

## WEBSITE TRAFFIC ANALYSIS :

Website traffic analysis is the practice of evaluating and examining data related to the visitors and their activities on a website. This process typically involves using web analytics tools to gather information about user interactions, such as the number of visitors, their geographical locations, the pages they visit, the time spent on the site, and how they found the website (e.g., through search engines, social media, or referrals). The objective of website traffic analysis is to gain insights into user behavior, preferences, and engagement patterns, allowing website owners to make informed decisions about content, design, marketing strategies, and overall website optimization. This data-driven approach helps enhance the performance and user experience of a website.

## INTRODUCTION :

Website traffic analysis is the process of examining the data related to visitors and their interactions with a website. It provides valuable insights into how users engage with your site, helping you make data-driven decisions to improve its performance and user experience. Key aspects of website traffic analysis include tracking the number of visitors, their demographics, referral sources, popular pages, and user behavior. This data is typically collected using web analytics tools like Google Analytics. By analyzing this information, website owners can optimize content, design, and marketing strategies to enhance user engagement, conversion rates, and overall site effectiveness.

```
In [1];
import math
from scipy.stats import norm
import numpy as np # Linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
import matplotlib.pyplot as plt
from IPython.core.display import HTML
import os

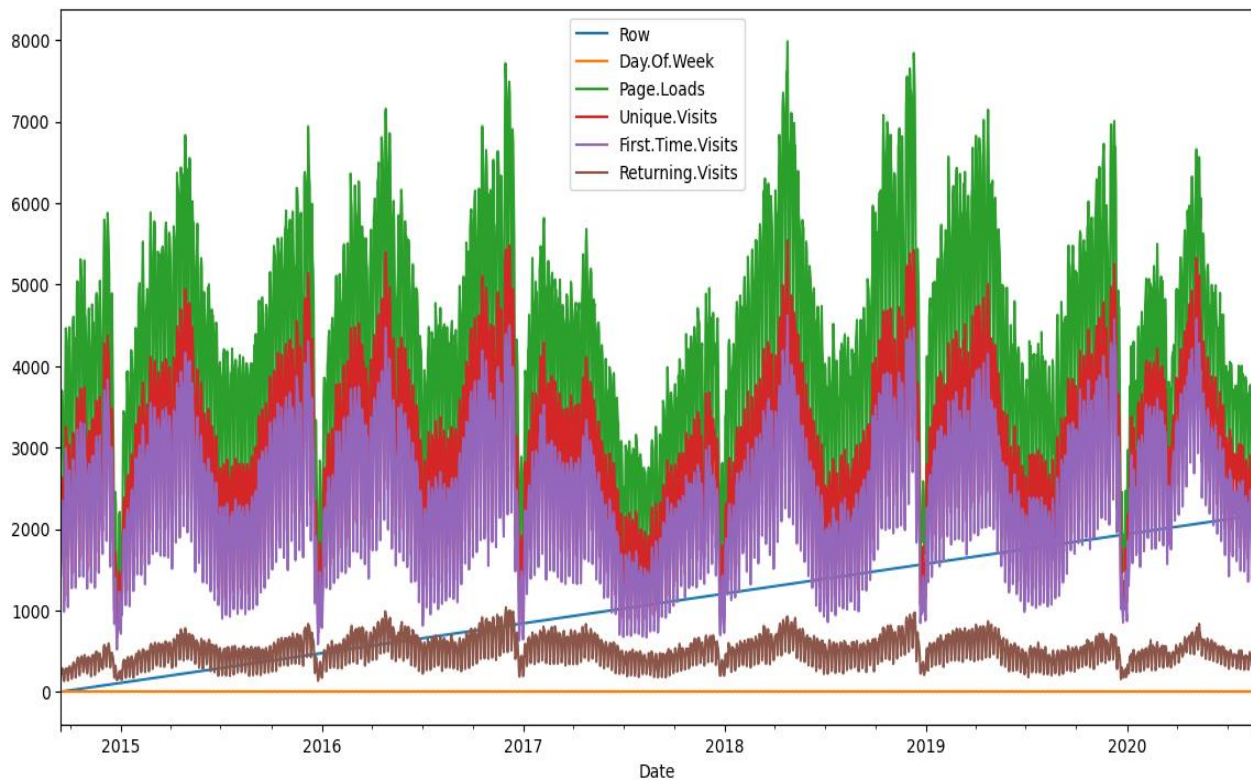
for dirname, _, filenames in os.walk('/kaggle/input'):

    for filename in filenames:

        print(os.path.join(dirname, filename))
df = pd.read_csv("/kaggle/input/daily-website-visitors/daily-website-visitors.csv", \
                  index_col = 'Date', thousands = ',', parse_dates=True)
df.head()

df.plot(figsize=(14,7))
<AxesSubplot:xlabel='Date'>
```

	Row	Day	Day of week	Page loads	Unique visits	First time visits	Returning visits
Date							
2014-09-14	1	Sunday	1	2146	1582	1430	152
2014-09-15	2	Monday	2	3621	2528	2297	231
2014-09-16	3	Tuesday	3	3698	2630	2352	278
2014-09-17	4	Wednesday	4	3667	2614	2327	287
2014-09-18	5	Thursday	5	3316	2366	2130	236



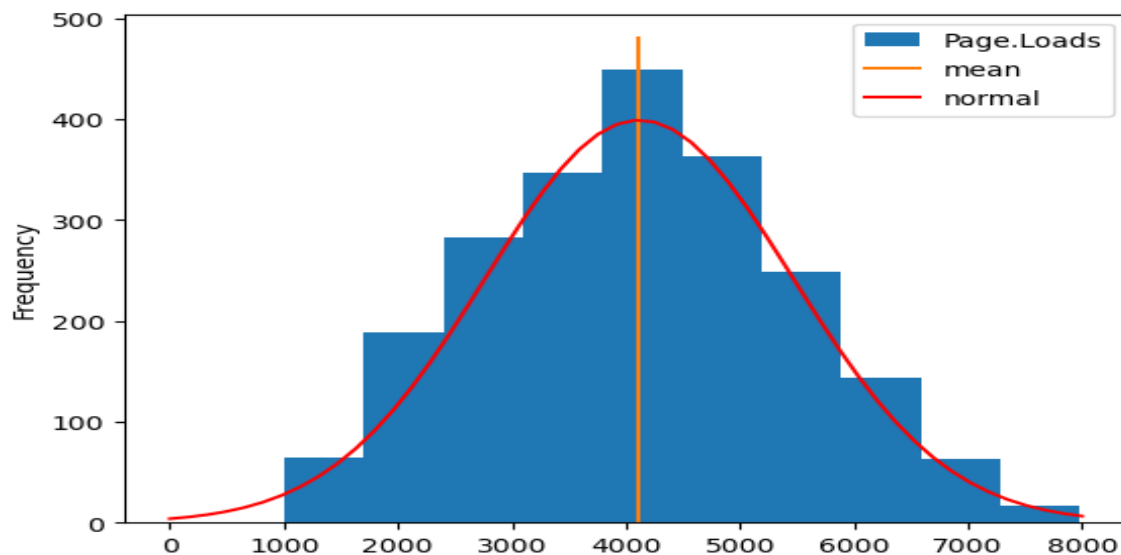
```
def prob(t, n, lmbda):
    return math.pow(lmbda * t, n)/math.factorial(n)*math.exp(-lmbda*t)
mean = df['Page.Loads'].mean()
print( "mean loads per day:", mean)
std = df['Page.Loads'].std()
print( "std deviation of loads per day:", std)
n = 1
px = np.linspace(1, 8000, 50)
py = np.zeros(50)
for i in range(0, 50):
    x = (px[i]-mean)/std
    p = norm.pdf(x)
    py[i] = 1000*p
```

mean loads per day: 4116.9893862482695  
std deviation of loads per day: 1350.9778426999621

```
fig, ax1 = plt.subplots()
df['Page.Loads'].plot.hist(ax = ax1, label='Page.Loads')
```

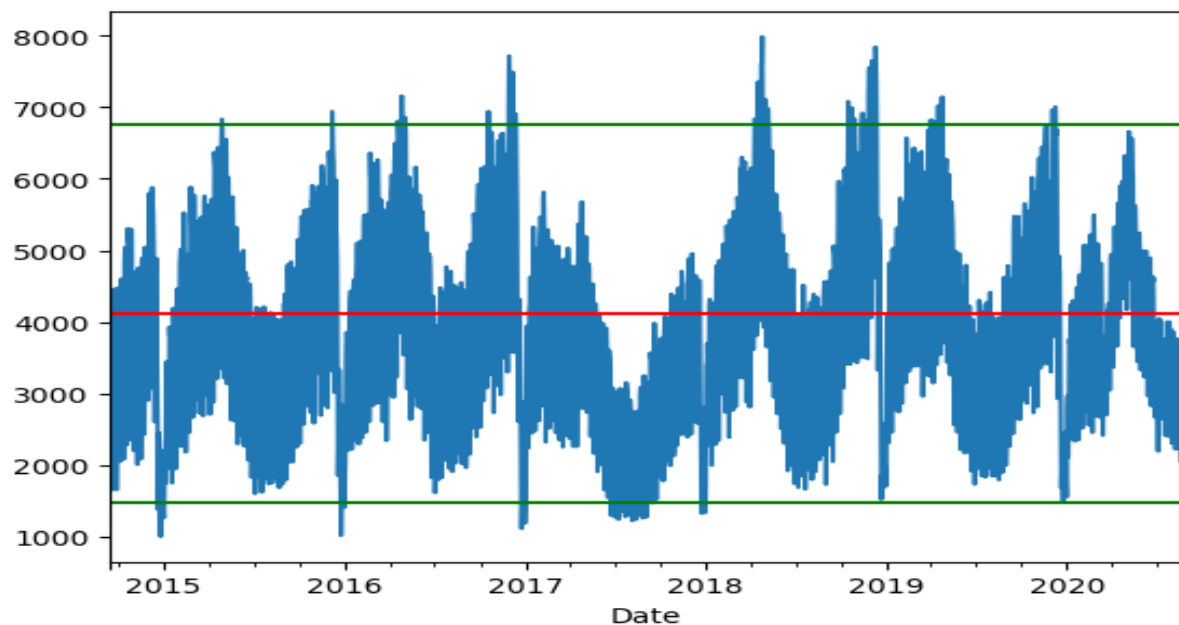
```
plt.plot([mean, mean], [0, 480], label='mean')
plt.plot(px, py, label='normal', color='red')
plt.legend()
plt.show()
```

HTML('<h3>using normal approximation to binomial distribution</h3>')



**using normal approximation to binomial distribution :**

```
fig, ax1 = plt.subplots()
df['Page.Loads'].plot(ax = ax1, label='Page.Loads')
plt.plot([df.index[0], df.index[-1]], [mean, mean], color='red')
upper = mean + 1.96*std
lower = mean - 1.96*std
plt.plot([df.index[0], df.index[-1]], [upper, upper], color='green')
plt.plot([df.index[0], df.index[-1]], [lower, lower], color='green')
plt.show()
```



```

outlier = 0
bulk = 0
for v in df['Page.Loads']:
    if v > upper or v < lower:
        outlier = outlier + v
    else:
        bulk = bulk + v
        tot = bulk + outlier
pctbulk = bulk / tot * 100.0
pctout = outlier / tot * 100.0
HTML("<h4>counts: bulk: {:,} {:.2f}% , outlier: {:,} {:.2f}%</h4>".format(bulk, pctbulk
, outlier, pctout))

```

counts: bulk: 8,485,433 95.11% , outlier: 436,083 4.89%

## CONCLUSION:

website traffic analysis is the linchpin of a successful online strategy. It provides the means to decode user behavior, optimize digital marketing initiatives, and continually refine our digital presence. By transforming raw data into actionable insights, we unlock the potential to engage, convert, and retain a loyal online audience. In a world where the internet's landscape is in perpetual flux, website traffic analysis acts as our guiding star, helping us navigate through the complexities of the digital realm and ensuring that our online efforts align with our overarching objectives. It's the key to staying not only relevant but thriving in the ever-evolving digital ecosystem, and it is an indispensable asset for any forward-thinking business or website owner.