

```
1 import pandas as pd
2
3 try:
4     df_business = pd.read_excel("Gies_Business_Jan15-Mar15-Cus_Data.xlsx")
5     display(df_business.head())
6 except FileNotFoundError:
7     print("Error: 'Gies_Business_Jan15-Mar15-Cus_Data.xlsx' not found.")
8 except Exception as e:
9     print(f"An error occurred: {e}")
```

	Date	Event name	Page title	Page location	Sessions	Views	New users	Returning users
0	20250115	page_view	MSA Admissions Gies Master's Degree in Accou...	https://giesbusiness.illinois.edu/msa/admissio...	542	543	0	5
1	20250115	session_start	MSA Admissions Gies Master's Degree in Accou...	https://giesbusiness.illinois.edu/msa/admissio...	541	0	0	6
2	20250115	first_visit	MSA Admissions Gies Master's Degree in Accou...	https://giesbusiness.illinois.edu/msa/admissio...	531	0	531	0
3	20250115	page_view	Gies College of Business University of Illin...	https://giesbusiness.illinois.edu/	407	535	0	122
4	20250115	session_start	Gies College of Business University of Illin...	https://giesbusiness.illinois.edu/	337	0	0	90

```
1 try:
2     df_business.to_csv("Gies_Business_Jan15-Mar15-Cus_Data.csv", index=False)
3     import os
4     if os.path.exists("Gies_Business_Jan15-Mar15-Cus_Data.csv"):
5         file_size = os.path.getsize("Gies_Business_Jan15-Mar15-Cus_Data.csv")
6         if file_size > 0:
7             print("Successfully converted to CSV.")
8         else:
9             print("Error: CSV file created but is empty.")
10    else:
11        print("Error: CSV file not found.")
12 except Exception as e:
13    print(f"An error occurred: {e}")
```

Successfully converted to CSV.

```
1 try:
2     df_online = pd.read_excel("Gies_Online_Jan15-Mar15-Cus_Data.xlsx")
3     display(df_online.head())
4 except FileNotFoundError:
5     print("Error: 'Gies_Online_Jan15-Mar15-Cus_Data.xlsx' not found.")
6 except Exception as e:
7     print(f"An error occurred: {e}")
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	Date	Event name	Page title	Page location	Sessions	Views	New users	Returning users
0	20250115	page_view	Gies Online MBA Program Overview IMBA at Ill...	https://giesonline.illinois.edu/explore-progra...	486	620	0	142
1	20250115	user_engagement	Gies Online MBA Program Overview IMBA at Ill...	https://giesonline.illinois.edu/explore-progra...	399	0	0	132
2	20250115	session_start	Gies Online MBA Program Overview IMBA at Ill...	https://giesonline.illinois.edu/explore-progra...	396	0	0	115
3	20250115	session_start	Mock Live Session: Innovating Business Models ...	https://giesonline.illinois.edu/event/2025/01/...	250	0	0	69
4	20250115	page_view	Mock Live Session: Innovating Business Models ...	https://giesonline.illinois.edu/event/2025/01/...	246	269	0	63

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1 try:
2     df_online.to_csv("Gies_Online_Jan15-Mar15-Cus_Data.csv", index=False)
3     import os
4     if os.path.exists("Gies_Online_Jan15-Mar15-Cus_Data.csv"):
5         file_size = os.path.getsize("Gies_Online_Jan15-Mar15-Cus_Data.csv")
6         if file_size > 0:
7             print("Successfully converted to CSV.")
8         else:
9             print("Error: CSV file created but is empty.")
10    else:
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12 except Exception as e:
13    print(f"An error occurred: {e}")
```

Successfully converted to CSV.

Top 10 Events in Business vs. Online Journeys

```
1 # For the business dataset
2 business_event_counts = df_business['Event name'].value_counts().reset_index()
3 business_event_counts.columns = ['Event name', 'Frequency']
4 print(business_event_counts.head(10)) # Top 10 events
5
6 # For the online dataset
7 online_event_counts = df_online['Event name'].value_counts().reset_index()
8 online_event_counts.columns = ['Event name', 'Frequency']
9 print(online_event_counts.head(10)) # Top 10 events
10
11 import matplotlib.pyplot as plt
12 import seaborn as sns
13
14 # Plot top 10 events for business
15 top_10_business = business_event_counts.head(10)
16 plt.figure(figsize=(10,6))
17 sns.barplot(data=top_10_business, x='Frequency', y='Event name', color='blue')
18 plt.title('Top 10 Events (Business)')
19 plt.xlabel('Frequency')
20 plt.ylabel('Event Name')
21 plt.show()
22
23 # Plot top 10 events for online
24 top_10_online = online_event_counts.head(10)
25 plt.figure(figsize=(10,6))
26 sns.barplot(data=top_10_online, x='Frequency', y='Event name', color='orange')
27 plt.title('Top 10 Events (Online)')
28 plt.xlabel('Frequency')
29 plt.ylabel('Event Name')
30 plt.show()
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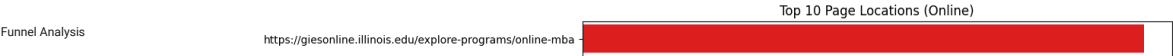
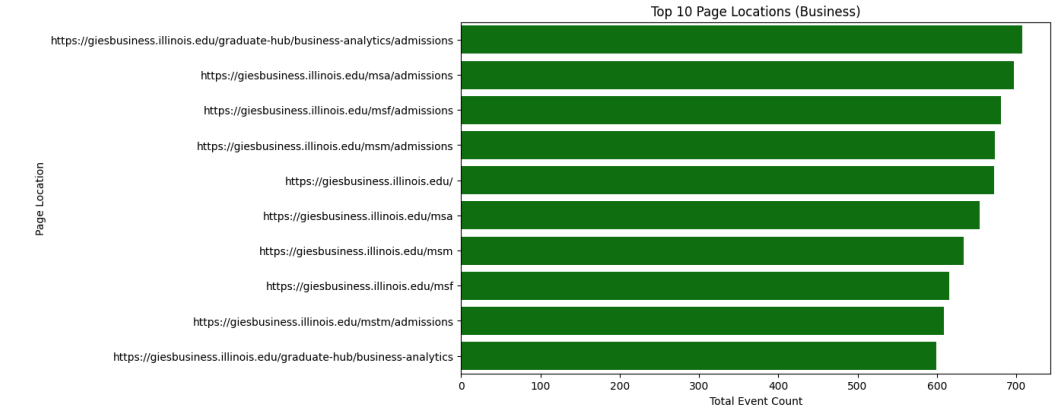
11
0      Event_name  Frequency
1      page_view    230491
2      session_start 199955
3      first_visit  152911
4      user_engagement 86833
5      scroll        30610
6      click        10693
7      view_search_results 2875
8      file_download 2513
9      click_apply_grad 729
10     generate_lead 497
11
12     Event_name  Frequency
13     page_view    328602
14     session_start 283823
15     first_visit  218048
16     user_engagement 64671
17     scroll        39142
18     click        6628
19     form_start   1161
20     video_start  993
21     click_apply  919
22     generate_lead 914
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Top Business Page Locations:

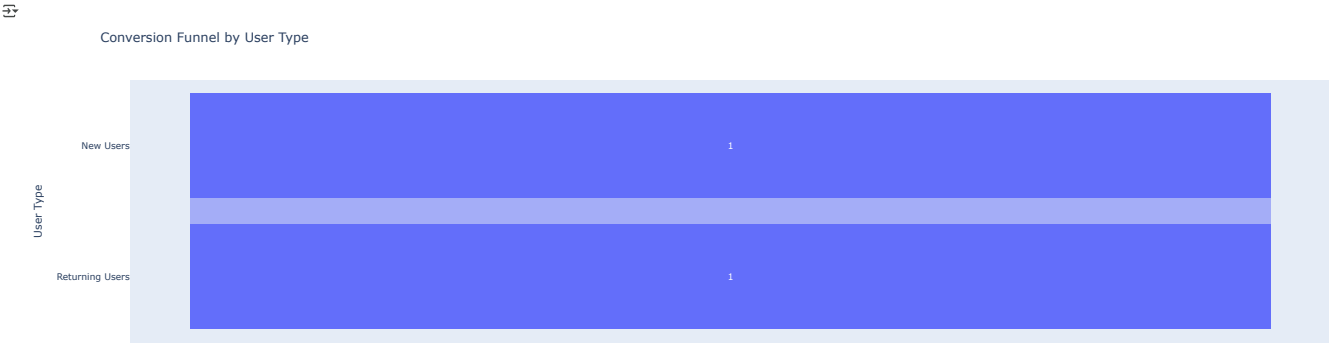
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132469	https://giesbusiness.illinois.edu/msm/admissions	673
151	https://giesbusiness.illinois.edu/	672
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111141	https://giesonline.illinois.edu/explore-progra...	617
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134808	https://giesonline.illinois.edu/explore-progra...	595
197991	https://giesonline.illinois.edu/explore-progra...	563



```
1 import plotly.express as px
2 import pandas as pd
3
4 # Define the steps in the funnel
5 funnel_steps = ['page_view', 'form_start', 'form_submit']
6
7 # Filter the data for relevant events
8 funnel_data = df_business[df_business['Event name'].isin(funnel_steps)]
9
10 # Create separate funnels for new and returning users
11 def create_funnel(data):
12     user_funnel = data.groupby('New users')['Event name'].apply(list).reset_index() # Group by 'new users'
13     step_counts = [user_funnel['Event name'].apply(lambda x: funnel_steps[0] in x).sum()]
14     for i in range(1, len(funnel_steps)):
15         step_counts.append(user_funnel['Event name'].apply(lambda x: funnel_steps[i] in x and funnel_steps[i-1] in x).sum())
16     return step_counts
17
18 new_user_counts = create_funnel(funnel_data[funnel_data['Returning users'] == 0]) # Filter for new users
19 returning_user_counts = create_funnel(funnel_data[funnel_data['Returning users'] == 1]) # Filter for returning users
20
21 # Create a DataFrame for visualization
22 funnel_df = pd.DataFrame({
23     'User Type': ['New Users', 'Returning Users'],
24     'Page View': [new_user_counts[0], returning_user_counts[0]],
25     'Form Start': [new_user_counts[1], returning_user_counts[1]],
26     'Form Submit': [new_user_counts[2], returning_user_counts[2]]
27 })
28
29 # Visualize the funnels using Plotly
30 fig = px.funnel(funnel_df, x=['Page View', 'Form Start', 'Form Submit'], y='User Type', title='Conversion Funnel by User Type')
31 fig.show()
```



```
Time Series Analysis

1 import pandas as pd
2 import matplotlib.pyplot as plt
3 from statsmodels.tsa.seasonal import seasonal_decompose
4
5 # 1. Create separate DataFrames for new and returning users
6 new_users_df = df_business[df_business['New users'] == 1] # Filter for new users
7 returning_users_df = df_business[df_business['Returning users'] == 1] # Filter for returning users
8
9 # 2. Calculate daily traffic for new users
10 daily_new_users = new_users_df.groupby('Date')['New users'].count().reset_index()
11 daily_new_users.rename(columns={'New users': 'New User Count'}, inplace=True) # Rename column for clarity
12
13 # 3. Calculate daily traffic for returning users
14 daily_returning_users = returning_users_df.groupby('Date')['Returning users'].count().reset_index()
15 daily_returning_users.rename(columns={'Returning users': 'Returning User Count'}, inplace=True) # Rename column
```

```

16
17 # 4. Merge the two DataFrames on 'Date'
18 daily_traffic = pd.merge(daily_new_users, daily_returning_users, on='Date', how='outer')
19 daily_traffic.fillna(0, inplace=True) # Fill any missing values with 0
20
21 # 5. Perform time series analysis for new users
22 result_new_users = seasonal_decompose(daily_traffic['New User Count'], model='additive', period=7)
23 result_new_users.plot()
24 plt.title('Time Series Decomposition for New Users')
25 plt.show()
26
27 # 6. Perform time series analysis for returning users
28 result_returning_users = seasonal_decompose(daily_traffic['Returning User Count'], model='additive', period=7)
29 result_returning_users.plot()
30 plt.title('Time Series Decomposition for Returning Users')
31 plt.show()
32

```

