Website Traffic Analysis..,

Project Submission Part 5: Project Documentation & Submission

Intoduction:

Website trafic analysis is the process of collecting, examining, and interpreting data related to the visitors and interactions on a website. Itprovides invaluable insights into user behavior, preferences, and trends, helping organizations make informed decisions, optimize their online presence, and enhance user experiences.

Abstract:

This project aims to analyze website trafi c data for insights into user behavior, popular pages, and trafi c sources. It involves data collection, visualization using IBM Cognos, and Python for advanced analysis. The goal is to optimize user experiences and enhance website performance.

Traffic…

The one word that every website needs, craves for, cannot live without at all times.

Over a billion websites and the number keeps growing exponentially daily. From personal branding to consulting to business to companies to every other thing, there is a website out there for almost everything now.

This post is mainly driven towards websites that have a good amount of traffic and there are multiple solid sources. This could be anything in and above the range of 10,000 – 30,000 monthly visitors approximately. Anyone in and above this range must perform traffic analysis and know their exact traffic sources, analyze them and use that to create business goals, traffic strategies for the future *(many more reasons ahead on why to do this below)*

Now if “traffic analysis” seems like a lot of work, we are here to break that myth and give you three awesome ready-made templates from Supermetrics that you can instantly plug and play!

Hold your horses before we jump to the templates now!

Before doing any type of analysis, we should be aware of the WHY behind it, so let’s dig into that quickly.

Table of Contents...

Why perform Website Traffic Analysis…

So, Why analyze your traffic? Why even waste time on this?

Here is a list of some top reasons that come out:

1. To fully and deeply understand how you get traffic from and what will happen if that stops in the future
2. To understand which is the most relevant traffic for you as per source and medium
3. To understand which traffic source is the most profitable
4. To understand which traffic source requires focus, growth, and work
5. To understand how to get more traffic per source over the next 3-6-12 months!
6. To prepare yourself for situations when any one of the traffic sources dips
7. To have a balanced distribution of traffic sources
8. To improve conversions eventually by having control over all traffic sources
9. To know who your referrers and goodwill folks are to form meaningful partnerships by reaching out to them, collaborations etc…
10. To deliver a mind-blowing report and analysis tied to your clients greatest needs and goals *(must see the last section for this)*

Eventually, Machine Learning techniques will also provide good insights extraction from your collected data.

Now, we can jump to the three templates that you can start using immediately for your website traffic analysis.

Website Traffic Analysis Templates & Reports…

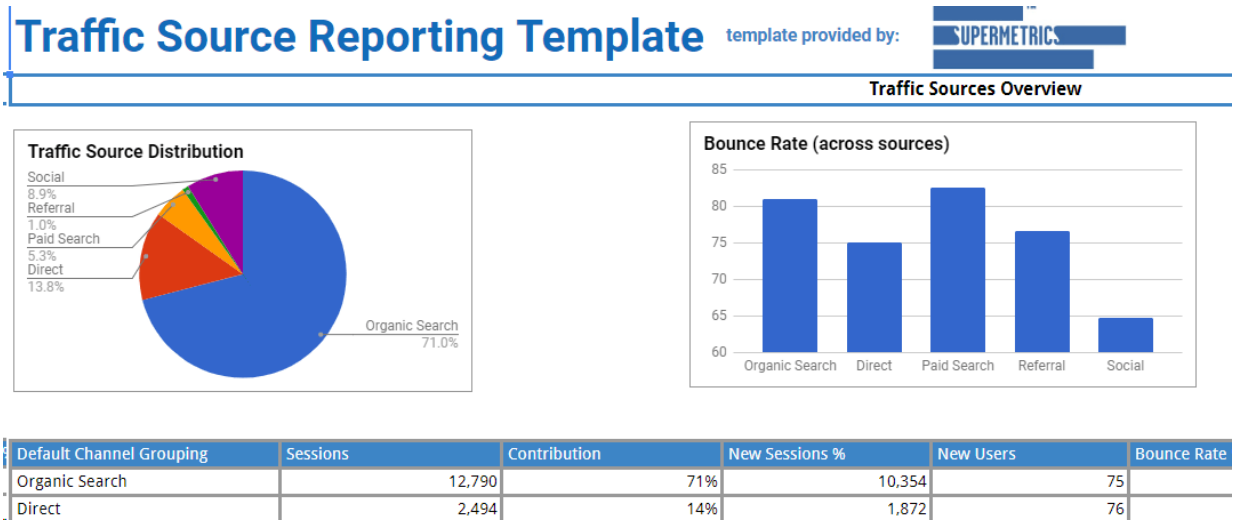
These are the three templates you need for any type of traffic analysis. Now you might be wondering why not just use Google analytics inbuilt reports and dashboards for this. Good thought!

The problem with GA (Google Analytics) inbuilt reports and dashboards are they are not customized and show a lot of things that are not needed. Here, we have created three reports that can potentially be aligned to your business goals and give you much better insights quicker than GA.

Note: All data shown from templates in images is dummy sample data shown for reference only. All templates are powered by Supermetrics addon for complete automation

Update: All templates are now added to a new supermetrics page, so just search for the template name and you will find it on the page (Ctrl + F)

1.Traffic Source Reporting Template…



Default Channel Grouping	Sessions	Contribution	New Sessions %	New Users	Bounce Rate
Organic Search	12,790	71%	10,354	75	
Direct	2,494	14%	1,872	76	

This template will give you a complete picture of traffic coming to your website. There are multiple sheets and visualizations within this template for deep-dives, different perspectives and lastly, the best action steps for your business which are described in detail below for respective sheets

1. Traffic sources – This is the executive overview of “Traffic Sources” for a certain website. This will help you understand instantly all the traffic sources at a glance from an “inbound” perspective as well as from the “device” perspective that is being used to access your website for a specific time period
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3. Social – This is a deep-dive view of “Social” traffic by looking at traffic share of each social media platform and the top landing pages that have been visited via this channel. This can help you optimize your social media strategy and to further improve upon the same
4. Direct – This is a deep-dive view of “Direct” traffic by showing the page that people land at an exit from when they are coming in via this channel. Furthermore, a quick check if these two respective pages are same or not to understand

which pages make the people stay on the website and which pages make them bounce off from the website

5. Paid search – This is a deep-dive view into “Paid search” traffic by showing the keywords that led to maximum clicks and the maximum impressions along with several other metrics to understand how to optimize further to improve the campaigns. For more deep-dives, check out our other templates on PPC on Supermetrics

6. Referral – This is a deep-dive view into “Referral” traffic by looking at the “Full referrer” to understand very clearly the exact source that the traffic came from along with the landing page that it came onto the website. This combination will help track referrals and their traffic contribution precisely, which can further be optimize

Balanced distribution of traffic sources

– Lastly, this is one of the most important key points in this shown in the first visualization only. The website ideally should never be over-dependent on any traffic source be it organic or social or anything like that’s very risky. The distribution should always be diversified and well-balanced.

Phew! That was a lot of templates and data you can analyze for a long time.

However, most analysts are stuck in data pukes and reporting things that are NOT needed by the business.

So, to make sure you do the analysis that is important for your business, clients and really adds value, you can follow the process below:

1. Find out your (or client's) business goals with website traffic
2. Create a list of business questions that you have for your website
3. Now, tie these business goals and questions with the various metrics and analysis that you are doing in the templates shared above. You can do this yourself via research or hire a data person (data analyst/scientist) if you want professional help
4. After listing down various analysis and metrics for each business question – you need to eliminate everything that is not helping you focus on your goals
5. Now, you can go ahead and present this to your clients and they will be hugely interested because you will be talking in their language of business goals and questions rather than just analysis that you have thought of

This is very similar to the KPIs framework that I have showcased to choose the most important metrics for your business.

All the above should be enough to get you moving super fast ahead in adding value to your client's traffic strategies. You can start a free trial with Supermetrics now and you can see all these templates and much more in the "template gallery" option in the Google sheets add-on.

Now, that you have seen and used all the three templates, you will have a much deeper understanding of your traffic and what to do about it in the future

This is a continuous process and should be done a few times every 3-6-12 months depending on your business goals. You can

always reach out to us if you need any help with all the above analysis and much more.

Let me know your thoughts in comments and I'd be happy to answer them for you.

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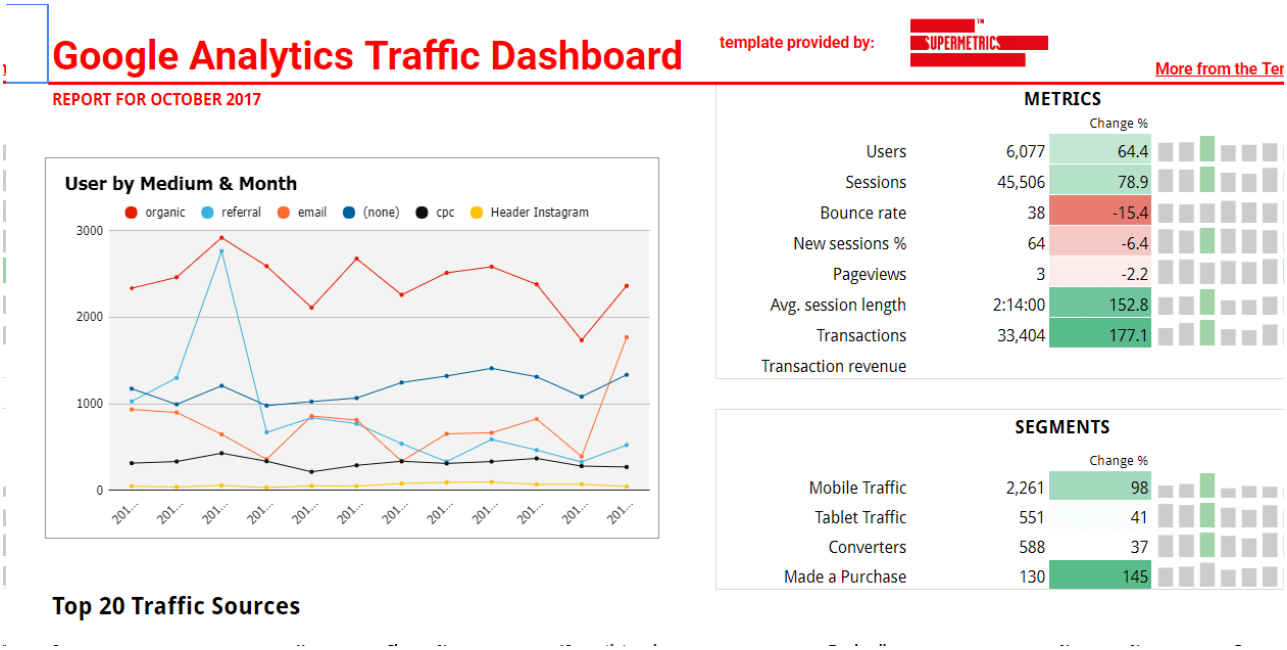
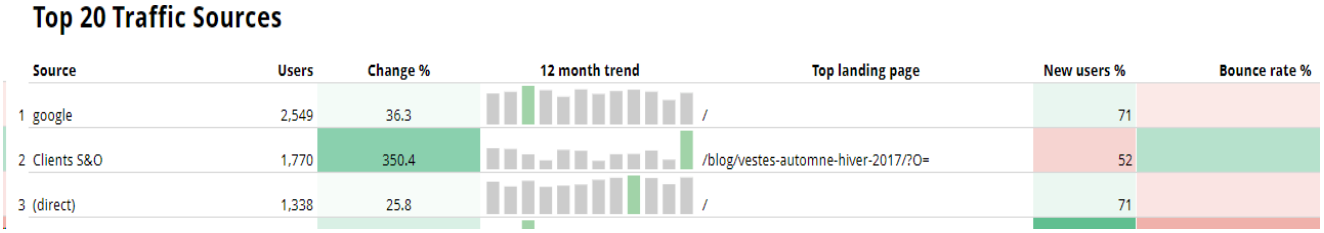


This shows a quick distribution as per source/medium of all traffic sources to take a further deep-dive within that area.

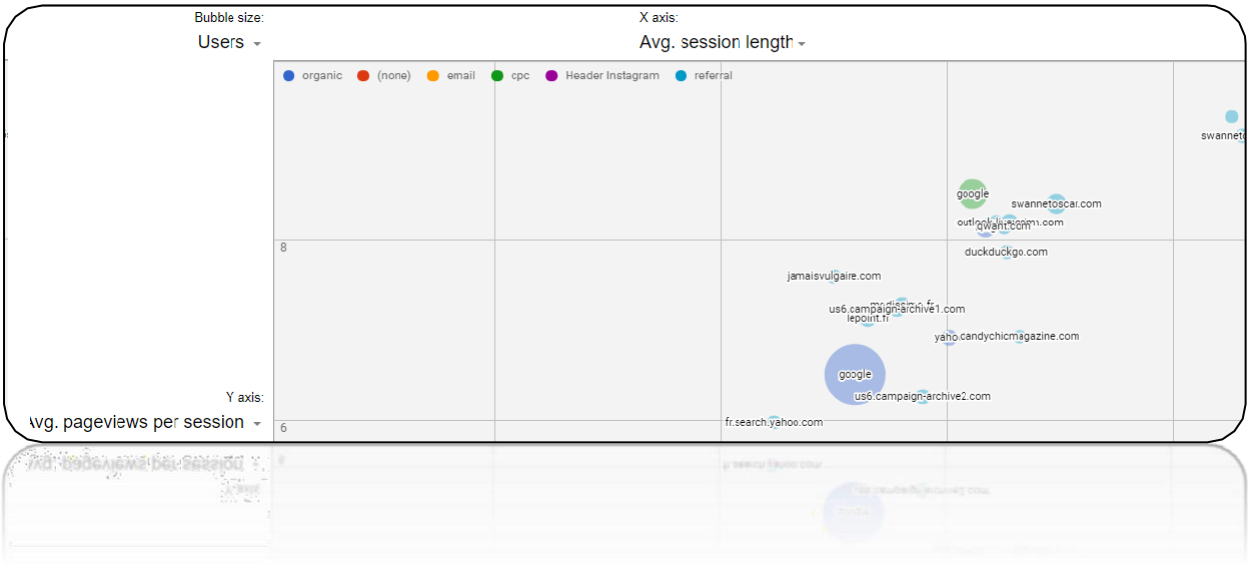
This can give you a slightly different view due to all the sources that are not counted in the default channels shown by GA. The conditional formatting has been added to understand if there are some changes in trends that are harmful for the website.

There are running 12-month trends for each source and also at an overall level to get contextual data and comparisons for your website so you can really take the best data-driven action steps.



Lastly, it shows segments of the sources along with it.

3 Traffic Source Bubbles Reporting Template…



Lastly, we have the traffic source bubbles to give you a holistic quick view directly of all the traffic sources, their users and session length directly.

The bubble size, X and Y axis are representations of all of these dimensions and they can be interchanged as per the end user for various perspectives.

This is the eagle eye view for your entire traffic in one single large visualization to find things that you have missed in all the templates and work discussed above.

These were the set of traffic analysis templates only. If you are a digital marketer, analyst and want some more templates, make sure you check out the entire Templates gallery by Supermetrics for much more ready to use templates, which is now broken down by PPC, Analytics, Social and Trending also for ease of use

How to Extract Insights out of these & Present to your Clients…

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PHASE:2

WEBSITE TRAFFIC ANALYSIS....

There are several reasons why website traffic analysis is important:

1. Understand audience demographics: By analyzing website traffic, businesses can gain insights into the demographic characteristics of their website visitors, such as age, gender, location, and interests. This information can help in creating targeted marketing campaigns and tailoring content to suit the needs and preferences of the audience.

2. Identify popular content: Website traffic analysis allows businesses to determine which pages and content on their site are most popular among visitors. By studying this data, they can create more of what works and optimize the less popular content to drive better engagement and conversions.

3. Track advertising effectiveness: If a website is running paid advertising campaigns, traffic analysis helps in evaluating the effectiveness of those campaigns. By measuring metrics like click-through rates, conversion rates, and bounce rates, businesses can determine which ads are performing well and which ones need improvement.

4. Improve website performance: By analyzing traffic patterns, businesses can identify any bottlenecks or areas for improvement in the website's design, user experience, or navigation. This can help in optimizing the site for faster loading times, better mobile responsiveness, and overall improved user experience.

5. Monitor SEO performance: Website traffic analysis provides valuable insights into the effectiveness of search engine optimization (SEO) efforts. By tracking organic search traffic and keyword rankings, businesses can identify which keywords are driving traffic to their site and make adjustments to improve their SEO strategy.

6. There are various tools and platforms available for website traffic analysis, such as Google Analytics, which provides comprehensive data and insights into website traffic. Other tools like SEMrush, Moz, and Ahrefs also offer traffic analysis features along with additional SEO optimization capabilities

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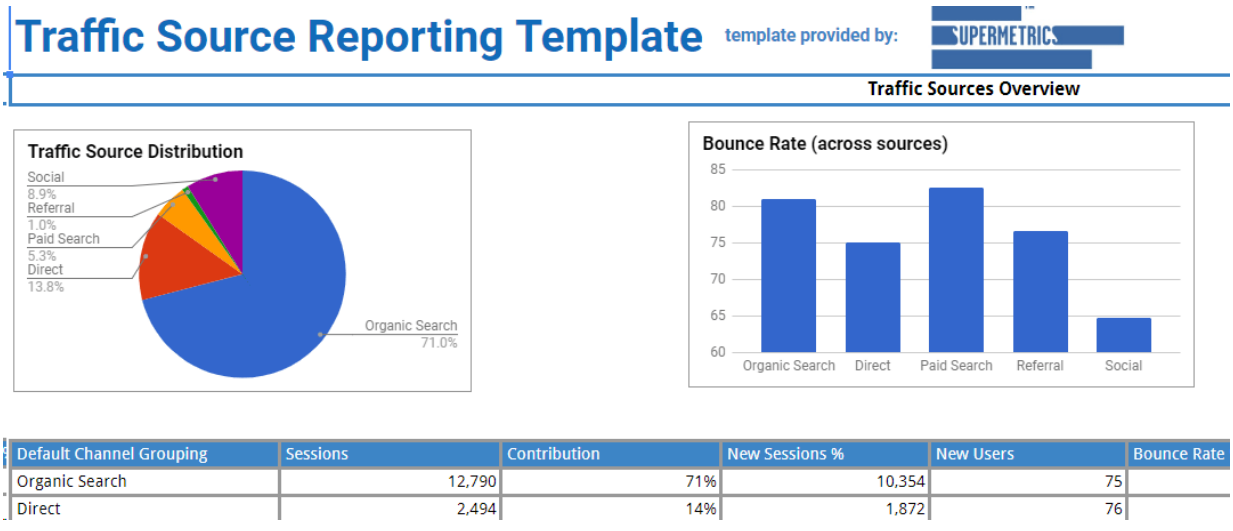

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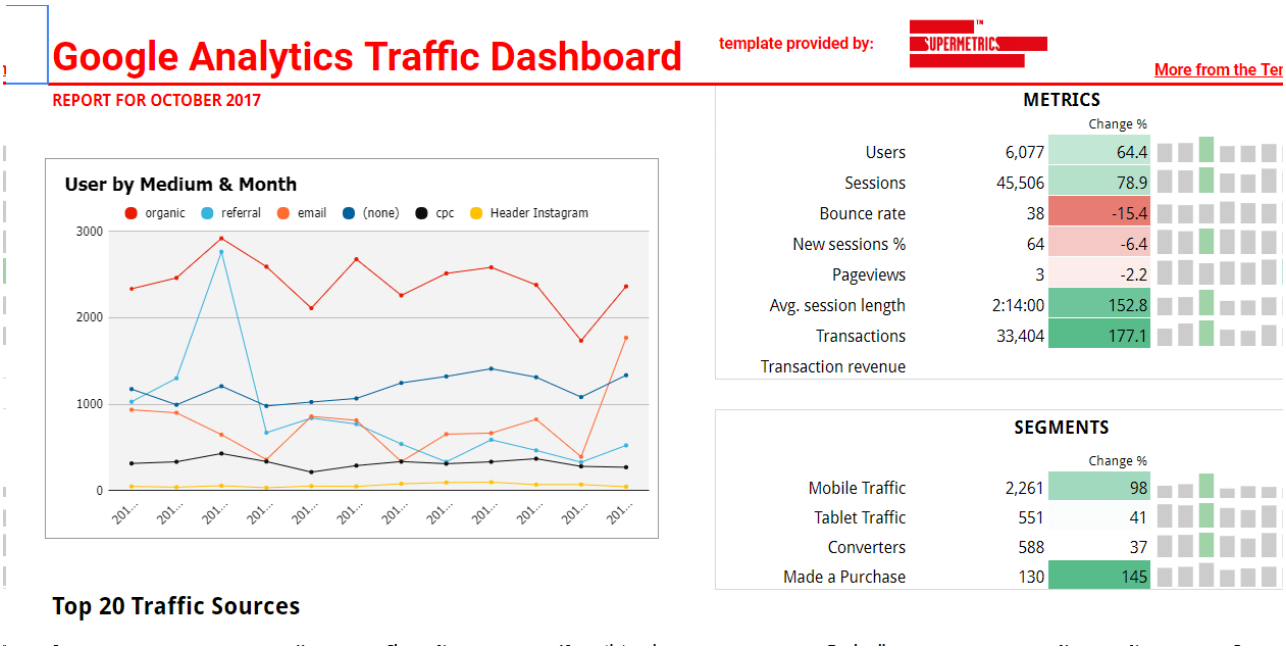

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Top 20 Traffic Sources

	Source	Users	Change %	12 month trend	Top landing page	New users %	Bounce rate %
1	google	2,549	36.3		/	71	
2	Clients S&O	1,770	350.4		/blog/vestes-automne-hiver-2017/?O=	52	
3	(direct)	1,338	25.8		/	71	

Lastly, it shows segments of the sources along with it.

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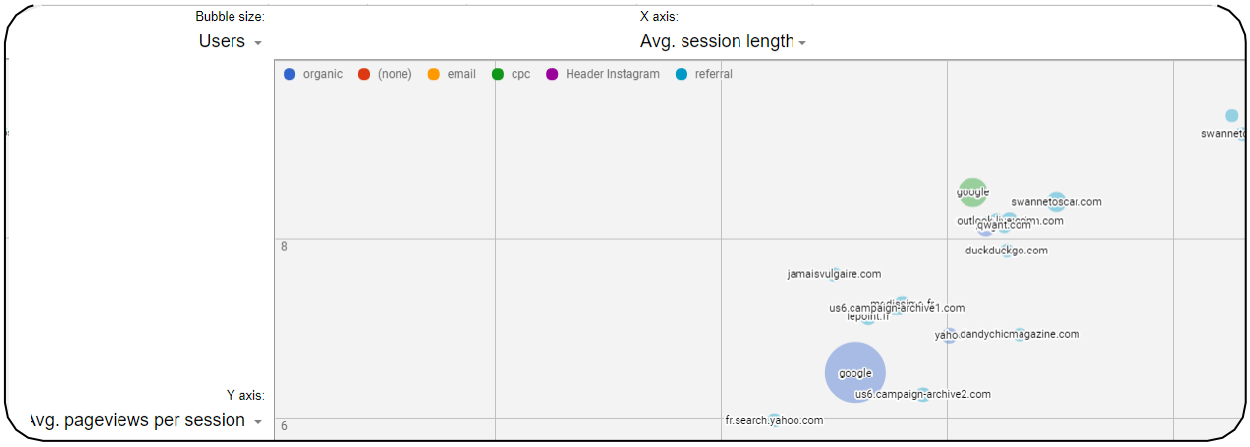

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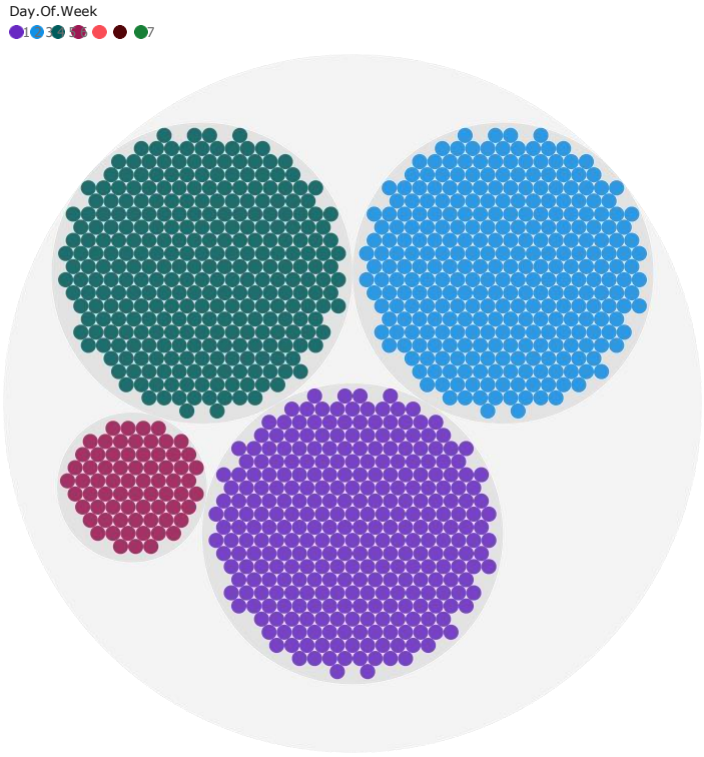
PHASE3:DEVELOPMENTPART1

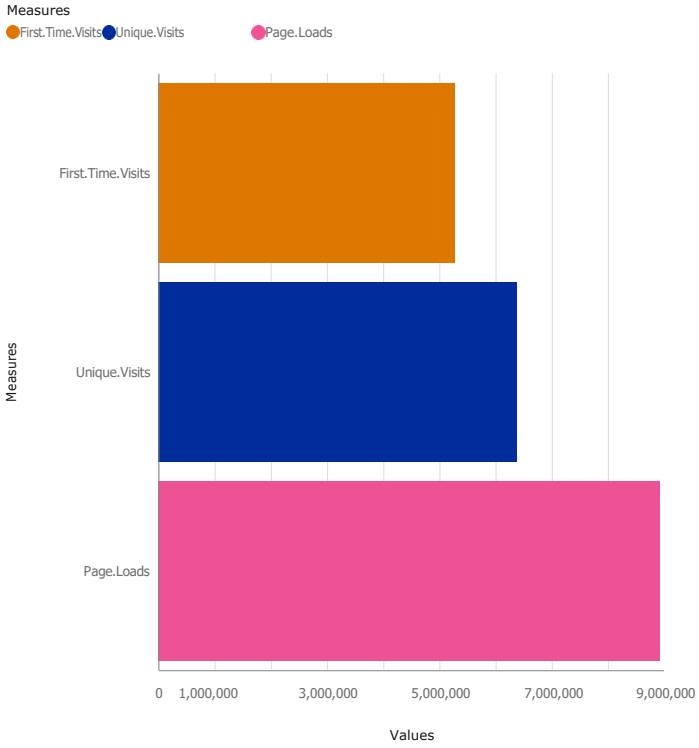
Website traffic analysis is the process of collecting, examining, andinterpretingdatarelatedtothevisitorsandinteractionsonawebsite.Itprovides invaluable insights into user behavior, preferences, and trends,helping organizations make informed decisions, optimize their onlinepresence,andenhanceuserexperiences.

Tab1

DayandDatehierarchycoloredbyDay.Of.Week



First.Time.Visits,Unique.Visits,Page.Loads

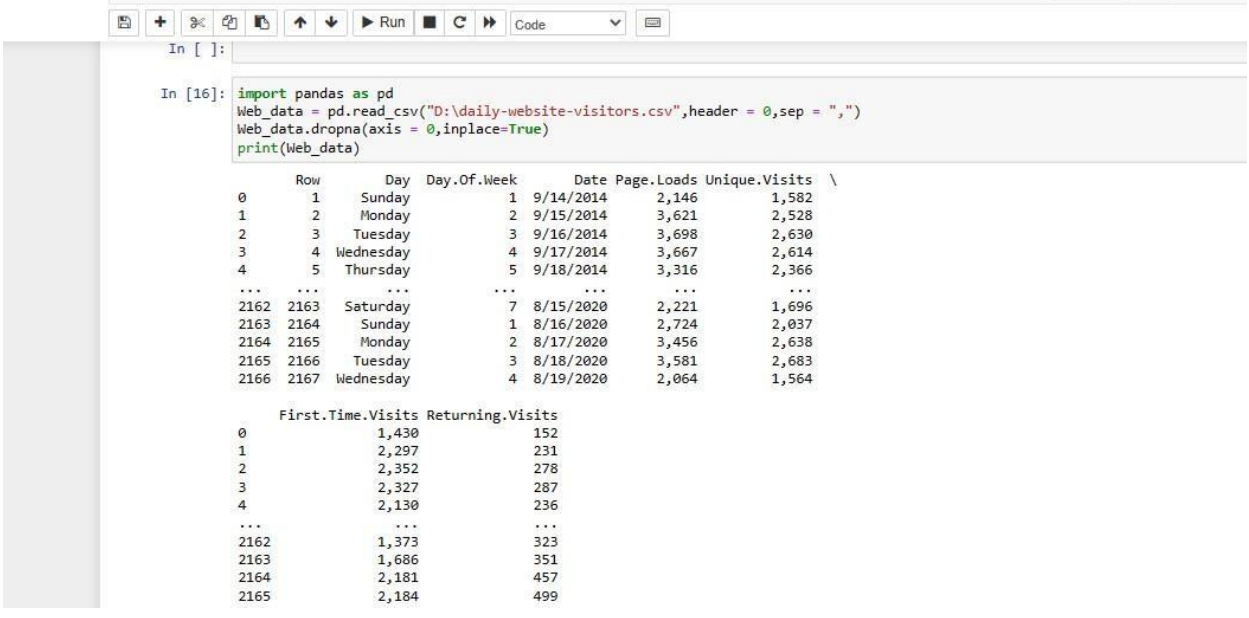


Insights:

Basedonthecurrentforecasting,**First.Time.Visits**mayreach**over395thousand**by**DayMonday+1**.
Theoverallnumberofresultsfor**First.Time.Visits**is**overtwo thousand**.
Theoverallnumberofresultsfor**Page.Loads**is**over two thousand**.
Theoverallnumberofresultsfor**Unique.Visits**is**overtwo thousand**

'PythonIntegration'forWebsiteTrafficAnalysis:

IncludingtheInsightsintothePythontoknowtheactualdatathatprovidedbyKaggle

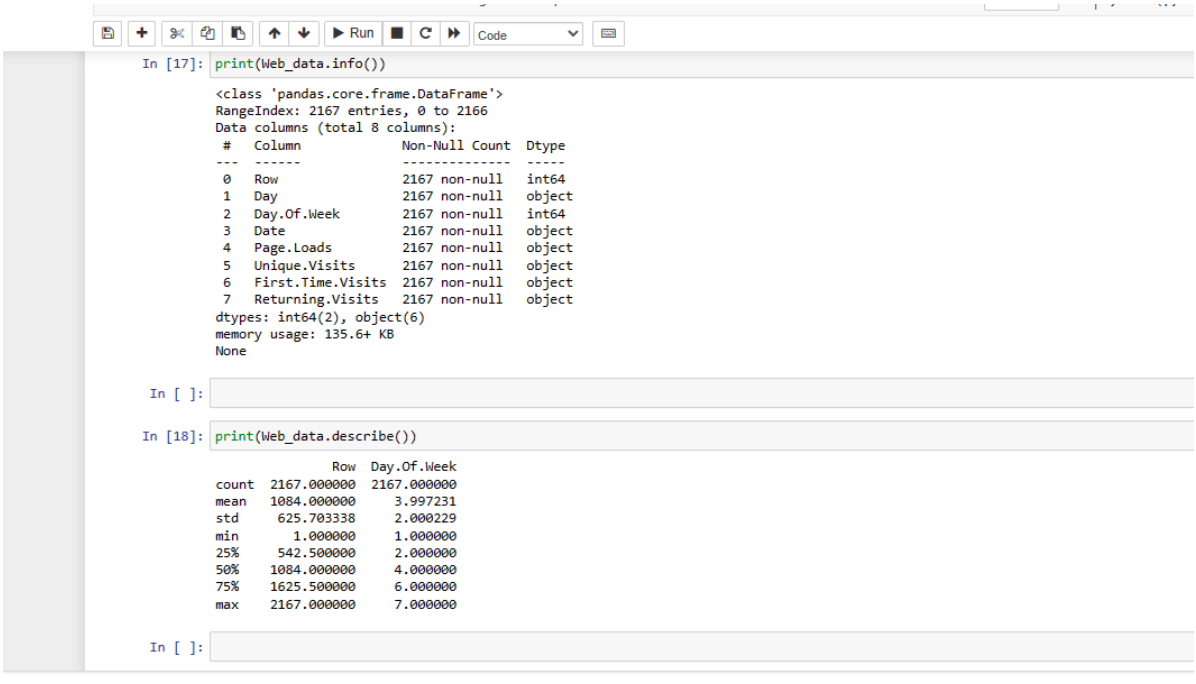


```
In [ ]:

In [16]: import pandas as pd
         Web_data = pd.read_csv("D:\daily-website-visitors.csv",header = 0,sep = ",")
         Web_data.dropna(axis = 0,inplace=True)
         print(Web_data)
```

```
        Row        Day  Day.Of.Week       Date Page.Loads Unique.Visits  \
0         1     Sunday            1  9/14/2014      2,146         1,582
1         2     Monday            2  9/15/2014      3,621         2,528
2         3    Tuesday            3  9/16/2014      3,698         2,630
3         4  Wednesday            4  9/17/2014      3,667         2,614
4         5   Thursday            5  9/18/2014      3,316         2,366
...     ...        ...          ...        ...        ...           ...
2162   2163   Saturday            7  8/15/2020      2,221         1,696
2163   2164     Sunday            1  8/16/2020      2,724         2,037
2164   2165     Monday            2  8/17/2020      3,456         2,638
2165   2166    Tuesday            3  8/18/2020      3,581         2,683
2166   2167  Wednesday            4  8/19/2020      2,064         1,564

     First.Time.Visits Returning.Visits
0                1,430              152
1                2,297              231
2                2,352              278
3                2,327              287
4                2,130              236
...                ...              ...
2162             1,373              323
2163             1,686              351
2164             2,181              457
2165             2,184              499
```

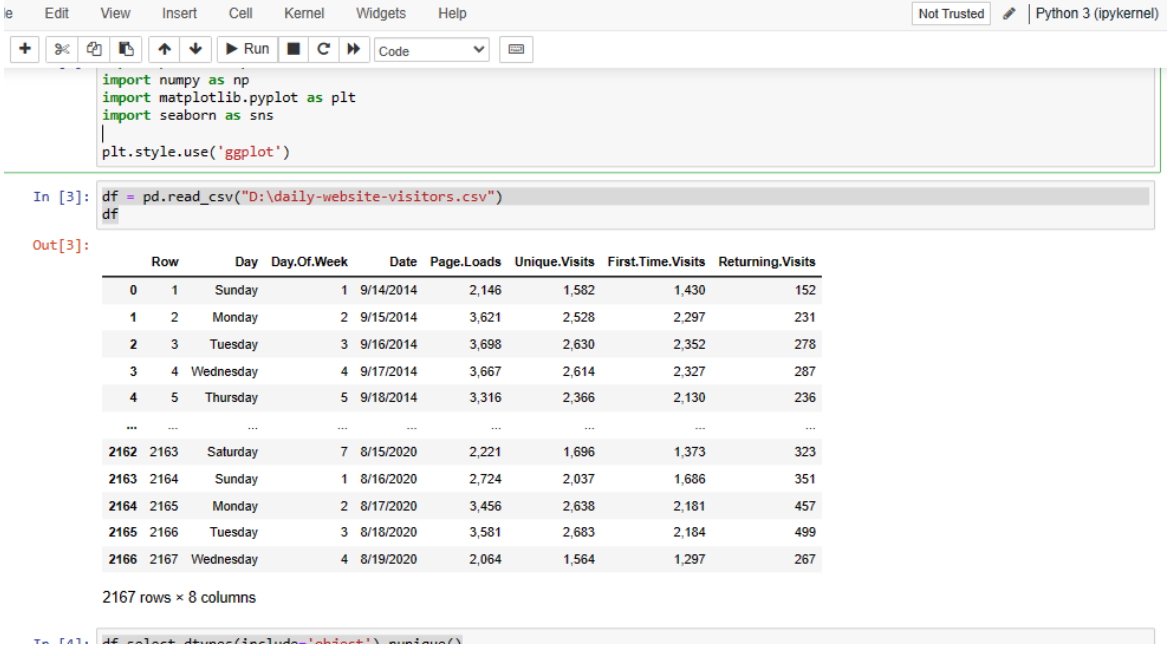
```
2166            1,297            267

[2167 rows x 8 columns]
```

Gettingofdatasetinformationusinginfofunction.



```
In [17]: print(Web_data.info())

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2167 entries, 0 to 2166
Data columns (total 8 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   Row                2167 non-null   int64
 1   Day                2167 non-null   object
 2   Day.Of.Week        2167 non-null   int64
 3   Date               2167 non-null   object
 4   Page.Loads         2167 non-null   object
 5   Unique.Visits      2167 non-null   object
 6   First.Time.Visits  2167 non-null   object
 7   Returning.Visits   2167 non-null   object
dtypes: int64(2), object(6)
memory usage: 135.6+ KB
None

In [ ]:

In [18]: print(Web_data.describe())

                Row  Day.Of.Week
count  2167.000000  2167.000000
mean   1084.000000     3.997231
std     625.703338     2.000229
min       1.000000     1.000000
25%     542.500000     2.000000
50%    1084.000000     4.000000
75%    1625.500000     6.000000
max    2167.000000     7.000000

In [ ]:
```

Printing the values ofdata setusing Pandas Library



```
Edit  View  Insert  Cell  Kernel  Widgets  Help        Not Trusted  Python 3 (ipykernel)

Run  Code

import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

plt.style.use('ggplot')

In [3]: df = pd.read_csv("D:\daily-website-visitors.csv")
        df

Out[3]:
```

	Row	Day	Day.Of.Week	Date	Page.Loads	Unique.Visits	First.Time.Visits	Returning.Visits
0	1	Sunday	1	9/14/2014	2,146	1,582	1,430	152
1	2	Monday	2	9/15/2014	3,621	2,528	2,297	231
2	3	Tuesday	3	9/16/2014	3,698	2,630	2,352	278
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...	...	...	...	...	...	...	...	...
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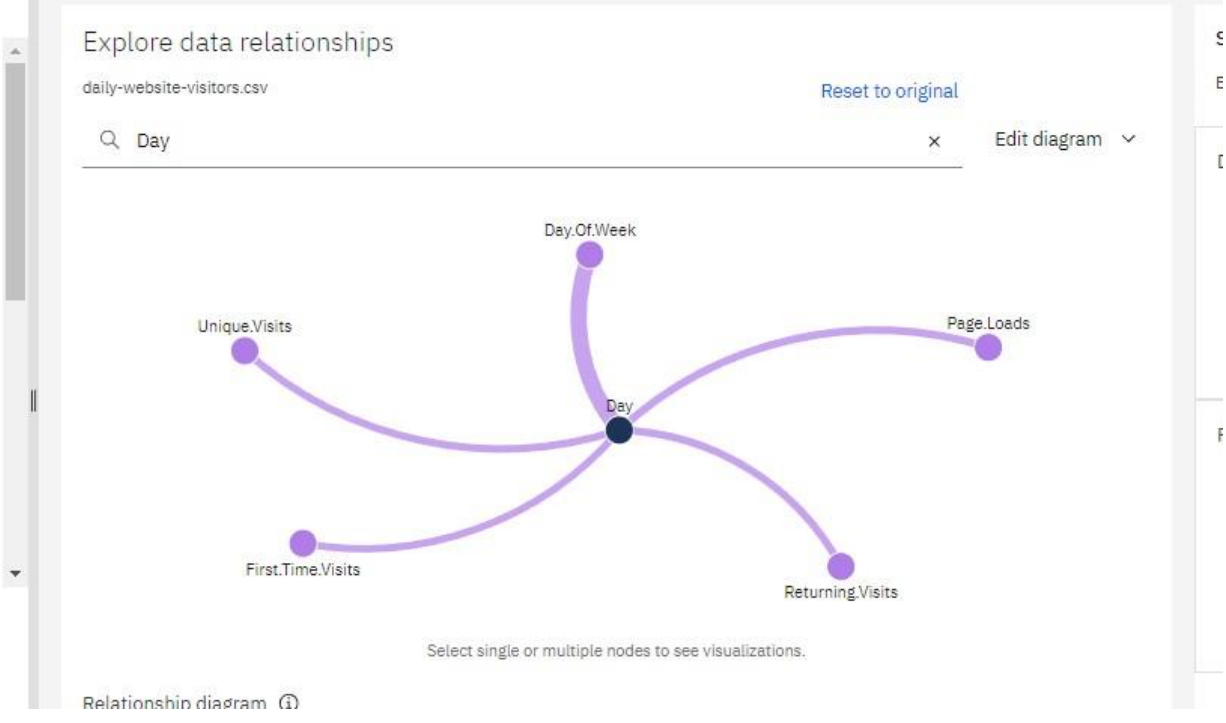
2165	2166	Tuesday	3	8/18/2020	3,581	2,683	2,184	499
2166	2167	Wednesday	4	8/19/2020	2,064	1,564	1,297	267

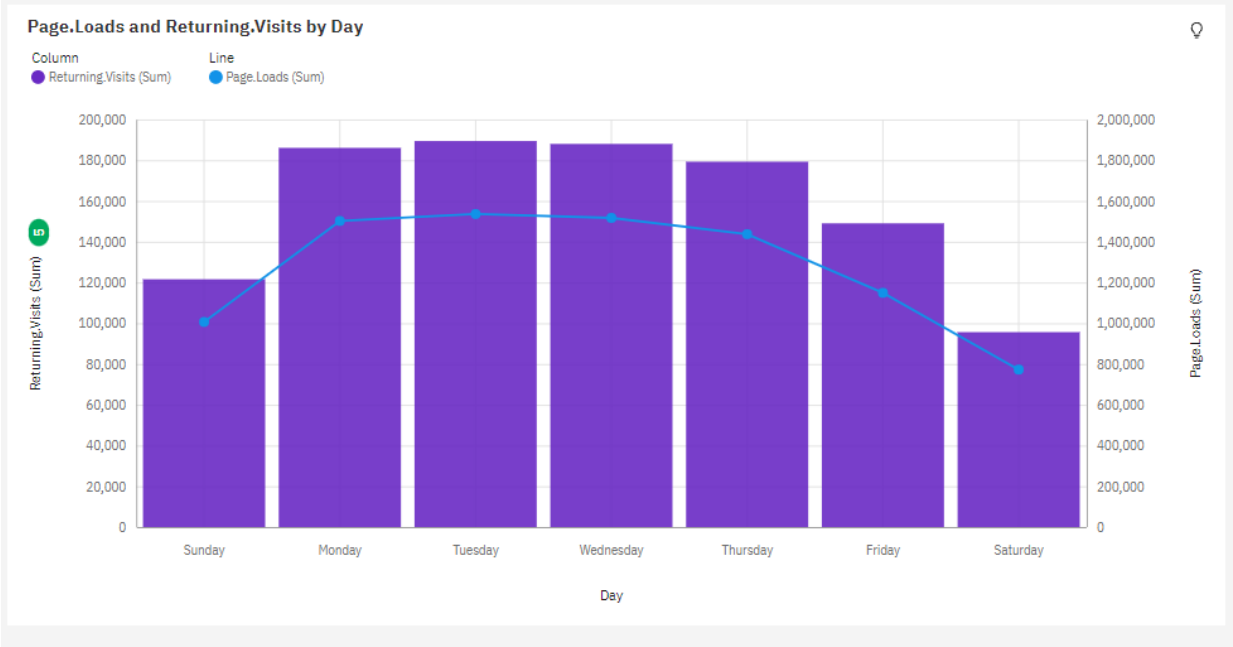
```
2167 rows × 8 columns

In [4]: df.select_dtypes(include='object').nunique()
```

PHASE 4 : DEVELOPMENT PART 2

Data Exploration





Across all days**, the sum of** Returning.Visits **is over 1.1 million.**

Returning.Visits **ranges from almost 96 thousand, when** Day **is Saturday, to over 189 thousand, when** Day **is Tuesday**

Returning.Visits **is unusually low when** Day **is Saturday.**

For Returning.Visits**, the most significant values of** Day **are Tuesday, Wednesday, Monday, Thursday, and Friday, whose respective** Returning.Visits **values add up to almost 892 thousand, or 80.4 % of the total.**

Across all days**, the sum of** Page.Loads **is over**

8.9 million.

Page.Loads **ranges from nearly 773 thousand, when** Day **is Saturday, to over 1.5 million, when** Day **is Tuesday.**

Page.Loads **is unusually low when** Day **is Saturday.**

For Page.Loads**, the most significant values of** Day **are Tuesday, Wednesday, Monday, Thursday, and Friday, whose respective** Page.Loads **values add up to over 7.1 million, or 80.1 % of the total.**

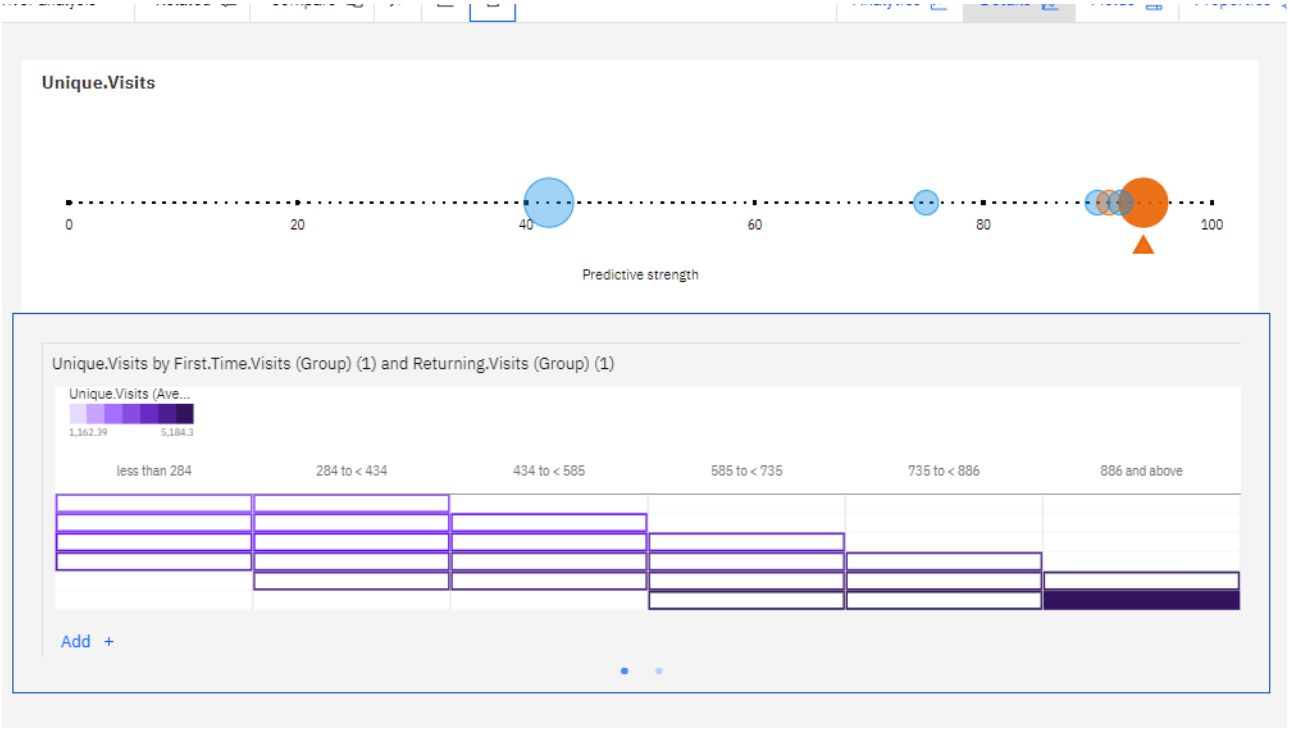
Across all values of Day.Of.Week**, the average of** Page.Loads **is over four thousand.**

The average values of Page.Loads **range from over 2500, occurring when** Day.Of.Week **is 7, to nearly five thousand, when** Day.Of.Week **is 3.**

Day.Of.Week **moderately aGects** Page.Loads **(44%).**

Page.Loads **is unusually low when** Day.Of.Week **is 7.**

1 (14.3 %), 2 (14.3 %), 3 (14.3 %), and 4 (14.3 %) are the most frequently occurring categories of Day.Of.Week **with a combined count of 1240 items with** Page.Loads **values (57.2 % of the total).**



First.Time.Visits (Group) (3) **strongly aGects** Unique.Visits **(94%).**

Unique.Visits **is most unusual when** First.Time.Visits (Group) (3) **is 3934 and above and less than 1205.**

Returning.Visits (Group) (2) **strongly aGects** Unique.Visits **(76%).**

Unique.Visits **is unusually high when** Returning.Visits (Group) (2) **is 886 and above.**

Over all values of First.Time.Visits (Group) (3) **and** Returning.Visits (Group) (2)**, the average of** Unique.Visits **is nearly three thousand.**

The average values of Unique.Visits **range from over a thousand to over five thousand.**

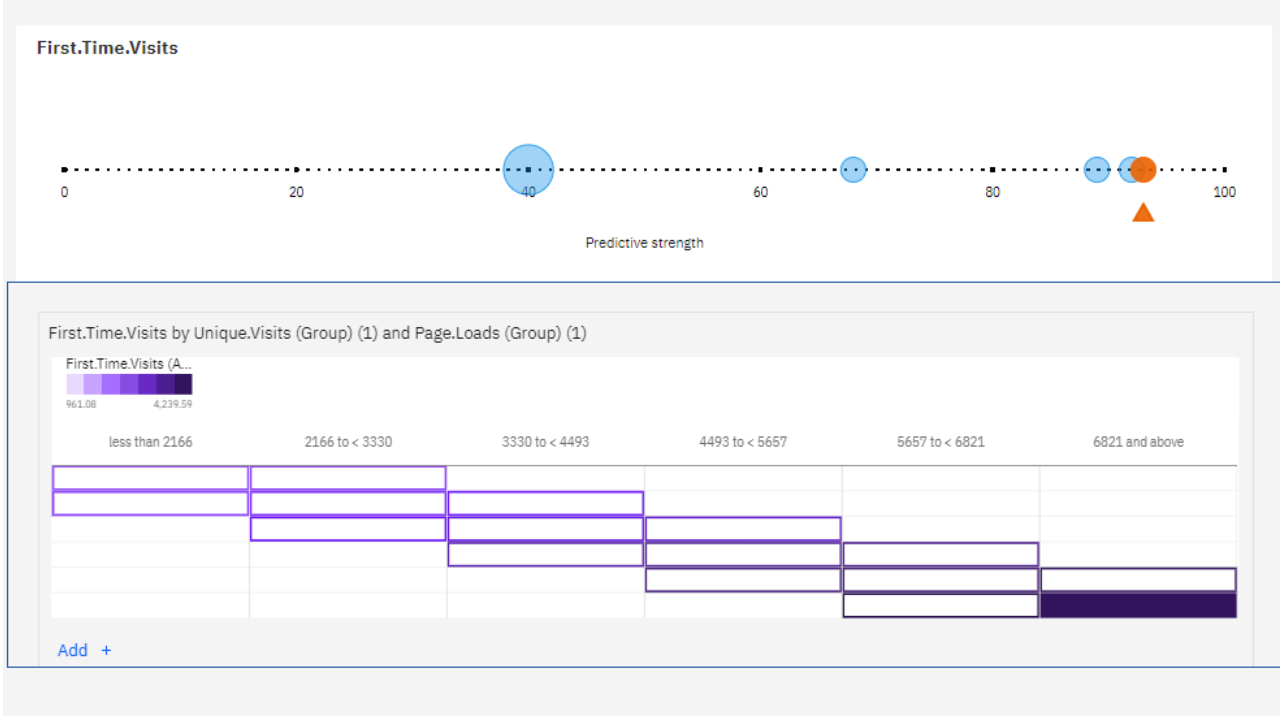
First.Time.Visits (Group) (3) **and** Returning.Visits (Group) (2) **strongly aGect** Unique.Visits **(96%).**

Unique.Visits **is unusually high when the combination of** First.Time.Visits (Group) (3) **and** Returning.Visits (Group) (2) **is 3934 and above and 886 and above.**

1887 to < 2569 is the most frequently occurring category of First.Time.Visits (Group) (3) **with a count of 666 items with** Unique.Visits **values (30.7 % of the total).**

434 to < 585 is the most frequently occurring category of Returning.Visits (Group) (2) **with a count of 734 items with** Unique.Visits **values (33.9 % of the total).**

There is no significant impact of Returning.Visits (Group) (2) **on the relationship between** First.Time.Visits (Group) (3) **and** Unique.Visits**.**

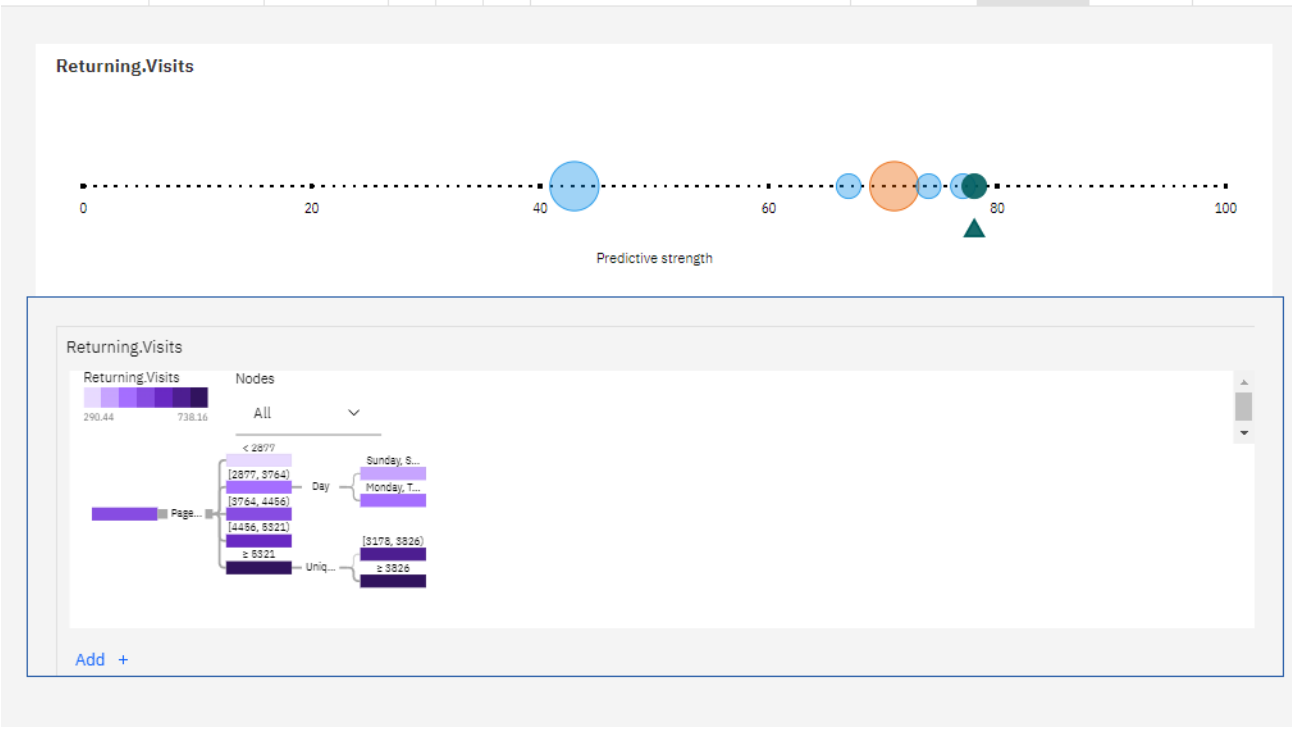


Unique.Visits **is unusually high when the combination of** First.Time.Visits (Group) (3) **and** Returning.Visits (Group) (2) **is 3934 and above and 886 and above.**

1887 to < 2569 is the most frequently occurring category of First.Time.Visits (Group) (3) **with a count of 666 items with** Unique.Visits **values (30.7 % of the total).**

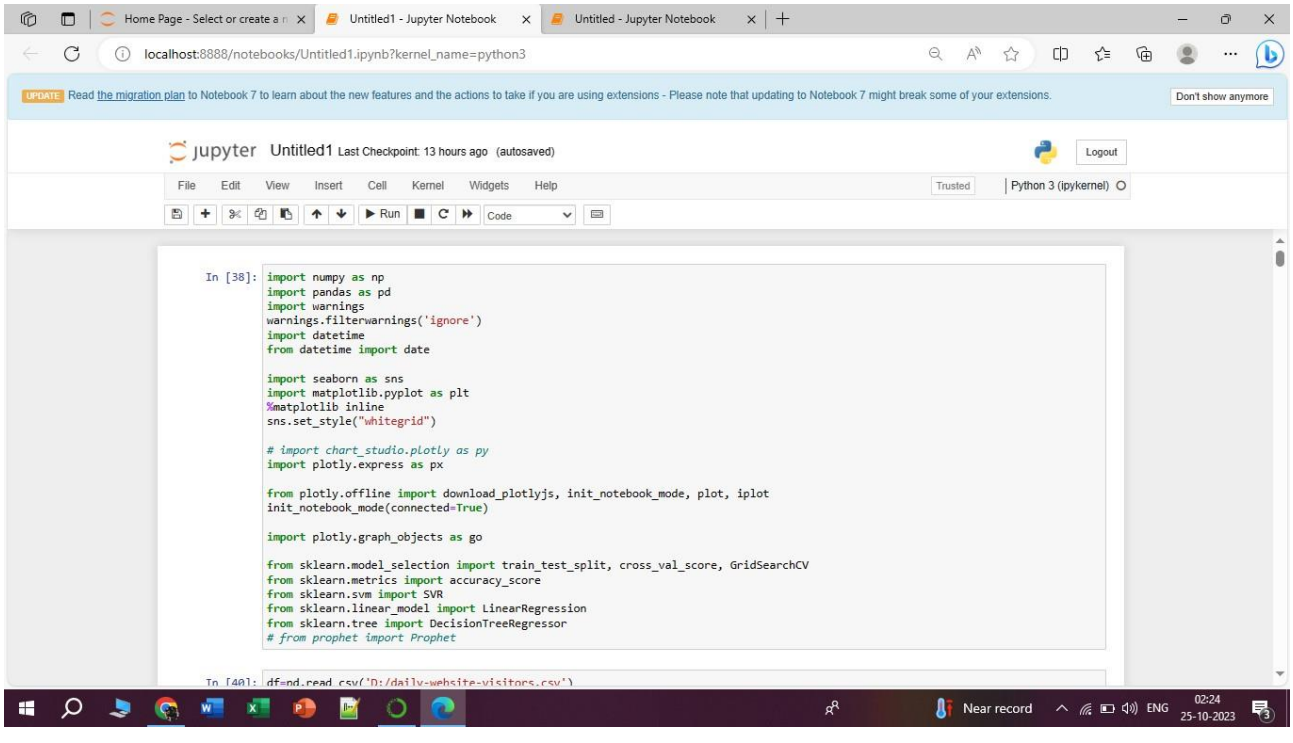
434 to < 585 is the most frequently occurring category of Returning.Visits (Group) (2) **with a count of 734 items with** Unique.Visits **values (33.9 % of the total).**

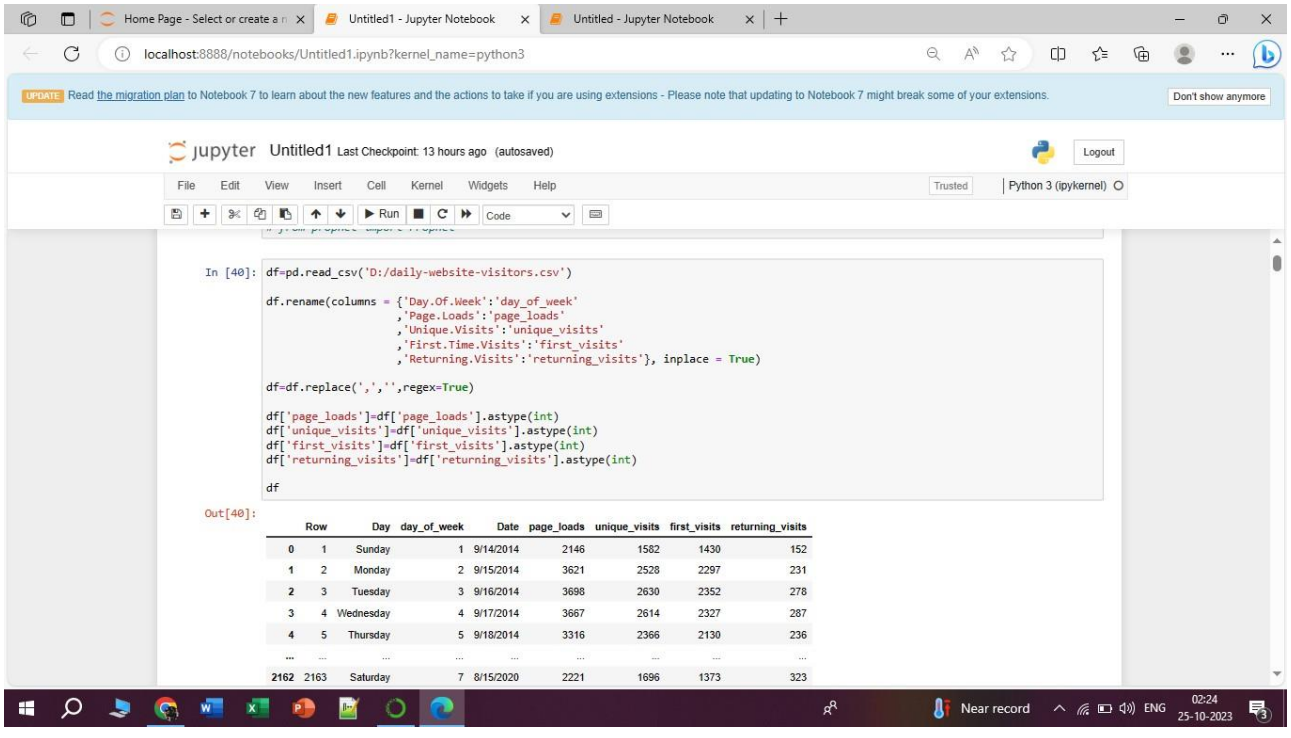
There is no significant impact of Returning.Visits (Group) (2) **on the relationship between** First.Time.Visits (Group) (3) **and** Unique.Visits**.**



Page.Loads, Unique.Visits, and Day predict Returning.Visits with a strength of 78.1%.

Page.Loads is the most significant predictor of Returning.Visits being three times better than any other field.




Home Page - Select or create a n
Untitled1 - Jupyter Notebook
Untitled - Jupyter Notebook
localhost:8888/notebooks/Untitled1.ipynb?kernel_name=python3
UPDATE Read the migration plan to Notebook 7 to learn about the new features and the actions to take if you are using extensions - Please note that updating to Notebook 7 might break some of your extensions.
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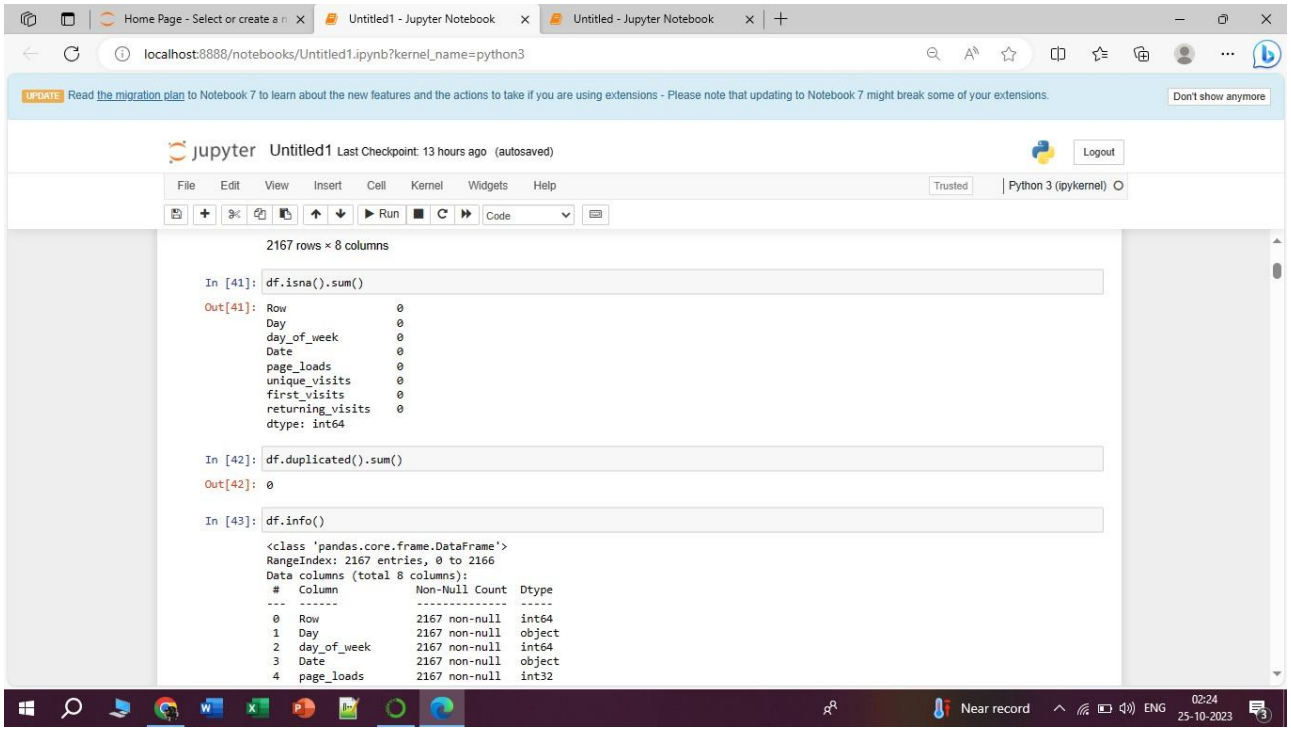
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Code
In [40]:
df=pd.read_csv('D:/daily-website-visitors.csv')
df.rename(columns = {'Day.Of.Week':'day_of_week'
,'Page.Loads':'page_loads'
,'Unique.Visits':'unique_visits'
,'First.Time.Visits':'first_visits'
,'Returning.Visits':'returning_visits'}, inplace = True)
df=df.replace(',','',regex=True)
df['page_loads']=df['page_loads'].astype(int)
df['unique_visits']=df['unique_visits'].astype(int)
df['first_visits']=df['first_visits'].astype(int)
df['returning_visits']=df['returning_visits'].astype(int)
df
Out[40]:
Row Day day_of_week Date page_loads unique_visits first_visits returning_visits
0 1 Sunday 1 9/14/2014 2146 1582 1430 152
1 2 Monday 2 9/15/2014 3621 2528 2297 231
2 3 Tuesday 3 9/16/2014 3698 2630 2352 278
3 4 Wednesday 4 9/17/2014 3667 2614 2327 287
4 5 Thursday 5 9/18/2014 3316 2366 2130 236
... ...
2162 2163 Saturday 7 8/15/2020 2221 1696 1373 323
Near record
ENG
02:24
25-10-2023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Don't show anymore
jupyter Untitled1 Last Checkpoint: 13 hours ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Code
2167 rows × 8 columns
In [41]:
df.isna().sum()
Out[41]:
Row 0
Day 0
day_of_week 0
Date 0
page_loads 0
unique_visits 0
first_visits 0
returning_visits 0
dtype: int64
In [42]:
df.duplicated().sum()
Out[42]:
0
In [43]:
df.info()
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2167 entries, 0 to 2166
Data columns (total 8 columns):
Column Non-Null Count Dtype
--- ------ -------------- -----
0 Row 2167 non-null int64
1 Day 2167 non-null object
2 day_of_week 2167 non-null int64
3 Date 2167 non-null object
4 page_loads 2167 non-null int32
Near record
ENG
02:24
25-10-2023

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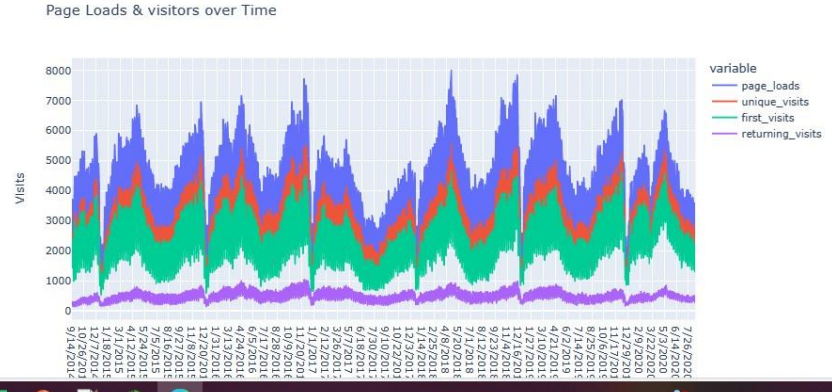
File Edit View Insert Cell Kernel Widgets Help Trusted Python 3 (ipykernel)

Run Code

In [44]:
```
px.line(df,x='Date',y=['page_loads' ,'unique_visits' ,'first_visits' ,'returning_visits'],
        labels={'value':'Visits'}
        ,title='Page Loads & visitors over Time')
```



Near record ENG 02:25 25-10-2023

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Run Code

unique_visits

In [46]:
```
day_imp=df.groupby(['Day'])['unique_visits'].agg(['sum']).sort_values(by='sum',ascending=False)
px.bar(day_imp,labels={'value':'sum of unique visits'},title='Sum of Unique visits for each day')
```

Near record ENG 02:25 25-10-2023

Conclusion

Website trafic analysis using IBM Cognos Analytics allows businesses to gain valuable insights into the performance of their websites. This analysis helps in making data-driven decisions to enhance user experience, optimize content, and improve marketing strategies. IBM Cognos Analytics provides robust tools for tracking and visualizing web trafic data, enabling organizations to monitor key metrics, detect trends, and make informed decisions to drive business success. It oGers the ability to create interactive reports and dashboards, making it easier for teams to collaborate and act on the insights derived from website trafic data, ultimately leading to improved online performance and user engagement.