

Analysis Report of

ADVENTURE WORKS ANALYSIS

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Introduction

❖ Before starting of this project I read the details and requirement of this company and I observe that they are facing major operational problems

- Adventure Works Cycles is looking to **broaden its market share by targeting more sales.**
- company wants to reach and **attract additional customers who** frequently **use** social or online **e-commerce** platforms.
- And wants to **lowering or reducing** the items of **COGS** which results in lower overall COGS.

so I hope my project will met their requirements, my project and their calculation is totally based on their provided dataset and further assumptions I take for making the calculated columns on Accounting Norms.

- I. **Gross profit is Selling price-production cost.**
- II. **Net profit is selling price-production cost-freight-tax this is result of PAT.**

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EXECUTIVE SUMMARY

● KEY PERFORMANCE INDICATORS



TOTAL SALES

YoY Growth



PRODUCTION COST

Operational Expenses



TOTAL PROFIT

Above Target



PROFIT MARGIN

Healthy Efficiency

Operational Overview

Total Orders
60.40K

Total Customers
18.4K

Weekday sales 71.93%

Weekend Sales 28.07%

Demand is significantly higher during weekends.

Strategic Highlight

❑ Robust Margin Profile

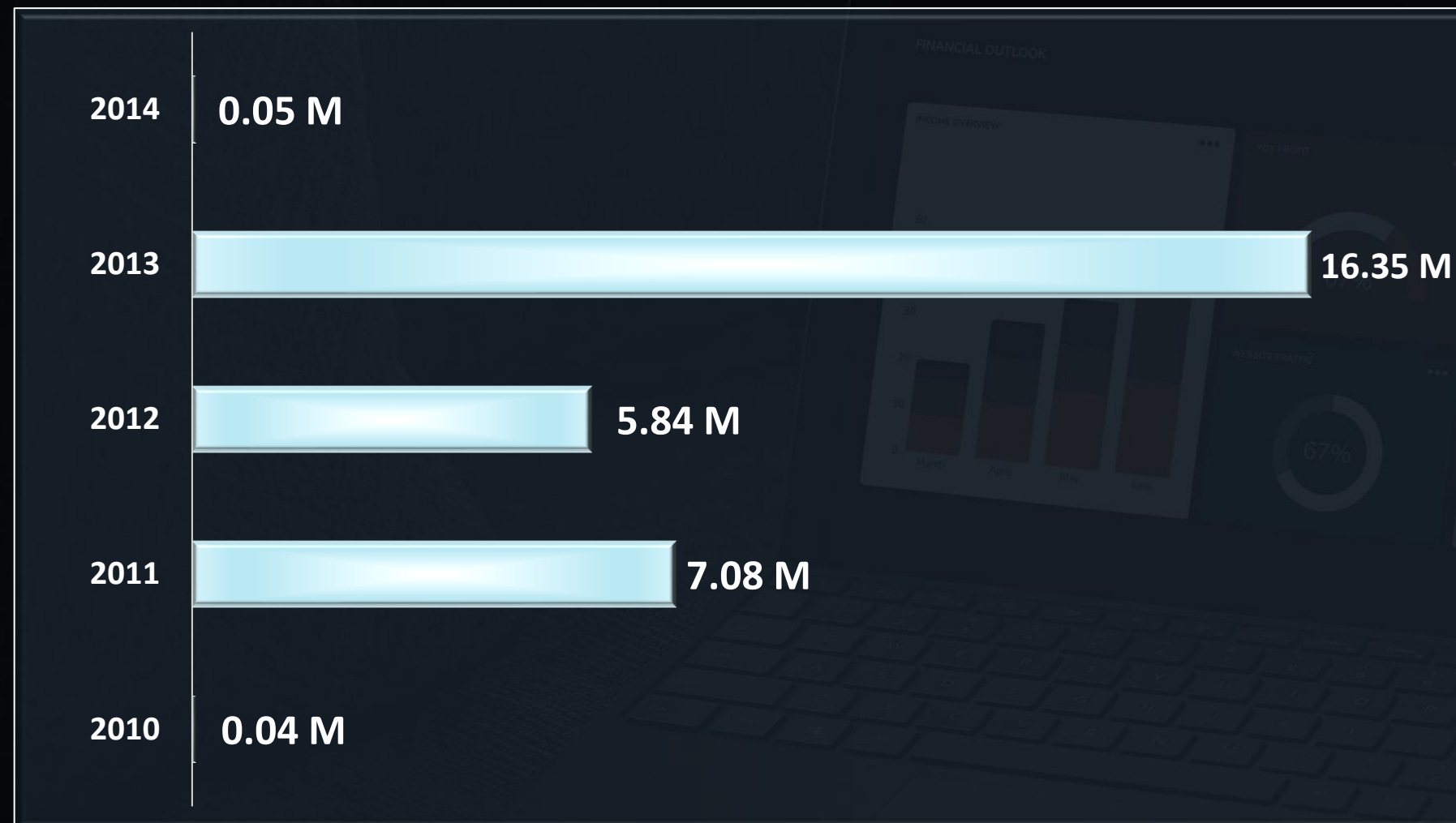
Maintaining a profit margin above 41% indicates strong pricing power and controlled production costs despite scaling volume.

❑ Multi-Year Growth Trajectory

Consistent sales growth from 2010 to 2013 showcases effective market penetration and successful product adoption strategies.

Sales by Year

2013
≈ 16.35 M



Observation

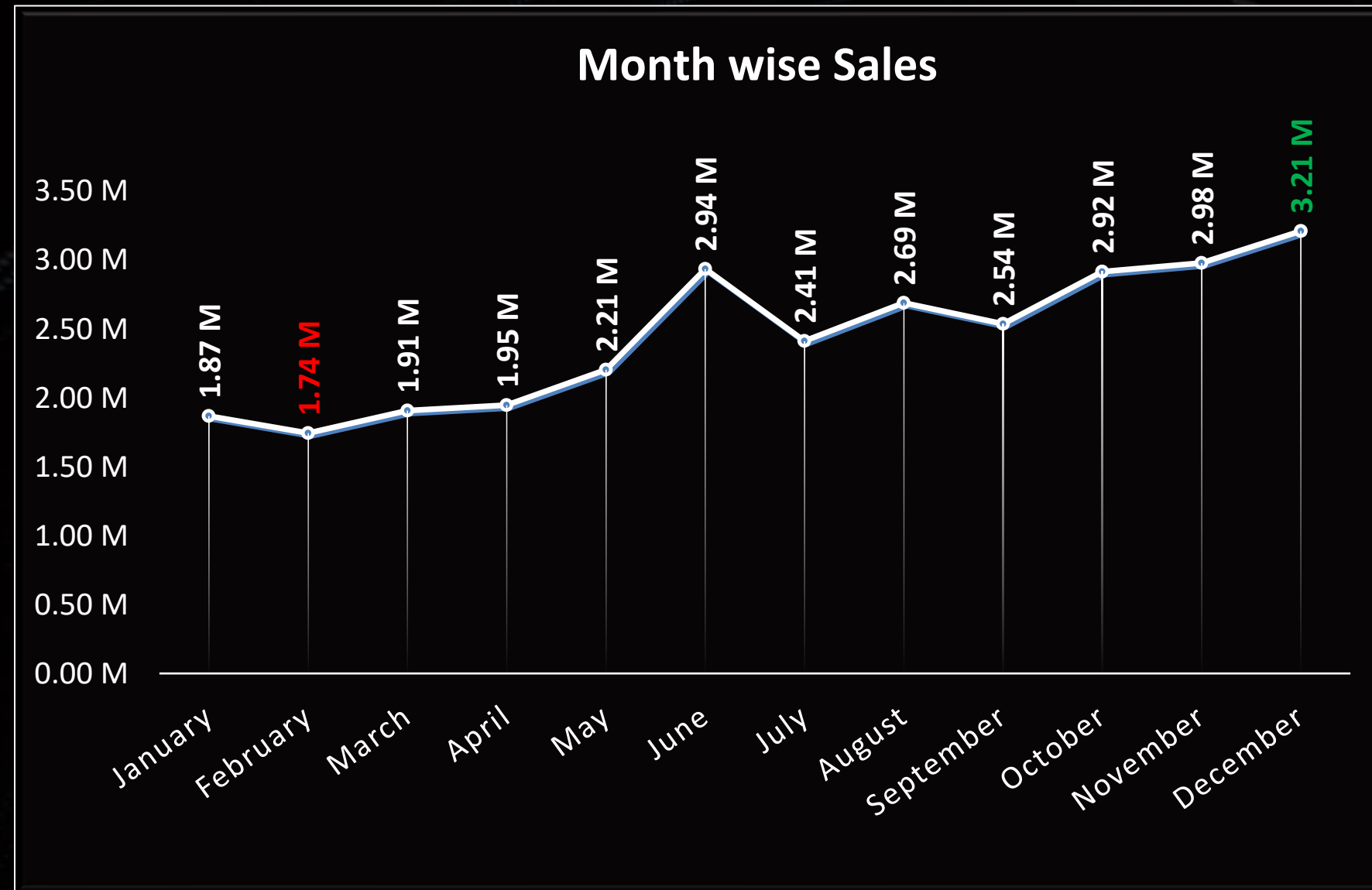
- ❖ 2013 records the highest sales is 16.35M, showing a significant rebound and peak performance.
- ❖ in year 2011 sales is 7.08m but in 2012 it is 5.84m this shows year over year decline
- ❖ May be due to reduced demand or lesser impact of promotional campaigns.

Business Impact

- ❖ Even though total sales in 2012 decreased compared to 2011 Sales still remained approximately 70% higher than production costs.
- ❖ Operational efficiency remained stable and controlled.

Sales by Month

December
≈ 3.21 M



Observation

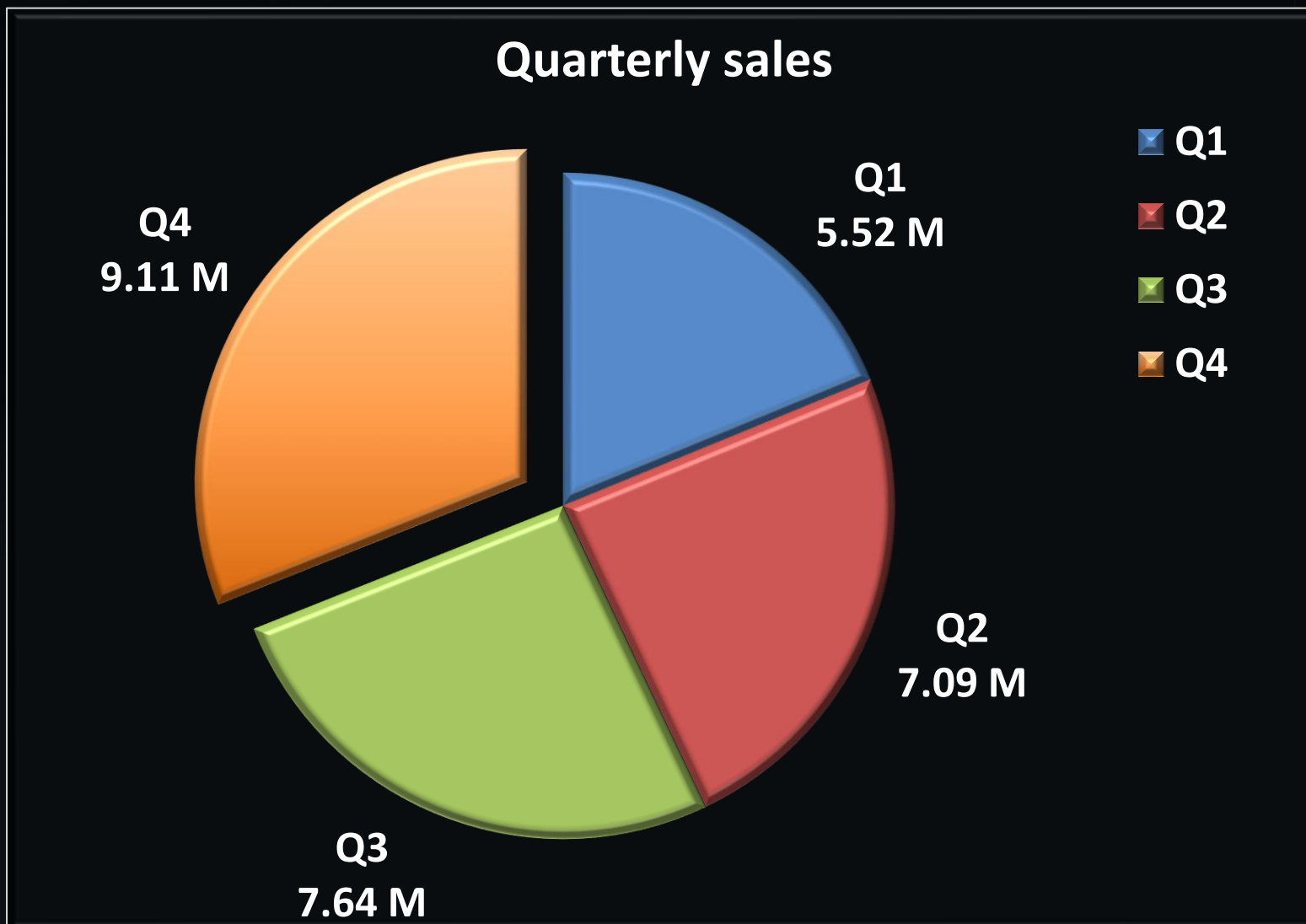
- ❖ Across all completing years June and last 3 months of year show peak sales level especially prominent in 2013, where sales steadily increase toward year-end.
- ❖ Earlier months of the year generally show moderate to lower sales

Business Impact

- ❖ Strong June performance sets the sales momentum for the second half of the year, directly influencing Q3 stability and Q4 peak outcomes.
- ❖ June performance impacts inventory flow, cash cycle, forecast accuracy and planning accuracy.

Sales by Quarters

Q4≈31%



Observations

- ❖ Across all completed quarters, Q4 contributes a significant share of annual revenue more about 31%.
- ❖ Q4 (Oct–Dec) emerges as the strongest quarter, aligning with the year-end sales surge observed in month-wise analysis.

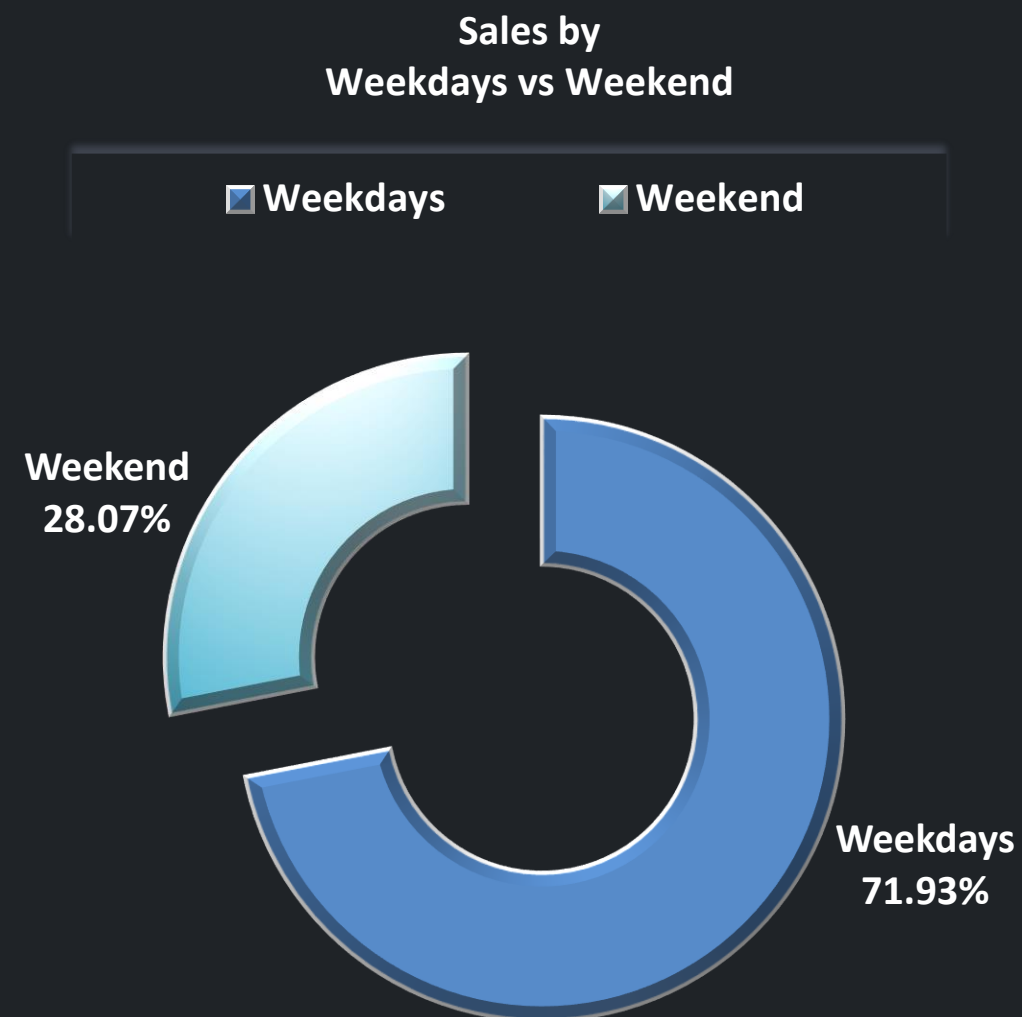
Business Impact

- ❖ Since business is more concentrated in specific period, over all 30% of revenue generated from Q4 so it become more important and any type of distortion effect the overall profit.
- ❖ Poor performance in those quarters can significantly reduce yearly income.
- ❖ Strengthening these quarters can maximize profitability.

Sales by Weekdays vs Weekend

Weekdays
≈ 72%

Weekends
≈ 28%



Observations

- ❖ Most purchases are likely to happen on office hours of working days of organization.
- ❖ Weekday sales indicate planned and repeated purchases.
- ❖ Sales teams, logistics, and support functions are fully active on weekdays

Business Impact

- ❖ Weekend shopping is supplementary, not core.
- ❖ Weekday performance is critical to revenue stability.
- ❖ Any weekday disruption (holidays, strikes, downtime) could significantly affect sales.



Sales vs Production Cost

Sales
≈ 16.4 M

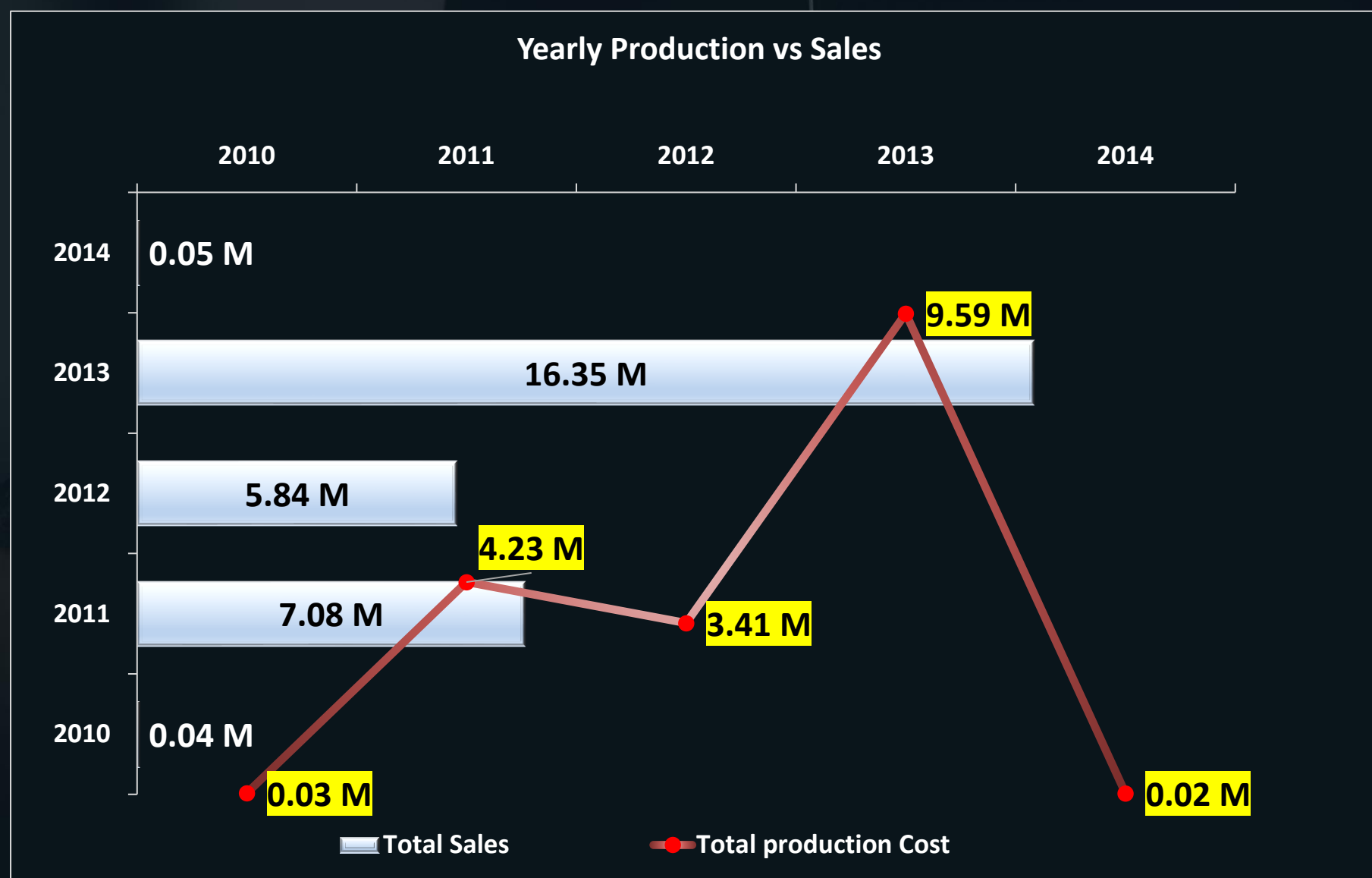
Cost
≈ 9.6 M

Observation

- ❖ This visual compares sales and production cost over years 2010-2014.
- ❖ Highest sale 16.4M and highest production cost 9.59M is in same year 2013.
- ❖ Sales are consistently around 70% higher than production costs in most observed years.
- ❖ In year 2012 when sales has dip, there's dip in Cost also.

Business Impact

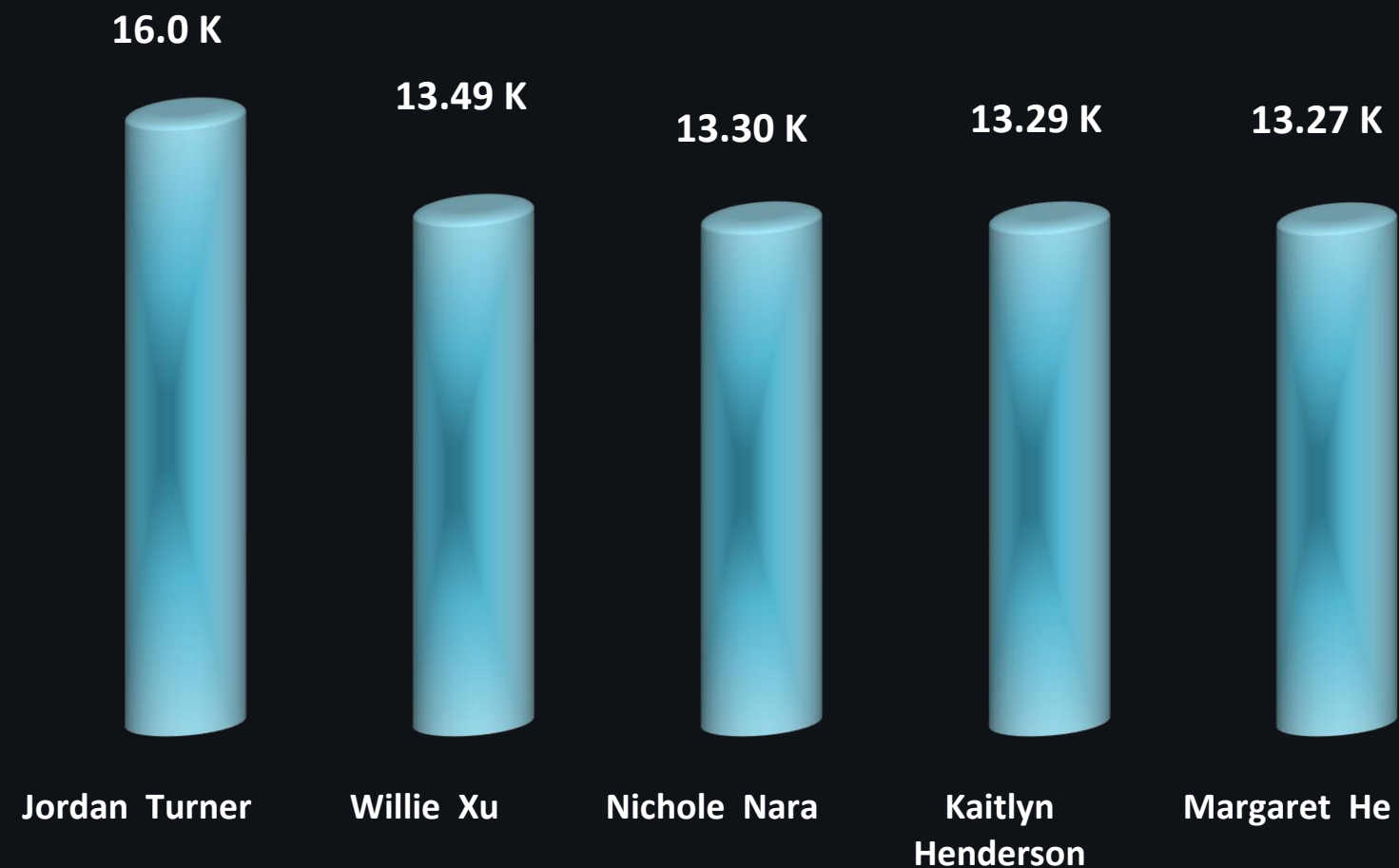
- ❖ Indicating strong gross margins and alignment Overall performance aligns with industry-acceptable profitability standards.



Sales by Top 5 Customers

Contribution
≈ 69 K

Top 5 Customers by Sales



Observation

- ❖ This chart highlights the top five customers who contribute the highest share of total sales among all customers.
- ❖ They contribute 69,289 of the total of 29.36m among 60398 customers.
- ❖ Among Top 5 customers **Jordan Turner** Made sales of 16K from 69K

Business Impact

- ❖ These customers represent a core revenue base and become strategically critical to the business.
- ❖ Their strong and consistent purchasing behavior indicates high trust, loyalty, and long-term value.

Sales by Country

USA
≈ 9.4 M

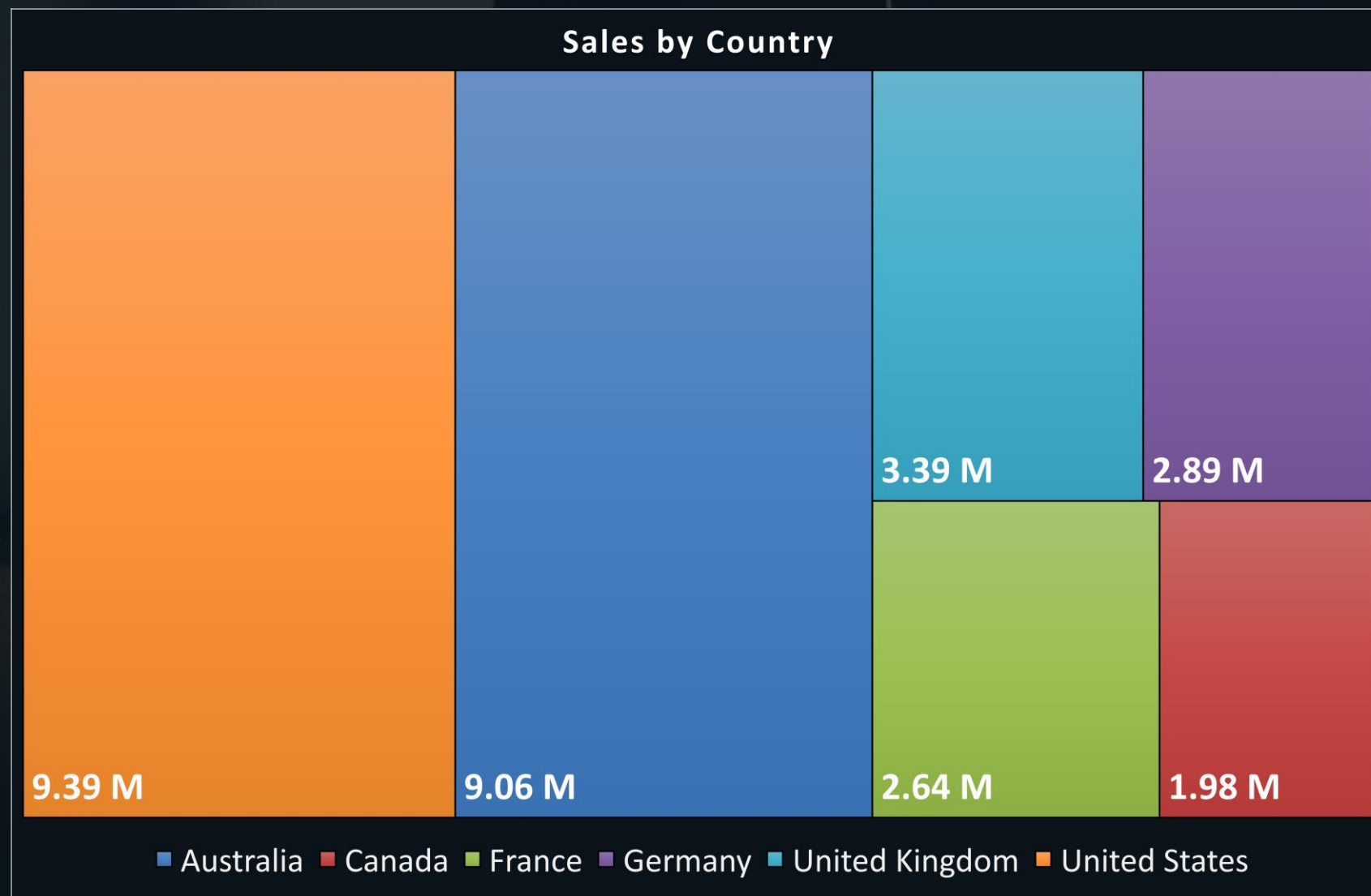
Australia
≈ 9 M

Observation

- ❖ Sales by Country analysis shows USA made highest sales of 9.39M among countries. Australia's total sales is 9.06M this is the 2nd highest country. But the difference between two is balanced and competitive.
- ❖ Australia leads in sales year by year but over the full period the USA slightly leads in total sales due to stronger peak-year performance (especially 2013).

Business Impact

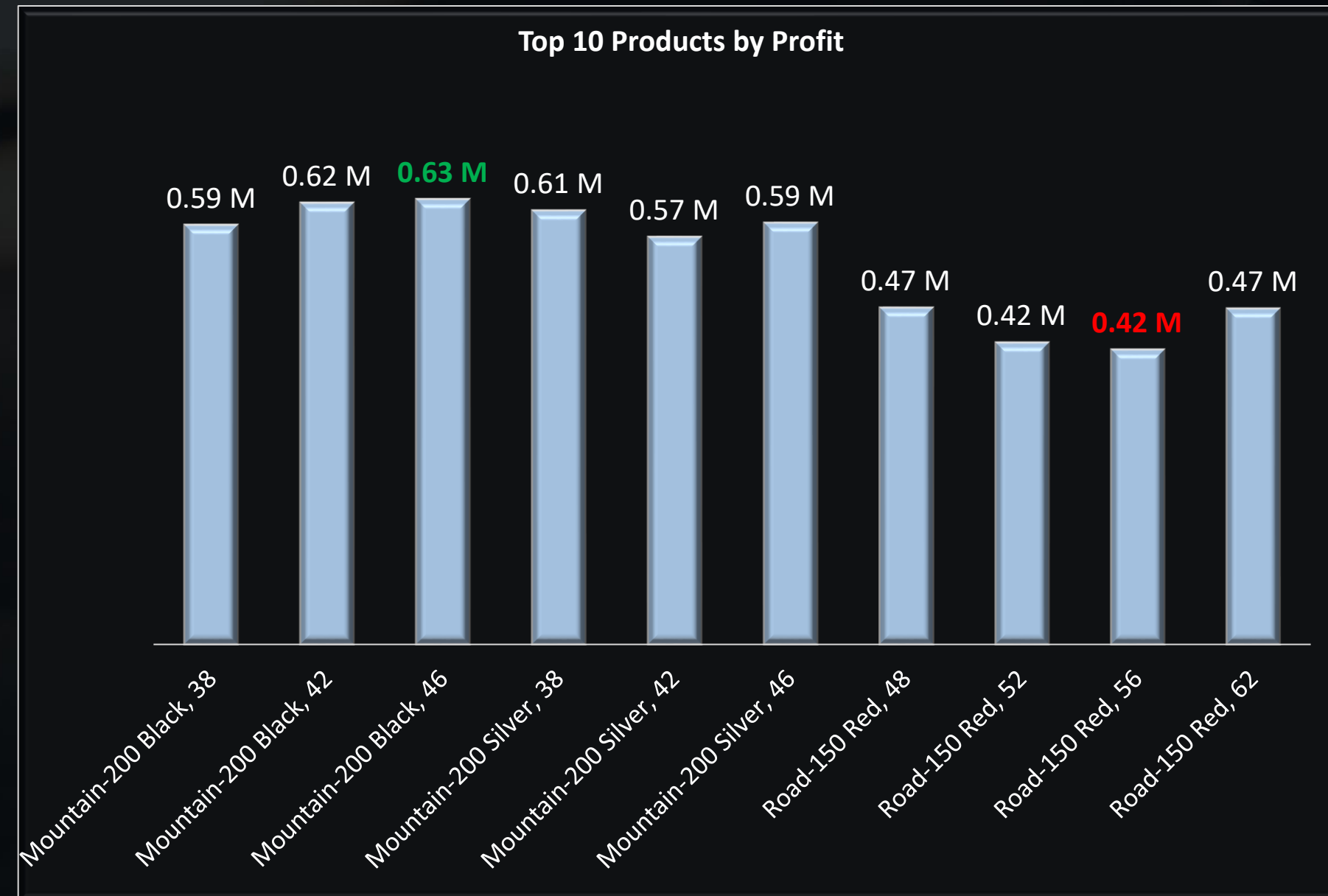
- ❖ There is balanced revenue contribution across Australia and the USA which reduce single country dependency.
- ❖ Balanced contribution improves revenue stability and risk diversification.
- ❖ Minor performance changes can shift overall leadership, so strategic planning is required always for better performance.



Profit by Top 10 Products

Highest
≈ 0.63 M

Lowest
≈ 0.42 M



Observation

- ❖ All top 10 products are bicycle models, dominated by Mountain-200 and Road-150 series.
- ❖ Mountain-200 Black, 46 leads with the highest profit of ₹0.63M, followed closely by Mountain-200 Black, 42 and Mountain-200 Silver, 38.
- ❖ Road-150 Red models consistently show lower profit margins, ranging between ₹0.42M–₹0.47M.

Business Impact

- ❖ High profitability of Mountain-200 Black models makes them strategic for revenue growth and margin stability.
- ❖ Lower profit from Road-150 Red models may dilute overall profitability if not optimized.
- ❖ Product mix decisions directly influence gross margin and inventory prioritization



Adventure Works Cycles

Sales

29.36M

Production

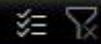
17.28M

Net Profit

9.00M

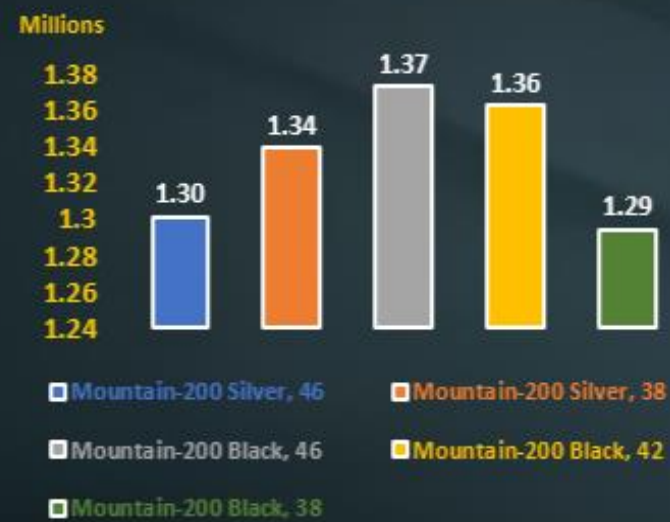
Profit Margin

42.85%

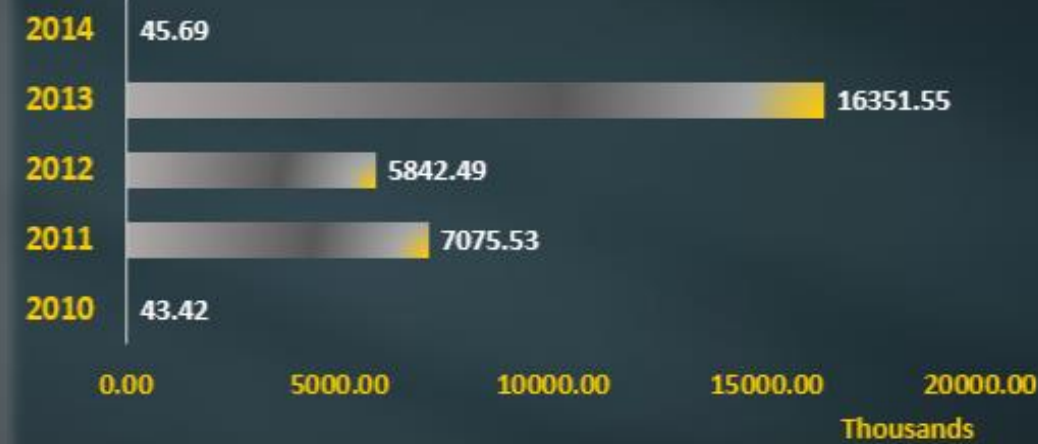


2010
2011
2012
2013
2014

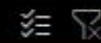
Top 5 Most Selling Product



Year wise Sales



Month Wise Sales



April
August
December
February
January
July
June
March
May
November
October
September

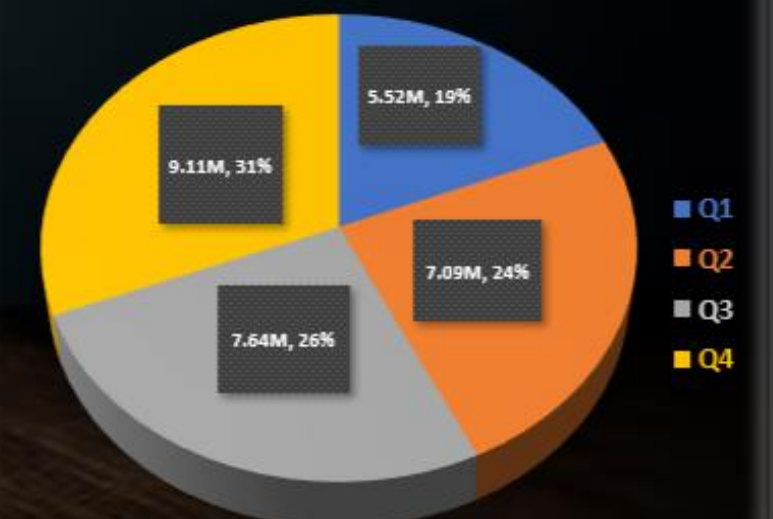
Sales vs Production cost



MONTHLY SALES TRENDLINE



Quarterly Proportion





SQL Queries

- -- 1. use adventure_works_cycles;
- -- 2. select * from sales;

- -- 3. Calculate the following fields from the Orderdatekey field (First Create a Date Field from Orderdatekey)
 - alter table sales add column Dates date;
 - update sales SET dates = STR_TO_DATE(orderdatekey, '%Y%m%d');
 - select dates from sales order by dates;

 - A. Year
 - alter table sales add column Years int;
 - update sales set years=year(dates);
 - select dates,years from sales order by years;
 - B. Monthno
 - alter table sales add column Month_no int;
 - update sales set Month_no=month(dates);
 - select dates,Month_no from sales order by month_no;
 - C. Monthfullname
 - alter table sales add column Month_Name varchar(12);
 - update sales set Month_Name= monthname(dates);
 - select dates,Month_name from sales order by Month_name;
 - D. Quarter(Q1,Q2,Q3,Q4)
 - alter table sales add column Quarters varchar(12);
 - update sales set Quarters=quarter(dates);
 - select dates,Quarters from sales order by quarters
 - E. YearMonth (YYYY-MMM)
 - alter table sales add column YearMonth varchar(20);
 - update sales set YearMonth = date_format(dates,'%Y-%b');
 - select dates,yearmonth from sales order by yearmonth;



SQL Queries

-- F. Weekdayno (counted week monthly)

```
alter table sales add column Weekday_No int;  
update sales set Weekday_no=weekday(dates)+1;  
select dates,weekday_no from sales;
```

-- G. Weekdayname

```
alter table sales add column Weekday_name varchar(12);  
update sales set Weekday_Name=dayname(dates);  
select dates,weekday_Name from sales;
```

-- H. FinancialMOnth month name financial year wise

```
alter table sales add column Financial_Month_Name varchar(15);update sales set Financial_Month_Name=DATE_FORMAT(DATE_ADD(dates,  
INTERVAL 3 MONTH),'%M');  
select dates,Financial_Month_Name from sales;  
select dates,month_name,Financial_Month_Name from sales;
```

-- I. Financial Quarter

```
alter table sales add column Financial_quarter varchar(2);  
update sales set Financial_quarter= CONCAT('Q',QUARTER(DATE_ADD(dates, INTERVAL 9 MONTH)));  
select dates,Financial_quarter from sales;  
select dates,quarters,Financial_quarter from sales;
```

➤ -- 4. Calculate the Sales amount using the columns(unit price,order quantity,unit discount)

```
alter table sales add column Sellingprice decimal(10,2);  
update sales set Sellingprice=OrderQuantity*UnitPrice-DiscoutAmount;  
select sellingprice from sales;select round(sum(sellingprice)/1000000,2) as Sellingprice from sales;
```

➤ -- 5. Calculate the Productioncost using the columns(unit cost ,order quantity

```
alter table sales add column Productioncost decimal(10,2);  
update sales set Productioncost=ProductStandardCost*OrderQuantity;select productioncost from sales;  
select round(sum(productioncost)/1000000,2) as Productioncost from sales;
```




SQL Queries

➤ -- 6. Calculate the Netprofit.

```
alter table sales add column Netprofit decimal(10,2);
update sales set Netprofit=OrderQuantity*UnitPrice-DiscoutAmount-ProductStandardCost*OrderQuantity-Taxamt-Freight;select netprofit from sales;
select round(sum(Netprofit)/1000000,2) as Netprofit from sales;
```

➤ -- 7. Create a Pivot table for month and sales (provide the Year as filter to select a particular Year)

```
select productkey,years,month_name,COUNT(*) AS sales_count,sum(sellingprice) as sellingprice FROM salesGROUP BY productkey,years,month_name ORDER BY ProductKey,years;
```

➤ -- 8. Create a Bar chart to show yearwise Sale

```
select years,sum(sellingprice) as sellingprice from sales group by years order by years;
```

➤ -- 9. Create a Line Chart to show Monthwise sales

```
select month_name,sum(sellingprice) as sellingprice from sales group by month_name order by month(str_to_date(month_name,'%M')) asc;
```

➤ -- 10. Create a Pie chart to show Quarterwise sales

```
select Quarters,sum(sellingprice) as sellingprice from sales group by quarters order by quarters;
```

➤ -- 11. Create a combinational chart (bar and Line) to show Salesamount and Productioncost together

```
select years,sum(sellingprice) as sellingprice ,sum(productioncost) as productioncost from sales group by years order by years;
```

➤ -- 12. Additional kpi Calculation for Net profit margin.

```
alter table sales add column Netprofit_margin decimal(10,2);
update sales set Netprofit_margin=((OrderQuantity*UnitPrice-DiscoutAmount-ProductStandardCost*OrderQuantity-Taxamt-Freight)/(OrderQuantity*UnitPrice-DiscoutAmount))*100;
select round(avg(Netprofit_margin),2) as Netprofit_margin from sales;
```




Adventure Work Cycles

Sales

29.36M

Production Cost

17.28M

Net Profit

9.00M

Profit Margin

☐ 2010☐ 2011☐ 2012☐ 2013☐ 2014☐ January☐ February☐ March☐ April☐ May☐ June☐ July☐ August☐ September☐ October☐ November☐ December

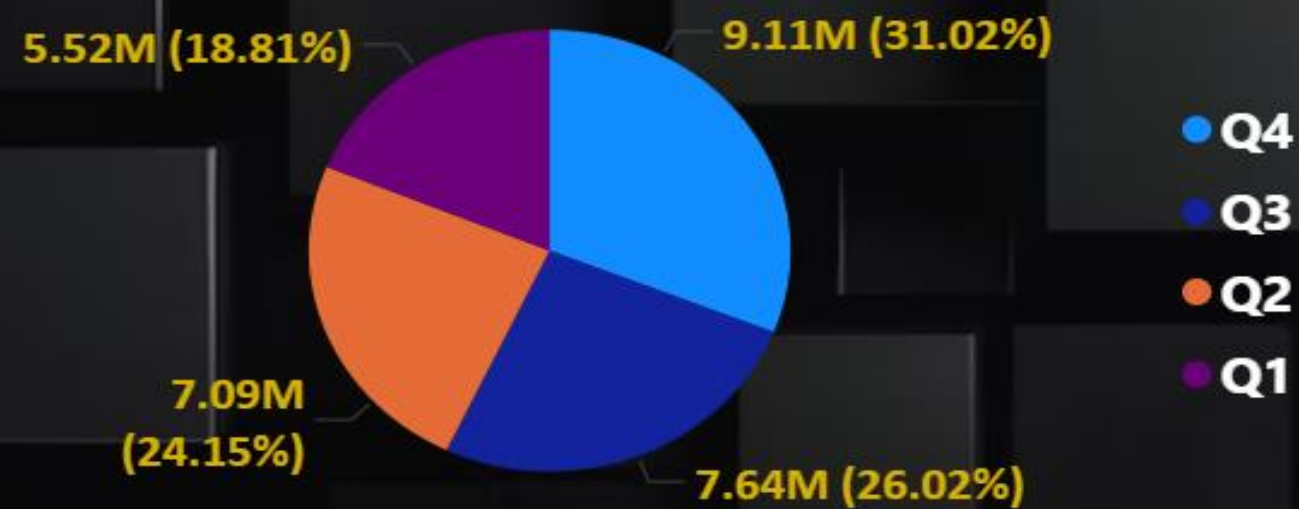
Sales vs Production Cost



Yearly Sales



Sales by Quarter



Monthly Sales





Adventure Work Cycles

Sales

29.36M

Production Cost

17.28M

Net Profit

9.00M

Profit Margin

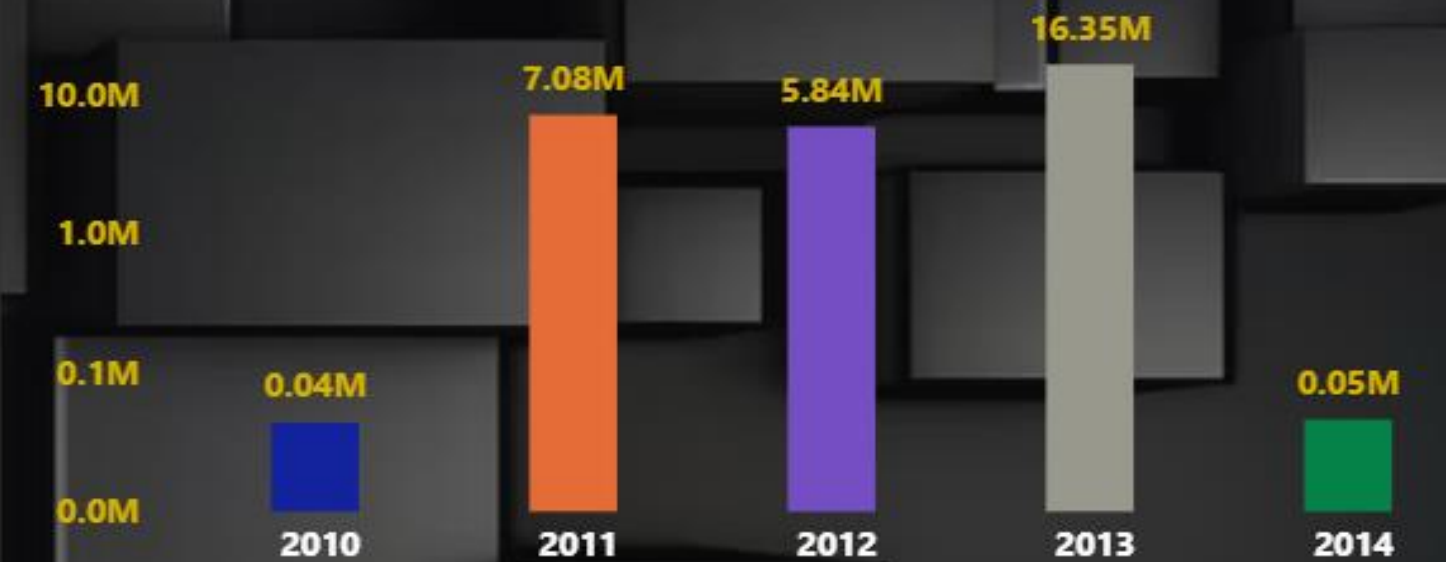


- ☐ 2010
- ☐ 2011
- ☐ 2012
- ☐ 2013
- ☐ 2014
- ☐ January
- ☐ February
- ☐ March
- ☐ April
- ☐ May
- ☐ June
- ☐ July
- ☐ August
- ☐ September
- ☐ October
- ☐ November
- ☐ December

Weekly Sales



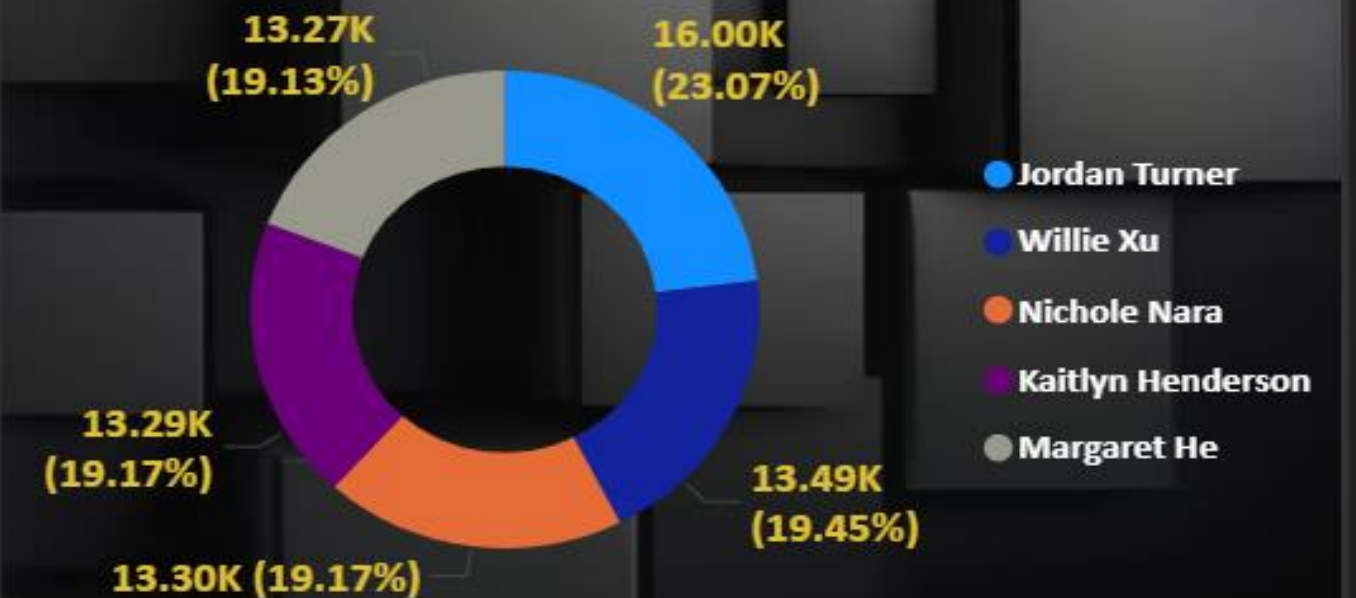
Sales by Year x Month



Countrywise Sales



Top 5 Customers





Adventure Works Cycle

Sales

29.36M

Production Cost

17.28M

Net Profit

9.00M

Profit Margin

42.85%

[Download Image](#)

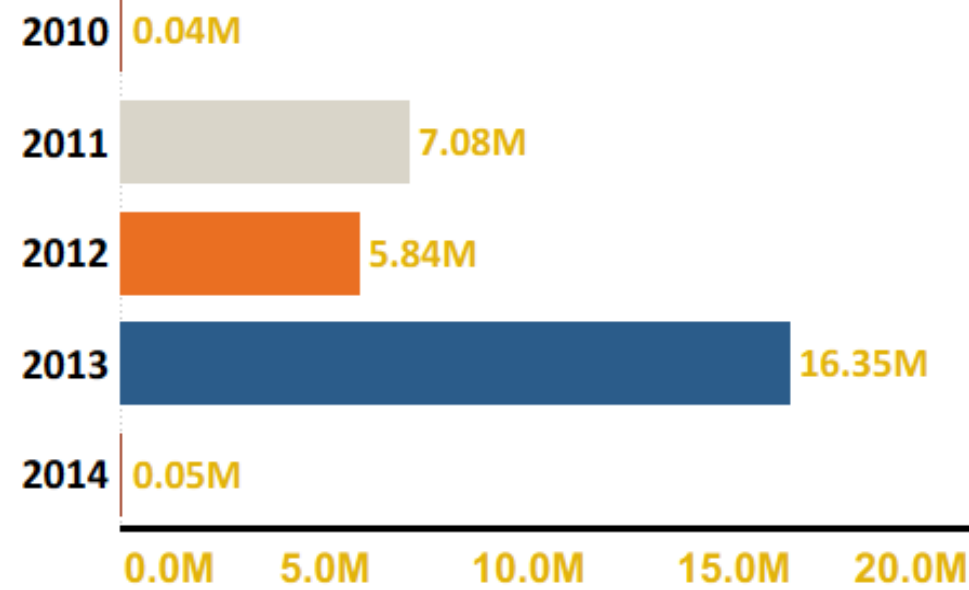
Years

- ✓ 2010
- ✓ 2011
- ✓ 2012
- ✓ 2013
- ✓ 2014

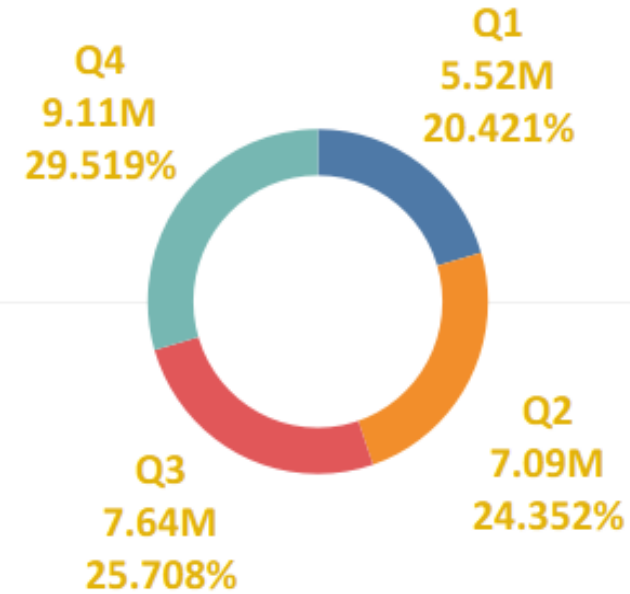
Months

- ✓ Jan
- ✓ Feb
- ✓ Mar
- ✓ Apr
- ✓ May
- ✓ Jun
- ✓ Jul
- ✓ Aug
- ✓ Sep
- ✓ Oct
- ✓ Nov
- ✓ Dec

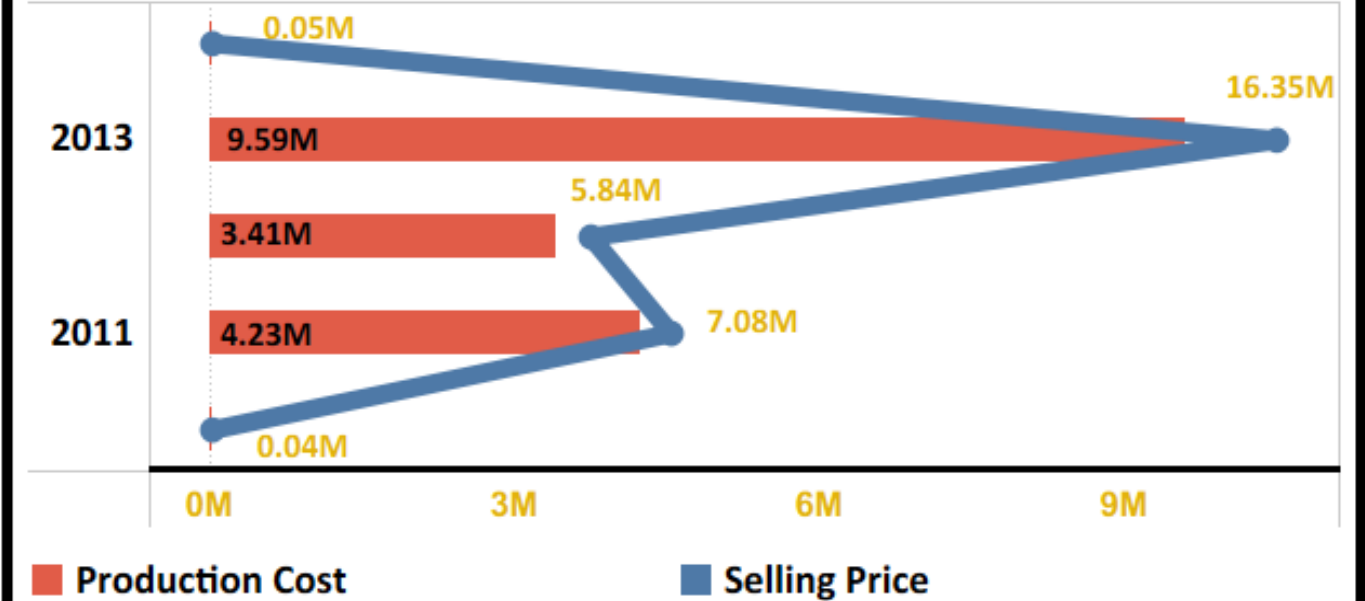
Sales by Year



Sales by Quarter



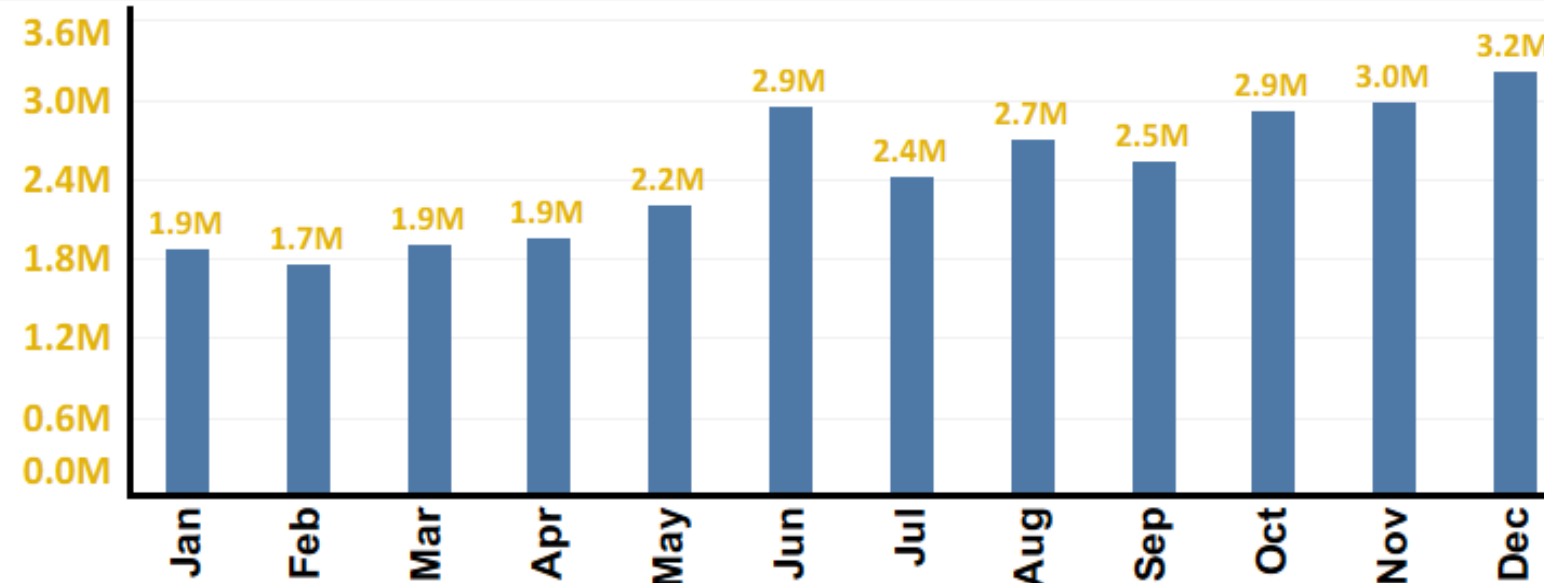
Sales by Year



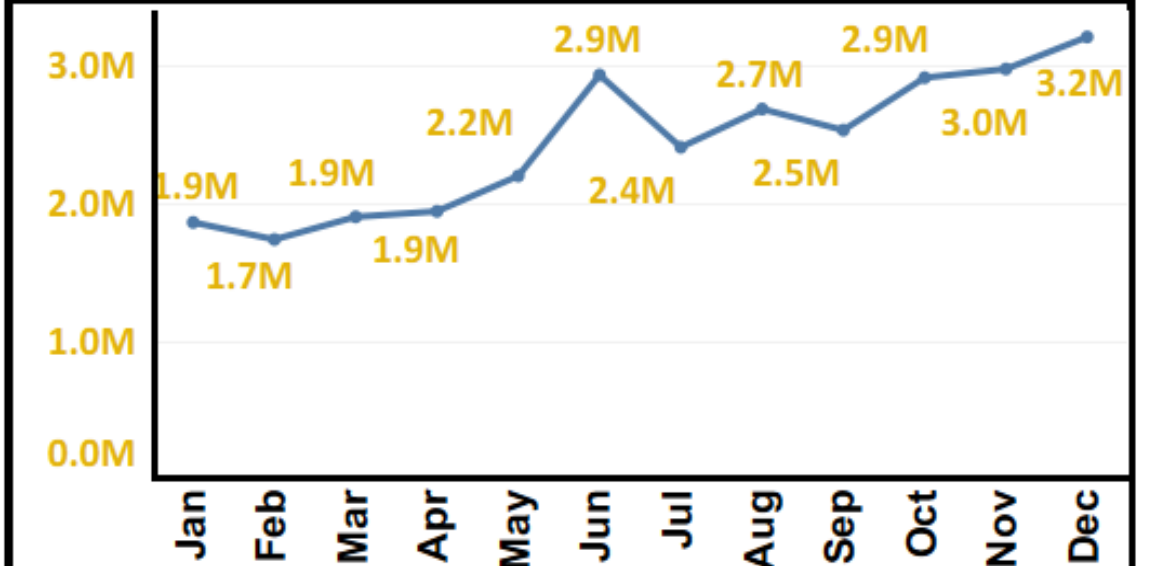
Top 5 Customers

Jordan Turner	15,999.10
Kaitlyn Henderson	13,294.27
Margaret He	13,269.27
Nichole Nara	13,295.38
Willie Xu	13,490.06

Sales by Year x Month



Sales by Months





CONCLUSIONS

- ❖ Sales grew strongly till 2013, peaking at 16.35M.
- ❖ Profit margins stayed healthy at $\approx 41\%+$.
- ❖ North America leads in sales & profit; Europe shows scalable potential.
- ❖ **Bikes** are the main profit driver (11.5M), especially Mountain-200 models; Road-150 underperformed.
- ❖ USA & Australia contributed almost equally (~9M each), ensuring balanced geography.
- ❖ Top 5 customers are loyal (~69K), but concentration risk exists.

NEXT YEAR PLANS

- ❖ **Expand Europe:** Scale operations where margins are strong.
- ❖ **Focus on Q4:** Strengthen promotions and inventory for peak quarter (~31% of sales).
- ❖ **Optimize Products:** Prioritize Mountain-200 bikes, rework or phase out low-margin Road-150.
- ❖ **Broaden Customer Base:** Reduce reliance on top 5 customers, launch loyalty programs.
- ❖ **Boost Weekend Sales:** Introduce weekend offers to raise share beyond 28%.
- ❖ **Maintain Efficiency:** Keep production costs aligned, use forecasting to avoid dips.
- ❖ **Geographic Balance:** Leverage USA & Australia, explore new territories.

IMPROVEMENTS

- ❖ Better forecasting & inventory management for peak months.
- ❖ Enhance real-time dashboards for faster decisions.
- ❖ Use customer segmentation to target high-value buyers.
- ❖ Innovate within **Bike category** to sustain growth.
- ❖ Diversify territories & product lines to reduce risk.

Key Challenges & How I addressed them

- Dataset split across multiple Excel files with primary/foreign keys, duplicates, blanks
 - ✓ Cleaned & combined files using Power Query Editor
- Maintaining relationships and accuracy during file merges
 - ✓ Used Merge on common columns to preserve accuracy
- Large data size (~60,000 rows) made merging difficult
 - ✓ Applied step-by-step transformations to handle large dataset

- CSV file connection issues while loading into SQL
 - ✓ Exported cleaned dataset into CSV format for SQL import
 - ✓ Wrote & refined SQL queries for analysis readiness
 - ✓ Fixed CSV import errors (delimiters, encoding, data types)

- SQL database connection problems in Power BI
 - ✓ Created dedicated SQL database for Power BI project
 - ✓ Resolved SQL–Power BI connection issues (drivers, credentials, permissions)



I WANT TO SAY

THANK YOU

FOR YOUR ATTENTION