

Bike Sales Analysis

Exploratory analysis of bike sales data

Motivation

- The aim of this project is to consolidate my knowledge on my data analysis training thus far.
- For this project I intend to use Microsoft excel for the data cleaning, exploration and visualization.

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Data Extraction

- The dataset for the project; Bike store sales, was downloaded from [kaggle.com](https://www.kaggle.com)
- Contains data about sales of products of a bike company in Europe.

Data Exploration

- Dataset Contains up to 15 fields.
- Fields include: age, gender, date, cost, revenue, profits etc.
- Dataset contains over 100,000 rows.
- Each row represents a particular sale of a product
- No missing values present

Cleaning

- Generated the weekday field from date field
- Replaced the Gender categories represented as M and N, with “Male” and “Female” respectively.
- Converted the fields into their appropriate datatype.

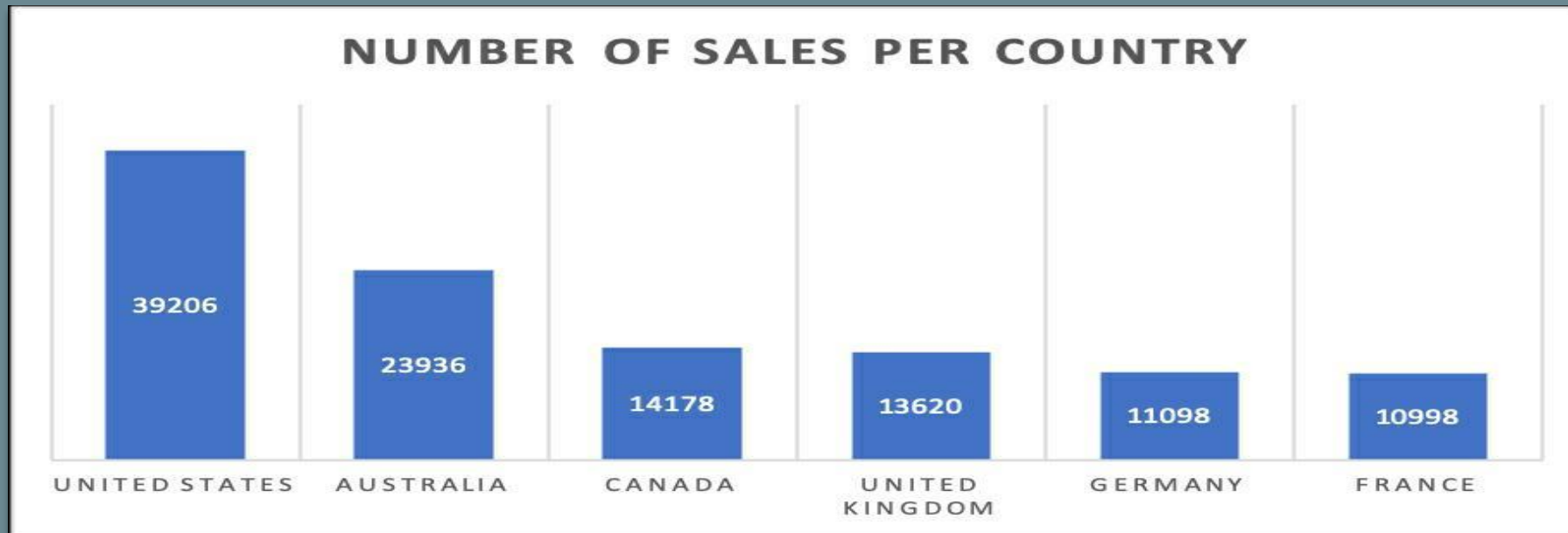
Cleaned dataset

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Date	Day	Month	Year	Weekday	Customer_Age	Age_Group	Gender	Country	State	Product_Category	Sub_Category	Product	Order_Quantity	Unit_Cost	Unit_Price	Profit	Cost	Revenue
2	07/03/2011	7	March	2011	Monday	29	Young Adults (18-34)	Female	Germany	Nordrhein-Westfalen	Bikes	Road Bikes	Road-150 Re	1	2171	3578	942	2171	3113
3	13/10/2011	13	October	2011	Thursday	55	Adults (35-64)	Male	Australia	New South Wales	Bikes	Road Bikes	Road-750 Bli	1	344	540	126	344	470
4	24/10/2011	24	October	2011	Monday	19	Youth (<25)	Male	Canada	British Columbia	Bikes	Road Bikes	Road-150 Re	3	2171	3578	4114	6513	10627
5	10/03/2011	10	March	2011	Thursday	19	Youth (<25)	Male	Canada	British Columbia	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2742	4342	7084
6	24/02/2011	24	February	2011	Thursday	19	Youth (<25)	Male	Canada	British Columbia	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1371	2171	3542
7	06/02/2011	6	February	2011	Sunday	19	Youth (<25)	Male	Canada	British Columbia	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2742	4342	7084
8	13/10/2011	13	October	2011	Thursday	18	Youth (<25)	Female	United States	Washington	Bikes	Road Bikes	Road-150 Re	3	2171	3578	1860	6513	8373
9	26/05/2011	26	May	2011	Thursday	18	Youth (<25)	Female	United States	Washington	Bikes	Road Bikes	Road-150 Re	2	2171	3578	1240	4342	5582
10	14/02/2011	14	February	2011	Monday	18	Youth (<25)	Female	United States	Washington	Bikes	Road Bikes	Road-150 Re	1	2171	3578	620	2171	2791
11	23/09/2011	23	September	2011	Friday	17	Youth (<25)	Female	United States	California	Bikes	Road Bikes	Road-750 Bli	2	344	540	370	688	1058
12	01/08/2011	1	August	2011	Monday	17	Youth (<25)	Female	United States	California	Bikes	Road Bikes	Road-750 Bli	1	344	540	185	344	529
13	03/07/2011	3	July	2011	Sunday	17	Youth (<25)	Female	United States	California	Bikes	Road Bikes	Road-750 Bli	1	344	540	185	344	529
14	23/06/2011	23	June	2011	Thursday	17	Youth (<25)	Female	United States	California	Bikes	Road Bikes	Road-750 Bli	3	344	540	556	1032	1588
15	10/02/2011	10	February	2011	Thursday	17	Youth (<25)	Female	United States	California	Bikes	Road Bikes	Road-750 Bli	1	344	540	185	344	529
16	30/05/2011	30	May	2011	Monday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2671	4342	7013
17	19/05/2011	19	May	2011	Thursday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
18	03/05/2011	3	May	2011	Tuesday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
19	12/04/2011	12	April	2011	Tuesday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
20	17/02/2011	17	February	2011	Thursday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
21	17/01/2011	17	January	2011	Monday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	4	2171	3578	5342	8684	14026
22	12/01/2011	12	January	2011	Wednesday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
23	06/01/2011	6	January	2011	Thursday	44	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	3	2171	3578	4006	6513	10519
24	26/11/2011	26	November	2011	Saturday	61	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
25	21/10/2011	21	October	2011	Friday	61	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2671	4342	7013
26	05/06/2011	5	June	2011	Sunday	61	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2671	4342	7013
27	31/01/2011	31	January	2011	Monday	61	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	4	2171	3578	5342	8684	14026
28	11/01/2011	11	January	2011	Tuesday	61	Adults (35-64)	Female	United States	California	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2671	4342	7013
29	01/10/2011	1	October	2011	Saturday	62	Adults (35-64)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
30	29/03/2011	29	March	2011	Tuesday	62	Adults (35-64)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
31	15/03/2011	15	March	2011	Tuesday	62	Adults (35-64)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2671	4342	7013
32	23/01/2011	23	January	2011	Sunday	62	Adults (35-64)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
33	29/08/2011	29	August	2011	Monday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	4	2171	3578	5342	8684	14026
34	14/08/2011	14	August	2011	Sunday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	2	2171	3578	2671	4342	7013
35	28/05/2011	28	May	2011	Saturday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
36	14/05/2011	14	May	2011	Saturday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
37	08/05/2011	8	May	2011	Sunday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
38	28/02/2011	28	February	2011	Monday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
39	17/01/2011	17	January	2011	Monday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	1	2171	3578	1335	2171	3506
40	09/01/2011	9	January	2011	Sunday	34	Young Adults (18-34)	Male	United States	California	Bikes	Road Bikes	Road-150 Re	3	2171	3578	4006	6513	10519

Questions

- What are the top and worst performing countries?
- What category of products has the most sales?
- How is the profit over time like?
- Any variability in sales monthly?
- Which gender makes the most purchases?
- Which age group makes the most purchases?
- What are the top performing products for each gender?

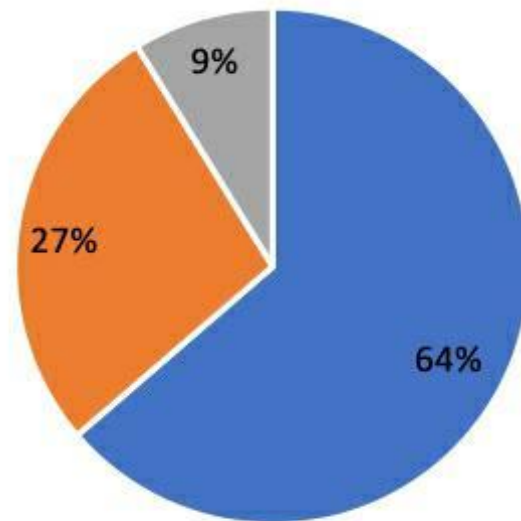
Sales performance per country.



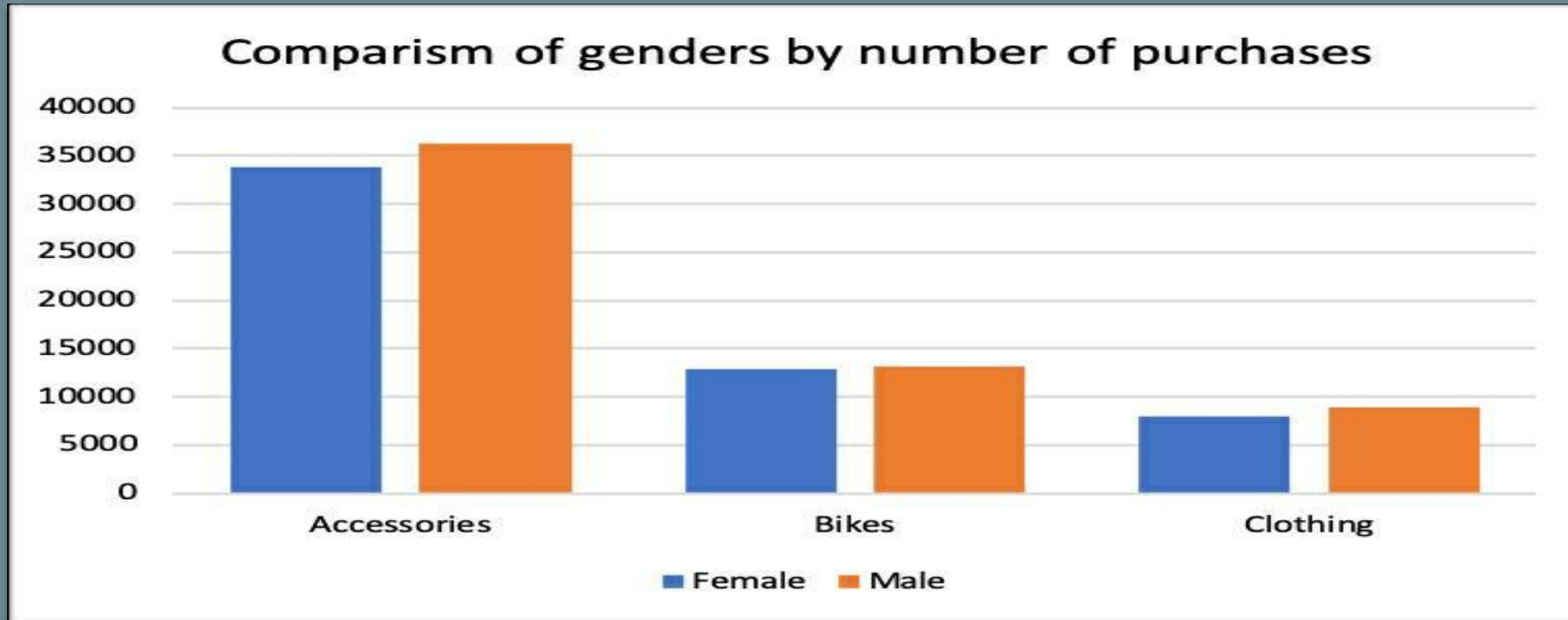
United States has the most sales, while France has the least amount of sales.

percentage of profit by category

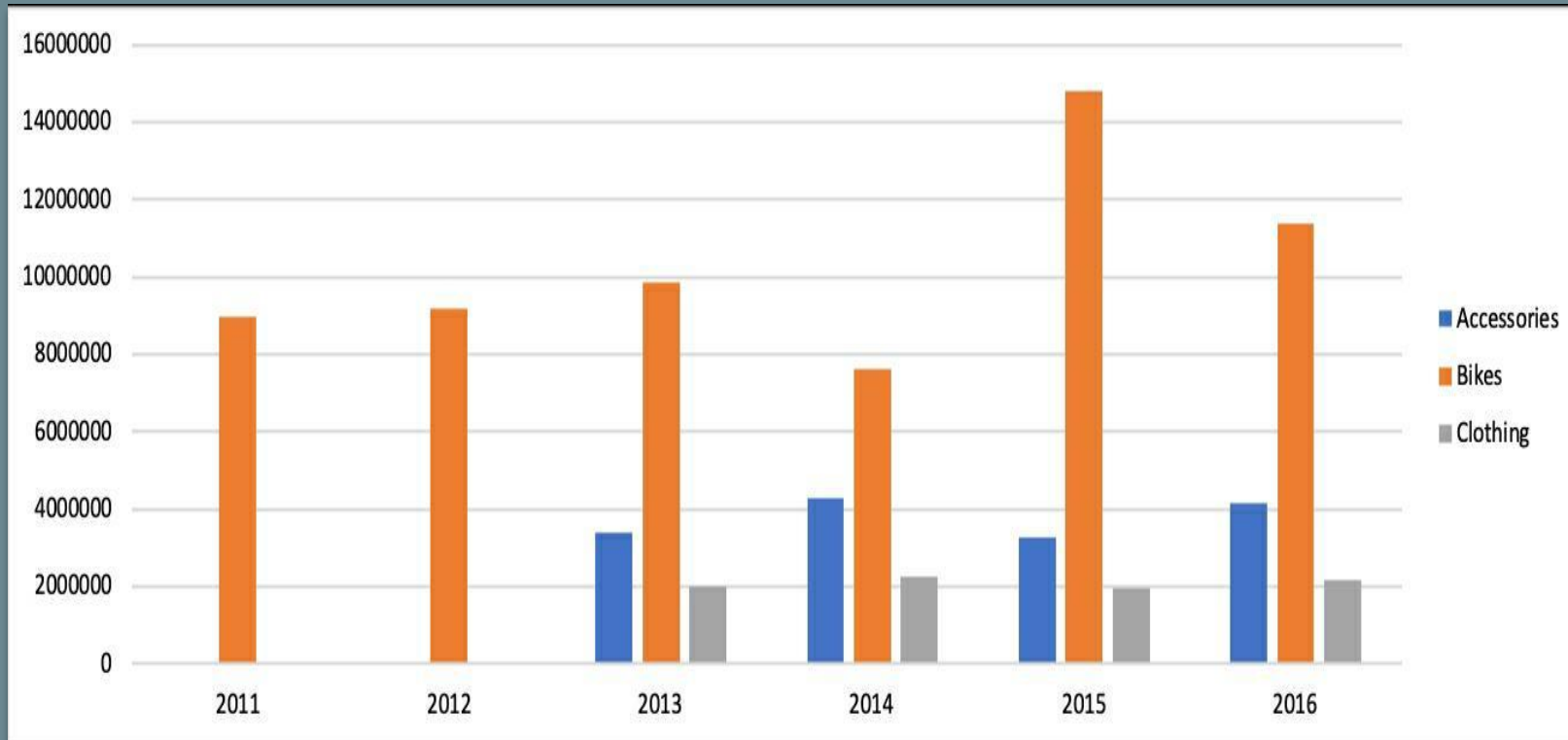
■ Bikes ■ Accessories ■ Clothing



Bikes carry a whopping 64% share of the profits



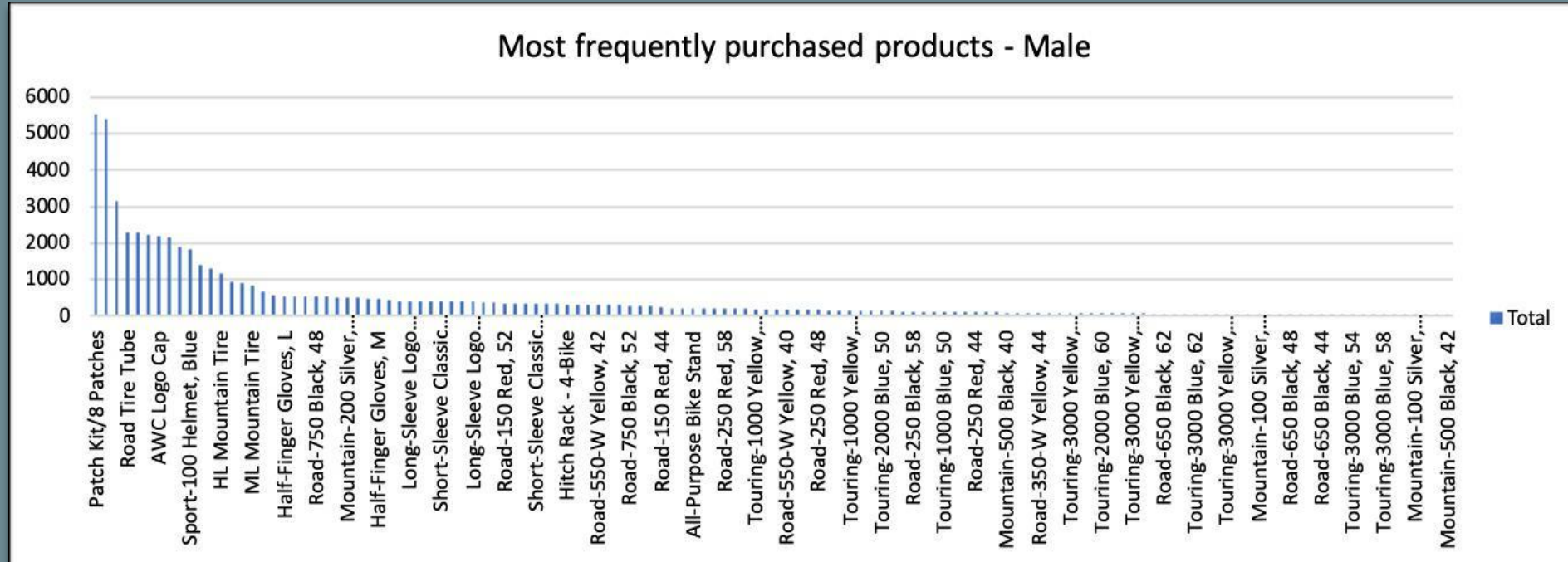
- We can see that products in the the accessories category, has the most number of sales.
- This makes sense because they need to be replaced often.
- Also the difference between genders in terms of purchases is quite small.



- No sales data for the accessories and clothing categories in 2011 and 2012.
- Most likely because sales of products in both categories started in 2013.

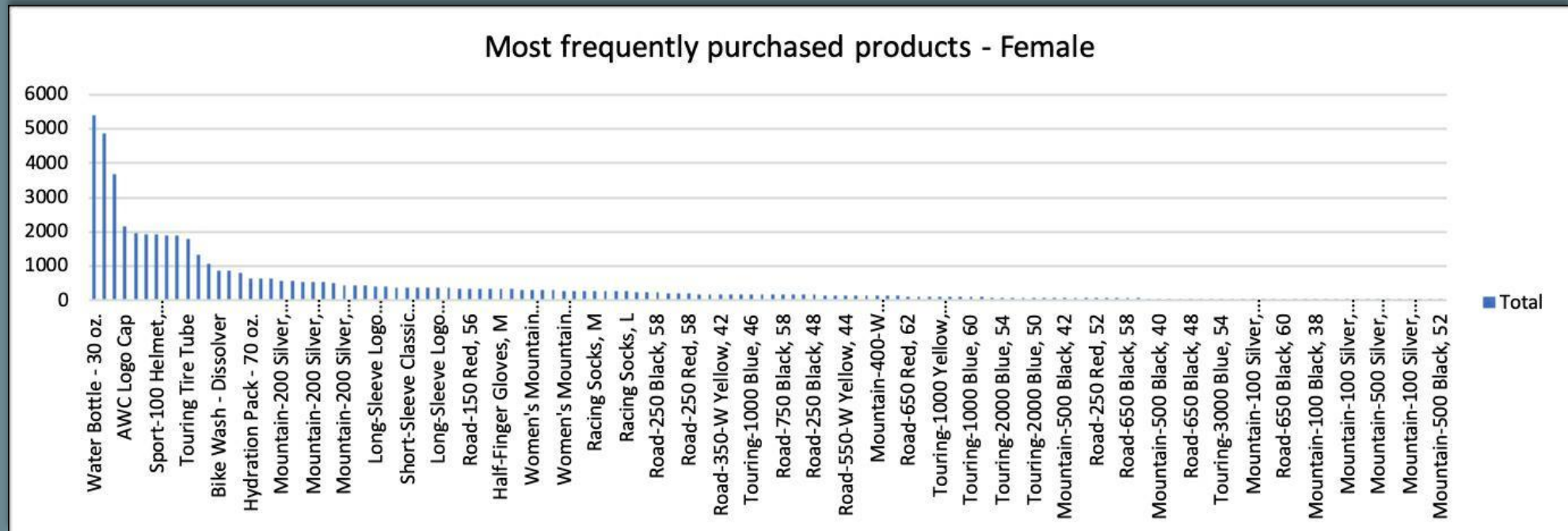


Observe the increase in profits by almost 100%, from 2014 to 2015 for the bikes category.



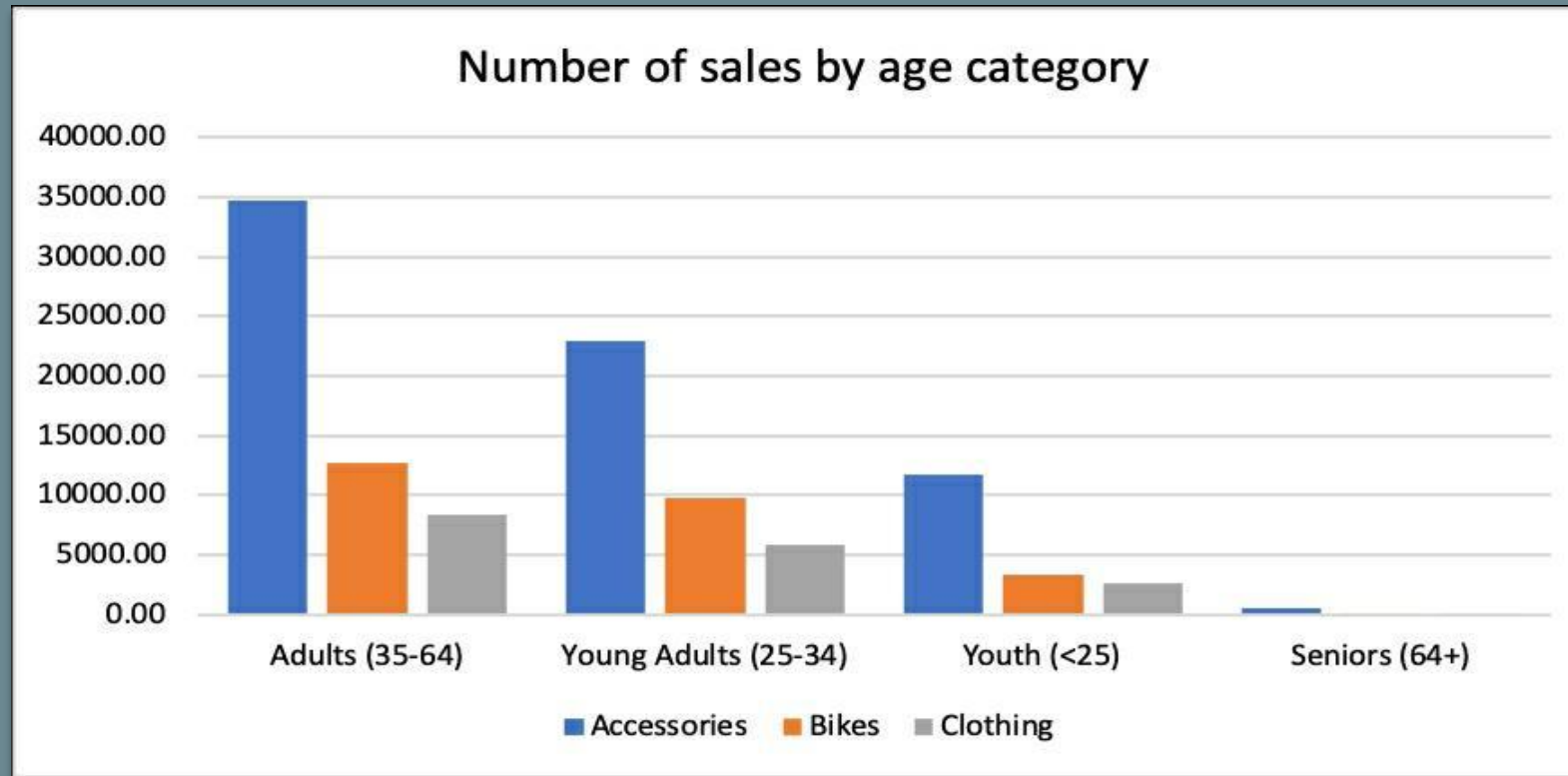
Top 5 most purchased products by males

1. Patch kit/ 8 patches
2. Road tire tube
3. Awc logo cap
4. Sport-100 helmet blue
5. HL mountain tire

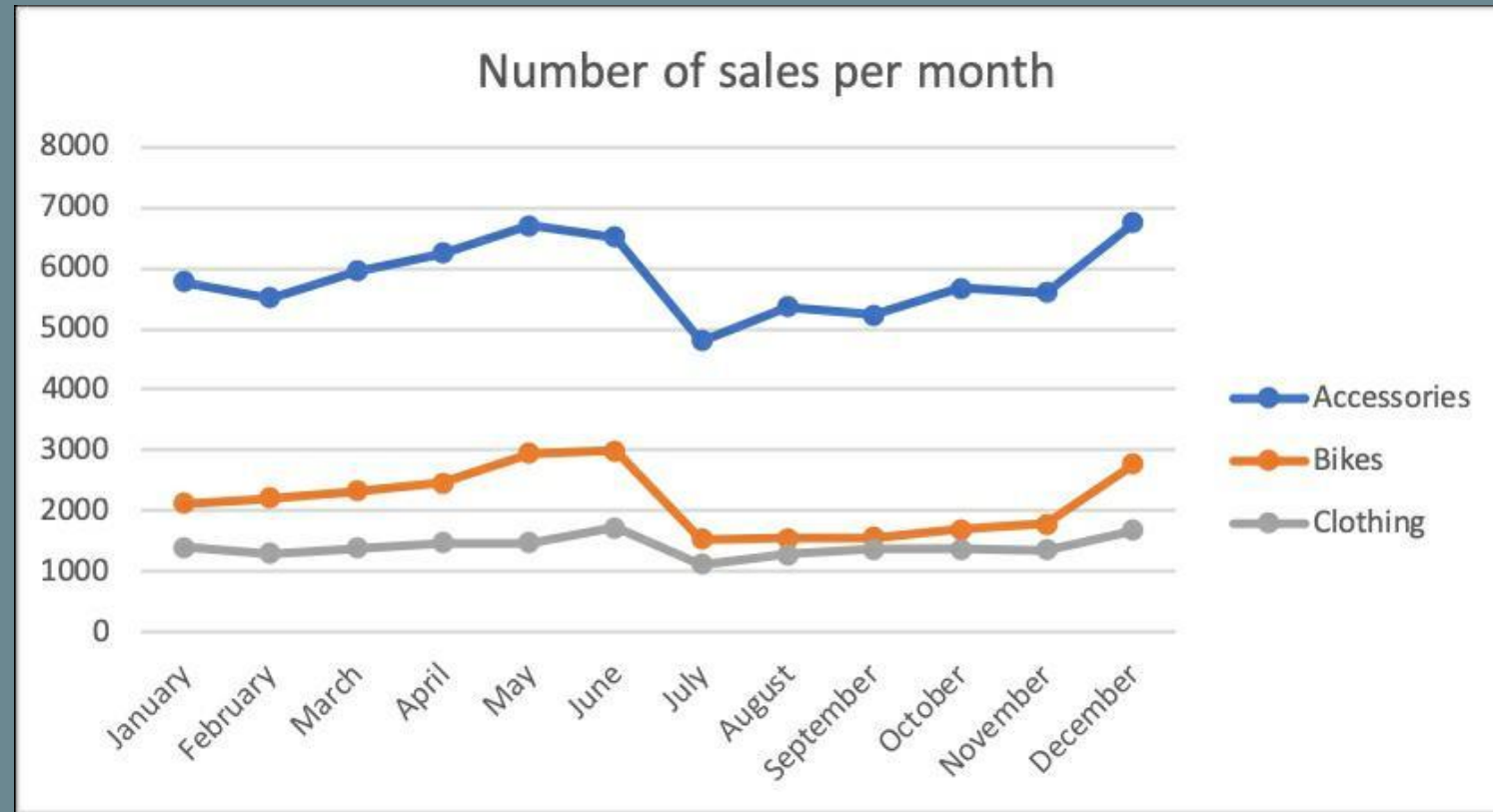


Top 5 most purchased products by females

1. Water bottle- 30 oz
2. Awc logo Cap
3. Sport - 100 Helmet
4. Touring Tire Tube
5. Bike Wash - Dissolver



The adults make the most purchases, while the seniors make the least purchases.



- There is a drop in sales across all categories from the month of June to the month of July.
- From November to December there is a sharp increase in sales.

Conclusions

- United States and France are the best and worst performing States respectively.
- The bikes category has the most sales.
- On the yearly time frame, for the Bikes category, there is an increasing trend in profits while the clothing and accessories categories have stable profits.
- On the monthly time frames, sales drop by over 30% around June to July, with a sharp rise from November to December, probably due to the festive season.
- In terms of products category, both gender have similar number of purchases across all categories.
- Adults make the most purchases, while seniors make the least amount of purchases.