Report of a Project in Statistics on

STORE SALES PREDICTION

submitted to the Osmania University

in partial fulfilment of the requirements for the award of the degree of

Bachelor of Science

By

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DECLARATION

I hereby declare that the Project Work entitled "STORE SALES PREDICTION" submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Science to the Osmania University through St. Mary's College, Yousufguda, Hyderabad – 45 is my original work and no part of the project has formed the basis for the award of any degree, diploma, or certificate and the project, in full or in part, has till date not been submitted to any other University or Institution, for credits or for any other recognition.

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CERTIFICATE

This is to certify that the project work entitled "STORE SALES PREDICTION" that is being submitted by **Sanjusha Suresh, Rohan Agarwal, Devi Varaprasad Gundrala** in partial fulfilment of the requirements for the award of the degree of Bachelor of Commerce to the Osmania University through St. Mary's College, Yousufguda, Hyderabad – 45 is a record of *bonafide* work carried out by her under my guidance and supervision. The work embodied in this project report has not been submitted to any other University or Institute for the award of any degree, diploma, or certificate.

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ABSTRACT

Sales forecasting is a fundamental assignment in retailing. Estimating future sales is the major aspect of the numerous distributions, manufacturing, marketing and wholesaling companies involved. This helps businesses to allocate capital effectively, to forecast realistic sales revenues as well as to prepare a better plan for potentially increasing the business. Most of the business organizations heavily depend on a knowledge base and demand prediction of sales trends. The customer requirements will be changed every month and the manager or the store owners will be facing the problem of keeping stock for upcoming months. In this work we proposed a data analytics-based statistical method that is time series analysis, moving average, regression analysis and correlation for predicting the sales based on the last three years data and it will generate reports. The data that is collected is quantitative, using which the sales are predicted. This approach is carried out on quantitative data from five Walmart stores which is taken from Kaggle, where data discovery, processed and sufficient relevant data is extracted, which play a vital role in predicting accurate outcomes. This prediction performs various tasks like, finding best months for sales, in which month the sales will increase and decrease, how the holidays affect the sales of the stores.

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CHAPTER 4: ANALYSIS OF DATA

CHAPTER 5: CONCLUSION AND FUTURE SCOPE

CHAPTER 1
INTRODUCTION

1.1 Objective of the study

Sales prediction enables in determining the production volumes by business thereby accordingly arranging the facilities such as capital, equipment, manpower, space etc. It forms the basis for production budget, sales budget, natural budget etc. It provides a commitment level to the sales department of business which needs to be achieved within the specified time period. Sales forecasting facilitates business in right decision making by providing relevant market information. Accurate sales forecasting assists in preparing schedules related to production activities and purchase of materials. Moreover it is useful since it guides the production, marketing and several other key business activities leading to accomplishment of pre-established targets.

1.2 Research Methodology

1.2.1 Dataset Collection

We used wide market sales data as a dataset in our work where the dataset consists of 8 attributes. These 8 attributes define the basic features of the data which is being forecasted. These attributes are divided into different datasets. Holidays, weekly sales, monthly sales, time, dates are the main factors on which our dataset focuses on. Attributes such as temperature, fuel price, CPI, unemployment etc. have been included in store level. At last the dataset is divided as training and test dataset.

1.2.2 Data Exploration

Valuable data information is drawn-out from the dataset in this step. Outlet year of establishment ranges from 2019 to 2021. The values in this form may not be sufficient. There are 6436 different items present in the dataset out of which the data is divided into 715 items of 5 five stores for easy and better calculations. The following subsections are trying to analyse dataset and figure out useful features that can be used to forecast sales. At first, we will attempt to extract features from the training dataset. Then, in order to get more useful features, the store information will be reviewed. At last, we will try to get more information from what we have now based on store information.

Holidays

Sales are commonly high during holidays because of the large number of customers.

Temperature

From hot summers to wet winters, the conditions can determine how consumers buy, what they buy, when retailers introduce new lines and when sales periods start.

Fuel Price

When gasoline prices increase, a larger share of households' budgets is likely to be spent on it, which leaves less to spend on other goods and services. The same goes for businesses whose goods must be shipped from place to place or that use fuel as a major input.

Day of Week

It's also easy to think that on different days of week, every store will have different sales since people get used to shopping on different days.

Year

The sales could have a relationship with years, since the brand influence of this company may change from year to year, which could affect the sales.

Month

Because people may tend to have a cold in winter and get sunstroke in summer, people would have different demands for drugs during different months. So, the sales may be affected by month.

Day

Each single day could affect the sales. For instance, people may tend to buy drugs on the first day of the month or they might go to stores when today is payday.

1.2.3 Data Cleaning

Under data cleaning the dates are categorized by careful assessment. Then the weekly sales and the monthly sales are analysed by creating separate sheets and using scatter plots on them. The unnecessary data and errors are deleted.

1.2.4 Feature Engineering

Feature engineering is all about converting cleaned data into predictive models to present the available problem in a better way. During data exploration, some noise was observed. In this phase, this noise is resolved and the data is used for building appropriate models. New features are created to make the

model work precisely and effectively. A few created features can be combined for the model to work better. Feature engineering phase converts data into a form understandable by the algorithms.

1.2.5 Model building

After Feature engineering, the processed data is used to give accurate results by applying multiple algorithms. A model is a set of algorithms that facilitate the process of finding relations between multiple datasets. An effective model can predict accurate results by finding exact insights of data.

1.3 Scope of the study

This study will cover 100 people in one particular area from where the data is collected using a questionnaire method and then examine the factors that affect the future sales. And the quantitative data of the past 3 years is analysed using the time series model, moving average, regression and correlation. Subsequently with the acquired result, it can be estimated as to how to increase the sales, what methods should be used to receive positive response from the customers and what changes should be made so that the store gets profitable without much loss and eventually advance the business. This study can also be referred for time ahead purposes and changes can be made according to the future necessity. Five stores are being researched upon and the duration of the study was 2 months.

1.4 Definitions

1.4.1 Time Series Analysis

In time series analysis, it is important to collect relevant past data for future projects. Time series analysis is a series of techniques that make forecasts based on past patterns of data. These data are collected, observed, and recorded at regular intervals of time. These methods are useful when the market forces are somehow stable and the market shows least erratic behaviour. Actions taken by the firm and the competitor's move are not taken into account.

Time series methods use chronologically ordered raw data. Historical data are used to project future events. For example, past sales are used to project future sales. However, future events are often different from past events, which make the accuracy of such methods far less than 100 per cent. Although this method has certain limitations, past sales are useful information inputs in the forecasting procedure. By studying the historical correlation of sales levels over time, a sales manager can identify a trend and find a general indication of the possible continuation of the time series. The more popular time series methods of forecasting include trend projections, free hand or graphic method, moving

averages method, exponential smoothing method, and regression method. In this method, past historical data is analysed and arranged in systematic time series.

The following four types of sales variations are separately analysed:

a) Long-term trends

b) Business cyclical movements

c) Seasonal variations

d) Irregular and casual fluctuation

After the analysis, different time series mathematical models are formed; assumed values are applied with each of the models, to arrive at sales forecasts.

Advantages:

This method compels the forecaster to consider the underlying trends, cycles, and seasonal variations in the sales.

It takes into account the particular repetitive or continuing patterns exhibited by the sales in the past.

It provides a systematic means of making quantitative projections.

Disadvantages:

Assuring the regularity or continuation of historical pattern of change in future sales, without considering the outside environment influences, may affect the forecasting period. This method is not suitable for short-term forecasting as pinpointing a cyclical change cannot be possible in it.This method is difficult to use in cases where irrelevant forces disrupt the regularity of sales. It requires the availability of persons with technical skill, experienced and having judgement capacity.

1.4.2 Moving Average Method

The method suggests drawing an average of the sales of a number of years to predict the sales of a coming period. The objective is to smooth out the fluctuations and provide a close estimate of the forecasted sales. This is a very simple method and the calculation for this is easy too. When the market is stable for a considerable period of time, it gives an accurate estimate of sales. Alternatively, this can

be construed that when factors influencing sales are common for the previous three years (for calculating three-year moving average), this method gives accurate projection of sales.

1.4.3 Regression Analysis

Regression analysis is a statistical process. It is used in sales forecasting; determines and measures the association between company sales and other variables. It involves fitting an equation to explain sales fluctuations in terms of related and presumably casual variables.

There are three major steps in forecasting sales through regression analysis:

(a) Identify variables causally related to company sales.

(b) Determine or estimate the values of these variables related to sales.

(c) Derive the sales forecast from these units.

Limitations:

The standard deviation of error made in actual forecasting, is likely to be larger than the computed error of estimates, due to a set of causes persisting in future years, such as –

(a) Consumer buying is affected by changes in physical environment, advertising appeal, availability of new products, etc.

(b) Changes in the method of production.

(c) Changes in business combination, legislation, etc.

1.4.4 Correlation

Correlation means association - more precisely it is a measure of the extent to which two variables are related. There are three possible results of a correlational study: a positive correlation, a negative correlation, and no correlation. A positive correlation is a relationship between two variables in which both variables move in the same direction. Therefore, when one variable increases as the other variable increases, or one variable decreases while the other decreases. An example of positive correlation would be height and weight. Taller people tend to be heavier. A negative correlation is a relationship between two variables in which an increase in one variable is associated with a decrease in the other. An example of negative correlation would be height above sea level and temperature. As you climb

the mountain (increase in height) it gets colder (decrease in temperature). A zero correlation exists when there is no relationship between two variables. For example there is no relationship between the amount of tea drunk and level of intelligence.

Scattergrams

A correlation can be expressed visually. This is done by drawing a scattergram (also known as a scatterplot, scatter graph, scatter chart, or scatter diagram). A scattergram is a graphical display that shows the relationships or associations between two numerical variables (or co-variables), which are represented as points (or dots) for each pair of scores. A scattergraph indicates the strength and direction of the correlation between the co-variables.

Some uses of Correlations

Prediction: If there is a relationship between two variables, we can make predictions about one from another.

Validity: Concurrent validity (correlation between a new measure and an established measure).

Reliability: Test-retest reliability (are measures consistent) and Inter-rater reliability (are observers consistent).

Theory verification: Predictive validity.

Instead of drawing a scattergram a correlation can be expressed numerically as a coefficient, ranging from -1 to +1. When working with continuous variables, the correlation coefficient to use is Pearson's r.

1.5 Limitations of the study

Data acquisition was a major limitation to this project work because of the lockdown that was implemented in all cities around the world due to the covid-19 pandemic. It hindered businesses from opening and thus remained closed for a long time. Another limitation is that the data collected from the questionnaire method may be biased or the rate of non-response may be high. And the data which is analysed using the time series is not suitable for short-term forecasting and this method is difficult to use in cases where irrelevant forces disrupt the regularity of sales.

CHAPTER 2
LITERATURE SURVEY

Various analytical tools attempt to evaluate store location decisions (Buckner, 1998; Levy & Weitz, 2004), mostly by considering the amount of sales each location can generate in a certain period, given the current spatial distribution of demand and competition. Huff's gravity model and its extensions provide one of the earliest applications of spatial models in marketing, but they are still used today. For example, Del Gatto and Mastinu (2018) empirically examine whether Italian retailers satisfy the Huff model. These models predict the geographical extent of store trade areas on the basis of a negative relation between store patronage and distance to consumers. They explain the proportion of visits from a certain area to the store, but not any changes in consumers' expenditures. To predict sales, the probability that a consumer will visit the store from a particular location is multiplied by an estimate of the (average) expenditures at that location and by population size or, alternatively, by (average) expenditures per household and number of households. Generally, these models do not include consumer and store characteristics other than store size; they assume that store patronage depends only on store size and distance to the store.

Regression models enable analysts to identify several factors associated with different levels of sales from stores at different sites. However, existing studies use aggregate measures of consumer demographics for the entire trade area to predict sales at a particular store location, even though retailers in most Western countries serve trade areas with a rather heterogeneous population (Campo & Gijsbrechts, 2004; Singh et al., 2006). Other studies reveal that the geographical location of consumers and their demographics can be an important variable for predicting consumer behaviour (Yang & Allenby, 2003). Within the spatial economics literature, De Mello-Sampayo (2016) explains which services patients use in the case of healthcare when these services are spread over different locations, while Öner (2017) determines whether consumers' access to retail units in Sweden is relevant for the attractiveness of municipalities.

In addition, a growing literature on spatial models in marketing (see Elhorst, 2017, for a recent overview) reveals how spatial covariation in sales can be exploited to gain better insights into the effectiveness of marketing activities across markets. Yet, these spatial effects heretofore have been mostly ignored in the store location literature (Duan & Mela, 2009). Many studies also consider sales in general (Kumar & Karande, 2000) and offer no insights in the underlying mechanisms causing changes in store sales components. Pan and Zinkhan (2006), however, demonstrate that various

regressors can have different effects across sales components, which suggests that decomposing sales (effects) into constituent parts may offer richer insights than a model of total store sales only. Furthermore, if store managers want to understand why sales levels are lagging and act accordingly, they will benefit from knowing which sales components need improvement to achieve the desired sales levels.

Another stream of research (Chan et al., 2007; Chintagunta et al., 2006; Duan & Mela, 2009; Thomadsen, 2007) determines equilibrium prices or sales conditional on outlet location and capacity. These studies show that location competition affects sales, positively or negatively, while the reverse can be true as well; that is, (potential) sales may attract competitors. To separate these alternative explanations, we not only employ the number of competitors as an explanatory variable of store sales components, but also include an equation explaining the number of competitors at a particular location.

"Intelligent Sales Prediction Using Machine Learning Techniques"

The fashion store dataset for three consecutive years of sales data is used. The sales prediction is done for the upcoming 3 years from 2015 to 2017. Exploratory analysis stages involved in the data mining model include data understanding, preparation, modelling, evaluation and deployment. The forecast is composed of a smoothed average adjusted for a linear trend. Then the forecast is also adjusted for seasonality. Machine learning algorithms such as Generalized Linear Model (GLM), Decision Tree (DT) and Gradient Boost Tree (GBT) are used in prediction of future sales. Based on the performance, Gradient Boost Algorithm provides 98% overall accuracy and the second stands Decision Tree Algorithms with nearly 71% overall accuracy and followed by Generalized Linear Model with 64% accuracy. Finally, it can be compared based on the empirical evaluation of the three chosen algorithms. The best fit for the model is Gradient Boosted Tree which provides the maximum accuracy of prediction across all the algorithms.

"Machine Learning Models for Sales Forecasting"

"Rossmann Store Sales" dataset is used to predict the future sales. The calculations were conducted in the Python environment using the main packages pandas, sklearn, numpy, keras, matplotlib, seaborn. Analysis is done using Jupyter notebook. Regression algorithm captures the patterns in the whole set of stores or products. The analysis includes the attributes such as mean sales value of historical data, state and school holiday flags, distance from store to competitor's store, store assortment type are considered in prediction. Various machine learning models such as Random Forest, Neural network,

Lasso regularization, Arima model and ExtraTree model are used to analyse the data. The models in the first level (ExtraTree, Lasso, and Neural Network) have non-zero coefficients for their results. The solution is based on three level models. On the first level, many models were based on the XG Boost machine learning algorithm. In the second level, models from Python scikit-learn package, Extra tree model, linear model as well as neural network model. The results from the second level were summed with weights on the third level. The use of regression approaches for sales forecasting can give better results compared to time series methods. ExtraTree method provides more stacking weights for regressors compared to other approaches.

"Walmart's Sales Data Analysis - A Big Data Analytics Perspective"

Walmart has 45 stores in geographically diverse locations, each of the stores having 99 departments. The dataset contains the weekly sales and the factors affecting sales such as (Temperature, fuel price, unemployment rate, and holiday) for each store location for 3 years. Apache data science platforms, libraries, and tools are used in this work. Tools like Hadoop Distributed File Systems (HDFS), Hadoop MapReduce framework and Apache Spark along with Scala, Java and Python high-level programming environments are used to analyse and visualize the data. Machine learning library is employed with a simple regression model to predict future sales. The results are predicted from data analysis and based on the predicted results the Retailers need to plan and evaluate according to the market driving factors which are, and not limited to, the temperature, fuel prices, holidays, human resources, geographical location and many more. Effective and efficient supply chain, inventory, human resource management is needed to avoid losing competitive edge in the market, especially planning sales at different locations

"Walmart's Sales Data Analysis - A Big Data Analytics Perspective"

In this study, inspection of the data collected from a retail store and prediction of the future strategies related to the store management is executed. Effect of various sequences of events such as the climatic conditions, holidays etc. can actually modify the state of different departments so it also studies these effects and examines its influence on sales.

CHAPTER 3
BACKGROUND

3.1 Topic Introduction

The objective of every supermarket store is to shape the benefits. This is accomplished when more products are sold, and hence the turnover is high. A significant test to expand the deals of a grocery store lies in the capacity of the manager to estimate sales and know promptly heretofore when to arrange and recharge inventories just as planned for labour and staff. One of the preeminent significant resources a store can have is the information created by clients as they communicate with different stores. Inside this information lies significant patterns and factors that can be displayed using a machine learning algorithm and this can prompt a serious level of precision to correctly forecast sales. Numerous grocery stores now-a-days don't have an estimate of their yearly deals. This is because of the lack of abilities, assets and information to shape sales estimation. There are a few strategies to forecast sales and numerous grocery stores have depended on the conventional models. The utilization of conventional measurable techniques to forecast supermarket sales has left a ton of difficulties unaddressed and generally bring about the production of predictive models that perform ineffectively.

An accurate forecasting model can significantly expand supermarket income and it improves benefit additionally and also gives experiences into the manner in which clients can be better served. As online commercial places have gotten famous in many years, web venders and dealers are requesting their clients to share their perspectives on the things they have bought. Millions of reviews on various goods, services and places are created every day across the Internet. This has made the Internet the most popular source of a product or a service to get ideas and opinions. However, as the measure of surveys accessible for an item builds, it turns out to be hard for a forthcoming purchaser to settle on a legitimate choice about whether to buy the item.

On the one hand various sentiments on a similar item and opposing criticism then again leave shoppers unsure in asking the correct choice. Here the necessity for analysing these contents seem crucial for all e-commerce businesses. For all online business firms, the need to inspect these contents here seems important. A technique of forecasting demand by employing a model for grasping the fluctuation of sales, by putting away a majority of models of neural network, and furthermore by feeding sales results into a model of neural network to make it learn by the brief time frame such as by the week, and a recording medium to obtain the results.

A strategy for evaluating customer audits to an item, including the means of (a) gathering the information, (b) pre-processing the collected data, (c) categorizing the reviews as positive or negative. Thus, the question to be answered by this study is: What are the advantages of applying Machine Learning techniques like time series to demand forecasting? The objective is to review scientific literature and identify if there are advantages over traditional techniques. In chapter 2, the various literature reviews regarding sales forecasts are stated. In chapter 1, the representation of the data pre-processing techniques and predictions methods are highlighted. Discussion of the consumer review categorizing process is done in chapter 4. Using various machine learning prediction algorithms the performance evaluation is calculated. Finally, the result is concluded by analysing the research summarization and future scope.

3.2 Store history

3.2.1 Overview

Walmart Inc. is an American multinational retail corporation that operates a chain of hypermarkets (also called supercentres), discount department stores, and grocery stores from the United States, headquartered in Bentonville, Arkansas. The company was founded by Sam Walton in nearby Rogers, Arkansas in 1962 and incorporated under Delaware General Corporation Law on October 31, 1969. It also owns and operates Sam's Club retail warehouses.

Fig 3.1 Walmart Store

As of April 30, 2022, Walmart has 10,585 stores and clubs in 24 countries, operating under 46 different names. The company operates under the name Walmart in the United States and Canada, as Walmart de México y Centroamérica in Mexico and Central America, and as Flipkart Wholesale in India. It has wholly owned operations in Chile, Canada, and South Africa. Since August 2018, Walmart holds only a minority stake in Walmart Brazil, which was renamed Grupo Big in August

2019, with 20 percent of the company's shares, and private equity firm Advent International holding 80 percent ownership of the company.

Walmart is the world's largest company by revenue, with about US$570 billion in annual revenue, according to the Fortune Global 500 list in May 2022. It is also the largest private employer in the world with 2.2 million employees. It is a publicly traded family-owned business, as the company is controlled by the Walton family. Sam Walton's heirs own over 50 percent of Walmart through both their holding company Walton Enterprises and their individual holdings. Walmart was the largest United States grocery retailer in 2019, and 65 percent of Walmart's US$510.329 billion sales came from U.S. operations.

Walmart was listed on the New York Stock Exchange in 1972. By 1988, it was the most profitable retailer in the U.S., and it had become the largest in terms of revenue by October 1989. The company was originally geographically limited to the South and lower Midwest, but it had stores from coast to coast by the early 1990s. Sam's Club opened in New Jersey in November 1989, and the first California outlet opened in Lancaster, in July 1990. A Walmart in York, Pennsylvania, opened in October 1990, the first main store in the Northeast. Walmart's investments outside the U.S. have seen mixed results. Its operations and subsidiaries in Canada, the United Kingdom, Central America, South America, and China are successful, but its ventures failed in Germany, Japan, and South Korea.

Fig 3.2 Factors affecting sales forecasting

3.2.2 Continuing growth and development

Signs on a Walmart indicated changes due to the COVID-19 pandemic. This decade, as with many other companies, started off very unorthodox and unusual, due to the large part of the coronavirus (COVID-19) pandemic, including store closures, limited store occupancy, and employment, along with social distancing protocols.

In March 2020, due to the pandemic, Walmart changed some of its employee benefits. Employees can now decide to stay home and take unpaid leave if they feel unable to work or uncomfortable coming to work. Additionally, Walmart employees who contract the virus will receive "up to two weeks of pay". After two weeks, hourly associates who are unable to return to work are eligible for up to 26 weeks in pay.

During this pandemic, people who work temporarily receive $150 but for those who work full-time get a bonus of $300 issuing all of the employees more than $390M starting on June 5. Previously during the pandemic on April 2, the bonus cash totalling was more than $365.

Fig 3.3 Analysis of Growth

In July 2020, Walmart announced that all customers would be required to wear masks in all stores nationwide, including Sam's Club. In the third quarter of 2020, ending October 31, Walmart reported revenue of $134.7 billion, representing a year-on-year increase of 5.2 percent.

In December 2020, Walmart launched a new service, Carrier Pickup, which allows the customers to schedule a return for a product bought online, in-store, or from a third-party vendor. These services can be initiated on the Walmart App or on the website.

In January 2021, Walmart announced that the company is launching a fintech start up, with venture partner Ribbit Capital, to provide financial products for consumers and employees.

In February 2021, Walmart acquired technology from Thunder Industries, which uses automation to create digital ads, to expand its online marketing capabilities.

In August 2021, Walmart announced it would open its Spark crowdsourced delivery to other businesses as a white-label service, competing with Post mates and online food ordering delivery companies.

In December 2021, Walmart announced it will participate in the Stephens Investment Conference Wednesday, and the Morgan Stanley Virtual Global Consumer & Retail Conference.

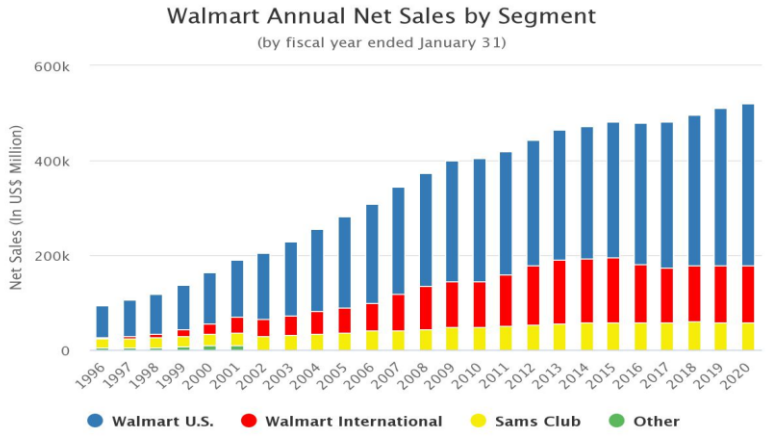

Fig 3.4 Walmart Annual Net Sales

3.3 Methodology

3.3.1 Statistical Techniques

- Time series analysis
- Moving average method
- Regression analysis
- Correlation

3.3.2 Statistical Tools

- Excel sheets
- Scatter diagrams
- Line plots

CHAPTER 4
ANALYSIS OF DATA

4.1 Problem statement

The aim is to build a predictive model and find out the future sales. Using this model, stores will try to understand the properties of products and stores which play a key role in increasing sales.

In order to help the stores achieve this goal, a predictive model can be built to find out for every store, the key factors that can increase their sales and what changes could be made to the product or store's characteristics.

The main problem that I am assigned with is that I have to predict the sales given the data-set. Store sales are influenced by many factors, including promotions, competition, school and state holidays, seasonality, and locality. With thousands of individual managers predicting sales based on their unique circumstances, the accuracy of results can be quite varied.

4.2 Data Analysis

4.2.1 Time Series Analysis

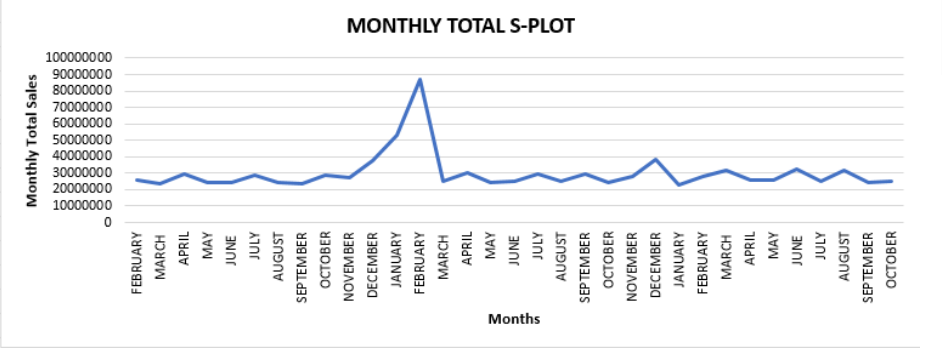

Fig 4.1 Monthly Total Sales Plot

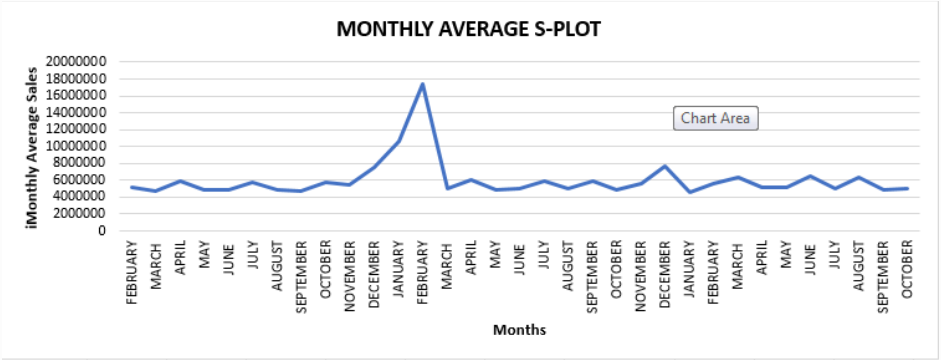

Fig 4.2 Monthly Average Sales Plot

From the data we firstly calculated the monthly sales from which we found out the total and average sales of 5 stores.

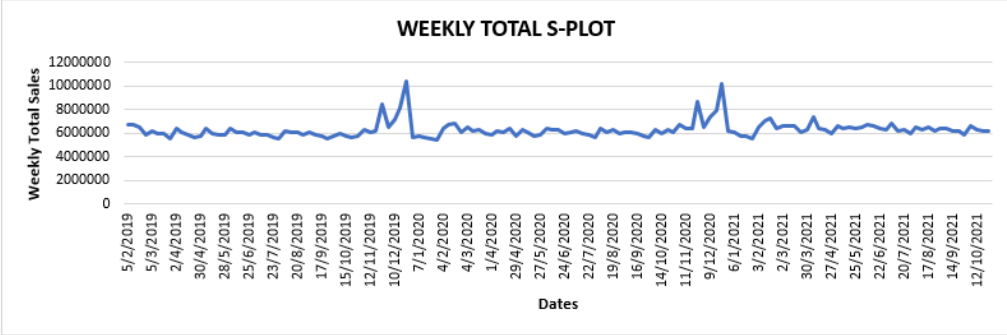

Fig 4.3 Weekly Total Sales Plot

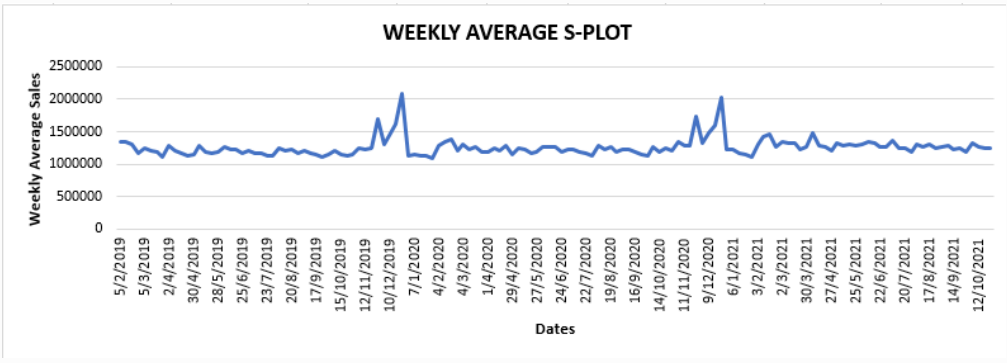

Fig 4.4 Weekly Average Sales Plot

Similarly, from the data we calculated the weekly sales from which we found out the total and average sales of 5 stores.

4.2.2 Moving Average Method

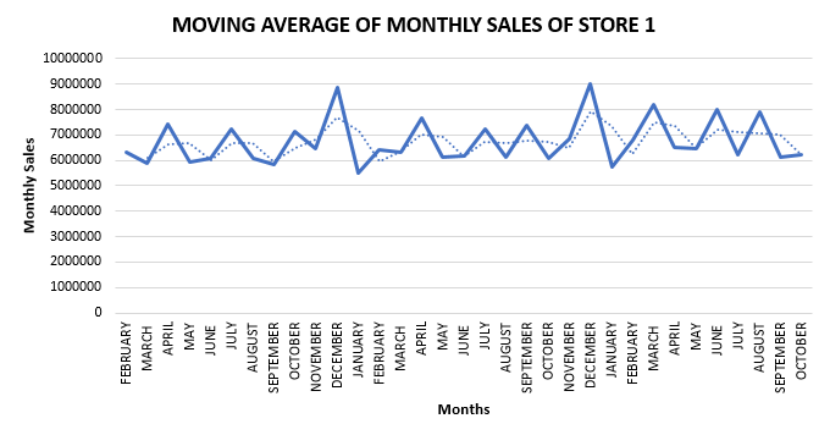

Fig 4.5 Moving Average of Monthly Sales of Store 1

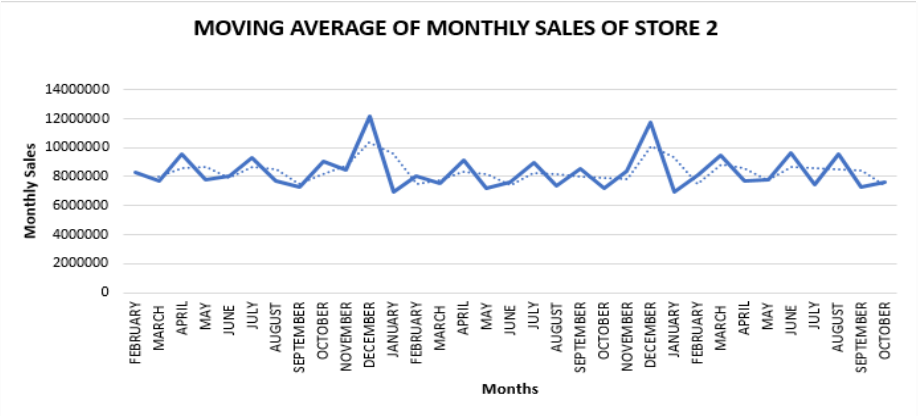

Fig 4.6 Moving Average Of Monthly Sales Of Store 2

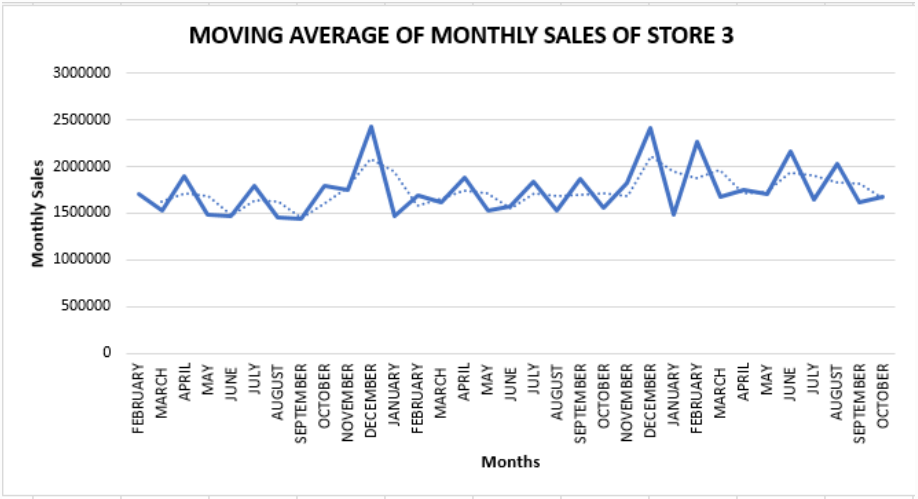

Fig 4.7 Moving Average Of Monthly Sales of Store 3

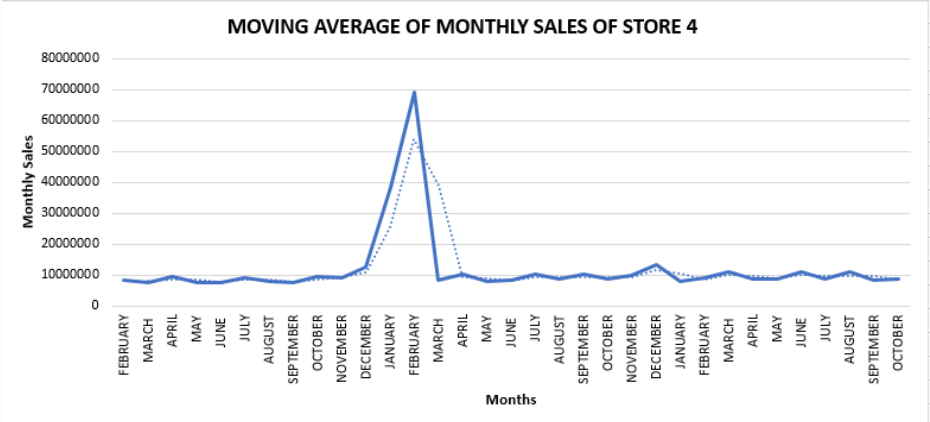

Fig 4.8 Moving Average of Monthly Sales of Store 4

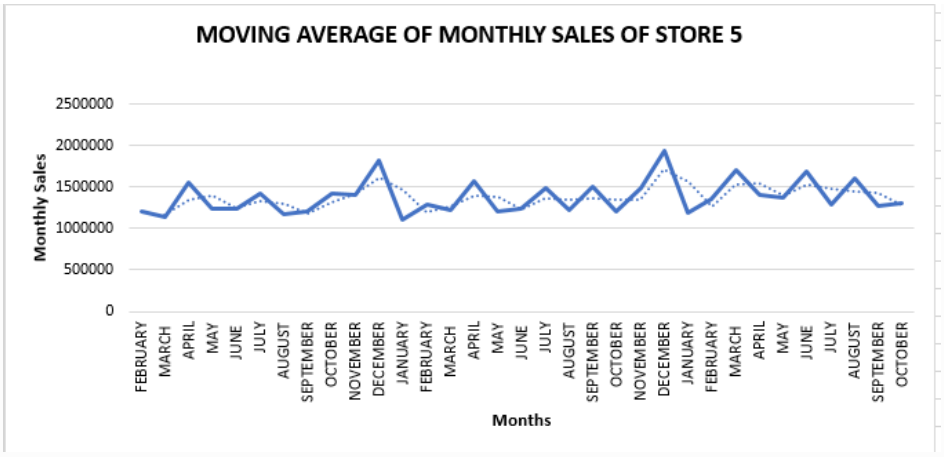

Fig 4.9 Moving Average of Monthly Sales of Store 5

The above plots represent the months that have the highest and lowest sales of all the 5 stores.

4.2.3 Regression Analysis

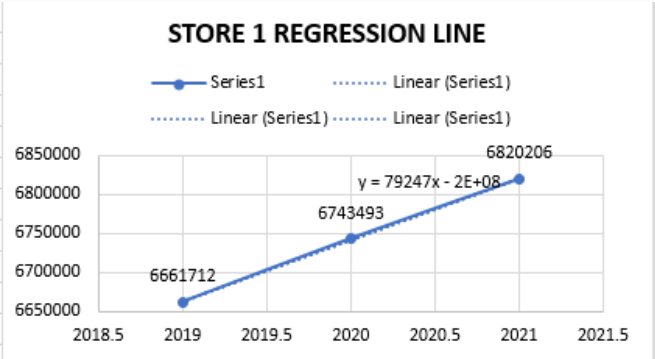

Fig 5.0 Store 1 Regression Line

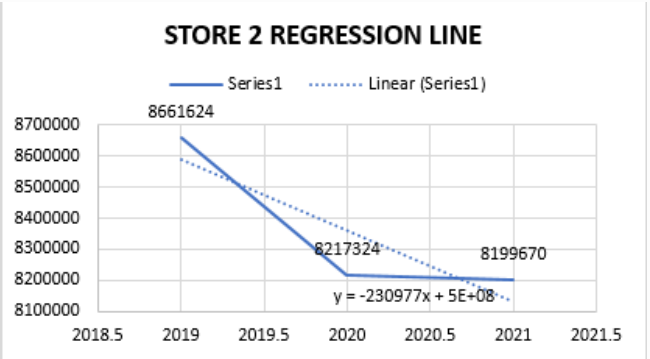

Fig 5.1 Store 2 Regression Line

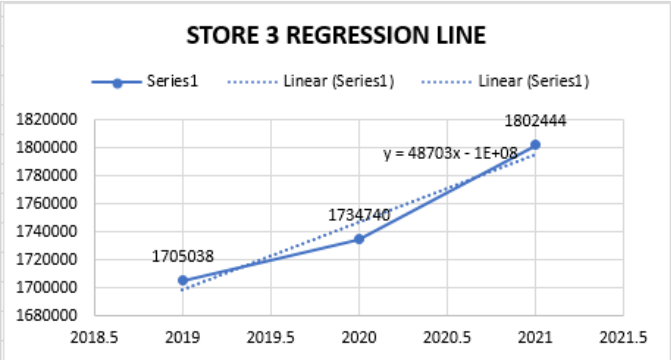

Fig 5.2 Store 3 Regression Line

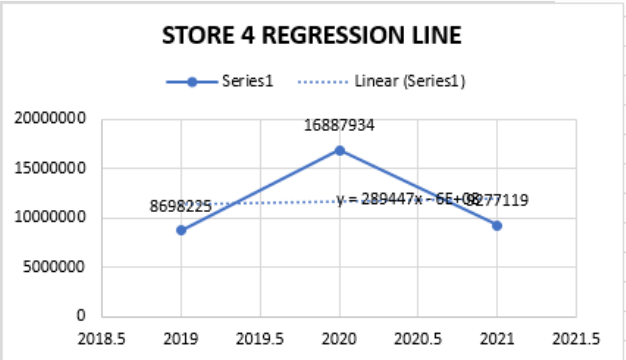

Fig 5.3 Store 4 Regression Line

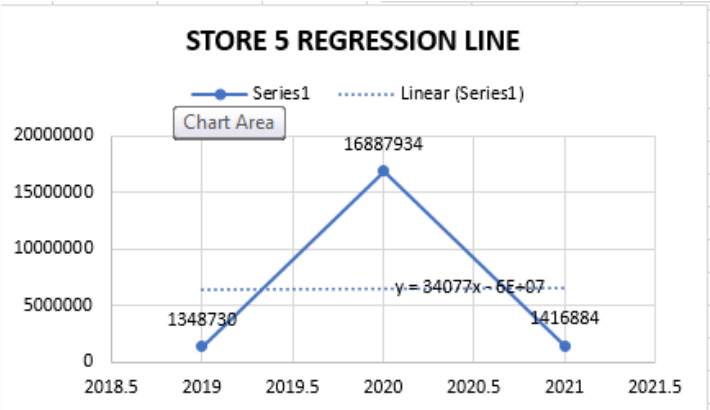

Fig 5.4 Store 5 Regression Line

4.2.4 Correlation

The correlation between the weekly sales of store 1 and holiday is 0.1949052.

The correlation between the weekly sales of store 2 and holiday is 0.1777260.

The correlation between the weekly sales of store 3 and holiday is 0.2085556.

The correlation between the weekly sales of store 4 and holiday is 0.1533879.

The correlation between the weekly sales of store 5 and holiday is 0.3025247.

4.3 Result

Using the time series analysis, we plotted the monthly total sales plot and monthly average sales plot of five stores of Walmart. From the monthly total sales plot January 2019 had the highest sales. And the lowest sales was in the month of January 2020. From the monthly average sales plot January 2019 to February 2019 had the highest sales. And the lowest sales was in the month of January 2020. Similarly, from the weekly total sales plot December 2019 and between December 2020 and January 2021 highest sales can be observed. And the lowest sales were in the months of February 2020 and February 2021. From the weekly average plot, the highest sales again in December 2019 and between December 2020 and January 2021. And the lowest sales are in the months of February 2020 and February 2021.

Using the Moving average method, the highest and lowest sales of store 1 is determined. The highest sales are in the month of December 2019 whereas the lowest sales is in the month of January 2020.

For store 2, The highest sales is in the month of December 2019 whereas the lowest sales is in the month of January 2020.

For store 3, the highest sales are again in the month of December and the lowest sales are constant from May to June 2019 and August to September 2019. And also is lowest in January 2020 and January 2021.

In store 4, there is a peak increase in the sales from December 2019 to February 2020. And the lowest sales were observed in January 2021.

In store 5, there is a continuous increase and decrease pattern of sales. The highest sales is in December 2020 and the lowest is in January 2020.

Using Regression Analysis we found out in which year the sales were less and the year the sales was more.

In Store 1, there is a uniform increase in the sales from 2019 till 2021. Hence the sales in 2022 of store 1 will also increase uniformly.

In store 2, there is a sudden decrease in the sales in the year 2019 till 2020. From 2020 to 2021 it is observed that the sales remained constant. Hence the sales might remain constant in the year 2022.

In store 3, there is an increase in the sales from 2019 till 2021. Hence there are chances that the sales in 2022 of store 3 will also increase.

In store 4, there was an increase in the sales from 2019 till 2020 and a decrease from 2020 to 2021. Hence there are chances that the sales might increase or decrease for the store 4 in 2022.

In store 5, there was an increase in the sales from 2019 till 2020 and a decrease from 2020 to 2021. Hence there are chances that the sales might increase or decrease for the store 4 in 2022.

In the next part correlation between sales and holidays were obtained. Since the correlation is positive it can be said that holidays are directly proportional to the sales. That is, holidays increase sales.

CHAPTER 5
CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

A Sales analysis is a very important constraint to run any business successfully. The prediction of customers' purchased items is playing an important role in Sales Analysis. All the predicted statistical analysis will be useful for proper planning and keeping store of all stocks in upcoming years, easily to identify the customer expectation and increase the sales of the products. Experts also showed that a smart sales forecasting program is required to manage vast volumes of data for business organizations. Business assessments are based on the speed and precision of the methods used to analyse the results. The Data analytics Methods presented in this research paper should provide an effective method for data shaping and decision-making. New approaches that can better identify consumer needs and formulate marketing plans will be implemented. The outcome of data analytics algorithms will help to select the most suitable demand prediction algorithm and with the aid of which DMart will prepare its marketing campaigns.

The research carried out in this project has concluded that product sales prediction systems are needed to manage massive volumes of data by businesses and that company decision-making is focused on data processing technologies' speed and precision. For businesses to be competent, it is necessary that they equip themselves with specialized techniques in order to take account of diverse forms of consumer behavior by making predictions for their product sales and demand to increase profit. However, because the implementation time was immense and the handling of such an extensive collection of data was complicated, some of the records were discarded during the analysis and data processing process phase. Simultaneously, the fields and attributes used in this analysis were not appropriate for further analysis. It was a huge obstacle that was faced during the study. However, we carefully weighed our work by introducing effective techniques that would work for the problem.

Multiple instance parameters and various factors can be used to make this sales prediction more innovative and successful. Accuracy, which plays a key role in prediction-based systems, can be significantly increased as the number of parameters used are increased. Also, a look into how the sub-models work can lead to an increase in productivity of a system. Various stakeholders concerned with sales information can also provide more inputs to help in hypothesis generation and more instances can be taken into consideration such that more precise results that are closer to real world situations

are generated. There is a further need of experiments for proper measurements of both accuracy and resource efficiency to assess and optimize correctly.

5.2 Future scope

The work performed in this research suggests that the introduction of more up-to-date models will boost the efficiency for larger datasets and support enterprises and cooperation in decision-making and overall improve customer loyalty and retention. In future work one can attempt performance metrics such as time while predicting the sales. These metrics can play a crucial role in evaluating multiple Machine Learning algorithms. And also one can attempt to implement more accurate data in the continued study. Machine Learning has the advantage of analysing data and key variables so that you can aim to develop a systematic approach using a variety of Machine Learning techniques.

With traditional methods not being of much help to the business organizations in revenue growth, use of Machine Learning approaches prove to be an important aspect for shaping business strategies keeping into consideration the purchase patterns of the consumers. Prediction of sales with respect to various factors including the sales of previous years helps businesses adopt suitable strategies for increasing sales and set their foot undaunted in the competitive world. The project can be further collaborated in a web-based application or in any device supported with an in-built intelligence by virtue of Internet of Things (IOT), to be more feasible for use.

Since the time was limited, further analysis on the dataset couldn't be done. However, some preliminary work is done which may be useful for future work. Among all the features, it seems that State Holiday and School Holiday are the least important features in the model. However, this kind of information may be useful for latent feature mining. According to some descriptions in the Kaggle Forum, different states have different public holidays. Thus we can infer the state of each store based on the public holidays provided by the Calendar. For one aspect, we could use the state as a feature dimension because different states could have different economic growth rates, which will have an influence on the sales. What's more, we could infer the weather information based on the state information of each store. For example, bad weather is likely to cause flu and fever, which will stimulate the sales growth

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LIST OF FIGURES

APPENDIX

WALMART SALES

Store	Date	Weekly_Sales	Holiday_Flag	Temperature	Fuel_Price	CPI	Unemployment
1	5/2/2019	1643690.9	0	42.31	2.572	211.09636	8.106
1	12/2/2019	1641957.44	1	38.51	2.548	211.24217	8.106
1	19-02-2019	1611968.17	0	39.93	2.514	211.28914	8.106
1	26-02-2019	1409727.59	0	46.63	2.561	211.31964	8.106
1	5/3/2019	1554806.68	0	46.5	2.625	211.35014	8.106
1	12/3/2019	1439541.59	0	57.79	2.667	211.38064	8.106
1	19-03-2019	1472515.79	0	54.58	2.72	211.21564	8.106
1	26-03-2019	1404429.92	0	51.45	2.732	211.01804	8.106
1	2/4/2019	1594968.28	0	62.27	2.719	210.82045	7.808
1	9/4/2019	1545418.53	0	65.86	2.77	210.62286	7.808
1	16-04-2019	1466058.28	0	66.32	2.808	210.4887	7.808
1	23-04-2019	1391256.12	0	64.84	2.795	210.43912	7.808
1	30-04-2019	1425100.71	0	67.41	2.78	210.38955	7.808
1	7/5/2019	1603955.12	0	72.55	2.835	210.33997	7.808
1	14-05-2019	1494251.5	0	74.78	2.854	210.33743	7.808
1	21-05-2019	1399662.07	0	76.44	2.826	210.61709	7.808
1	28-05-2019	1432069.95	0	80.44	2.759	210.89676	7.808
1	4/6/2019	1615524.71	0	80.69	2.705	211.17643	7.808
1	11/6/2019	1542561.09	0	80.43	2.668	211.4561	7.808
1	18-06-2019	1503284.06	0	84.11	2.637	211.45377	7.808
1	25-06-2019	1422711.6	0	84.34	2.653	211.33865	7.808
1	2/7/2019	1492418.14	0	80.91	2.669	211.22353	7.787
1	9/7/2019	1546074.18	0	80.48	2.642	211.10841	7.787
1	16-07-2019	1448938.92	0	83.15	2.623	211.10039	7.787
1	23-07-2019	1385065.2	0	83.36	2.608	211.23514	7.787
1	30-07-2019	1371986.6	0	81.84	2.64	211.3699	7.787
1	6/8/2019	1605491.78	0	87.16	2.627	211.50466	7.787
1	13-08-2019	1508237.76	0	87	2.692	211.63942	7.787
1	20-08-2019	1513080.49	0	86.65	2.664	211.60336	7.787
1	27-08-2019	1449142.92	0	85.22	2.619	211.56731	7.787
1	3/9/2019	1540163.53	0	81.21	2.577	211.53125	7.787
1	10/9/2019	1507460.69	1	78.69	2.565	211.49519	7.787
1	17-09-2019	1430378.67	0	82.11	2.582	211.52246	7.787
1	24-09-2019	1351791.03	0	80.94	2.624	211.59722	7.787
1	1/10/2019	1453329.5	0	71.89	2.603	211.67199	7.838
1	8/10/2019	1508239.93	0	63.93	2.633	211.74675	7.838
1	15-10-2019	1459409.1	0	67.18	2.72	211.81374	7.838
1	22-10-2019	1345454	0	69.86	2.725	211.86129	7.838
1	29-10-2019	1384209.22	0	69.64	2.716	211.90884	7.838
1	5/11/2019	1551659.28	0	58.74	2.689	211.95639	7.838
1	12/11/2019	1494479.49	0	59.61	2.728	212.00394	7.838
1	19-11-2019	1483784.18	0	51.41	2.771	211.88967	7.838
1	26-11-2019	1955624.11	1	64.52	2.735	211.74843	7.838
1	3/12/2019	1548033.78	0	49.27	2.708	211.60719	7.838
1	10/12/2019	1682614.26	0	46.33	2.843	211.46595	7.838
1	17-12-2019	1891034.93	0	49.84	2.869	211.40531	7.838
1	24-12-2019	2387950.2	0	52.33	2.886	211.40512	7.838
1	31-12-2019	1367320.01	1	48.43	2.943	211.40493	7.838
1	7/1/2020	1444732.28	0	48.27	2.976	211.40474	7.742
1	14-01-2020	1391013.96	0	35.4	2.983	211.45741	7.742
1	21-01-2020	1327405.42	0	44.04	3.016	211.82723	7.742
1	28-01-2020	1316899.31	0	43.83	3.01	212.19706	7.742
1	4/2/2020	1606629.58	0	42.27	2.989	212.56688	7.742
1	11/2/2020	1649614.93	1	36.39	3.022	212.9367	7.742
1	18-02-2020	1686842.78	0	57.36	3.045	213.24789	7.742
1	25-02-2020	1456800.28	0	62.9	3.065	213.53561	7.742
1	4/3/2020	1636263.41	0	59.58	3.288	213.82333	7.742
1	11/3/2020	1553191.63	0	53.56	3.459	214.11106	7.742
1	18-03-2020	1576818.06	0	62.76	3.488	214.36271	7.742
1	25-03-2020	1541102.38	0	69.97	3.473	214.59994	7.742
1	1/4/2020	1495064.75	0	59.17	3.524	214.83717	7.682
1	8/4/2020	1614259.35	0	67.84	3.622	215.07439	7.682
1	15-04-2020	1559889	0	71.27	3.743	215.29186	7.682
1	22-04-2020	1564819.81	0	72.99	3.807	215.45991	7.682
1	29-04-2020	1455090.69	0	72.03	3.81	215.62795	7.682
1	6/5/2020	1629391.28	0	64.61	3.906	215.796	7.682
1	13-05-2020	1604775.58	0	75.64	3.899	215.96405	7.682
1	20-05-2020	1428218.27	0	67.63	3.907	215.73392	7.682
1	27-05-2020	1466046.67	0	77.72	3.786	215.50379	7.682
1	3/6/2020	1635078.41	0	83	3.699	215.27366	7.682
1	10/6/2020	1588948.32	0	83.13	3.648	215.04352	7.682
1	17-06-2020	1532114.86	0	86.41	3.637	214.99806	7.682
1	24-06-2020	1438830.15	0	83.58	3.594	215.0911	7.682
1	1/7/2020	1488538.09	0	85.55	3.524	215.18414	7.962
1	8/7/2020	1534849.64	0	85.83	3.48	215.27718	7.962
1	15-07-2020	1455119.97	0	88.54	3.575	215.36111	7.962
1	22-07-2020	1396926.82	0	85.77	3.651	215.42228	7.962
1	29-07-2020	1352219.79	0	86.83	3.682	215.48345	7.962
1	5/8/2020	1624383.75	0	91.65	3.684	215.54462	7.962
1	12/8/2020	1525147.09	0	90.76	3.638	215.60579	7.962
1	19-08-2020	1530761.43	0	89.94	3.554	215.66931	7.962
1	26-08-2020	1464693.46	0	87.96	3.523	215.73323	7.962
1	2/9/2020	1550229.22	0	87.83	3.533	215.79714	7.962
1	9/9/2020	1540471.24	1	76	3.546	215.86106	7.962
1	16-09-2020	1514259.78	0	79.94	3.526	216.04105	7.962
1	23-09-2020	1380020.27	0	75.8	3.467	216.37582	7.962
1	30-09-2020	1394561.83	0	79.69	3.355	216.7106	7.962
1	7/10/2020	1630989.95	0	69.31	3.285	217.04537	7.866
1	14-10-2020	1493525.93	0	71.74	3.274	217.35527	7.866
1	21-10-2020	1502562.78	0	63.71	3.353	217.51598	7.866
1	28-10-2020	1445249.09	0	66.57	3.372	217.67668	7.866
1	4/11/2020	1697229.58	0	54.98	3.332	217.83738	7.866
1	11/11/2020	1594938.89	0	59.11	3.297	217.99808	7.866
1	18-11-2020	1539483.7	0	62.25	3.308	218.22051	7.866
1	25-11-2020	2033320.66	1	60.14	3.236	218.46762	7.866
1	2/12/2020	1584083.95	0	48.91	3.172	218.71473	7.866
1	9/12/2020	1799682.38	0	43.93	3.158	218.96185	7.866
1	16-12-2020	1881176.67	0	51.63	3.159	219.17945	7.866
1	23-12-2020	2270188.99	0	47.96	3.112	219.35772	7.866
1	30-12-2020	1497462.72	1	44.55	3.129	219.53599	7.866
1	6/1/2021	1550369.92	0	49.01	3.157	219.71426	7.348
1	13-01-2021	1459601.17	0	48.53	3.261	219.89253	7.348
1	20-01-2021	1394393.84	0	54.11	3.268	219.98569	7.348
1	27-01-2021	1319325.59	0	54.26	3.29	220.07885	7.348
1	3/2/2021	1636339.65	0	56.55	3.36	220.17202	7.348
1	10/2/2021	1802477.43	1	48.02	3.409	220.26518	7.348
1	17-02-2021	1819870	0	45.32	3.51	220.42576	7.348
1	24-02-2021	1539387.83	0	57.25	3.555	220.6369	7.348
1	2/3/2021	1688420.76	0	60.96	3.63	220.84805	7.348
1	9/3/2021	1675431.16	0	58.76	3.669	221.05919	7.348
1	16-03-2021	1677472.78	0	64.74	3.734	221.21181	7.348
1	23-03-2021	1511068.07	0	65.93	3.787	221.28641	7.348
1	30-03-2021	1649604.63	0	67.61	3.845	221.36101	7.348
1	6/4/2021	1899676.88	0	70.43	3.891	221.43561	7.143
1	13-04-2021	1621031.7	0	69.07	3.891	221.51021	7.143
1	20-04-2021	1521577.87	0	66.76	3.877	221.56407	7.143
1	27-04-2021	1468928.37	0	67.23	3.814	221.61794	7.143
1	4/5/2021	1684519.99	0	75.55	3.749	221.6718	7.143
1	11/5/2021	1611096.05	0	73.77	3.688	221.72566	7.143
1	18-05-2021	1595901.87	0	70.33	3.63	221.74267	7.143
1	25-05-2021	1555444.55	0	77.22	3.561	221.74494	7.143
1	1/6/2021	1624477.58	0	77.95	3.501	221.74721	7.143
1	8/6/2021	1697230.96	0	78.3	3.452	221.74948	7.143
1	15-06-2021	1630607	0	79.35	3.393	221.76264	7.143
1	22-06-2021	1527845.81	0	78.39	3.346	221.80302	7.143
1	29-06-2021	1540421.49	0	84.88	3.286	221.8434	7.143
1	6/7/2021	1769854.16	0	81.57	3.227	221.88378	6.908
1	13-07-2021	1527014.04	0	77.12	3.256	221.92416	6.908
1	20-07-2021	1497954.76	0	80.42	3.311	221.93273	6.908
1	27-07-2021	1439123.71	0	82.66	3.407	221.9413	6.908
1	3/8/2021	1631135.79	0	86.11	3.417	221.94986	6.908
1	10/8/2021	1592409.97	0	85.05	3.494	221.95843	6.908
1	17-08-2021	1597868.05	0	84.85	3.571	222.03841	6.908
1	24-08-2021	1494122.38	0	77.66	3.62	222.17195	6.908
1	31-08-2021	1582083.4	0	80.49	3.638	222.30548	6.908
1	7/9/2021	1661767.33	1	83.96	3.73	222.43902	6.908
1	14-09-2021	1517428.87	0	74.97	3.717	222.58202	6.908
1	21-09-2021	1506126.06	0	69.87	3.721	222.78184	6.908
1	28-09-2021	1437059.26	0	76.08	3.666	222.98166	6.908
1	5/10/2021	1670785.97	0	68.55	3.617	223.18148	6.573
1	12/10/2021	1573072.81	0	62.99	3.601	223.3813	6.573
1	19-10-2021	1508068.77	0	67.97	3.594	223.42572	6.573

1	26-10-2021	1493659.74	0	69.16	3.506	223.44425	6.573
2	5/2/2019	2136989.46	0	40.19	2.572	210.75261	8.324
2	12/2/2019	2137809.5	1	38.49	2.548	210.89799	8.324
2	19-02-2019	2124451.54	0	39.69	2.514	210.94516	8.324
2	26-02-2019	1865097.27	0	46.1	2.561	210.97596	8.324
2	5/3/2019	1991013.13	0	47.17	2.625	211.00675	8.324
2	12/3/2019	1990483.78	0	57.56	2.667	211.03755	8.324
2	19-03-2019	1946070.88	0	54.52	2.72	210.87333	8.324
2	26-03-2019	1750197.81	0	51.26	2.732	210.67661	8.324
2	2/4/2019	2066187.72	0	63.27	2.719	210.47989	8.2
2	9/4/2019	1954689.21	0	65.41	2.77	210.28317	8.2
2	16-04-2019	1874957.94	0	68.07	2.808	210.14955	8.2
2	23-04-2019	1821990.93	0	65.11	2.795	210.10006	8.2
2	30-04-2019	1802450.29	0	66.98	2.78	210.05058	8.2
2	7/5/2019	2042581.71	0	71.28	2.835	210.0011	8.2
2	14-05-2019	1880752.36	0	73.31	2.854	209.99846	8.2
2	21-05-2019	1896937.1	0	74.83	2.826	210.27684	8.2
2	28-05-2019	1957113.89	0	81.13	2.759	210.55523	8.2
2	4/6/2019	2102539.93	0	81.81	2.705	210.83362	8.2
2	11/6/2019	2025538.76	0	83.4	2.668	211.112	8.2
2	18-06-2019	2001636.96	0	85.81	2.637	211.10965	8.2
2	25-06-2019	1939927.09	0	86.26	2.653	210.99501	8.2
2	2/7/2019	2003940.64	0	82.74	2.669	210.88037	8.099
2	9/7/2019	1880902.62	0	82.59	2.642	210.76573	8.099
2	16-07-2019	1845879.79	0	85.32	2.623	210.7578	8.099
2	23-07-2019	1781717.71	0	87.66	2.608	210.89213	8.099
2	30-07-2019	1804246.16	0	83.49	2.64	211.02647	8.099
2	6/8/2019	1991909.98	0	89.53	2.627	211.1608	8.099
2	13-08-2019	1895601.05	0	89.05	2.692	211.29514	8.099
2	20-08-2019	1964335.23	0	88.7	2.664	211.25966	8.099
2	27-08-2019	1863840.49	0	87.12	2.619	211.22418	8.099
2	3/9/2019	1904608.09	0	81.83	2.577	211.18869	8.099
2	10/9/2019	1839128.83	1	79.09	2.565	211.15321	8.099
2	17-09-2019	1793903.6	0	82.05	2.582	211.18064	8.099
2	24-09-2019	1724557.22	0	81.79	2.624	211.25526	8.099
2	1/10/2019	1827440.43	0	69.24	2.603	211.32987	8.163
2	8/10/2019	1849921.44	0	63.19	2.633	211.40449	8.163
2	15-10-2019	1794355.49	0	65.8	2.72	211.47133	8.163
2	22-10-2019	1737947.64	0	68.5	2.725	211.51872	8.163
2	29-10-2019	1802755.11	0	66.24	2.716	211.56611	8.163
2	5/11/2019	1939061.41	0	57.85	2.689	211.61351	8.163
2	12/11/2019	1916812.74	0	59.69	2.728	211.6609	8.163
2	19-11-2019	1956739.17	0	50.81	2.771	211.54703	8.163
2	26-11-2019	2658725.29	1	62.98	2.735	211.40629	8.163
2	3/12/2019	2015781.27	0	49.33	2.708	211.26554	8.163
2	10/12/2019	2378726.55	0	45.5	2.843	211.1248	8.163
2	17-12-2019	2609166.75	0	47.55	2.869	211.06455	8.163
2	24-12-2019	3436007.68	0	49.97	2.886	211.06466	8.163
2	31-12-2019	1750434.55	1	47.3	2.943	211.06477	8.163
2	7/1/2020	1758050.79	0	44.69	2.976	211.06489	8.028
2	14-01-2020	1744193.58	0	33.02	2.983	211.11767	8.028
2	21-01-2020	1751384.9	0	41.4	3.016	211.48647	8.028
2	28-01-2020	1695371.68	0	42.83	3.01	211.85527	8.028
2	4/2/2020	1929346.23	0	38.25	2.989	212.22406	8.028
2	11/2/2020	2168041.61	1	33.19	3.022	212.59286	8.028
2	18-02-2020	2080884.82	0	57.83	3.045	212.90331	8.028
2	25-02-2020	1833511.08	0	60.8	3.065	213.19042	8.028
2	4/3/2020	1981607.78	0	57.77	3.288	213.47753	8.028
2	11/3/2020	1879107.31	0	52.7	3.459	213.76464	8.028
2	18-03-2020	1902557.66	0	62.32	3.488	214.01562	8.028
2	25-03-2020	1766162.05	0	69.42	3.473	214.25216	8.028
2	1/4/2020	1800171.36	0	55.43	3.524	214.48869	7.931
2	8/4/2020	1847552.61	0	67	3.622	214.72522	7.931
2	15-04-2020	1856467.84	0	69.48	3.743	214.94206	7.931
2	22-04-2020	1886339.6	0	69.39	3.807	215.10967	7.931
2	29-04-2020	1745545.28	0	69.21	3.81	215.27727	7.931
2	6/5/2020	1837743.6	0	61.48	3.906	215.44487	7.931
2	13-05-2020	1838513.07	0	74.61	3.899	215.61247	7.931
2	20-05-2020	1688281.86	0	67.14	3.907	215.38348	7.931
2	27-05-2020	1797732.56	0	76.42	3.786	215.15448	7.931
2	3/6/2020	1933756.21	0	83.07	3.699	214.92549	7.931
2	10/6/2020	1929153.16	0	83.4	3.648	214.69649	7.931
2	17-06-2020	1953771.99	0	86.53	3.637	214.65135	7.931
2	24-06-2020	1790925.8	0	85.17	3.594	214.74411	7.931
2	1/7/2020	1866243	0	85.69	3.524	214.83687	7.852
2	8/7/2020	1853161.99	0	87.7	3.48	214.92962	7.852
2	15-07-2020	1785187.29	0	89.83	3.575	215.01344	7.852
2	22-07-2020	1743816.41	0	89.34	3.651	215.07491	7.852
2	29-07-2020	1680693.06	0	90.07	3.682	215.13638	7.852
2	5/8/2020	1876704.26	0	93.34	3.684	215.19785	7.852
2	12/8/2020	1812768.26	0	91.58	3.638	215.25932	7.852
2	19-08-2020	1844094.59	0	89.86	3.554	215.32293	7.852
2	26-08-2020	1821139.91	0	90.45	3.523	215.3869	7.852
2	2/9/2020	1809119.7	0	89.64	3.533	215.45086	7.852
2	9/9/2020	1748000.65	1	77.97	3.546	215.51483	7.852
2	16-09-2020	1691439.52	0	78.85	3.526	215.69444	7.852
2	23-09-2020	1669299.78	0	75.58	3.467	216.02824	7.852
2	30-09-2020	1650394.44	0	78.14	3.355	216.36203	7.852
2	7/10/2020	1837553.43	0	69.92	3.285	216.69583	7.441
2	14-10-2020	1743882.19	0	71.67	3.274	217.00483	7.441
2	21-10-2020	1834680.25	0	64.53	3.353	217.165	7.441
2	28-10-2020	1769296.25	0	65.87	3.372	217.32518	7.441
2	4/11/2020	1959707.9	0	55.53	3.332	217.48536	7.441
2	11/11/2020	1920725.15	0	59.33	3.297	217.64554	7.441
2	18-11-2020	1902762.5	0	62.01	3.308	217.86702	7.441
2	25-11-2020	2614202.3	1	56.36	3.236	218.11303	7.441
2	2/12/2020	1954952	0	48.74	3.172	218.35903	7.441
2	9/12/2020	2290549.32	0	41.76	3.158	218.60504	7.441
2	16-12-2020	2432736.52	0	50.13	3.159	218.82179	7.441
2	23-12-2020	3224369.8	0	46.66	3.112	218.99955	7.441
2	30-12-2020	1874226.52	1	44.57	3.129	219.17731	7.441
2	6/1/2021	1799520.14	0	46.75	3.157	219.35506	7.057
2	13-01-2021	1744725.48	0	45.99	3.261	219.53282	7.057
2	20-01-2021	1711769.11	0	51.7	3.268	219.62584	7.057
2	27-01-2021	1660906.14	0	50.5	3.29	219.71886	7.057
2	3/2/2021	1935299.94	0	55.21	3.36	219.81189	7.057
2	10/2/2021	2103322.68	1	46.98	3.409	219.90491	7.057
2	17-02-2021	2196688.46	0	43.82	3.51	220.0652	7.057
2	24-02-2021	1861802.7	0	54.63	3.555	220.27594	7.057
2	2/3/2021	1952555.66	0	58.79	3.63	220.48669	7.057
2	9/3/2021	1937628.26	0	57.11	3.669	220.69743	7.057
2	16-03-2021	1976082.13	0	63.68	3.734	220.84985	7.057
2	23-03-2021	1790439.16	0	64.01	3.787	220.92449	7.057
2	30-03-2021	1857480.84	0	66.83	3.845	220.99912	7.057
2	6/4/2021	2129035.91	0	68.43	3.891	221.07376	6.891
2	13-04-2021	1935869.1	0	68.08	3.891	221.1484	6.891
2	20-04-2021	1847344.45	0	65.69	3.877	221.20211	6.891
2	27-04-2021	1764133.09	0	67.2	3.814	221.25581	6.891
2	4/5/2021	1923957.09	0	76.73	3.749	221.30952	6.891
2	11/5/2021	1917520.99	0	73.87	3.688	221.36322	6.891
2	18-05-2021	2000940.67	0	71.27	3.63	221.38033	6.891
2	25-05-2021	1912791.09	0	78.19	3.561	221.3828	6.891
2	1/6/2021	1910092.37	0	78.38	3.501	221.38527	6.891
2	8/6/2021	2019216.49	0	78.69	3.452	221.38775	6.891
2	15-06-2021	1962924.3	0	80.56	3.393	221.40099	6.891
2	22-06-2021	1887733.21	0	81.04	3.346	221.44116	6.891
2	29-06-2021	1881046.12	0	86.32	3.286	221.48133	6.891
2	6/7/2021	2041507.4	0	84.2	3.227	221.52151	6.565
2	13-07-2021	1830075.13	0	80.17	3.256	221.56168	6.565
2	20-07-2021	1819666.46	0	83.23	3.311	221.57011	6.565
2	27-07-2021	1757923.88	0	86.37	3.407	221.57855	6.565
	3/8/2021	1946104.64	0	90.22	3.417	221.58698	6.565
2	10/8/2021	1866719.96	0	88.55	3.494	221.59541	6.565
2	17-08-2021	1928016.01	0	84.79	3.571	221.67515	6.565
2	24-08-2021	1876788.15	0	76.91	3.62	221.80835	6.565
2	31-08-2021	1947083.3	0	82.64	3.638	221.94156	6.565
2	7/9/2021	1898777.07	1	87.65	3.73	222.07476	6.565
2	14-09-2021	1814806.63	0	75.88	3.717	222.21744	6.565
2	21-09-2021	1829415.67	0	71.09	3.721	222.41694	6.565
2	28-09-2021	1746470.56	0	79.45	3.666	222.61643	6.565
2	5/10/2021	1998321.04	0	70.27	3.617	222.81593	6.17
2	12/10/2021	1900745.13	0	60.97	3.601	223.01543	6.17
2	19-10-2021	1847990.41	0	68.08	3.594	223.05981	6.17
2	26-10-2021	1834458.35	0	69.79	3.506	223.07834	6.17

3	5/2/2019	461622.22	0	45.71	2.572	214.42488	7.368
3	12/2/2019	420728.96	1	47.93	2.548	214.57479	7.368
3	19-02-2019	421642.19	0	47.07	2.514	214.61989	7.368
3	26-02-2019	407204.86	0	52.05	2.561	214.64751	7.368
3	5/3/2019	415202.04	0	53.04	2.625	214.67514	7.368
3	12/3/2019	384200.69	0	63.08	2.667	214.70276	7.368
3	19-03-2019	375328.59	0	60.42	2.72	214.53012	7.368
3	26-03-2019	359949.27	0	57.06	2.732	214.3241	7.368
3	2/4/2019	423294.4	0	65.56	2.719	214.11808	7.343
3	9/4/2019	415870.28	0	68	2.77	213.91206	7.343
3	16-04-2019	354993.26	0	66.98	2.808	213.77269	7.343
3	23-04-2019	339976.65	0	67.87	2.795	213.72219	7.343
3	30-04-2019	361248.39	0	70.24	2.78	213.67168	7.343
3	7/5/2019	399323.86	0	73.47	2.835	213.62118	7.343
3	14-05-2019	384357.94	0	77.18	2.854	213.61961	7.343
3	21-05-2019	343763.17	0	75.81	2.826	213.91169	7.343
3	28-05-2019	350089.23	0	78.6	2.759	214.20376	7.343
3	4/6/2019	396968.8	0	78.53	2.705	214.49584	7.343
3	11/6/2019	355017.09	0	82.1	2.668	214.78791	7.343
3	18-06-2019	364076.85	0	83.52	2.637	214.78583	7.343
3	25-06-2019	357346.48	0	83.79	2.653	214.66607	7.343
3	2/7/2019	381151.72	0	82.2	2.669	214.54632	7.346
3	9/7/2019	349214.18	0	81.75	2.642	214.42657	7.346
3	16-07-2019	352728.78	0	84.32	2.623	214.41765	7.346
3	23-07-2019	352864.49	0	83.32	2.608	214.5565	7.346
3	30-07-2019	347955.05	0	82.04	2.64	214.69535	7.346
3	6/8/2019	402635.76	0	85.13	2.627	214.8342	7.346
3	13-08-2019	339597.38	0	86.74	2.692	214.97304	7.346
3	20-08-2019	351728.21	0	88.02	2.664	214.93142	7.346
3	27-08-2019	362134.09	0	86.15	2.619	214.88979	7.346
3	3/9/2019	366473.97	0	84.16	2.577	214.84817	7.346
3	10/9/2019	352260.97	1	80.84	2.565	214.80654	7.346
3	17-09-2019	363064.64	0	82.36	2.582	214.83225	7.346
3	24-09-2019	355626.87	0	76.9	2.624	214.90845	7.346
3	1/10/2019	358784.1	0	73.6	2.603	214.98465	7.564
3	8/10/2019	395107.35	0	66.99	2.633	215.06086	7.564
3	15-10-2019	345584.39	0	69.71	2.72	215.12931	7.564
3	22-10-2019	348895.98	0	71.64	2.725	215.17839	7.564
3	29-10-2019	348591.74	0	72.04	2.716	215.22747	7.564
3	5/11/2019	423175.56	0	62.94	2.689	215.27655	7.564
3	12/11/2019	386635.03	0	62.79	2.728	215.32563	7.564
3	19-11-2019	372545.32	0	57.72	2.771	215.20745	7.564
3	26-11-2019	565567.84	1	68.71	2.735	215.0614	7.564
3	3/12/2019	476420.77	0	53.76	2.708	214.91535	7.564
3	10/12/2019	467642.03	0	51.13	2.843	214.7693	7.564
3	17-12-2019	498159.39	0	52.2	2.869	214.70492	7.564
3	24-12-2019	605990.41	0	57.16	2.886	214.70178	7.564
3	31-12-2019	382677.76	1	53.2	2.943	214.69865	7.564
3	7/1/2020	378241.34	0	53.35	2.976	214.69551	7.551
3	14-01-2020	381061.1	0	44.76	2.983	214.74707	7.551
3	21-01-2020	350876.7	0	50.74	3.016	215.12683	7.551
3	28-01-2020	364866.24	0	48.71	3.01	215.50658	7.551
3	4/2/2020	438516.53	0	45.95	2.989	215.88634	7.551
3	11/2/2020	430526.21	1	43.57	3.022	216.26609	7.551
3	18-02-2020	432782.1	0	61.58	3.045	216.58436	7.551
3	25-02-2020	397211.19	0	67.4	3.065	216.87803	7.551
3	4/3/2020	437084.51	0	65.11	3.288	217.1717	7.551
3	11/3/2020	404753.3	0	61.29	3.459	217.46537	7.551
3	18-03-2020	392109.51	0	69.47	3.488	217.72352	7.551
3	25-03-2020	380683.67	0	72.94	3.473	217.96747	7.551
3	1/4/2020	374556.08	0	68.76	3.524	218.21142	7.574
3	8/4/2020	384075.31	0	72.55	3.622	218.45537	7.574
3	15-04-2020	366250.69	0	75.88	3.743	218.67886	7.574
3	22-04-2020	391860.04	0	76.91	3.807	218.85124	7.574
3	29-04-2020	367405.4	0	78.69	3.81	219.02361	7.574
3	6/5/2020	413042.12	0	69.45	3.906	219.19598	7.574
3	13-05-2020	386312.68	0	79.87	3.899	219.36836	7.574
3	20-05-2020	364603.13	0	75.79	3.907	219.12722	7.574
3	27-05-2020	369350.6	0	84.41	3.786	218.88608	7.574
3	3/6/2020	394507.84	0	84.29	3.699	218.64494	7.574
3	10/6/2020	391638.75	0	84.84	3.648	218.4038	7.574
3	17-06-2020	403423.34	0	86.96	3.637	218.35517	7.574
3	24-06-2020	385520.71	0	84.94	3.594	218.45094	7.574
3	1/7/2020	368962.72	0	85.1	3.524	218.54671	7.567
3	8/7/2020	395146.24	0	85.38	3.48	218.64247	7.567
3	15-07-2020	373454.33	0	87.14	3.575	218.72752	7.567
3	22-07-2020	360617.37	0	86.19	3.651	218.78579	7.567
3	29-07-2020	345381.29	0	88.07	3.682	218.84405	7.567
3	5/8/2020	409981.25	0	88.45	3.684	218.90232	7.567
3	12/8/2020	380376.85	0	88.88	3.638	218.96059	7.567
3	19-08-2020	379716.91	0	88.44	3.554	219.02327	7.567
3	26-08-2020	366367.55	0	87.67	3.523	219.08669	7.567
3	2/9/2020	375988.69	0	89.12	3.533	219.15011	7.567
3	9/9/2020	377347.49	1	81.72	3.546	219.21353	7.567
3	16-09-2020	375629.51	0	83.63	3.526	219.39729	7.567
3	23-09-2020	365248.94	0	80.19	3.467	219.74149	7.567
3	30-09-2020	368477.93	0	82.58	3.355	220.0857	7.567
3	7/10/2020	403342.4	0	75.54	3.285	220.4299	7.197
3	14-10-2020	368282.57	0	73.75	3.274	220.74862	7.197
3	21-10-2020	394976.36	0	69.03	3.353	220.9144	7.197
3	28-10-2020	389540.62	0	71.04	3.372	221.08018	7.197
3	4/11/2020	459443.22	0	59.31	3.332	221.24597	7.197
3	11/11/2020	407764.25	0	61.7	3.297	221.41175	7.197
3	18-11-2020	398838.97	0	63.91	3.308	221.64329	7.197
3	25-11-2020	556925.19	1	68	3.236	221.90112	7.197
3	2/12/2020	472511.32	0	54.97	3.172	222.15895	7.197
3	9/12/2020	468772.8	0	49.26	3.158	222.41679	7.197
3	16-12-2020	510747.62	0	57.95	3.159	222.64264	7.197
3	23-12-2020	551221.21	0	53.41	3.112	222.82586	7.197
3	30-12-2020	410553.88	1	48.29	3.129	223.00908	7.197
3	6/1/2021	398178.21	0	52.42	3.157	223.1923	6.833
3	13-01-2021	367438.62	0	51.86	3.261	223.37553	6.833
3	20-01-2021	365818.61	0	56.2	3.268	223.47006	6.833
3	27-01-2021	349518.1	0	58.06	3.29	223.56458	6.833
3	3/2/2021	424960.66	0	59.33	3.36	223.65911	6.833
3	10/2/2021	473292.47	1	51.65	3.409	223.75364	6.833
3	17-02-2021	475591.08	0	52.39	3.51	223.91702	6.833
3	24-02-2021	418925.47	0	60.12	3.555	224.13202	6.833
3	2/3/2021	469752.56	0	61.65	3.63	224.34702	6.833
3	9/3/2021	445162.05	0	60.71	3.669	224.56203	6.833
3	16-03-2021	411775.8	0	64	3.734	224.7167	6.833
3	23-03-2021	413907.25	0	66.53	3.787	224.79091	6.833
3	30-03-2021	407488.84	0	69.36	3.845	224.86513	6.833
3	6/4/2021	503232.13	0	73.01	3.891	224.93934	6.664
3	13-04-2021	420789.74	0	72.83	3.891	225.01356	6.664
3	20-04-2021	434822.13	0	72.05	3.877	225.06895	6.664
3	27-04-2021	394616.11	0	73.39	3.814	225.12435	6.664
3	4/5/2021	439913.57	0	79.51	3.749	225.17975	6.664
3	11/5/2021	431985.36	0	75.19	3.688	225.23515	6.664
3	18-05-2021	418112.76	0	72.38	3.63	225.2512	6.664
3	25-05-2021	413701.29	0	78.58	3.561	225.25152	6.664
3	1/6/2021	432268.53	0	81.55	3.501	225.25183	6.664
3	8/6/2021	446336.8	0	81.65	3.452	225.25215	6.664
3	15-06-2021	442074.79	0	84.66	3.393	225.26448	6.664
3	22-06-2021	419497.95	0	82.7	3.346	225.30686	6.664
3	29-06-2021	422965.33	0	86.42	3.286	225.34924	6.664
3	6/7/2021	411206.5	0	83.14	3.227	225.39163	6.334
3	13-07-2021	416913.1	0	82.28	3.256	225.43401	6.334
3	20-07-2021	432424.85	0	81.38	3.311	225.44388	6.334
3	27-07-2021	389427.9	0	84.94	3.407	225.45376	6.334
3	3/8/2021	419990.29	0	86.55	3.417	225.46363	6.334
3	10/8/2021	391811.6	0	85.85	3.494	225.47351	6.334
3	17-08-2021	394918.83	0	87.36	3.571	225.55587	6.334
3	24-08-2021	412449.67	0	83.01	3.62	225.69259	6.334
3	31-08-2021	408838.73	0	85.18	3.638	225.82931	6.334
3	7/9/2021	408229.73	1	84.99	3.73	225.96603	6.334
3	14-09-2021	407589.16	0	78.36	3.717	226.11221	6.334
3	21-09-2021	414392.09	0	72.78	3.721	226.31515	6.334
3	28-09-2021	389813.02	0	77.46	3.666	226.51809	6.334
3	5/10/2021	443557.65	0	72.74	3.617	226.72104	6.034
3	12/10/2021	410804.39	0	70.31	3.601	226.92398	6.034
3	19-10-2021	424513.08	0	73.44	3.594	226.96884	6.034
3	26-10-2021	405432.7	0	74.66	3.506	226.98736	6.034
4	5/2/2019	2135143.87	0	43.76	2.598	126.44206	8.623

4	12/2/2019	2188307.39	1	28.84	2.573	126.49626	8.623
4	19-02-2019	2049860.26	0	36.45	2.54	126.52629	8.623
4	26-02-2019	1925728.84	0	41.36	2.59	126.55229	8.623
4	5/3/2019	1971057.44	0	43.49	2.654	126.57829	8.623
4	12/3/2019	1894324.09	0	49.63	2.704	126.60429	8.623
4	19-03-2019	1897429.36	0	55.19	2.743	126.60665	8.623
4	26-03-2019	1762539.3	0	39.91	2.752	126.60506	8.623
4	2/4/2019	1979247.12	0	48.77	2.74	126.60348	7.896
4	9/4/2019	1818452.72	0	54.16	2.773	126.6019	7.896
4	16-04-2019	1851519.69	0	56.23	2.81	126.5621	7.896
4	23-04-2019	1802677.9	0	56.87	2.805	126.47133	7.896
4	30-04-2019	1817273.28	0	53.04	2.787	126.38057	7.896
4	7/5/2019	2000626.14	0	56.77	2.836	126.2898	7.896
4	14-05-2019	1875597.28	0	62.35	2.845	126.20855	7.896
4	21-05-2019	1903752.6	0	67.4	2.82	126.18439	7.896
4	28-05-2019	1857533.7	0	67.73	2.756	126.16023	7.896
4	4/6/2019	1903290.58	0	70.83	2.701	126.13606	7.896
4	11/6/2019	1870619.23	0	78.45	2.668	126.1119	7.896
4	18-06-2019	1929736.35	0	81.53	2.635	126.114	7.896
4	25-06-2019	1846651.95	0	81.1	2.654	126.1266	7.896
4	2/7/2019	1881337.21	0	73.66	2.668	126.1392	7.372
4	9/7/2019	1812208.22	0	80.35	2.637	126.1518	7.372
4	16-07-2019	1898427.66	0	78.53	2.621	126.14981	7.372
4	23-07-2019	1848426.78	0	79.78	2.612	126.12835	7.372
4	30-07-2019	1796637.61	0	80.7	2.65	126.1069	7.372
4	6/8/2019	1907638.58	0	76.53	2.64	126.08545	7.372
4	13-08-2019	2007050.75	0	78.08	2.698	126.064	7.372
4	20-08-2019	1997181.09	0	78.83	2.671	126.07665	7.372
4	27-08-2019	1848403.92	0	74.44	2.621	126.08929	7.372
4	3/9/2019	1935857.58	0	76.8	2.584	126.10194	7.372
4	10/9/2019	1865820.81	1	73.54	2.574	126.11458	7.372
4	17-09-2019	1899959.61	0	64.91	2.594	126.14547	7.372
4	24-09-2019	1810684.68	0	60.96	2.642	126.19003	7.372
4	1/10/2019	1842821.02	0	63.96	2.619	126.2346	7.127
4	8/10/2019	1951494.85	0	67.73	2.645	126.27917	7.127
4	15-10-2019	1867345.09	0	62.03	2.732	126.32668	7.127
4	22-10-2019	1927610.06	0	64.17	2.736	126.38155	7.127
4	29-10-2019	1933333	0	56.94	2.718	126.43642	7.127
4	5/11/2019	2013115.79	0	51.6	2.699	126.49129	7.127
4	12/11/2019	1999794.26	0	52.65	2.741	126.54616	7.127
4	19-11-2019	2097809.4	0	48.05	2.78	126.6072	7.127
4	26-11-2019	2789469.45	1	48.08	2.752	126.66927	7.127
4	3/12/2019	2102530.17	0	46.4	2.727	126.73133	7.127
4	10/12/2019	2302504.86	0	42.4	2.86	126.7934	7.127
4	17-12-2019	2740057.14	0	46.57	2.884	126.87948	7.127
4	24-12-2019	3526713.39	0	43.21	2.887	126.98358	7.127
4	31-12-2019	1794868.74	1	38.09	2.955	127.08768	7.127
4	7/1/2020	1862476.27	0	39.34	2.98	127.19177	6.51
4	14-01-2020	1865502.46	0	31.6	2.992	127.30094	6.51
4	21-01-2020	1886393.94	0	38.34	3.017	127.44048	6.51
4	28-01-2020	1814240.85	0	40.6	3.022	127.58003	6.51
4	4/2/2020	2119086.04	0	34.61	2.996	127.71958	6.51
4	11/2/2020	2187847.29	1	33.29	3.033	127.85913	6.51
4	18-02-2020	2316495.56	0	48.17	3.058	127.99525	6.51
4	25-02-2020	2078094.69	0	49	3.087	128.13	6.51
4	4/3/2020	2103455.75	0	46.56	3.305	128.26475	6.51
4	11/3/2020	2039818.41	0	50.93	3.461	128.3995	6.51
4	18-03-2020	2116475.38	0	51.86	3.495	128.51219	6.51
4	25-03-2020	1944164.32	0	59.1	3.48	128.61606	6.51
4	1/4/2020	1900246.47	0	56.99	3.521	128.71994	5.946
4	8/4/2020	2074953.46	0	62.61	3.605	128.82381	5.946
4	15-04-2020	1960587.76	0	62.34	3.724	128.91073	5.946
4	22-04-2020	2220600.76	0	68.8	3.781	128.9553	5.946
4	29-04-2020	1878167.44	0	64.22	3.781	128.99987	5.946
4	6/5/2020	2063682.76	0	63.41	3.866	129.04443	5.946
4	13-05-2020	2002362.37	0	70.65	3.872	129.089	5.946
4	20-05-2020	2015563.48	0	70.49	3.881	129.07568	5.946
4	27-05-2020	1986597.95	0	73.65	3.771	129.06235	5.946
4	3/6/2020	2065377.15	0	78.26	3.683	129.04903	5.946
4	10/6/2020	2073951.38	0	80.05	3.64	129.03571	5.946
4	17-06-2020	2141210.62	0	83.51	3.618	129.0432	5.946
4	24-06-2020	2008344.92	0	81.85	3.57	129.0663	5.946
4	1/7/2020	2051533.53	0	84.54	3.504	129.0894	5.644
4	8/7/2020	2066541.86	0	84.59	3.469	129.1125	5.644
4	15-07-2020	2049046.95	0	83.27	3.563	129.13384	5.644
4	22-07-2020	2036231.39	0	82.84	3.627	129.15077	5.644
4	29-07-2020	1989674.07	0	84.36	3.659	129.16771	5.644
4	5/8/2020	2160057.39	0	86.09	3.662	129.18465	5.644
4	12/8/2020	2105668.74	0	82.98	3.617	129.20158	5.644
4	19-08-2020	2232892.1	0	82.77	3.55	129.24058	5.644
4	26-08-2020	1988490.21	0	81.47	3.523	129.28326	5.644
4	2/9/2020	2078420.31	0	77.99	3.533	129.32594	5.644
4	9/9/2020	2093139.01	1	73.34	3.554	129.36861	5.644
4	16-09-2020	2075577.33	0	72.76	3.532	129.4306	5.644
4	23-09-2020	2031406.41	0	69.23	3.473	129.51833	5.644
4	30-09-2020	1929486.63	0	72.15	3.371	129.60607	5.644
4	7/10/2020	2166737.65	0	65.79	3.299	129.6938	5.143
4	14-10-2020	2074548.85	0	63.75	3.283	129.77065	5.143
4	21-10-2020	2207742.13	0	64.79	3.361	129.78216	5.143
4	28-10-2020	2151659.59	0	55.31	3.362	129.79368	5.143
4	4/11/2020	2281217.31	0	49.86	3.322	129.80519	5.143
4	11/11/2020	2203028.96	0	47.12	3.286	129.81671	5.143
4	18-11-2020	2243946.59	0	50.44	3.294	129.82683	5.143
4	25-11-2020	3004702.33	1	47.96	3.225	129.8364	5.143
4	2/12/2020	2180999.26	0	38.71	3.176	129.84597	5.143
4	9/12/2020	2508955.24	0	31.64	3.153	129.85553	5.143
4	16-12-2020	2771397.17	0	36.44	3.149	129.89806	5.143
4	23-12-2020	3676388.98	0	35.92	3.103	129.98455	5.143
4	30-12-2020	2007105.86	1	36.89	3.119	130.07103	5.143
4	6/1/2021	2047766.07	0	38.64	3.158	130.15752	4.607
4	13-01-2021	1941676.61	0	34.41	3.263	130.244	4.607
4	20-01-2021	2005097.76	0	42.09	3.273	130.27923	4.607
4	27-01-2021	1928720.51	0	40.31	3.29	130.31445	4.607
4	3/2/2021	2173373.91	0	41.81	3.354	130.34968	4.607
4	10/2/2021	2374660.64	1	33	3.411	130.3849	4.607
4	17-02-2021	2427640.17	0	34.19	3.493	130.45462	4.607
4	9/3/2021	2202450.81	0	53.63	3.667	130.74138	4.607
4	16-03-2021	2214967.44	0	59.81	3.707	130.82619	4.607
4	23-03-2021	2091592.54	0	59.07	3.759	130.89665	4.607
4	30-03-2021	2089381.77	0	72.63	3.82	130.9671	4.607
4	6/4/2021	2470206.13	0	67.69	3.864	131.03755	4.308
4	13-04-2021	2105301.39	0	68.69	3.881	131.108	4.308
4	20-04-2021	2144336.89	0	68.6	3.864	131.11733	4.308
4	27-04-2021	2064065.66	0	76.47	3.81	131.12667	4.308
4	4/5/2021	2196968.33	0	80.14	3.747	131.136	4.308
4	11/5/2021	2127661.17	0	67.64	3.685	131.14533	4.308
4	18-05-2021	2207214.81	0	68.43	3.62	131.09832	4.308
4	25-05-2021	2154137.67	0	77.47	3.551	131.02877	4.308
4	1/6/2021	2179360.94	0	77.41	3.483	130.95923	4.308
4	8/6/2021	2245257.18	0	78.11	3.433	130.88968	4.308
4	15-06-2021	2234190.93	0	80.94	3.372	130.82953	4.308
4	22-06-2021	2197299.65	0	81.63	3.329	130.7929	4.308
4	29-06-2021	2128362.92	0	84.23	3.257	130.75627	4.308
4	6/7/2021	2224499.28	0	80.37	3.187	130.71963	4.077
4	13-07-2021	2100252.61	0	76.86	3.224	130.683	4.077
4	20-07-2021	2175563.69	0	79.14	3.263	130.70129	4.077
4	27-07-2021	2048613.65	0	81.06	3.356	130.71958	4.077
4	3/8/2021	2174514.13	0	83.86	3.374	130.73787	4.077
4	10/8/2021	2193367.69	0	83.21	3.476	130.75616	4.077
4	17-08-2021	2283540.3	0	81.41	3.552	130.79097	4.077
4	24-08-2021	2125241.68	0	75.76	3.61	130.83816	4.077
4	31-08-2021	2081181.35	0	76.47	3.646	130.88535	4.077
4	7/9/2021	2125104.72	1	82.09	3.709	130.93255	4.077
4	14-09-2021	2117854.6	0	68.2	3.706	130.97767	4.077
4	21-09-2021	2119438.53	0	68.97	3.721	131.01033	4.077
4	28-09-2021	2027620.23	0	71.74	3.666	131.043	4.077
4	5/10/2021	2209835.43	0	63.07	3.62	131.07567	3.879
4	12/10/2021	2133026.07	0	57.11	3.603	131.10833	3.879
4	19-10-2021	2097266.85	0	64.46	3.61	131.14997	3.879
4	26-10-2021	2149594.46	0	63.64	3.514	131.1931	3.879
5	5/2/2019	317173.1	0	39.7	2.572	211.65397	6.566
5	12/2/2019	311825.7	1	39.81	2.548	211.80047	6.566

5	19-02-2019	303447.57	0	41.14	2.514	211.84713	6.566
5	26-02-2019	270281.63	0	46.7	2.561	211.87715	6.566
5	5/3/2019	288855.71	0	48.89	2.625	211.90717	6.566
5	12/3/2019	297293.59	0	58.5	2.667	211.93718	6.566
5	19-03-2019	281706.41	0	55.46	2.72	211.7709	6.566
5	26-03-2019	273282.97	0	52.47	2.732	211.57189	6.566
5	2/4/2019	331406	0	63.18	2.719	211.37289	6.465
5	9/4/2019	328020.49	0	65.19	2.77	211.17388	6.465
5	16-04-2019	306858.69	0	65.3	2.808	211.03885	6.465
5	23-04-2019	288839.73	0	65.13	2.795	210.98912	6.465
5	30-04-2019	298697.84	0	67.53	2.78	210.93939	6.465
5	7/5/2019	333522.6	0	71.53	2.835	210.88966	6.465
5	14-05-2019	296673.77	0	74.79	2.854	210.88728	6.465
5	21-05-2019	301615.49	0	75.2	2.826	211.16902	6.465
5	28-05-2019	310013.11	0	79.81	2.759	211.45077	6.465
5	4/6/2019	337825.89	0	79.54	2.705	211.73251	6.465
5	11/6/2019	296641.91	0	80.7	2.668	212.01426	6.465
5	18-06-2019	313795.6	0	83.91	2.637	212.01198	6.465
5	25-06-2019	295257.3	0	83.72	2.653	211.89608	6.465
5	2/7/2019	305993.27	0	81.25	2.669	211.78019	6.496
5	9/7/2019	291808.87	0	81.14	2.642	211.66429	6.496
5	16-07-2019	280701.7	0	83.98	2.623	211.65611	6.496
5	23-07-2019	274742.63	0	83.66	2.608	211.79156	6.496
5	30-07-2019	268929.03	0	82.46	2.64	211.927	6.496
5	6/8/2019	303043.02	0	86.1	2.627	212.06244	6.496
5	13-08-2019	286477.35	0	87.41	2.692	212.19789	6.496
5	20-08-2019	287205.38	0	87.71	2.664	212.1609	6.496
5	27-08-2019	288519.75	0	87.05	2.619	212.12391	6.496
5	3/9/2019	323798	0	84.06	2.577	212.08692	6.496
5	10/9/2019	306533.08	1	79.86	2.565	212.04993	6.496
5	17-09-2019	282558.65	0	82.28	2.582	212.07693	6.496
5	24-09-2019	293131.58	0	78.53	2.624	212.15194	6.496
5	1/10/2019	283178.12	0	71.1	2.603	212.22695	6.768
5	8/10/2019	290494.85	0	64.99	2.633	212.30195	6.768
5	15-10-2019	280681.2	0	68.11	2.72	212.36919	6.768
5	22-10-2019	284988.27	0	70.96	2.725	212.41699	6.768
5	29-10-2019	278031.81	0	70.58	2.716	212.4648	6.768
5	5/11/2019	325310.3	0	58.88	2.689	212.51261	6.768
5	12/11/2019	301827.36	0	62.37	2.728	212.56041	6.768
5	19-11-2019	297384.81	0	52.52	2.771	212.44549	6.768
5	26-11-2019	488362.61	1	66.15	2.735	212.30344	6.768
5	3/12/2019	344490.88	0	51.31	2.708	212.1614	6.768
5	10/12/2019	352811.53	0	48.27	2.843	212.01935	6.768
5	17-12-2019	367801.19	0	51.61	2.869	211.95808	6.768
5	24-12-2019	466010.25	0	55.01	2.886	211.9574	6.768
5	31-12-2019	298180.18	1	49.79	2.943	211.95671	6.768
5	7/1/2020	286347.26	0	48.3	2.976	211.95603	6.634
5	14-01-2020	260636.71	0	37.74	2.983	212.00851	6.634
5	21-01-2020	275313.34	0	45.41	3.016	212.38	6.634
5	28-01-2020	279088.39	0	44.5	3.01	212.75149	6.634
5	4/2/2020	329613.2	0	41.67	2.989	213.12298	6.634
5	11/2/2020	311590.54	1	38.25	3.022	213.49446	6.634
5	18-02-2020	356622.61	0	58.83	3.045	213.80683	6.634
5	25-02-2020	294659.5	0	63.35	3.065	214.09555	6.634
5	4/3/2020	329033.66	0	60.35	3.288	214.38427	6.634
5	11/3/2020	293098.1	0	55.74	3.459	214.67299	6.634
5	18-03-2020	312177.67	0	64.31	3.488	214.92573	6.634
5	25-03-2020	294732.5	0	70.71	3.473	215.16409	6.634
5	1/4/2020	314316.55	0	61.5	3.524	215.40244	6.489
5	8/4/2020	307333.62	0	69.64	3.622	215.64079	6.489
5	15-04-2020	307913.58	0	72.02	3.743	215.85927	6.489
5	22-04-2020	328415.44	0	74.34	3.807	216.02804	6.489
5	29-04-2020	307291.56	0	74.75	3.81	216.19681	6.489
5	6/5/2020	322904.68	0	66.27	3.906	216.36559	6.489
5	13-05-2020	290930.01	0	77.38	3.899	216.53436	6.489
5	20-05-2020	299614.33	0	71.37	3.907	216.30238	6.489
5	27-05-2020	297149.69	0	80.14	3.786	216.07041	6.489
5	3/6/2020	329183.92	0	83.81	3.699	215.83843	6.489
5	10/6/2020	304984.14	0	83.61	3.648	215.60646	6.489
5	17-06-2020	304811.82	0	86.84	3.637	215.56046	6.489
5	24-06-2020	302881.64	0	84.76	3.594	215.65396	6.489
5	1/7/2020	327093.89	0	85.81	3.524	215.74745	6.529

5	8/7/2020	310804.93	0	86.64	3.48	215.84095	6.529
5	15-07-2020	283248.62	0	88.64	3.575	215.92507	6.529
5	22-07-2020	292539.73	0	86.97	3.651	215.98575	6.529
5	29-07-2020	275142.17	0	89.42	3.682	216.04644	6.529
5	5/8/2020	317738.56	0	91.07	3.684	216.10712	6.529
5	12/8/2020	289886.16	0	90.16	3.638	216.1678	6.529
5	19-08-2020	303643.84	0	89.35	3.554	216.23119	6.529
5	26-08-2020	310338.17	0	89.18	3.523	216.29502	6.529
5	2/9/2020	315645.53	0	90.38	3.533	216.35885	6.529
5	9/9/2020	321110.22	1	79.04	3.546	216.42268	6.529
5	16-09-2020	278529.71	0	83.55	3.526	216.60331	6.529
5	23-09-2020	291024.98	0	78.01	3.467	216.93966	6.529
5	30-09-2020	292315.38	0	81.16	3.355	217.27601	6.529
5	7/10/2020	309111.47	0	71.64	3.285	217.61236	6.3
5	14-10-2020	286117.72	0	72.36	3.274	217.92375	6.3
5	21-10-2020	306069.18	0	66.9	3.353	218.0853	6.3
5	28-10-2020	307035.11	0	69.27	3.372	218.24685	6.3
5	4/11/2020	353652.23	0	56.71	3.332	218.40841	6.3
5	11/11/2020	311906.7	0	60.71	3.297	218.56996	6.3
5	18-11-2020	307944.37	0	64.33	3.308	218.79391	6.3
5	25-11-2020	507900.07	1	61.93	3.236	219.04282	6.3
5	2/12/2020	376225.61	0	51.14	3.172	219.29173	6.3
5	9/12/2020	367433.77	0	44.12	3.158	219.54064	6.3
5	16-12-2020	379530.3	0	54.42	3.159	219.75963	6.3
5	23-12-2020	458562.24	0	50.33	3.112	219.93872	6.3
5	30-12-2020	349624.88	1	45.62	3.129	220.11782	6.3
5	6/1/2021	312078.71	0	50.21	3.157	220.29692	5.943
5	13-01-2021	291454.52	0	48.86	3.261	220.47602	5.943
5	20-01-2021	287523.98	0	54.65	3.268	220.56941	5.943
5	27-01-2021	295974.22	0	54.63	3.29	220.6628	5.943
5	3/2/2021	333948	0	57.35	3.36	220.75619	5.943
5	10/2/2021	349239.88	1	48.57	3.409	220.84959	5.943
5	17-02-2021	356427.98	0	48.25	3.51	221.01063	5.943
5	24-02-2021	312220.47	0	57.75	3.555	221.22242	5.943
5	2/3/2021	359206.21	0	60.66	3.63	221.43421	5.943
5	9/3/2021	347295.6	0	57.69	3.669	221.646	5.943
5	16-03-2021	339392.54	0	63.55	3.734	221.79897	5.943
5	23-03-2021	321299.99	0	64.44	3.787	221.87351	5.943
5	30-03-2021	331318.73	0	67.76	3.845	221.94804	5.943
5	6/4/2021	402985.7	0	70.4	3.891	222.02258	5.801
5	13-04-2021	351832.03	0	70.56	3.891	222.09711	5.801
5	20-04-2021	330063.06	0	67.33	3.877	222.15123	5.801
5	27-04-2021	324839.74	0	68.96	3.814	222.20535	5.801
5	4/5/2021	360932.69	0	77.1	3.749	222.25947	5.801
5	11/5/2021	333870.52	0	73.45	3.688	222.31359	5.801
5	18-05-2021	336189.66	0	70.45	3.63	222.33044	5.801
5	25-05-2021	341994.48	0	78.23	3.561	222.33239	5.801
5	1/6/2021	359867.8	0	79.72	3.501	222.33433	5.801
5	8/6/2021	341704.59	0	81.02	3.452	222.33627	5.801
5	15-06-2021	327383.64	0	81.64	3.393	222.34929	5.801
5	22-06-2021	325041.68	0	80.57	3.346	222.39	5.801
5	29-06-2021	329658.1	0	87.08	3.286	222.43072	5.801
5	6/7/2021	341214.43	0	82.35	3.227	222.47143	5.603
5	13-07-2021	316203.64	0	80.78	3.256	222.51215	5.603
5	20-07-2021	321205.12	0	81.05	3.311	222.52094	5.603
5	27-07-2021	306827.36	0	85.06	3.407	222.52972	5.603
5	3/8/2021	324195.17	0	86.91	3.417	222.53851	5.603
5	10/8/2021	306759.7	0	86.96	3.494	222.5473	5.603
5	17-08-2021	314014.18	0	87.52	3.571	222.62768	5.603
5	24-08-2021	320831.36	0	79.45	3.62	222.76174	5.603
5	31-08-2021	344642.01	0	84.25	3.638	222.89581	5.603
5	7/9/2021	350648.91	1	86.3	3.73	223.02988	5.603
5	14-09-2021	299800.67	0	76.65	3.717	223.17342	5.603
5	21-09-2021	307306.76	0	71.09	3.721	223.37376	5.603
5	28-09-2021	310141.68	0	78.33	3.666	223.5741	5.603
5	5/10/2021	343048.29	0	71.17	3.617	223.77444	5.422
5	12/10/2021	325345.41	0	66.24	3.601	223.97479	5.422
5	19-10-2021	313358.15	0	69.17	3.594	224.01929	5.422
5	26-10-2021	319550.77	0	71.7	3.506	224.03781	5.422