1. Acquired the Raw Data of Bike Buyers

ID	Marital Status	Gender	Income	Children	Education	Occupation	Home Owner	Cars	Commute Dist	Region	Age	Purchased Bike
12496	M	F	$40,000.00	1	Bachelors	Skilled Manua	Yes	0	0-1 Miles	Europe	42	No
24107	M	M	$30,000.00	3	Partial College	Clerical	Yes	1	0-1 Miles	Europe	43	No
14177	M	M	$80,000.00	5	Partial College	Professional	No	2	2-5 Miles	Europe	60	No
24381	S	M	$70,000.00	0	Bachelors	Professional	Yes	1	5-10 Miles	Pacific	41	Yes
25597	S	M	$30,000.00	0	Bachelors	Clerical	No	0	0-1 Miles	Europe	36	Yes
13507	M	F	$10,000.00	2	Partial College	Manual	Yes	0	1-2 Miles	Europe	50	No
27974	S	M	$160,000.00	2	High School	Management	Yes	4	0-1 Miles	Pacific	33	Yes
19364	M	M	$40,000.00	1	Bachelors	Skilled Manua	Yes	0	0-1 Miles	Europe	43	Yes
22155	M	M	$20,000.00	2	Partial High Sc	Clerical	Yes	2	5-10 Miles	Pacific	58	No
19280	M	M	$120,000.00	2	Partial College	Manual	Yes	1	0-1 Miles	Europe	40	Yes
22173	M	F	$30,000.00	3	High School	Skilled Manua	No	2	1-2 Miles	Pacific	54	Yes
12697	S	F	$90,000.00	0	Bachelors	Professional	No	4	10+ Miles	Pacific	36	No
11434	M	M	$170,000.00	5	Partial College	Professional	Yes	0	0-1 Miles	Europe	55	No
25323	M	M	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Yes
23542	S	M	$60,000.00	1	Partial College	Skilled Manua	No	1	0-1 Miles	Pacific	45	Yes
20870	S	F	$10,000.00	2	High School	Manual	Yes	1	0-1 Miles	Europe	38	Yes
23316	S	M	$30,000.00	3	Partial College	Clerical	No	2	1-2 Miles	Pacific	59	Yes
12610	M	F	$30,000.00	1	Bachelors	Clerical	Yes	0	0-1 Miles	Europe	47	No
27183	S	M	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Yes
25940	S	M	$20,000.00	2	Partial High Sc	Clerical	Yes	2	5-10 Miles	Pacific	55	Yes
25598	M	F	$40,000.00	0	Graduate Deg	Clerical	Yes	0	0-1 Miles	Europe	36	Yes
21564	S	F	$80,000.00	0	Bachelors	Professional	Yes	4	10+ Miles	Pacific	35	No
19193	S	M	$40,000.00	2	Partial College	Clerical	Yes	0	1-2 Miles	Europe	35	Yes
26412	M	F	$80,000.00	5	High School	Management	No	3	5-10 Miles	Europe	56	No
27184	S	M	$40,000.00	2	Partial College	Clerical	No	1	0-1 Miles	Europe	34	No
12590	S	M	$30,000.00	1	Bachelors	Clerical	Yes	0	0-1 Miles	Europe	63	No
17841	S	M	$30,000.00	0	Partial College	Clerical	No	1	0-1 Miles	Europe	29	Yes
18283	S	F	$100,000.00	0	Bachelors	Professional	No	1	5-10 Miles	Pacific	40	No
18299	M	M	$70,000.00	5	Partial College	Skilled Manua	Yes	2	5-10 Miles	Pacific	44	No
16466	S	F	$20,000.00	0	Partial High Sc	Manual	No	2	0-1 Miles	Europe	32	Yes

2. Data Cleaning:

i) Removed Duplicates:

ID	Marital Status	Gender	Income	Children	Education	Occupation	Home Owner	Cars	Commute Dist	Region	Age	Purchased Bike
12496	M	F	$40,000.00	1	Bachelors	Skilled Manua	Yes		0	0-1 Miles	Europe	42 No
24107	M	M	$30,000.00	3	Partial College	Clerical	Yes		1	0-1 Miles	Europe	43 No
14177	M	M	$80,000.00	5	Partial College	Professional	No		2	2-5 Miles	Europe	60 No
24381	S	M	$70,000.00	0	Bachelors	Professional	Yes		1	5-10 Miles	Pacific	41 Yes
25597	S	M	$30,000.00	0	Bachelors	Clerical	No		0	0-1 Miles	Europe	36 Yes
13507	M	F	$10,000.00	2	Partial College	Manual	Yes		0	1-2 Miles	Europe	50 No
27974	S	M	$160,000.00	2	High School	Management	Yes		4	0-1 Miles	Pacific	33 Yes
19364	M	M	$40,000.00	1	Bachelors	Skilled Manua	Yes		0	0-1 Miles	Europe	43 Yes
22155	M	M	$20,000.00									
19280	M	M	$120,000.00									
22173	M	F	$30,000.00									
12697	S	F	$90,000.00									
11434	M	M	$170,000.00									
25323	M	M	$40,000.00									
23542	S	M	$60,000.00	1	Partial College	Skilled Manua	No		1	0-1 Miles	Pacific	45 Yes
20870	S	F	$10,000.00	2	High School	Manual	Yes		1	0-1 Miles	Europe	38 Yes
23316	S	M	$30,000.00	3	Partial College	Clerical	No		2	1-2 Miles	Pacific	59 Yes
12610	M	F	$30,000.00	1	Bachelors	Clerical	Yes		0	0-1 Miles	Europe	47 No
27183	S	M	$40,000.00	2	Partial College	Clerical	Yes		1	1-2 Miles	Europe	35 Yes
25940	S	M	$20,000.00	2	Partial High Sc	Clerical	Yes		2	5-10 Miles	Pacific	55 Yes
25598	M	F	$40,000.00	0	Graduate Deg	Clerical	Yes		0	0-1 Miles	Europe	36 Yes
21564	S	F	$80,000.00	0	Bachelors	Professional	Yes		4	10+ Miles	Pacific	35 No
19193	S	M	$40,000.00	2	Partial College	Clerical	Yes		0	1-2 Miles	Europe	35 Yes
26412	M	F	$80,000.00	5	High School	Management	No		3	5-10 Miles	Europe	56 No
27184	S	M	$40,000.00	2	Partial College	Clerical	No		1	0-1 Miles	Europe	34 No
12590	S	M	$30,000.00	1	Bachelors	Clerical	Yes		0	0-1 Miles	Europe	63 No
17841	S	M	$30,000.00	0	Partial College	Clerical	No		1	0-1 Miles	Europe	29 Yes
18283	S	F	$100,000.00	0	Bachelors	Professional	No		1	5-10 Miles	Pacific	40 No
18299	M	M	$70,000.00	5	Partial College	Skilled Manua	Yes		2	5-10 Miles	Pacific	44 No

Microsoft Excel

ℹ️ 26 duplicate values found and removed; 1000 unique values remain. Note that counts may include empty cells, spaces, etc.

[OK]

ii) Converted Marital Status "M" to "Married" and "S" to "Single", similarly converted Gender "M" to "Male" and "F" to "Female" for more clarity in Understanding the data

(Note: Used the find and replace tool to convert Marital Status, and Used substitute function to replace Genders to display my knowledge of various excel functionalities)

For Gender formula: =IF(C2="F",SUBSTITUTE(C2,"F","Female"),SUBSTITUTE(C2,"M","Male"))

ID	Marital Status	Gender	Income	Children	Education	Occupation	Home Owner	Cars	Commute Dist	Region	Age	Purchased Bike
12496	Married	F	$40,000.00	1	Bachelors	Skilled Manua	Yes	0	0-1 Miles	Europe	42	No
24107	Married	M	$30,000.00	3	Partial College	Clerical	Yes	1	0-1 Miles	Europe	43	No
14177	Married	M	$80,000.00	5	Partial College	Professional	No	2	2-5 Miles	Europe	60	No
24381	S	M	$70,000.00	0	Bachelors	Professional	Yes	1	5-10 Miles	Pacific	41	Yes
25597	S	M	$30,000.00	0	Bachelors	Clerical	No	0	0-1 Miles	Europe	36	Yes
13507	Married	F	$10,000.00	2	Partial College	Manual	Yes	0	1-2 Miles	Europe	50	No
27974	S	M	$160,000.00	2	High School	Management	Yes	4	0-1 Miles	Pacific	33	Yes
19364	Married	M	$40,000.00	1	Bachelors	Skilled Manua	Yes	0	0-1 Miles	Europe	43	Yes
22155	Married	M	$20,000.00	2	Partial High Sc	Clerical				Pacific	58	No
19280	Married	M	$120,000.00	2	Partial College	Manual				Europe	40	Yes
22173	Married	F	$30,000.00	3	High School	Skilled Manua				Pacific	54	Yes
12697	S	F	$90,000.00	0	Bachelors	Professional				Pacific	36	No
11434	Married	M	$170,000.00	5	Partial College	Professional				Europe	55	No
25323	Married	M	$40,000.00	2	Partial College	Clerical				Europe	35	Yes
23542	S	M	$60,000.00	1	Partial College	Skilled Manua	No	1	0-1 Miles	Pacific	45	Yes
20870	S	F	$10,000.00	2	High School	Manual	Yes	1	0-1 Miles	Europe	38	Yes
23316	S	M	$30,000.00	3	Partial College	Clerical	No	2	1-2 Miles	Pacific	59	Yes
12610	Married	F	$30,000.00	1	Bachelors	Clerical	Yes	0	0-1 Miles	Europe	47	No
27183	S	M	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Yes
25940	S	M	$20,000.00	2	Partial High Sc	Clerical	Yes					
25598	Married	F	$40,000.00	0	Graduate Deg	Clerical	Yes					
21564	S	F	$80,000.00	0	Bachelors	Professional	Yes					
19193	S	M	$40,000.00	2	Partial College	Clerical	Yes					
26412	Married	F	$80,000.00	5	High School	Management	No					
27184	S	M	$40,000.00	2	Partial College	Clerical	No					
12590	S	M	$30,000.00	1	Bachelors	Clerical	Yes					
17841	S	M	$30,000.00	0	Partial College	Clerical	No					
18283	S	F	$100,000.00	0	Bachelors	Professional	No					
18299	Married	M	$70,000.00	5	Partial College	Skilled Manua	Yes					
16466	S	F	$20,000.00	0	Partial High Sc	Manual	No					

Microsoft Excel — All done. We made 538 replacements. [OK]

Find and Replace — Find what: M | Replace with: Married | Within: Sheet | Search: By Columns | Look in: Formulas | Match entire cell contents

Sheets: Rawdata | Working Sheet | Pivot Table | Dashboard

D2 = =IF(C2="F",SUBSTITUTE(C2,"F","Female"),SUBSTITUTE(C2,"M","Male"))

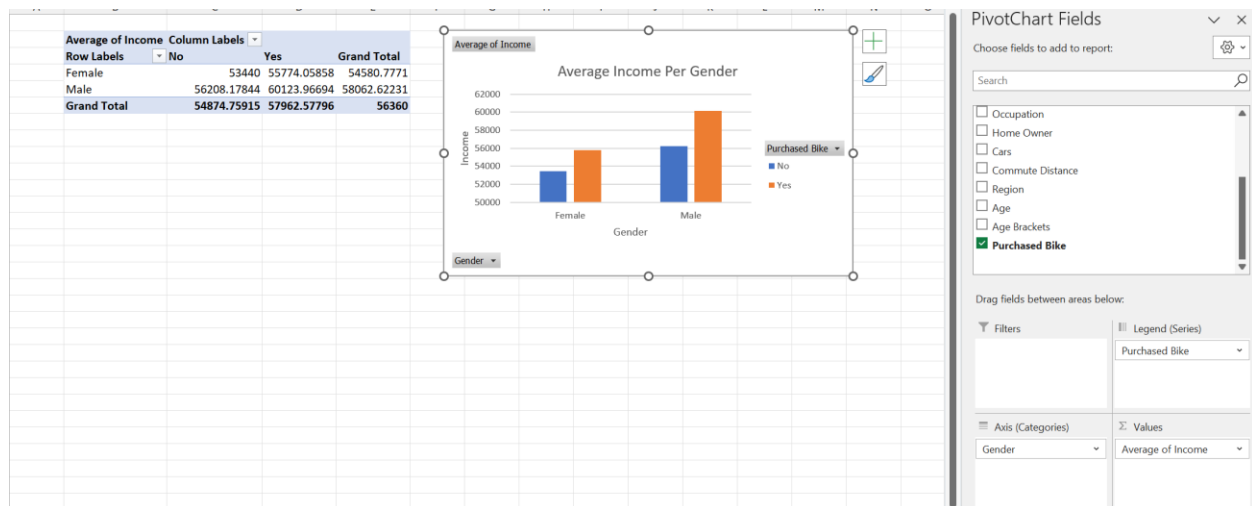| ID	Marital Status	Gender	Gender	Income	Children	Education	Occupation	Home Owner	Cars	Commute Dist	Region	Age	Purchased Bike
12496	Married	F	Female	$40,000.00	1	Bachelors	Skilled Manua	Yes	0	0-1 Miles	Europe	42	No
24107	Married	M	Male	$30,000.00	3	Partial College	Clerical	Yes	1	0-1 Miles	Europe	43	No
14177	Married	M	Male	$80,000.00	5	Partial College	Professional	No	2	2-5 Miles	Europe	60	No
24381	Single	M	Male	$70,000.00	0	Bachelors	Professional	Yes	1	5-10 Miles	Pacific	41	Yes
25597	Single	M	Male	$30,000.00	0	Bachelors	Clerical	No	0	0-1 Miles	Europe	36	Yes
13507	Married	F	Female	$10,000.00	2	Partial College	Manual	Yes	0	1-2 Miles	Europe	50	No
27974	Single	M	Male	$160,000.00	2	High School	Management	Yes	4	0-1 Miles	Pacific	33	Yes
19364	Married	M	Male	$40,000.00	1	Bachelors	Skilled Manua	Yes	0	0-1 Miles	Europe	43	Yes
22155	Married	M	Male	$20,000.00	2	Partial High Sc	Clerical	Yes	2	5-10 Miles	Pacific	58	No
19280	Married	M	Male	$120,000.00	2	Partial College	Manual	Yes	1	0-1 Miles	Europe	40	Yes
22173	Married	F	Female	$30,000.00	3	High School	Skilled Manua	No	2	1-2 Miles	Pacific	54	Yes
12697	Single	F	Female	$90,000.00	0	Bachelors	Professional	No	4	10+ Miles	Pacific	36	No
11434	Married	M	Male	$170,000.00	5	Partial College	Professional	Yes	0	0-1 Miles	Europe	55	No
25323	Married	M	Male	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Yes
23542	Single	M	Male	$60,000.00	1	Partial College	Skilled Manua	No	1	0-1 Miles	Pacific	45	Yes
20870	Single	F	Female	$10,000.00	2	High School	Manual	Yes	1	0-1 Miles	Europe	38	Yes
23316	Single	M	Male	$30,000.00	3	Partial College	Clerical	No	2	1-2 Miles	Pacific	59	Yes
12610	Married	F	Female	$30,000.00	1	Bachelors	Clerical	Yes	0	0-1 Miles	Europe	47	No
27183	Single	M	Male	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Yes
25940	Single	M	Male	$20,000.00	2	Partial High Sc	Clerical	Yes	2	5-10 Miles	Pacific	55	Yes
25598	Married	F	Female	$40,000.00	0	Graduate Deg	Clerical	Yes	0	0-1 Miles	Europe	36	Yes
21564	Single	F	Female	$80,000.00	0	Bachelors	Professional	Yes	4	10+ Miles	Pacific	35	No
19193	Single	M	Male	$40,000.00	2	Partial College	Clerical	Yes	0	1-2 Miles	Europe	35	Yes

iii) Did Feature Engineering To divide age into age brackets (If age<31 then "Adolescent", If age>=31 then "Middle Age", If age>55 then "Old")

Formula: =IF(L2>55,"Old",IF(L2>=31,"Middle Age",IF(L2<55,"Adolescent","Invalid")))

M2   fx =IF(L2>55,"Old",IF(L2>=31,"Middle Age",IF(L2<55,"Adolescent","Invalid")))

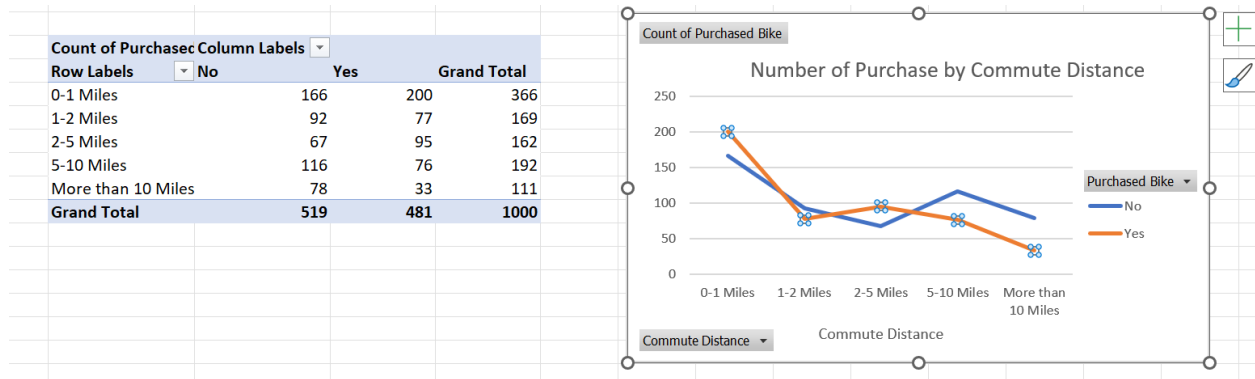| ID	Marital Status	Gender	Income	Children	Education	Occupation	Home Owner	Cars	Commute Distance	Region	Age	Age Brackets	Purchased Bike
12496	Married	Female	$40,000.00	1	Bachelors	Skilled Manual	Yes	0	0-1 Miles	Europe	42	Middle Age	No
24107	Married	Male	$30,000.00	3	Partial College	Clerical	Yes	1	0-1 Miles	Europe	43	Middle Age	No
14177	Married	Male	$80,000.00	5	Partial College	Professional	No	2	2-5 Miles	Europe	60	Old	No
24381	Single	Male	$70,000.00	0	Bachelors	Professional	Yes	1	5-10 Miles	Pacific	41	Middle Age	Yes
25597	Single	Male	$30,000.00	0	Bachelors	Clerical	No	0	0-1 Miles	Europe	36	Middle Age	Yes
13507	Married	Female	$10,000.00	2	Partial College	Manual	Yes	0	1-2 Miles	Europe	50	Middle Age	No
27974	Single	Male	$160,000.00	2	High School	Management	Yes	4	0-1 Miles	Pacific	33	Middle Age	Yes
19364	Married	Male	$40,000.00	1	Bachelors	Skilled Manual	Yes	0	0-1 Miles	Europe	43	Middle Age	Yes
22155	Married	Male	$20,000.00	2	Partial High School	Clerical	Yes	2	5-10 Miles	Pacific	58	Old	No
19280	Married	Male	$120,000.00	2	Partial College	Manual	Yes	1	0-1 Miles	Europe	40	Middle Age	Yes
22173	Married	Female	$30,000.00	3	High School	Skilled Manual	No	2	1-2 Miles	Pacific	54	Middle Age	Yes
12697	Single	Female	$90,000.00	0	Bachelors	Professional	No	4	More than 10 Miles	Pacific	36	Middle Age	No
11434	Married	Male	$170,000.00	5	Partial College	Professional	Yes	0	0-1 Miles	Europe	55	Middle Age	No
25323	Married	Male	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Middle Age	Yes
23542	Single	Male	$60,000.00	1	Partial College	Skilled Manual	No	1	0-1 Miles	Pacific	45	Middle Age	Yes
20870	Single	Female	$10,000.00	2	High School	Manual	Yes	1	0-1 Miles	Europe	38	Middle Age	Yes
23316	Single	Male	$30,000.00	3	Partial College	Clerical	No	2	1-2 Miles	Pacific	59	Old	Yes
12610	Married	Female	$30,000.00	1	Bachelors	Clerical	Yes	0	0-1 Miles	Europe	47	Middle Age	No
27183	Single	Male	$40,000.00	2	Partial College	Clerical	Yes	1	1-2 Miles	Europe	35	Middle Age	Yes
25940	Single	Male	$20,000.00	2	Partial High School	Clerical	Yes	2	5-10 Miles	Pacific	55	Middle Age	Yes
25598	Married	Female	$40,000.00	0	Graduate Degree	Clerical	Yes	0	0-1 Miles	Europe	36	Middle Age	Yes
21564	Single	Female	$80,000.00	0	Bachelors	Professional	Yes	4	More than 10 Miles	Pacific	35	Middle Age	No
19193	Single	Male	$40,000.00	2	Partial College	Clerical	Yes	0	1-2 Miles	Europe	35	Middle Age	Yes
26412	Married	Female	$80,000.00	5	High School	Management	No	3	5-10 Miles	Europe	56	Old	No
27184	Single	Male	$40,000.00	2	Partial College	Clerical	No	1	0-1 Miles	Europe	34	Middle Age	No
12590	Single	Male	$30,000.00	1	Bachelors	Clerical	Yes	0	0-1 Miles	Europe	63	Old	No
17841	Single	Male	$30,000.00	0	Partial College	Clerical	No	1	0-1 Miles	Europe	29	Adolescent	Yes
18283	Single	Female	$100,000.00	0	Bachelors	Professional	No	1	5-10 Miles	Pacific	40	Middle Age	No
18299	Married	Male	$70,000.00	5	Partial College	Skilled Manual	Yes	2	5-10 Miles	Pacific	44	Middle Age	No
16466	Single	Female	$20,000.00	0	Partial High School	Manual	No	2	0-1 Miles	Europe	32	Middle Age	

3.Data Analysis:

i) Average income of customer who have/not have purchased a bike by gender
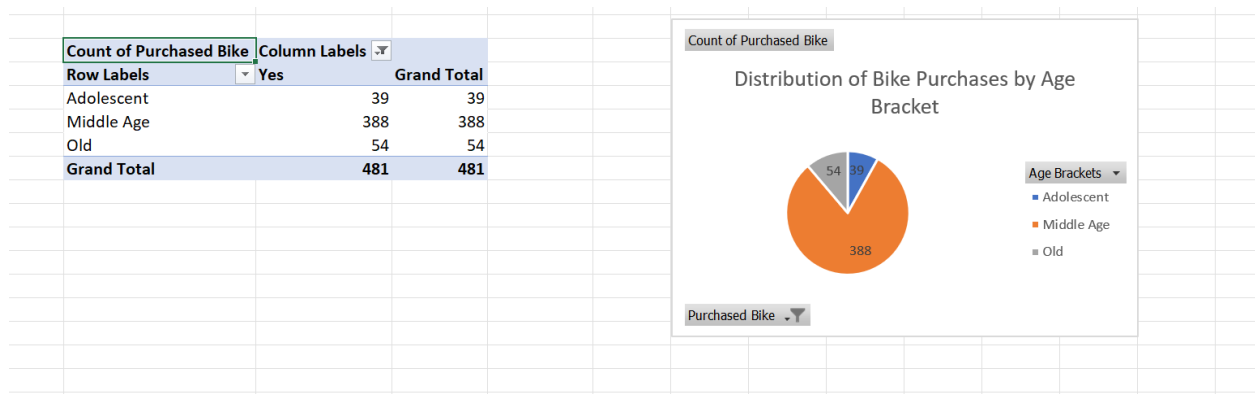

ii) Count of purchase based on customer commute distance
Note: While visualizing this I ran into a scenario where a commute distance value was "10 Miles+" and while visualizing was not getting arranged in ascending order. So I Used the find the replace tool and changed the value to "More than 10 Miles" which enabled me to place it at the last according to order.

Count of Purchased	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

iii) Distribution of Bike Purchases by Age Bracket

Count of Purchased Bike	Column Labels	
Row Labels	Yes	Grand Total
Adolescent	39	39
Middle Age	388	388
Old	54	54
Grand Total	481	481

4.Dashboard: