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BIKE SALES ANALYSIS



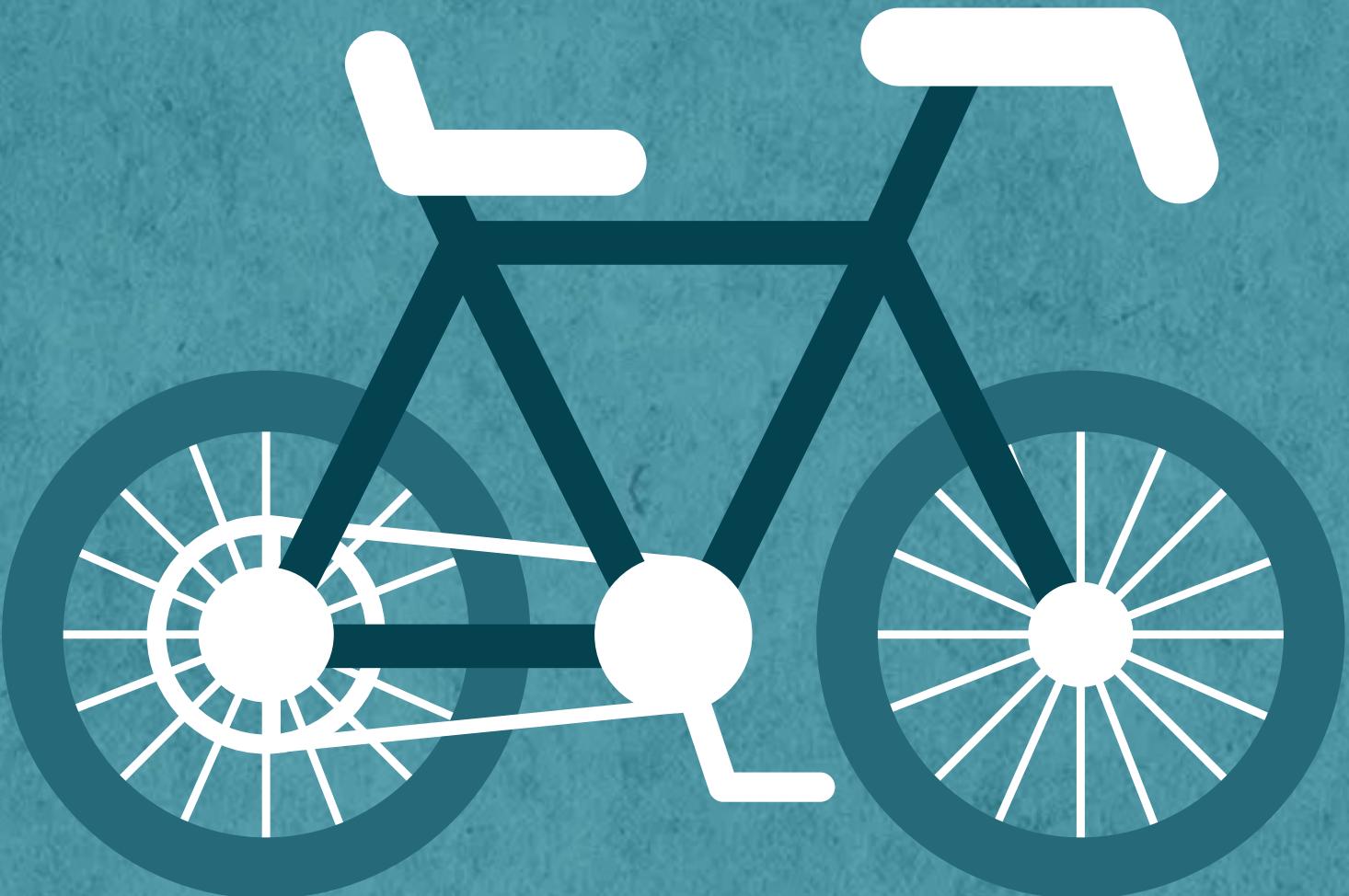
Bauyrzhan Mubarak, Sekenov Gabit



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Agenda:

- Introduction
- Data preparation
- Functionalities
- Analysis of charts



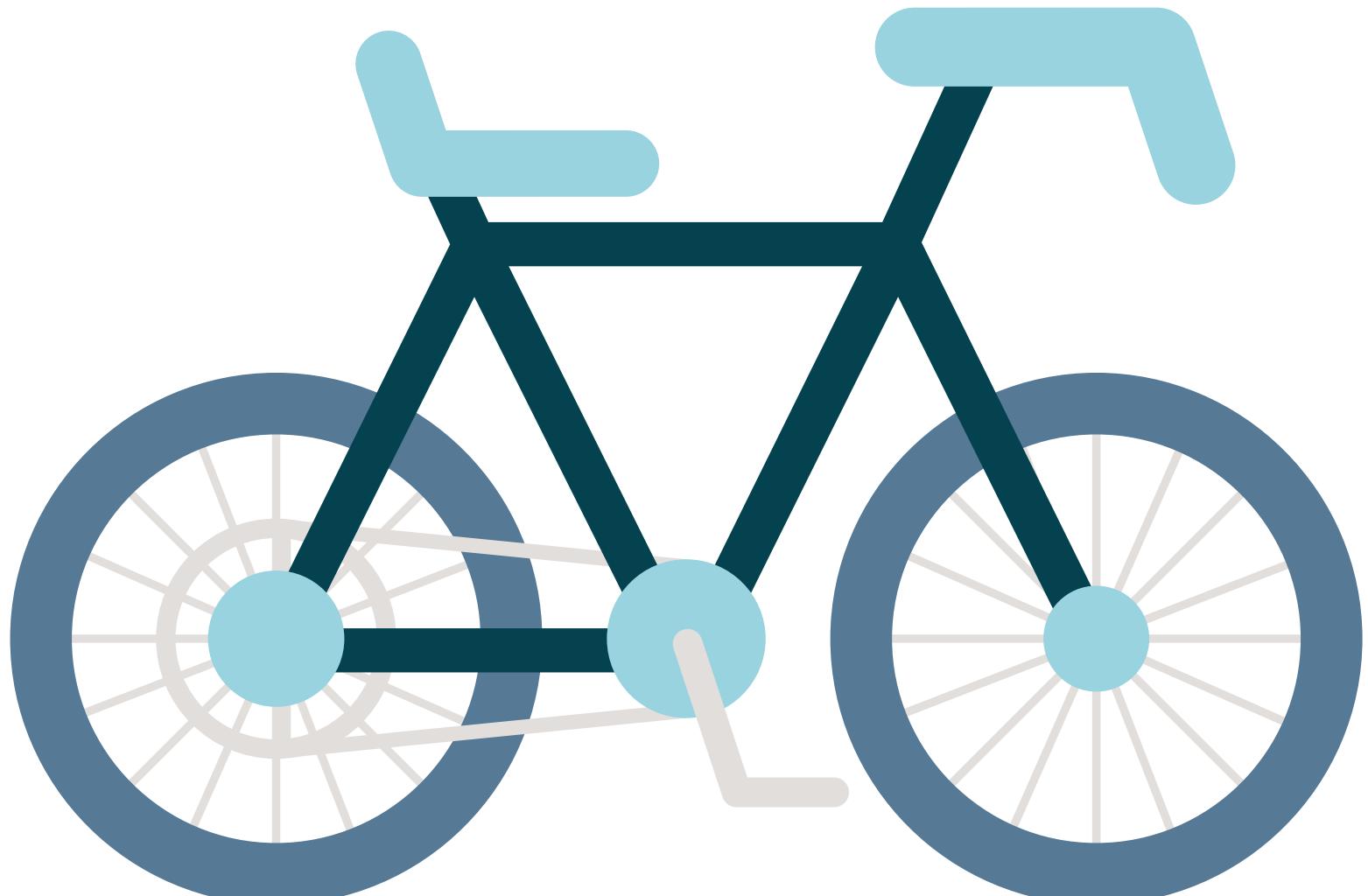
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Introduction

Today we present a comprehensive analysis of the bike market using Power BI tools. This report not only reveals key aspects of the company's bike sales, but also provides in-depth analysis of customer preferences, sales seasonality and financial performance. We delve into the intricacies of the bike market, assessing its current state and potential growth opportunities.

The company's mission is to create high-quality and innovative products that help improve the quality of life and health of people. In this report, we will focus on analyzing bike sales over recent years, identifying key trends and opportunities for development.



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Company Bike

The bike market is a dynamically developing sector, where this company occupies one of the leading positions. Since its founding in 2011, the company has significantly expanded its range, offering a wide selection of bikes for different categories of users: from mountain and road models to city and electric bikes. The company is active in the markets of America, Canada, France, England and is striving to expand its presence.



Sekenov Gabit

BI analyst, Business analyst



Bauyrzhan Mubarak

BI analyst, Business analyst



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Data preparation

- General info about dataset
- Duplicates handling
- Missing values handling
- DAX and column addition



General info:

< Dimensionality of the dataset:

```
Rows of DataSet is : 113036  
Columns of DataSet is : 18
```

Columns in the dataset:

0	Date	111043	non-null	object
1	Day	111043	non-null	int64
2	Month	111043	non-null	object
3	Year	111043	non-null	int64
4	Customer_Age	111043	non-null	int64
5	Age_Group	111043	non-null	object
6	Customer_Gender	111043	non-null	object
7	Country	111043	non-null	object
8	State	111043	non-null	object
9	Product_Category	111043	non-null	object
10	Sub_Category	111043	non-null	object
11	Product	111043	non-null	object
12	Order_Quantity	111043	non-null	int64
13	Unit_Cost	111043	non-null	int64
14	Unit_Price	111043	non-null	int64
15	Profit	111043	non-null	int64
16	Cost	111043	non-null	int64
17	Revenue	111043	non-null	int64

Discrete variables:

Age_Group, Product_Category, Sub_Category
and etc;

Continuous variables:

Order_Quantity, Profit, Cost, Revenue and etc;



Data description:

	Day	Year	Customer_Age	Order_Quantity	Unit_Cost	Unit_Price	Profit	Cost	Revenue
count	111043.000000	111043.000000	111043.000000	111043.000000	111043.000000	111043.000000	111043.000000	111043.000000	111043.000000
mean	15.665850	2014.400070	35.919662	11.907090	268.339814	454.757833	287.025522	472.900552	759.926074
std	8.781345	1.274164	11.010803	9.567849	550.594608	923.420671	455.821134	889.085563	1315.039816
min	1.000000	2011.000000	17.000000	1.000000	1.000000	2.000000	-30.000000	1.000000	2.000000
25%	8.000000	2013.000000	28.000000	2.000000	2.000000	5.000000	29.000000	28.000000	64.000000
50%	16.000000	2014.000000	35.000000	10.000000	9.000000	25.000000	104.000000	112.000000	229.000000
75%	23.000000	2016.000000	43.000000	20.000000	42.000000	70.000000	362.000000	456.000000	810.000000
max	31.000000	2016.000000	87.000000	32.000000	2171.000000	3578.000000	15096.000000	42978.000000	58074.000000

- Average customer_age is 36 years old.
- Customer with max age is 87 years old.
- Product with max cost is 2171\$.
- In average,287\$ profit was taken.
- Median revenue taken is 229\$.



Duplicates and missing values:

```
# dropping duplicate values  
data.drop_duplicates(keep=False, inplace=True)
```

There aren't any missing values in the dataset.

There are about 1900 duplicates in the dataset.

Before cleaning:

```
(113036, 18)
```

After cleaning:

```
(111043, 18)
```

	data.isnull().sum()
Date	0
Day	0
Month	0
Year	0
Customer_Age	0
Age_Group	0
Customer_Gender	0
Country	0
State	0
Product_Category	0
Sub_Category	0
Product	0
Order_Quantity	0
Unit_Cost	0
Unit_Price	0
Profit	0
Cost	0
Revenue	0



Adding new column by DAX

Profit margin is the percentage of sales revenue a business retains after all costs have been deducted. Simply put, it measures how much you keep of the money you generate from a sale. The higher your profit margin, the better financial health your company attains.

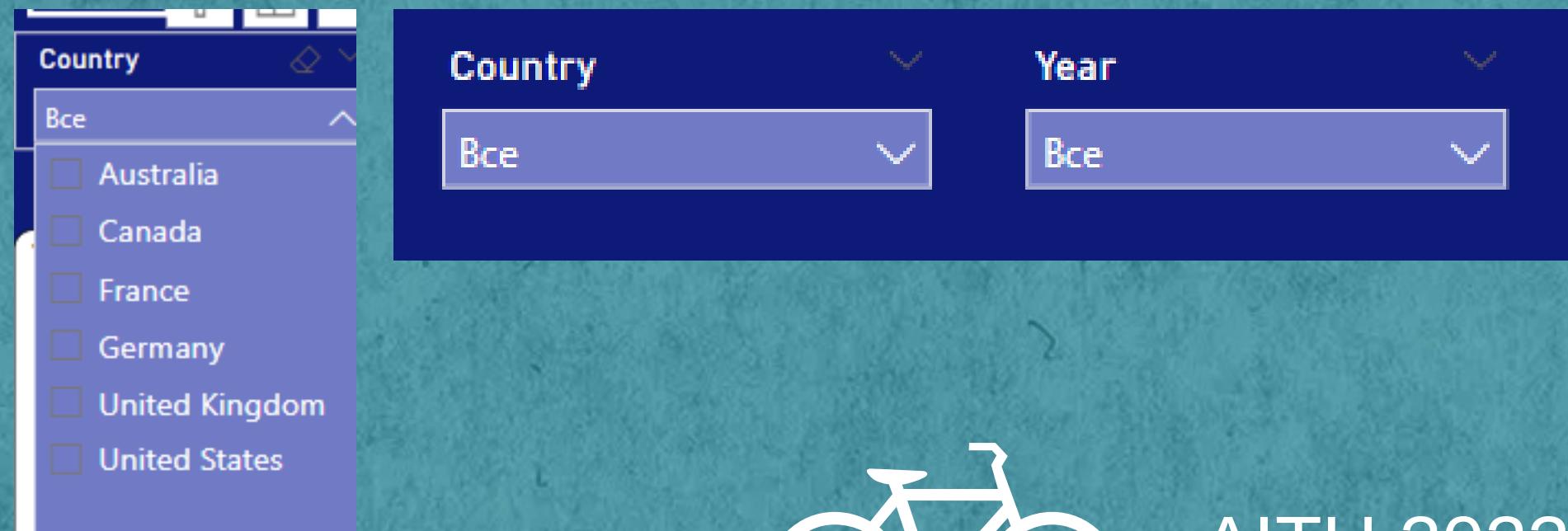
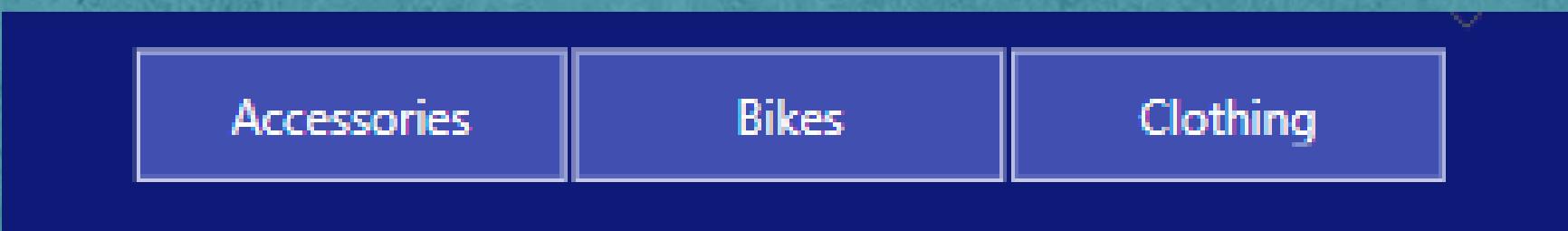
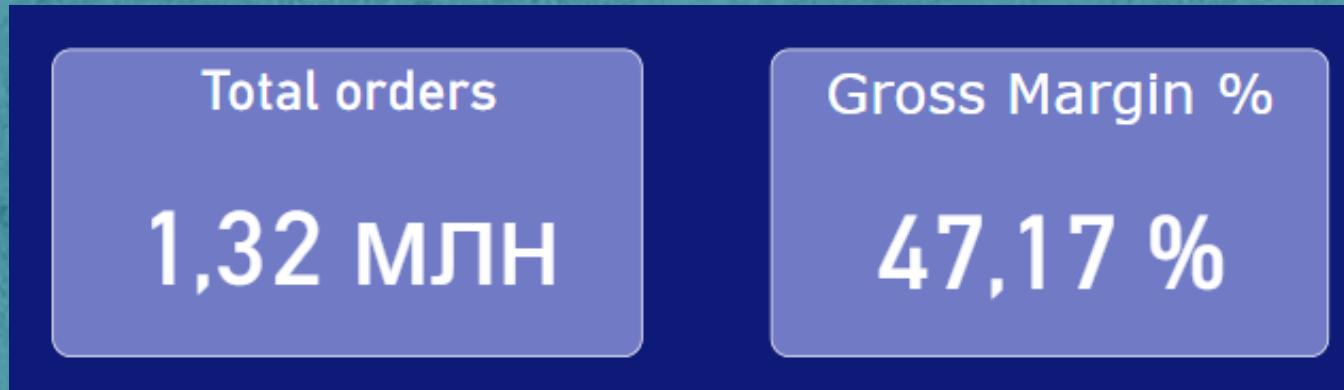
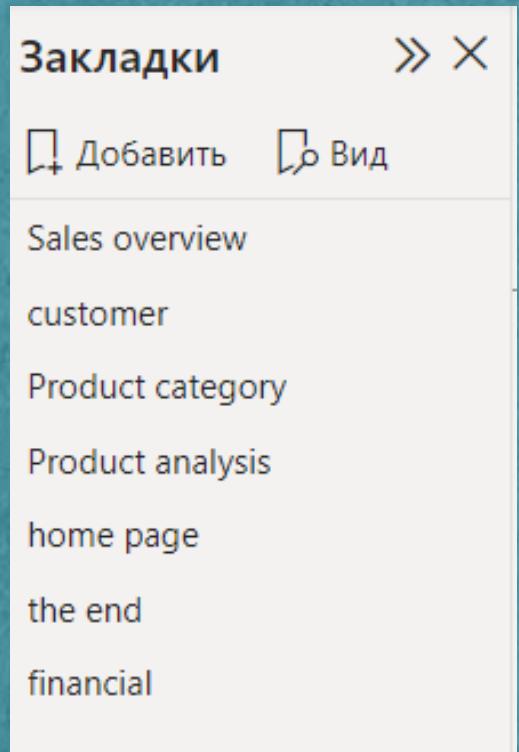
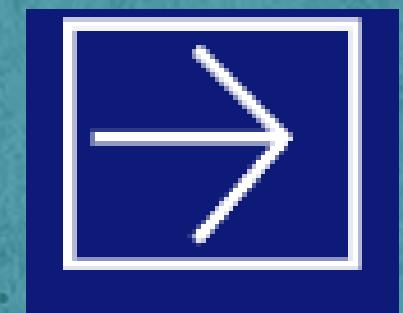
DAX Formula:

```
Profit_Margin_1 = (Sales_updated[Profit]/Sales_updated[Revenue])
```



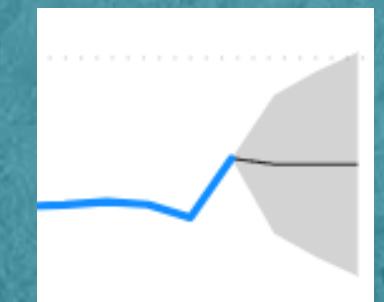
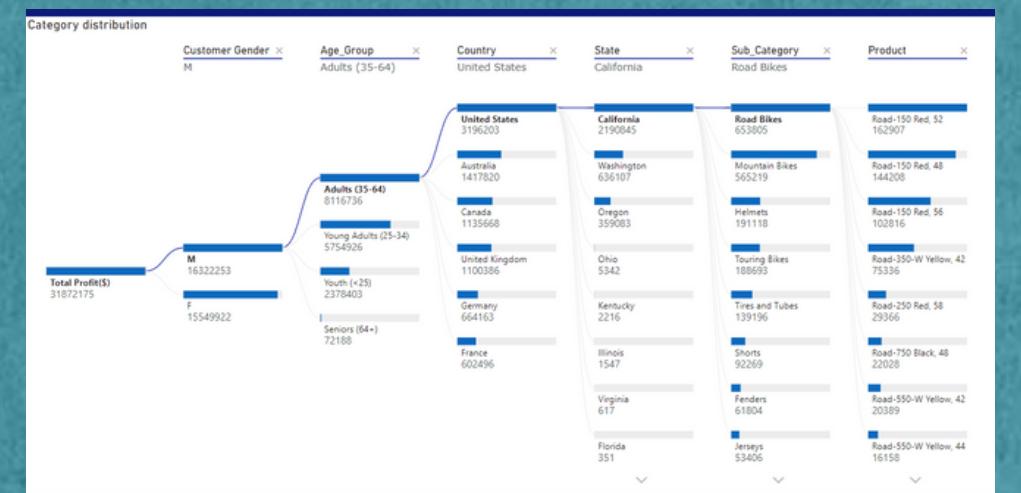
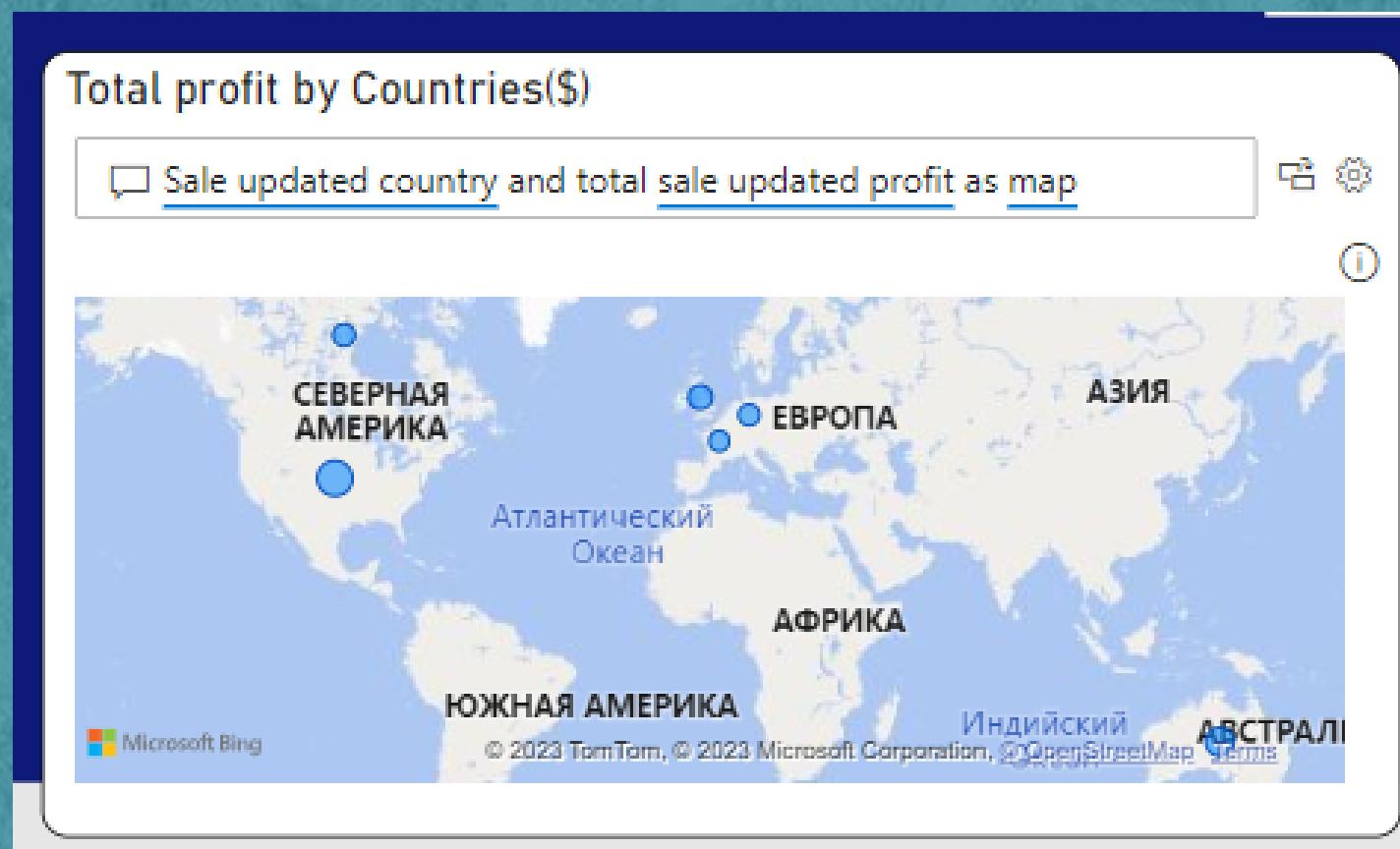
Functionalities

- Bookmarks
- Buttons
- Cards
- Slicers



Functionalities

- Decomposition tree
- Time forecasting and lines
- Conditional formatting
- Q and A feature

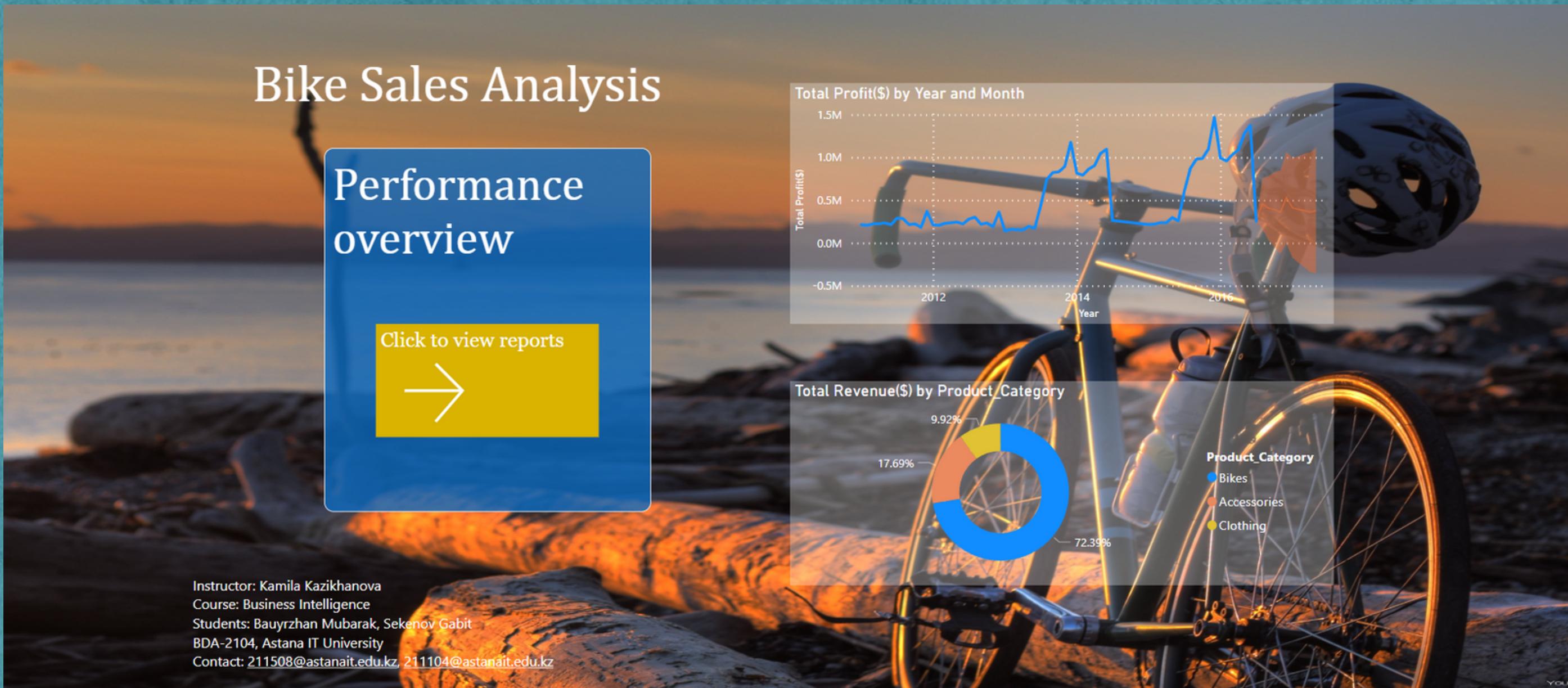


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Sub_Category	Profit_Margin %
Socks	63,00 %
Fenders	59,75 %
Shorts	58,99 %
Helmets	58,55 %
Gloves	58,37 %
Bike Racks	58,35 %
Bike Stands	58,35 %
Vests	58,16 %
Cleaners	58,08 %
Hydration Packs	57,47 %
Bottles and Cages	56,81 %
Tires and Tubes	55,00 %
Mountain Bikes	38,60 %
Touring Bikes	30,63 %
Road Bikes	29,13 %
Jerseys	14,16 %

Sub_Category	Total Order_Quantity
Tires and Tubes	497793
Bottles and Cages	235531
Helmets	181438
Jerseys	88065
Caps	67268
Fenders	62138
Gloves	39978
Cleaners	27574
Shorts	27168
Hydration Packs	19914
Road Bikes	19507
Socks	17678
Vests	14526
Mountain Bikes	11878
Bike Racks	4741
Touring Bikes	4609

Home page



The "Total Profits (\$)" by Year and Month" line graph was created to observe a company's financial performance over date time, showing seasonal trends and year on year progress. The dataset was taken from Kaggle, allowing us to accurately look for profit changes.

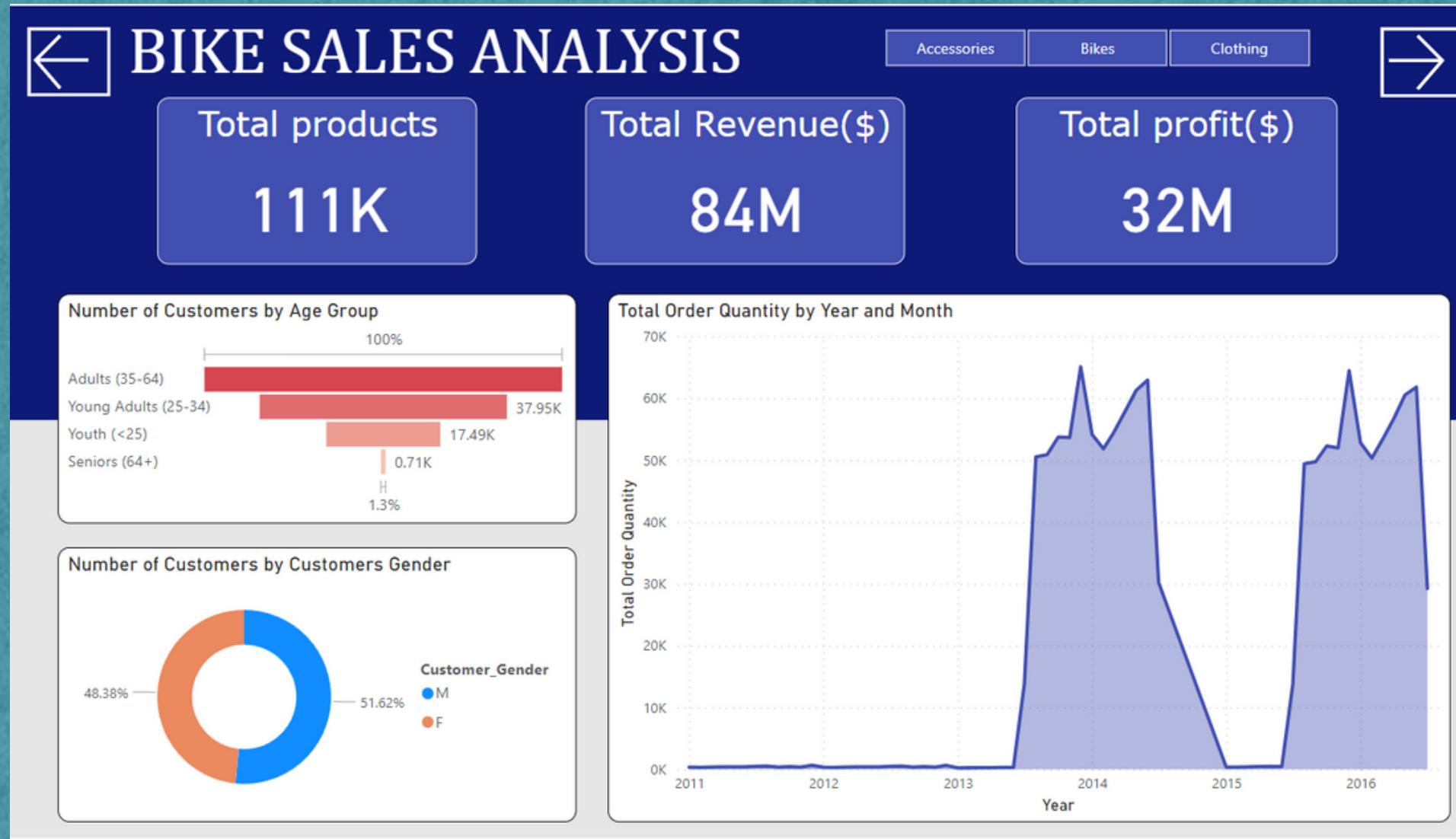
The Total Revenue (\$) by Product Category pie chart is used to show sales breakdown by breaking down total revenue into bikes, accessories, and clothing. This visualization helps us quickly understand which product segments are most profitable for your business.

In the Line chart, through the forecast that there is no risk for sales in the future.

In the pie chart, the biggest contributor is bike sales.



Sales overview



Insights Received

The analysis shows that bicycle sales are highly seasonal, with sales peaking in the warmer months and December. We also see that adults make up the majority of our customers, which may indicate a target demographic for marketing campaigns.

Recommendations

Develop targeted marketing strategies for the most active age groups.
Expand product lines that will attract customers outside the peak season.
Assess opportunities to balance the gender mix of customers through targeted offers and campaigns.

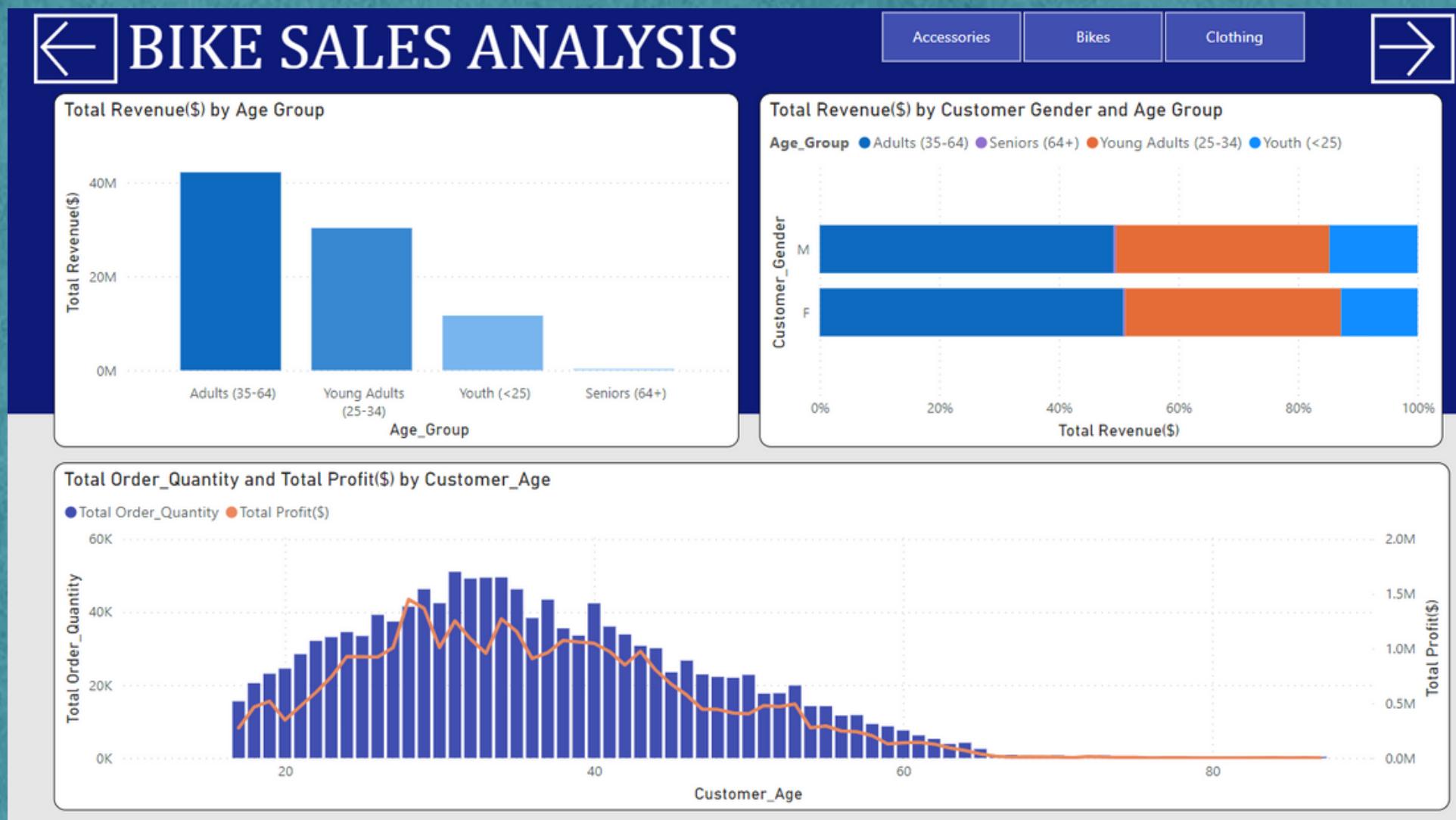
The Total Orders by Year and Month graph illustrates sales dynamics, allowing us to see monthly and yearly trends. The ups and downs in this graph reflect the seasonal nature of bicycle sales.

The Number of Customers by Age Group bar graph shows that the majority of our customers are in the 25 to 64 age group, demonstrating our ability to attract and retain an adult audience.

The pie chart "Number of customers by gender" shows an almost equal distribution between men and women, which indicates the versatility and wide appeal potential of our products.



Customer analysis



Analysis Results

The analysis shows that while adults are the main contributor to revenue, young adults (25-34) also represent a significant portion of customers. Order volume and profitability tend to decline as customers age after a certain peak.

Recommendations

Focus on retaining and growing the adult customer segment by offering them loyalty programs and personalized offers.

Develop strategies to attract young adults, for example through digital marketing and social media.

Conduct additional analysis to understand the reasons for the decline in purchasing activity among older age groups and develop appropriate incentive measures.

Insights Received

The analysis found that adults aged 35 to 64 generate the most revenue, highlighting the importance of this segment as a major source of income. It is also worth noting that the distribution of revenue between men and women is relatively even across all age groups.

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Product Category



Insights Received

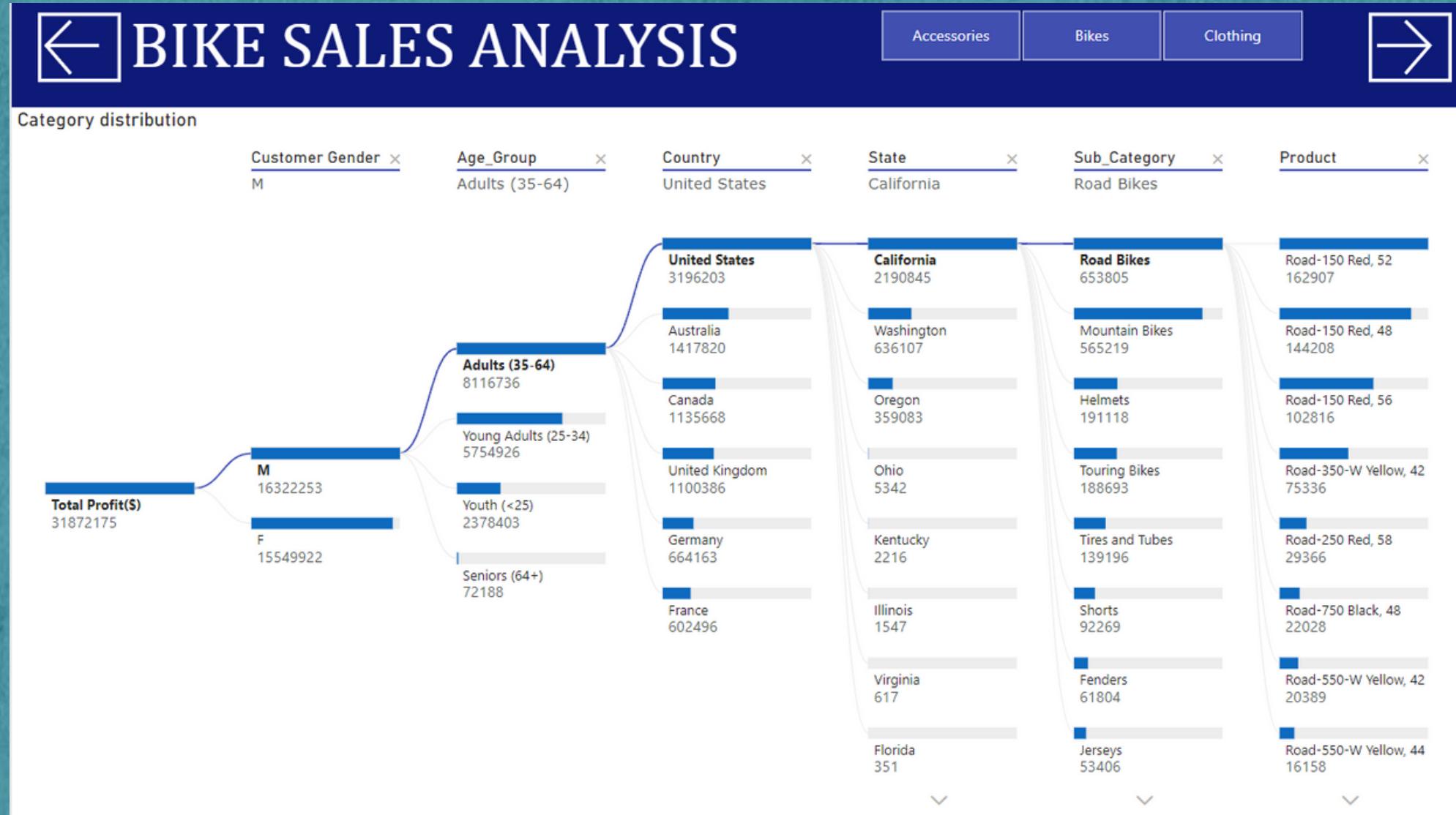
From these visualizations we can see that while road bikes are the top sellers, socks and fenders have the highest profit margins. It is also worth noting that adults and men are the main buyers, which indicates who should be targeted with marketing efforts.

Recommendations

- Increase inventory of top-selling accessories such as socks and wings to improve overall profitability.
- Consider opportunities for targeted marketing campaigns aimed at adult men, given their high purchasing activity.
- Analyze pricing strategies for low-margin road bikes to improve their profitability without compromising sales volume.



Product analysis



Recommendations

Strengthen marketing efforts in the adult male age group and expand presence in high-sales regions such as California. Analyze low-margin products to identify opportunities to improve their performance or consider eliminating them from the range.

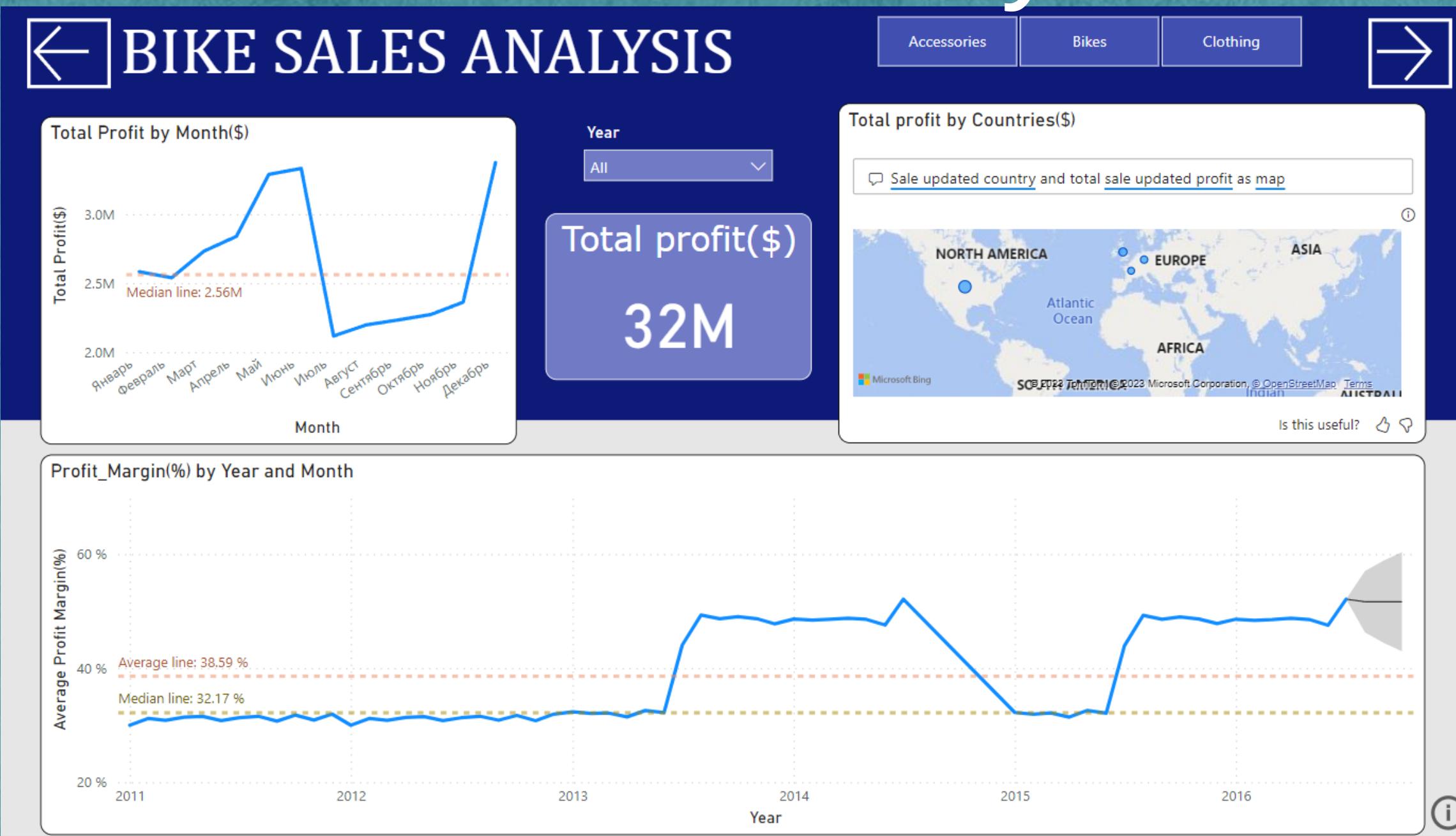
Given the high profitability of road bikes, consider expanding this product line and related accessories.

Insights Received

From the analysis, it is clear that adult men (35-64 years old) and the Road Bikes category are the biggest contributors to profits. It is also noticeable that a significant portion of sales are concentrated in the United States, especially in California.



Financial analysis



Total profits were \$32 million, with a median profit by month of \$2.56 million and an average margin of 38.59%. These numbers indicate the stability of the business and its ability to generate profits throughout the year.





Thank
you!



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