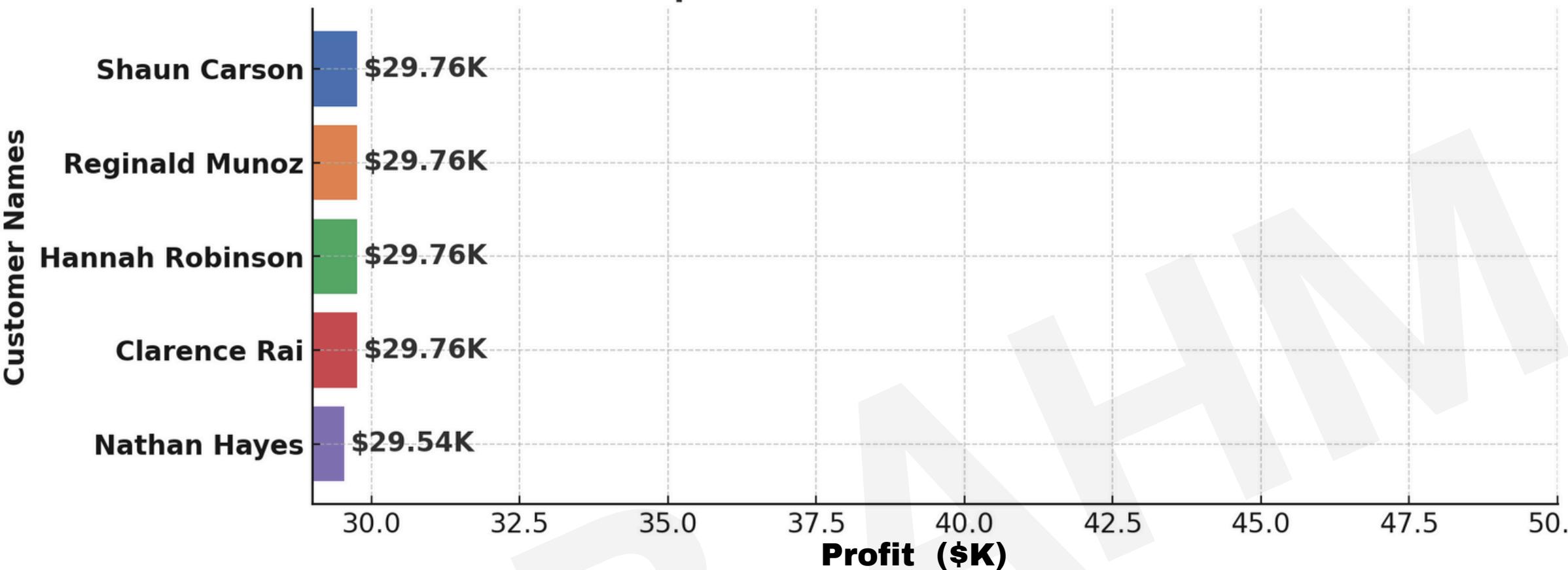


Profit Contribution by Gender (FY 2005-FY 2008)

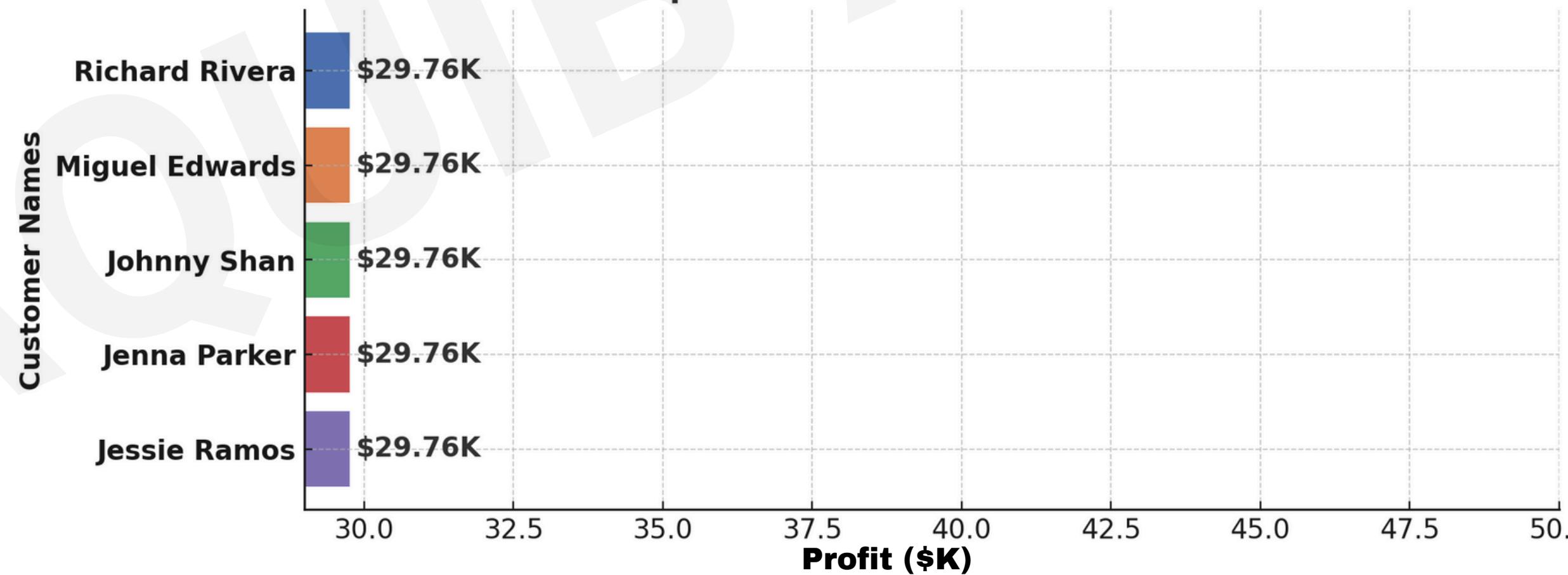


- Profit Contribution by Age Group (FY 2005 - FY 2008): **50+ Age Group** contributes range between 40%-50% of Total Profit Depending on Country and Year

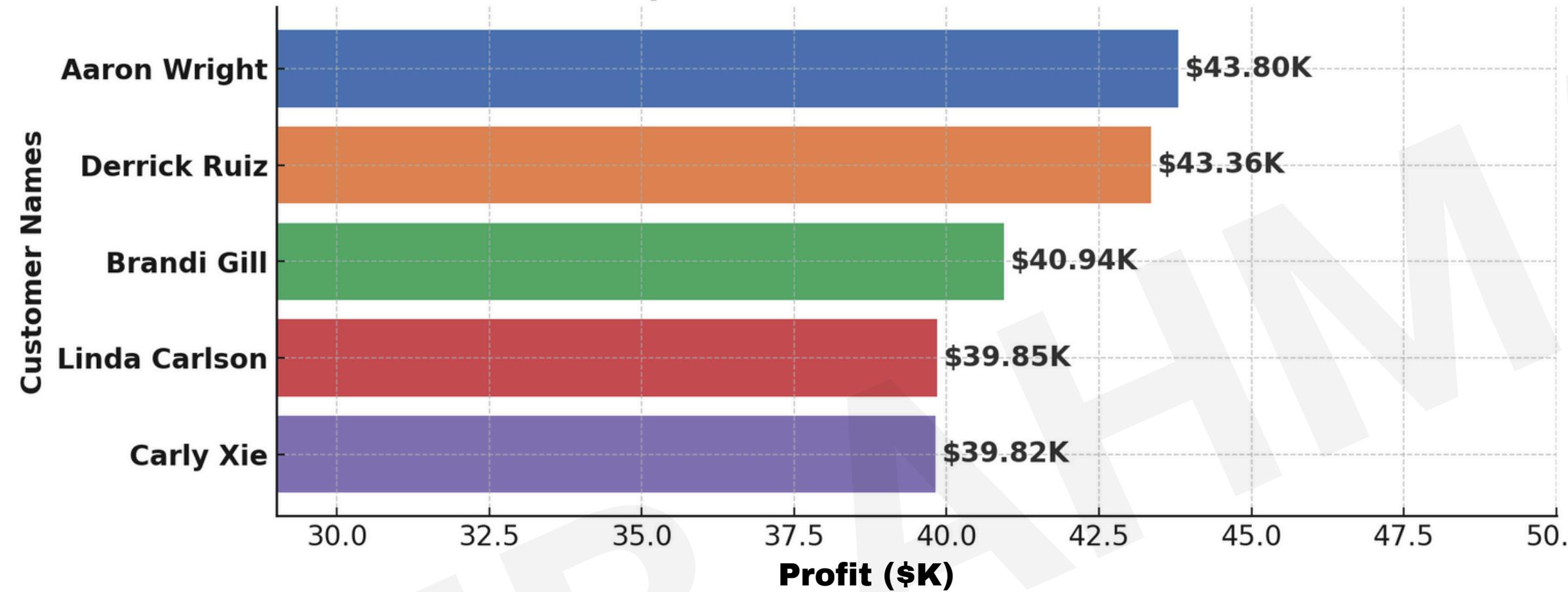
Top 5 Profitable Customers - 2005



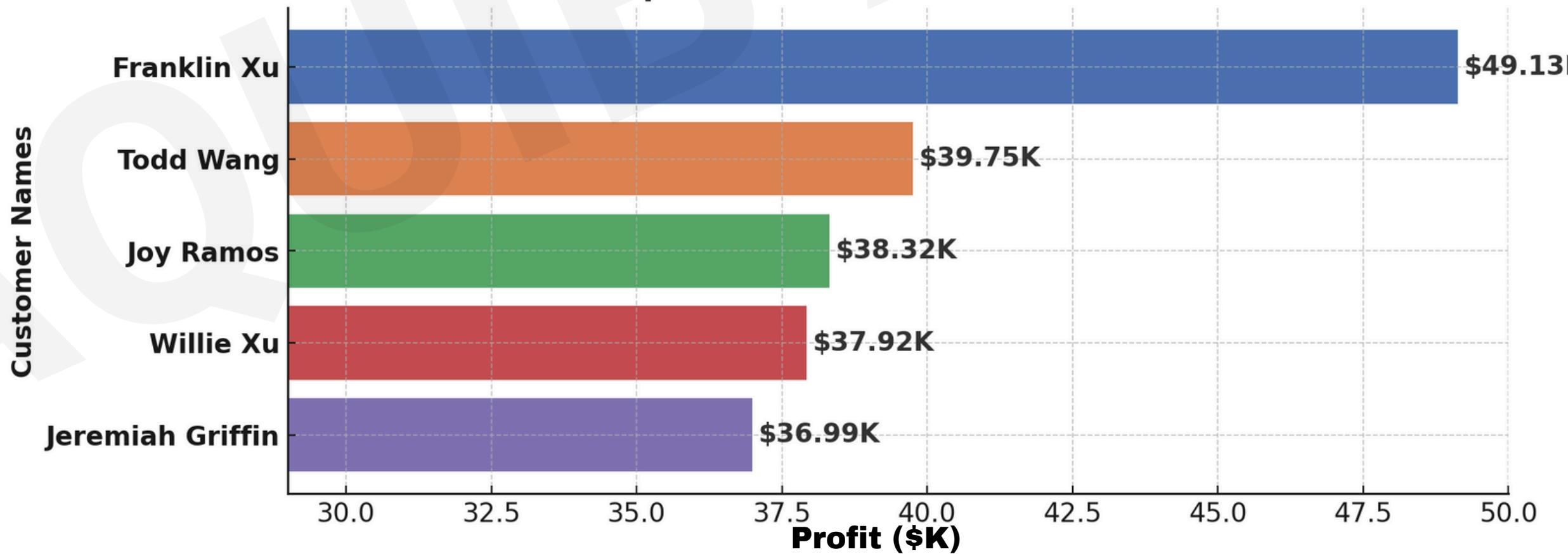
Top 5 Profitable Customers - 2006



Top 5 Profitable Customers - 2007



Top 5 Profitable Customers - 2008





Geographical Insights



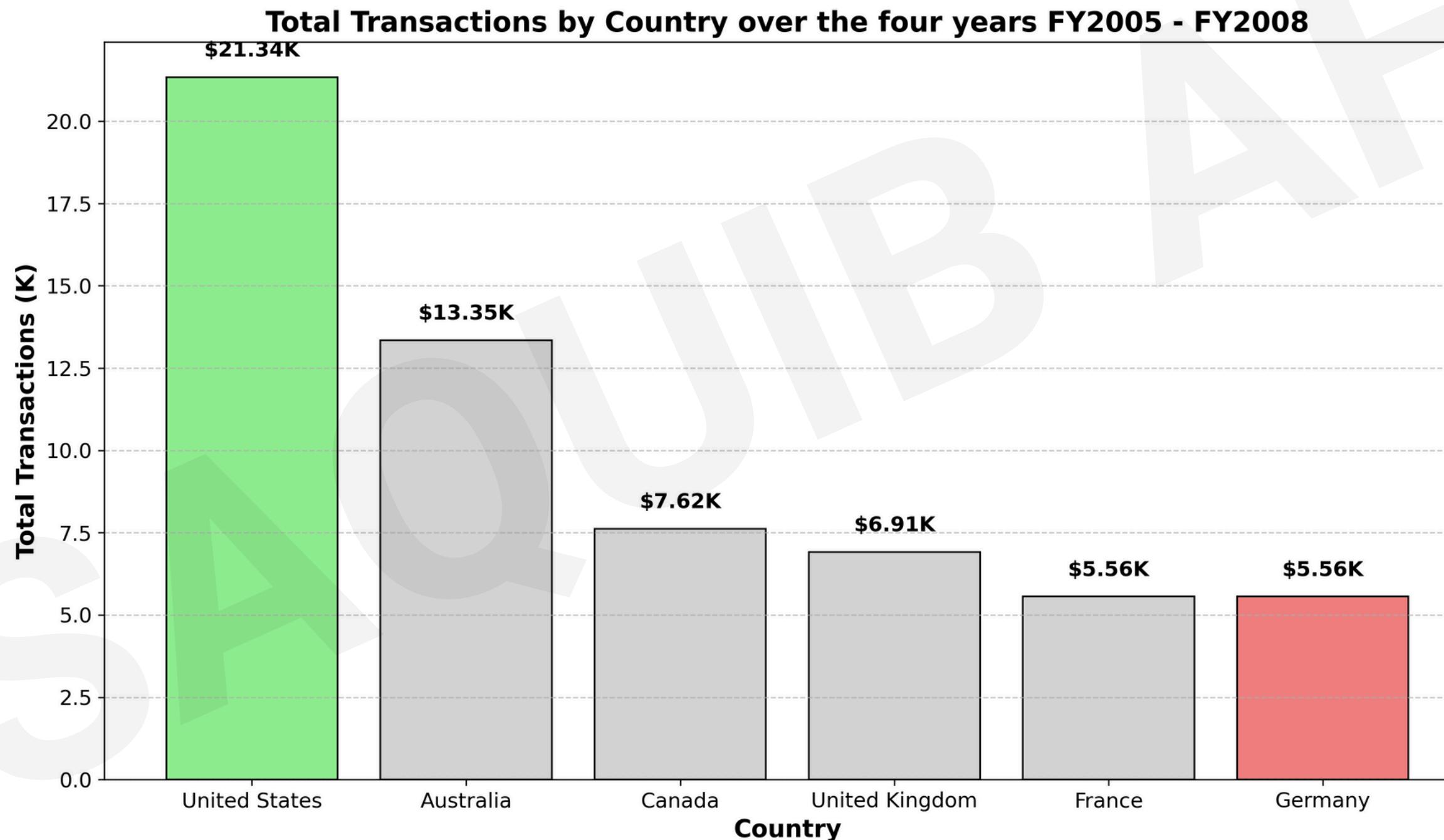
Top Performing Countries in Sales and Profit (FY 2005 - FY 2008)

Year	Highest Sales (\$M)	Country (Sales)	Highest Profit (\$M)	Country (Profit)
2005	13.37	Australia	5.4	Australia
2006	23.35	Australia	9.55	Australia
2007	31.43	Australia	12.89	Australia
2008	34.46	United States	14.47	United States

- From 2005 to 2007, Australia led in both sales and profit, with sales rising from \$13.37M in 2005 to \$31.43M in 2007, and profit increasing from \$5.40M to \$12.89M. In 2008, the United States took the lead, achieving the highest sales of \$34.46M and a profit of \$14.47M, marking a significant shift in market leadership. Overall, both sales and profit showed consistent growth during this period.

Countries with the highest transaction volumes annually from (FY 2005 - FY 2008)

Year	Country	Highest Transactions (K)	Remarks
2005	Australia	0.39K	Leading in 2005 among listed countries
2006	Australia/United States	0.86K ▲	Highest transactions in 2006, both Australia and US
2007	United States	8.51K ▲	Significant increase in 2007
2008	United States	11.63K ▲	Continued highest in 2008



- This chart displays transaction totals for various countries from 2005 to 2008. The United States has the highest transactions at \$21.34K, while France and Germany are the lowest at \$5.56K.

Quarterly Profit Trends Across Countries

The quarterly profit analysis reveals the following key insights:

Quarter 2 Dominates:

- Quarter 2 consistently achieves the highest profit across all analyzed countries, including Australia, Canada, France, Germany, the United Kingdom, and the United States. Notably, Quarter 2 leads with an impressive profit of **\$39.02 million**.

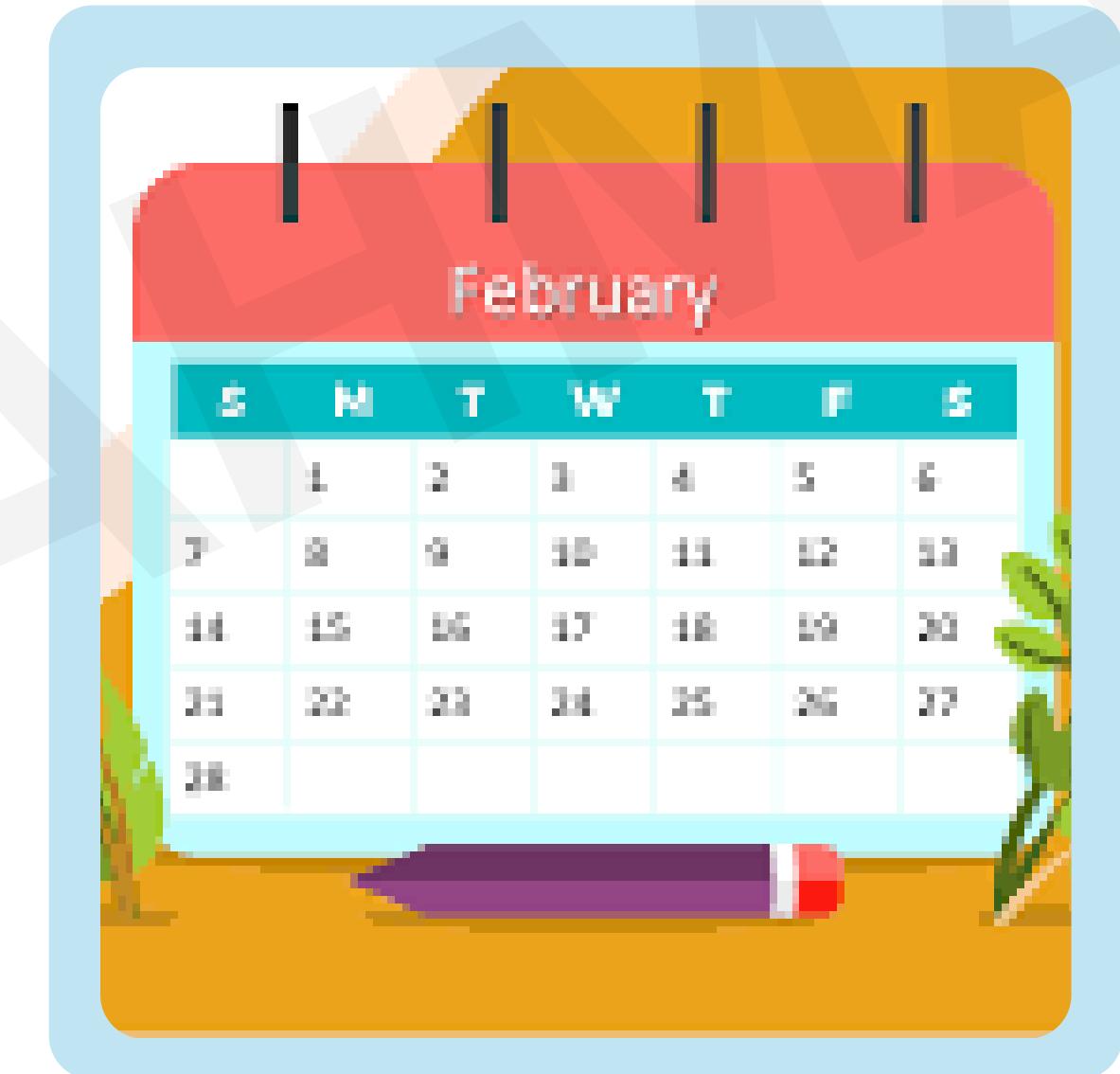
Quarter 3 Performance:

Quarter 3 generally records the lowest profit among the quarters for each of the analyzed countries. This trend is observed uniformly across Australia, Canada, France, Germany, the United Kingdom, and the United States.

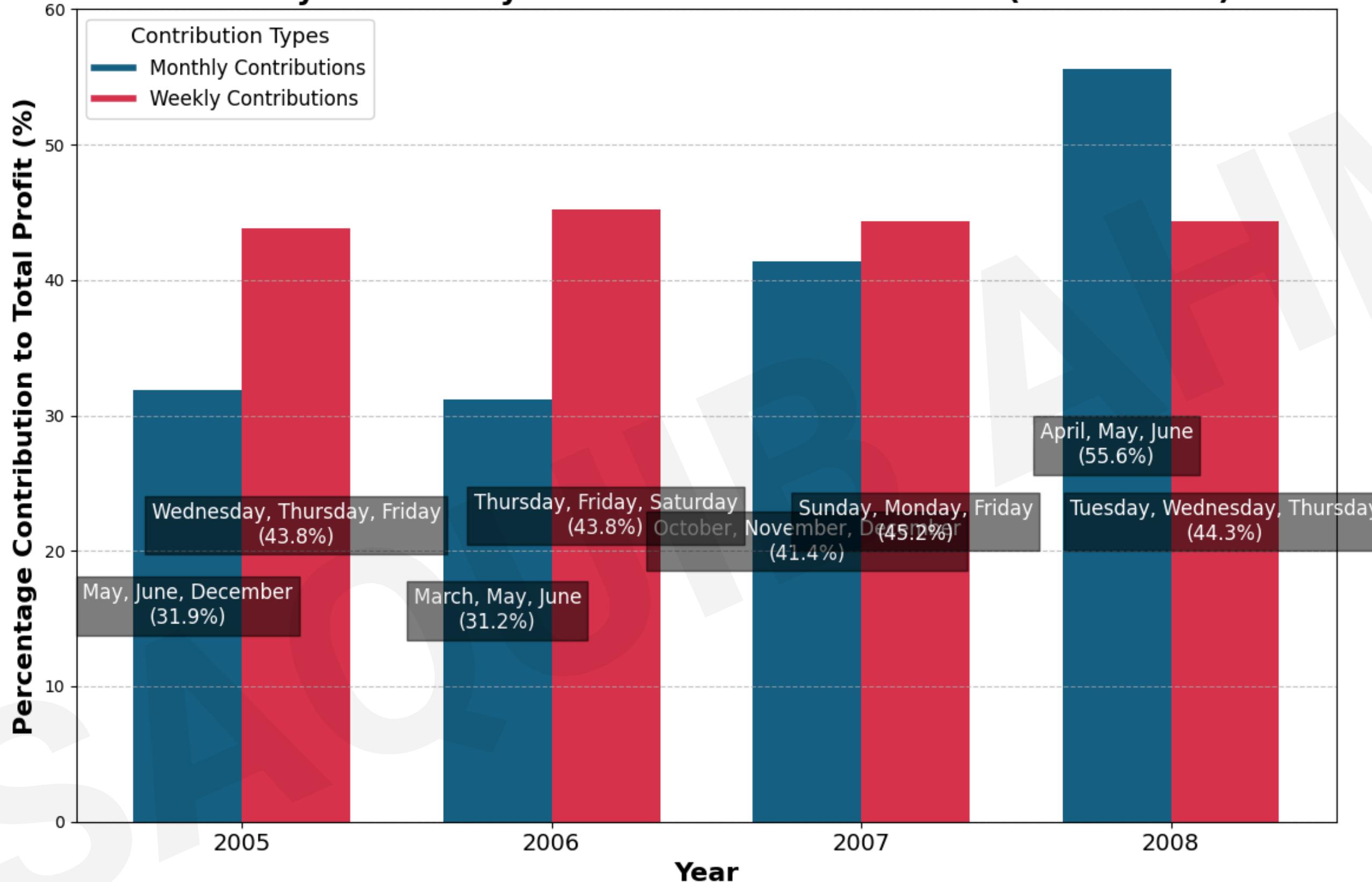
This quarterly profit fluctuation indicates a significant peak in Quarter 2, while Quarter 3 remains the weakest performing quarter throughout the year.



Seasonal Trends



Monthly and Weekly Contributions to Total Profit (2005 - 2008)

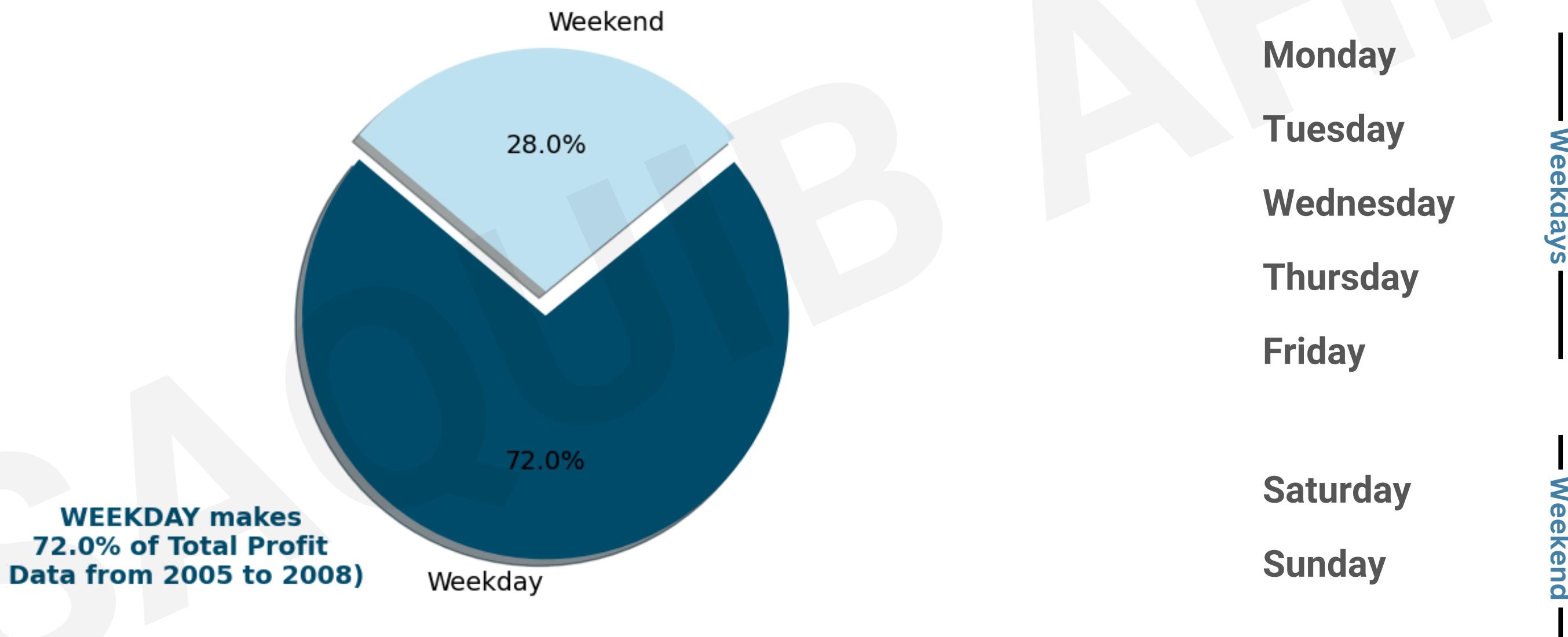


- December consistently ranks as the top month for sales across all years, with the highest profit recorded each year.

Profit Distribution by Weekdays (2005-2008)

- Over the period from 2005 to 2008, weekdays account for **72.0%** of the total profit. This indicates that a significant majority of the profit is generated during weekdays, highlighting the importance of weekday sales in our overall profitability.

Profit Distribution by Weekday and Weekend (2005-2008)



Technologies Used



Microsoft
Excel



Excel Pivot Table

Utilized for comprehensive data cleaning, processing, and visualization

Created various types to summarize and present data insights effectively.



Interactive Dashboards:
Developed to provide an at-a-glance view of critical performance metrics.

THANK YOU

I'd like to extend my thanks to Microsoft for providing the AdventureWorks sales dataset, which has been invaluable in helping me enhance my skills in data analysis using tools like MS Excel.

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