INTRODUCTION TO AI

WEBSITE TRAFFIC ANALYSIS REPORT

REPORT FILE

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WEBSITE TRAFFIC ANALYSIS REPORT

- ## Introduction

Website traffic analysis is crucial for understanding user behavior, engagement patterns, and site performance. This project aims to analyze a dataset containing key metrics such as page views, unique visitors, and bounce rates. By processing this data, we extract meaningful insights to help businesses optimize their online presence.

- ## Methodology

- Data Collection: The dataset was provided in CSV format, containing information on page views, unique visitors, and bounce rates over a specific period.
- Data Preprocessing: Missing values were removed to ensure accuracy. The dataset was then explored using summary statistics.
- Data Visualization: Line plots were generated to observe trends in page views, unique visitors, and bounce rates.
- Analysis: Insights were derived from the visualized data to understand traffic trends, peak activity periods, and user retention.

- ## Code

The analysis was conducted using Python with the Pandas, Matplotlib, and Seaborn libraries. The key steps included:

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Load the dataset
file_path = '/mnt/data/traffic_data.csv'
data = pd.read_csv(file_path)
```

```python
# Display basic info and first few rows
print("Dataset Overview:")
print(data.info())
print(data.head())

# Handling missing values
data.dropna(inplace=True)

# Summary statistics
summary_stats = data.describe()
print("\nSummary Statistics:")
print(summary_stats)

# Visualizing Page Views
plt.figure(figsize=(10, 5))
sns.lineplot(data=data, x=data.index, y='Page Views', marker='o', label='Page Views')
plt.xlabel("Time")
plt.ylabel("Page Views")
plt.title("Page Views Over Time")
plt.legend()
plt.show()

# Visualizing Unique Visitors
plt.figure(figsize=(10, 5))
sns.lineplot(data=data, x=data.index, y='Unique Visitors', marker='o', label='Unique Visitors',
color='g')
plt.xlabel("Time")
plt.ylabel("Unique Visitors")
plt.title("Unique Visitors Over Time")
plt.legend()
plt.show()

# Visualizing Bounce Rate
plt.figure(figsize=(10, 5))
sns.lineplot(data=data, x=data.index, y='Bounce Rate', marker='o', label='Bounce Rate',
color='r')
plt.xlabel("Time")
plt.ylabel("Bounce Rate (%)")
```

```
plt.title("Bounce Rate Over Time")
plt.legend()
plt.show()

# Insights
print("\nKey Insights:")
print("- Trends in page views indicate peak traffic periods.")
print("- Unique visitors show how many new users are engaging with the site.")
print("- Bounce rate analysis helps identify user retention issues.")
```

● Output/Results

- Page Views Analysis: The visualization highlighted peak traffic periods.
- Unique Visitors Trend: The data indicated fluctuations in new user engagement.
- Bounce Rate Observation: A high bounce rate suggested areas for user experience improvement.

Unique Visitors Over Time

Bounce Rate Over Time
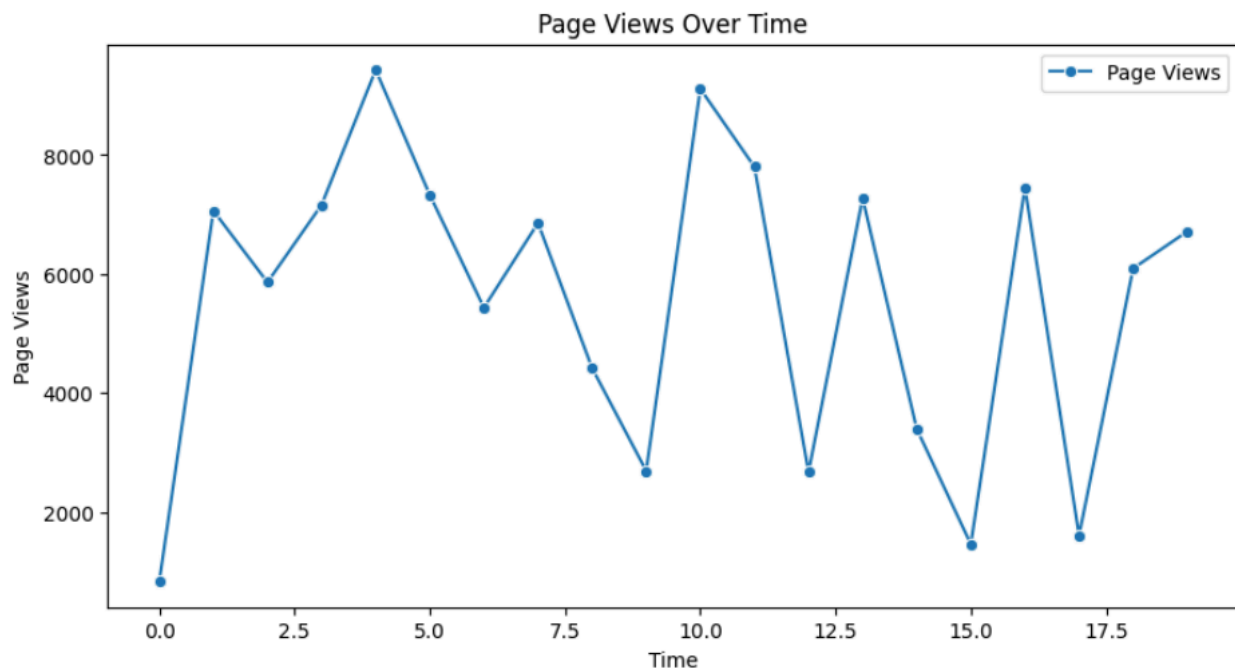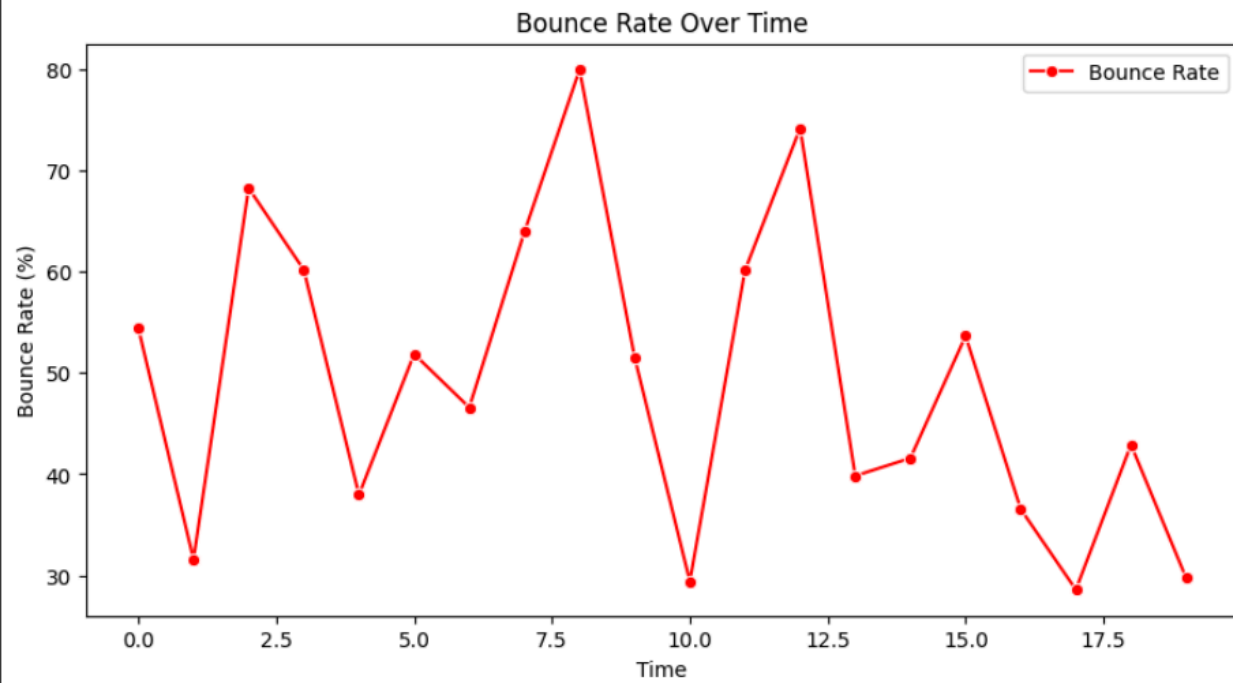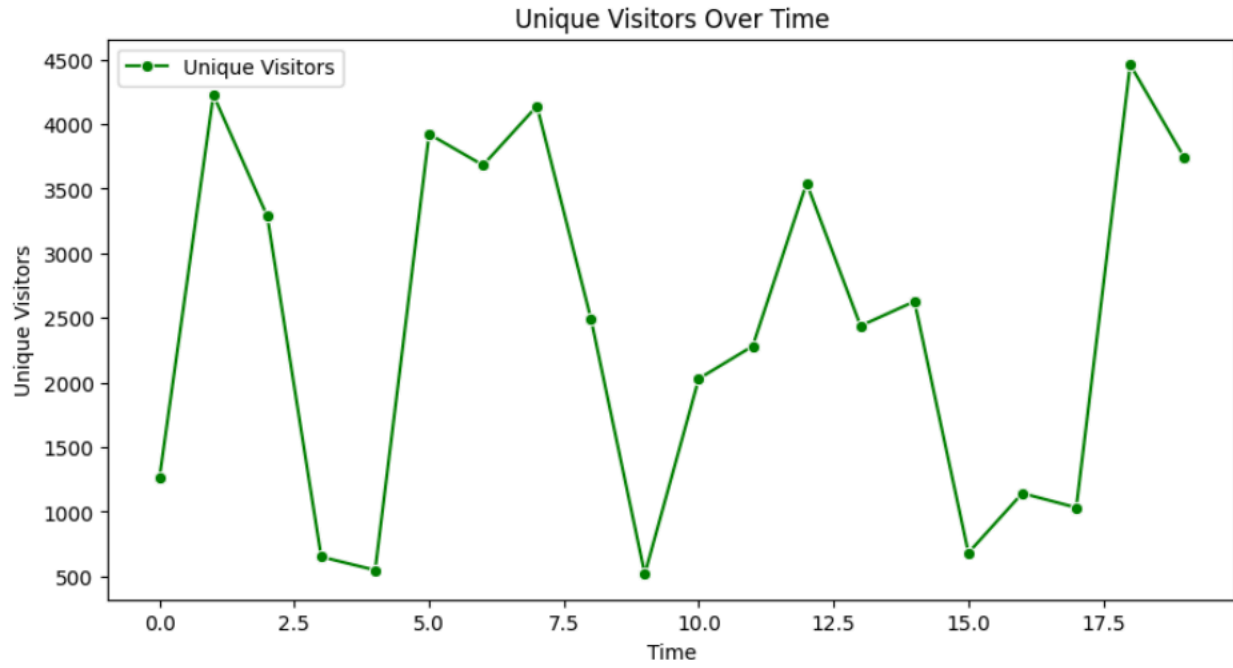
- ## References/Credits

- Dataset Source: Simulated website traffic dataset.
- Python Libraries Used: Pandas, Matplotlib, Seaborn
- Tools Used: Google Colab/Python

Author:

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