BIKE SALES ANALYSIS

Data Analyst Project | 2025

By: Muhammad Fakhri Azhar

INTRODUCTION

Hi! I'm Muhammad Fakhri Azhar, a physics graduate with a strong passion for data analysis. This project is part of my learning journey in turning data into insights.

Course License:

- Data Science Bootcamp @Kelas Work by Kelas.com
- Data Analyst Mini Course @RevoU
- Ms.Excel Short Class @MySkill
- Computer Training @FMIPA UNNES

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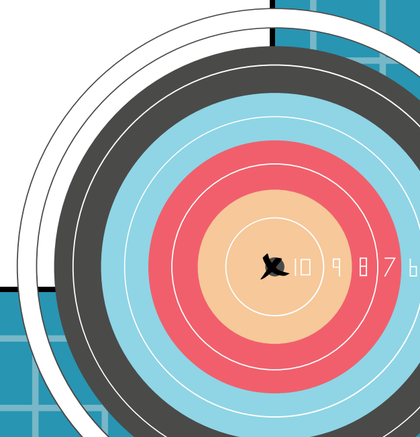
Project Code Details on Github :
https://github.com/mfakhriazhar/bike-sales-analysis

OVERVIEW

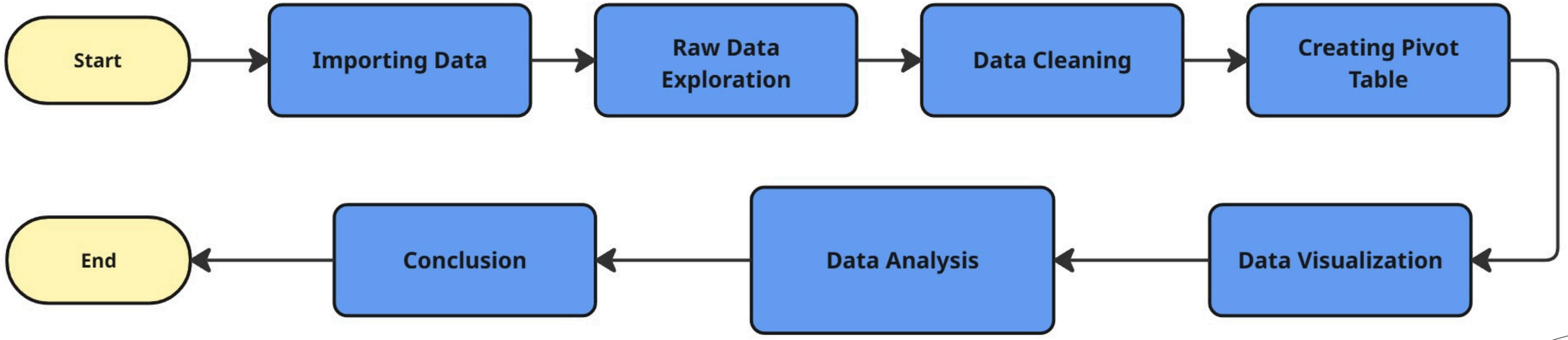
This Bike Sales Analysis project was developed to analyze consumer data in order to understand the factors that influence bicycle purchase decisions. The project originated from the company's need to identify the characteristics of potential customers to effectively target marketing strategies. By examining demographic data such as age, income, marital status, education, and commuting distance, the analysis aims to deliver data-driven insights into the profiles of bicycle buyers.

PROJECT GOALS

- Identify the demographic characteristics and behaviors of consumers who are likely to purchase bicycles.
- Analyze the relationship between variables such as age, income, education, and commuting distance with purchase decisions.
- Provided data-driven insights to help the marketing team target more precise customers.
- Create interactive dashboards as visualization and decision-making aids.



FLOWCHART

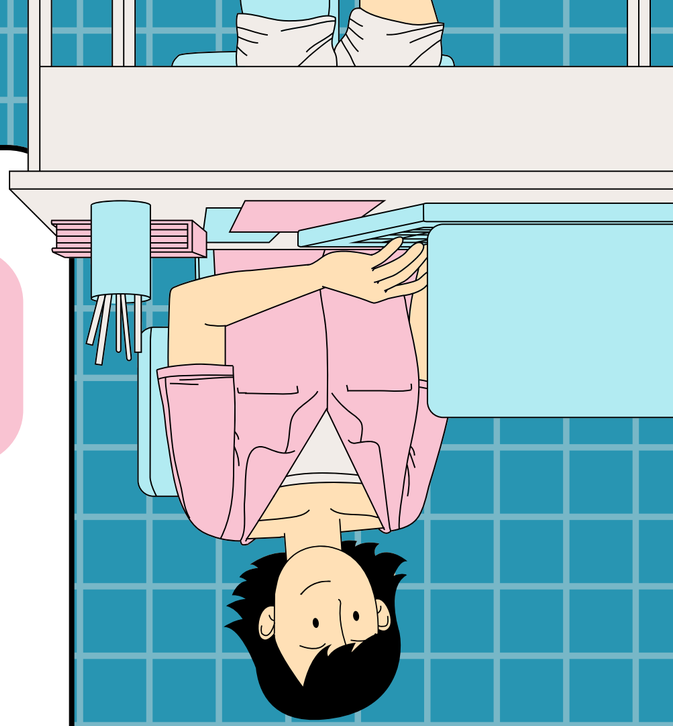

Start
Importing Data
Raw Data Exploration
Data Cleaning
Creating Pivot Table
Data Visualization
Data Analysis
Conclusion
End

DATA OVERVIEW

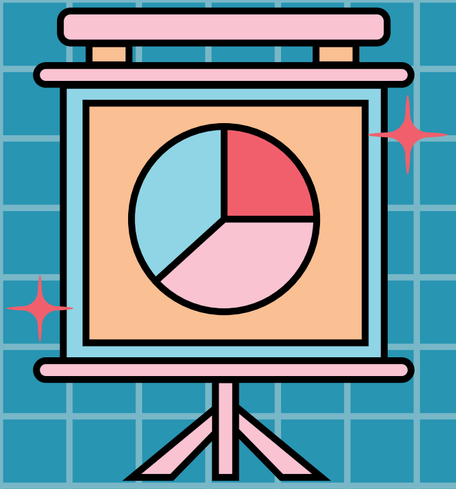
The dataset contains demographic and behavioral information of several individuals who are the target of the bicycle purchase analysis. There are approximately 1000+ rows of data, with each row representing one consumer.

Dataset Link :

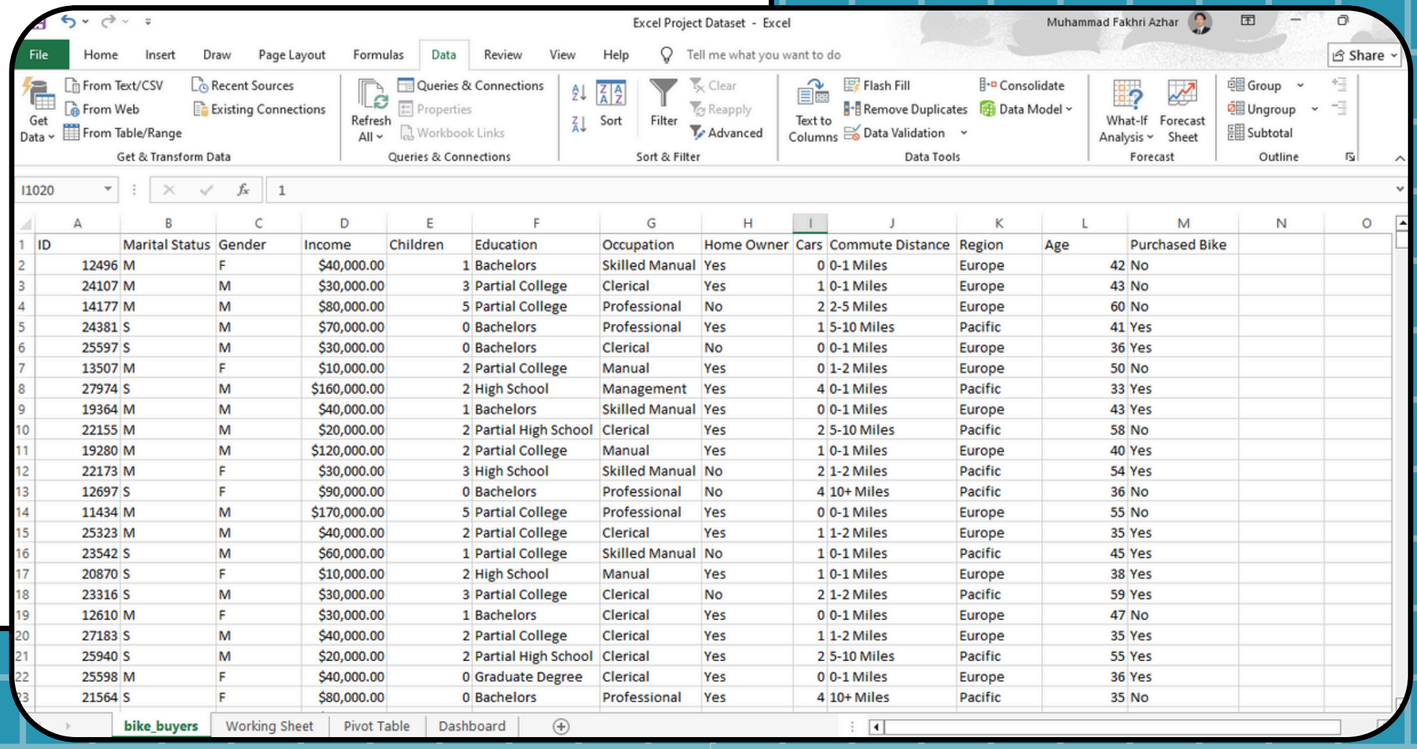
https://github.com/mfakhriazhar/bike-sales-analysis/blob/main/Excel%20Project%20Raw%20Data.xlsx



IMPORT AND EXPLORE RAW DATA



The initial data is taken from the **bike_buyers** sheet. At this stage, we check the data structure, variable types, and identify important data such as the target variable (Purchased Bike).



Excel Project Dataset - Excel — Muhammad Fakhri Azhar

File | Home | Insert | Draw | Page Layout | Formulas | Data | Review | View | Help | Tell me what you want to do | Share

Get Data | From Text/CSV | From Web | From Table/Range | Recent Sources | Existing Connections | Get & Transform Data
Refresh All | Queries & Connections | Properties | Workbook Links | Queries & Connections
Sort | Filter | Clear | Reapply | Advanced | Sort & Filter
Text to Columns | Flash Fill | Remove Duplicates | Data Validation | Consolidate | Data Model | Data Tools
What-If Analysis | Forecast Sheet | Forecast
Group | Ungroup | Subtotal | Outline

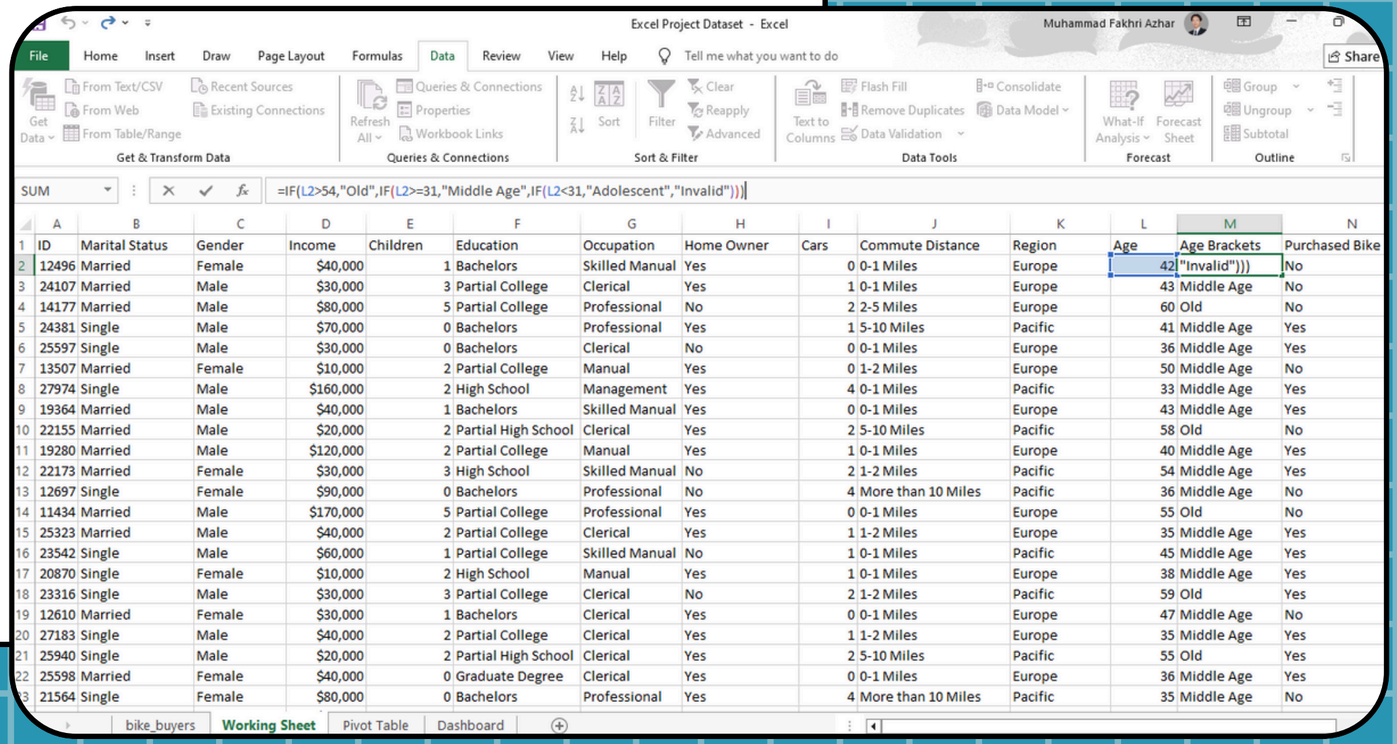
I1020 | 1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	ID	Marital Status	Gender	Income	Children	Education	Occupation	Home Owner	Cars	Commute Distance	Region	Age	Purchased Bike		
2	12496	M	F	$40,000.00	1	Bachelors	Skilled Manual	Yes	0	0-1 Miles	Europe	42	No		
3	24107	M	M	$30,000.00	3	Partial College	Clerical	Yes	1	0-1 Miles	Europe	43	No		
4	14177	M	M	$80,000.00	5	Partial College	Professional	No	2	2-5 Miles	Europe	60	No		
5	24381	S	M	$70,000.00	0	Bachelors	Professional	Yes	1	5-10 Miles	Pacific	41	Yes		
6	25597	S	M	$30,000.00	0	Bachelors	Clerical	No	0	0-1 Miles	Europe	36	Yes		
7	13507	M	F	$10,000.00	2	Partial College	Manual	Yes	0	1-2 Miles	Europe	50	No		
8	27974	S	M	$160,000.00	2	High School	Management	Yes	4	0-1 Miles	Pacific	33	Yes		
9	19364	M	M	$40,000.00	1	Bachelors	Skilled Manual	Yes	0	0-1 Miles	Europe	43	Yes		
10	22155	M	M	$20,000.00	2	Partial High School	Clerical	Yes	2	5-10 Miles	Pacific	58	No		
11	19280	M	M	$120,000.00	2	Partial College	Manual	Yes	1	0-1 Miles	Europe	40	Yes		
12	22173	M	F	$30,000.00	3	High School	Skilled Manual	No	2	1-2 Miles	Pacific	54	Yes		
13	12697	S	F	$90,000.00	0	Bachelors	Professional	No	4	10+ Miles	Pacific	36	No		
14	11434	M	M	$170,000.00	5	Partial College	Professional	Yes	0	0-1 Miles	Europe	55	No		
15	25323	M	M	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Yes		
16	23542	S	M	$60,000.00	1	Partial College	Skilled Manual	No	1	0-1 Miles	Pacific	45	Yes		
17	20870	S	F	$10,000.00	2	High School	Manual	Yes	1	0-1 Miles	Europe	38	Yes		
18	23316	S	M	$30,000.00	3	Partial College	Clerical	No	2	1-2 Miles	Pacific	59	Yes		
19	12610	M	F	$30,000.00	1	Bachelors	Clerical	Yes	0	0-1 Miles	Europe	47	No		
20	27183	S	M	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Yes		
21	25940	S	M	$20,000.00	2	Partial High School	Clerical	Yes	2	5-10 Miles	Pacific	55	Yes		
22	25598	M	F	$40,000.00	0	Graduate Degree	Clerical	Yes	0	0-1 Miles	Europe	36	Yes		
23	21564	S	F	$80,000.00	0	Bachelors	Professional	Yes	4	10+ Miles	Pacific	35	No		

bike_buyers | Working Sheet | Pivot Table | Dashboard

DATA CLEANING

The initial data was then copied and moved to a new **working_sheet** for cleaning, such as changing labels (e.g. “M” to “Married”), grouping ages into categories (adolescent, middle age and old), and checking data consistency and completeness.



ID	Marital Status	Gender	Income	Children	Education	Occupation	Home Owner	Cars	Commute Distance	Region	Age	Age Brackets	Purchased Bike
12496	Married	Female	$40,000	1	Bachelors	Skilled Manual	Yes	0	0-1 Miles	Europe	42	"Invalid")))	No
24107	Married	Male	$30,000	3	Partial College	Clerical	Yes	1	0-1 Miles	Europe	43	Middle Age	No
14177	Married	Male	$80,000	5	Partial College	Professional	No	2	2-5 Miles	Europe	60	Old	No
24381	Single	Male	$70,000	0	Bachelors	Professional	Yes	1	5-10 Miles	Pacific	41	Middle Age	Yes
25597	Single	Male	$30,000	0	Bachelors	Clerical	No	0	0-1 Miles	Europe	36	Middle Age	Yes
13507	Married	Female	$10,000	2	Partial College	Manual	Yes	0	1-2 Miles	Europe	50	Middle Age	No
27974	Single	Male	$160,000	2	High School	Management	Yes	4	0-1 Miles	Pacific	33	Middle Age	Yes
19364	Married	Male	$40,000	1	Bachelors	Skilled Manual	Yes	0	0-1 Miles	Europe	43	Middle Age	Yes
22155	Married	Male	$20,000	2	Partial High School	Clerical	Yes	2	5-10 Miles	Pacific	58	Old	No
19280	Married	Male	$120,000	2	Partial College	Manual	Yes	1	0-1 Miles	Europe	40	Middle Age	Yes
22173	Married	Female	$30,000	3	High School	Skilled Manual	No	2	1-2 Miles	Pacific	54	Middle Age	Yes
12697	Single	Female	$90,000	0	Bachelors	Professional	No	4	More than 10 Miles	Pacific	36	Middle Age	No
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23542	Single	Male	$60,000	1	Partial College	Skilled Manual	No	1	0-1 Miles	Pacific	45	Middle Age	Yes
20870	Single	Female	$10,000	2	High School	Manual	Yes	1	0-1 Miles	Europe	38	Middle Age	Yes
23316	Single	Male	$30,000	3	Partial College	Clerical	No	2	1-2 Miles	Pacific	59	Old	Yes
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21564	Single	Female	$80,000	0	Bachelors	Professional	Yes	4	More than 10 Miles	Pacific	35	Middle Age	No

PIVOT TABLE ANALYSIS

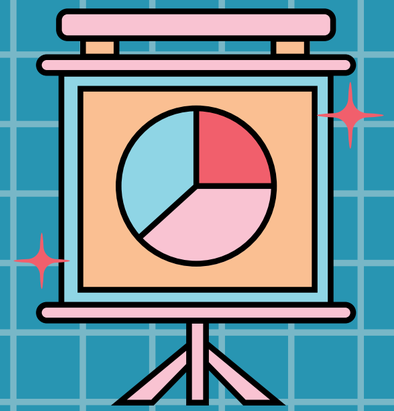
Construct a Pivot Table to scrutinize the relationship between various features, including Income, Gender, Age, and Commute Distance, and their impact on bike purchases. This insightful analysis will assist in uncovering buying patterns and emerging trends, providing a clearer understanding of customer behavior and preferences.

PIVOT TABLE ANALYSIS

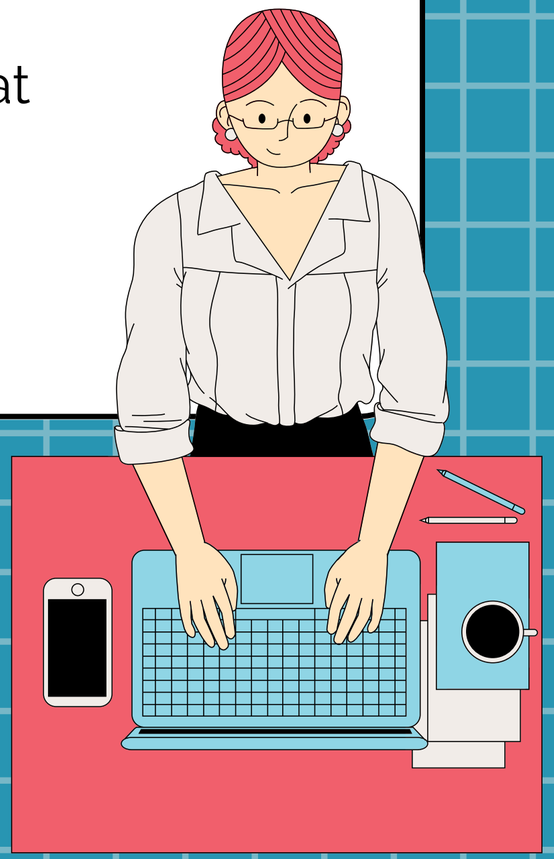
Income vs Purchase:

- The average income of bicycle buyers was higher ($57,963) than non-purchasers ($54,875).
- Male purchasers had the highest income ($60,124), suggesting that income and gender influence purchase decisions.

Conclusion: Income is a significant factor, especially among male consumers.



Average of Income	Column Labels		
Row Labels	No	Yes	Grand Total
Female	53,440	55,774	54,581
Male	56,208	60,124	58,063
Grand Total	54,875	57,963	56,360

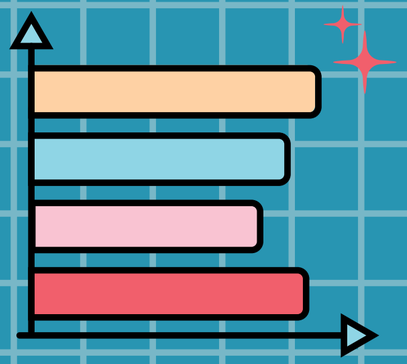


PIVOT TABLE ANALYSIS

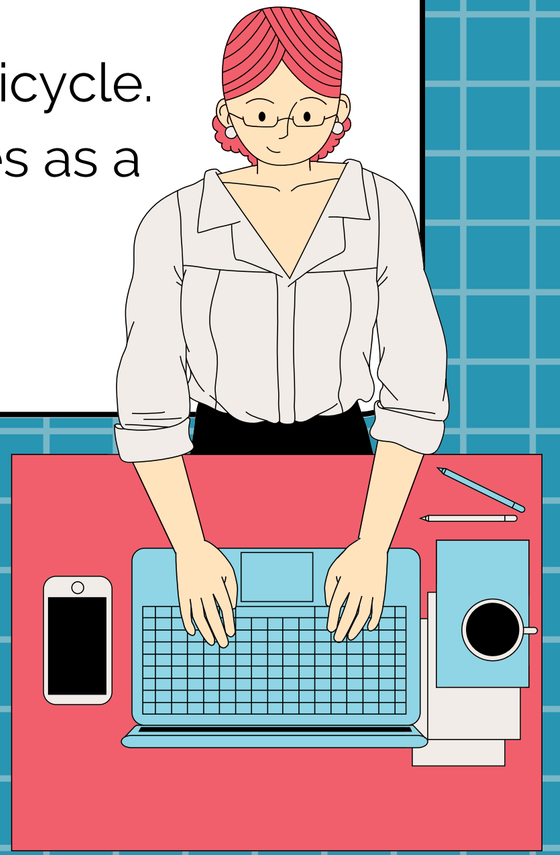
Commuting Distance vs Bike Purchase:

- People who live close to their workplace (especially 0-1 miles and 2-5 miles) are more likely to buy a bicycle.
- The longer the distance (>10 miles), the less likely to purchase a bicycle.

Conclusion: Short commuting distances encourage the use of bicycles as a means of transportation.



Count of Purchased Bike	Column Labels		
Row Labels	No	Yes	Grand Total
0-1 Miles	166	200	366
1-2 Miles	92	77	169
2-5 Miles	67	95	162
5-10 Miles	116	76	192
More than 10 Miles	78	33	111
Grand Total	519	481	1000



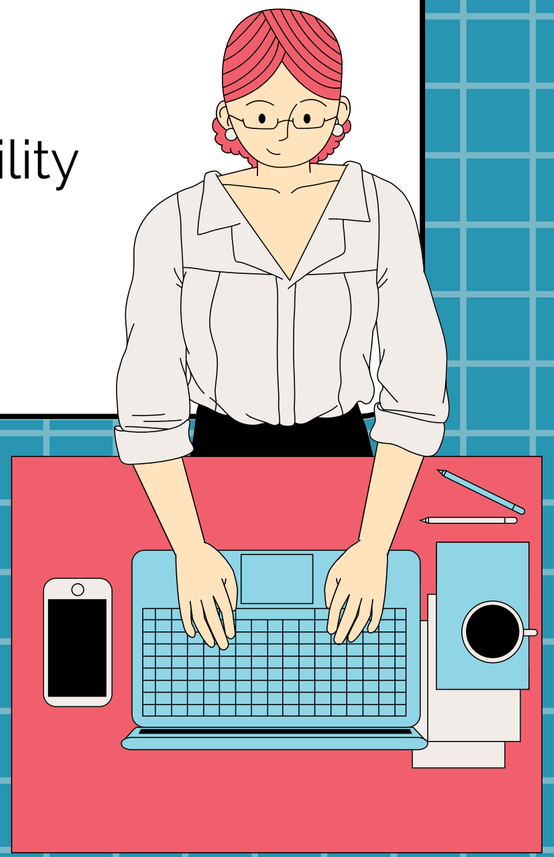
PIVOT TABLE ANALYSIS

Age vs Bike Purchase:

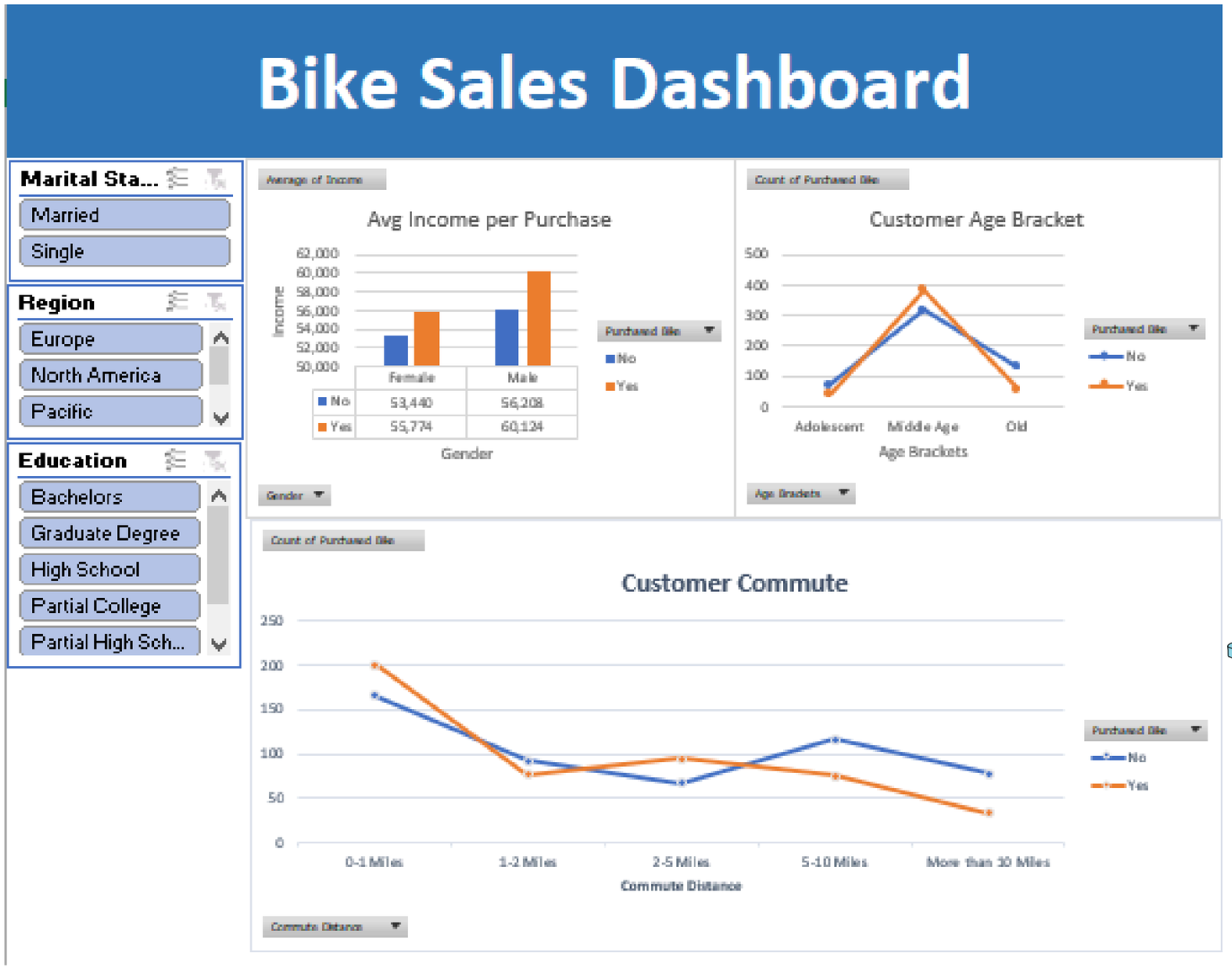
- The Middle Age group dominates bike purchases with 383 buyers out of 701 people.
- Adolescent and Old had lower purchase rates (~35% and ~31%).

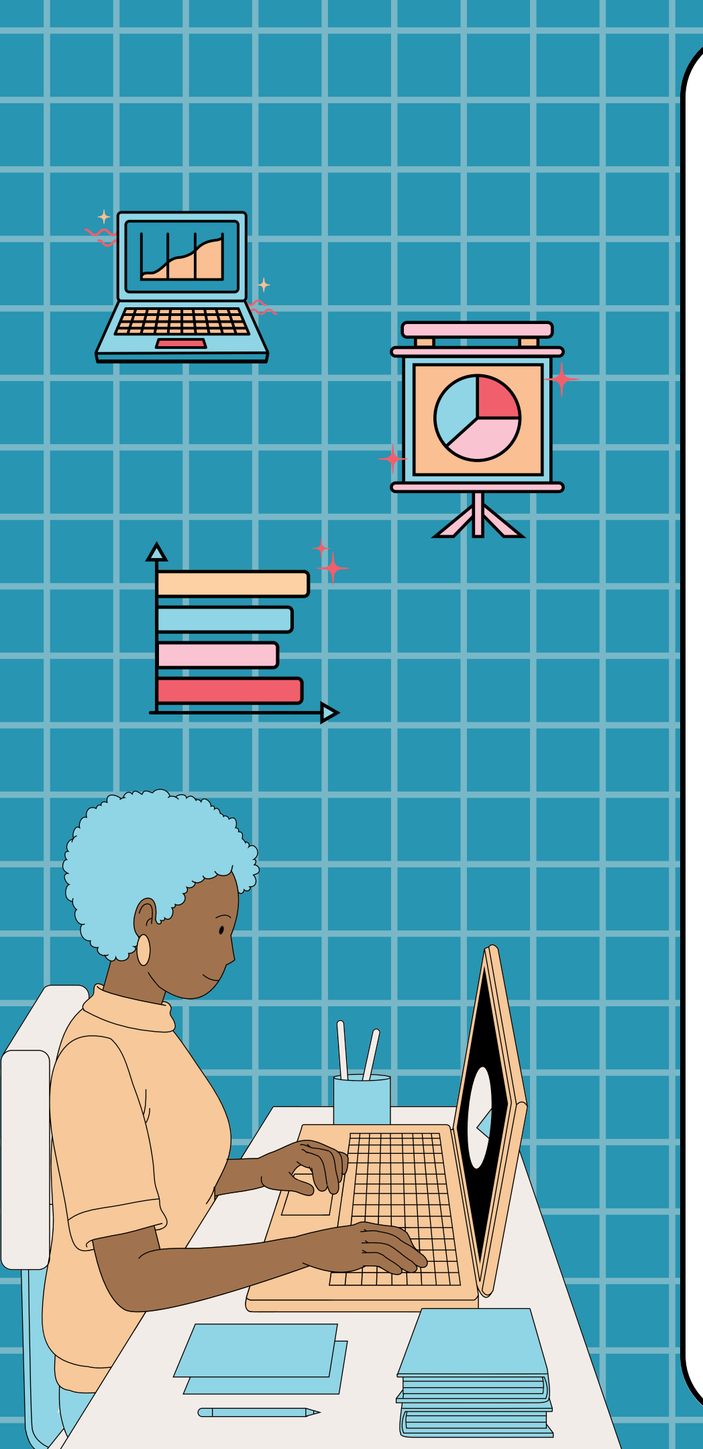
Conclusion: Productive age has the most potential, as they have mobility needs and strong purchasing power.

Count of Purchased Bike	Column Labels		
Row Labels	No	Yes	Grand Total
Adolescent	71	39	110
Middle Age	318	383	701
Old	130	59	189
Grand Total	519	481	1000



DASHBOARD PREVIEW





INSIGHTS

- The majority of bicycle buyers are from the productive age group (Middle Age), indicating that this age segment has the most potential as a target market.
- Income plays an important role in purchasing decisions, with individuals with higher incomes more likely to purchase a bicycle, especially men.
- Commuting distance to work also influences purchase intention, with the highest purchase trend coming from people living within 0-5 miles.
- Men dominate the number of bicycle buyers, both in terms of number and average income.
- The ideal combination of target consumers is: male, middle age, middle to upper-middle income, and living near work.
- Marketing strategies should focus on these segments, with approaches that match their demographic and lifestyle characteristics.

CONCLUSION

Through analyzing consumer data using pivot tables and segmentation, the Bike Sales Analysis project successfully identified the key patterns and factors that influence bike purchase decisions. The results show that bike buyers are dominated by individuals of middle age, middle to upper-middle income, male, and live within a short distance to work (specifically 0-5 miles). Factors such as income, age, and commuting distance have a significant influence on purchase intention, where the higher the income and the shorter the commuting distance, the greater the probability of buying a bike. These findings provide important insights for a more targeted marketing strategy, targeting the most potential customer segments based on their demographics and behavior.

THANK YOU!

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