

Website Traffic Data Analysis

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Introduction

Website traffic analysis helps in understanding user behavior, engagement trends, and optimizing website performance. This document provides a Python-based approach to analyzing website traffic data.

Methodology

1. Collect website traffic data (CSV file generated with dummy data).
2. Load and process the data using Pandas.
3. Compute key metrics like sessions, bounce rate, and session duration.
4. Analyze traffic sources and user engagement.
5. Interpret results and take action for website improvement.

Python Code

```
import pandas as pd

# Load the dataset
df = pd.read_csv("website_traffic_data.csv")

# Key Metrics Calculation
total_sessions = df['Sessions'].sum()
unique_users = df['Users'].nunique()
bounce_rate = (df['Bounces'].sum() / total_sessions) * 100
avg_session_duration = df['Session_Duration'].mean()

# Display Key Insights
print("Total Sessions:", total_sessions)
print("Unique Users:", unique_users)
print("Bounce Rate:", bounce_rate, "%")
print("Average Session Duration:", avg_session_duration, "seconds")

# Traffic Source Analysis
traffic_source_counts = df['Traffic_Source'].value_counts()
print("\n### Traffic Sources Breakdown ###")
print(traffic_source_counts)

# Bounce Rate per Traffic Source
bounce_by_source = df.groupby('Traffic_Source')['Bounces'].sum() /
df.groupby('Traffic_Source')['Sessions'].sum() * 100
print("\n### Bounce Rate per Traffic Source ###")
print(bounce_by_source)
```

Screenshots / Output Photos

Below are the screenshots showing the output of the traffic analysis script:

Key Website Traffic Metrics

Total Sessions: 19586

Unique Users: 29

Bounce Rate: 28.51%

Average Session Duration: 164.50 seconds

Traffic Sources Breakdown

Traffic_Source

Direct	8
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Social Media	6
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Organic Search	6
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Paid Ads	5
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Referral	5
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Name: count, dtype: int64

Bounce Rate per Traffic Source

Traffic_Source

Direct	31.231672
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Organic Search	25.376450
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Paid Ads	29.111589
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Referral	25.153374
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Social Media	30.426248
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Traffic Sources Breakdown

