

## DJW Regression models

### Regression Analysis

**Regression Results**

	Percieved Quality			
	Model1	Model2	Model3	Model4
nat	0.00004 (0.00002)	0.00004* (0.00002)	0.00002 (0.00002)	0.00002 (0.00002)
loc	0.00005* (0.00002)	0.00005** (0.00002)	0.00002 (0.00002)	0.00003 (0.00002)
dig	0.00005 (0.00004)	0.00005 (0.00004)	0.00002 (0.00004)	0.0001 (0.00004)
lag1nat	0.0001*** (0.00002)	0.0001*** (0.00002)	0.0001*** (0.00002)	0.0001*** (0.00002)
lag2nat	-0.00002 (0.00002)	-0.00002 (0.00002)	-0.00002 (0.00002)	-0.00004 (0.00002)
lag3nat	0.00003 (0.00002)	0.00002 (0.00002)	0.00003 (0.00002)	0.00001 (0.00002)
lag4nat	0.00005** (0.00002)	0.00004* (0.00002)	0.0001** (0.00002)	0.00003 (0.00002)
lag5nat	-0.00003 (0.00002)	-0.00003 (0.00002)	-0.00004* (0.00002)	-0.0001** (0.00002)
lag1loc	0.00004* (0.00003)	0.00005* (0.00003)	0.00005* (0.00002)	0.00003 (0.00003)
lag2loc	0.00003 (0.00002)	0.00003 (0.00002)	0.00003 (0.00002)	0.00001 (0.00002)
lag3loc	0.00001 (0.00002)	0.00001 (0.00002)	0.00003 (0.00002)	-0.00001 (0.00002)
lag4loc	0.00002 (0.00003)	0.00001 (0.00003)	0.00003 (0.00002)	-0.00001 (0.00003)
lag5loc	-0.00000 (0.00002)	-0.00000 (0.00002)	-0.00001 (0.00002)	-0.00003 (0.00002)
lag1dig	0.00001 (0.00005)	0.00002 (0.00005)	0.00002 (0.00005)	0.00002 (0.00005)
lag2dig	-0.00002 (0.00005)	-0.00003 (0.00005)	-0.00002 (0.00005)	-0.00003 (0.00005)
lag3dig	0.00005 (0.00005)	0.00004 (0.00005)	0.00003 (0.00005)	0.00004 (0.00005)
lag4dig	-0.00002 (0.00005)	-0.00000 (0.00005)	-0.00001 (0.00005)	-0.00000 (0.00005)
lag5dig	-0.00004 (0.00004)	-0.0001 (0.00004)	-0.00003 (0.00004)	-0.0001 (0.00004)

lag1compnat	0.0003 ** (0.0001)	0.0003 *** (0.0001)	0.0002 * (0.0001)	0.0003 *** (0.0001)
lag2compnat	-0.00002 (0.0001)	-0.00004 (0.0001)	-0.0001 (0.0001)	-0.00002 (0.0001)
lag3compnat	-0.0002 (0.0001)	-0.0002 * (0.0001)	-0.0001 (0.0001)	-0.0002 * (0.0001)
lag4compnat	0.0001 (0.0001)	0.0002 (0.0001)	0.0001 (0.0001)	0.0002 (0.0001)
lag5compnat	-0.00001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)
lag1comploc	-0.00003 (0.0001)	-0.00004 (0.0001)	-0.0001 (0.0001)	-0.00005 (0.0001)
lag2comploc	0.0002 *** (0.0001)	0.0002 *** (0.0001)	0.0002 ** (0.0001)	0.0002 *** (0.0001)
lag3comploc	0.00005 (0.0001)	0.0001 (0.0001)	0.0002 ** (0.0001)	0.0001 (0.0001)
lag4comploc	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
lag5comploc	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)
lag1compdig	0.0001 (0.0001)	0.0002 * (0.0001)	0.0001 (0.0001)	0.0002 (0.0001)
lag2compdig	-0.0002 (0.0001)	-0.0003 ** (0.0001)	-0.0002 (0.0001)	-0.0003 ** (0.0001)
lag3compdig	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
lag4compdig	0.0003 ** (0.0001)	0.0003 ** (0.0001)	0.0003 ** (0.0001)	0.0003 ** (0.0001)
lag5compdig	-0.0004 *** (0.0001)	-0.0004 *** (0.0001)	-0.0003 ** (0.0001)	-0.0004 *** (0.0001)
Observations	142,600	142,600	142,600	142,600
R <sup>2</sup>	0.957	0.958	0.957	0.956
Adjusted R <sup>2</sup>	0.957	0.957	0.957	0.956
Residual Std. Error	0.026 (df = 141706)	0.239 (df = 141706)	0.240 (df = 141934)	0.243 (df = 142244)
Note:	*p<0.1; ** p<0.05; *** p<0.01			

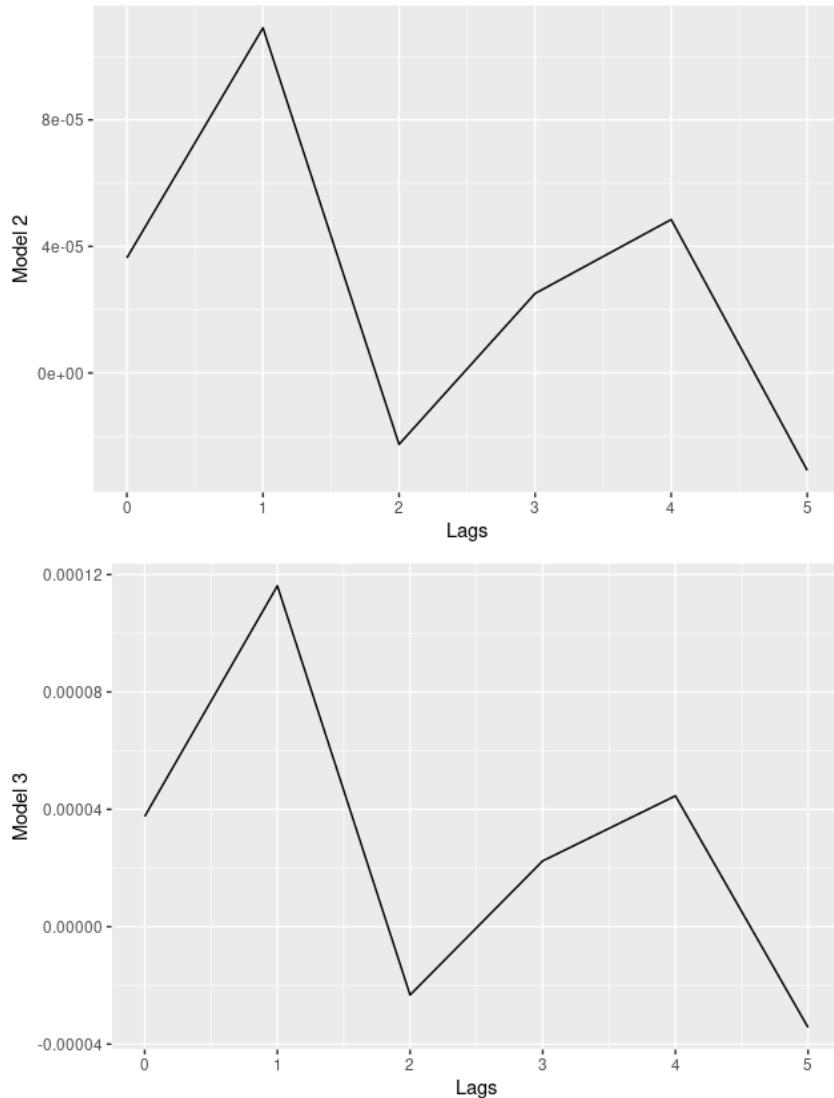
Note: The coefficients have been plotted against the number of lags below.

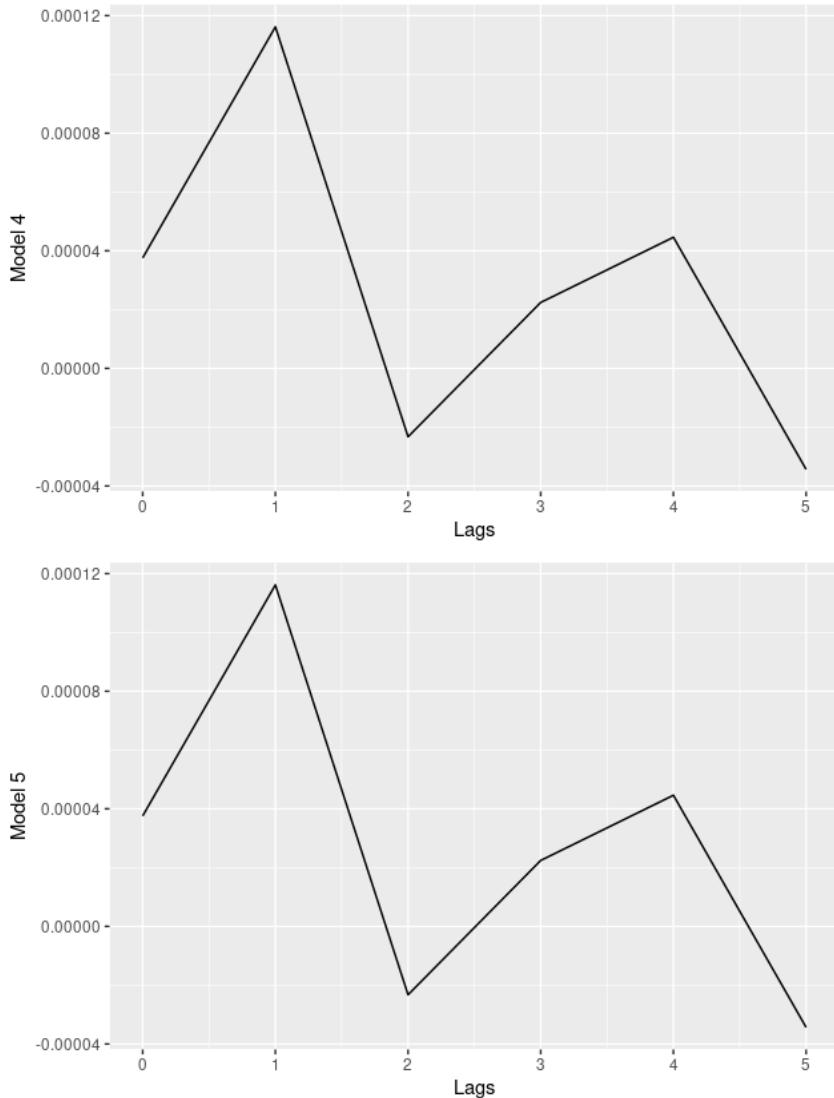
## Interpretation of the Regression Coefficients

### 1. Effect of National Ad Spent on Perceived Quality

We can see that just two coefficients of the lagged National Ad Spent terms are negative. The remaining coefficients are all positive. These negative coefficients may be explained by how the data was collected by YouGov and Kantar. The data may include those people who have not been exposed to the advertisement, hence skewing the data. But most coefficients are positive and large.

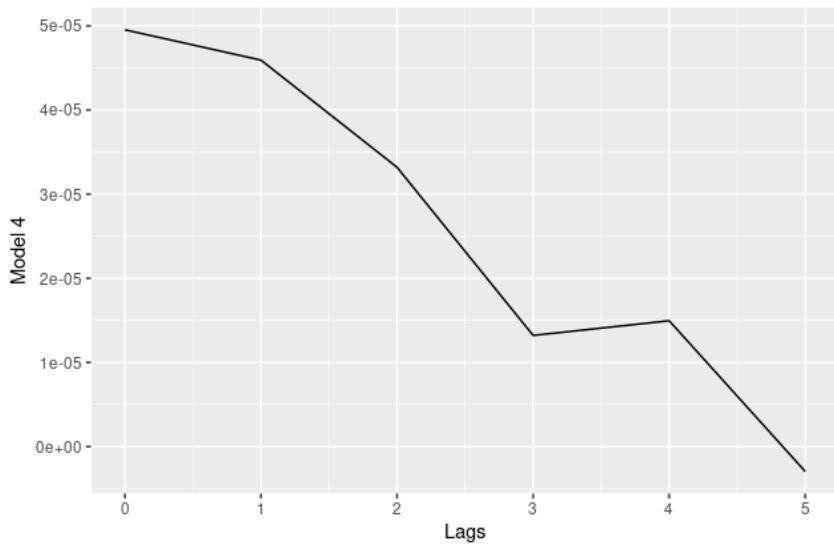
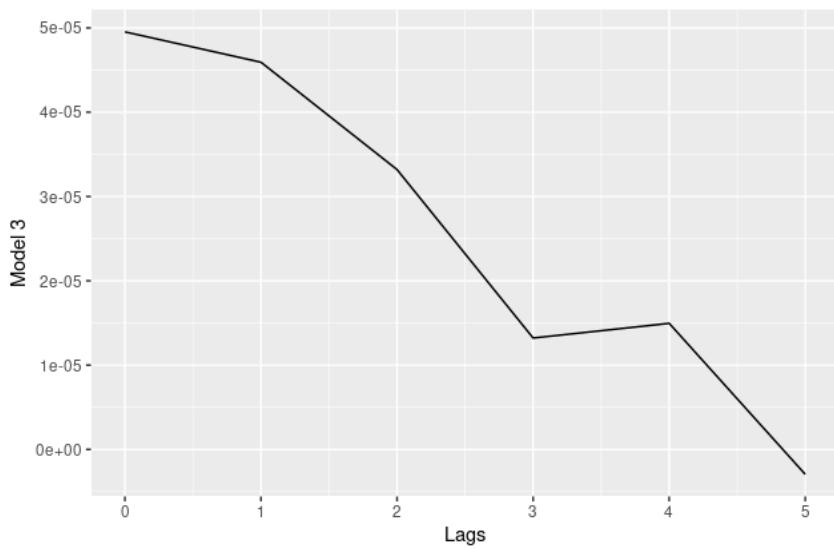
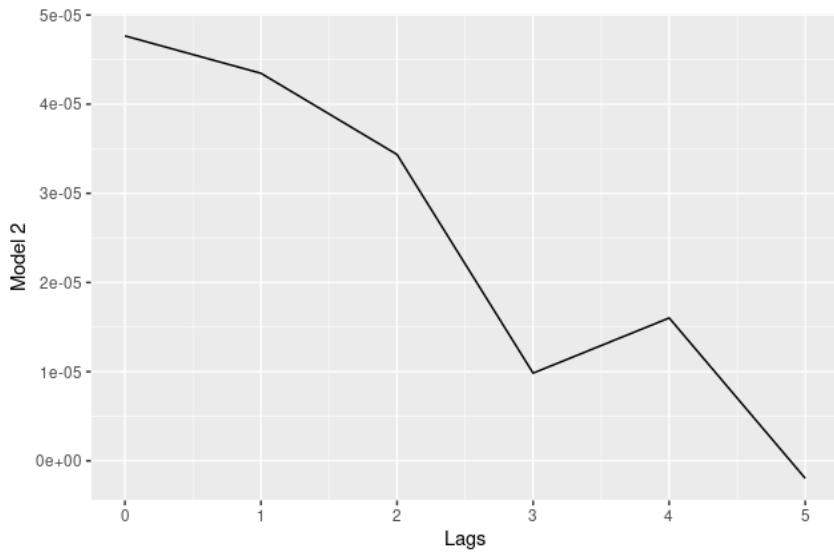
Hence, we can conclude that increase in National Ad Spent increases the Perceived Quality of a Brand.

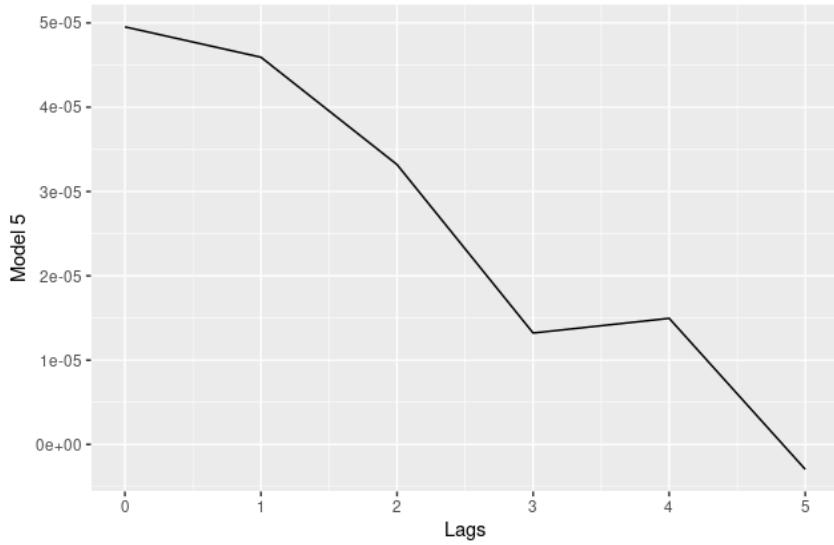




## 2. Effect of Local Ad Spent on Perceived Quality

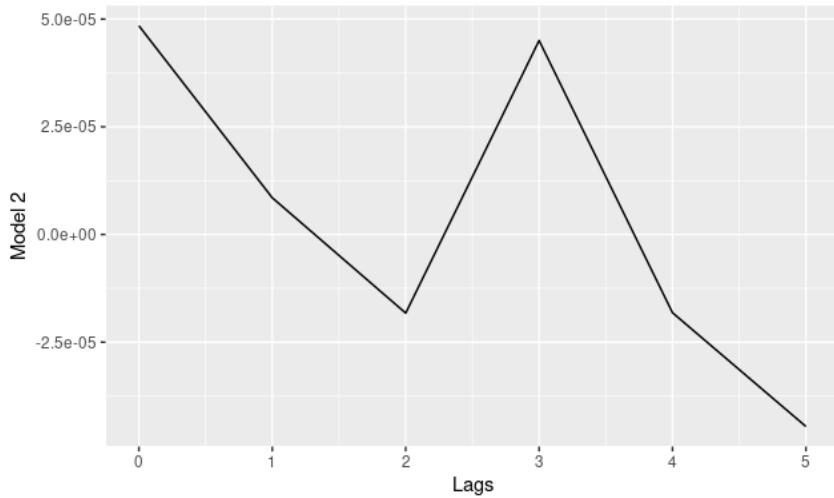
Most of the coefficients of the lagged Local Ad spent are positive. Hence, increase in Local Ad spent increases the Perceived Quality of the brand but not to the same extent as National Ad spent as the coefficients are smaller compared to that of National Ad spent on average.

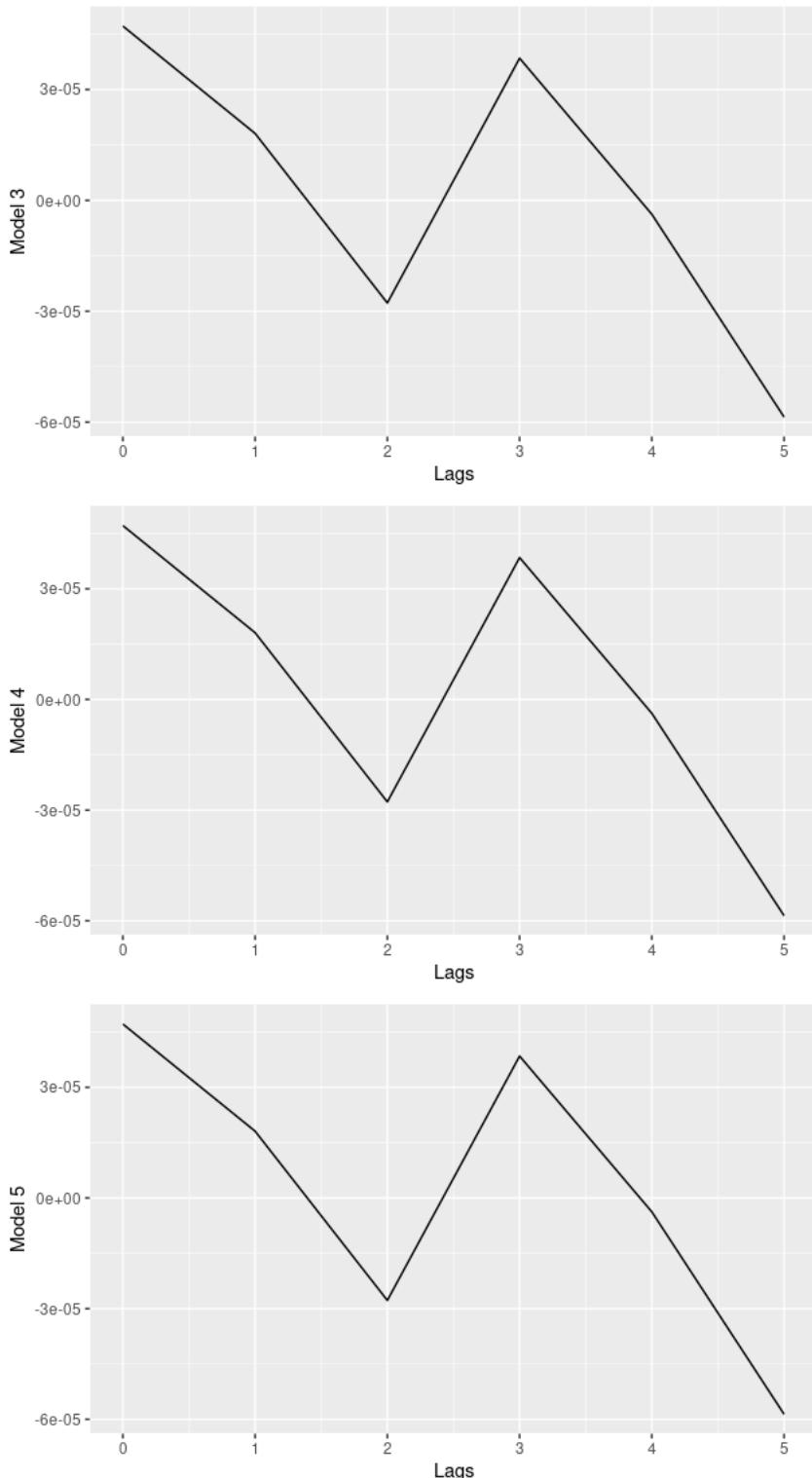




### 3. Effect of Digital Ad Spent on Perceived Quality

Most of the coefficients of the lagged Local Ad spent are also positive. However, the value of the coefficients is going down. Hence, the effect of Digital Ad Spent is positive but not significantly large.



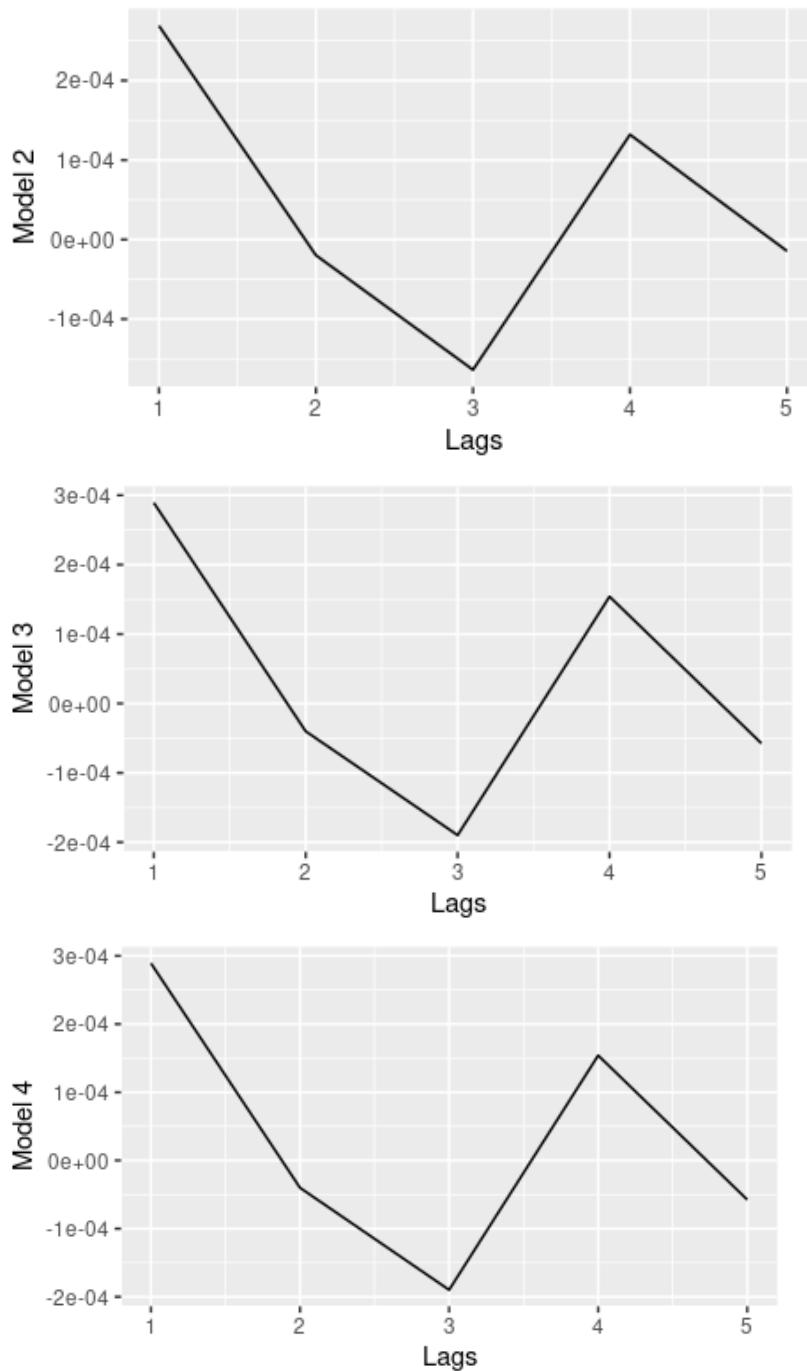


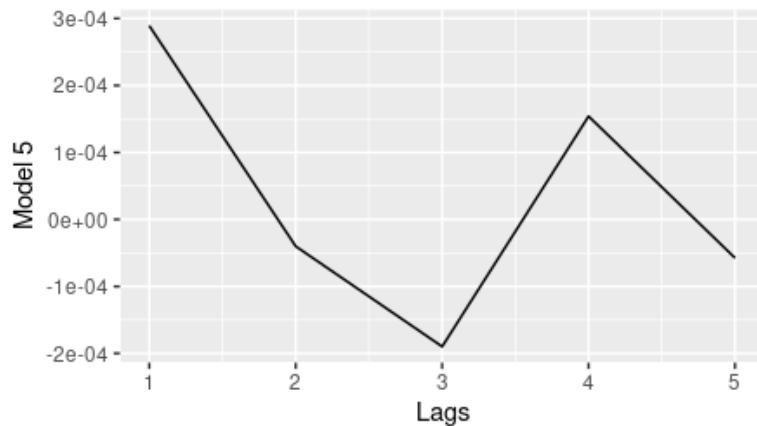
#### 4. Effect of Competitor National Ad Spent on Perceived Quality

We should expect the coefficients of Competitor National Ad Spent to be negative all throughout. Here we can see that just two coefficients are positive. This may be explained by

inconsistencies in the data that was collected. Competitor Ads can attract new customer to the market, who then try to find multiple brand offerings.

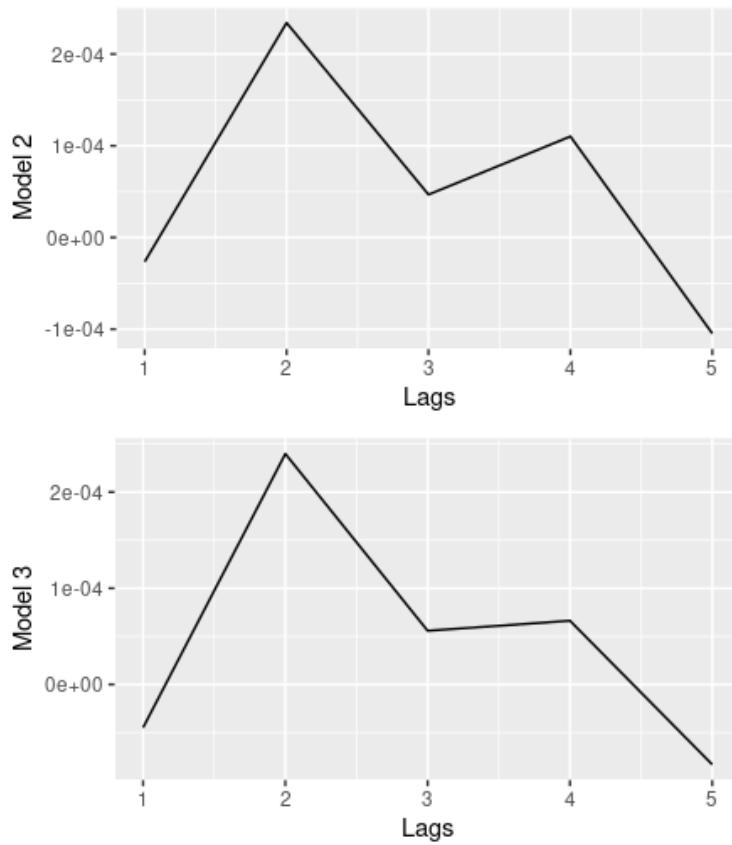
However, most of the coefficients are negative. Hence, as Competitor Ad Spent increases, our Own Perceived Quality decreases.

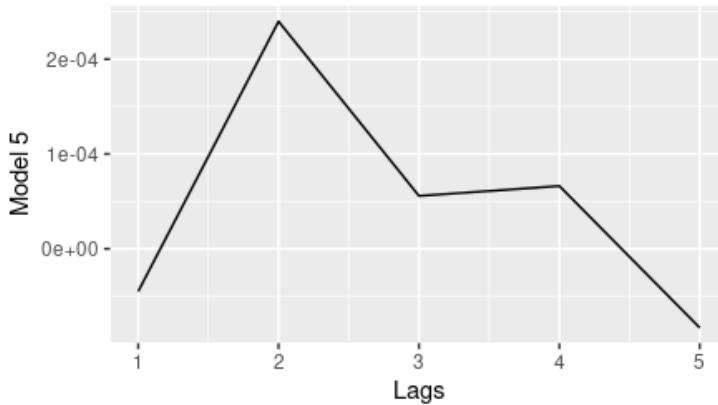
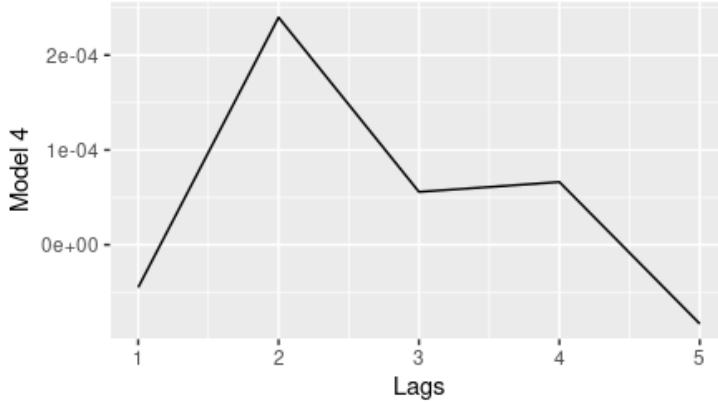




##### 5. Effect of Competitor Local Ad Spent on Perceived Quality

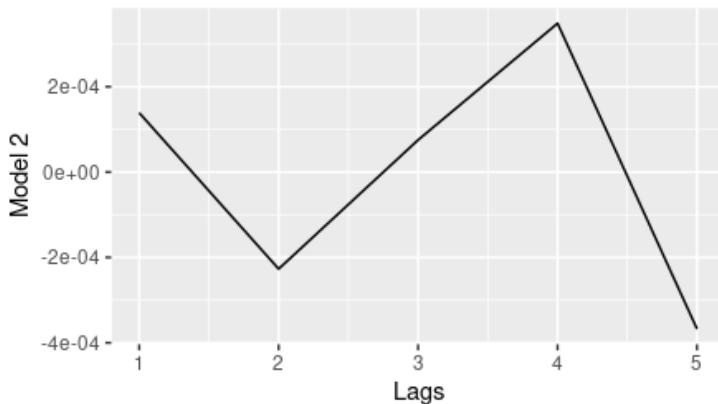
Here, we can notice that the coefficients of the lagged Competitor Local Ad Spent are negative or positive values that are small. Hence, we can conclude that Competitor Local Ad Spent has a negligible or negative effect on our Own Perceived Quality.

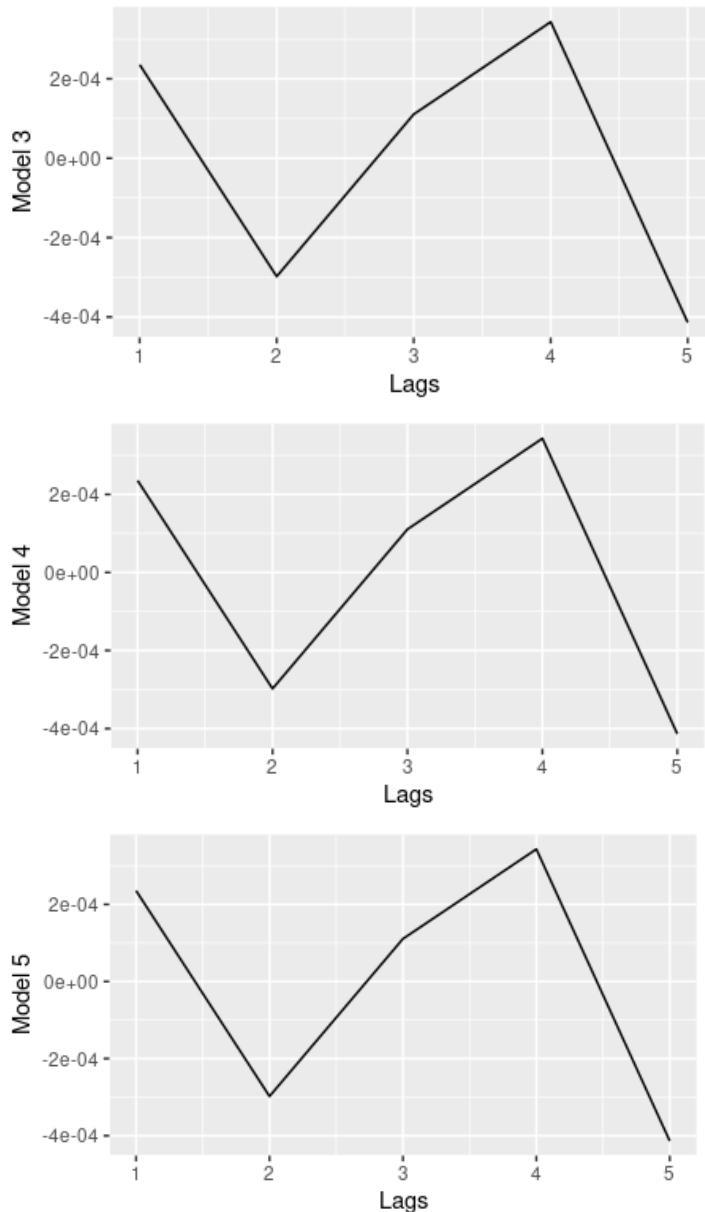




## 6. Effect of Competitor Digital Ad Spent on Perceived Quality

Here, we can notice that the coefficients of the lagged Competitor Digital Ad Spent are negative or positive values that are small. Hence, we can conclude that Competitor Digital Ad Spent has a negligible or negative effect on our Own Perceived Quality.





## Summary

- Increase in Own National Ad Spent increases Perceived Quality of the brand.
- Increase in Own National Ad Spent increases Perceived Quality of the brand but to a lesser extent compared to National Ad Spent.
- The effect of Digital Ad Spent is positive but not significantly large.
- Competitor National, Local and Digital Ad Spent have a negative impact on our Own Perceived Quality.