



Walmart Sales Prediction Using Regression Analysis

Final Project Report

Team 8

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1. Introduction

1.1 Overview

Revenue forecasting has always been crucial for businesses to prepare for upcoming demands and long-term strategic planning. It provides insights in demand planning, storage space allocation, human resource planning, logistics arrangements, and more. Therefore, business owners often deploy certain data analytics models to simulate outcomes that can capture future trends for their operations. Models used to conduct such a simulation may vary based on its required precision or capability for dynamically adjusting to irregularities, but all models are aiming for similar results. Some common predicting models that utilize machine learning techniques for sales forecasting include linear regression, random forest regressions, extreme gradient boosting (XGBoost), long short-term memory (LSTM) model, ARIMA time series forecasting, and more [1]. In this project, we will be using multivariate linear regression techniques to forecast sales trends for targeted retail stores.

1.2 Subject for Analysis - Walmart Supercenters

For this project, we will be using regression models to forecast future sales of Walmart Supercenters within the United States. Based on their business model [2], Walmart Supercenters provides a one-stop shopping experience by combining grocery stores with fresh produce, bakery, deli and dairy products. They also include electronics, apparel, toys, and home furnishing items to customers with various needs. Furthermore, most supercenters are open 24 hours with additional services such as banks, hair, pharmacy, and more. The main source of customers for Walmart is from physical retail stores, such as Walmart Superstores, and e-commerce sales. Based on figure 1, we can see that even though the total number of Walmart stores has been slightly decaying, the number of supercenters is still increasing. This indicates the significance of Walmart Supercenters in the United States Region. Therefore, an effective model to forecast future sales for Walmart Supercenters would provide a critical advantage for senior level executives and managers to plan ahead.

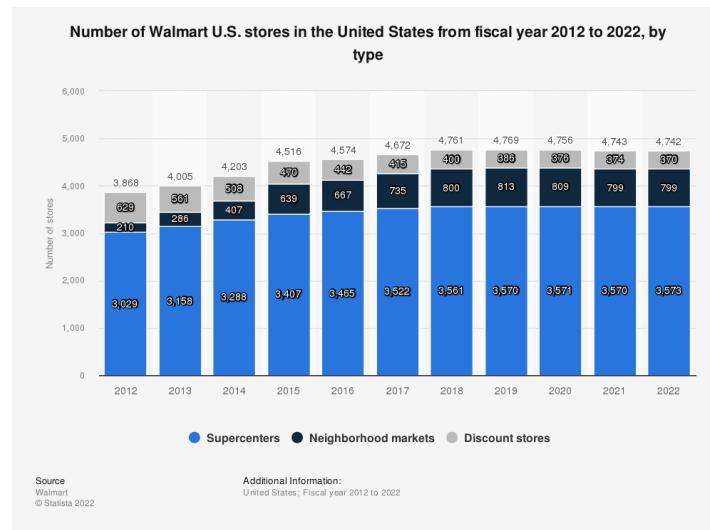


Figure 1: Number of Walmart U.S. stores in the US from 2012 to 2022 (Source: Walmart 10-K Report)

2. Problem Statement

In this project, our goal is to predict the weekly sales of Walmart stores based on historical data with several independent variables. Here we selected 10 independent variables that we assume may influence the weekly sales – date, temperature, fuel price, Consumer Price Index, unemployment rate, etc. We further elaborate on these independent and dependent variables as below. One of the biggest challenges for building an effective regression model depends on the quality of selected factors and understanding its correlations between each predictors. As we are curious about what factors may affect the sales revenue of a retail store in the US, we plan to conduct a series of regression analysis with residual analysis and other data validation techniques to find out the most relevant variables. By finalizing these findings, we can better predict the weekly sales with these selected predictors.

3. Data Description

We used the open-source dataset “**Walmart Dataset**” on Kaggle, the largest data science platform in the world. We got the dataset as a CSV file directly from the URL address: <https://www.kaggle.com/datasets/yasserh/walmart-dataset>. Our dataset covers the historical sales records and other variables of 45 Walmart stores for the period from 2010/2/5 to 2012/11/1. The sample size of the Walmart Dataset is 6,435. As we split the column **Date** in the Walmart Dataset into 4 different columns (**Year**, **Month**, **Day**, and **Weekday**), the number of independent variables will be 10 and the number of dependent variables is 1 in the dataset. In addition, we split the sample dataset into a training set and a test set with an 8:2 ratio (train = 5,148, test = 1,287) to ensure that our prediction is unbiased. Since our current model to obtain the response variable, weekly sales for a specific Walmart store (**Weekly_Sales**), is a time-dependent study with a 1-week period between each data point, we can assume the data points we use are time-dependent. The following table summarizes the description and categories of our 11 variables:

Variable Name	Description	Variable Type	Categories / Units	Variable Type
Store	The store number	Qualitative	1 - 45	Independent
Year	The year of weekly sales	Qualitative	2010, 2011, 2012	Independent
Month	The month of weekly sales	Qualitative	1 - 12	Independent
Day	The day of weekly sales	Qualitative	1 - 31	Independent
Weekday	The weekday of weekly sales	Qualitative	0 - 6	Independent
Holiday_Flag	Whether the week is a special holiday	Qualitative	1: holiday week; 0: else	Independent
Temperature	Temperature on the day of sale	Quantitative	°F	Independent
Fuel_Price	Cost of the fuel in the region	Quantitative	dollars/gallon	Independent
CPI	Prevailing consumer price index	Quantitative	-	Independent
Unemployment	Prevailing unemployment rate	Quantitative	%	Independent
Weekly_Sales	Weekly sales for the given store	Quantitative	dollars	Dependent

Table 1: Summary of Independent and Dependent Variables

For the qualitative variables, **Holiday_Flag** can be viewed as a dummy variable that indicates whether a specific data point includes holidays within its period. This variable is related to our assumption that holidays may create a temporary spike in demand, which leads to a higher weekly sales amount for the store. The other qualitative variable is **Store**, which simply indicates the Walmart store number that is covered in our study. Since the study only includes a certain amount of stores to analyze, the data directly assign each store with a numerical value between 1 to 45 (total Walmart store within the study: 45).

4. Regression Analysis

After basic data preprocessing, we performed the following processes for the regression analysis. First of all, we performed some exploratory analysis on our dataset to see if there are any noteworthy characteristics or trends of the variables. We then built a full multiple linear regression model based on all the predictors we originally have. After analysis and diagnosis, we took different actions on the full model and built several reduced regression models to improve the model performance, and we conducted residual analysis and checked if the basic regression assumptions hold in each of our reduced models accordingly. Finally, we used our test data to conduct predictions on our models.

In the following section, R would be the main tool for our regression analysis.

4.1 Exploratory Analysis

First of all, Figure 2 shows the frequency of the response variable, ***Weekly_Sales***. The weekly sales are around 1 million dollars in most Walmart stores. It implies that the response variable would be in a great range of scale.

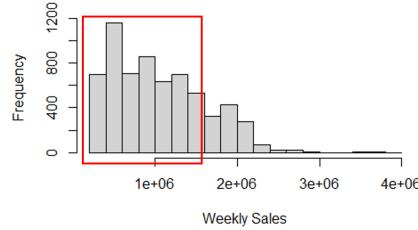


Figure 2: Frequency of response variable, ***Weekly_Sales***

We can see that Store 4, 14, 20 have higher weekly sales with larger variability in Figure 3. On the other hand, the weekly sales are lower in Store 5, 33, 44. This might be caused by the different areas these 45 stores are located.

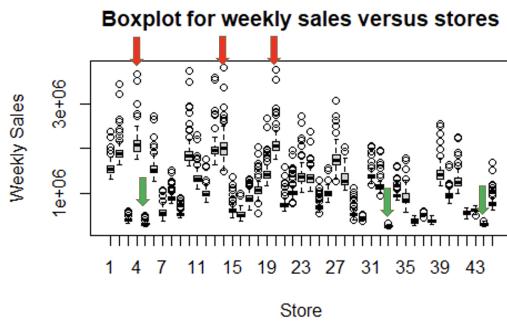


Figure 3: Boxplot for ***Weekly_Sales*** versus ***Stores***

In Figure 4 below, the average of weekly sales among stores is similar in each month. We notice that there are more data points outside the 75th percentile in December than in other months. It indicates that people would purchase much more in December, the Christmas holiday season.

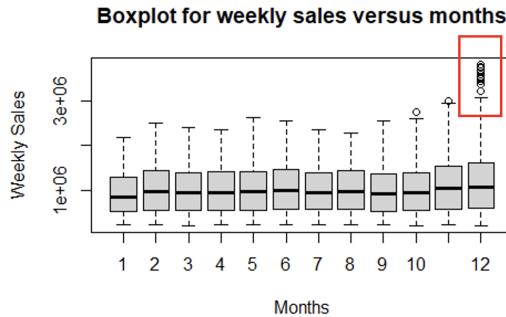
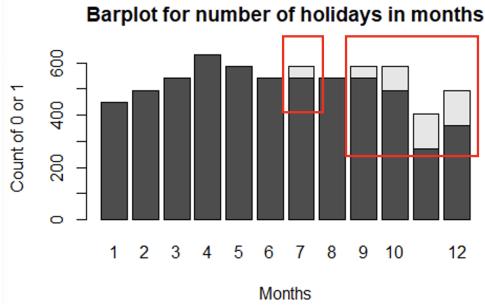


Figure 4: Boxplot for ***Weekly_Sales*** versus ***Month***

Figure 5 displays that July, September, October, November, and December should be holiday seasons with counts of holiday flags (***Holiday_Flag*** = 1, the white area in the histogram).

Figure 5: Histogram for *Month* versus *Holiday_Flag*

4.2 Regression Analysis - Full Model

After preprocessing and exploring the dataset, we built a full linear regression model with all predictors we currently have. The basic information of this model is summarized in the Appendix section - Summary of Full model. We set our significance level at 0.05, and noticed that 16 of the predictors are insignificant in the full model. In addition, the R-squared value is 94.29% and the adjusted R-squared value is 94.18%, which is quite high and may result from multicollinearity. Based on these facts of the full models, we want to further improve our model to enhance its prediction performance. We accordingly performed stepwise regression for feature selection, conducted the residual analysis to test if basic assumptions hold in the model, applied data transformation, identified potential outliers, and checked for multicollinearity. These processes and results are elaborated on in the following paragraphs.

4.3 Forward and Backward Stepwise Regression

In order to avoid potential overfitting issues, we conducted forward and backward stepwise regression to perform feature selection. This is because we got a relatively high R-squared in our full model. From the result in Appendix section - Results of Forward/Backward Stepwise Regression both forward and backward stepwise regression shows that the model with all predictors has the best AIC value. It might be because we split the testing from our original data, which might be very clean initially.

4.4 Residual Analysis - Full Model

4.4.1 Linearity Assumption

The scatter plots below show the standardized residuals against each quantitative variable, *Temperature*, *Fuel_Price*, *Unemployment*, and *CPI*. The data points are randomly scattered around 0. This shows that the Linearity assumption holds for the full model.

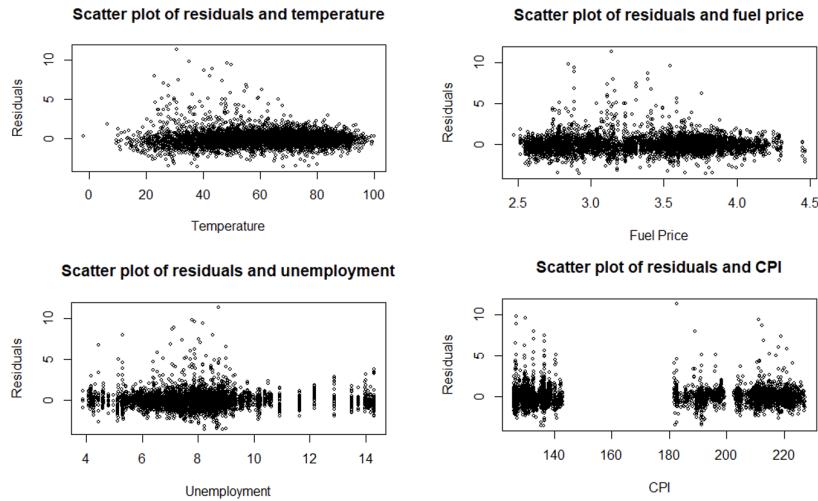


Figure 6: Scatter plots of standardized residuals against each quantitative variable, **Temperature**, **Fuel_Price**, **Unemployment**, and **CPI** for the complete model

4.4.2 Constant Variance Assumption

Overall, the plots are scattered randomly around 0 in Figure 7. However, a few standardized residuals show larger variance as the predicting variable increases. The constant variance assumption might not hold for the complete model.

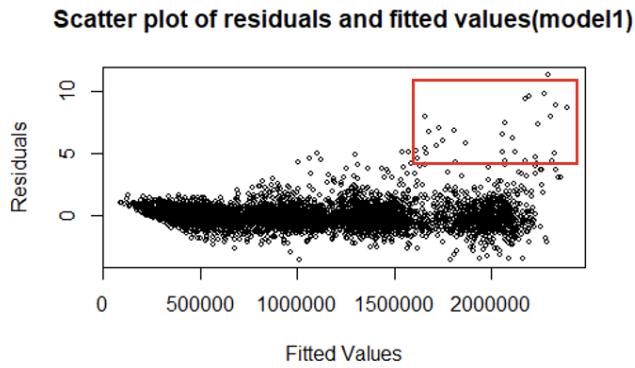


Figure 7: Scatter plot of standardized residuals against fitted values for the complete model

4.4.3 Normality Assumption

The histogram of the standardized residuals for the full model is bell-shaped in the left chart of Figure 8. It shows that the residuals should have an approximately symmetric and unimodal distribution. However, the curvature at the ends of the Q-Q plot on the right of Figure 8 suggests a non-normality in the complete model.

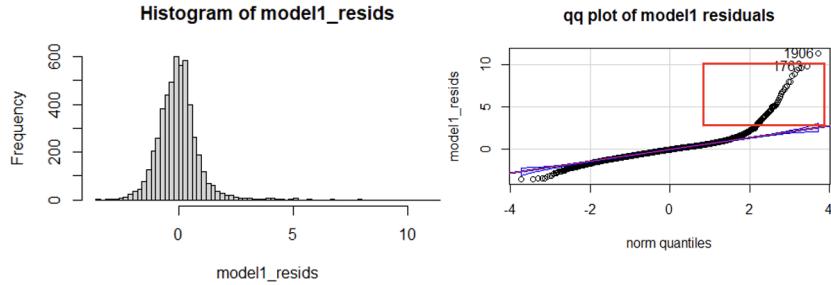


Figure 8: Histogram of standardized residuals for the complete model (left); Normal Probability (Q-Q) plot for the complete model (right)

4.5 Outlier Checks - Full Model

We conducted Cook's Distance as a measure to exclude the outliers. The threshold we selected is 0.0078, retrieved from 4 divided by the size of the sample dataset (=4/5148). In Figure 9, there are several data points that should be removed from this criteria.

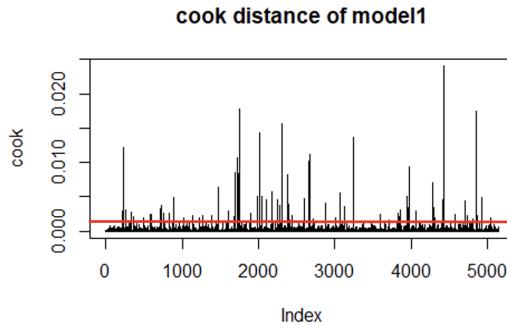


Figure 9: Cook's distance of standardized residuals for complete model

4.6 Multicollinearity Diagnosis - Full Model

For VIF (Variance Inflation Factor) analysis, we would like to take the degree of freedom into account for our model since the number of categories for the qualitative variables is relatively large in the data set. The result shown in Figure 10 indicates that the VIF value of **CPI** is significantly higher than other predicting variables. This suggests that **CPI** might be more correlated with the other predictors. Thus, it should be taken out potentially.

	GVIF	Df	GVIF^(1/(2*Df))
Store	75302.307609	44	1.136104
Holiday_Flag	2.410435	1	1.552557
Temperature	6.769469	1	2.601820
Fuel_Price	12.421840	1	3.524463
CPI	1106.681619	1	33.266825
Unemployment	21.395043	1	4.625478
Year	50.661557	2	2.667901
Month	73.991016	11	1.216081
Day	976.575779	30	1.121575
Weekday	27.478537	6	1.318002

Figure 10: Generalized VIF values of each predicting variable for complete model

4.7 Improvements - Reduced Model

Based on the residual analysis, outlier checking, and multicollinearity diagnosis presented in the previous sections, we performed 3 improvements to acquire a better model.

1. Fitted the model with Square Root Transformation. We plan to eliminate the violation of assumptions by fitting the model with square root transformation.

2. Removed the outliers with Cook's Distance larger than 0.0078. If there are a large number of outliers, they probably point to a heavy tailed distribution rather than truly extreme values. To fix the assumption violation issue, the outliers would be taken away.
3. Removed the predictor **CPI**. We would like to improve R-Squared by excluding the predictor that is correlated with the other predictors potentially.

We built the additional 7 models based on the different combinations among the 3 measures. Also, we performed predictions on our test dataset with these models. The result will be explained further in the next section.

4.8 Models Comparison

According to the above assumptions, we combined three different improvements and then generated 8 different models. To compare these models, we calculated adjusted R-squared and R-squared to analyze the residuals of training data and calculated MSPE and precision measure to see the reliability of prediction.

	Model	MSPE	Precision Measure	Adjusted R-Squared	R-Squared	Constant Variance	Linearity	Normality
1	Full MLR	20,955,845,278	0.06593	0.9418	0.9429	X	V	X
2	MLR - remove CPI	21,104,573,984	0.06640	0.9414	0.9425	X	V	X
3	MLR - remove outlier	24,732,754,076	0.07781	0.9751	0.9756	V	V	X
4	MLR - Sqrt transformation	19,037,280,458	0.05989	0.9605	0.9613	X	V	X
5	MLR - Sqrt transformation + remove CPI	19,205,406,402	0.06042	0.9603	0.9611	X	V	X
6	MLR - Sqrt transformation + remove outlier	23,502,067,318	0.07394	0.9784	0.9788	V	V	X
7	MLR - remove outlier + remove CPI	24,856,912,284	0.07820	0.9750	0.9755	V	V	X
8	MLR - Sqrt transformation + remove outlier + remove CPI	23,618,983,170	0.07431	0.9784	0.9788	V	V	X

From the above table, we can observe that the 7th (remove outlier and CPI) model has the best R-squared value. However, its MSPE value is significantly larger than the 4th (squared transformation) and 5th (squared transformation and remove CPI) models. In contrast, although the 4th model's R-squared is not as high as the 7th model, it has the lowest MSPE among the 8 models, which means it has the least chance to cause an overfitting issue. We therefore chose the 4th model to be our final selected model.

We also test the model for three multiple linear regression assumptions. We can see that all models follow the linearity assumption and violate the normality assumption. As for the constant variance assumption, which only holds

in models that outliers are removed. Though some of the models after modification or transformation still violate the variance assumption, the new models perform much better in these assumptions than the full model. The plots of the three assumptions for all models except the full model and the final selected model can be found in the appendix.

4.9 Summary of Final Selected Model

From the summary table of the final selected model (Model 4) in Appendix section - Summary of Reduced Model Model 4, we can find the statistically insignificant and significant variables based on 95% confidence level.

4.10 Linearity, Normality, and Constant Variance Assumption of Final Selected Model

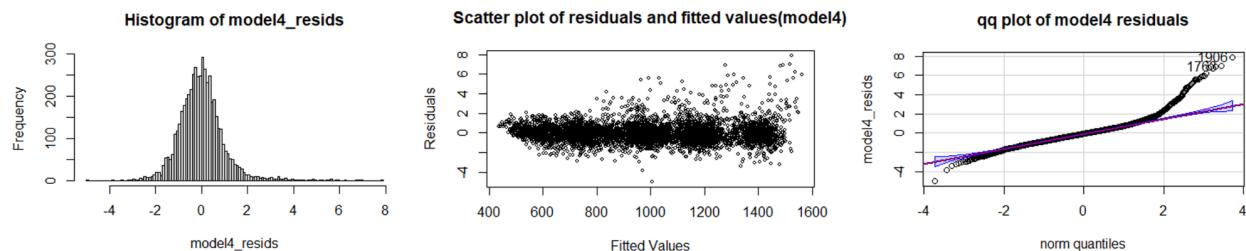


Figure 11: Histogram of standardized residuals for the final selected model (left); scatter plot of residuals and fitted values for the final selected model (middle) ;Normal Probability (Q-Q) plot for the final selected model (right)

The above plots show that the final selected model follows the linearity assumption, and violates the normality and constant variance assumption. However, the variance of residuals is smaller than the full model.

5. Conclusion and Recommendations

5.1 Final Selected Model

In summary, we choose the multiple linear regression model with the square root transformation (model 4) to be our suggested final model, based on the fact that it has the lowest MSPE among the 8 models while maintaining a decent R-squared value. We believe that Walmart can apply this model for future weekly sales prediction and use it to foresee any seasonal and promotional demand spikes.

However, as the normality assumption does not hold in any of the models we built, further evaluation may be conducted to check the reason behind this situation when applying the model.

5.2 Recommendations for Improvement

Based on the regression model selected, we can predict weekly sales for individual stores at certain locations in the United States with certain economic, environmental, and seasonal factors. Even though the current model already demonstrates a certain level of accuracy toward the collected dataset, several recommendations could still be made to improve the adaptability and accuracy of our regression model:

1. Longer time frame

In the current training dataset, our time frame covers 2 years of data ranging from 2010 to 2012. Two years of data may be sufficient to predict weekly sales at a relatively stable year with only a few anomalies. However, after experiencing the pandemic in 2020 and other economic depression from recent years, these supply chain disruptions should be considered in the model for a more up-to-date result. For example, Fuel price and unemployment rate around the pandemic era (2020 to 2021) experience significant fluctuations. These influences should either be collected into the current dataset or to build a contingent model with consideration of abnormal economic events.

2. Include additional store locations

Based on our current dataset, we have data from a total of 45 Walmart supercenter locations within the United States. Since our data was provided based on a credible third-party contributor on Kaggle, we have minimal capability to identify the actual geographic locations of the represented stores in our data. In future research stages, it is recommended to add additional store locations that cover a more holistic demographic throughout the United States. The dataset can also include region information (i.e midwest, west coast, east coast, etc.) to include regional effects to weekly sales forecast. This improvement can result in a more comprehensive model for Walmart to predict sales in different regions.

3. Product categories as predictors

Weekly forecast as our response variable demonstrates the overall weekly sales trend and other high-level information. However, to actually provide an actionable plan for Walmart supercenters to prepare future demands, specific product or product categories should be included as one of the predicting variables. This information is crucial for supply chain or store managers to plan ahead. Managers can target specific product categories to stock in advance for potential demand spike due to certain factors. This information will not only be useful for predicting holiday demands but also prepare for demand fluctuations on certain types of product when economic indicators fall below a predefined threshold.

4. Operating and labor costs

As mentioned above, the weekly sales response variable captures the overall sales data of Walmart supercenter. To increase the usability of the data, we could incorporate the operating and labor costs for each Walmart supercenter to obtain the weekly profit for a more direct performance measurement. For example, operating costs such as weekly utility spendings, equipment spendings, and other technology enhancements could play an important role in averaging out sales spikes in certain situations. For human labor on the other hand, since it is a recurring cost for every month, the effects on weekly sales may be a systematic difference depending on the operating situation in each store. In summary, these spending information are critical to evaluate the current profit of each Walmart location and provide insight for managers to understand the reality of their sales performances.

6. Reference

- [1] Liebeskind, M. (2021, December 14). *5 Machine Learning Techniques for Sales Forecasting*. Medium. <https://towardsdatascience.com/5-machine-learning-techniques-for-sales-forecasting-598e4984b109>
- [2] *About Walmart*. (n.d.). Corporate - Walmart US. <https://corporate.walmart.com/about>

Appendix

Summary of Full model

Residuals:					Temperature	-1165.9	269.7	-4.323	1.57e-05	***							
Min	1Q	Median	3Q	Max	Fuel_Price	-47589.3	14532.8	-3.275	0.001065	**							
-473997	-72381	-6052	54354	1521991	CPI	9245.4	1606.0	5.757	9.08e-09	***							
					Unemployment	-40219.2	4662.1	-8.627	< 2e-16	***							
					Year2011	-8199.7	14971.0	-0.548	0.583920								
					Year2012	-45556.8	21724.2	-2.097	0.036038	*							
					Month2	73015.0	11909.4	6.131	9.41e-10	***							
					Month3	64576.0	12481.6	5.174	2.38e-07	***							
					Month4	119152.6	12517.0	9.519	< 2e-16	***							
					Month5	137841.1	13352.1	10.324	< 2e-16	***							
					Month6	119174.6	13320.4	8.947	< 2e-16	***							
					Month7	110410.9	13516.5	8.169	3.91e-16	***							
					Month8	118625.7	12918.0	9.183	< 2e-16	***							
					Month9	47902.4	12717.5	3.767	0.000167	***							
					Month10	80713.6	12741.0	6.335	2.58e-10	***							
					Month11	204315.3	14044.7	14.547	< 2e-16	***							
					Month12	279797.3	14101.9	19.841	< 2e-16	***							
					Day2	72025.1	23314.7	3.089	0.002017	**							
					Day3	47600.4	23335.7	2.040	0.041421	*							
					Day4	189376.2	26833.8	7.057	1.93e-12	***							
					Day5	95030.3	27180.5	3.496	0.000476	***							
					Day6	179438.9	27200.9	6.597	4.63e-11	***							
					Day7	185962.8	27565.3	6.746	1.69e-11	***							
					Day8	110320.1	28398.6	3.885	0.000104	***							
					Day9	157401.0	28598.7	5.504	3.90e-08	***							
					Day10	33510.3	27094.9	1.237	0.216229								
					Day11	20290.7	25562.0	0.794	0.427359								
					Day12	248969.9	25602.5	9.724	< 2e-16	***							
					Day13	79151.3	23001.6	3.441	0.000584	***							
					Day14	61853.0	23225.4	2.663	0.007766	**							
					Day15	85619.0	23242.7	3.684	0.000232	***							
					Day16	117062.3	22854.8	5.122	3.14e-07	***							
					Day17	148905.9	22853.1	6.516	7.93e-11	***							
					Day18	87452.0	22447.4	3.896	9.91e-05	***							
					Day19	70994.6	23192.7	3.061	0.002217	**							
					Day20	72184.4	22841.9	3.160	0.001586	**							
					Day21	74205.9	23371.8	3.175	0.001507	**							
					Day22	103523.5	23357.6	4.432	9.53e-06	***							
					Day23	163334.2	22709.6	7.192	7.30e-13	***							
					Day24	188911.3	22817.0	8.279	< 2e-16	***							
					Day25	155309.9	23052.1	6.737	1.79e-11	***							
					Day26	137635.2	23204.9	5.931	3.21e-09	***							
					Day27	44035.2	23037.2	1.911	0.055999	.							
					Day28	70284.8	23320.2	3.014	0.002592	**							
					Day29	68421.5	23656.2	2.892	0.003840	**							
					Day30	20119.2	23096.2	0.871	0.383739								
					Day31	-87548.4	27586.9	-3.174	0.001515	**							
					Weekday1	16085.7	11681.0	1.377	0.168547								
					Weekday2	-72302.4	21478.9	-3.366	0.000768	***							
					Weekday3	-49183.2	11265.7	-4.366	1.29e-05	***							
					Weekday4	-4733.5	12600.6	-0.376	0.707188								
					Weekday5	-77749.9	13326.1	-5.834	5.73e-09	***							
					Weekday6	27993.5	12404.1	2.257	0.024064	*							

					Signif. codes:	0	'***'	0.001	'**'	0.01	'*'	0.05	'.'	0.1	' '	'1'	
					Residual standard error:	136200	on 5049	degrees of freedom									
					Multiple R-squared:	0.9429	, Adjusted R-squared:	0.9418									
					F-statistic:	850.2	on 98	and 5049	DF,	p-value:	< 2.2e-16						

Result of Forward/Backward Stepwise Regression

Forward Stepwise Regression

```

Start: AIC=122710.9
Weekly_Sales ~ Store + Holiday_Flag + Month

Step: AIC=122089.2
Weekly_Sales ~ Store + Holiday_Flag + Month + Day

Step: AIC=121974.7
Weekly_Sales ~ Store + Holiday_Flag + Month + Day + Weekday

Step: AIC=121887.9
Weekly_Sales ~ Store + Holiday_Flag + Month + Day + Weekday + Unemployment

Step: AIC=121865.9
Weekly_Sales ~ Store + Holiday_Flag + Month + Day + Weekday + Unemployment + Temperature + Fuel_Price

Step: AIC=121854.6
Weekly_Sales ~ Store + Holiday_Flag + Month + Day + Weekday + Unemployment + Temperature + Fuel_Price + Year

Step: AIC=121850.4
Weekly_Sales ~ Store + Holiday_Flag + Month + Day + Weekday + Unemployment + Temperature + Fuel_Price + Year
  
```

Backward Stepwise Regression

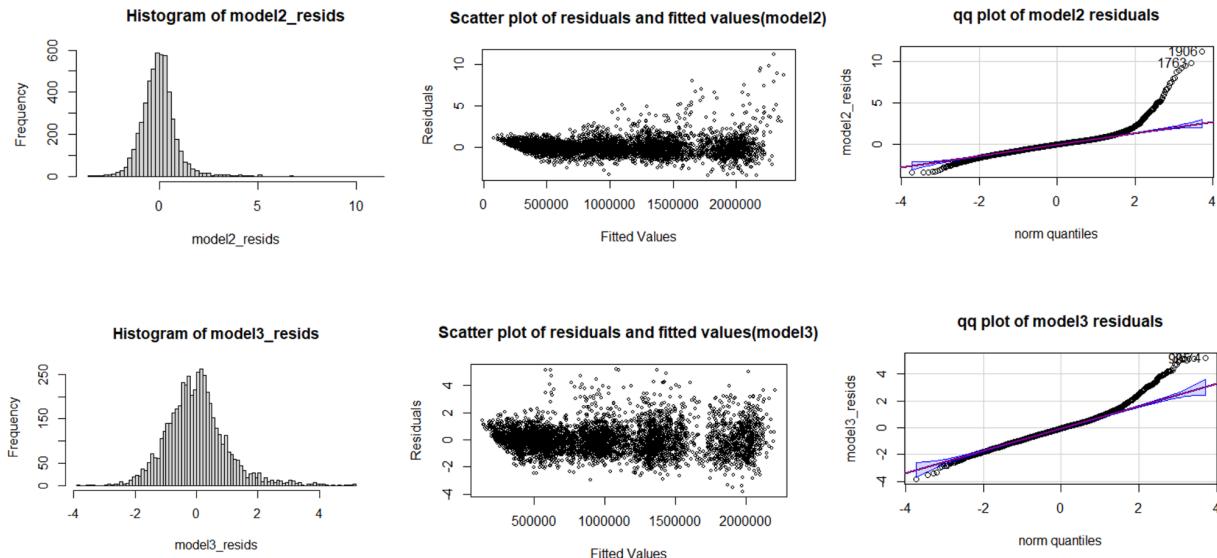
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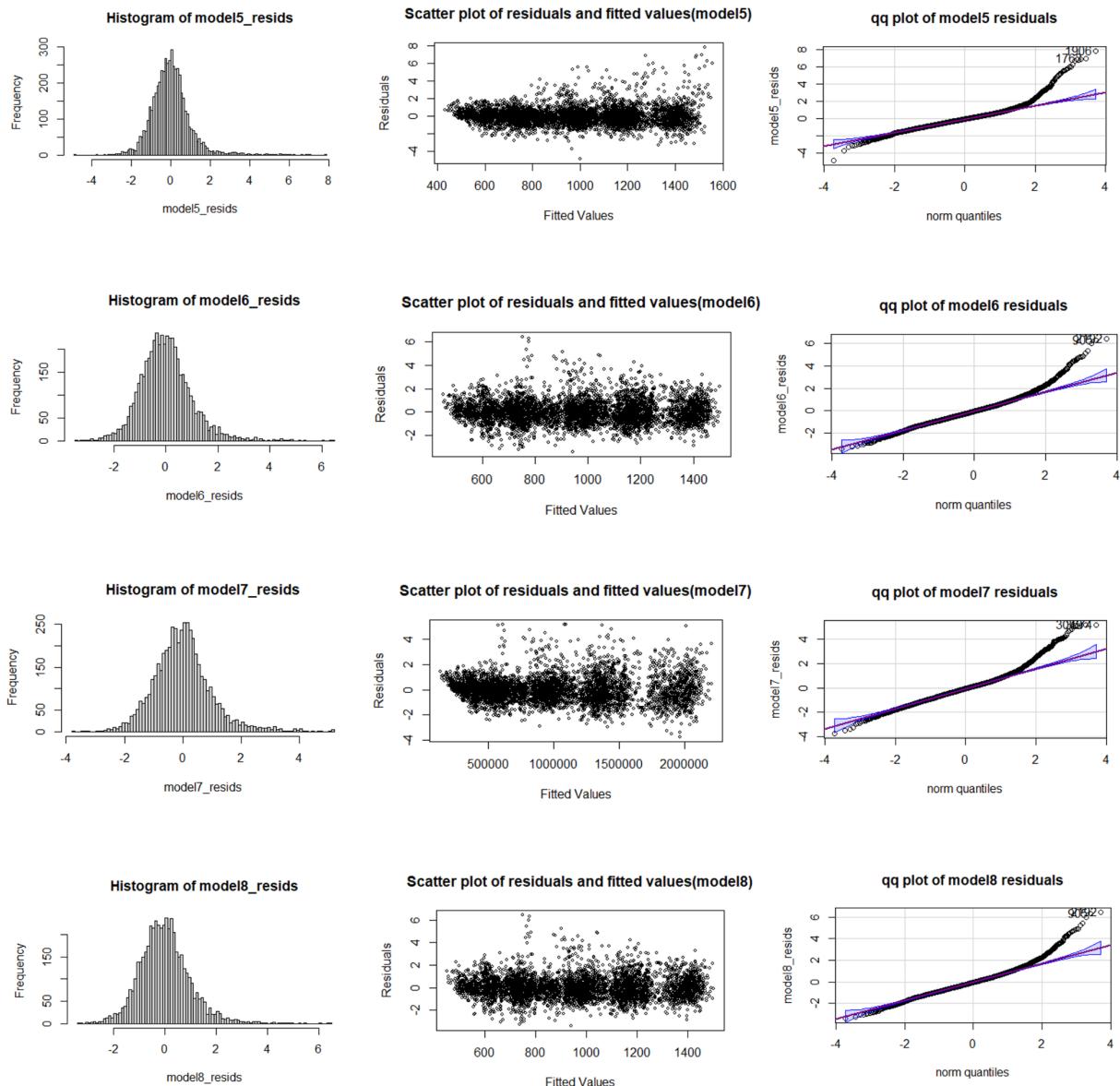
Start: AIC=121850.4
Weekly_Sales ~ Store + Holiday_Flag + Temperature + Fuel_Price + Unemployment + Year + Month + Day + Weekday

Step: AIC=121850.4
  
```

	Df	Sum of Sq	RSS	AIC
<none>	2	1.5044e+11	9.4323e+13	121850
- Year	1	2.4074e+12	9.6817e+13	121975
- Temperature	1	1.5961e+12	9.7629e+13	122008
- Unemployment	1	7.3100e+11	9.8494e+13	122053
- Fuel_Price	1	4.9722e+11	9.8728e+13	122067
- Day	2	1.2112e+10	1.1326e+14	122713
- Month	2	1.2112e+10	1.1326e+14	122714

Linearity, Normality, and Constant Variance Assumptions of Reduced Model





Summary of Reduced Models

Model2

Residuals:						Temperature	-980.2	268.6	-3.649	0.000265	***									
	Min	1Q	Median	3Q	Max	Fuel_Price	-58837.5	14446.6	-4.073	4.72e-05	***									
Holiday_Flag1	-461237	-72731	-5776	54192	1519441	Unemployment	-36495.3	4631.7	-7.879	4.00e-15	***									
Year2011						Year2012	36346.5	12856.8	2.827	0.004717	**									
Month2						Month3	41431.0	15657.5	2.646	0.008168	**									
						Month4	83512.8	11806.4	7.074	1.72e-12	***									
						Month5	74389.6	12403.9	5.997	2.15e-09	***									
						Month6	132887.6	12326.5	10.781	< 2e-16	***									
						Month7	135001.5	13056.5	11.872	< 2e-16	***									
						Month8	132127.9	13170.6	10.032	< 2e-16	***									
						Month9	120699.3	13440.3	8.980	< 2e-16	***									
						Month10	127889.8	12789.8	10.212	< 2e-16	***									
						Month11	66160.5	12354.8	5.355	8.93e-08	***									
						Month12	101286.5	12268.4	8.256	< 2e-16	***									
						Day1	226613.3	13572.5	16.652	< 2e-16	***									
						Day2	307695.2	13285.2	23.161	< 2e-16	***									
						Day3	82981.6	23310.7	3.560	0.000375	***									
						Day4	60386.6	23303.6	2.591	0.009589	**									
						Day5	217013.9	26484.7	8.194	3.18e-16	***									
						Day6	118057.4	26970.0	4.377	1.23e-05	***									
						Day7	201309.0	27019.9	7.450	1.09e-13	***									
						Day8	207074.8	27407.0	7.556	4.92e-14	***									
						Day9	129821.7	28285.4	4.590	4.55e-06	***									
						Day10	184373.6	28301.9	6.515	8.00e-11	***									
						Day11	64994.5	26621.5	2.441	0.014663	*									
						Day12	51643.7	25054.4	2.061	0.039329	*									
						Day13	288415.7	24746.9	11.655	< 2e-16	***									
						Day14	98875.8	22817.3	4.333	1.50e-05	***									
						Day15	77233.7	23144.5	3.337	0.000853	***									
						Day16	103325.8	23111.4	4.471	7.96e-06	***									
						Day17	137686.9	22643.9	6.081	1.29e-09	***									
						Day18	164428.7	22765.5	7.223	5.86e-13	***									
						Day19	102992.0	22355.3	4.607	4.18e-06	***									
						Day20	94497.1	22903.1	4.126	3.75e-05	***									
						Day21	91441.9	22667.4	4.034	5.56e-05	***									
						Day22	91457.1	23252.5	3.933	8.49e-05	***									
						Day23	121619.1	23218.6	5.238	1.69e-07	***									
						Day24	185124.2	22463.0	8.241	< 2e-16	***									
						Day25	205614.5	22703.7	9.056	< 2e-16	***									
						Day26	171906.9	22943.8	7.493	7.93e-14	***									
						Day27	916050.9	22918.2	7.027	2.39e-12	***									
						Day28	62945.4	22874.2	2.752	0.005948	**									
						Day29	88163.1	23185.9	3.802	0.000145	***									
						Day30	87168.8	23505.5	3.708	0.000211	***									
						Day31	42680.9	22833.6	1.869	0.061651	.									
						Weekday1	-68826.8	27481.5	-2.504	0.012295	*									
						Weekday2	13805.8	11711.3	1.179	0.238516										
						Weekday3	-79271.6	21512.9	-3.685	0.000231	***									
						Weekday4	-52837.5	11283.5	-4.683	2.91e-06	***									
						Weekday5	-720.8	12621.3	-0.057	0.954460										
						Weekday6	-84809.8	13311.7	-6.371	2.04e-10	***									
						---	31613.5	12427.5	2.544	0.010994	*									
						Signif. codes:	0	'***'	0.001	'**'	0.01	'*'	0.05	'.'	0.1	' '	1			
						Residual standard error:	136700	on	5050	degrees of freedom										
						Multiple R-squared:	0.9425	Adjusted R-squared:	0.9414	F-statistic:	853.2	on	97	and	5050	DF,	p-value:	< 2.2e-16		

Model3

Residuals:					Temperature	291.6	171.4	1.701	0.088925	.							
	Min	1Q	Median	3Q	Fuel_Price	-42212.0	9314.5	-4.532	5.99e-06	***							
-316504	-52171	-3527	40396	430062	CPI	4582.3	1013.6	4.521	6.31e-06	***							
Store2	353274.0	11447.5	30.860	< 2e-16	Unemployment	-32636.2	2961.2	-11.021	< 2e-16	***							
Store3	-1171253.3	11963.0	-97.906	< 2e-16	Year2011	10141.1	9585.1	1.058	0.290100								
Store4	866127.7	88654.6	9.770	< 2e-16	Year2012	-8640.3	13759.9	-0.628	0.530075								
Store5	-1268206.9	11971.0	-105.940	< 2e-16	Month2	91302.5	7426.8	12.294	< 2e-16	***							
Store6	-39633.9	12056.8	-3.287	0.001019	Month3	68778.3	7778.7	8.842	< 2e-16	***							
Store7	-831868.1	25655.3	-32.425	< 2e-16	Month4	97261.8	7807.1	12.458	< 2e-16	***							
Store8	-705087.1	13097.9	-53.832	< 2e-16	Month5	106391.7	8385.2	12.688	< 2e-16	***							
Store9	-1061599.6	12963.6	-81.891	< 2e-16	Month6	105016.5	8322.8	12.618	< 2e-16	***							
Store10	739424.4	89370.0	8.274	< 2e-16	Month7	76087.8	8441.5	9.014	< 2e-16	***							
Store11	-223144.3	12096.1	-18.448	< 2e-16	Month8	89828.6	8058.3	11.147	< 2e-16	***							
Store12	46208.1	92430.3	0.500	0.617152	Month9	38515.1	7944.1	4.848	1.28e-06	***							
Store13	809194.2	88792.9	9.113	< 2e-16	Month10	64287.3	7962.4	8.074	8.52e-16	***							
Store14	646907.2	32569.4	19.862	< 2e-16	Month11	114554.9	8833.4	12.968	< 2e-16	***							
Store15	-526335.9	82337.4	-6.392	1.79e-10	Month12	163731.4	9261.9	17.678	< 2e-16	***							
Store16	-940767.9	24992.1	-37.643	< 2e-16	Day2	94686.0	14692.1	6.445	1.27e-10	***							
Store17	-284154.5	88342.1	-3.217	0.001306	Day3	70489.1	14625.0	4.820	1.48e-06	***							
Store18	-50517.6	82878.0	-0.610	0.542194	Day4	147468.6	16849.8	8.752	< 2e-16	***							
Store19	279137.6	82276.6	3.393	0.000698	Day5	84810.8	17057.5	4.972	6.85e-07	***							
Store20	546773.7	13630.2	40.115	< 2e-16	Day6	148781.1	17043.0	8.730	< 2e-16	***							
Store21	-794335.0	11529.1	-68.898	< 2e-16	Day7	135366.9	17302.5	7.824	6.26e-15	***							
Store22	-149126.7	78593.5	-1.897	0.057829	Day8	81680.0	17755.1	4.600	4.33e-06	***							
Store23	97685.6	81622.6	1.197	0.231445	Day9	86015.9	18064.6	4.762	1.98e-06	***							
Store24	219325.7	82516.7	2.658	0.007887	Day10	54579.6	16931.6	3.224	0.001275	**							
Store25	-800603.1	13811.0	-57.969	< 2e-16	Day11	61235.8	15970.0	3.834	0.000127	***							
Store26	-143713.7	82217.7	-1.748	0.080533	Day12	220313.5	16081.6	13.700	< 2e-16	***							
Store27	609033.7	78521.4	7.756	1.06e-14	Day13	62202.7	14398.9	4.320	1.59e-05	***							
Store28	344604.8	92540.1	3.724	0.000198	Day14	44046.8	14525.3	3.032	0.002439	**							
Store29	-549983.1	83384.2	-6.596	4.68e-11	Day15	57494.7	14530.9	3.957	7.71e-05	***							
Store30	-1098643.2	11382.7	-96.518	< 2e-16	Day16	97750.9	14346.6	6.814	1.07e-11	***							
Store31	-159767.5	11688.1	-13.669	< 2e-16	Day17	111310.7	14365.8	7.748	1.13e-14	***							
Store32	-254706.8	25675.3	-9.920	< 2e-16	Day18	70553.1	14047.6	5.022	5.29e-07	***							
Store33	-835276.3	89485.8	-9.334	< 2e-16	Day19	63749.0	14541.6	4.384	1.19e-05	***							
Store34	-103074.6	90016.3	-1.145	0.252238	Day20	51005.0	14290.6	3.569	0.000362	***							
Store35	-257614.5	79029.8	-3.260	0.001123	Day21	55161.5	14610.3	3.776	0.000162	***							
Store36	-1147188.0	11498.1	-99.772	< 2e-16	Day22	75533.1	14625.3	5.165	2.51e-07	***							
Store37	-1010516.7	11410.4	-88.561	< 2e-16	Day23	61077.5	14525.4	4.205	2.66e-05	***							
Store38	-560028.0	92402.6	-6.061	1.46e-09	Day24	64786.9	14522.4	4.461	8.34e-06	***							
Store39	-101603.2	11811.6	-8.602	< 2e-16	Day25	67956.5	14512.5	4.683	2.91e-06	***							
Store40	-286800.8	81506.5	-3.519	0.000438	Day26	78122.5	14627.2	5.341	9.67e-08	***							
Store41	-199579.3	25111.0	-7.948	2.34e-15	Day27	25400.8	14431.6	1.760	0.078457	.							
Store42	-542314.7	89149.2	-6.083	1.27e-09	Day28	53341.1	14602.5	3.653	0.000262	***							
Store43	-787737.2	16265.6	-48.430	< 2e-16	Day29	36368.6	14793.8	2.458	0.013992	*							
Store44	-854927.3	88595.8	-9.650	< 2e-16	Day30	20702.7	14533.2	1.425	0.154363								
Store45	-582735.1	32375.7	-17.999	< 2e-16	Day31	-28538.0	18327.2	-1.557	0.119503								
Holiday_Flag1	43949.1	7644.7	5.749	9.53e-09	Weekday1	-10095.3	7357.1	-1.372	0.170071								
					Weekday2	-60729.8	13541.5	-4.485	7.47e-06	***							
					Weekday3	-43353.9	7101.9	-6.105	1.11e-09	***							
					Weekday4	-13910.8	7906.2	-1.759	0.078560	.							
					Weekday5	-68509.4	8377.1	-8.178	3.65e-16	***							
					Weekday6	-8059.3	7812.5	-1.032	0.302316								

					Signif. codes:	0	'***'	0.001	'**'	0.01	'*'	0.05	'.	0.1	' '	' '	
					Residual standard error:	84150	on 4847	degrees of freedom									
					Multiple R-squared:	0.9756	Adjusted R-squared:	0.9751									
					F-statistic:	1977	on 98	and 4847 DF,	p-value:	< 2.2e-16							

Model 4

Residuals:						
	Min	1Q	Median	3Q	Max	
	-270.25	-32.37	-2.96	25.16	430.55	
Coefficients:						
	Estimate	Std. Error	t value	Pr(> t)		
(Intercept)	668.2104	136.1531	4.908	9.50e-07	***	
Store2	141.4028	7.3656	19.198	< 2e-16	***	
Store3	-630.7769	7.7640	-81.244	< 2e-16	***	
Store4	452.3275	56.7894	7.965	2.03e-15	***	
Store5	-706.9679	7.7644	-91.053	< 2e-16	***	
Store6	-18.9607	7.7379	-2.450	0.014304	*	
Store7	-417.7912	16.5259	-25.281	< 2e-16	***	
Store8	-333.6705	8.4533	-39.472	< 2e-16	***	
Store9	-546.0905	8.3947	-65.052	< 2e-16	***	
Store10	431.9299	57.2612	7.543	5.4le-14	***	
Store11	-97.0535	7.8088	-12.429	< 2e-16	***	
Store12	137.7469	59.2708	2.324	0.020163	*	
Store13	437.7884	56.8928	7.695	1.69e-14	***	
Store14	283.6560	20.7530	13.668	< 2e-16	***	
Store15	-189.0737	52.7881	-3.582	0.000345	***	
Store16	-476.4252	16.0855	-29.618	< 2e-16	***	
Store17	-42.1261	56.6527	-0.744	0.457162		
Store18	72.3492	53.1231	1.362	0.173285		
Store19	224.1281	52.7339	4.250	2.17e-05	***	
Store20	216.3366	8.6851	24.909	< 2e-16	***	
Store21	-377.3084	7.4300	-50.782	< 2e-16	***	
Store22	23.1450	50.3831	0.459	0.645981		
Store23	142.1515	52.2649	2.720	0.006554	**	
Store24	197.4635	52.9150	3.732	0.000192	***	
Store25	-391.2479	8.9233	-43.846	< 2e-16	***	
Store26	17.7714	52.7349	0.337	0.736135		
Store27	345.9948	50.2967	6.879	6.76e-12	***	
Store28	281.4306	59.2856	4.747	2.12e-06	***	
Store29	-213.5619	53.4813	-3.993	6.6le-05	***	
Store30	-583.3022	7.3832	-79.004	< 2e-16	***	
Store31	-66.9173	7.5649	-8.846	< 2e-16	***	
Store32	-87.0930	16.4933	-5.281	1.34e-07	***	
Store33	-425.7262	57.3485	-7.423	1.33e-13	***	
Store34	52.1170	57.7589	0.902	0.366930		
Store35	-21.9822	50.6157	-0.434	0.664092		
Store36	-627.0479	7.4257	-84.443	< 2e-16	***	
Store37	-518.7648	7.4154	-69.957	< 2e-16	***	
Store38	-244.5444	59.2639	-4.126	3.74e-05	***	
Store39	-36.2728	7.5732	-4.790	1.72e-06	***	
Store40	-47.7855	52.2384	-0.915	0.360363		
Store41	-65.4226	16.0806	-4.068	4.81e-05	***	
Store42	-196.2045	57.1472	-3.433	0.000601	***	
Store43	-384.3624	10.4920	-36.634	< 2e-16	***	
Store44	-426.8864	56.8191	-7.513	6.79e-14	***	
Store45	-248.4259	20.7863	-11.951	< 2e-16	***	
Holiday_Flag1	15.2026	4.6004	3.305	0.000958	***	

Temperature	-0.3435	0.1091	-3.149	0.001648	**
Fuel_Price	-20.4893	5.8794	-3.485	0.000497	***
CPI	3.2678	0.6497	5.029	5.09e-07	***
Unemployment	-16.1725	1.8861	-8.574	< 2e-16	***
Year2011	-0.1835	0.6057	-0.030	0.975836	
Year2012	-11.1252	8.7888	-1.266	0.205630	
Month2	36.4593	4.8181	7.567	4.51e-14	***
Month3	31.1033	5.0496	6.160	7.86e-10	***
Month4	54.4329	5.0639	10.749	< 2e-16	***
Month5	61.8191	5.4918	11.444	< 2e-16	***
Month6	55.3477	5.3889	10.271	< 2e-16	***
Month7	49.6176	5.4683	9.074	< 2e-16	***
Month8	53.1923	5.2262	10.178	< 2e-16	***
Month9	22.3565	5.1451	4.345	1.42e-05	***
Month10	37.6275	5.1546	7.300	3.33e-13	***
Month11	89.4560	5.6820	15.744	< 2e-16	***
Month12	120.0540	5.7051	21.043	< 2e-16	***
Day2	31.3657	9.4323	3.325	0.000889	***
Day3	20.6095	9.4408	2.183	0.029080	*
Day4	80.9127	10.8560	7.453	1.07e-13	***
Day5	38.6729	10.9963	3.517	0.000440	***
Day6	75.3645	11.0045	6.848	8.35e-12	***
Day7	77.9166	11.1519	6.987	3.18e-12	***
Day8	43.5570	11.4891	3.791	0.000152	***
Day9	62.1444	11.5700	5.371	8.17e-08	***
Day10	13.5329	10.9617	1.235	0.217048	
Day11	10.4832	10.3415	1.014	0.310772	
Day12	108.5373	10.3579	10.479	< 2e-16	***
Day13	31.5284	9.3056	3.388	0.000709	***
Day14	23.5360	9.3962	2.505	0.012282	*
Day15	32.5457	9.4032	3.461	0.000542	***
Day16	47.6494	9.2462	5.153	2.66e-07	***
Day17	60.8165	9.2455	6.578	5.25e-11	***
Day18	34.7892	9.0814	3.831	0.000129	***
Day19	28.2521	9.3829	3.011	0.002617	**
Day20	27.0459	9.2410	2.927	0.003441	*
Day21	28.5392	9.4554	3.018	0.002555	*
Day22	40.2640	9.4497	4.261	2.07e-05	***
Day23	63.9024	9.1875	6.955	3.96e-12	***
Day24	73.2241	9.2310	7.932	2.63e-15	***
Day25	60.0240	9.3261	6.436	1.34e-10	***
Day26	56.2279	9.3879	5.989	2.25e-09	***
Day27	13.9791	9.3200	1.500	0.133705	
Day28	26.5034	9.4345	2.809	0.004986	**
Day29	23.0258	9.5705	2.406	0.016168	*
Day30	3.6995	9.3439	0.396	0.692177	
Day31	-40.3477	11.1607	-3.615	0.000303	***
Weekday1	6.0616	4.7257	1.283	0.199661	
Weekday2	-33.7231	8.6896	-3.881	0.000105	***
Weekday3	-21.8258	4.5577	-4.789	1.73e-06	***
Weekday4	-2.1078	5.0978	-0.413	0.679276	
Weekday5	-33.9171	5.3913	-6.291	3.42e-10	***
Weekday6	10.5608	5.0183	2.104	0.035387	*

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 55.12 on 5049 degrees of freedom
Multiple R-squared: 0.9613, Adjusted R-squared: 0.9605
F-statistic: 1279 on 98 and 5049 DF, p-value: < 2.2e-16

Model5

Residuals:						
	Min	1Q	Median	3Q	Max	
	-264.60	-32.30	-2.68	25.11	429.65	
Coefficients:						
	Estimate	Std. Error	t value	Pr(> t)		
(Intercept)	1344.1972	21.7766	61.727	< 2e-16 ***		
Store2	140.5528	7.3814	19.042	< 2e-16 ***		
Store3	-619.1804	7.4315	-83.318	< 2e-16 ***		
Store4	169.5535	8.0064	21.177	< 2e-16 ***		
Store5	-703.7818	7.7571	-90.728	< 2e-16 ***		
Store6	-12.6340	7.6533	-1.651	0.098844 .		
Store7	-490.1398	8.1539	-60.111	< 2e-16 ***		
Store8	-320.2005	8.0371	-39.841	< 2e-16 ***		
Store9	-532.2609	7.9506	-66.946	< 2e-16 ***		
Store10	146.7099	7.9363	18.486	< 2e-16 ***		
Store11	-85.4485	7.4780	-11.427	< 2e-16 ***		
Store12	-153.3278	12.8159	-11.964	< 2e-16 ***		
Store13	154.3191	7.7637	19.877	< 2e-16 ***		
Store14	186.8987	7.8009	23.959	< 2e-16 ***		
Store15	-451.4527	8.0758	-55.902	< 2e-16 ***		
Store16	-546.1247	8.1856	-66.718	< 2e-16 ***		
Store17	-324.1942	8.0226	-40.410	< 2e-16 ***		
Store18	-191.7350	8.0752	-23.744	< 2e-16 ***		
Store19	-38.0169	8.0216	-4.739	2.20e-06 ***		
Store20	195.7434	7.6777	25.495	< 2e-16 ***		
Store21	-378.2642	7.4454	-50.805	< 2e-16 ***		
Store22	-227.2084	7.7996	-29.131	< 2e-16 ***		
Store23	-116.1921	9.6677	-12.019	< 2e-16 ***		
Store24	-65.5811	8.0501	-8.147	4.68e-16 ***		
Store25	-411.9011	7.9413	-51.868	< 2e-16 ***		
Store26	-244.2693	8.1623	-29.926	< 2e-16 ***		
Store27	96.1656	7.9061	12.163	< 2e-16 ***		
Store28	-9.7131	12.8229	-0.757	0.448795		
Store29	-478.8298	8.8704	-53.981	< 2e-16 ***		
Store30	-584.5366	7.3969	-79.025	< 2e-16 ***		
Store31	-67.7477	7.5813	-8.936	< 2e-16 ***		
Store32	-160.2443	7.7951	-20.557	< 2e-16 ***		
Store33	-711.3843	7.9435	-89.556	< 2e-16 ***		
Store34	-235.1554	8.5919	-27.370	< 2e-16 ***		
Store35	-273.3674	7.9922	-34.204	< 2e-16 ***		
Store36	-631.8546	7.3816	-85.598	< 2e-16 ***		
Store37	-523.3208	7.3776	-70.934	< 2e-16 ***		
Store38	-535.5573	12.8398	-41.711	< 2e-16 ***		
Store39	-41.0224	7.5321	-5.446	5.39e-08 ***		
Store40	-305.9425	9.7217	-31.470	< 2e-16 ***		
Store41	-136.0722	7.8452	-17.345	< 2e-16 ***		
Store42	-480.8830	7.8827	-61.005	< 2e-16 ***		
Store43	-414.2951	8.6614	-47.832	< 2e-16 ***		
Store44	-709.9867	7.7561	-91.539	< 2e-16 ***		
Store45	-345.2967	7.8340	-44.077	< 2e-16 ***		
Holiday_Flag1	15.0801	4.6114	3.270	0.001082 **		
Temperature	-0.2779		0.1086	-2.560	0.010507 *	
Fuel_Price	-24.4649		5.8401	-4.189	2.85e-05 ***	
Unemployment	-14.8563		1.8724	-7.934	2.58e-15 ***	
Year2011	15.5612		5.1974	2.994	0.002766 **	
Year2012	19.6203		6.3296	3.100	0.001947 **	
Month2	40.1697		4.7728	8.416	< 2e-16 ***	
Month3	34.5719		5.0143	6.895	6.06e-12 ***	
Month4	59.2875		4.9830	11.898	< 2e-16 ***	
Month5	67.8844		5.2781	12.861	< 2e-16 ***	
Month6	59.9260		5.3243	11.255	< 2e-16 ***	
Month7	53.2540		5.4333	9.881	< 2e-16 ***	
Month8	57.4273		5.1703	11.187	< 2e-16 ***	
Month9	28.8098		4.9945	5.768	8.48e-09 ***	
Month10	44.8989		4.9595	9.053	< 2e-16 ***	
Month11	97.1251		5.4867	17.702	< 2e-16 ***	
Month12	129.9144		5.3706	24.190	< 2e-16 ***	
Day2	35.2382		9.4234	3.739	0.000186 ***	
Day3	25.1288		9.4205	2.667	0.007667 **	
Day4	90.6811		10.7065	8.470	< 2e-16 ***	
Day5	46.8118		10.9027	4.294	1.79e-05 ***	
Day6	83.0944		10.9229	7.667	3.32e-14 ***	
Day7	85.3786		11.0794	7.706	1.55e-14 ***	
Day8	50.4498		11.4344	4.412	1.05e-05 ***	
Day9	71.6778		11.4411	6.265	4.04e-10 ***	
Day10	24.6609		10.7618	2.292	0.021974 *	
Day11	21.5648		10.1283	2.129	0.033289 *	
Day12	122.4793		10.0040	12.243	< 2e-16 ***	
Day13	38.4999		9.2239	4.174	3.04e-05 ***	
Day14	28.9722		9.3562	3.097	0.001968 **	
Day15	38.8041		9.3428	4.153	3.33e-05 ***	
Day16	54.9392		9.1539	6.002	2.09e-09 ***	
Day17	66.3030		9.2030	7.204	6.69e-13 ***	
Day18	40.2818		9.0372	4.457	8.48e-06 ***	
Day19	36.5589		9.2586	3.949	7.97e-05 ***	
Day20	33.8525		9.1634	3.694	0.000223 ***	
Day21	34.6366		9.3999	3.685	0.000231 ***	
Day22	46.6599		9.3862	4.971	6.88e-07 ***	
Day23	71.6040		9.0867	7.885	3.82e-15 ***	
Day24	79.1279		9.1780	8.621	< 2e-16 ***	
Day25	65.8901		9.2751	7.184	1.38e-12 ***	
Day26	64.5041		9.2647	6.962	3.77e-12 ***	
Day27	20.6628		9.2470	2.235	0.025490 *	
Day28	32.8225		9.3730	3.582	0.000466 ***	
Day29	29.6519		9.5021	3.121	0.001815 **	
Day30	11.6738		9.2305	1.265	0.206038	
Day31	-33.7306		11.1095	-3.036	0.002408 **	
Weekday1	5.2558		4.7343	1.110	0.266990	
Weekday2	-36.1864		8.6966	-4.161	3.22e-05 ***	
Weekday3	-23.1174		4.5614	-5.068	4.16e-07 ***	
Weekday4	-0.6895		5.1022	-0.135	0.892504	
Weekday5	-36.4124		5.3813	-6.766	1.47e-11 ***	
Weekday6	11.8402		5.0238	2.357	0.018471 *	
<hr/>						
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						
Residual standard error: 55.25 on 5050 degrees of freedom						
Multiple R-squared: 0.9611, Adjusted R-squared: 0.9603						
F-statistic: 1285 on 97 and 5050 DF, p-value: < 2.2e-16						

Model6

Residuals:					Temperature	0.16240	0.08027	2.023	0.043098	*		
	Min	1Q	Median	3Q	Fuel_Price	-18.69396	4.36171	-4.286	1.86e-05	***		
	-133.328	-24.667	-2.365	20.736	251.044	1.67321	0.47465	3.525	0.000427	***		
Coefficients:												
		Estimate	Std. Error	t value	Pr(> t)	Month1	32.98191	3.64255	9.055	< 2e-16 ***		
(Intercept)	964.51684	99.42893	9.701	< 2e-16	***	Month2	43.46875	3.47777	12.499	< 2e-16 ***		
Store2	135.06191	5.36054	25.196	< 2e-16	***	Month3	32.98191	3.64255	9.055	< 2e-16 ***		
Store3	-620.90930	5.60194	-110.838	< 2e-16	***	Month4	46.52544	3.65586	12.726	< 2e-16 ***		
Store4	317.86919	41.51450	7.657	2.29e-14	***	Month5	50.76211	3.92657	12.928	< 2e-16 ***		
Store5	-697.35255	5.60568	-124.401	< 2e-16	***	Month6	50.70163	3.89732	13.009	< 2e-16 ***		
Store6	-17.01083	5.64587	-3.013	0.002600	**	Month7	37.29943	3.95293	9.436	< 2e-16 ***		
Store7	-436.41133	12.01368	-36.326	< 2e-16	***	Month8	42.94559	3.77349	11.381	< 2e-16 ***		
Store8	-319.38567	6.13340	-52.073	< 2e-16	***	Month9	19.06280	3.71999	5.124	3.10e-07 ***		
Store9	-531.68565	6.07049	-87.585	< 2e-16	***	Month10	36.22477	3.72857	8.637	< 2e-16 ***		
Store10	278.85294	41.84950	6.663	2.98e-11	***	Month11	56.77643	4.13646	13.726	< 2e-16 ***		
Store11	-93.12872	5.66428	-16.441	< 2e-16	***	Month12	80.85223	4.33707	18.642	< 2e-16 ***		
Store12	-15.83416	43.28257	-0.366	0.714506		Day2	40.77806	6.87991	5.927	3.30e-09 ***		
Store13	301.05287	41.57929	7.240	5.18e-13	***	Day3	30.00447	6.84850	4.381	1.21e-05 ***		
Store14	244.89398	15.25136	16.057	< 2e-16	***	Day4	67.30271	7.89032	8.530	< 2e-16 ***		
Store15	-309.93221	38.55633	-8.038	1.13e-15	***	Day5	36.22675	7.98755	4.535	5.89e-06 ***		
Store16	-492.69245	11.70309	-42.099	< 2e-16	***	Day6	66.26175	7.98079	8.303	< 2e-16 ***		
Store17	-166.76073	41.36816	-4.031	5.64e-05	***	Day7	61.19994	8.10229	7.553	5.04e-14 ***		
Store18	-50.67181	38.80948	-1.306	0.191732	.	Day8	34.24510	8.31424	4.119	3.87e-05 ***		
Store19	98.84535	38.52787	2.566	0.010331	*	Day9	37.72379	8.45914	4.460	8.40e-06 ***		
Store20	205.46231	6.38264	32.191	< 2e-16	***	Day10	22.84585	7.92859	2.881	0.003976 **		
Store21	-378.67154	5.39878	-70.140	< 2e-16	***	Day11	25.81755	7.47832	3.452	0.000561 ***		
Store22	-95.22355	36.80317	-2.587	0.009700	**	Day12	100.10195	7.53059	13.293	< 2e-16 ***		
Store23	20.77960	38.22163	0.544	0.586700	.	Day13	27.22117	6.74260	4.037	5.49e-05 ***		
Store24	72.87344	38.64031	1.886	0.059362	.	Day14	18.30077	6.80181	2.691	0.007157 **		
Store25	-389.31829	6.46730	-60.198	< 2e-16	***	Day15	24.08610	6.80442	3.540	0.000404 ***		
Store26	-94.30104	38.50027	-2.449	0.014346	*	Day16	43.06729	6.71812	6.411	1.59e-10 ***		
Store27	229.69685	36.76942	6.247	4.54e-10	***	Day17	49.40654	6.72712	7.344	2.41e-13 ***		
Store28	123.53874	43.33397	2.851	0.004379	**	Day18	29.97440	6.57812	4.557	5.32e-06 ***		
Store29	-339.16081	39.04654	-8.686	< 2e-16	***	Day19	26.85882	6.80942	3.944	8.11e-05 ***		
Store30	-576.88826	5.33022	-108.230	< 2e-16	***	Day20	21.32811	6.69191	3.187	0.001446 **		
Store31	-65.95850	5.47323	-12.051	< 2e-16	***	Day21	23.24013	6.84160	3.397	0.000687 ***		
Store32	-116.53060	12.02303	-9.692	< 2e-16	***	Day22	32.06124	6.84863	4.681	2.93e-06 ***		
Store33	-565.48948	41.90371	-13.495	< 2e-16	***	Day23	28.02914	6.80186	4.121	3.84e-05 ***		
Store34	-81.98812	42.15214	-1.945	0.051826	.	Day24	29.60482	6.80043	4.353	1.37e-05 ***		
Store35	-154.61012	37.00748	-4.178	3.00e-05	***	Day25	30.72298	6.79579	4.521	6.31e-06 ***		
Store36	-622.40258	5.38426	-115.597	< 2e-16	***	Day26	34.71222	6.84951	5.068	4.17e-07 ***		
Store37	-516.14670	5.34318	-96.599	< 2e-16	***	Day27	9.13833	6.75791	1.352	0.176361		
Store38	-391.41622	43.26961	-9.046	< 2e-16	***	Day28	21.46536	6.83794	3.139	0.001705 **		
Store39	-42.69684	5.53104	-7.719	1.41e-14	***	Day29	13.30350	6.92752	1.920	0.054868 .		
Store40	-158.84001	38.16722	-4.162	3.21e-05	***	Day30	6.10101	6.80551	0.896	0.370041		
Store41	-90.61359	11.75878	-7.706	1.56e-14	***	Day31	-16.44638	8.58214	-1.916	0.055379 .		
Store42	-331.58883	41.74609	-7.943	2.43e-15	***	Weekday1	-3.47385	3.44512	-1.008	0.313342		
Store43	-395.80294	7.61675	-51.965	< 2e-16	***	Weekday2	-28.49137	6.34112	-4.493	7.18e-06 ***		
Store44	-550.98171	41.48698	-13.281	< 2e-16	***	Weekday3	-20.16766	3.32564	-6.064	1.43e-09 ***		
Store45	-291.26885	15.16064	-19.212	< 2e-16	***	Weekday4	-6.03321	3.70227	-1.630	0.103252		
Holiday_Flag1	21.62066	3.57979	6.040	1.66e-09	***	Weekday5	-31.89762	3.92275	-8.131	5.34e-16 ***		
						Weekday6	-2.82361	3.65839	-0.772	0.440260		
						--						
						Signif. codes:	0 '***'	0.001 '**'	0.01 '*'	0.05 '.'	0.1 ' '	' 1
						Residual standard error:	39.4	on 4847 degrees of freedom				
						Multiple R-squared:	0.9788	Adjusted R-squared:	0.9784			
						F-statistic:	2288	on 98 and 4847 DF,	p-value:	< 2.2e-16		

Model7

Coefficients:		Temperature	390.2	170.4	2.290	0.022035	*
(Intercept)	1714855.3	34102.7	50.285	< 2e-16	***		
Store2	352215.0	11468.0	30.713	< 2e-16	***		
Store3	-1154951.6	11429.4	-101.051	< 2e-16	***		
Store4	469368.9	12564.1	37.358	< 2e-16	***		
Store5	-1263711.9	11953.5	-105.719	< 2e-16	***		
Store6	-30794.1	11921.0	-2.583	0.009819	**		
Store7	-932982.5	12592.2	-74.092	< 2e-16	***		
Store8	-686211.2	12439.5	-55.164	< 2e-16	***		
Store9	-1042185.4	12256.1	-85.034	< 2e-16	***		
Store10	339392.1	12553.5	27.036	< 2e-16	***		
Store11	-206891.8	11572.7	-17.878	< 2e-16	***		
Store12	-361709.4	20080.2	-18.013	< 2e-16	***		
Store13	411554.1	12169.9	33.817	< 2e-16	***		
Store14	511074.0	12594.2	40.580	< 2e-16	***		
Store15	-894261.0	12509.7	-71.485	< 2e-16	***		
Store16	-1038330.1	12629.6	-82.214	< 2e-16	***		
Store17	-679485.3	12565.2	-54.077	< 2e-16	***		
Store18	-420874.7	12568.4	-33.487	< 2e-16	***		
Store19	-88544.1	12459.8	-7.106	1.36e-12	***		
Store20	517978.9	12074.5	42.898	< 2e-16	***		
Store21	-795564.0	11549.0	-68.886	< 2e-16	***		
Store22	-500208.8	12103.7	-41.327	< 2e-16	***		
Store23	-264891.5	15190.7	-17.438	< 2e-16	***		
Store24	-149423.9	12503.5	-11.951	< 2e-16	***		
Store25	-829532.8	12263.5	-67.643	< 2e-16	***		
Store26	-511020.0	12612.2	-40.518	< 2e-16	***		
Store27	258508.6	12423.0	20.809	< 2e-16	***		
Store28	-63771.6	20129.6	-3.168	0.001544	**		
Store29	-921804.5	13750.7	-67.037	< 2e-16	***		
Store30	-1100345.5	11399.3	-96.528	< 2e-16	***		
Store31	-160877.0	11709.0	-13.740	< 2e-16	***		
Store32	-357157.0	12092.7	-29.535	< 2e-16	***		
Store33	-1236000.5	12294.7	-100.531	< 2e-16	***		
Store34	-505573.6	13294.3	-38.029	< 2e-16	***		
Store35	-610294.2	12661.5	-48.201	< 2e-16	***		
Store36	-1154005.9	11421.6	-101.037	< 2e-16	***		
Store37	-1016789.2	11348.4	-89.597	< 2e-16	***		
Store38	-967869.8	20027.7	-48.327	< 2e-16	***		
Store39	-108276.7	11742.5	-9.221	< 2e-16	***		
Store40	-648935.8	15081.9	-43.027	< 2e-16	***		
Store41	-298679.9	12273.0	-24.336	< 2e-16	***		
Store42	-941553.2	12213.6	-77.091	< 2e-16	***		
Store43	-829524.2	13410.8	-61.855	< 2e-16	***		
Store44	-1251803.5	11950.6	-104.748	< 2e-16	***		
Store45	-718456.8	12143.6	-59.164	< 2e-16	***		
Holiday_Flag1	43312.0	7658.7	5.655	1.65e-08	***		

Signif. codes: 0 '****' 0.001 '***' 0.01 '**' 0.05 '*' 0.1 '.' 0.1 ' ' 1							
Residual standard error: 84320 on 4848 degrees of freedom							
Multiple R-squared: 0.9755, Adjusted R-squared: 0.975							
F-statistic: 1989 on 97 and 4848 DF, p-value: < 2.2e-16							

Model8

Residuals:					Temperature	0.19839	0.07971	2.489	0.012845 *		
Min	1Q	Median	3Q	Max	Fuel_Price	-20.53052	4.33558	-4.735	2.25e-06 ***		
-132.153	-24.440	-2.415	20.820	251.720	Unemployment	-13.38385	1.37597	-9.727	< 2e-16 ***		
					Year2011	14.24224	3.89783	3.654	0.000261 ***		
					Year2012	16.68016	4.70671	3.544	0.000398 ***		
					Month2	45.31199	3.44228	13.163	< 2e-16 ***		
					Month3	34.66096	3.61553	9.587	< 2e-16 ***		
					Month4	48.88563	3.59827	13.586	< 2e-16 ***		
					Month5	53.67239	3.84332	13.965	< 2e-16 ***		
					Month6	52.95866	3.84890	13.759	< 2e-16 ***		
					Month7	39.05483	3.92606	9.948	< 2e-16 ***		
					Month8	44.98384	3.73332	12.049	< 2e-16 ***		
					Month9	22.26625	3.61153	6.165	7.60e-10 ***		
					Month10	35.81872	3.58908	9.980	< 2e-16 ***		
					Month11	60.46933	4.00632	15.093	< 2e-16 ***		
					Month12	85.59663	4.12782	20.737	< 2e-16 ***		
					Day2	42.83533	6.86319	6.241	4.71e-10 ***		
					Day3	32.19656	6.82825	4.715	2.48e-06 ***		
					Day4	72.07724	7.78236	9.262	< 2e-16 ***		
					Day5	40.16217	7.91846	5.072	4.08e-07 ***		
					Day6	69.99897	7.91938	8.839	< 2e-16 ***		
					Day7	64.81226	8.04669	8.055	9.96e-16 ***		
					Day8	37.57662	8.27009	4.544	5.66e-06 ***		
					Day9	42.46934	8.36118	5.079	3.93e-07 ***		
					Day10	28.43112	7.77782	3.655	0.000259 ***		
					Day11	31.42463	7.31581	4.295	1.78e-05 ***		
					Day12	107.13604	7.26997	14.737	< 2e-16 ***		
					Day13	30.63338	6.68062	4.585	4.65e-06 ***		
					Day14	20.97831	6.76723	3.100	0.001946 **		
					Day15	27.12266	6.75763	4.014	6.07e-05 ***		
					Day16	46.63262	6.64937	7.013	2.65e-12 ***		
					Day17	52.05267	6.69299	7.777	9.00e-15 ***		
					Day18	32.68291	6.54079	4.997	6.03e-07 ***		
					Day19	30.96360	6.71702	4.610	4.14e-06 ***		
					Day20	24.65646	6.63278	3.717	0.000204 ***		
					Day21	26.21906	6.79721	3.857	0.000116 ***		
					Day22	35.15918	6.80001	5.170	2.43e-07 ***		
					Day23	31.64573	6.73196	4.701	2.66e-06 ***		
					Day24	32.42452	6.76118	4.796	1.67e-06 ***		
					Day25	33.34723	6.76285	4.931	8.46e-07 ***		
					Day26	38.79503	6.75883	5.740	1.00e-08 ***		
					Day27	12.40778	6.70185	1.851	0.064173 .		
					Day28	24.56990	6.78897	3.619	0.000299 ***		
					Day29	16.51575	6.87542	2.402	0.016337 *		
					Day30	10.04597	6.72078	1.495	0.135841		
					Day31	-13.34387	8.54695	-1.561	0.118531		
					Weekday1	-3.95493	3.44647	-1.148	0.251219		
					Weekday2	-29.78079	6.33801	-4.699	2.69e-06 ***		
					Weekday3	-20.81082	3.32454	-6.260	4.19e-10 ***		
					Weekday4	-5.39561	3.70221	-1.457	0.145069		
					Weekday5	-33.17851	3.91049	-8.484	< 2e-16 ***		
					Weekday6	-2.28603	3.65952	-0.625	0.532211		

					Signif. codes:	0 '***'	0.001 '**'	0.01 '*'	0.05 '.'	0.1 ' '	1
					Residual standard error:	39.45	on 4848 degrees of freedom				
					Multiple R-squared:	0.9788	Adjusted R-squared:	0.9784			
					F-statistic:	2306	on 97 and 4848 DF,	p-value:	< 2.2e-16		
					Holiday_Flag1	21.38805	3.58340	5.969	2.56e-09 ***		