

Objectives

This project evaluates product performance and identifies target audiences to adjust future marketing strategies. By visualizing the sales data, it offers insights into product performance from 2011 to 2016, enabling informed decision-making for the company.

Data Overview

Size: 113,037 sales records in total

Timeframe: 1/1/2011 - 7/31/2016

Data source: <https://www.kaggle.com/datasets/sadiqshah/bike-sales-in-europe>

* This dataset is sourced from Kaggle and is intended for data analysis practice. It's important to note that the dataset has some inherent flaws, including missing records for the latter half of the year in 2014 and 2016.

Deliverables

Product Dashboard

This dashboard presents the sales performance of product categories (Accessories, Bikes, Clothing) along with their subcategories and products.

Key Takeaways:

1. December and June are two of the best selling months.
2. Accessories have the highest quantity sold, but Bikes is the best-selling category in terms of profit.
3. Helmets lead in the sales of accessories, road bikes are the most popular type of bikes, and shorts are the best-selling clothing items.

Consumer Dashboard

This dashboard provides insights into target consumer characteristics and consumer behavior based on gender and regions.

Key Takeaways:

1. The US market consistently led with the highest revenue from 2011 to 2016.
2. The main consumer groups are young adults and adults aged from 25 to 64.
3. Male consumers are spending more than females.

PRODUCT DASHBOARD

Overview

\$32.22M

Total Profit

2015

Best Selling Year

BIKES

Best Selling Cat.

ROAD BIKES

Best Selling Sub-Cat.

Mountain-200

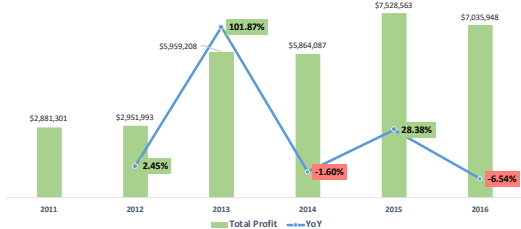
Black, 38

Best Selling Product

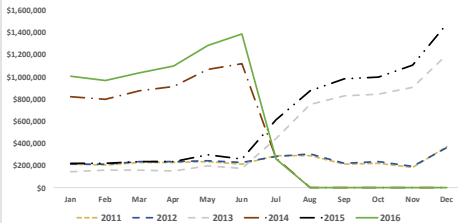
Total Profit

- In 2013, the company experienced a remarkable 102% increase in profits compared to 2012. This growth was twice as much as in both 2011 and 2012, and it peaked at \$7.5M in 2015;
- From 2011 to 2016, December mostly stands out as the peak month, which largely attributed to the Christmas holiday;
- In 2014 and 2016, June also emerges as a peak month, potentially driven by summer sales.

Changes in Yearly Profit (2011-2016)



Changes in Monthly Profit



Category Profit

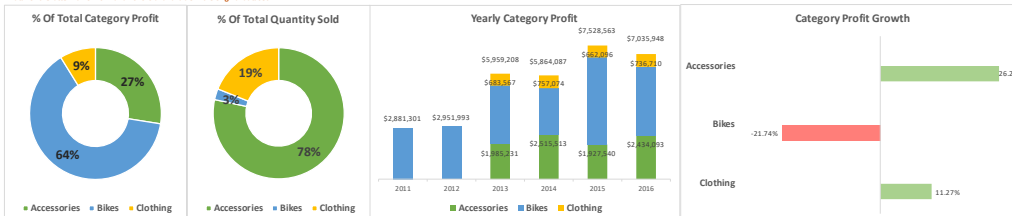
1. Category Profit Distribution

- 'Bikes' category leads in overall profits, contributing to 64% of the total, despite representing only 3% of the quantity sold, which aligns with the fact that bikes are generally more expensive than accessories and clothing.
- In contrast, 'Accessories' has the highest quantity sold at 78%, but it accounts for only 27% of profits. This is because accessories are generally more affordable and in higher demand among consumers. New buyers might invest in accessories to upgrade their bikes, while existing bike owners purchase accessories for replacements or maintenance;
- 'Clothing' generally underperforms compared to 'Accessories'. This might be due to the diverse preferences of consumers. Professional cyclists may opt for full gear, whereas regular consumers may stick to essentials like shorts or may choose not to purchase clothing at all.

2. Growth

- In terms of yearly trends, 'Bikes' experienced its peak in sales in 2015 but declined sharply by 22% in 2016, possibly due to missing data in the latter half of the year. Both 'Clothing' and 'Accessories' showed a similar profit trend, with increases in 2014, followed by a decrease in 2015, and then a rebound in 2016.

*Data for the latter half of 2014 and 2016 is unavailable in the original dataset.



Accessories

1. Total profits

- Helmets is the best selling accessory categories (38%), followed by tires and tubes (31%), these 2 subcategories accounts for nearly 70% of the total. Consumers typically buy helmets as they are essential for biking and required by traffic rules in many countries or districts. This could be a key reason why helmets are the best-selling accessories. Tires are likely the most significant factor affecting the riding experience. Consumers buy them for maintenance purposes or to accommodate different riding surfaces such as mountains, gravel, and pavement, which contributes to their popularity as accessories.

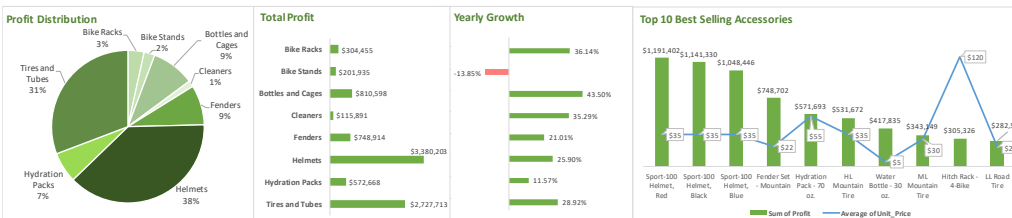
2. Growth

- All subcategories within accessories experienced positive growth in 2016, except for bike stands. Bottle & cages saw the highest growth at 43.5%, closely followed by bike racks at 36.14% and cleaners at 35.29%, suggesting a growing interest among consumers in these accessory categories.

3. Best Selling Products

- The top 3 best-selling products are helmets, all priced at an average of \$35, with red being the most popular color;
- Despite both fenders and bottles & cages accounting for only 9% of the total profits, 'Fender Set - Mountain' and 'Hydration Pack - 70 oz.' rank among the top five best-selling products;
- The best-selling tire is "HL Mountain Tire";
- The most expensive top 10 product is "Hitch Rack - 4 - Bike", which priced at \$120.

(Ref: https://en.wikipedia.org/wiki/Bicycle_helmet_tows_by_country; <https://www.bikestrdirect.com/tires-and-tubes-category>)



Bikes

1. Profit Distribution

- Road bike is the best selling subcategories within bikes, following by Mountain bikes. This could be due to the fact that road bikes are designed for daily use and are suitable for various riding surfaces, which cater the needs of the majority of consumers. On the other hand, mountain bikes are specifically designed for off-road riding, equipped with flat tires and a heavier frame. As a result, their consumer base is more narrow than that of road bikes, as they are typically chosen by riders who frequently ride on rugged, unpaved trails and terrain. Touring bikes are specifically designed for comfortable long-distance riding, which are less commonly needed among consumers.

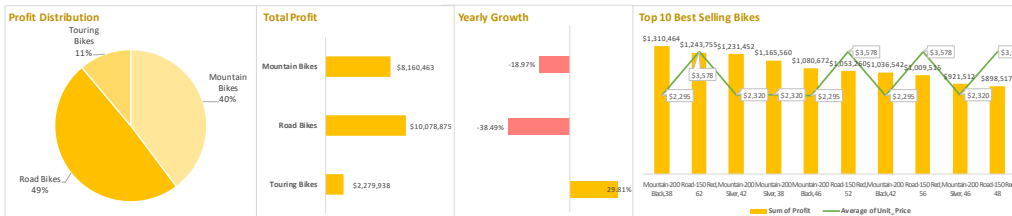
2. Profit Growth

- Both road bikes and mountain bikes experienced a decline in profits in 2016, while touring bikes saw an increase of 30%.

3. Best Selling Products

- The best-selling bike is the "Mountain-200 Black, 38", the best-selling road bike is "Road-150 Red, 62";
- Mountain bikes (6) outnumber road bikes (4) in top 10 best-selling products, indicating a strong preference for mountain bikes among consumers.

(Ref: <https://www.cyclingnews.com/features/road-bikes-vs-mountain-bikes-understanding-the-differences/>; <https://www.cyclingnews.com/features/best-touring-bikes/>)



Clothing

1. Profit Distribution

- Shorts are the best selling clothing category (37%), followed by jerseys (21%), gloves (18%) and vests (18%). Shorts play a crucial role in biking apparel as it helps reduce wind resistance and draw sweat away from the skin, which is essential for professional cyclists. Furthermore, biking shorts have been integrated into mainstream women fashion since the 1980s, which further explains their popularity among consumers.

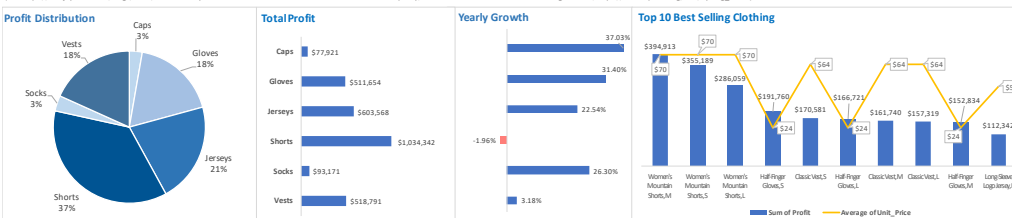
2. Profit Growth

- All subcategories experienced positive growth in 2016, except for shorts, which saw a slight decline of 1.96%.

3. Best Selling Products

- The best-selling clothing is women's mountain shorts.

(Ref: <https://bicycles.com/blogs/news/a-brief-history-of-bike-short>; <https://www.cyclingnews.com/features/road-bikes-vs-mountain-bikes-understanding-the-differences/>; https://en.wikipedia.org/wiki/Bicycle_helmet_tows_by_country)



CONSUMER DASHBOARD

OVERVIEW

BEST SELLING COUNTRY



USA
\$27.98M

AVERAGE CONSUMER SPENDING



\$754
AVG. Spending



Adults (35 - 64)
\$42.58M | 49%
Young Adults(25 - 34)
\$30.66M | 34%

AGE GROUP



\$58,074
Max. Spending

MAXIMUM TRANSACTION AMOUNT

48%



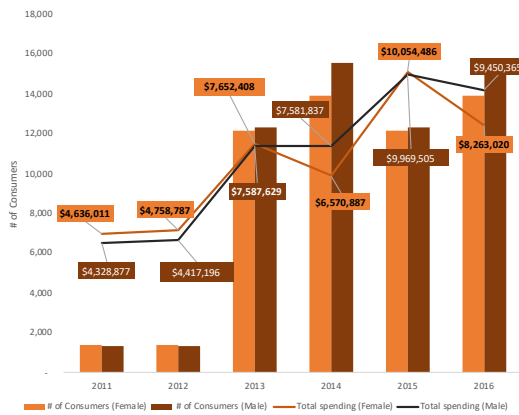
52%

GENDER DISTRIBUTION

GENDER INSIGHTS

- Total spending has shown a consistent upward trend over the past six years for both genders, with only minor declines observed in 2014 and 2016. During these two years, the gender spending gap also widened, with females spending 12% to 13% less than males.
- The year 2013 marked the first year where the number of female consumers fell below that of males. There was also a significant reduction in average spending for both genders in 2013, with a decline of over 80%. This decline can be linked to changes in the category profit landscape, specifically the introduction of accessories and clothing. These products are priced more affordably compared to bikes but are sold in larger quantities.
- Water bottles are the top choice among female consumers, while male consumers prefer patch kits.

Yearly Consumer Spending



Gender

Female

Male

Product Category

Accessories

Bikes

Clothing

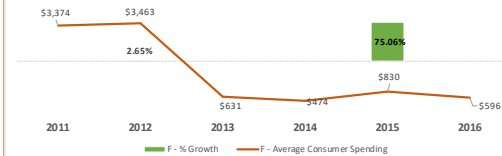
Subcategory

Bike Racks

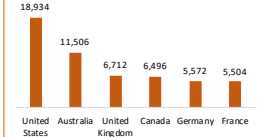
Bike Stands

Bottles and Cages

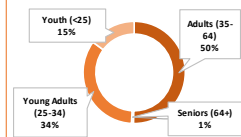
Average Consumer Spending



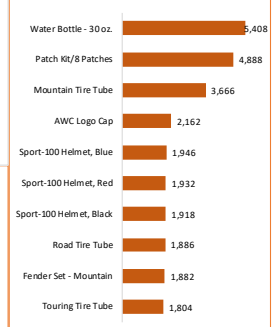
Country Distribution



Age Group Distribution



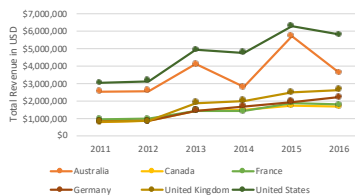
Quantity Sold of Best Selling Products



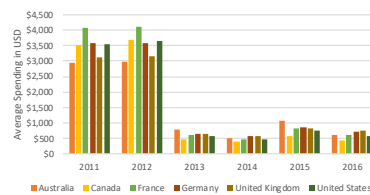
REGIONAL INSIGHTS

- Consumer spending has been steadily growing worldwide, with the US market remaining the most robust. Australia market is the most volatile among all, as it experienced a significant drop in both 2014 and 2016.
- In terms of average spending, French consumers led the way in 2011 and 2012, while Australian consumers topped the list in 2015.
- As for market share, Canada and the UK have witnessed the most significant increases in market share since 2013, while Australia's market share has been declining during the same period.
- The US and Canada are two markets where the adult group dominates, with over 50% of consumers belonging to this category. Additionally, in these markets, along with the UK, there is also a small proportion of senior consumers.
- Water bottles and patch kits are among the most popular products worldwide. Moreover, mountain tire tubes are particularly popular in Canada and the US, while touring tire tube are favored in European countries such as France, Germany, and the UK.

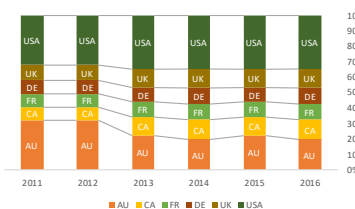
Yearly Consumer Spending



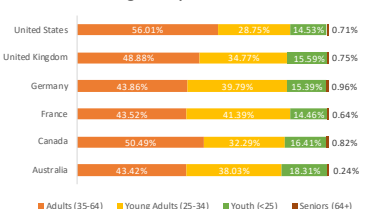
Average Consumer Spending



Consumer Distribution



Age Group Distribution



Country

Australia

Canada

France

Germany

United Kingdom

United States

State

Bayern

Brandenburg

Hamburg

Category

Accessories

Bikes

Clothing

Subcategory

Helmet

Hydration ...

Tires and ...

Caps

Quantity Sold of Best Selling Products

