

Excel Analysis and Scientific Report on Victorian Integrated Survey of Travel and Activity

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Introduction

The households in Victoria use different modes of transportation to reach their destination. This information can be used by the Victorian government to make informed transport and land-use planning decisions. This study aims to profile the different households in Melbourne and periodically Geelong and identify their travel behaviour. It is expected to notice a significant difference in the travel behaviour between weekdays and weekends in the various subregions. It is also expected that the no of vehicles owned by the households will increase with the increase in the size of the household. The study also aims to identify the preferences and ownership status of the dwellings based on the average household income.

Methods

The analysis is based on the VISTA Household dataset (Victoria 2007) published on the Victoria State Government Website(URL and details provided in the Reference Section). The data consists of information from 30,195 households in Melbourne and Geelong between the years 2012 to 2020. Excel Pivot tables and charts are used to conduct the analysis in this report.

Results

The study consists of 30195 households in total, majority of which were from Melbourne -outer (13558 households) and Melbourne - Middle (12673 households) sub region, which could indicate a preference for these regions. The table also shows a comparison of average age across the different sub-region in Victoria. Approximately 42% of the households had members in the age group of 20-39.

No. of Households	Sub-regions				Grand Total
Average Age	MELB - Outer	MELB - Middle	MELB - Inner	Geelong	
0-9	7	11	1		19
10-19	918	510	65	105	1598
20-29	2983	2886	543	310	6722
30-39	2483	2620	613	223	5939
40-49	1665	1530	311	155	3661
50-59	1605	1353	237	208	3403
60-69	1988	1642	296	365	4291
70-79	1313	1318	144	216	2991
80-89	543	679	62	93	1377
90-99	52	124	11	6	193
110-119	1				1
Grand Total	13558	12673	2283	1681	30195

Table 1: Compares the number of households from Victoria participating in the study with a comparison of the average age across the sub-regions.

Table 2 shows the proportion of households in each region across the years of the survey. Over the years, the households have preferred to stay in Melbourne Outer and Middle over living in the inner parts of the city or in Geelong. Geelong was preferred by only 5.57% of the sample households.

% of households	Sub-Region				Grand Total
Year	MELB - Outer	MELB - Middle	MELB - Inner	Geelong	
2012-13	43.73%	42.17%	7.81%	6.29%	100.00%
2013-14	45.11%	41.25%	7.73%	5.91%	100.00%
2014-15	43.20%	43.89%	7.46%	5.45%	100.00%
2015-16	43.69%	42.86%	7.53%	5.92%	100.00%
2016-17	44.97%	42.14%	8.08%	4.81%	100.00%
2017-18	46.15%	41.46%	7.65%	4.74%	100.00%
2018-19	47.63%	39.66%	7.48%	5.22%	100.00%
2019-20	46.89%	41.13%	5.71%	6.27%	100.00%
Grand Total	44.90%	41.97%	7.56%	5.57%	100.00%

Table 2: percentage of the total number of households for each year for each subregion.

The analysis also revealed that 4388 FWD vehicles, where from households either renting or in the process of purchasing a Separate Dwelling in the Inner, Middle and Outer Melbourne (Formula in the Appendix).

Figure 1 shows the average household income for the participants over the years. The household income is the highest amongst the resident in Melbourne- Inner and lowest among the households in Geelong. On an average the households in Melbourne Inner earns 2216\$, whereas in Melbourne – Middle it is 1931\$, followed by Melbourne Outer with 1727\$ and Geelong with 1481\$. It can be noticed that 2019-20 is the year when most regions had the highest average household income.

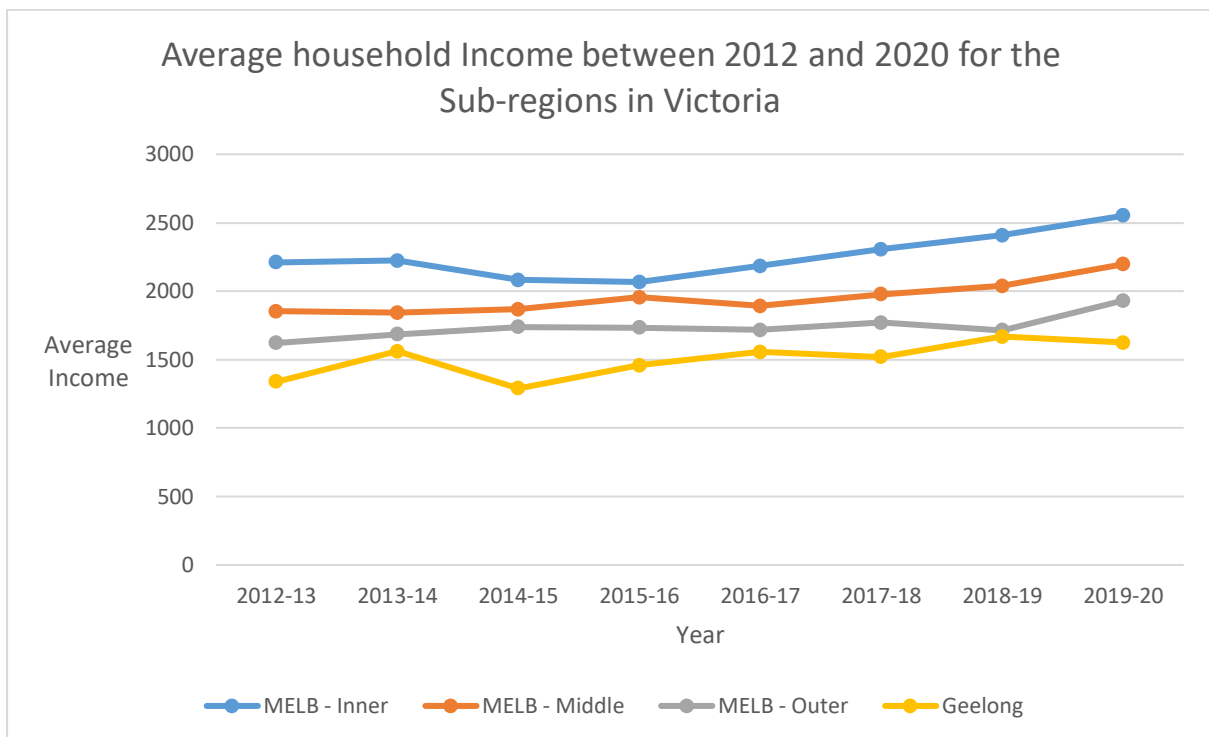


Figure 1: PivotChart shows the average household income for the survey participants over time.

Figure 2 shows that 74.09% of the households generally travel during the weekdays compared to the 25.91% during the weekend, which is a significant difference. The percentage of the travel in each sub-region is very close to each other.

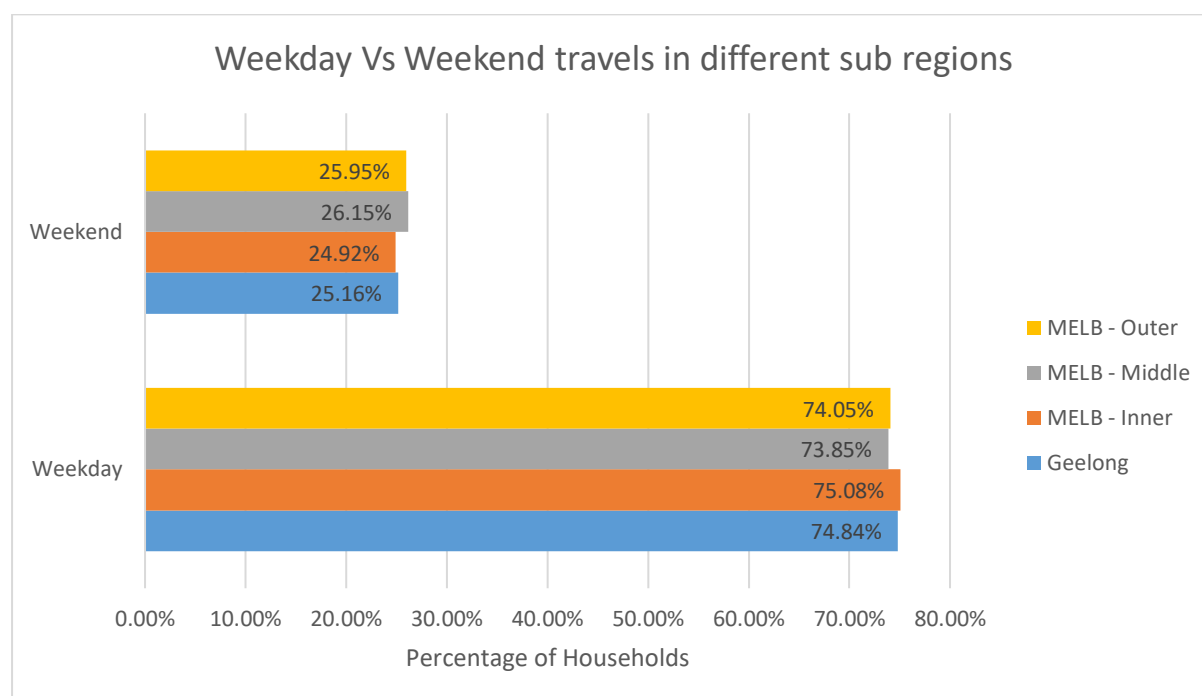


Figure 2: Shows the travel pattern during weekdays and weekends across different sub-regions.

Table 3 shows the percentage of households owning vehicles including cars, Four-wheel drives, utility vehicles, vans, trucks, motorbikes, and other vehicles. 93.16% of the households across the sub-regions owned at least one form of vehicle. 77.10% of the households owned 1-2 vehicles, which indicate towards the reliance on the public transport. Table 4 shows that 14622 of the households that owned 1-2 vehicles had only 1-2 members. 17 households in Melbourne Middle and Outer consisting of an average of 4 household members owned 7-9 vehicles.

% of hhid totalvehs	Sub-Region				Grand Total
	Geelong	MELB - Inner	MELB - Middle	MELB - Outer	
<1	5.53%	15.86%	7.43%	4.93%	6.84%
1-2	78.76%	77.62%	78.55%	75.44%	77.10%
3-4	14.87%	6.31%	12.93%	17.69%	14.68%
5-6	0.83%	0.22%	1.04%	1.84%	1.33%
7-9	0.00%	0.00%	0.04%	0.09%	0.06%
Grand Total	100.00%	100.00%	100.00%	100.00%	100.00%

Table 3: The percentage of households having vehicles in different sub-regions of Victoria.

No of households Household Size	Total vehicles					Grand Total
	<1	1-2	3-4	5-6	7-9	
1-2	1835	14622	853	51	3	17364
3-4	204	7196	2800	173	7	10380

5-6	26	1379	727	161	7	2300
7-8	1	75	45	13		134
9-11		7	7	3		17
Grand Total	2066	23279	4432	401	17	30195

Table 4: Comparison between the no of households and the vehicles they own

Table 5 shows the percentage of households that owns bicycles including adult and kids bikes in different sub-regions. 88% of the households across different regions owned a max of 3 bikes, out of which 14357 (47.55%) households didn't own any bike. 0.20% of the households owned 10-15 bikes in total.

% of hhid	Sub-Region				
total bikes	Geelong	MELB - Inner	MELB - Middle	MELB - Outer	Grand Total
<1	44.02%	44.24%	47.17%	48.89%	47.55%
1-3	42.89%	45.47%	40.16%	40.04%	40.66%
4-6	11.78%	9.68%	11.43%	9.96%	10.66%
7-9	1.01%	0.53%	1.00%	0.94%	0.94%
10-12	0.24%	0.09%	0.18%	0.17%	0.17%
13-15	0.06%	0.00%	0.06%	0.00%	0.03%
Grand Total	100.00%	100.00%	100.00%	100.00%	100.00%

Table 5: % of households having bikes in different Sub regions of Victoria.

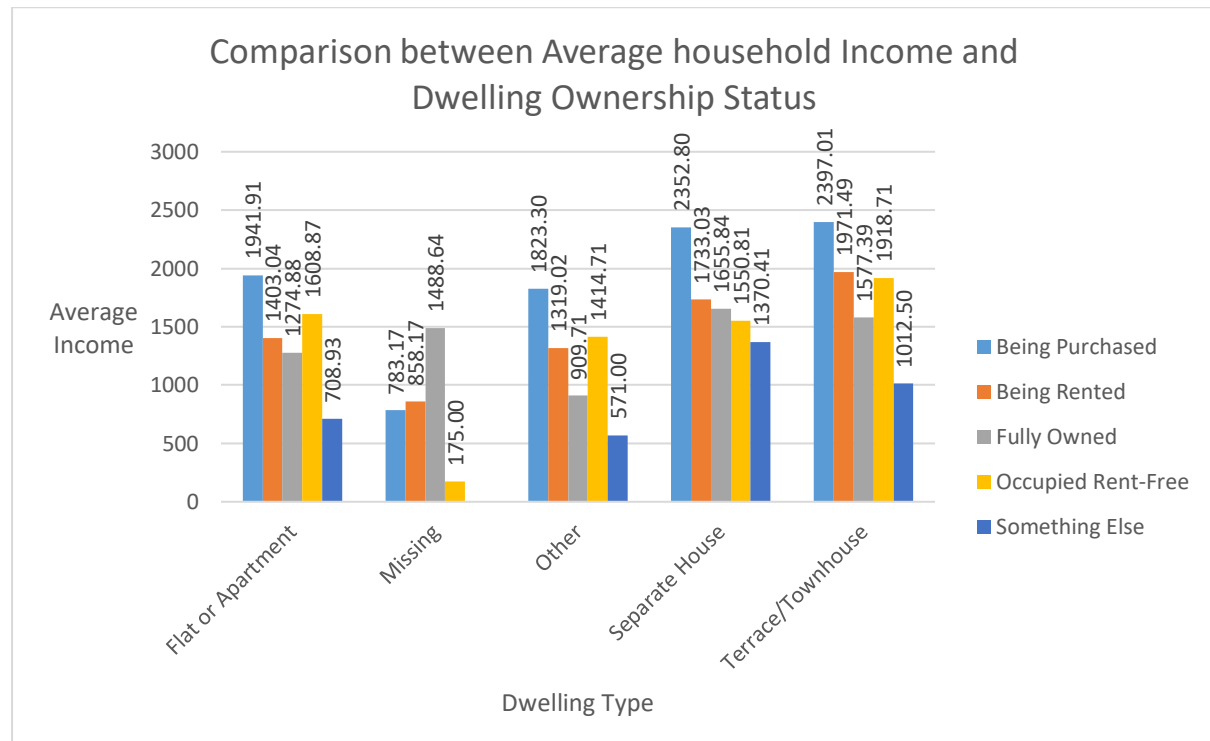


Figure 3 : Comparison of the average household income and the Dwelling status across different types of dwellings

Figure 3 shows that the households with highest average income over 2000\$ tend to take a mortgage to purchase Terrace/townhouses or Separate houses. The homeowners are seen to have

an average income of 1592\$, while renters have an average income of 1635\$. Renters with high average income prefers terrace/townhouses over the other types.

Conclusion

Households that were part of the Survey were majorly from the Melbourne Middle and outer region, with 42% of the members in the age group of 20-39 years. There is a significant difference in the travel during the weekday and weekend, with 74.09% of the households travelling during the weekday, compared to a 25.91% during the weekend. It was also noticed that majority of the household owned on an average 1-3 vehicles and bicycles. However, the no of vehicles owned doesn't really depend on the number of members in the household. The study also indicated that households with over 2000\$ average income tend to purchase Terrace/townhouses or Separate housings.

It recommended to conduct further studies on the route taken by the vehicle/bike owners to understand if there is a lack of public transport in these routes.

References

Victoria, State Government of. 2007. "Victorian Integrated Survey of Travel and Activity (VISTA)." *Data VIC*. 5 01. Accessed Aug 20, 2023. <https://discover.data.vic.gov.au/dataset/victorian-integrated-survey-of-travel-and-activity>.

Appendix

1. Formula used in Excel to calculate total number of FWD (four-wheel drive) vehicles, for separate dwellings households, that were not from the Geelong region and were renting or currently paying a mortgage:

```
=SUM(SUMIFS($T:$T,$F:$F,"Separate House",$AE:$AE,"MSD_31LGAs",$G:$G,{"Being Purchased","Being Rented"}))
```