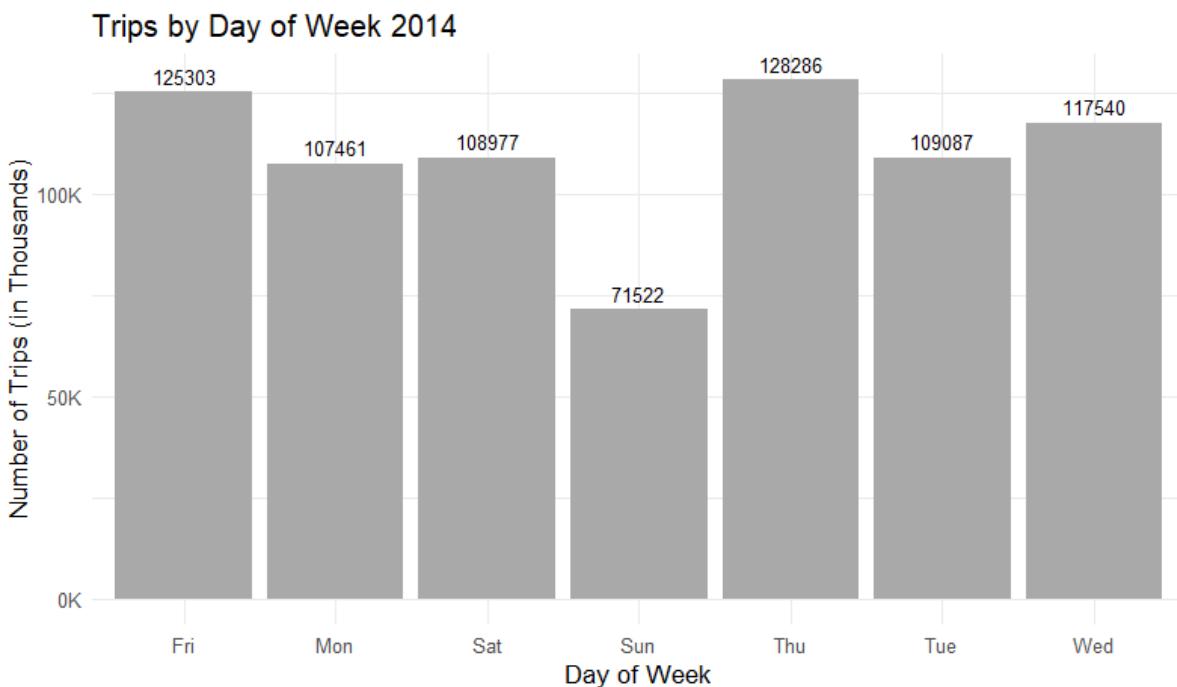


# IMAGES AND TABLES

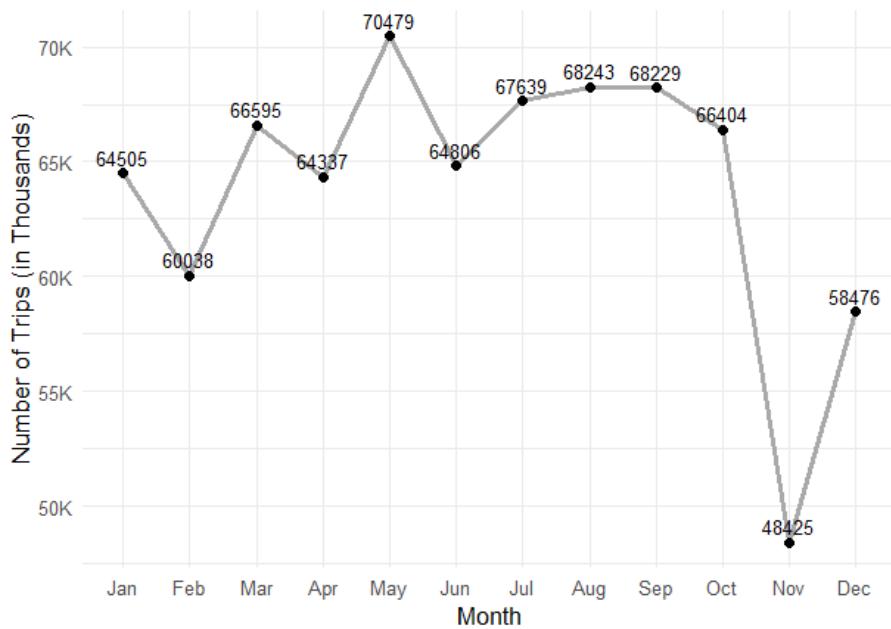
The analysis is based on a large-scale transactional dataset covering supermarket operations from 2013 to 2015. Each trading day is represented by a separate file, with missing days corresponding to public holidays when the store was closed. After combining all files across the three years, the consolidated dataset contained 37,371,576 rows and 14 columns, capturing detailed information at the receipt-line level.

## Dataset Overview

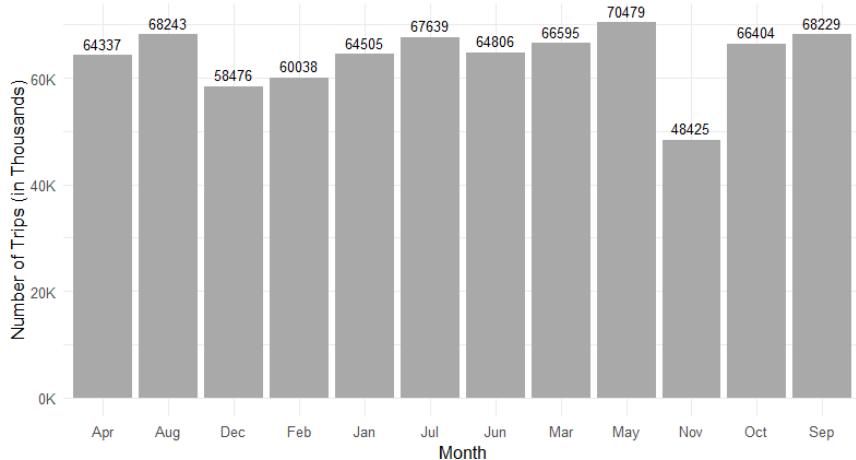
Measures	Value (Approx.)
Total transaction records	37.4 million lines (2013 – 2015)
Unique shopping trips (2014)	768,176
Unique customers (2014)	10,650
Total spend per customer	AUD 3 – AUD 3.2M
Items per customer (2014)	0.4 – 753,434



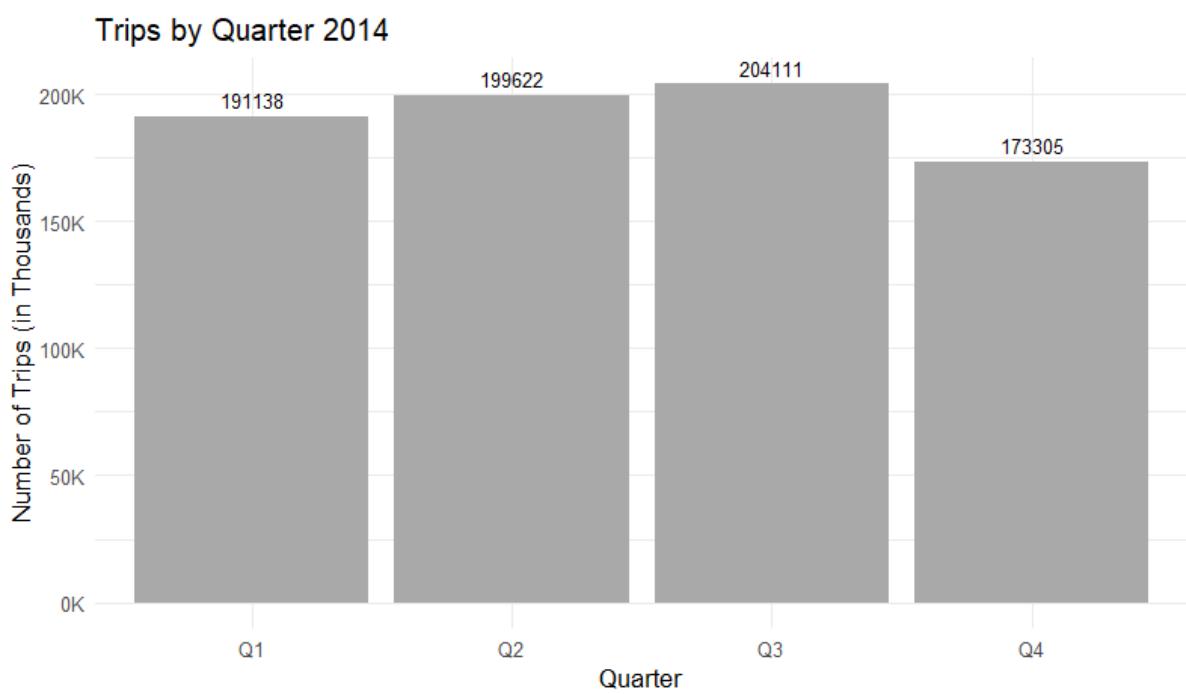
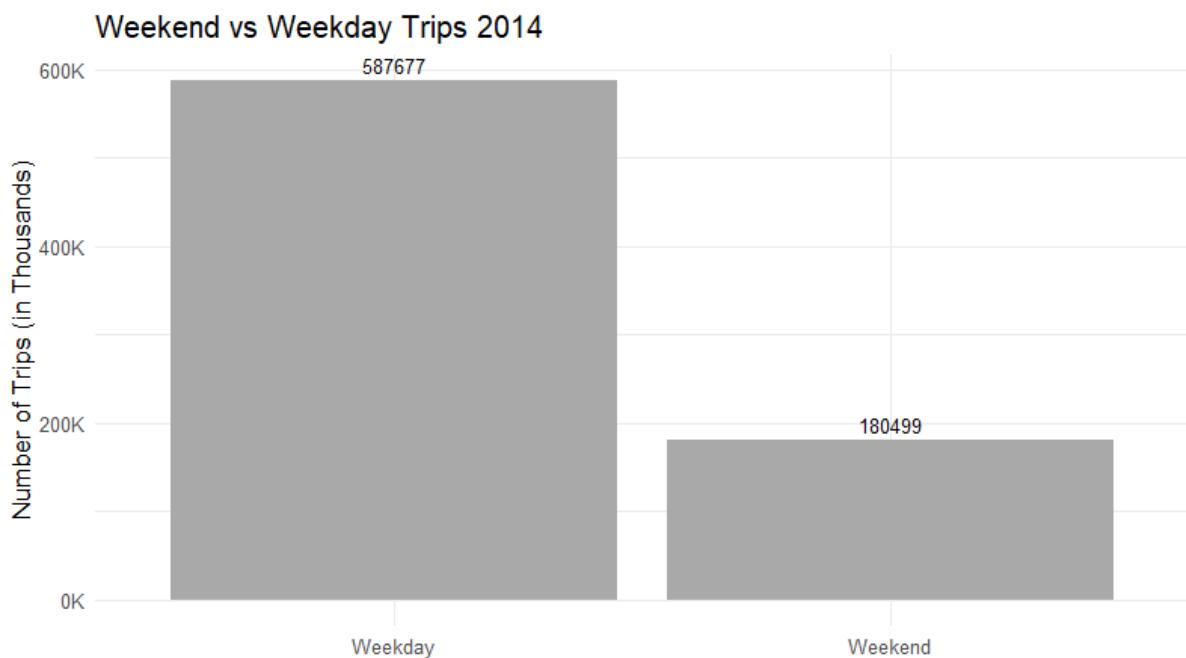
### Number of Trips by Month 2014



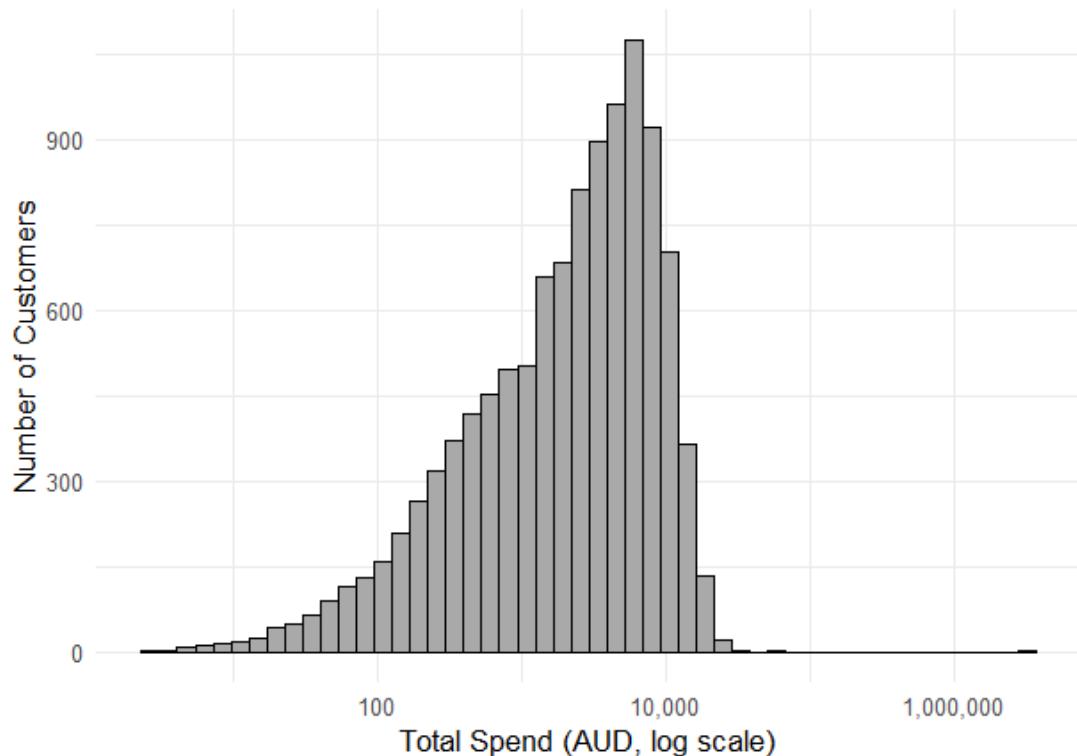
### Trips by Month 2014



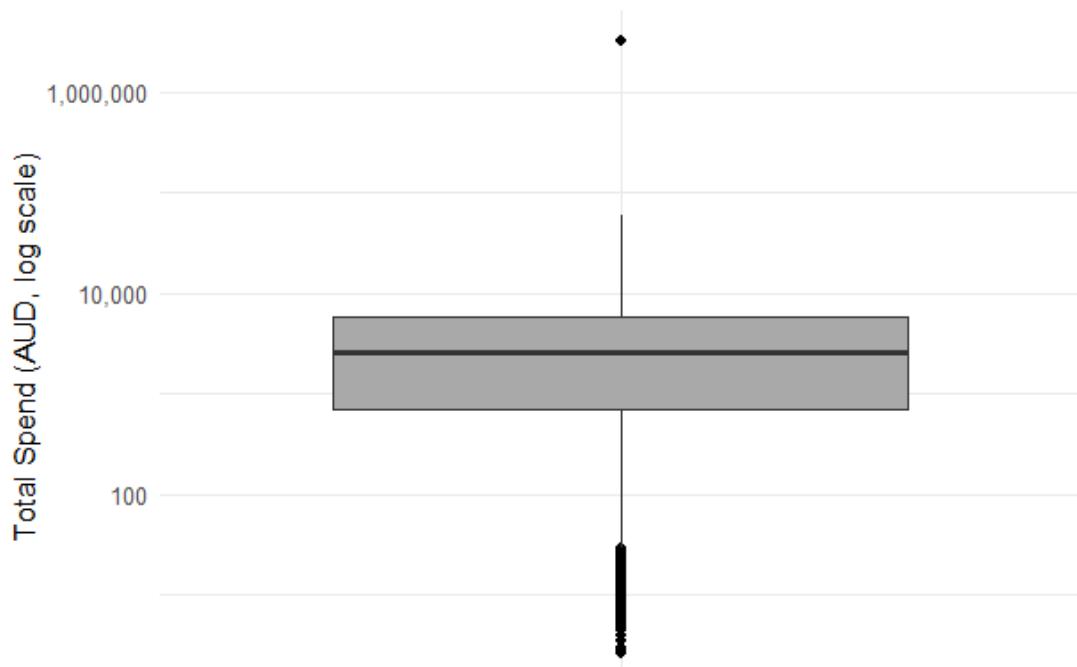
## 2.6 Weekend vs Weekday Trips



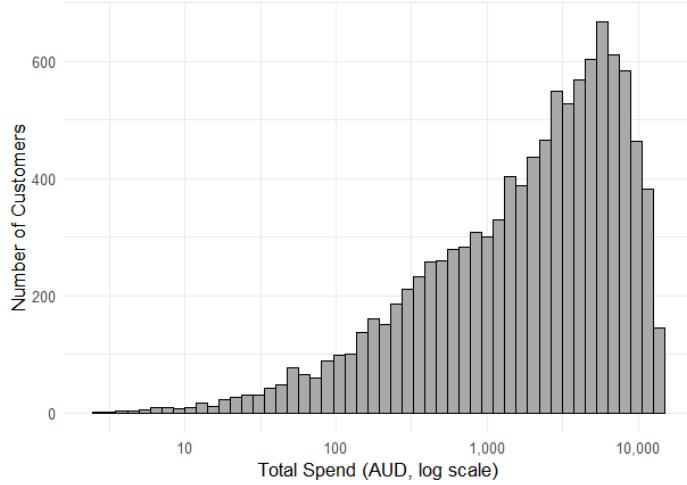
Histogram of Customer Total Spend 2014 (Log Scale)



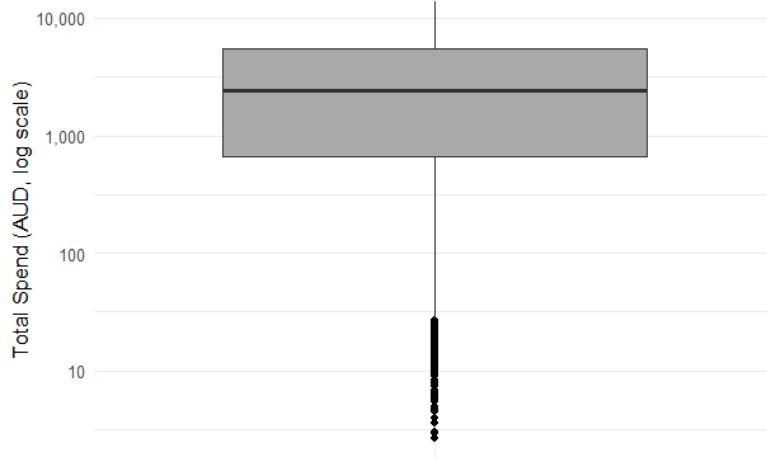
Boxplot of Customer Total Spend 2014 (Log Scale)



Histogram of Customer Total Spend 2014 (Log Scale)



Boxplot of Customer Total Spend 2014 (Log Scale)



### RFM Segmentation Table

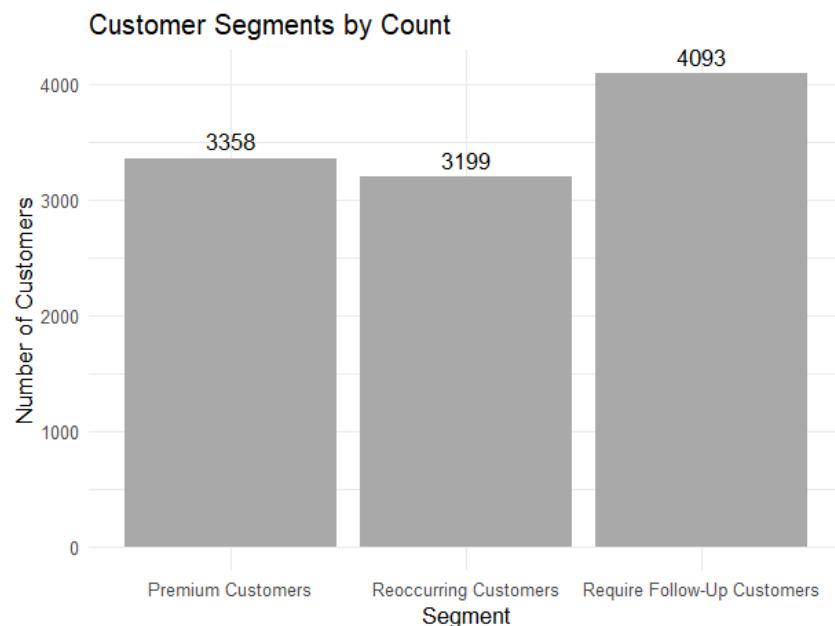
Customer_ID	Recency	Frequency	Monetary	R_Score	F_Score	M_Score	RFM_Score	RFM_Total
302712438	13	64	522.50	2	4	2	242	8
2479711497	1	227	11001.42	4	5	5	455	14
555957017	13	81	4353.81	2	4	4	244	10
3353063604	2	113	5126.90	4	5	4	454	13
5721879862	1	169	3583.87	4	5	4	454	13
8011156257	3	96	2674.60	4	4	3	443	11

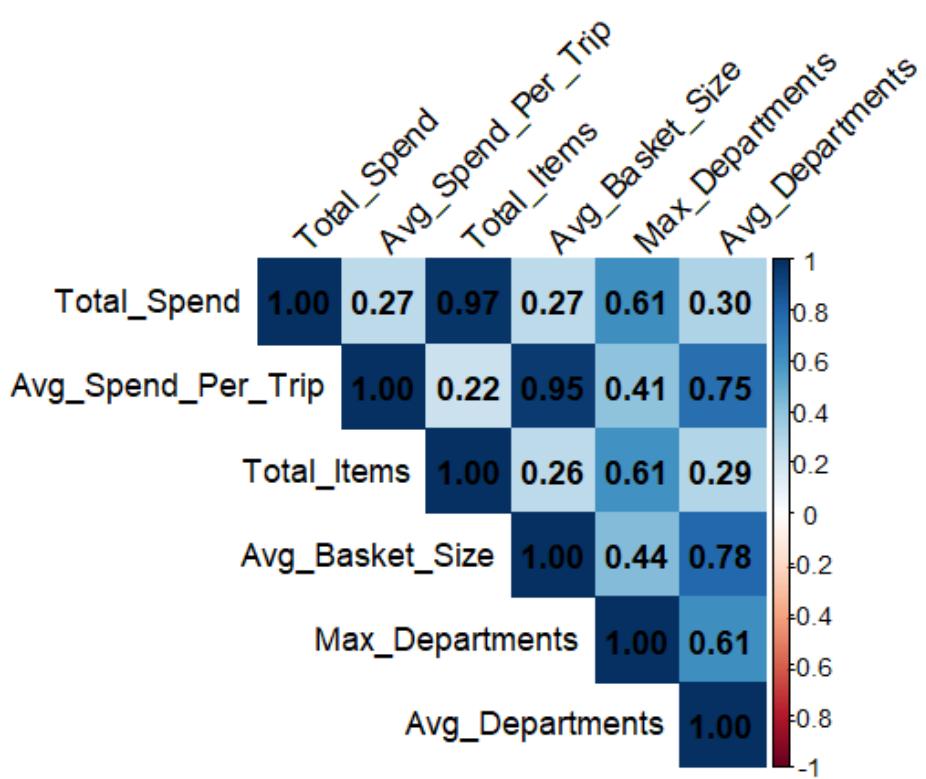
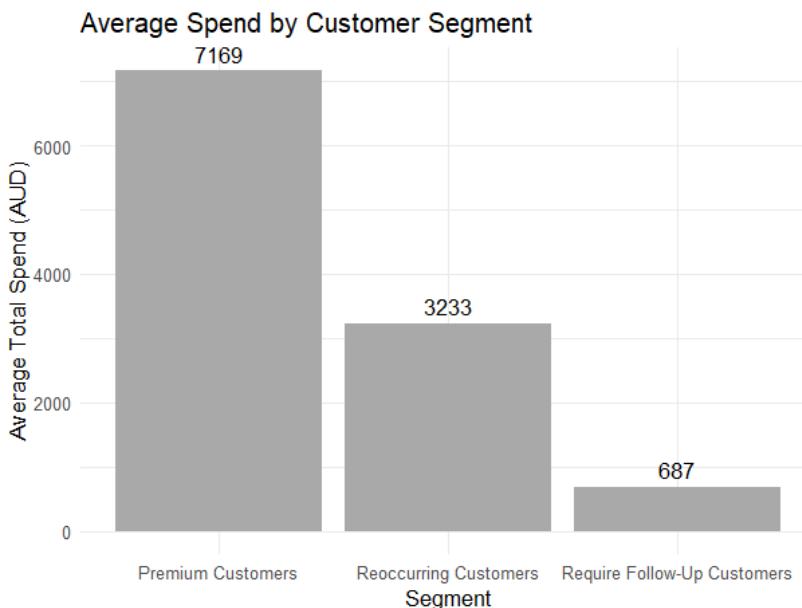
## RFM Segment Counts

Segment	Count
Premium Customers	3,358
Reoccurring Customers	3,199
Require Follow-Up Customers	4,093

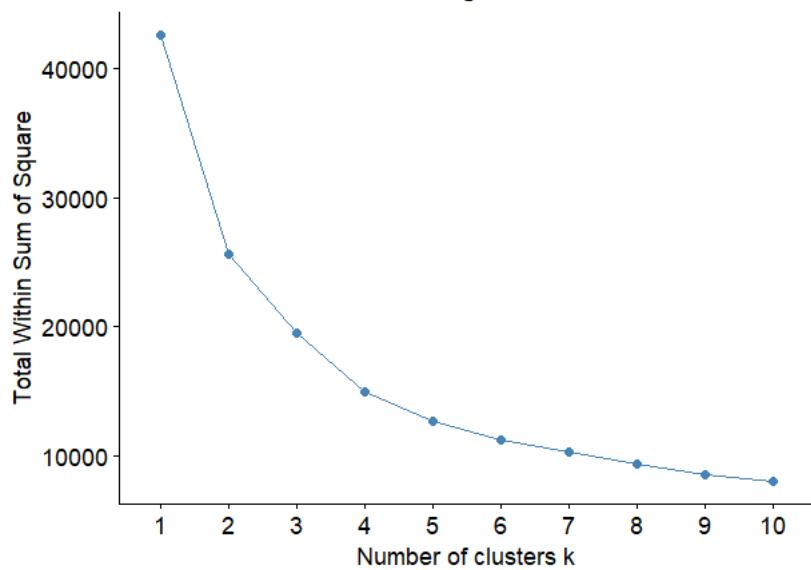
## RFM Segment Summary

Segment	Count	Avg_Recency	Avg_Frequency	Avg_Monetary
Reoccurring Customers	3,199	8.7	48.1	3,233.29
Premium Customers	3,358	1.8	123.9	7,168.72
Require Follow-Up Customers	4,093	66.0	10.8	686.56

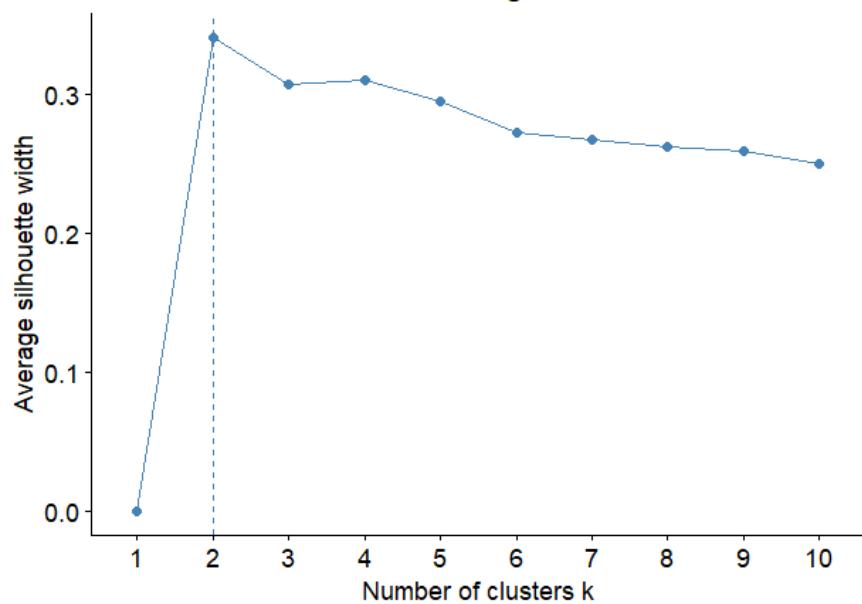




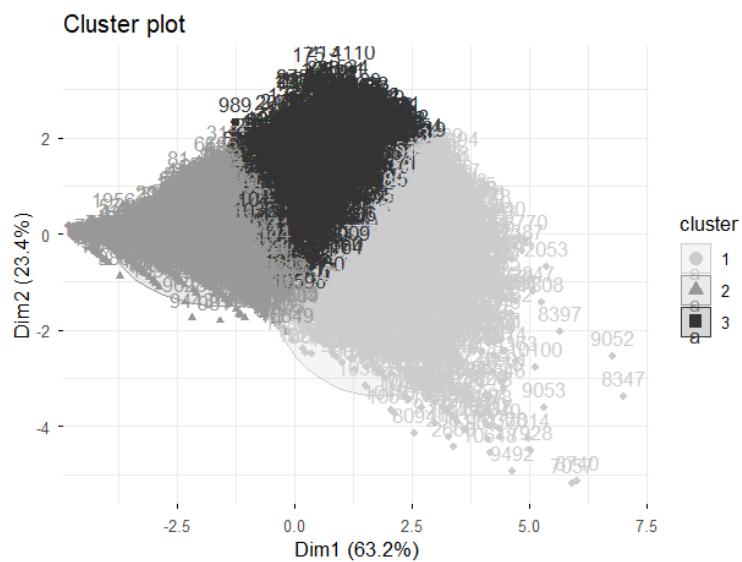
Elbow Method for Choosing k



Silhouette Method for Choosing k

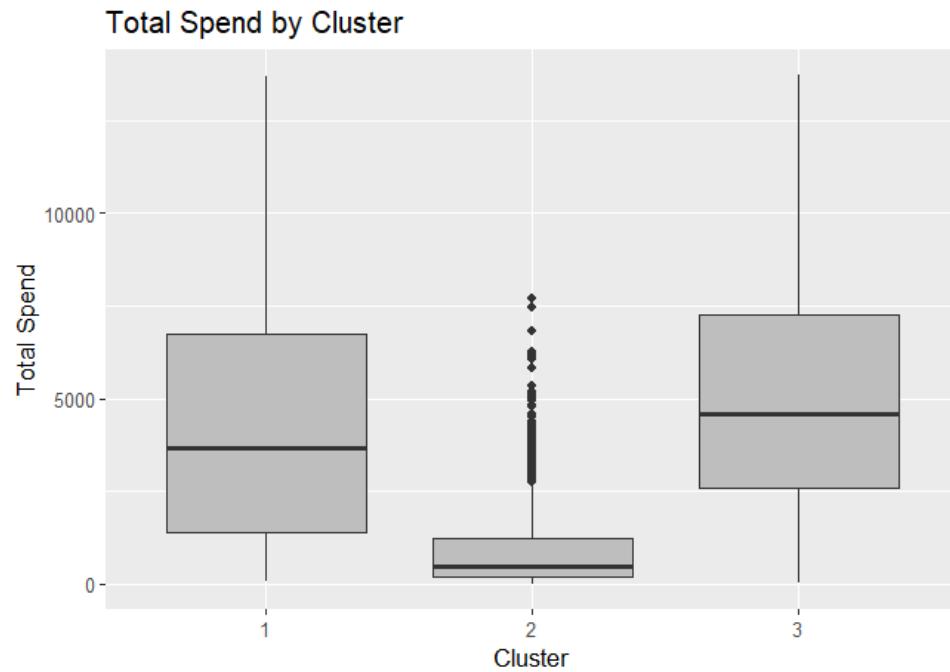


## 6.8 Cluster plot



## 6.10 Cluster table

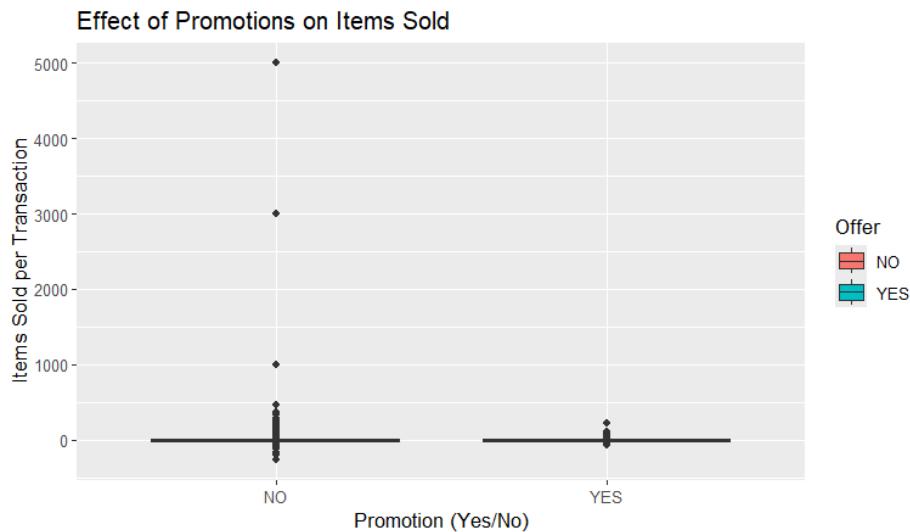
Cluster	Avg Spend	Avg Spend per Trip	Avg Items	Avg Basket	Avg Max Dep	Avg Avg Dep	Dep
2	841.90	39.71	213.67	9.56	5.76	3.14	3,709
3	5,123.19	64.58	1,292.96	15.99	8.77	4.28	4,825
1	4,434.76	150.43	1,103.79	37.04	8.93	6.00	2,116



## Prediction of Sales for January–March 2016

Month	(AUD)			
	Year	Predicted Sales	Lower Bound	Upper Bound
January 2016		135,279,915	0	298,467,017
February 2016		161,098,217	4,129,025	318,067,409
March 2016		189,224,725	32,570,107	345,879,343

### 8.1 Effect of promotion on items sold



### Row-level stats for Quantity\_Sold

Min_Items	Max_Items	Mean_Items
-270	5,000	0.998