Analysis of car insurance brokerage services

Introduction:

This report is prepared for the analysis on benefit provided by insurance brokers to customers in terms of saving on amount paid on car insurance premiums. A random sample of 400 customers data who obtained the service of car insurance brokers is provided by Insurance Brokers Association (IBA).

This data contains 12 variables namely; Gender, Age, State, Area which provides general information about the customer and other 9 variables namely; NCBR (No Claim Bonus Rating), Valuation method, Vehicle type, Broker name, Insurer name, Approached insurer, Customer Satisfaction, and Savings provides information regarding the insurance policy obtained by the customer.

This report further contains three sections; Main Body including Descriptive analysis and Statistical Inferential analysis, Conclusion of overall observation, and Appendix - Tables and charts related to the analysis.

Main Body:

Sample data contains information of 42% females and 58% males (Refer Fig 1 in Appendix). It seems, urban customers prefer car insurance more than rural customers as 76% of the customers are from urban and 24% are from rural area (Refer Fig 2 in Appendix). Seventy-three percent customers have 'Diamond' NCBR (Refer Fig 6 in Appendix). It seems customers having 'Family car' prefer car insurance as 57% of the customers in the sample have Family car (Refer Fig 7 in Appendix).

On an average, 75% of the customers saved less than $357, 50% of the customers saved between $12 and $357, and lowest 25% of the customers saved maximum $12 on insurance premiums. Almost 83.5% of the customers saved maximum $450 and 16.5% of the customers saved $600 and above (Refer Table 1 and Fig 4 in Appendix).

On an average, customers of iChoose broker saved $262 which is more than the customers of other brokers (Refer Fig 11 in Appendix). However, there is insufficient evidence to conclude that average savings on insurance premiums for the customers of iChoose insurance broker is greater than for the customers of uChoose insurance broker.

It seems satisfaction level of the customers depends on the average savings on insurance premiums as average savings of satisfied customers (satisfied and very satisfied) is $276 and average savings of dissatisfied customers (dissatisfied and very dissatisfied) is $74.37. Also, there is enough evidence that proportion of dissatisfied customers residing in urban area is smaller than the customers residing in rural area. In fact, we are 95% confident that proportion of dissatisfies urban customers is between 5.70% to 25.08% less than the proportion of dissatisfied rural customers. Average savings of customers from urban area is $241 and $193 for customer from rural area (Refer Fig 14 and Fig 17 in Appendix). But there is insufficient evidence to conclude that average savings on insurance premiums of customers significantly differ between rural and urban customers.

Customers opting for 'Agreed Value' policy on an average saved $147 more than the customers opting for 'Market Value' policy and there is sufficient evidence that average savings on insurance premiums for customers with 'Agreed value' policy is greater than customers with 'Market value' policy (Refer Fig 13 in Appendix). In fact, we are 95% confident that the average savings on insurance premiums for customers with 'Agreed Value' policy is between $16 and $278 greater than the customers with 'Market Value' policy. But this needs to be probed into detail as 89% customers opted for market valuation policy despite of low average savings comparatively.

Almost 73% of the customers have Diamond NCBR out which 46% are males and 27% are females and there is sufficient evidence to conclude that proportion of male customers with Diamond NCBR is greater than the female customers with Diamond NCBR. In fact, we are 95% confident that the proportion of male customers with Diamond level NCBR is between 6.96% to 24.55% greater than the proportion of female customers with Diamond level NCBR (Refer Fig 15 in Appendix).

Customers residing in state NSW, Victoria, and Queensland saved more on insurance premiums comparatively with an average of $267, $242, and $240 respectively, but there is insufficient evidence to conclude that the average savings on insurance premiums across these three states is significantly different (Refer Fig 16 in Appendix).

Average savings for customers who owned Sports car is maximum ($693) followed by customers who owned Luxury cars ($508) and 4WD car ($286) (Refer Fig 12 in Appendix). But, average savings on insurance premiums of customers who owned these cars is significantly different. In fact, there is difference in average savings between customers owning 4WD and Luxury, 4WD and Sports car, and Luxury and Sports car.

Approximately 83% Customers approached insurance brokers and there is sufficient evidence to conclude that proportion of customers who approached insurance brokers across seven insurers is not significantly different (Refer Fig 4 in Appendix).

We have further extended our analysis to analyse the combined effect of Valuation method (Agreed value or Market value) opted by the customer and vehicle type (4WD, Luxury, Family, Sports car) on average savings on insurance premiums (Refer Fig 18 in Appendix). We found that there is significant relationship between Valuation method and Vehicle type on average savings. Further, we analysed this relationship by comparing combination of Valuation method and Vehicle type. First observation is that average savings for the combination of Agreed value policy and each vehicle type is significantly different. However, average savings for customers who opted for Agreed value policy and owned either 4WD or Luxury is not significantly different. When we analysed the combination of vehicle type with valuation method, we found that average savings for customers who owned vehicle 4WD or Sports car is not significantly different for the customers who opted either Agreed value policy or Market value policy. However, mean savings for customers who owned vehicle type Family or Sports is significantly different for the customers who opted either Agreed value policy or Market value policy (Refer Fig 19 in Appendix).

Conclusion:

To maximise average savings on insurance premiums customers can take service from either iChoose or uChoose broker as average savings of their customers is not significantly different and proportion of satisfied customer across all brokers is also similar. Customers should be advised to opt for Agreed value policy instead of Market value policy as average savings of customers with Agreed value policy is greater than customers with Market value policy. Customers owning Luxury or Sports car should definitely opt for car insurance with Agreed value policy as average savings for this combination is comparatively greater than 4WD and Family cars combined with either Agreed value policy or Market value policy.
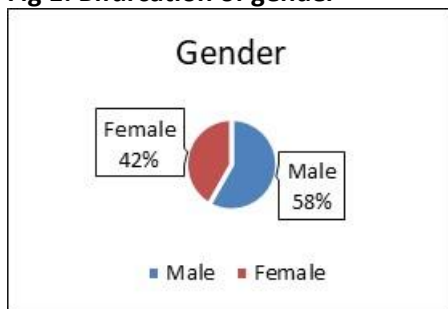
Appendix:

Fig 1: Bifurcation of gender

Gender

Female 42%

Male 58%

■ Male ■ Female

Fig 2: Bifurcation of customers across urban and rural area

Customers across Area

Rural 24%

Urban 76%

■ Rural ■ Urban
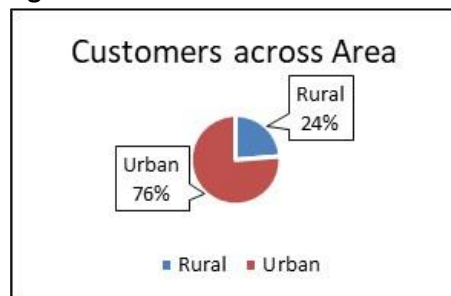
Fig 3: Bifurcation of customers across Agreed value and Market value policy

Customers acrosssValuation Method

Agreed value 11%

Market value 89%

■ Agreed value ■ Market value

Fig 4: Bifurcation of customers who approached insurance broker

Customers Approached Insurance broker

Yes 17%

No 83%

■ No ■ Yes
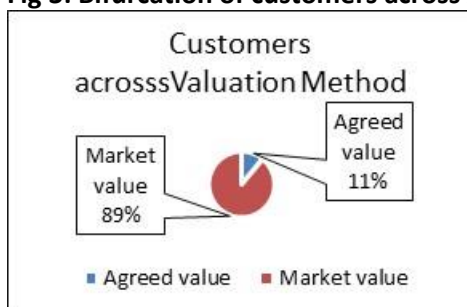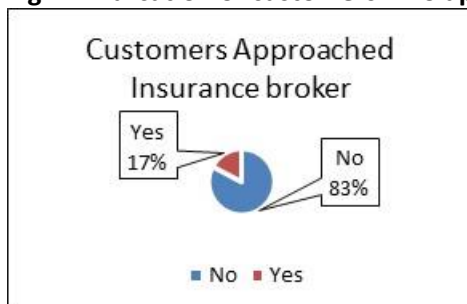
Fig 4: Distribution of savings on insurance premium ($)
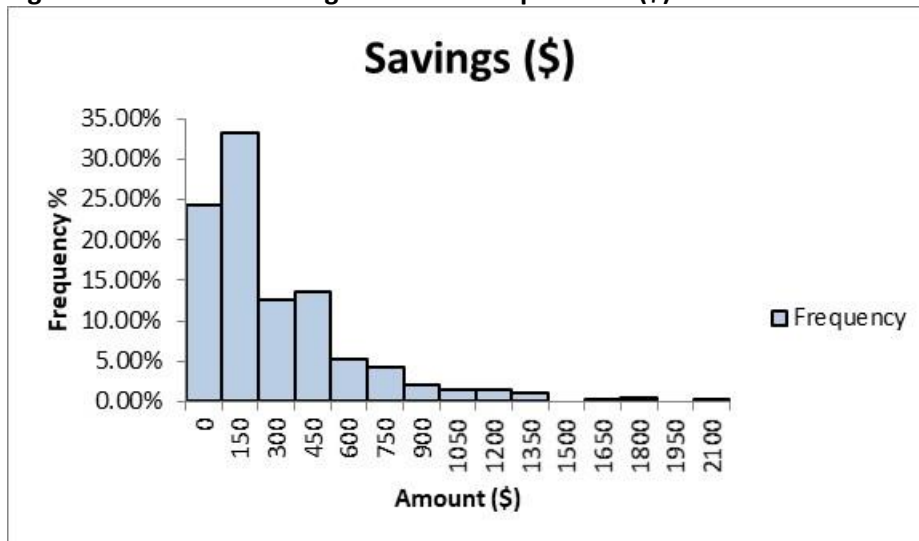
Fig 5: Bifurcation of customers across States
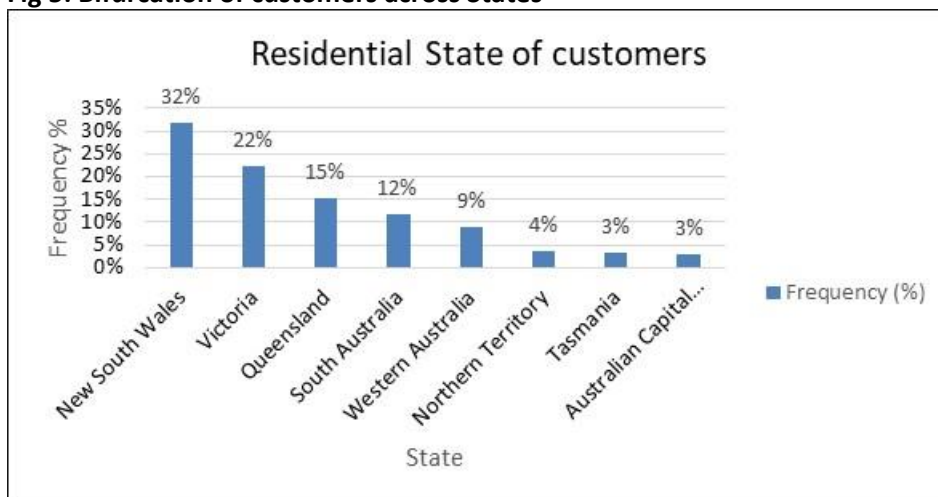
Fig 6: Bifurcation of customers across NCBR
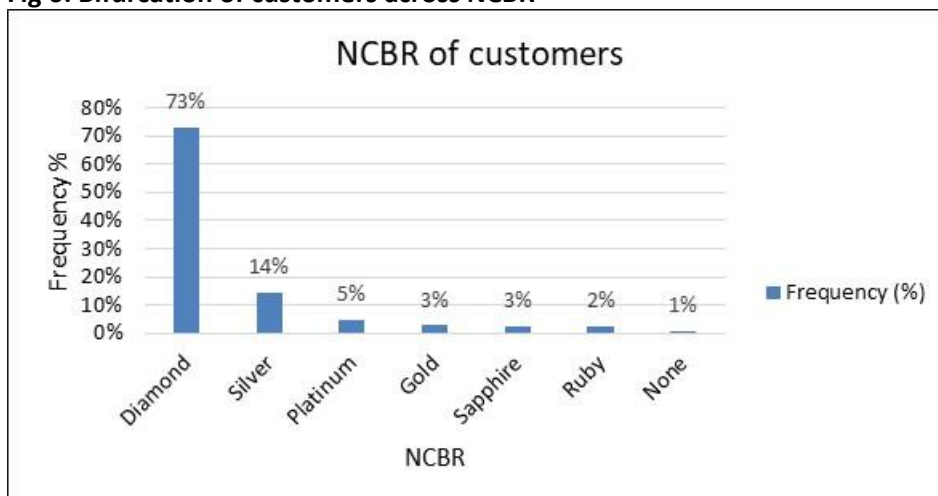
Fig 7: Bifurcation of vehicle type insured

Vehicle type insured

Fig 8: Bifurcation of customers across insurance broker
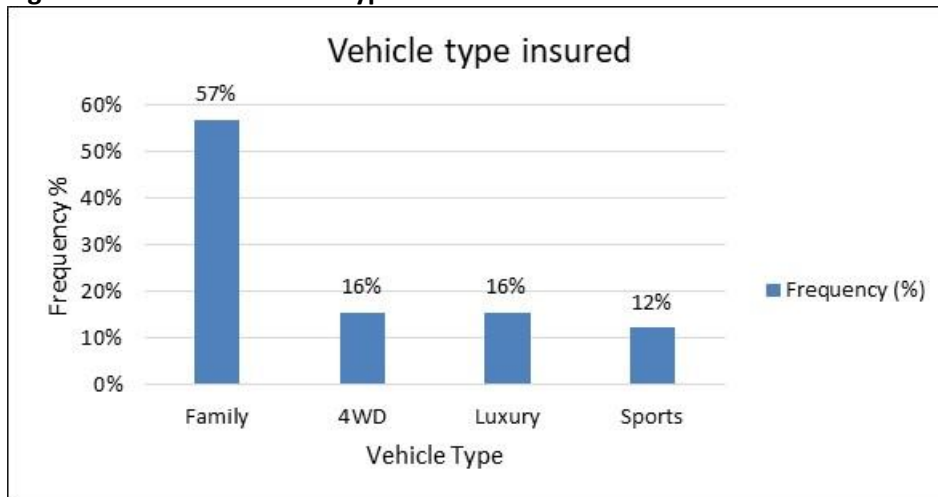
Customers across insurance brokers
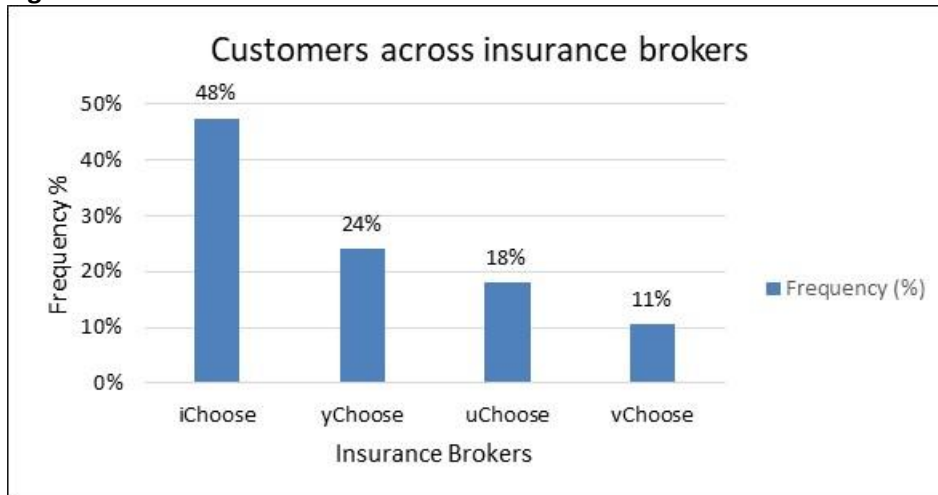
Fig 9: Bifurcation of customers across insurers

Customer across insurers
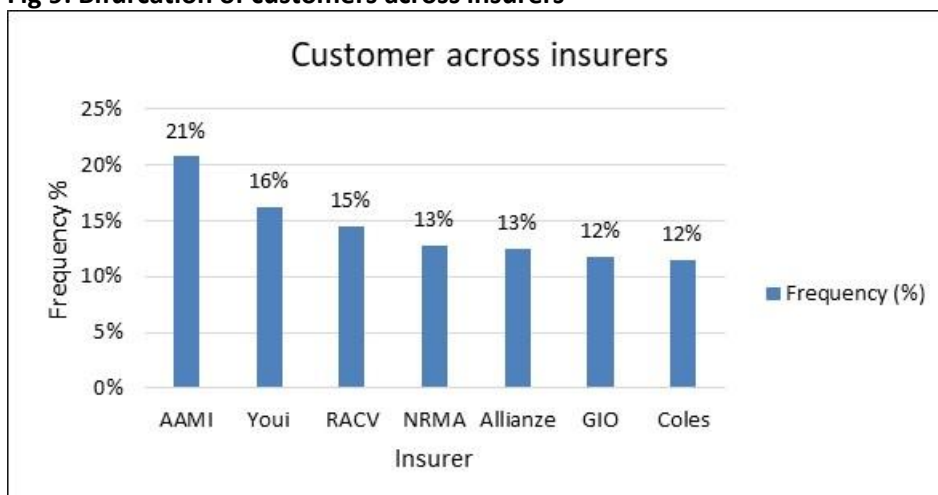
Fig 10: Bifurcation of customers satisfaction rating with the insurance broker service

Fig 11: Average savings on insurance premium across insurance brokers
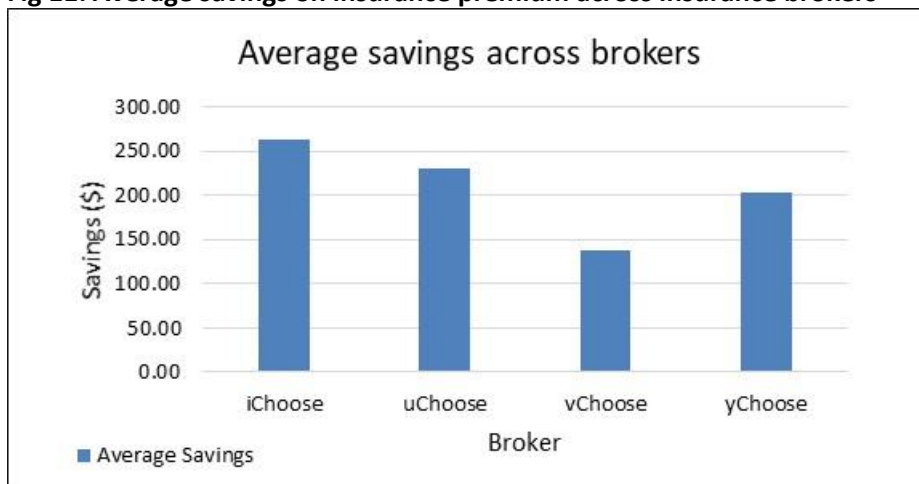
Fig 12: Average savings across vehicle type insured
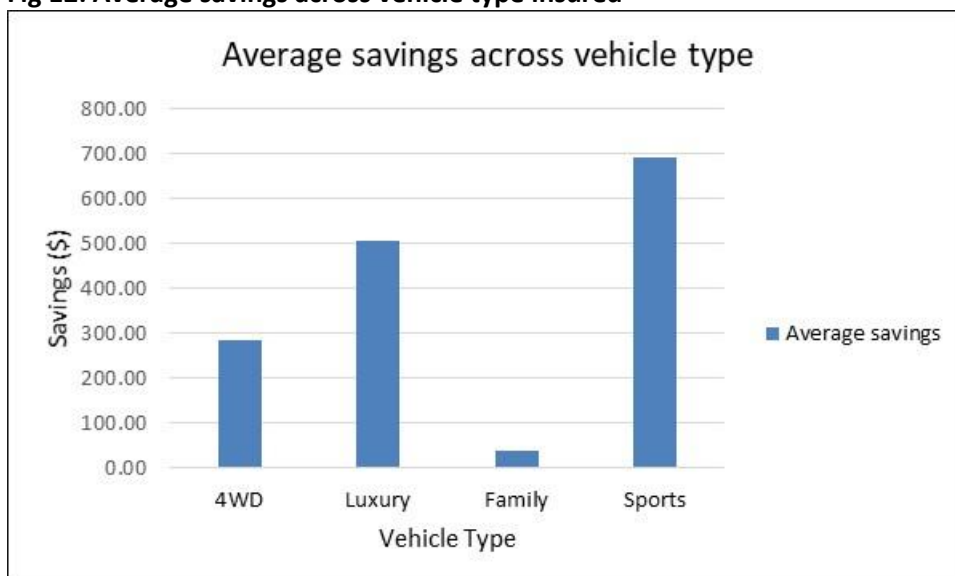
Fig 13: Average savings across Agreed Value and Market Value policy
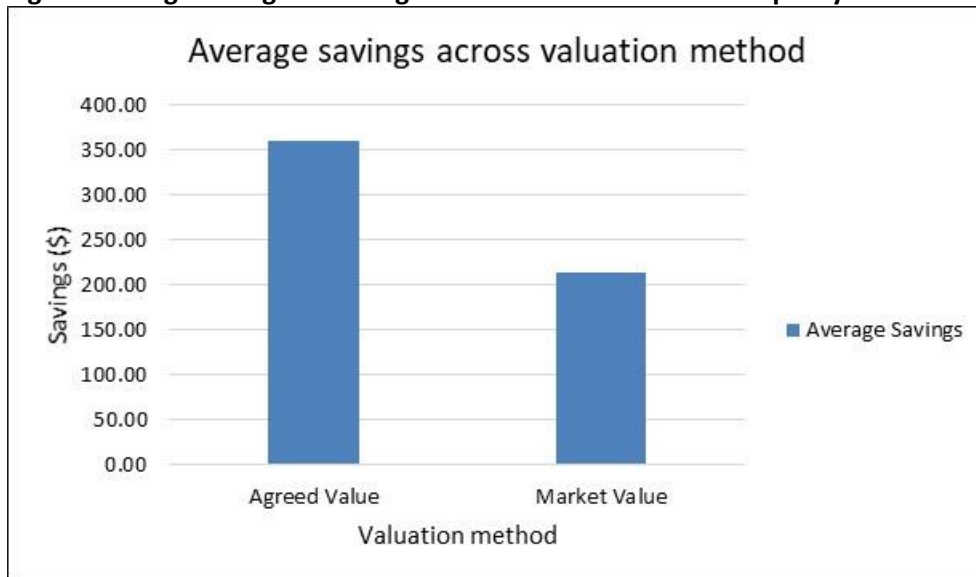
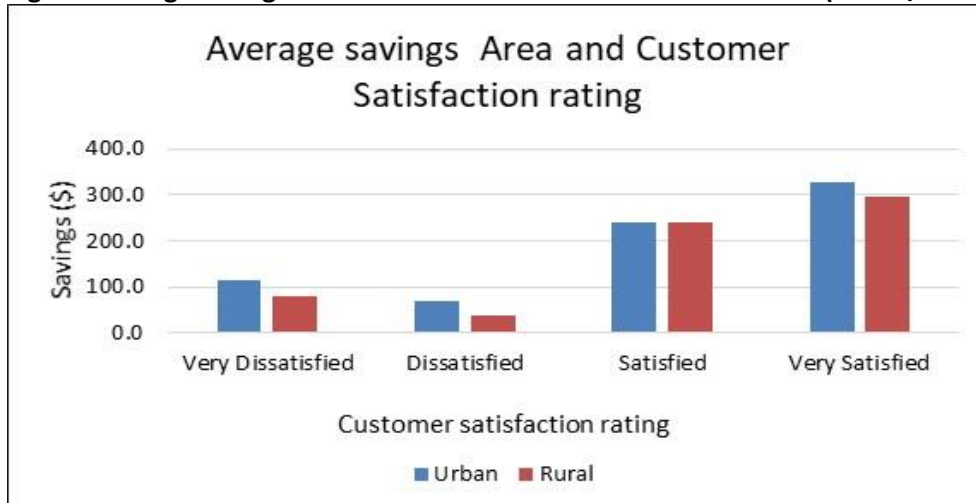**Fig 14: Average savings across customer satisfaction level and area (Urban/Rural)**

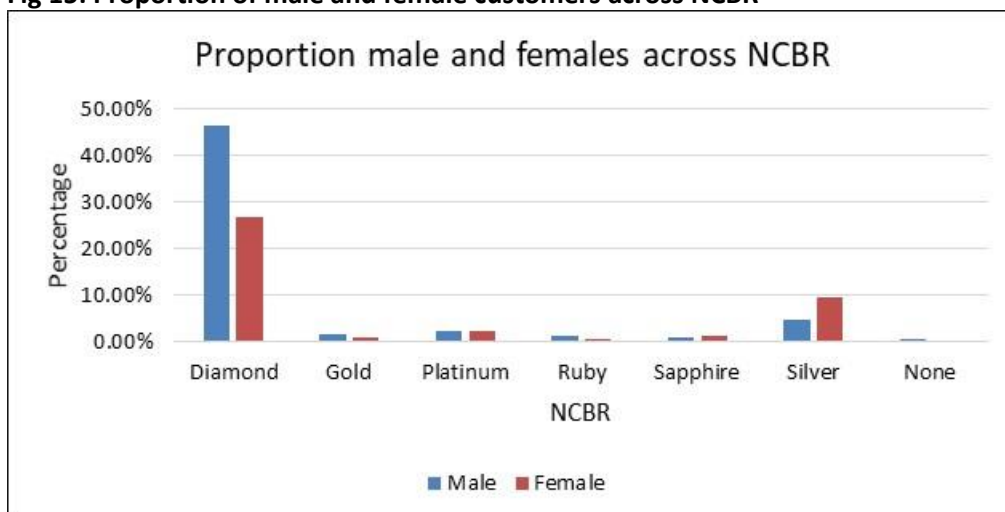**Fig 15: Proportion of male and female customers across NCBR**
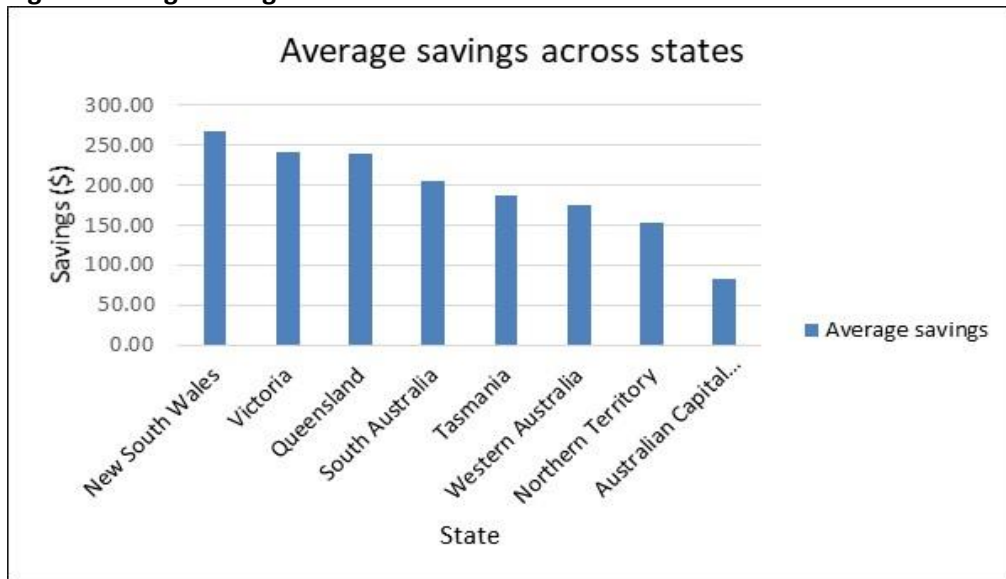
Fig 16: Average savings across states

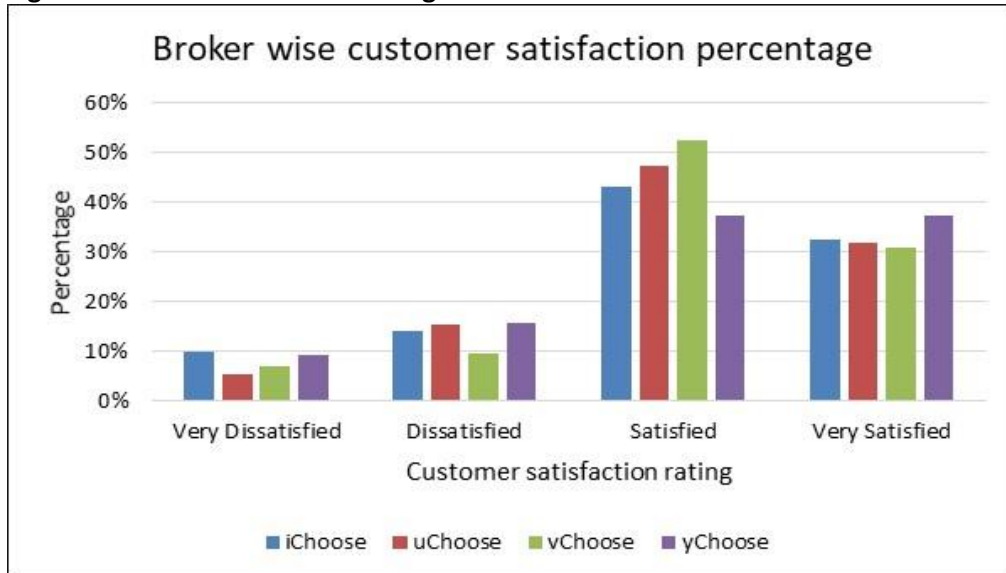**Fig 17: Customer satisfaction rating across insurance brokers**

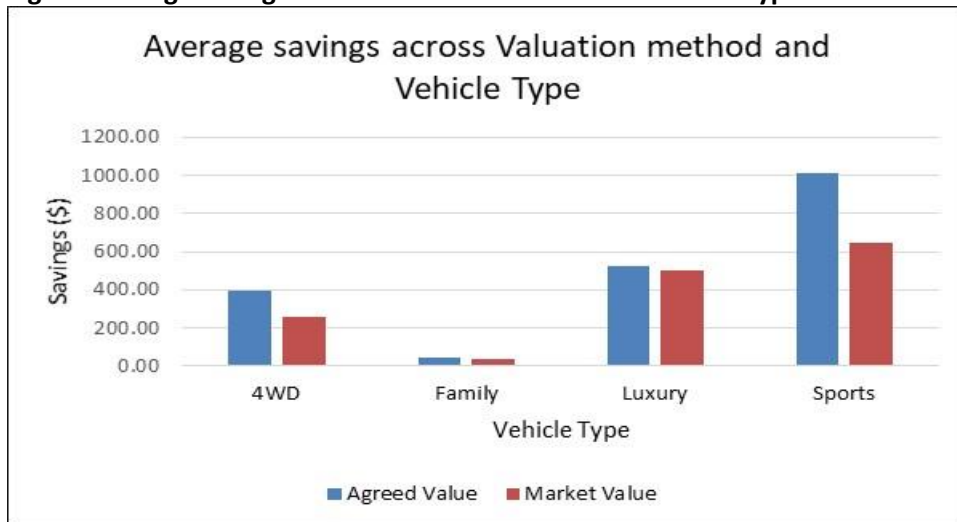**Fig 18: Average savings across valuation method and vehicle type**

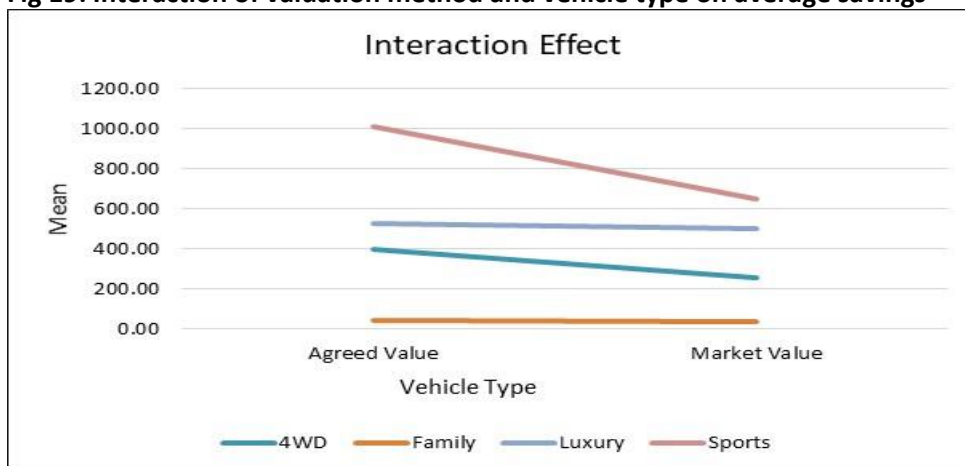**Fig 19: Interaction of valuation method and vehicle type on average savings**

Table 1: Summary statistics of savings on insurance premiums

Savings on insurance premiums	
Mean	229.64
Standard Error	16.03
Median	113.00
Q1	12
Q3	357
IQR	345
Standard Deviation	320.56
Kurtosis	5.46
Skewness	2.08
Range	2043.00
Minimum	-87.00
Maximum	1956.00
Sum	91857.00
Count	400.00