



**WITH THE COLLABORATION OF YONSEI UNIVERSITY**



**IBM SPSS STATISTICS PROJECTS**

**COURSE 1: BIG DATA EMERGING TECHNOLOGIES**

**PROJECT 1: IBM SPSS STATISTICS SUBSCRIPTION**

**PROJECT 2: DATA ANALYSIS ON INCOME, RESIDE AND  
CARCAT**

**NAME: AHMAD MUSTAFFA BIN ZAKARIA**

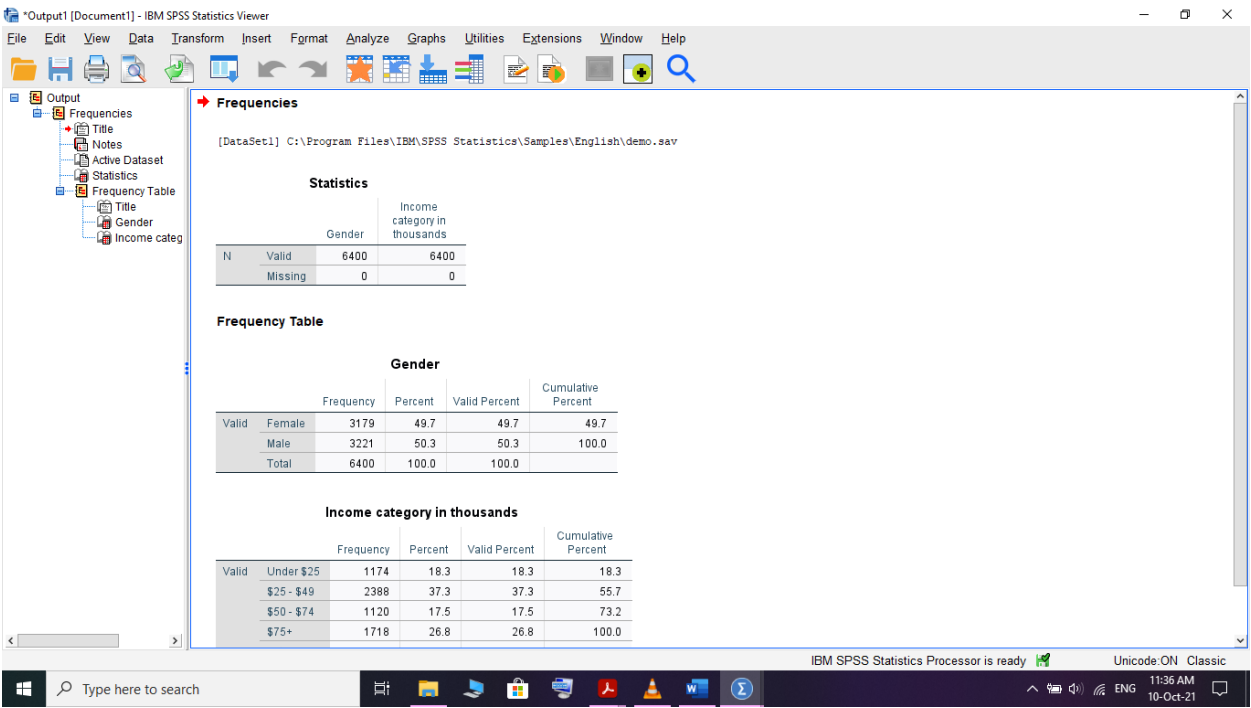
**UNIVERSITY: UNIVERSITI TEKNOLOGI MARA(UTM), MALAYSIA(ALUMNI)**

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PROJECT 1: IBM SPSS STATISTICS SUBSCRIPTION

Producing the output in form of variable element



Data that have been generated into graph

Frequencies

Notes		
Output Created	10-OCT-2021 11:35:26	
Comments		
Input	Data	C:\Program Files\IBM\SPSS Statistics\Samples\English\demo.sav
	Active Dataset	DataSet1
	Filter	<none>

	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	6400
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=gender inccat /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.03

[DataSet1] C:\Program Files\IBM\SPSS Statistics\Samples\English\demo.sav

### Statistics

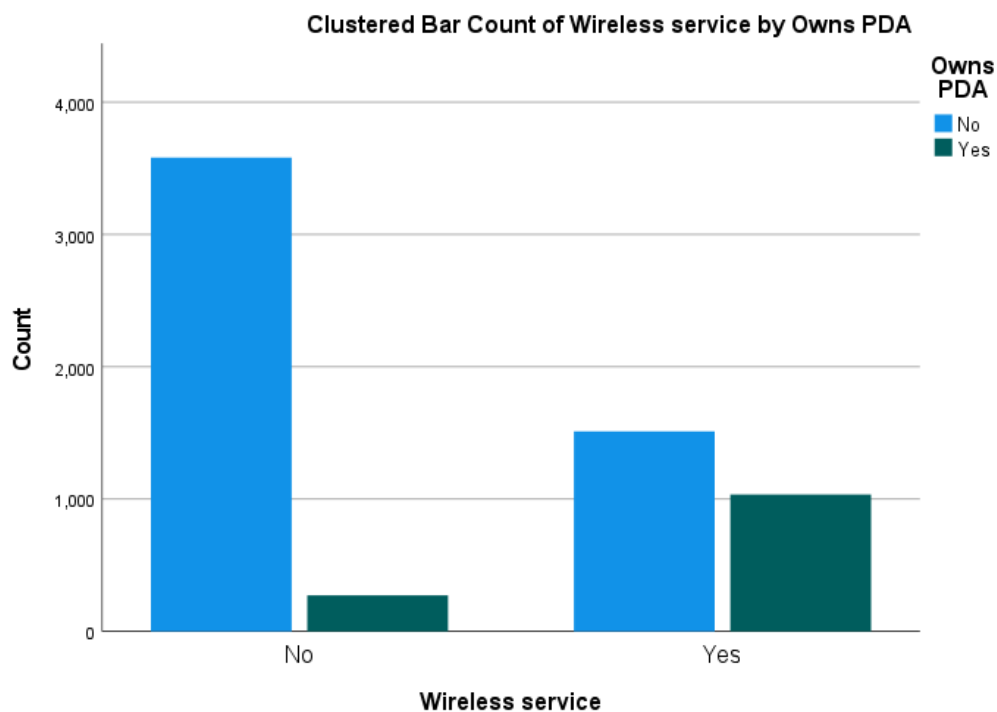
		Gender	Income category in thousands
N	Valid	6400	6400
	Missing	0	0

### Frequency Table

		Gender		Valid Percent	Cumulative Percent
		Frequency	Percent		
Valid	Female	3179	49.7	49.7	49.7
	Male	3221	50.3	50.3	100.0
	Total	6400	100.0	100.0	

Income category in thousands					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under \$25	1174	18.3	18.3	18.3
	\$25 - \$49	2388	37.3	37.3	55.7
	\$50 - \$74	1120	17.5	17.5	73.2
	\$75+	1718	26.8	26.8	100.0
	Total	6400	100.0	100.0	

## GGraph



The chart above shows that people with wireless phone services are far more likely to have PDAs which are Personal Digital or Data Assistant than people without wireless services .

PROJECT 2: DATA ANALYSIS ON INCOME, RESIDE AND CARCAT

In this project, the task was given is still on the same process, but the variable were change to income, reside and carcat. Based on the project 2 requirements, the income is refer to Household income in thousands, the reside is refer to Number of people in household and the carcat refers to Primary vehicle price category.

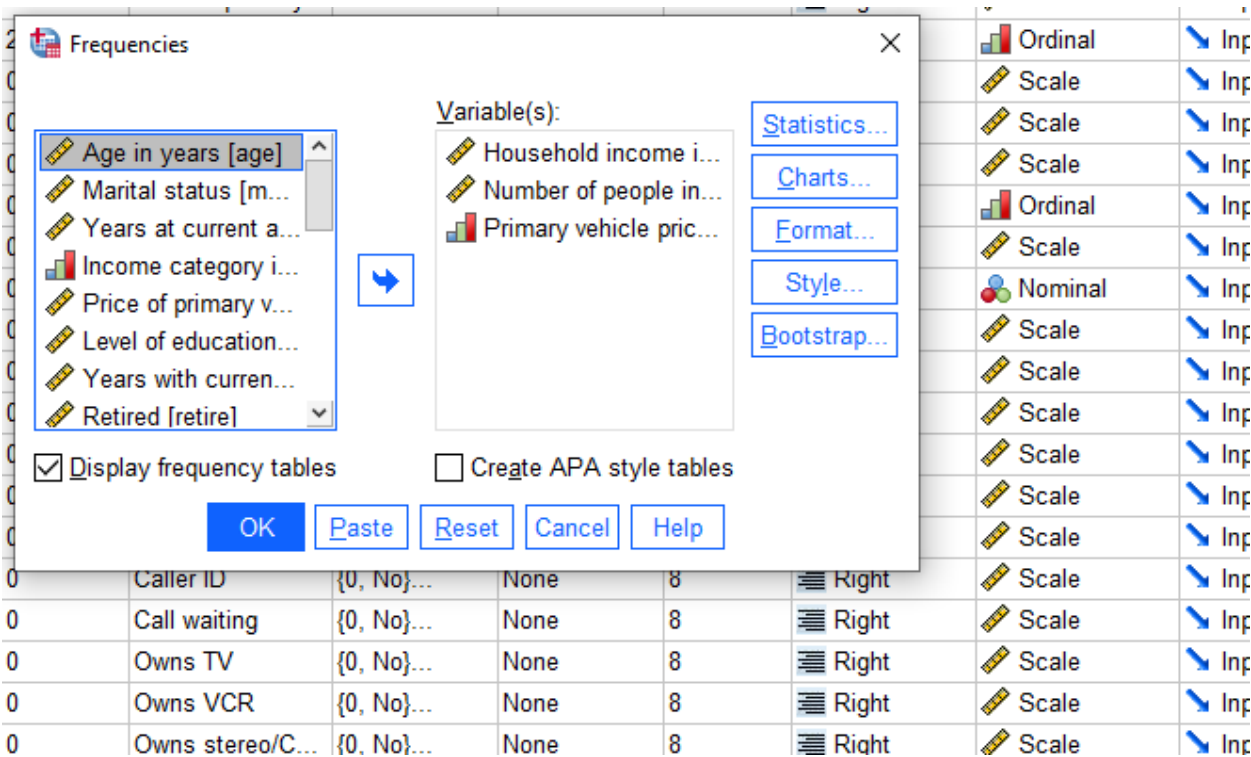


Diagram 2.1 Selecting variable

## Frequencies

### Statistics

		Household income in thousands	Number of people in household	Primary vehicle price category
N	Valid	6400	6400	6400
	Missing	0	0	0

## Frequency Table

### Household income in thousands

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9.00	25	.4	.4	.4
	10.00	37	.6	.6	1.0
	11.00	26	.4	.4	1.4
	12.00	21	.3	.3	1.7
	13.00	32	.5	.5	2.2
	14.00	44	.7	.7	2.9
	15.00	52	.8	.8	3.7
	16.00	57	.9	.9	4.6
	17.00	72	1.1	1.1	5.7
	18.00	105	1.6	1.6	7.4
	19.00	110	1.7	1.7	9.1
	20.00	110	1.7	1.7	10.8
	21.00	117	1.8	1.8	12.6
	22.00	129	2.0	2.0	14.6
	23.00	120	1.9	1.9	16.5
	24.00	117	1.8	1.8	18.3
	25.00	131	2.0	2.0	20.4
	26.00	122	1.9	1.9	22.3
	27.00	118	1.8	1.8	24.1
	28.00	120	1.9	1.9	26.0

	29.00	115	1.8	1.8	27.8
	30.00	126	2.0	2.0	29.8
	31.00	125	2.0	2.0	31.7
	32.00	110	1.7	1.7	33.5
	33.00	109	1.7	1.7	35.2
	34.00	111	1.7	1.7	36.9
	35.00	93	1.5	1.5	38.3
	36.00	107	1.7	1.7	40.0
	37.00	81	1.3	1.3	41.3
	38.00	87	1.4	1.4	42.6
	39.00	87	1.4	1.4	44.0
	40.00	90	1.4	1.4	45.4
	41.00	72	1.1	1.1	46.5
	42.00	75	1.2	1.2	47.7
	43.00	71	1.1	1.1	48.8
	44.00	71	1.1	1.1	49.9
	45.00	79	1.2	1.2	51.2
	46.00	89	1.4	1.4	52.5
	47.00	64	1.0	1.0	53.5
	48.00	52	.8	.8	54.4
	49.00	83	1.3	1.3	55.7
	50.00	76	1.2	1.2	56.8
	51.00	54	.8	.8	57.7
	52.00	45	.7	.7	58.4
	53.00	60	.9	.9	59.3
	54.00	47	.7	.7	60.1
	55.00	53	.8	.8	60.9
	56.00	39	.6	.6	61.5
	57.00	56	.9	.9	62.4
	58.00	48	.8	.8	63.1
	59.00	51	.8	.8	63.9
	60.00	46	.7	.7	64.6
	61.00	47	.7	.7	65.4
	62.00	52	.8	.8	66.2
	63.00	35	.5	.5	66.7
	64.00	36	.6	.6	67.3
	65.00	48	.8	.8	68.0
	66.00	45	.7	.7	68.8

	67.00	39	.6	.6	69.4
	68.00	43	.7	.7	70.0
	69.00	45	.7	.7	70.7
	70.00	38	.6	.6	71.3
	71.00	30	.5	.5	71.8
	72.00	26	.4	.4	72.2
	73.00	35	.5	.5	72.8
	74.00	26	.4	.4	73.2
	75.00	31	.5	.5	73.6
	76.00	22	.3	.3	74.0
	77.00	29	.5	.5	74.4
	78.00	20	.3	.3	74.8
	79.00	21	.3	.3	75.1
	80.00	24	.4	.4	75.5
	81.00	16	.3	.3	75.7
	82.00	20	.3	.3	76.0
	83.00	24	.4	.4	76.4
	84.00	26	.4	.4	76.8
	85.00	21	.3	.3	77.1
	86.00	31	.5	.5	77.6
	87.00	22	.3	.3	78.0
	88.00	23	.4	.4	78.3
	89.00	15	.2	.2	78.5
	90.00	24	.4	.4	78.9
	91.00	13	.2	.2	79.1
	92.00	20	.3	.3	79.4
	93.00	17	.3	.3	79.7
	94.00	17	.3	.3	80.0
	95.00	25	.4	.4	80.4
	96.00	26	.4	.4	80.8
	97.00	22	.3	.3	81.1
	98.00	23	.4	.4	81.5
	99.00	24	.4	.4	81.8
	100.00	16	.3	.3	82.1
	101.00	13	.2	.2	82.3
	102.00	24	.4	.4	82.7
	103.00	28	.4	.4	83.1
	104.00	11	.2	.2	83.3



105.00	11	.2	.2	83.5
106.00	20	.3	.3	83.8
107.00	15	.2	.2	84.0
108.00	14	.2	.2	84.2
109.00	18	.3	.3	84.5
110.00	12	.2	.2	84.7
111.00	9	.1	.1	84.8
112.00	15	.2	.2	85.1
113.00	11	.2	.2	85.2
114.00	14	.2	.2	85.5
115.00	14	.2	.2	85.7
116.00	7	.1	.1	85.8
117.00	11	.2	.2	86.0
118.00	14	.2	.2	86.2
119.00	9	.1	.1	86.3
120.00	10	.2	.2	86.5
121.00	13	.2	.2	86.7
122.00	12	.2	.2	86.9
123.00	10	.2	.2	87.0
124.00	11	.2	.2	87.2
125.00	15	.2	.2	87.4
126.00	12	.2	.2	87.6
127.00	9	.1	.1	87.8
128.00	19	.3	.3	88.0
129.00	11	.2	.2	88.2
130.00	11	.2	.2	88.4
131.00	5	.1	.1	88.5
132.00	9	.1	.1	88.6
133.00	7	.1	.1	88.7
134.00	8	.1	.1	88.8
135.00	9	.1	.1	89.0
136.00	5	.1	.1	89.1
137.00	13	.2	.2	89.3
138.00	11	.2	.2	89.4
139.00	11	.2	.2	89.6
140.00	12	.2	.2	89.8
141.00	7	.1	.1	89.9
142.00	5	.1	.1	90.0

143.00	12	.2	.2	90.2
144.00	9	.1	.1	90.3
145.00	4	.1	.1	90.4
146.00	7	.1	.1	90.5
147.00	4	.1	.1	90.5
148.00	10	.2	.2	90.7
149.00	3	.0	.0	90.8
150.00	6	.1	.1	90.8
151.00	12	.2	.2	91.0
152.00	11	.2	.2	91.2
153.00	6	.1	.1	91.3
154.00	4	.1	.1	91.4
155.00	1	.0	.0	91.4
156.00	8	.1	.1	91.5
157.00	6	.1	.1	91.6
158.00	4	.1	.1	91.7
159.00	6	.1	.1	91.8
160.00	11	.2	.2	91.9
161.00	5	.1	.1	92.0
162.00	4	.1	.1	92.1
163.00	5	.1	.1	92.1
164.00	3	.0	.0	92.2
165.00	8	.1	.1	92.3
166.00	3	.0	.0	92.4
167.00	9	.1	.1	92.5
168.00	3	.0	.0	92.5
169.00	8	.1	.1	92.7
170.00	6	.1	.1	92.8
171.00	5	.1	.1	92.8
172.00	7	.1	.1	93.0
173.00	5	.1	.1	93.0
174.00	6	.1	.1	93.1
175.00	2	.0	.0	93.2
176.00	3	.0	.0	93.2
177.00	4	.1	.1	93.3
178.00	4	.1	.1	93.3
179.00	4	.1	.1	93.4
180.00	7	.1	.1	93.5

181.00	9	.1	.1	93.6
182.00	2	.0	.0	93.7
183.00	5	.1	.1	93.8
184.00	9	.1	.1	93.9
185.00	2	.0	.0	93.9
186.00	2	.0	.0	94.0
187.00	5	.1	.1	94.0
188.00	8	.1	.1	94.2
189.00	5	.1	.1	94.2
190.00	1	.0	.0	94.3
191.00	3	.0	.0	94.3
192.00	5	.1	.1	94.4
193.00	2	.0	.0	94.4
194.00	5	.1	.1	94.5
195.00	6	.1	.1	94.6
196.00	3	.0	.0	94.6
197.00	3	.0	.0	94.7
198.00	6	.1	.1	94.8
199.00	1	.0	.0	94.8
200.00	3	.0	.0	94.8
201.00	4	.1	.1	94.9
202.00	1	.0	.0	94.9
203.00	3	.0	.0	95.0
204.00	2	.0	.0	95.0
205.00	5	.1	.1	95.1
206.00	4	.1	.1	95.1
207.00	4	.1	.1	95.2
208.00	3	.0	.0	95.2
209.00	2	.0	.0	95.3
210.00	3	.0	.0	95.3
211.00	2	.0	.0	95.3
212.00	3	.0	.0	95.4
213.00	5	.1	.1	95.5
214.00	1	.0	.0	95.5
215.00	3	.0	.0	95.5
216.00	3	.0	.0	95.6
217.00	1	.0	.0	95.6
218.00	1	.0	.0	95.6

220.00	2	.0	.0	95.6
221.00	1	.0	.0	95.7
222.00	2	.0	.0	95.7
223.00	3	.0	.0	95.7
224.00	2	.0	.0	95.8
226.00	1	.0	.0	95.8
227.00	3	.0	.0	95.8
228.00	3	.0	.0	95.9
230.00	4	.1	.1	95.9
232.00	1	.0	.0	96.0
233.00	3	.0	.0	96.0
234.00	1	.0	.0	96.0
235.00	3	.0	.0	96.1
236.00	2	.0	.0	96.1
237.00	3	.0	.0	96.1
238.00	2	.0	.0	96.2
239.00	4	.1	.1	96.2
240.00	4	.1	.1	96.3
241.00	3	.0	.0	96.3
242.00	2	.0	.0	96.4
243.00	1	.0	.0	96.4
244.00	6	.1	.1	96.5
245.00	5	.1	.1	96.6
246.00	1	.0	.0	96.6
249.00	2	.0	.0	96.6
250.00	1	.0	.0	96.6
252.00	4	.1	.1	96.7
253.00	2	.0	.0	96.7
254.00	1	.0	.0	96.7
256.00	1	.0	.0	96.8
258.00	3	.0	.0	96.8
259.00	4	.1	.1	96.9
260.00	2	.0	.0	96.9
261.00	1	.0	.0	96.9
262.00	1	.0	.0	96.9
263.00	1	.0	.0	96.9
264.00	1	.0	.0	97.0
266.00	2	.0	.0	97.0

267.00	1	.0	.0	97.0
268.00	2	.0	.0	97.0
269.00	1	.0	.0	97.0
270.00	4	.1	.1	97.1
271.00	1	.0	.0	97.1
272.00	2	.0	.0	97.2
273.00	1	.0	.0	97.2
274.00	1	.0	.0	97.2
275.00	6	.1	.1	97.3
276.00	2	.0	.0	97.3
278.00	7	.1	.1	97.4
279.00	3	.0	.0	97.5
280.00	2	.0	.0	97.5
282.00	2	.0	.0	97.5
283.00	1	.0	.0	97.5
284.00	1	.0	.0	97.6
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286.00	2	.0	.0	97.6
287.00	1	.0	.0	97.6
288.00	1	.0	.0	97.7
289.00	2	.0	.0	97.7
290.00	1	.0	.0	97.7
291.00	3	.0	.0	97.8
292.00	3	.0	.0	97.8
293.00	2	.0	.0	97.8
294.00	1	.0	.0	97.8
297.00	1	.0	.0	97.9
298.00	3	.0	.0	97.9
299.00	1	.0	.0	97.9
300.00	1	.0	.0	97.9
302.00	1	.0	.0	98.0
304.00	1	.0	.0	98.0
306.00	1	.0	.0	98.0
307.00	2	.0	.0	98.0
308.00	1	.0	.0	98.0
309.00	2	.0	.0	98.1
310.00	1	.0	.0	98.1
312.00	1	.0	.0	98.1

313.00	1	.0	.0	98.1
314.00	1	.0	.0	98.1
315.00	1	.0	.0	98.1
316.00	2	.0	.0	98.2
318.00	2	.0	.0	98.2
319.00	1	.0	.0	98.2
320.00	1	.0	.0	98.2
321.00	2	.0	.0	98.3
322.00	1	.0	.0	98.3
323.00	3	.0	.0	98.3
324.00	1	.0	.0	98.3
325.00	1	.0	.0	98.4
328.00	1	.0	.0	98.4
331.00	1	.0	.0	98.4
332.00	3	.0	.0	98.4
333.00	2	.0	.0	98.5
335.00	2	.0	.0	98.5
343.00	2	.0	.0	98.5
344.00	1	.0	.0	98.5
345.00	1	.0	.0	98.6
346.00	1	.0	.0	98.6
349.00	3	.0	.0	98.6
350.00	1	.0	.0	98.6
352.00	2	.0	.0	98.7
353.00	1	.0	.0	98.7
354.00	1	.0	.0	98.7
355.00	1	.0	.0	98.7
356.00	2	.0	.0	98.8
359.00	1	.0	.0	98.8
360.00	1	.0	.0	98.8
361.00	1	.0	.0	98.8
362.00	1	.0	.0	98.8
365.00	1	.0	.0	98.8
367.00	1	.0	.0	98.8
368.00	1	.0	.0	98.9
371.00	1	.0	.0	98.9
372.00	2	.0	.0	98.9
375.00	1	.0	.0	98.9

376.00	1	.0	.0	98.9
377.00	1	.0	.0	99.0
379.00	1	.0	.0	99.0
382.00	1	.0	.0	99.0
385.00	1	.0	.0	99.0
393.00	1	.0	.0	99.0
394.00	1	.0	.0	99.0
396.00	1	.0	.0	99.0
404.00	1	.0	.0	99.1
406.00	2	.0	.0	99.1
416.00	1	.0	.0	99.1
419.00	1	.0	.0	99.1
423.00	2	.0	.0	99.2
424.00	1	.0	.0	99.2
429.00	1	.0	.0	99.2
433.00	1	.0	.0	99.2
435.00	1	.0	.0	99.2
439.00	1	.0	.0	99.2
440.00	2	.0	.0	99.3
445.00	1	.0	.0	99.3
457.00	1	.0	.0	99.3
458.00	1	.0	.0	99.3
459.00	1	.0	.0	99.3
462.00	1	.0	.0	99.3
465.00	1	.0	.0	99.4
469.00	2	.0	.0	99.4
470.00	1	.0	.0	99.4
478.00	1	.0	.0	99.4
480.00	2	.0	.0	99.5
485.00	1	.0	.0	99.5
489.00	1	.0	.0	99.5
496.00	2	.0	.0	99.5
504.00	1	.0	.0	99.5
505.00	1	.0	.0	99.5
525.00	1	.0	.0	99.6
527.00	1	.0	.0	99.6
529.00	1	.0	.0	99.6
533.00	1	.0	.0	99.6

	544.00	1	.0	.0	99.6
	545.00	1	.0	.0	99.6
	549.00	1	.0	.0	99.7
	557.00	1	.0	.0	99.7
	558.00	2	.0	.0	99.7
	585.00	1	.0	.0	99.7
	589.00	1	.0	.0	99.7
	599.00	1	.0	.0	99.8
	607.00	1	.0	.0	99.8
	609.00	1	.0	.0	99.8
	637.00	1	.0	.0	99.8
	646.00	1	.0	.0	99.8
	674.00	1	.0	.0	99.8
	691.00	1	.0	.0	99.8
	706.00	1	.0	.0	99.9
	819.00	1	.0	.0	99.9
	822.00	1	.0	.0	99.9
	837.00	1	.0	.0	99.9
	874.00	1	.0	.0	99.9
	993.00	1	.0	.0	99.9
	1033.00	1	.0	.0	100.0
	1045.00	1	.0	.0	100.0
	1070.00	1	.0	.0	100.0
	1116.00	1	.0	.0	100.0
	Total	6400	100.0	100.0	

### Number of people in household

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2466	38.5	38.5	38.5
	2	1651	25.8	25.8	64.3
	3	786	12.3	12.3	76.6
	4	851	13.3	13.3	89.9
	5	436	6.8	6.8	96.7
	6	154	2.4	2.4	99.1
	7	45	.7	.7	99.8

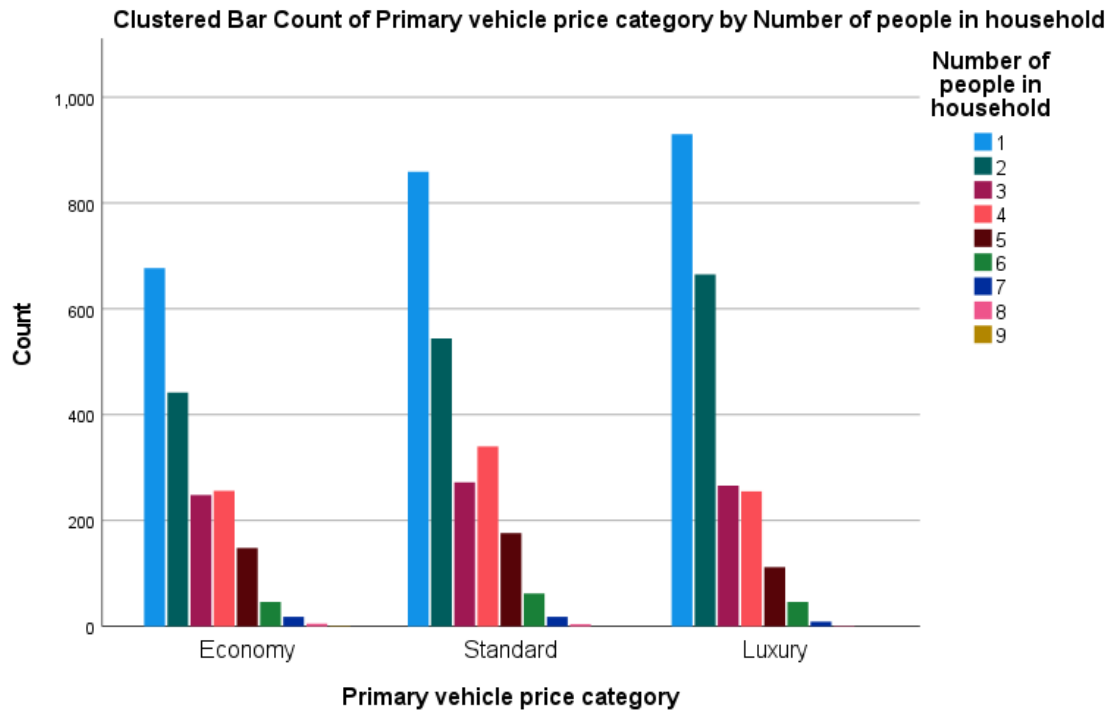


	8	10	.2	.2	100.0
	9	1	.0	.0	100.0
	Total	6400	100.0	100.0	

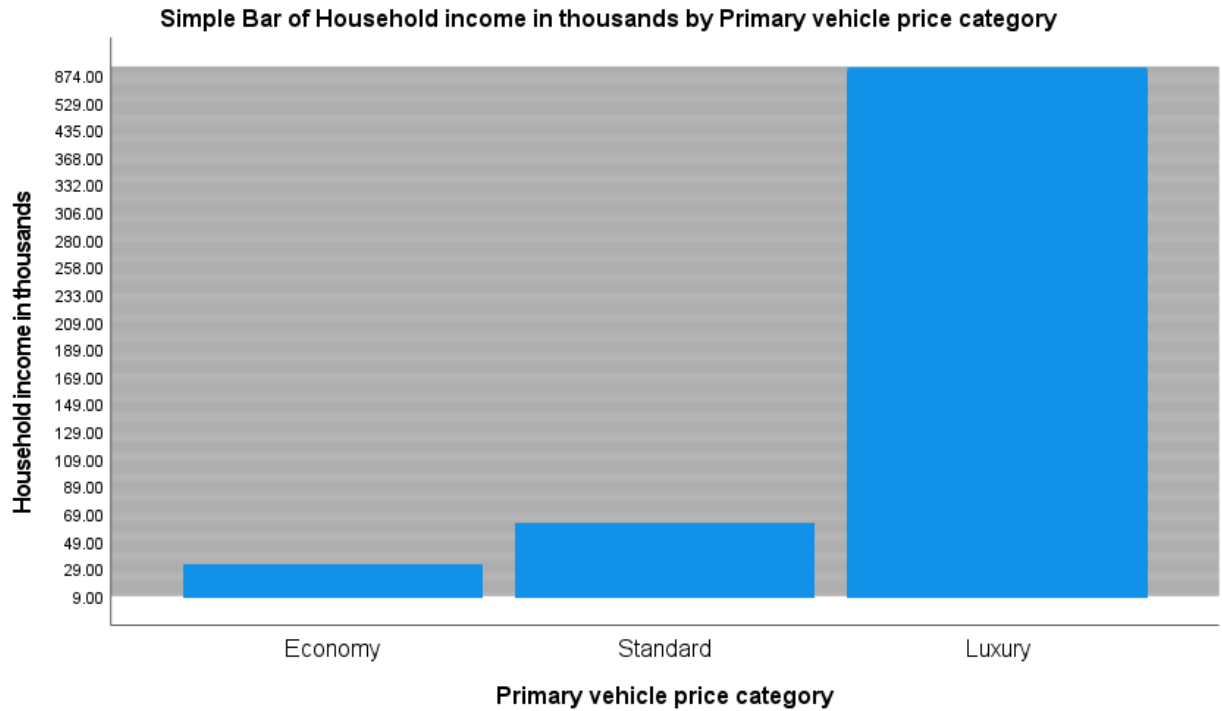
**Primary vehicle price category**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Economy	1841	28.8	28.8	28.8
	Standard	2275	35.5	35.5	64.3
	Luxury	2284	35.7	35.7	100.0
	Total	6400	100.0	100.0	

## Graph Result

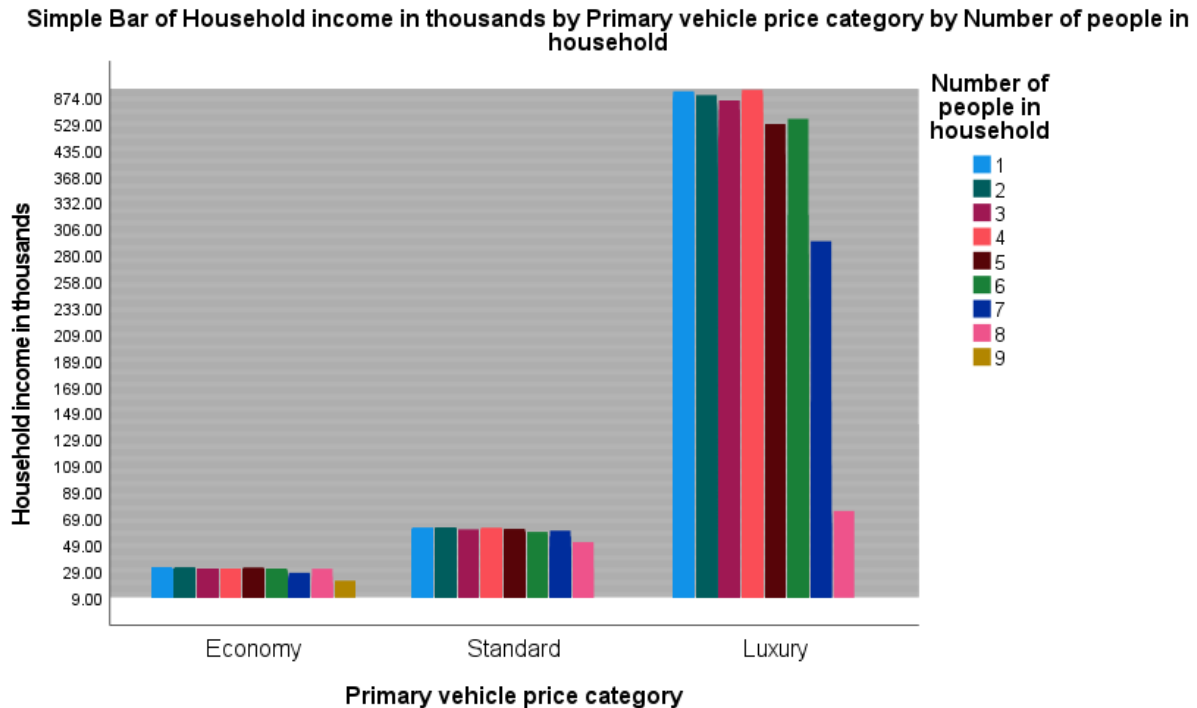


Based on the bar chart above, the price of primary vehicle increases when the number of people in household decrease. This occur logically because spending rates increase when having a family. As we can see, the pattern almost same for every category of vehicles and only people with lesser number in household able to own a vehicle. There is a minor difference in standard category vehicle which is 4 people in household able to buy standard vehicle which is differ to others category. The Standard Car price category increases as with the increase in the no. of people per household.



The graph above shows the Household income in thousands versus Primary vehicle price category. As we can say from the graph, the more household income, the more ability to buy a luxury car. The minimum income capacity for luxury car about 874 thousand.

Based on both graph above, there is a lot contradiction between the price category of vehicle with 2 different variables.



Based on the graph above, when three variables combine altogether in one graph, which is income, reside and carcat, shows a lot of changes between the previous graph.

From this graph, we can conclude that income increase by carcat. Logically, people will buy luxury car if they has a lot of income. The effect of number of people in household doesn't give a lot of impact for the primary vehicle price category factor. Therefore, if they stay in a many people in household, they still can buy expensive vehicle unless their income was not much and afford to buy it. When reside increase, income will be decrease because not all people in house could able to provide income such as family with young children, the children still depends on their parent's income.

The comparison, in general, illustrates the correlation as changes in ownership as a function of average per-capita income, income dispersion, and the "Cost/utility" ratio of owning an automobile. This means that families with fewer people could buy more vehicles and also more luxury cars, but households with more people owned fewer overall cars and also fewer luxury

cars. This can be ascribed to an increase in disposable income proportional to a decrease in the number of persons per family.