

Data-Driven Financial Performance Analysis

Insights and Recommendations
for Market Growth

By: Heba Adel Ali



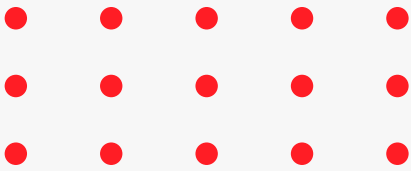


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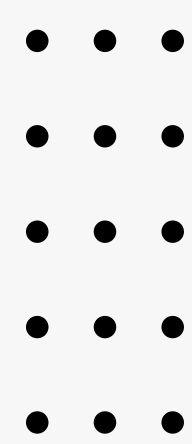
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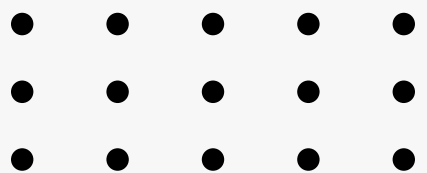
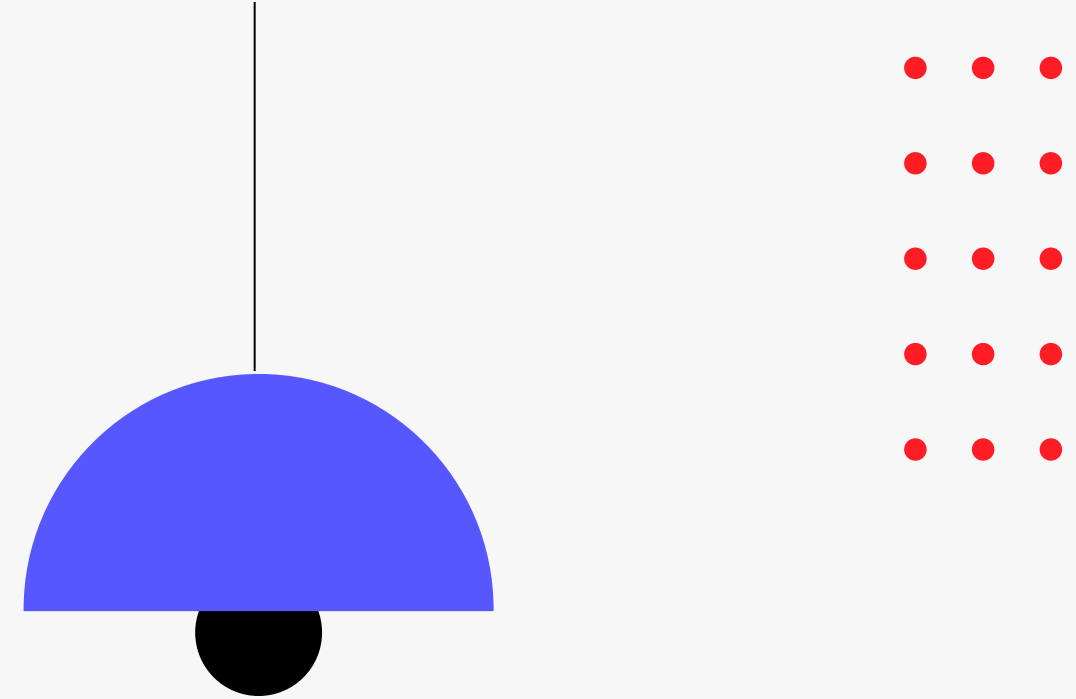
06

Suggestions



Introduction

- The dataset includes financial records (Sales, Profit, Discounts, etc.) across different Products, Segments, and Countries from 2013–2014.
- This analysis examines financial performance across products, segments, and countries for the years 2013–2014.
- The goal is to provide data-driven insights and strategic recommendations for the upcoming year.



Data Preparation



As we can see, the column names contained extra spaces and inconsistent formatting.

To fix this, we stripped unnecessary spaces and standardized all column names.

Additionally, several numeric columns were stored as text (with symbols like "\$", ",", and "() for negatives).

We cleaned and converted these columns into proper numeric formats for accurate analysis.

- • • Finally, we converted the Date column into a
- • • datetime format to enable time-based
- • • analysis.
- • •
- • •

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 700 entries, 0 to 699
```

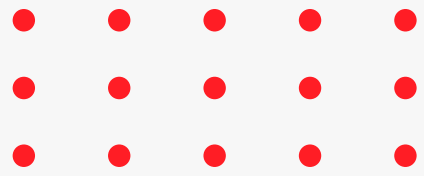
```
Data columns (total 16 columns):
```

#	Column	Non-Null Count	Dtype
0	Segment	700 non-null	object
1	Country	700 non-null	object
2	Product	700 non-null	object
3	Discount Band	700 non-null	object
4	Units Sold	700 non-null	object
5	Manufacturing Price	700 non-null	object
6	Sale Price	700 non-null	object
7	Gross Sales	700 non-null	object
8	Discounts	700 non-null	object
9	Sales	700 non-null	object
10	COGS	700 non-null	object
11	Profit	700 non-null	object
12	Date	700 non-null	object
13	Month Number	700 non-null	int64
14	Month Name	700 non-null	object
15	Year	700 non-null	int64

```
dtypes: int64(2), object(14)
```

```
memory usage: 87.6+ KB
```

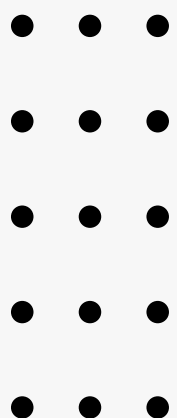
Data Preparation

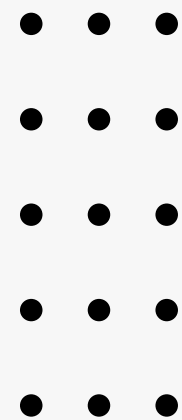


After cleaning the columns, several NaN values appeared in the dataset.

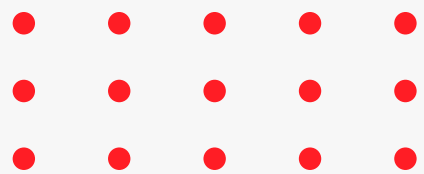
Upon investigation, we discovered that these values originally appeared as "\$-" in the raw data — which actually represents zero, not missing information.

Therefore, we replaced these NaN values with 0 to correctly reflect the financial data, especially in columns like Discounts and Profit.



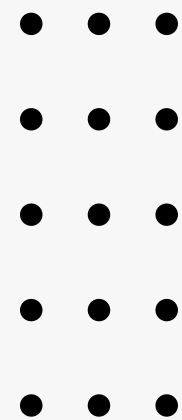


df.isnull().sum()	
	0
Segment	0
Country	0
Product	0
Discount Band	0
Units Sold	0
Manufacturing Price	0
Sale Price	0
Gross Sales	0
Discounts	0
Sales	0
COGS	0
Profit	0
Date	0

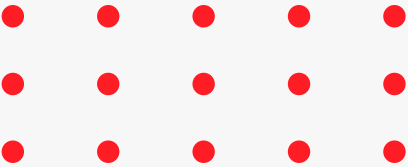


Gross Sales	Discounts	Sales	COGS	Profit	Date	Month Number	Month Name	Year
\$32,370.00	\$-	\$32,370.00	\$16,185.00	\$16,185.00	1/1/2014	1	January	2014
\$26,420.00	\$-	\$26,420.00	\$13,210.00	\$13,210.00	1/1/2014	1	January	2014
\$32,670.00	\$-	\$32,670.00	\$21,780.00	\$10,890.00	1/6/2014	6	June	2014
\$13,320.00	\$-	\$13,320.00	\$8,880.00	\$4,440.00	1/6/2014	6	June	2014
\$37,050.00	\$-	\$37,050.00	\$24,700.00	\$12,350.00	1/6/2014	6	June	2014
...
\$7,42,500.00	\$1,11,375.00	\$6,31,125.00	\$6,18,750.00	\$12,375.00	1/3/2014	3	March	2014
\$1,63,800.00	\$24,570.00	\$1,39,230.00	\$1,36,500.00	\$2,730.00	1/10/2014	10	October	2014
\$9,576.00	\$1,436.40	\$8,139.60	\$6,840.00	\$1,299.60	1/2/2014	2	February	2014
\$5,061.00	\$759.15	\$4,301.85	\$3,615.00	\$686.85	1/4/2014	4	April	2014

Before



df.isnull().sum()	
	0
Segment	0
Country	0
Product	0
Discount Band	0
Units Sold	0
Manufacturing Price	0
Sale Price	0
Gross Sales	0
Discounts	53
Sales	0
COGS	0
Profit	5
Date	0



Sale Price	Gross Sales	Discounts	Sales	COGS	Profit	Date	Month Number	Month Name	Year
20.0	32370.0	NaN	32370.00	16185.0	16185.00	2014-01-01	1	January	2014
20.0	26420.0	NaN	26420.00	13210.0	13210.00	2014-01-01	1	January	2014
15.0	32670.0	NaN	32670.00	21780.0	10890.00	2014-01-06	6	June	2014
15.0	13320.0	NaN	13320.00	8880.0	4440.00	2014-01-06	6	June	2014
15.0	37050.0	NaN	37050.00	24700.0	12350.00	2014-01-06	6	June	2014
...
300.0	742500.0	111375.00	631125.00	618750.0	12375.00	2014-01-03	3	March	2014

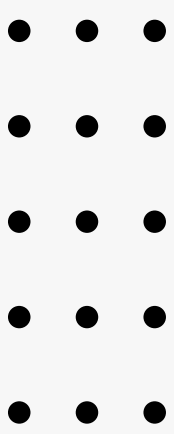
After

EDA



We used descriptive statistics to summarize the numeric fields in the dataset.

The Month Number column shows that most transactions occurred between mid and late months of the year, while the Year field confirms that our data covers two periods — 2013 and 2014.



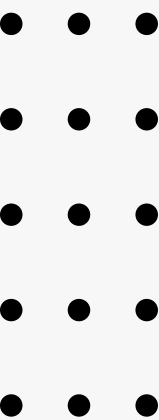
```
df.describe()
```

	Month Number	Year
count	700.000000	700.000000
mean	7.900000	2013.750000
std	3.377321	0.433322
min	1.000000	2013.000000
25%	5.750000	2013.750000
50%	9.000000	2014.000000
75%	10.250000	2014.000000
max	12.000000	2014.000000

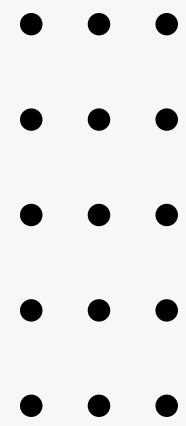


The results reveal that Small Business and Enterprise segments show the highest average sales, while Enterprise also records negative mean profit, indicating potential inefficiency or high costs.

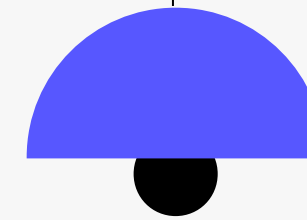
In contrast, Government and Channel Partners maintain stable profits with moderate sales volumes.



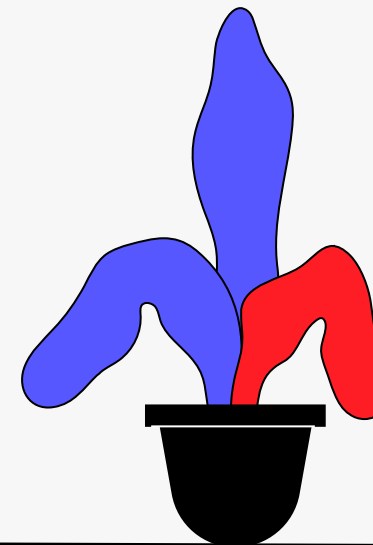
Summary Statistics for Sales and Profit by Market Segment:				
Segment	Sales		std	Profit \
	mean	median		mean
Channel Partners	18005.936400	18498.960	9156.473502	13168.031400
Enterprise	196116.943800	185389.375	107631.255803	-6145.456200
Government	175014.202267	27286.875	266986.546682	37960.577267
Midmarket	23818.830900	24349.650	12324.443638	6601.030900
Small Business	424279.185000	373755.000	239938.999668	41431.685000
Segment	median		std	
Channel Partners	13242.960	6706.583019		
Enterprise	-2769.375	11871.787155		
Government	12360.800	56108.500054		
Midmarket	6665.800	3555.430312		
Small Business	36592.500	31045.668904		



Next



Data Visualization



Insights

Strong Year-End Growth:

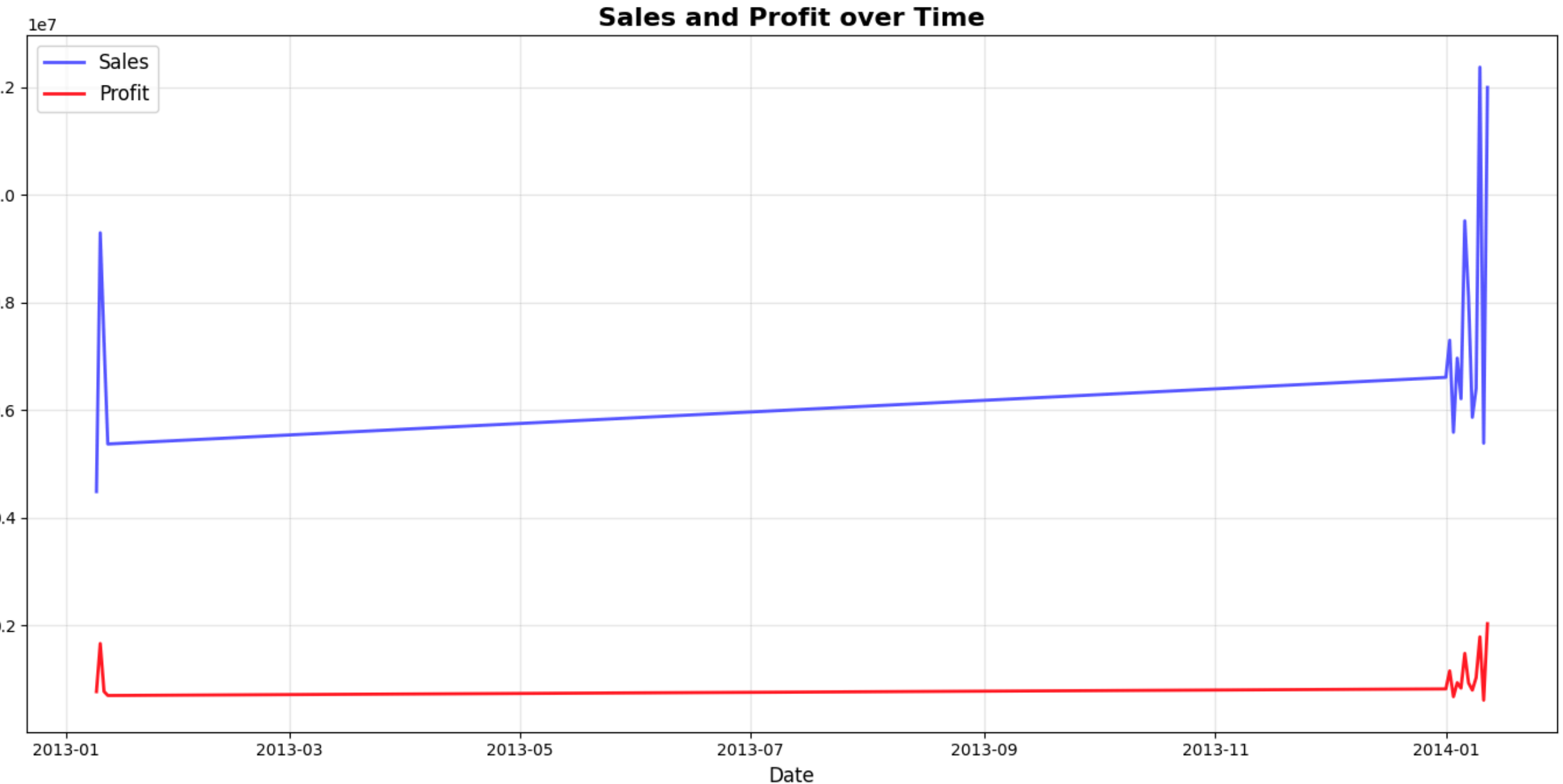
- There's a sharp increase in both Sales and Profit near the end of the period, suggesting a strong seasonal or promotional effect.
→ This could be linked to holiday sales or end-of-year demand peaks.

Low Profit Margin:

- Despite high Sales, Profit remains proportionally low, indicating high operating or product costs — this is a key business weakness.

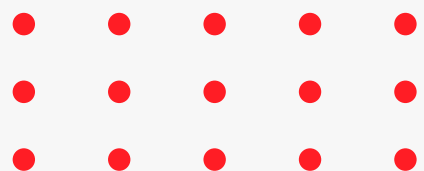
Mid-Year Stagnation:

- Sales and Profit are flat during mid-year, showing a lack of growth momentum or weak marketing activity during that period.



High Early-Year Volatility:

- Sudden fluctuations at the beginning of the year suggest unstable operations, demand variability, or forecasting issues.





Recommendations

Replicate Year-End Success:

- Analyze what caused the end-of-year sales boost (campaigns, discounts, seasonal products) — and apply similar strategies earlier in the year to balance performance.

Improve Profit Margins:

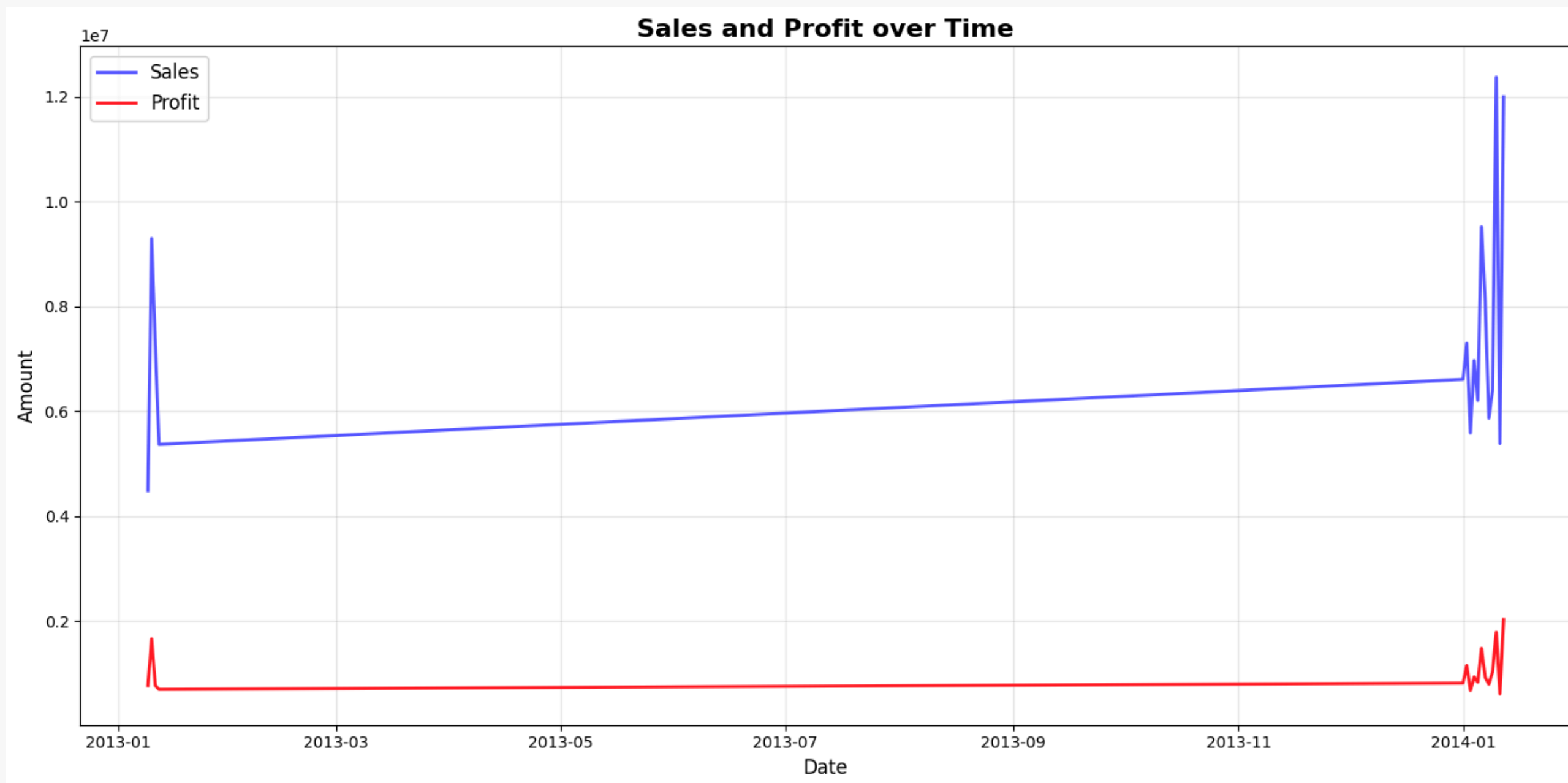
- Focus on cost reduction, supplier negotiation, or pricing optimization to turn strong sales into stronger profit.

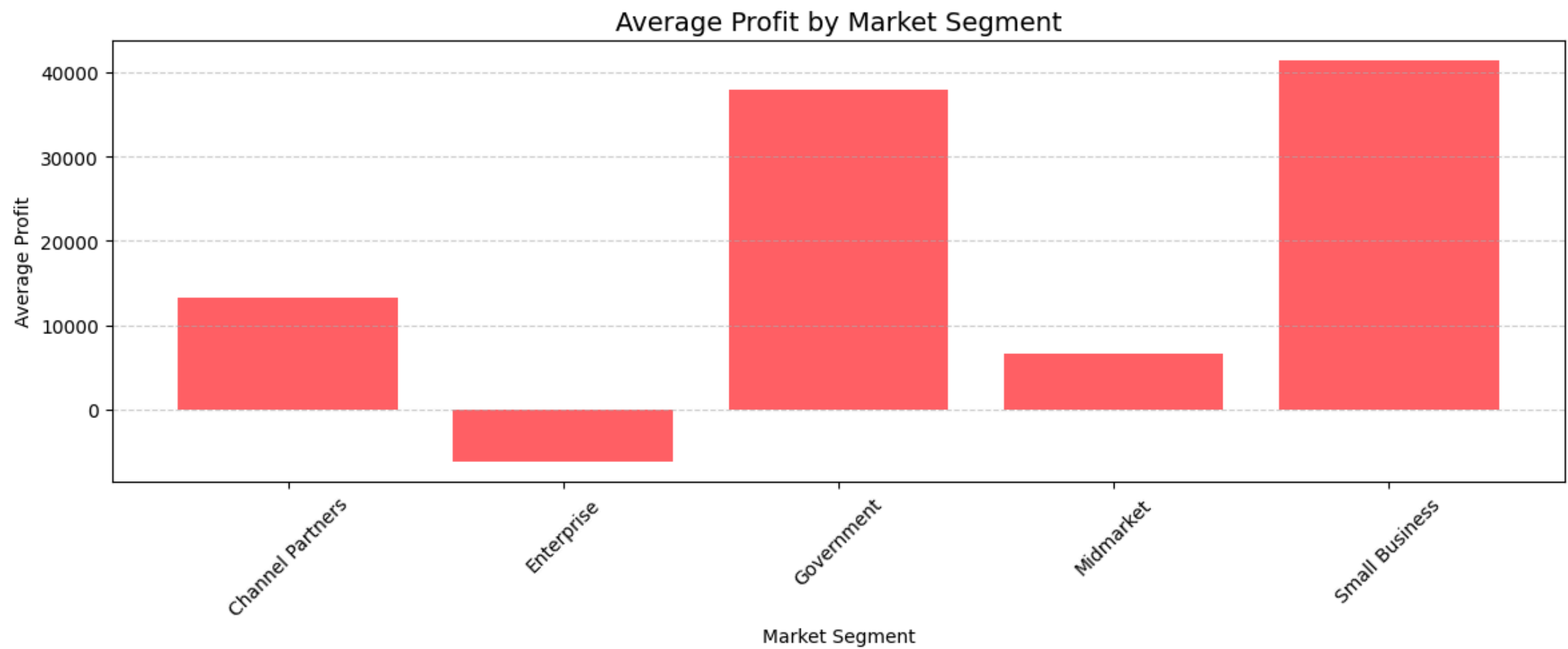
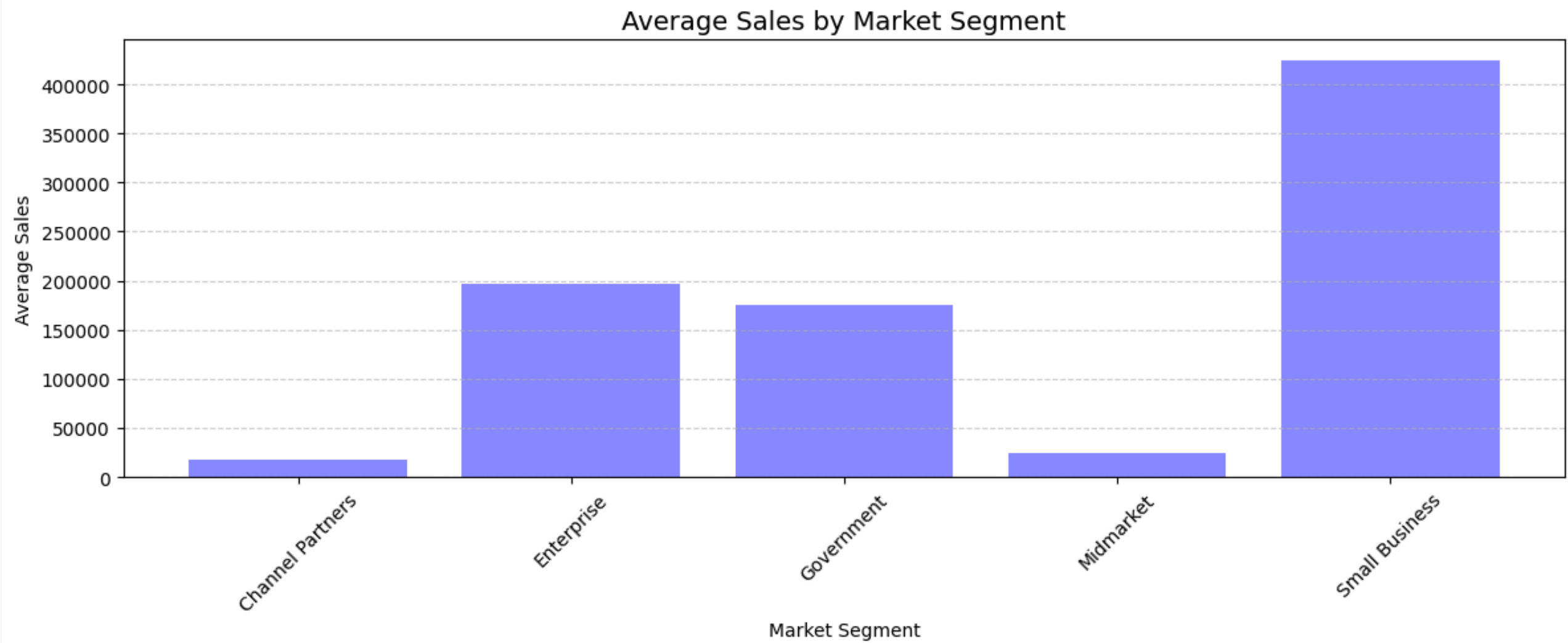
Stimulate Mid-Year Demand:

- Introduce marketing promotions or new product launches in the mid-year months to maintain consistent revenue flow.

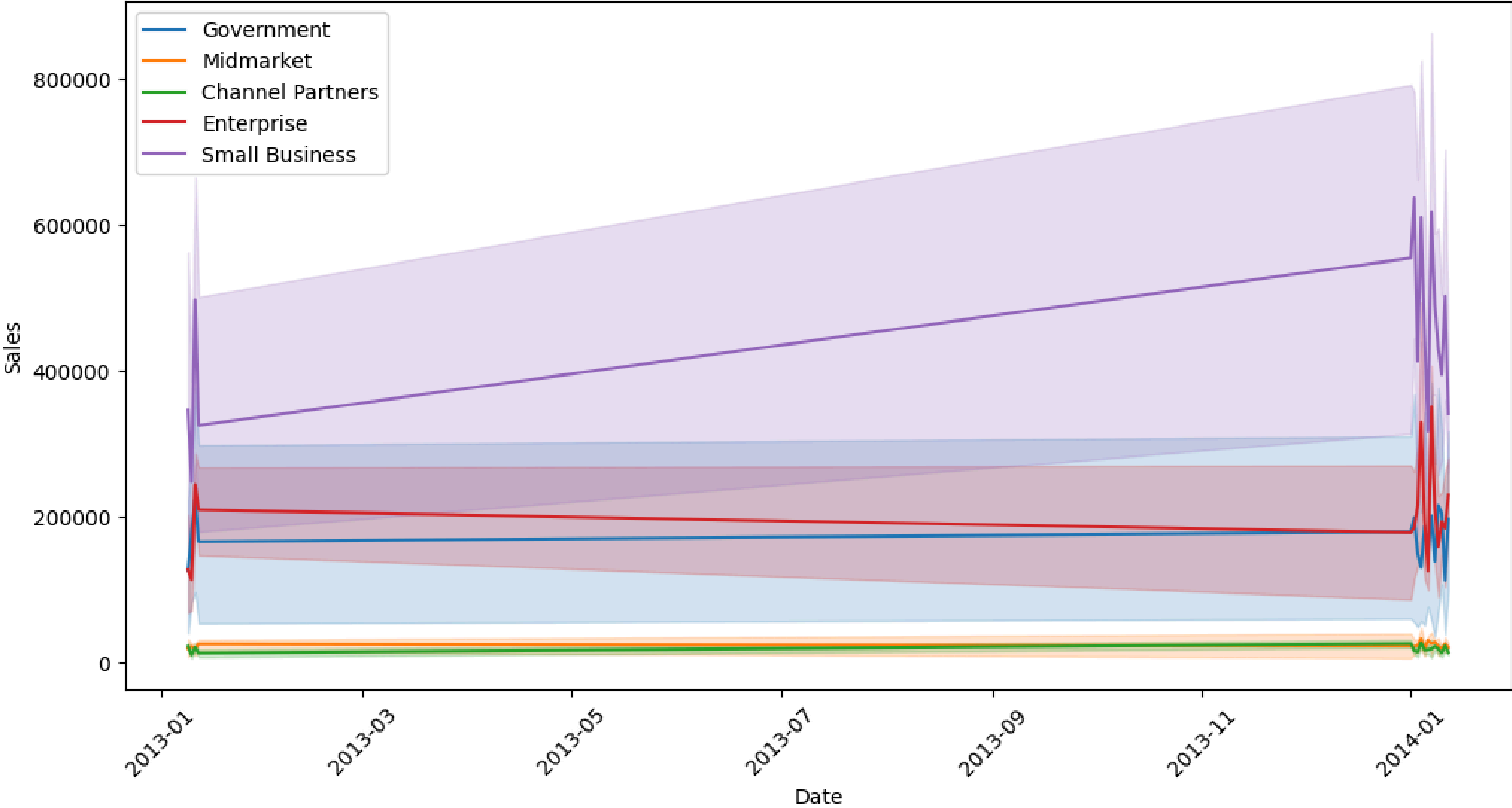
Stabilize Operations:

- Review early-year volatility by improving demand forecasting and inventory management to reduce sudden sales dips or spikes.

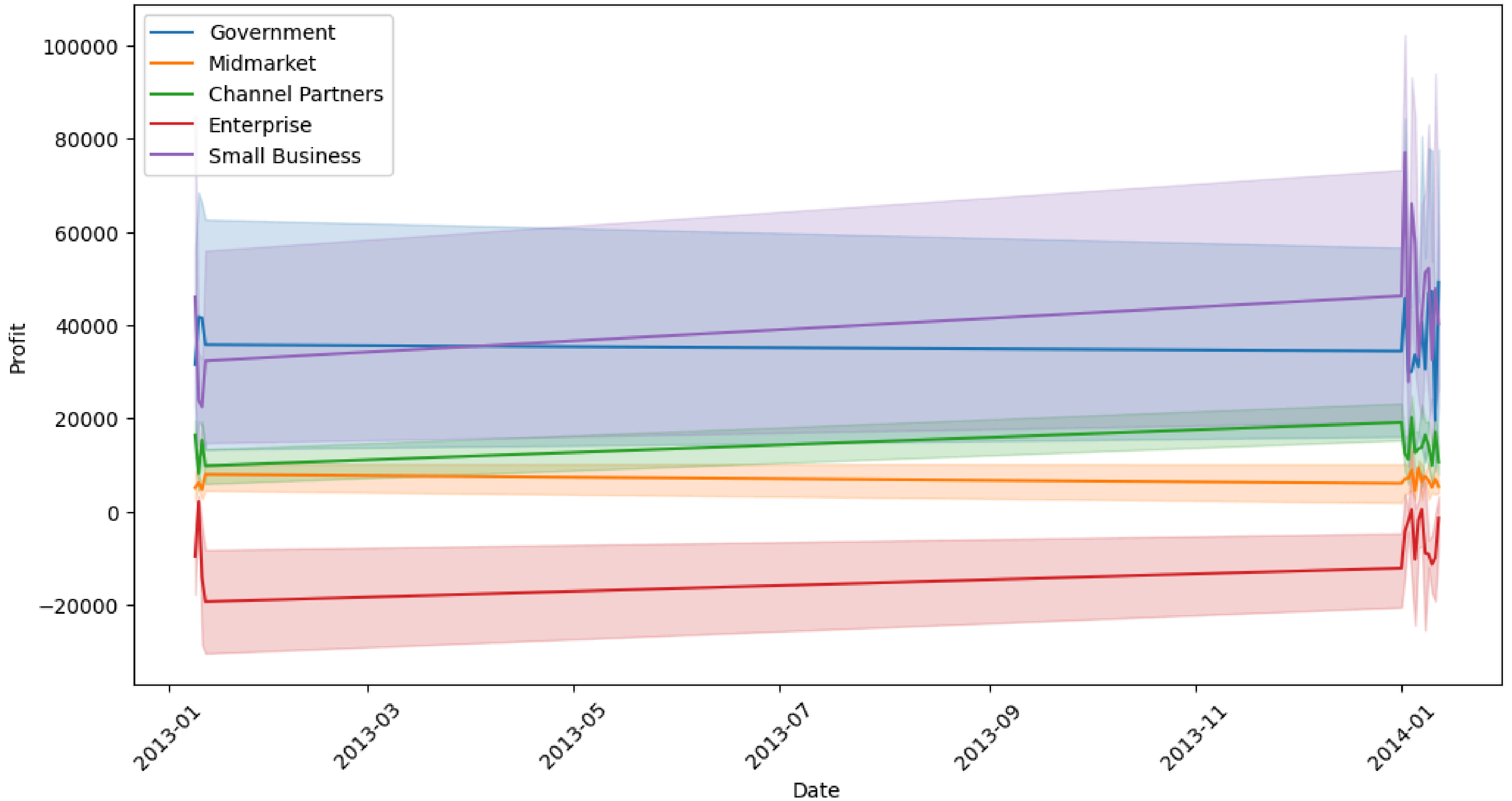




Sales Trends Over Time by Market Segment



Profit Trends Over Time by Market Segment





Insights

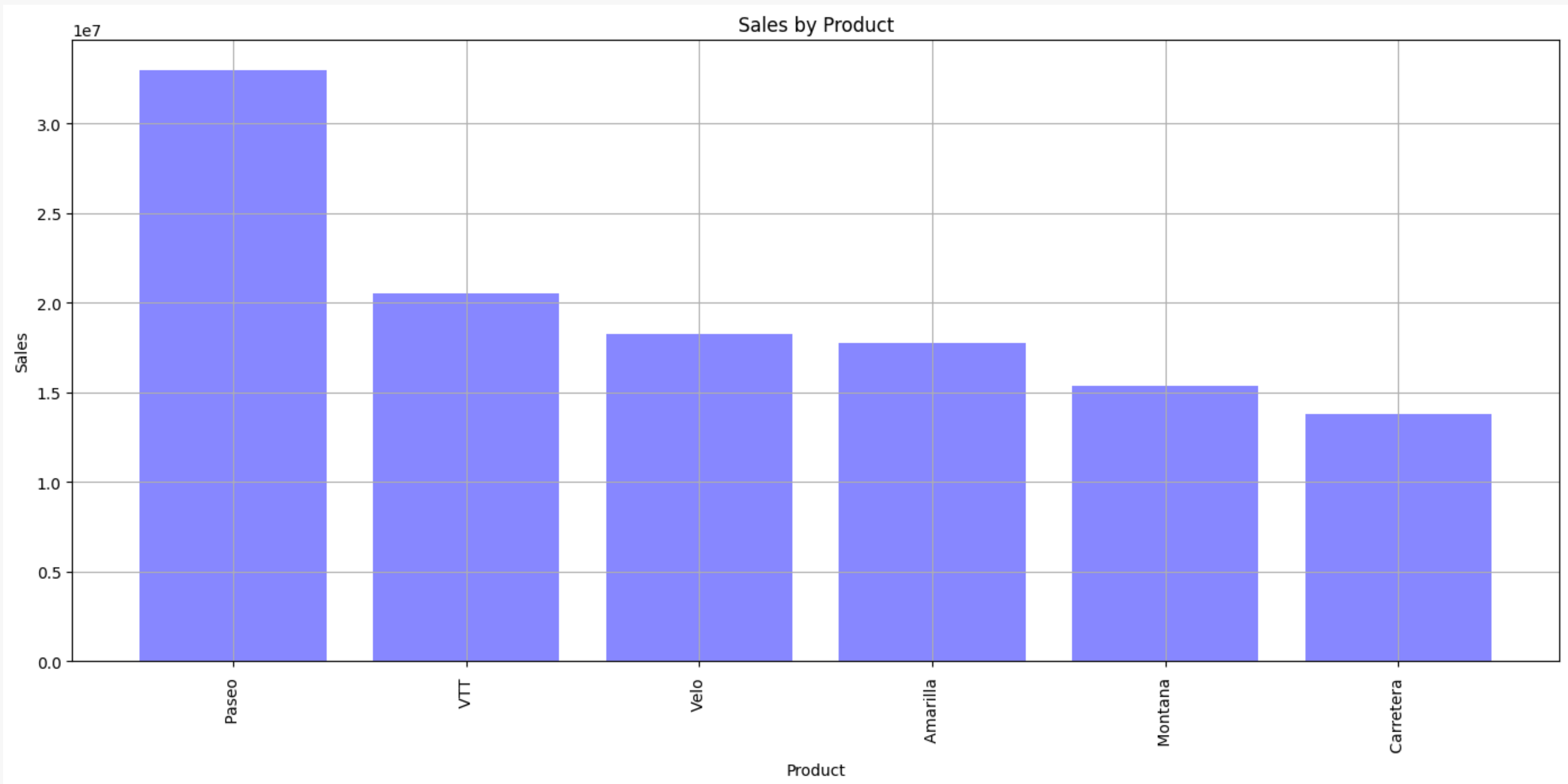
- Small Business segment leads in both sales and profit, showing strong and consistent upward trends.
- Government = high margins with moderate sales.
- Enterprise = high sales but negative profit → needs urgent review.
- Channel Partners & Midmarket = underperforming segments.



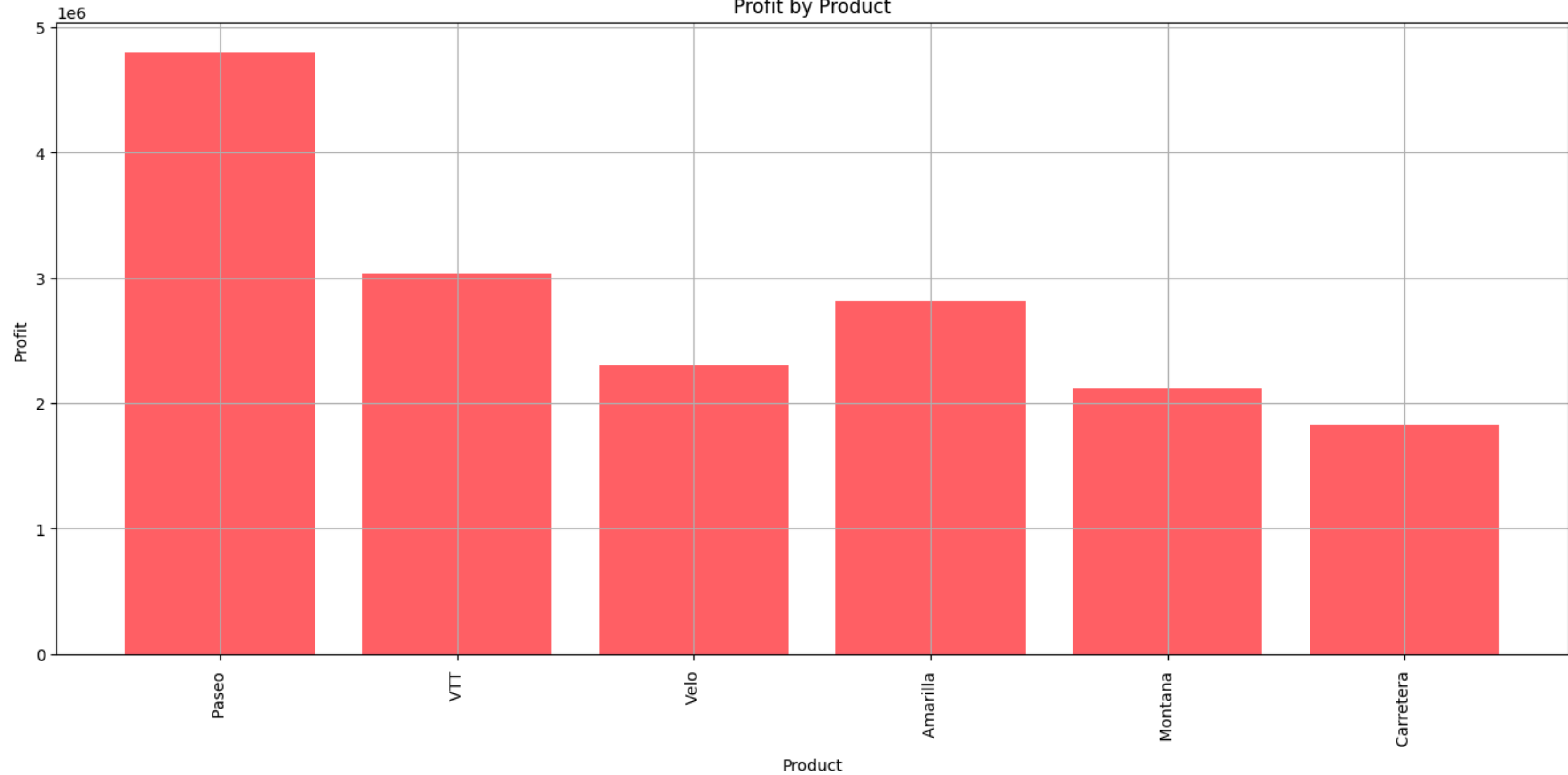
Recommendations

- Focus growth efforts on Small Business and Government.
- Review pricing and cost structure for Enterprise to turn sales volume into real profit.
- Revise or reduce investment in weak segments (Channel Partners, Midmarket).
- Leverage seasonal peaks by planning marketing campaigns during high-demand periods.

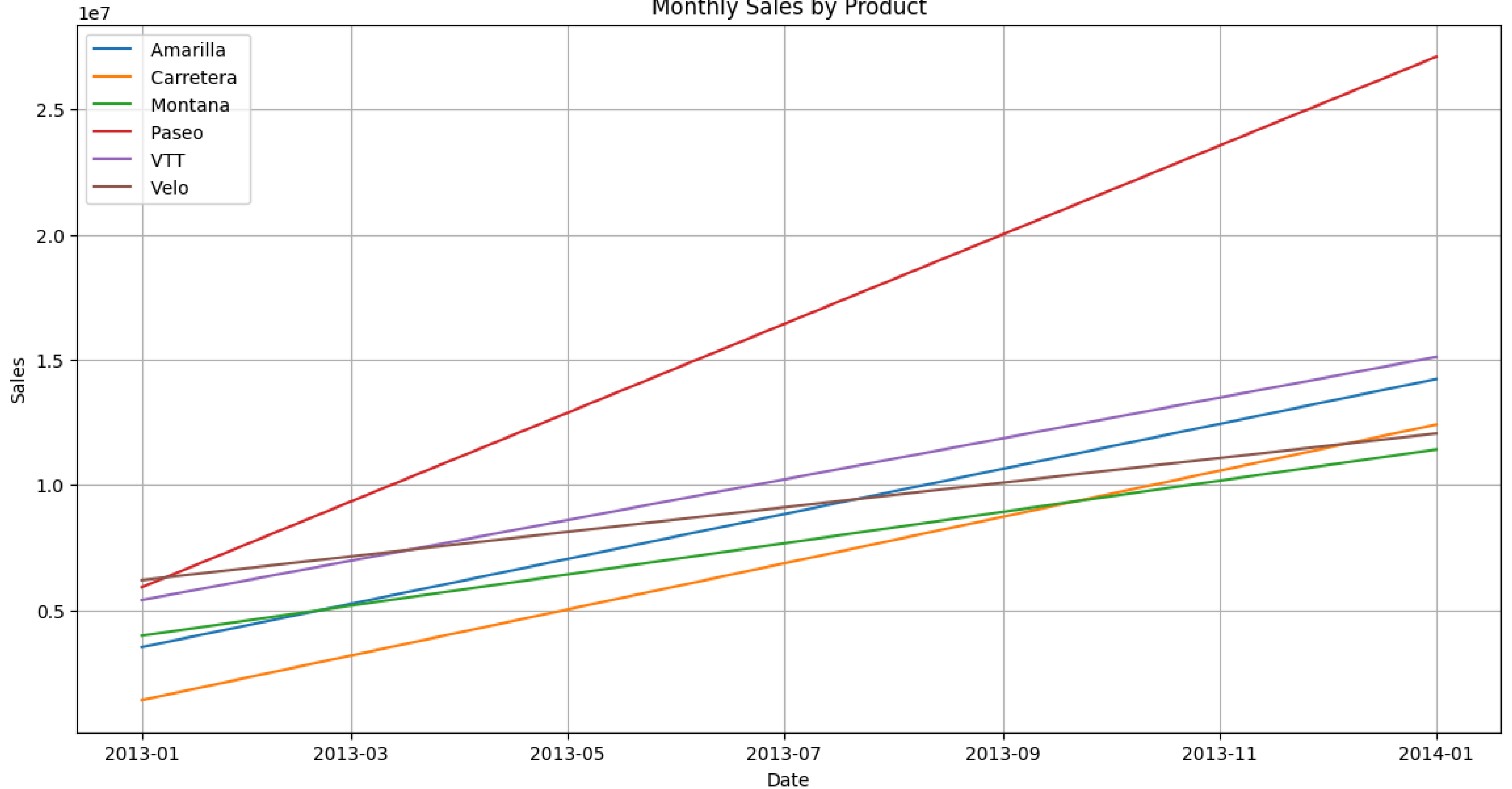


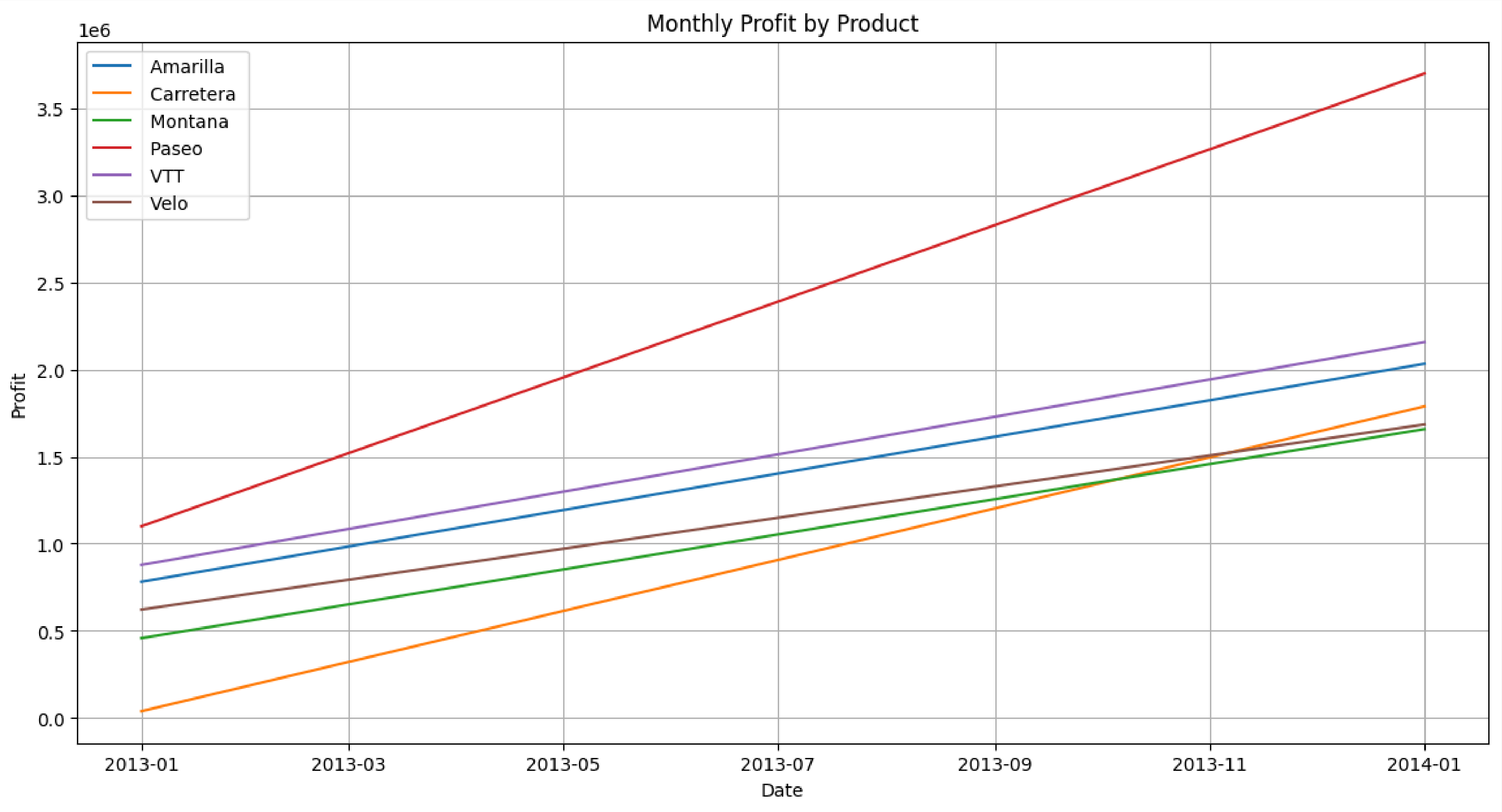


Profit by Product



Monthly Sales by Product





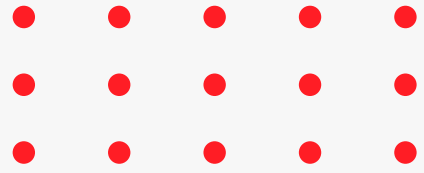


Insights

- Paseo is the top performer in both sales and profit — strong demand and brand position.
- VTT and Amarilla show solid mid-range performance — stable contributors.
- Carretera and Montana have low sales and profit — need attention.
- Sales and profit move consistently — pricing and margins appear well-aligned.



Recommendations

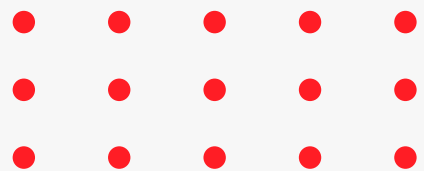
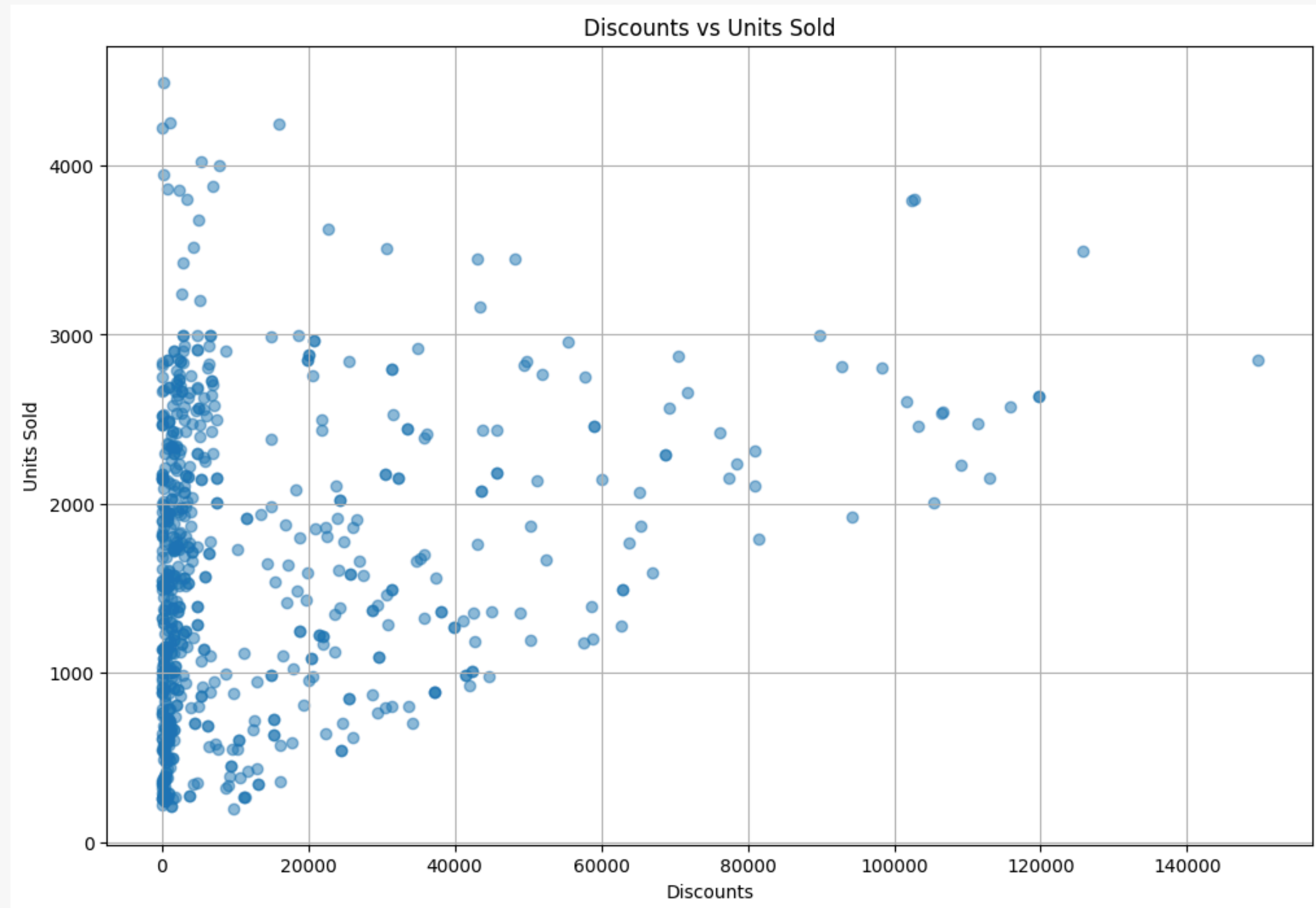
- Invest more in Paseo — expand marketing, production, or product line extensions.
 - Investigate weak products (Carretera, Montana) — analyze market fit, pricing, or awareness.
 - Boost mid-tier products (VTT, Amarilla) — improve efficiency or bundle with Paseo.
 - Optimize resources — focus spending on high-ROI products, reduce low-return efforts.
- 

Insights

- Discounts don't strongly increase sales — weak correlation.
- Most sales happen with low discounts, so customers aren't very price-sensitive.

Recommendations

- Reduce unnecessary discounts — protect margins.
- Use targeted promotions only for slow-moving items.
- Focus on marketing & product value, not heavy discounting.





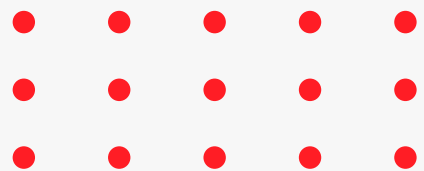
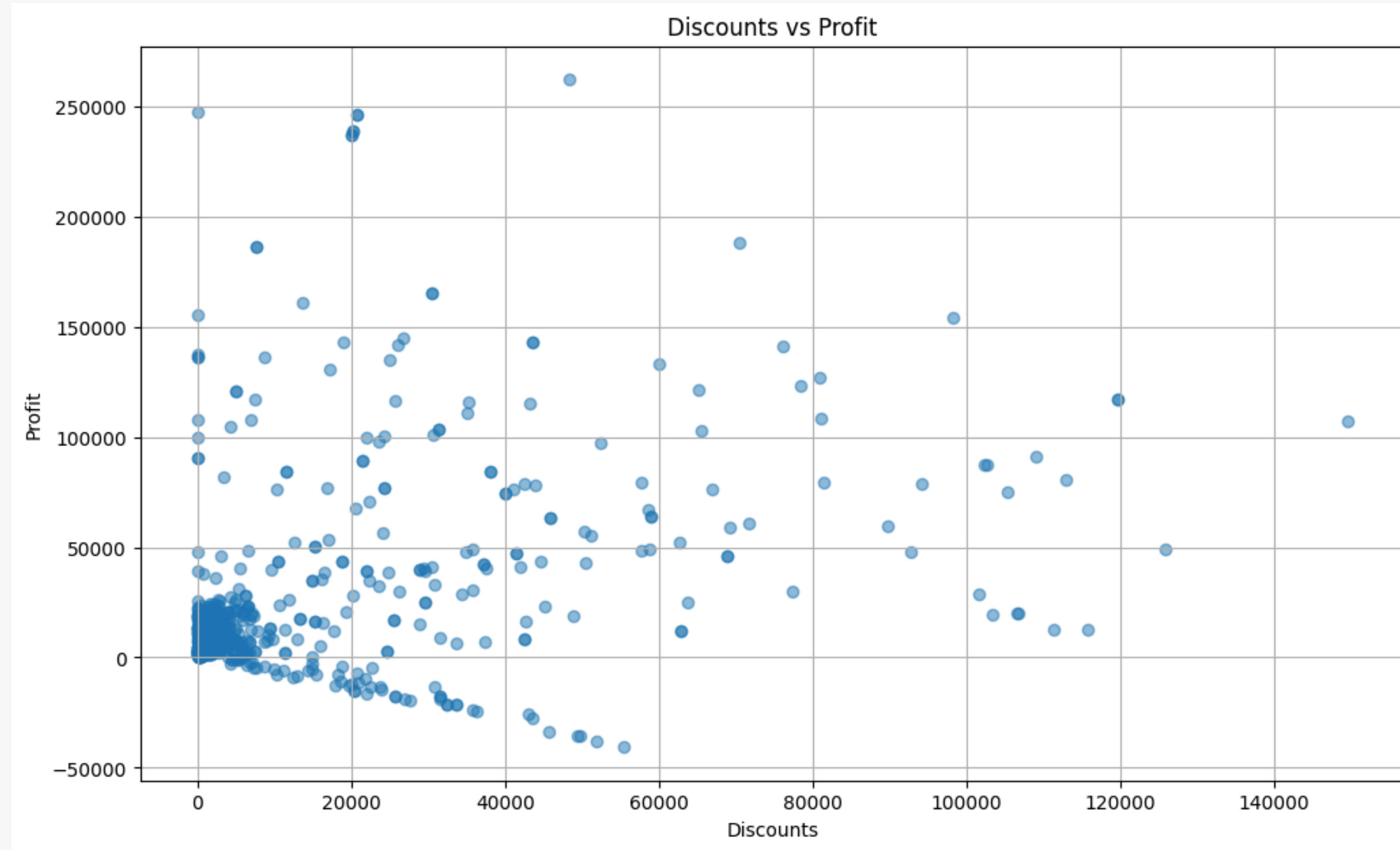
Insights

- High Discounts = High Risk: A clear pattern shows that large discounts (>\$75k) frequently lead to significant losses.
- We are losing money even on deals with ZERO discount.
- A cluster of highly profitable deals exists in the low-to-mid discount range (\$20k - \$70k).



Recommendations

- **Replicate Success:** Analyze the "Sweet Spot" deals to understand what makes them profitable (product, customer, etc.).





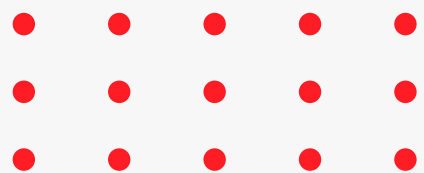
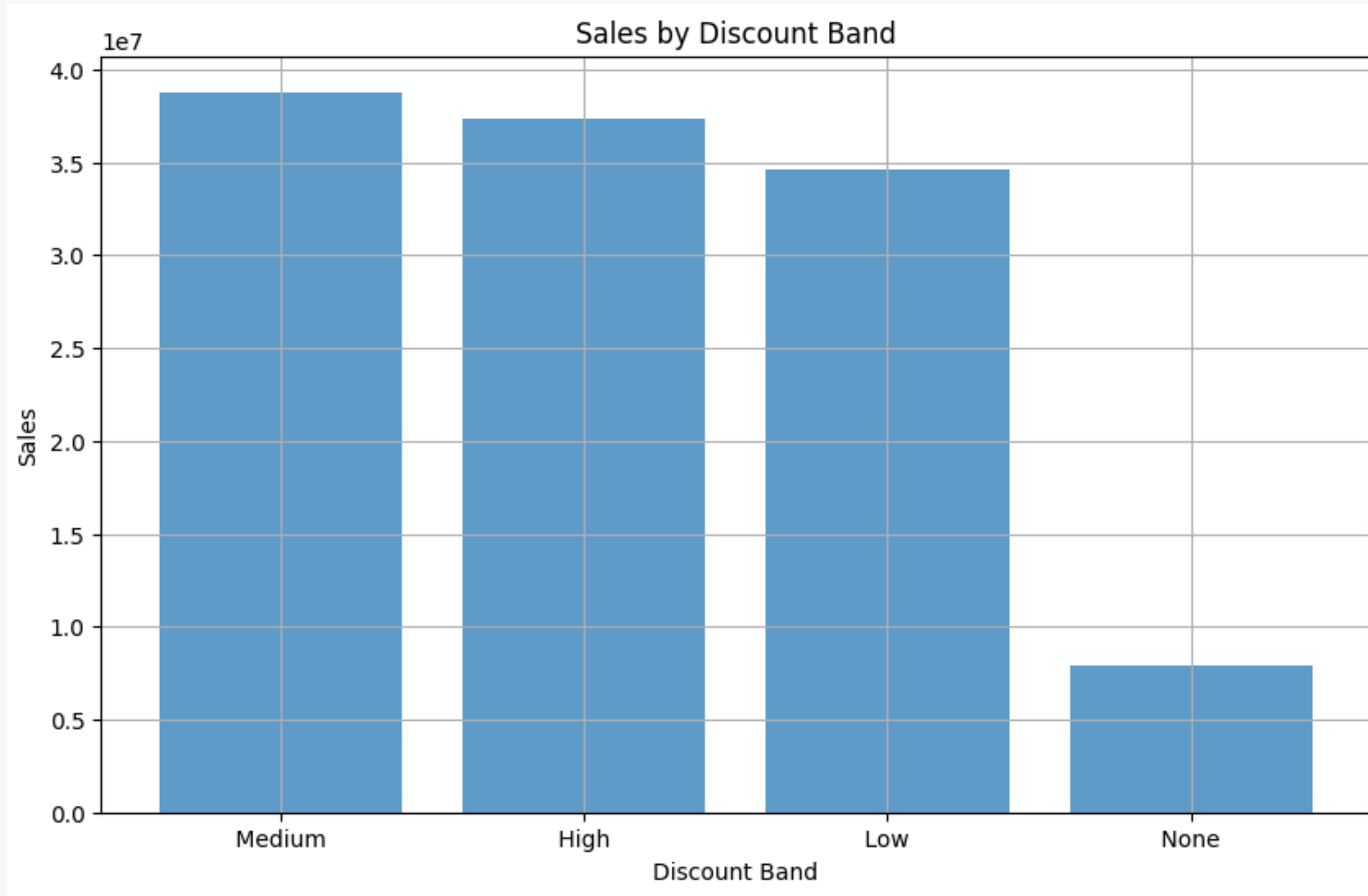
Insights

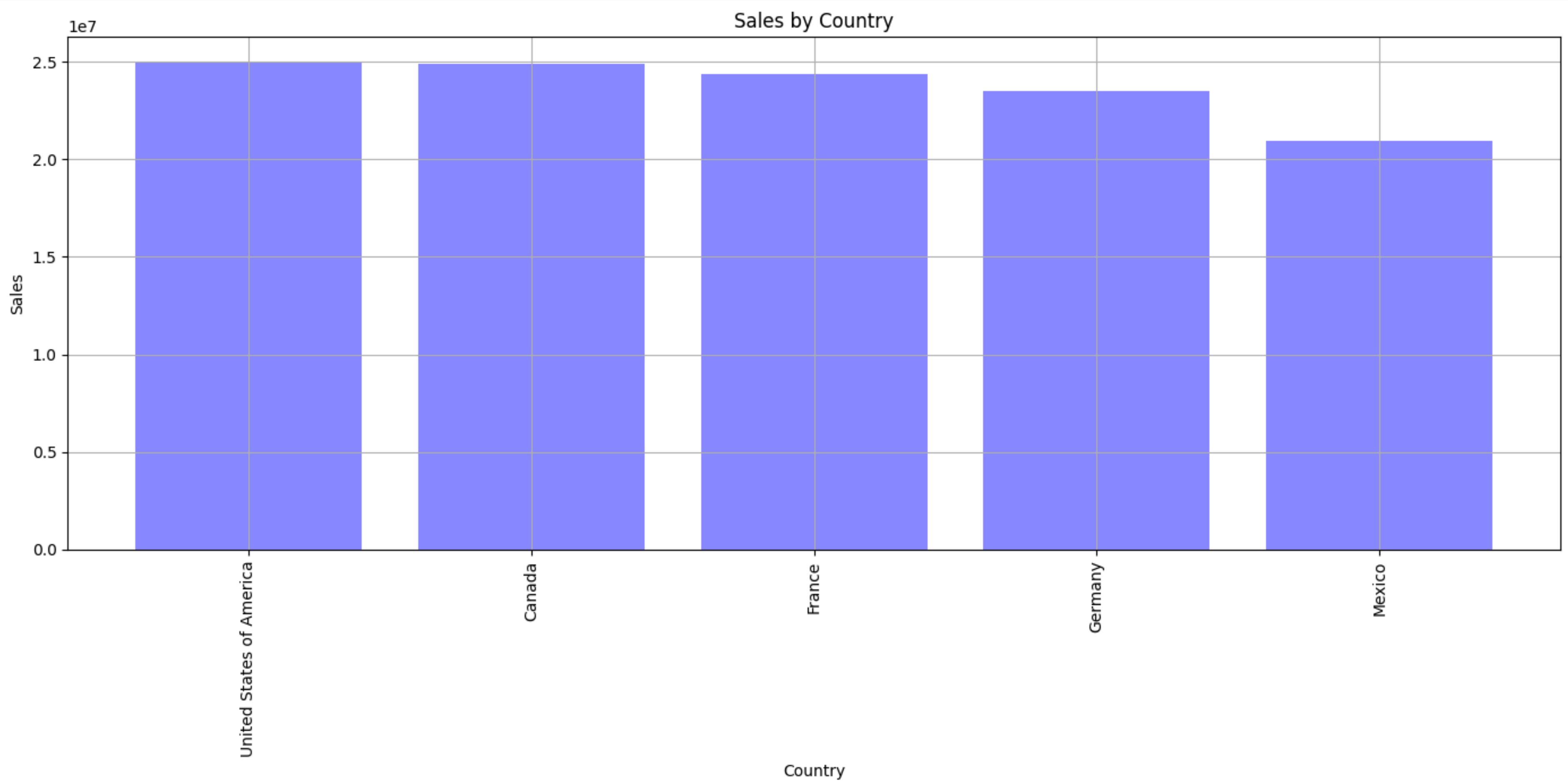
- Sales are highest under Medium and High discounts, slightly less for Low — so some discounting helps drive sales.
- No-discount sales are very low, showing discounts do influence purchase decisions.
- Combined with the previous chart: too high discounts don't always mean much higher sales, but no discount clearly hurts volume.

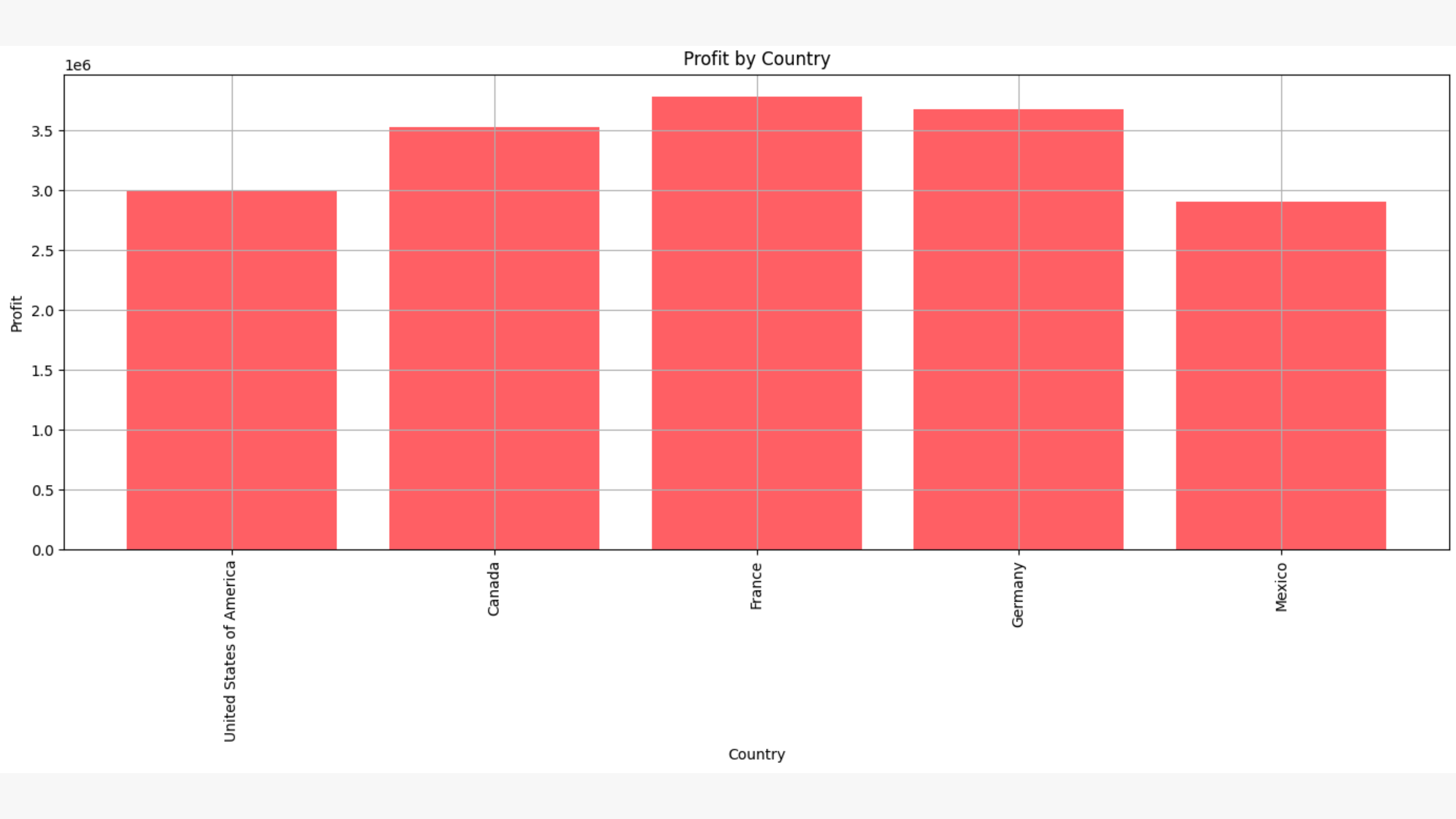


Recommendations

- Maintain moderate discounts (Medium/High) — they balance sales boost and margin control.
- Avoid over-discounting — since it doesn't significantly raise sales further.
- Don't remove discounts entirely — zero-discount leads to much lower sales.
- Test optimal discount range — find the "sweet spot" that maximizes both sales and profit.







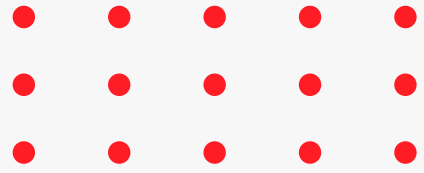


Insights

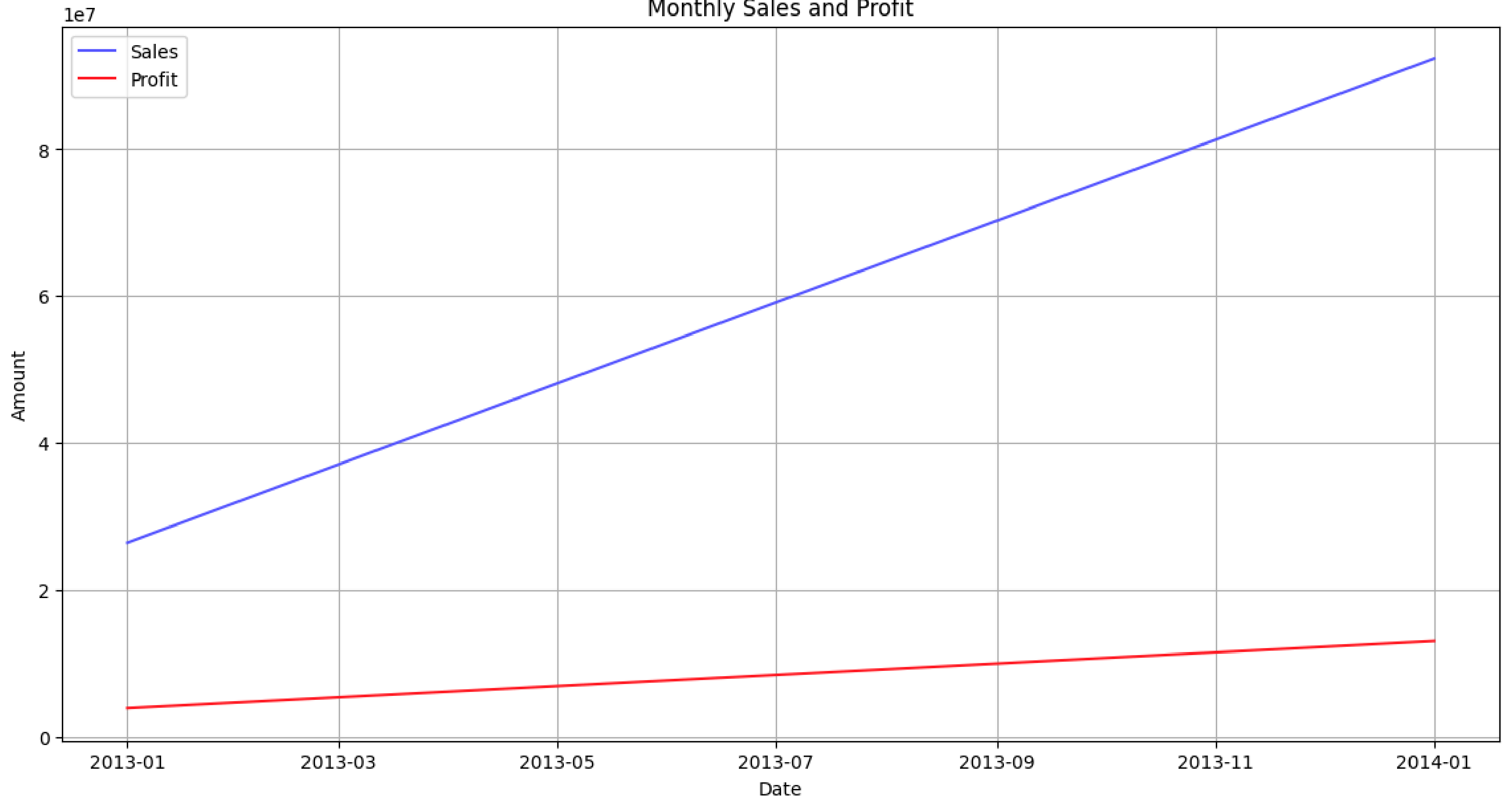
- USA is the top revenue market but low in profitability.
- Germany and Mexico generate sales but almost no profit — draining company resources.
- Canada delivers high profits with moderate sales — strong efficiency model.

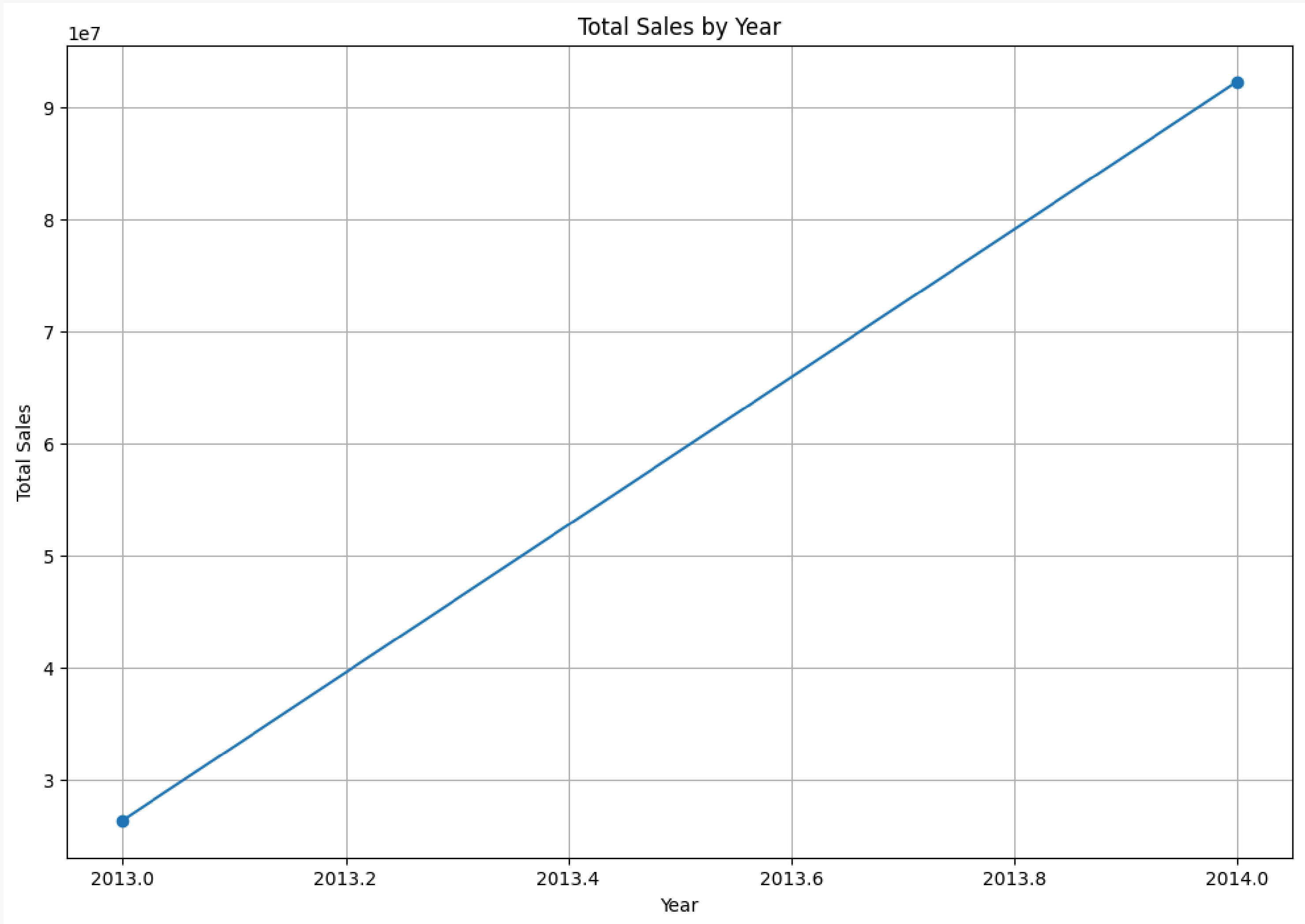


Recommendations

- Audit the USA to identify cost inefficiencies and shift focus to profit margin growth.
 - Give Germany and Mexico 90 days to present a profitability plan — otherwise, restructure or exit.
 - Study Canada's model — replicate its pricing and cost strategy to boost efficiency.
- 

Monthly Sales and Profit



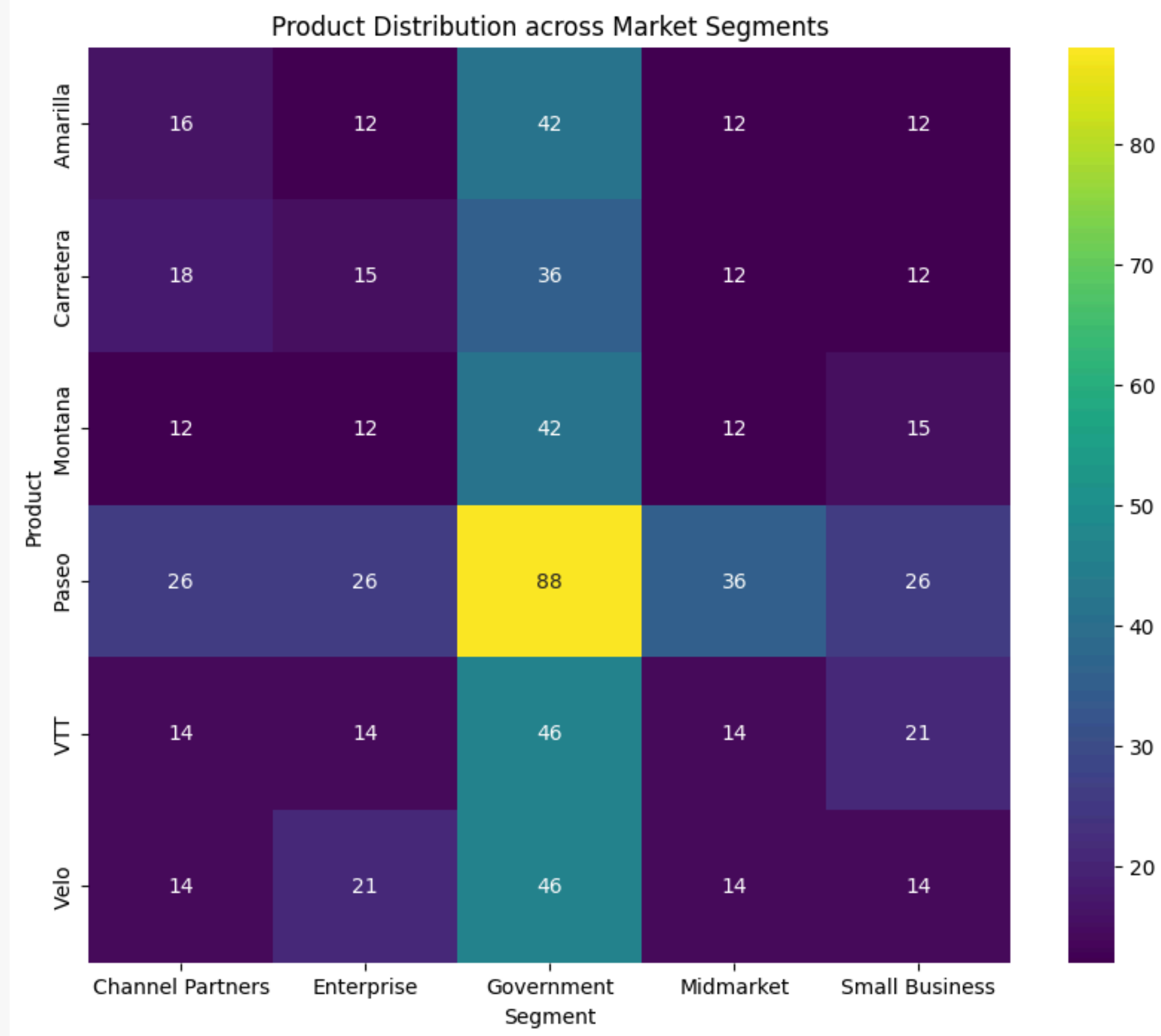


Insights

- Hero Product: Paseo dominates Government segment.
- Workhorses vs Question Marks: Carretera performs steadily; VTT & Velo underperform.

Recommendations

- Defend and expand Paseo in Government; replicate success in Enterprise.
- Bundle Carretera with Paseo to increase deal size.
- Give VTT & Velo a 90-day “save or kill” evaluation.

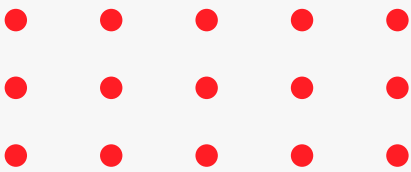
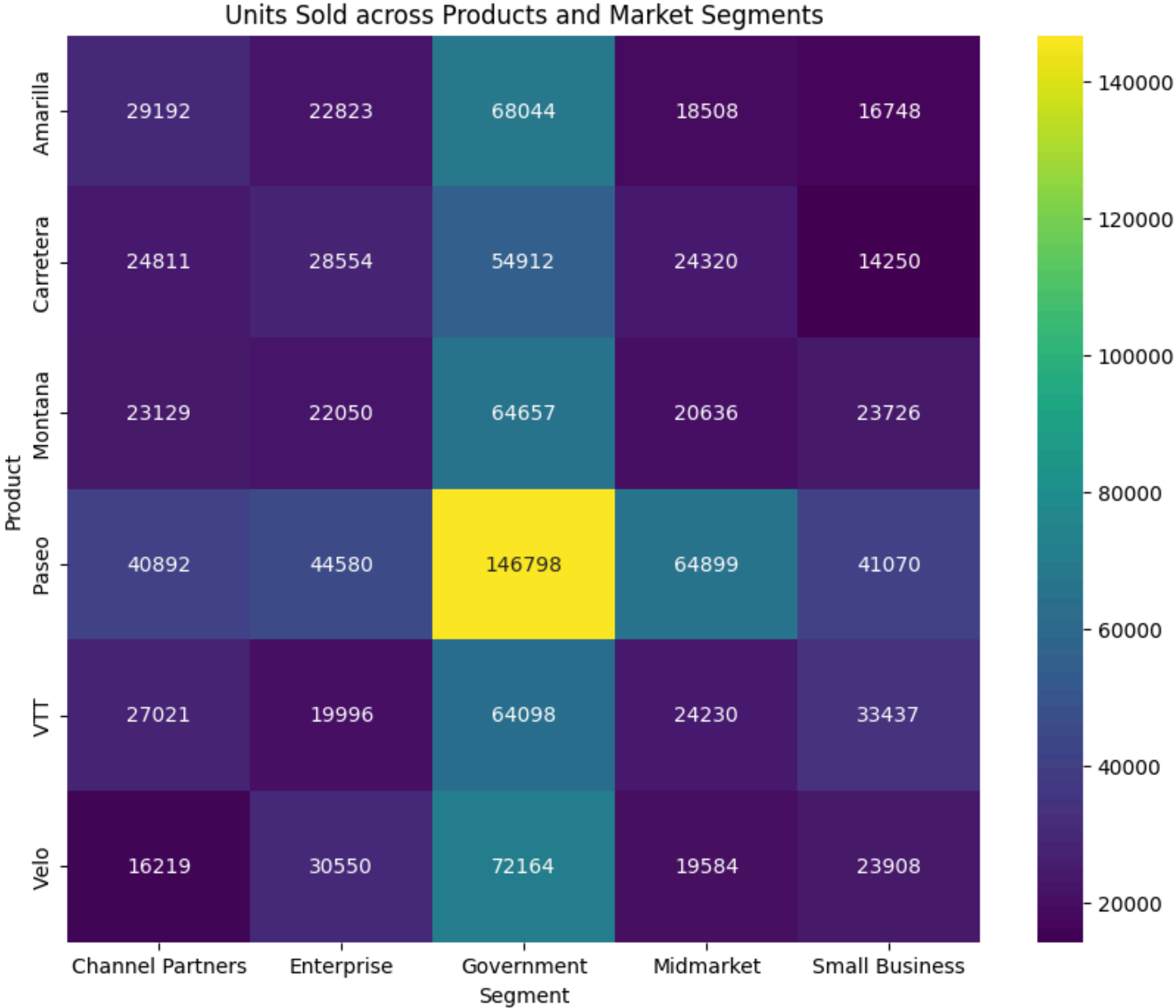


Insights

- Paseo–Government: Main volume driver but a single point of failure.
- VTT & Velo: Low-volume products draining resources.
- White Space: Huge untapped potential in Enterprise & Small Business segments.

Recommendations

- Fortify Paseo–Government: Create a dedicated key account team; use success as social proof to enter Enterprise.
- Eliminate Drains: Give VTT/Velo 60 days to prove growth or discontinue and reallocate resources.
- Exploit White Space: Launch “Paseo for Enterprise” pilot; offer higher commissions for sales in new segments.

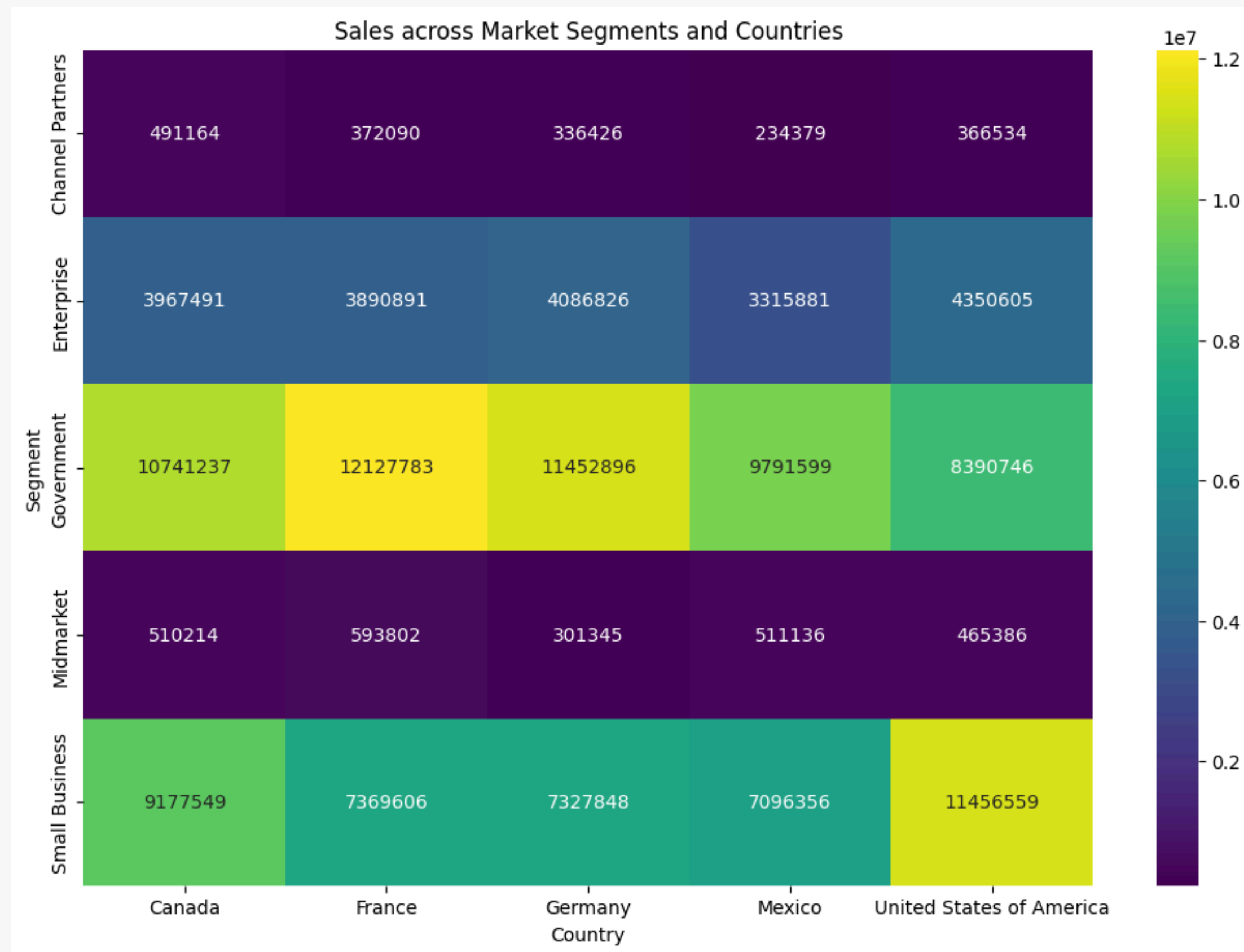


Insights

- US dominates sales — strongest in Enterprise & Midmarket.
- France's Government segment is an exceptional success.
- Germany & France perform moderately; Canada & Mexico underperform.
- Small Business & Channel Partner are weakest segments.

Recommendations

- Increase focus and investment in US Enterprise & Midmarket.
- Study and replicate France's Government success model.
- Tailor strategies for Germany & France; test pilots in Canada & Mexico.
- Redesign Small Business offering and Channel Partner program.



Thanks!

You can check out the full project,
dataset, and notebook from [here](#)

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