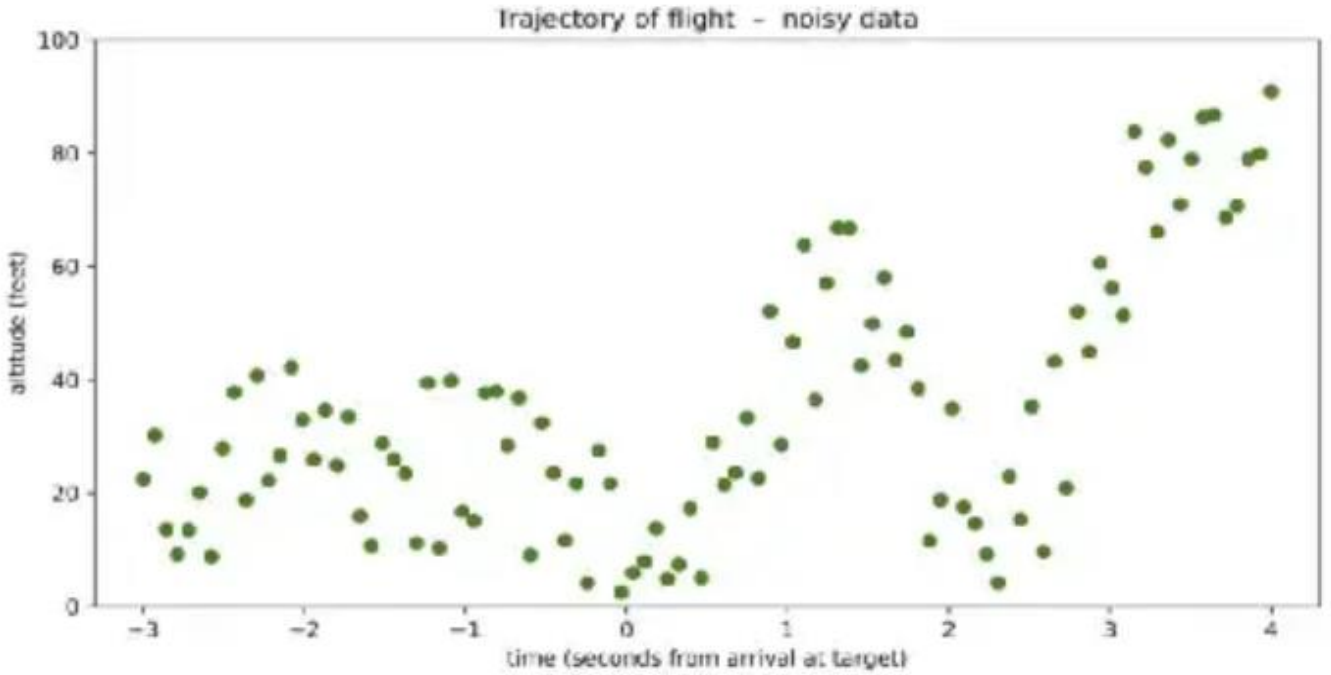
Data Smoothing

Data smoothing refers to a statistical approach of eliminating outliers from datasets to make the patterns more noticeable. It is achieved using algorithm to eliminate statistical noise from datasets. This allows important patterns to more clearly stand out.

Use of Data Smoothing:

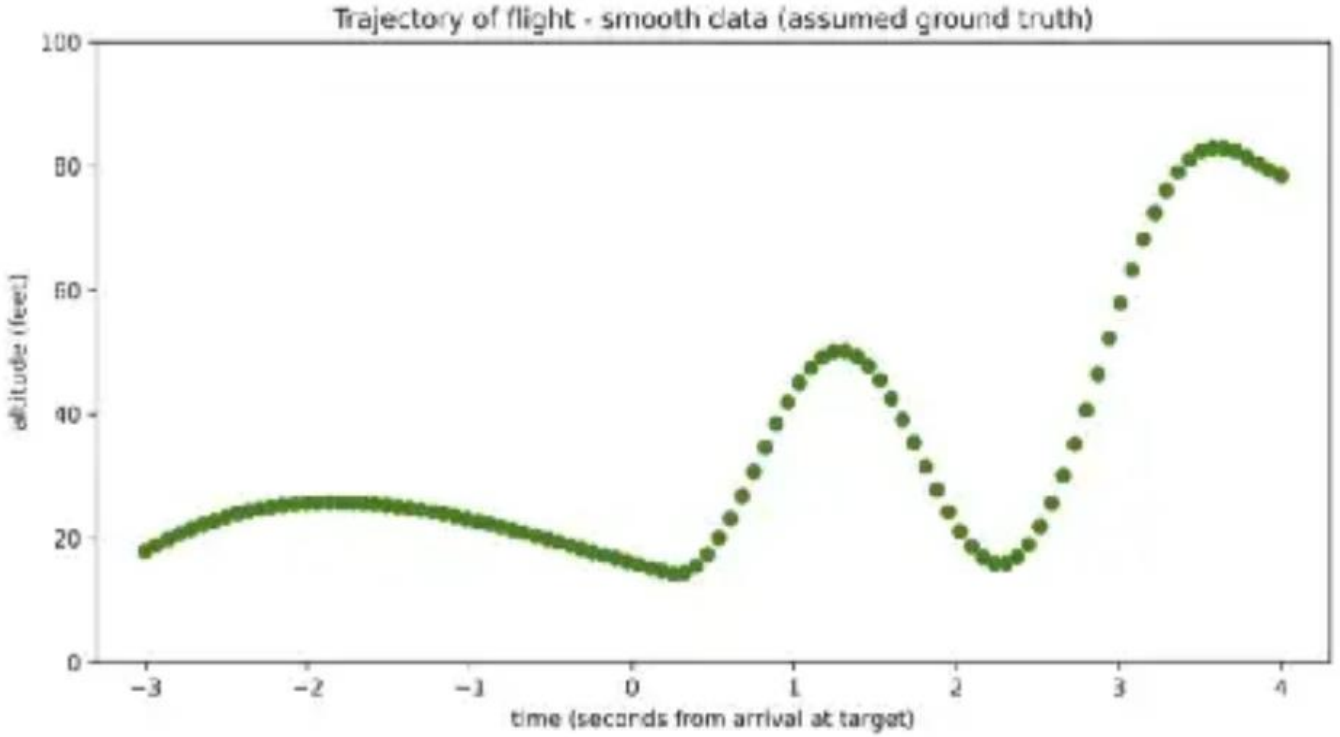
It mainly focuses on creating a basic direction for the main data points by avoiding all the volatile pieces of data which help in drawing a smoother curve across all the data points. Data smoothing can help forecast patterns, such as those seen in share prices. This allows them to clearly stand out. Data smoothing can also help predict trends in the price movement of a security. It serves as a good tool is economic analysis as well.

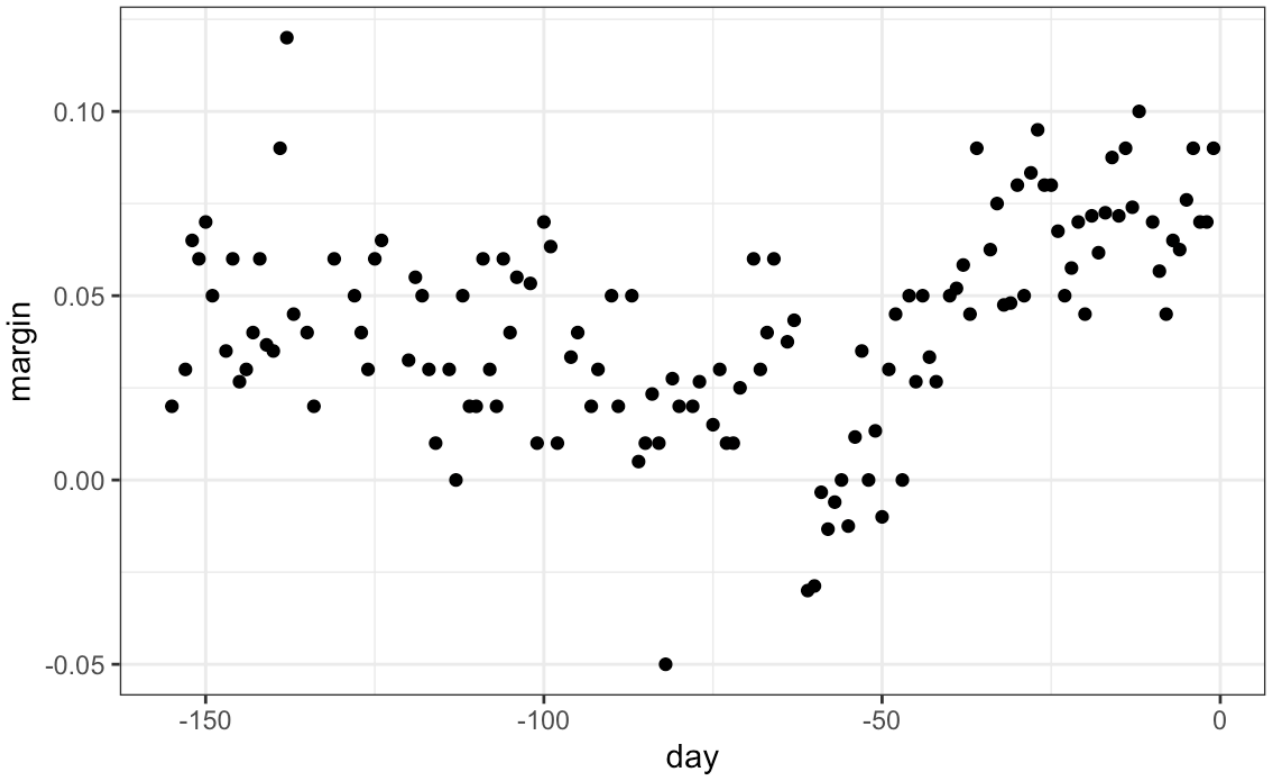
When data is compiled, it can be manipulated to remove or reduce noise in it. Data smoothing helps in predicting different trends and patterns It acts as an aid for statisticians or traders who need to look at a lot of data that can often be complicated to process.

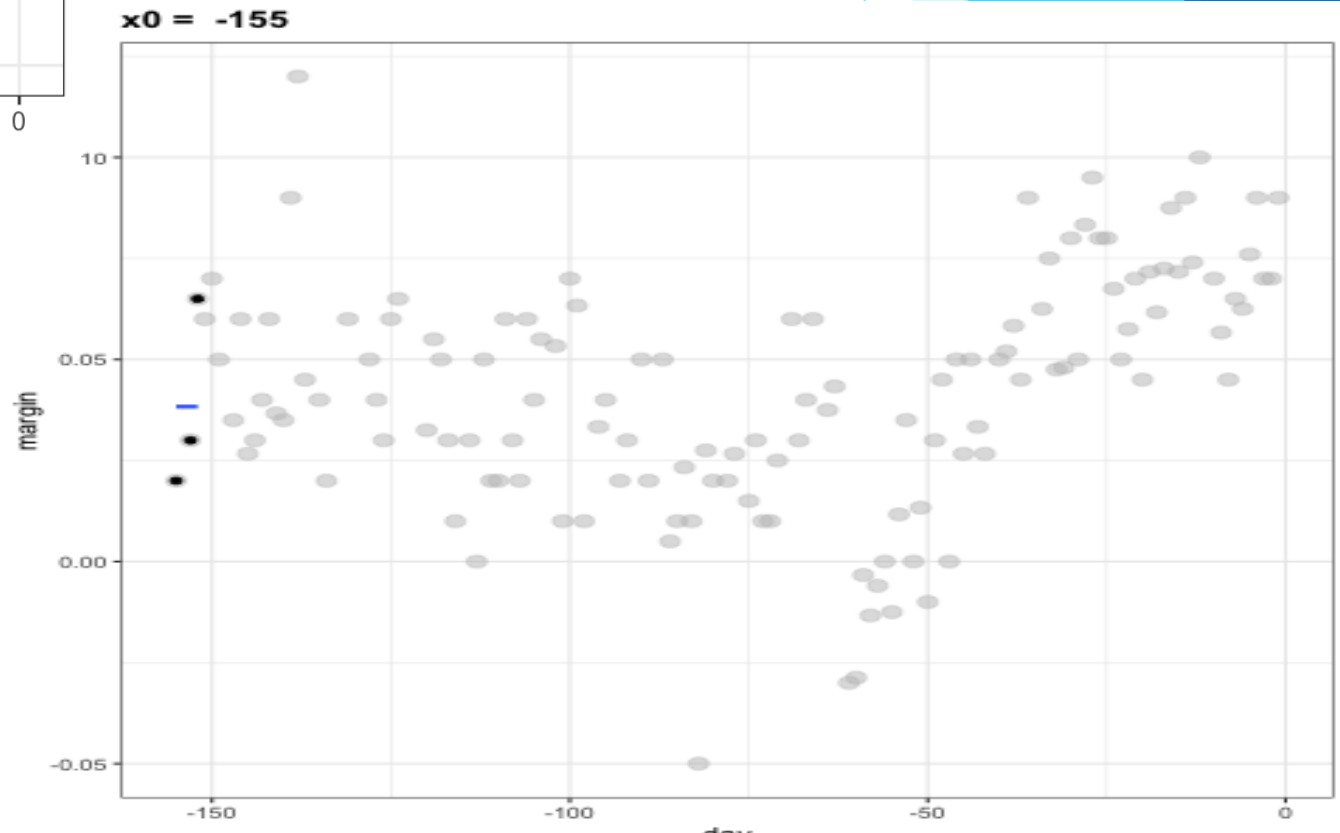


This is the noisy data, we can not supposed to identify the pattern clearly.

This is after smoothing the nosy data. After smoothing the data we can clearly identify the pattern in our data




0.10
0.05
0.00
-0.05
margin
-150
-100
-50
0
day


x0 = -155
10
0.05
0.00
-0.05
margin
-150
-100
-50
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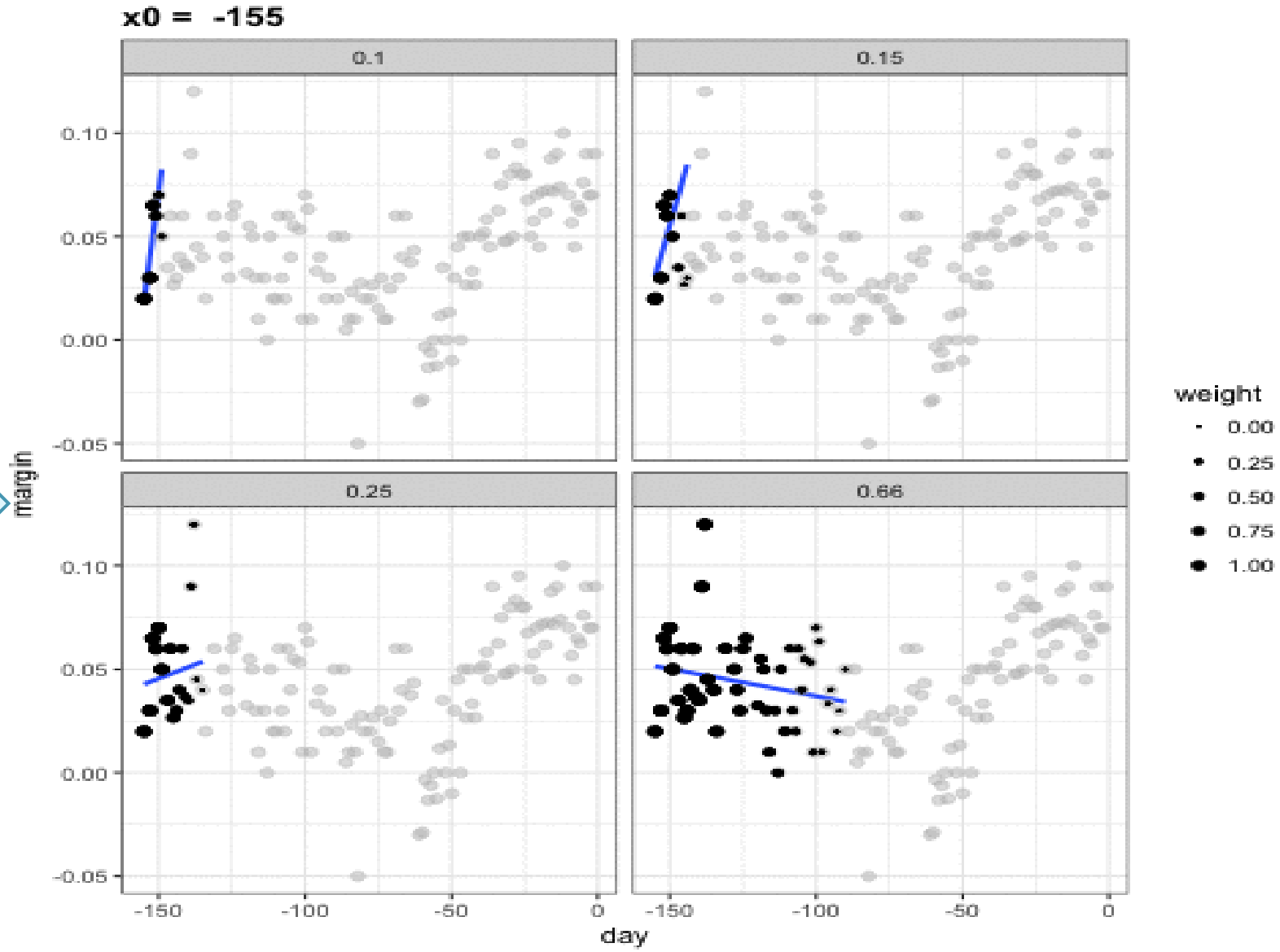
These are the visualizations of the smoothing of same data in different window size. We also want so concentrate on the window size to get the clear pattern.



Data smoothing can be used to help predict trends, such as those found in securities prices, as well as in economic analysis. Data smoothing is intended to ignore one-time outliers and take into account the effects of seasonality.

KEY TAKEAWAYS

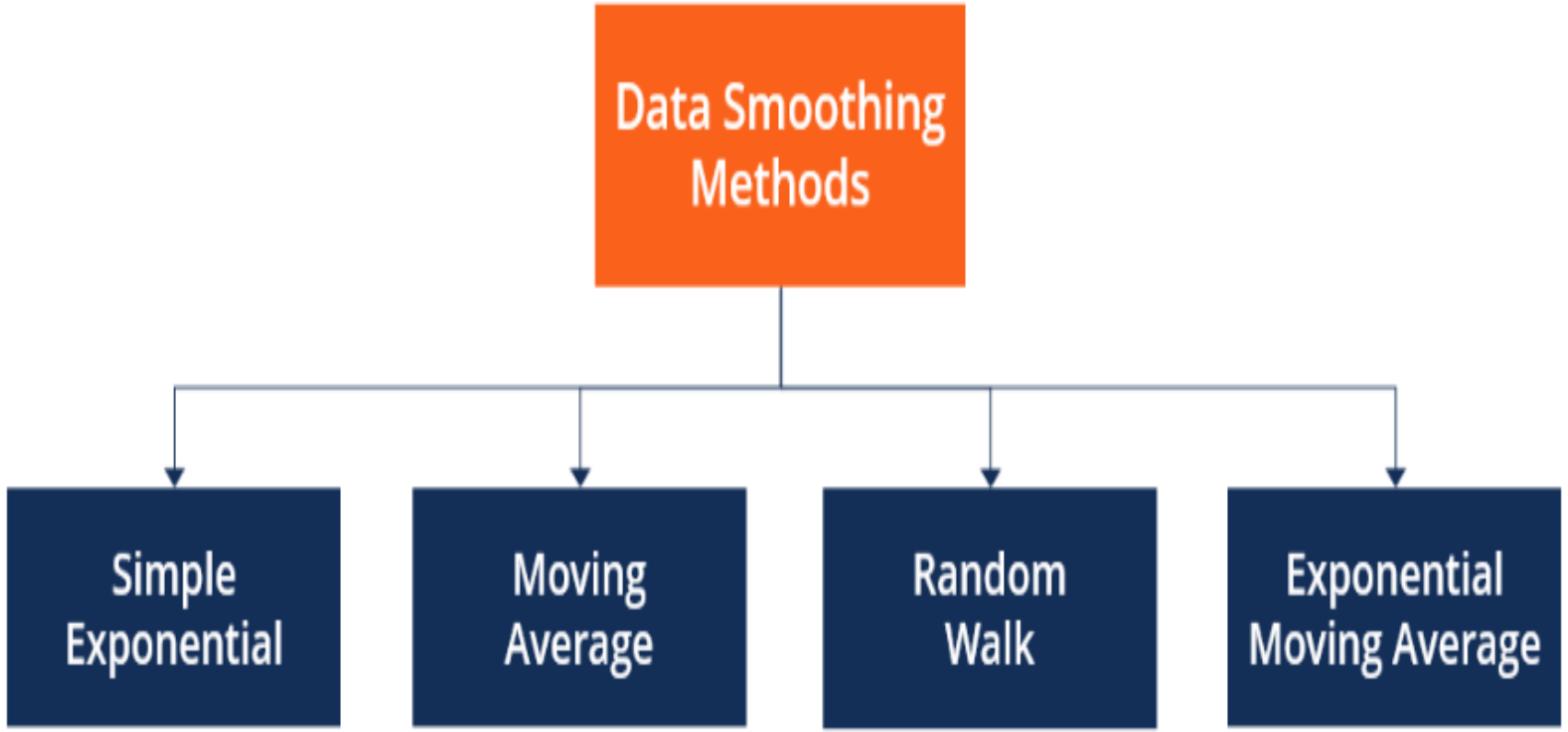
- Data smoothing uses an algorithm to remove noise from a data set, allowing important patterns to stand out.
- Data smoothing can be used to predict trends, such as those found in securities prices.
- Different data smoothing models include the random method the use of moving averages.
- While data smoothing can help predict certain trends, it will inherently lead to less information in the sample that may lead to certain data points being ignored.

Pros :

- Helps identify real trends by eliminating noise from the data
- Allows for seasonal adjustments of economic data

Cons :

- Removing data always comes with less information to analyze, increasing the risk of errors in analysis
- Smoothing may emphasize analysts' biases and ignore outliers that may be meaningful


Data Smoothing Methods
Simple Exponential
Moving Average
Random Walk
Exponential Moving Average

THANK YOU