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LANGUAGE

Python

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# Twitter Data Sentiment Analysis

Twitter tweets are an attractive data source to analyze as Twitter users tweet about many different topics in which they not only impart knowledge to others but also express their feelings and opinions. Analyzing this data can result in valuable insights and can be useful to detect trends and drive business decisions.

Notebooks are a powerful platform for data scientists to analyze Twitter data.

## Auto Industry Tweets

This notebook analyzes Twitter data to glean insights about the automotive industry. As the automotive industry is one of the largest industries in the world and still very much a growth industry, analyzing tweets about cars can assist manufacturers to pay closer attention to market dynamics and position their companies to take advantage of demographic changes and shifts in consumer expectations.

## Learning goals

The notebook is structured into different sections. In the first sections, you will perform a general analysis on the data set then you will go deeper in the analysis to gain meaningful insights about manufacturers.

1. Determine the countries with the highest number of tweets (based on the user profile information).
2. Analyze tweet sentiments
3. Draw insights from tweets about major car manufacturers worldwide by combining Twitter timeline analysis with sentiment, gender distribution and location distribution.

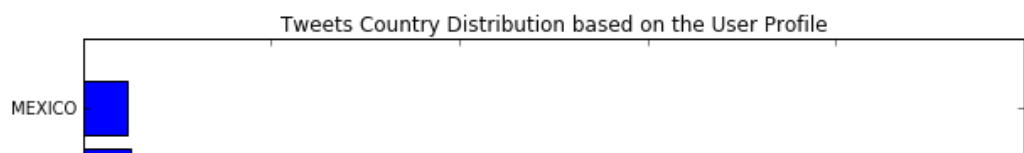
## The data set

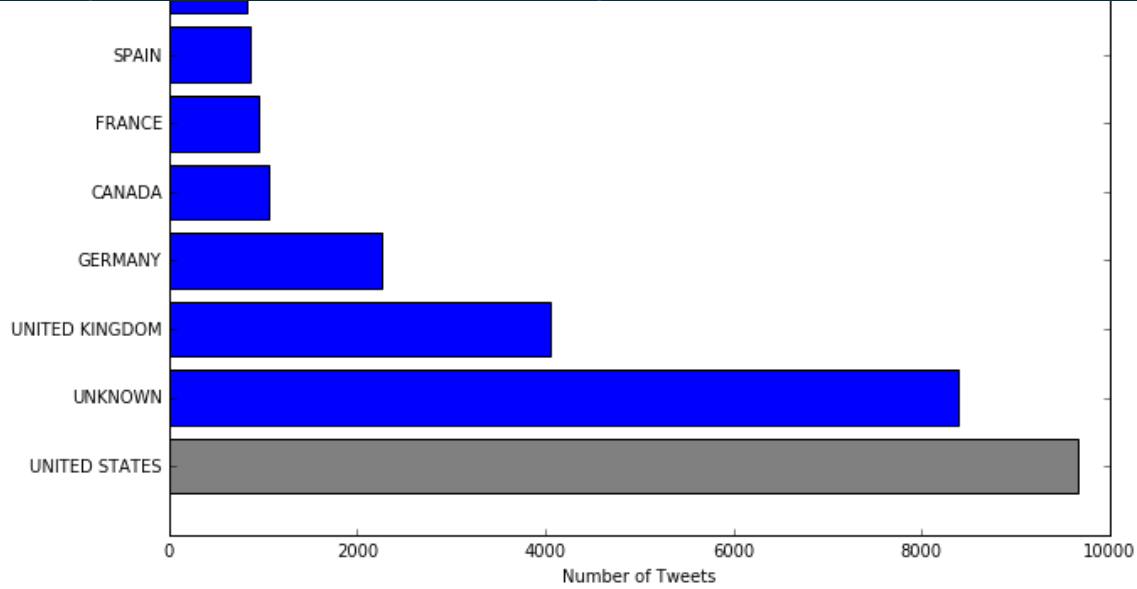
Number of tweets: 127898

Number of sentiment records: 41280

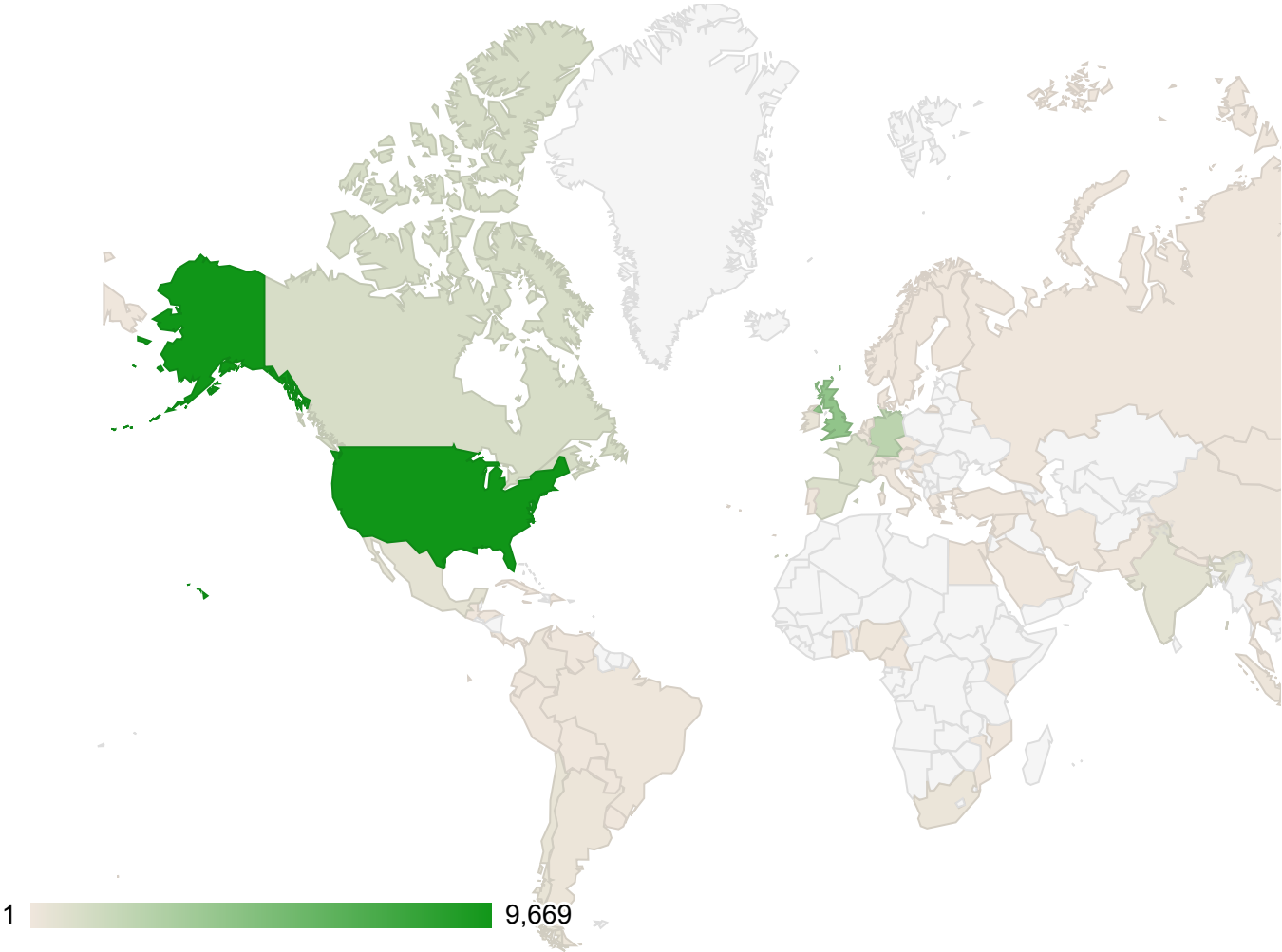
Aggregated tweets with sentiment scores: 31877

## Distribution of tweets by country



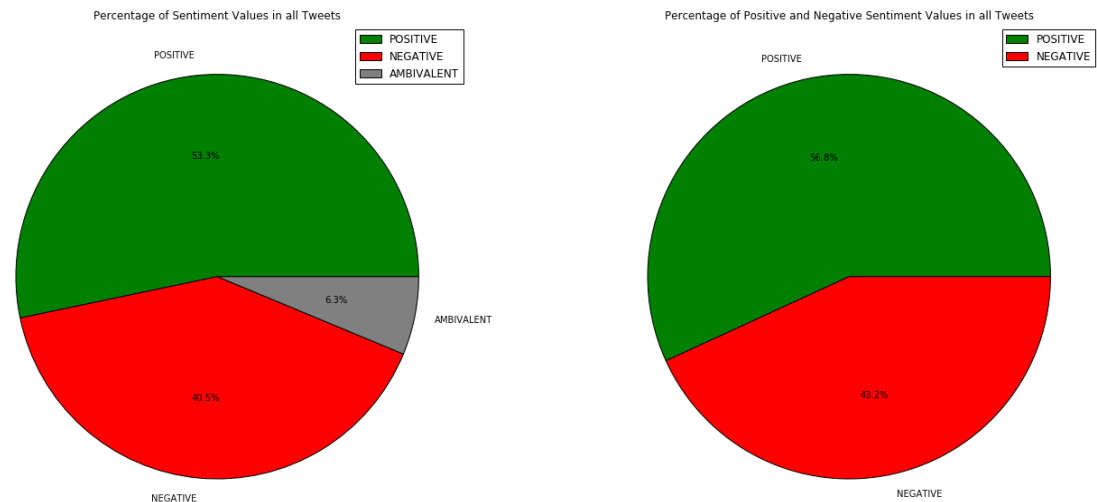


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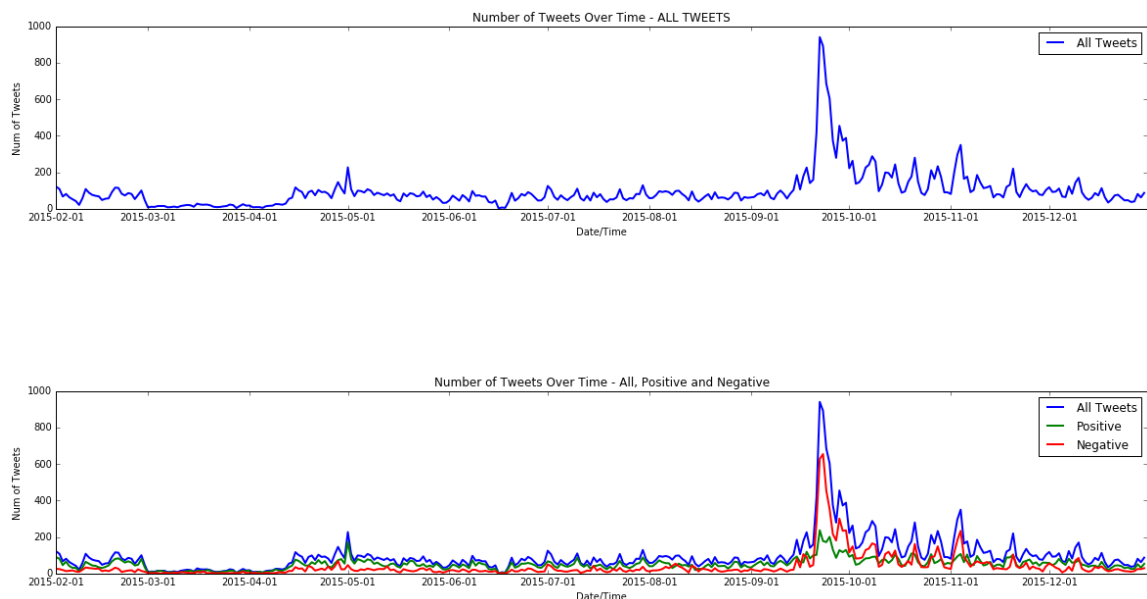


Sentiment analysis is one of the most valuable sources of information that the IBM twitter API provides. By giving each tweet a sentiment value, you can determine whether the content of a tweet is positive, negative, ambivalent, neutral, or NULL, if no value is provided by the API. Unfortunately, a sentiment value is provided for English, German, French, and Spanish tweets only. As the data set also has tweets in other languages, only a subset of the tweets in the data set have a sentiment value.



## Analyzing tweet timelines

To learn more about which car manufacturing events occurred in 2015, you can plot data over time. The following section groups all tweets created in 2015 by their posting date (and sentiment value) and counts the number of tweets per date.

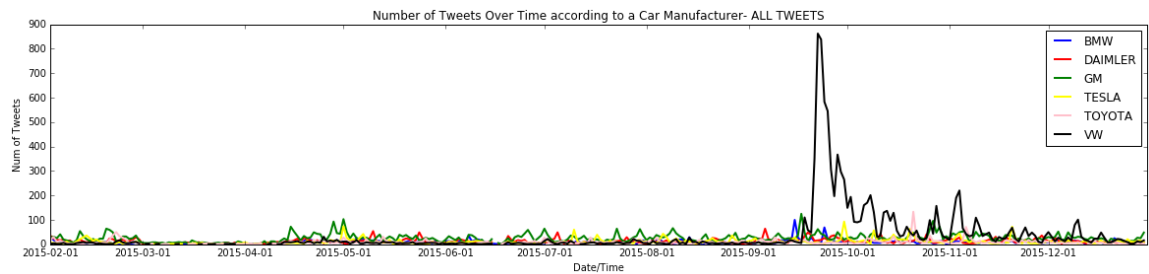




## Insights from tweets about car manufacturers

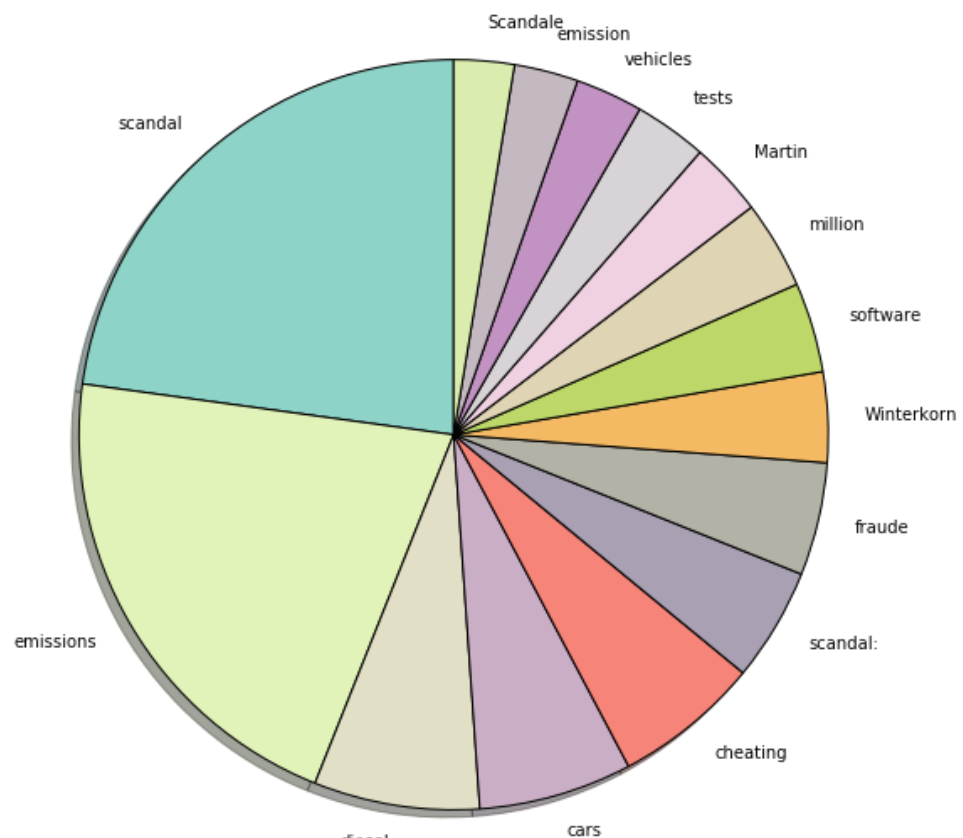
This section combines different types of analyses to dig deeper into the list of car manufacturers (Volkswagen, Toyota, BMW, Daimler, and General Motors). The purpose of the analyses is to obtain car manufacturer-based insights from tweets that could be interesting and useful to detect potential car buyers. The first step is to detect the tweets that mention certain car manufacturers.

### Analyzing tweet timelines by car maker



### Explaining the peak of tweets for VW

September 15, 2015 - October 15, 2015

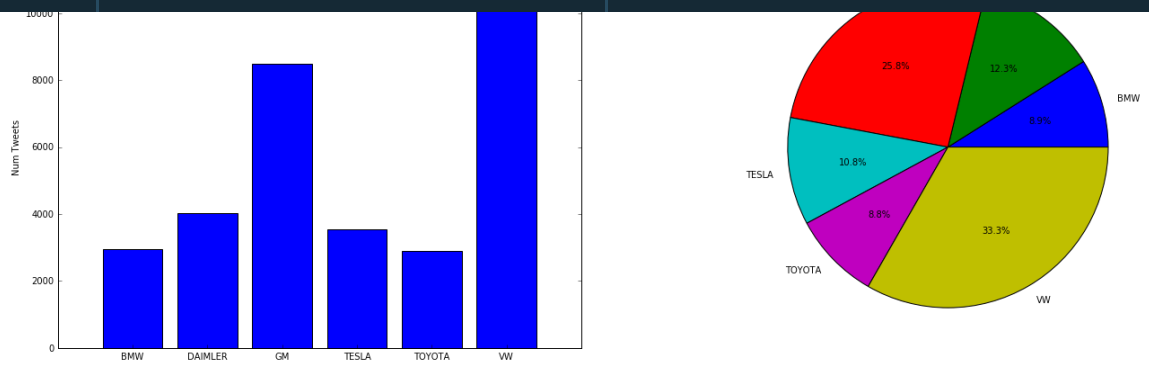




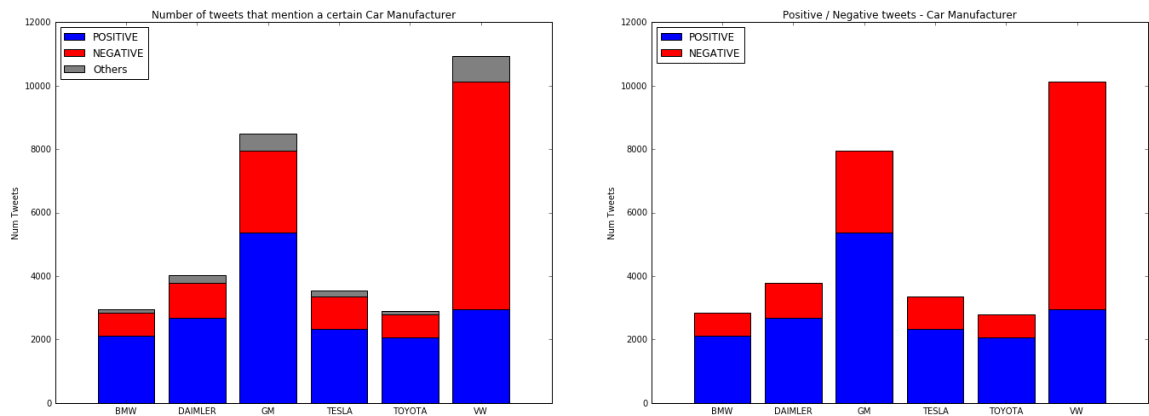
## Sentiment analysis by car maker



## Tweet distribution by car manufacturer

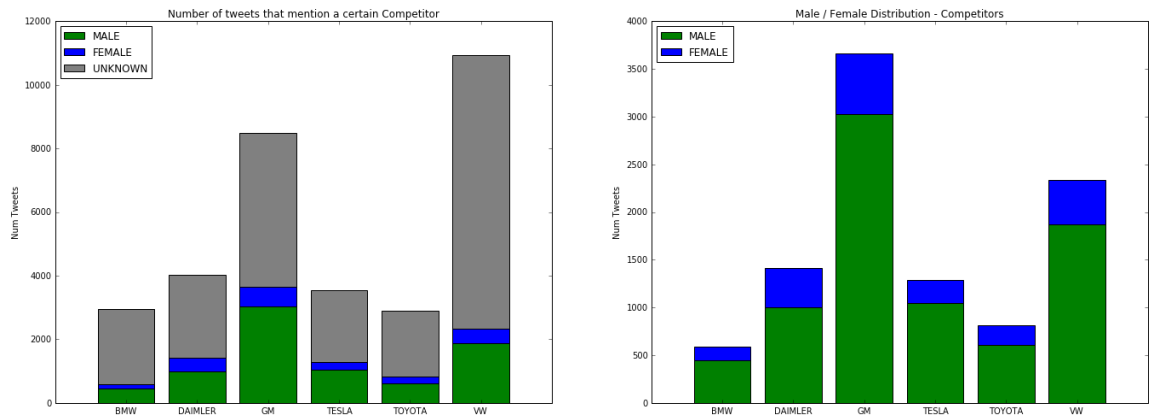


## Tweet distribution by sentiment by car maker



## Gender distribution

Another interesting insight when analyzing tweets about certain car manufacturers and what car manufacturers might want to pay more attention to for marketing purposes is the distribution of tweets between male and female users.

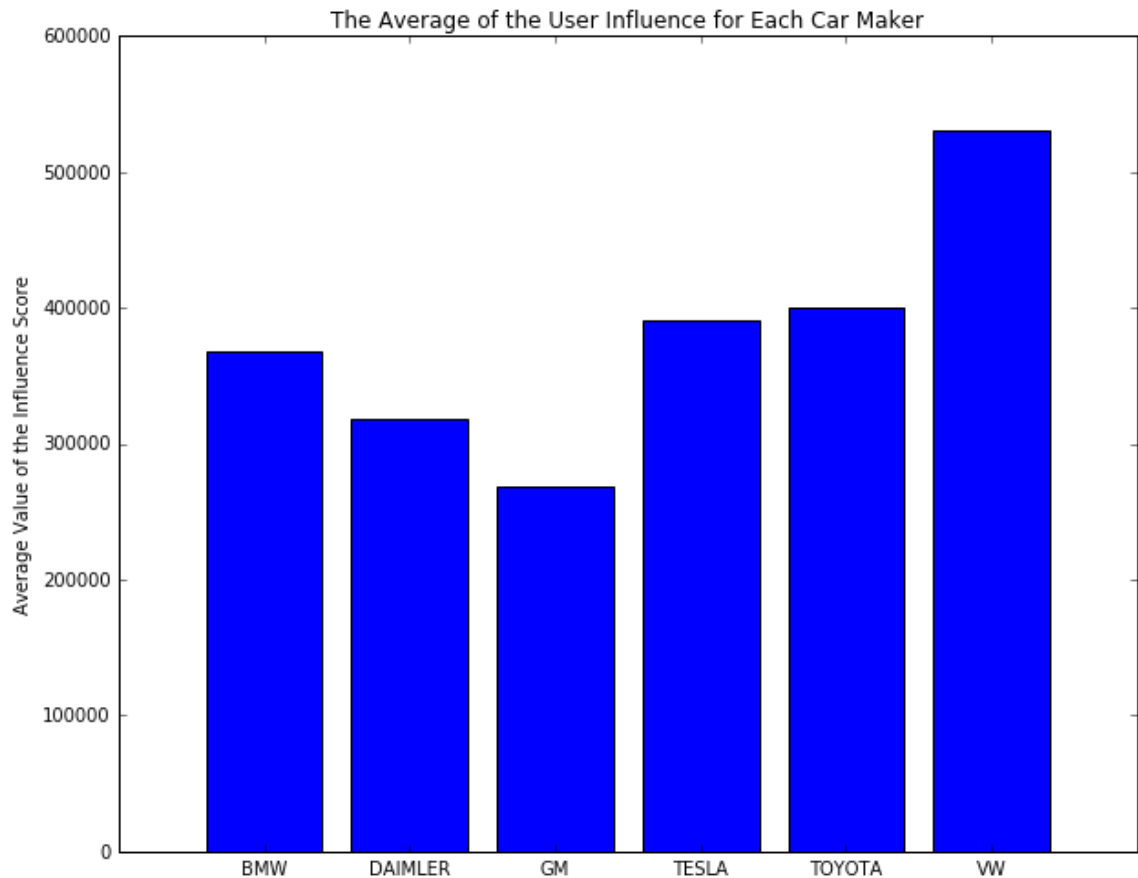




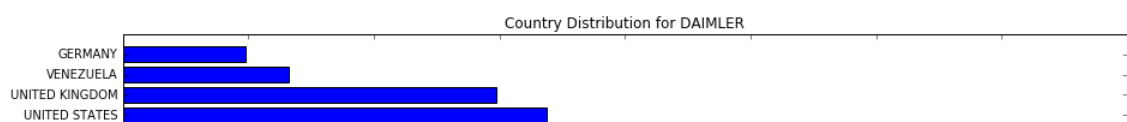
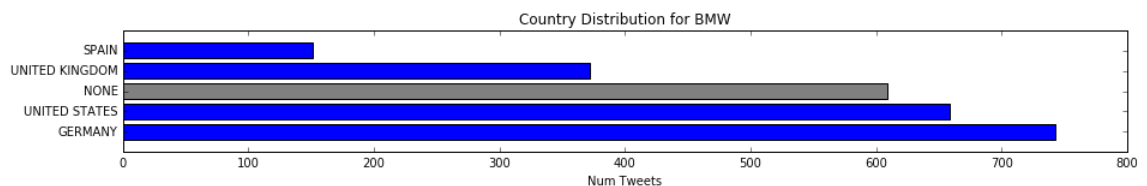
In this section, we will calculate the average value of the influence variable of the people who tweeted about a certain car maker. The influence variable is calculated by:

$$\text{Influence} = ( \text{num of followers} + \text{number of friends} ) \div 2$$

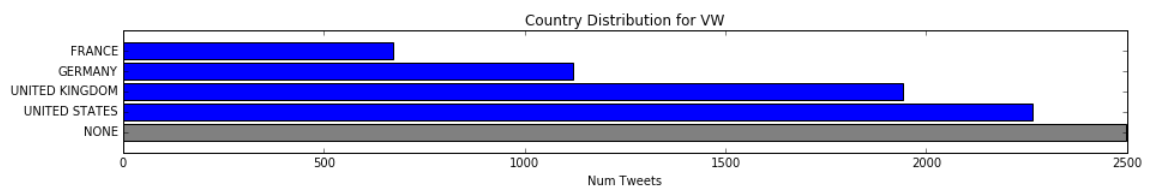
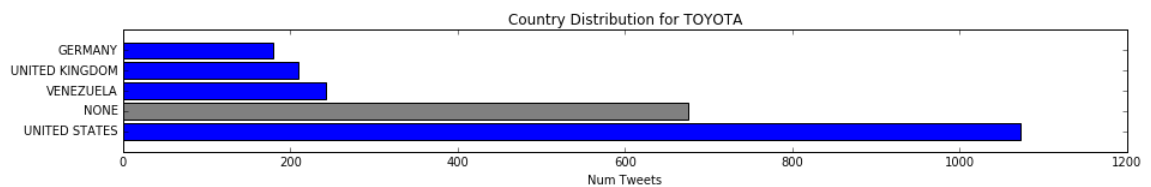
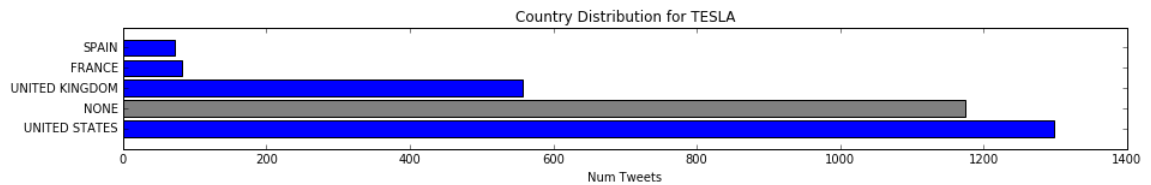
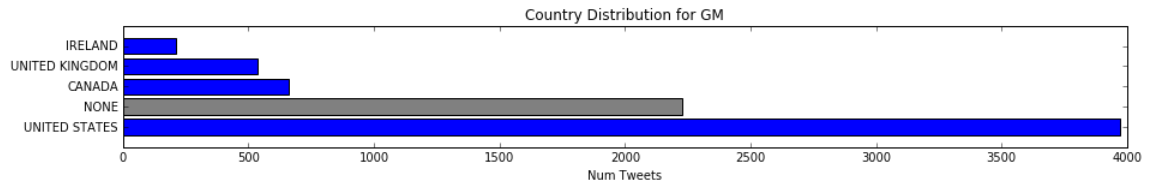
The influence score gives an indication whether someone is a famous person or a public figure in society or whether the twitter account is owned by the media or a company. This average value gives an indication about the people who are interested in a certain car maker.



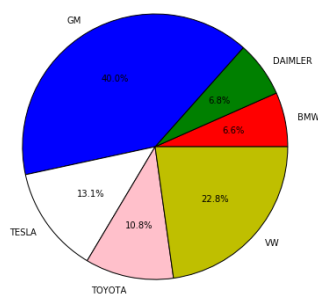
## Distribution of tweets by country across car manufacturer



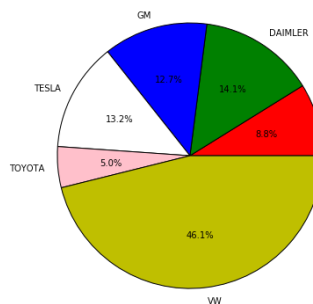




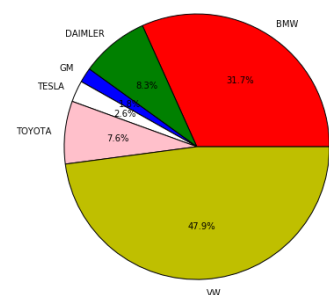
Percentage of Tweets from Users in US among Car Makers



Percentage of Tweets from Users in UK among Car Makers



Percentage of Tweets from Users in GERMANY among Car Makers



## Summary

In this notebook you learned how to use notebooks to analyze Twitter data and extract interesting insights from tweets. You learned how to easily perform complex computations on a large amount of data in a notebook by using SparkContext, which enables you to start tasks on the Spark cluster. In addition, you learned how to integrate data from dashDB using the Spark connector and how to use Spark and pandas DataFrames.



**Data Science** Experience 





**Data Science** Experience 

