In [2]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

User Acquisition

In [3]:
```
User_Acquisition = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sheet_
User_Acquisition
```

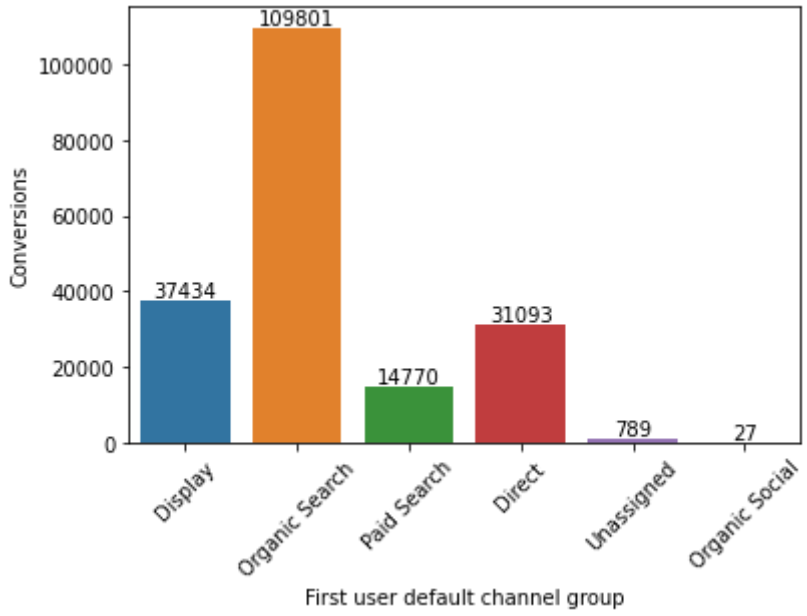
Out[3]:

	First user default channel group	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversions	Tota revenu
0	Display	9957	12008	0.544457	1.206107	58.86209	204820	37434	
1	Organic Search	7652	18141	0.813680	2.367041	534.31280	770710	109801	
2	Paid Search	3025	4408	0.474284	1.458154	102.23780	81997	14770	
3	Direct	1903	4975	0.318808	2.261364	1128.88100	227434	31093	
4	Unassigned	325	1619	0.813159	4.981538	798.34150	33320	789	
5	Organic Social	10	13	0.722222	1.300000	145.30000	248	27	

Channel group by conversions (User_Acquisition data)

In [4]:
```
data = User_Acquisition
x = User_Acquisition['First user default channel group']
y = User_Acquisition['Conversions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
for i in ax.containers:
    ax.bar_label(i)
```

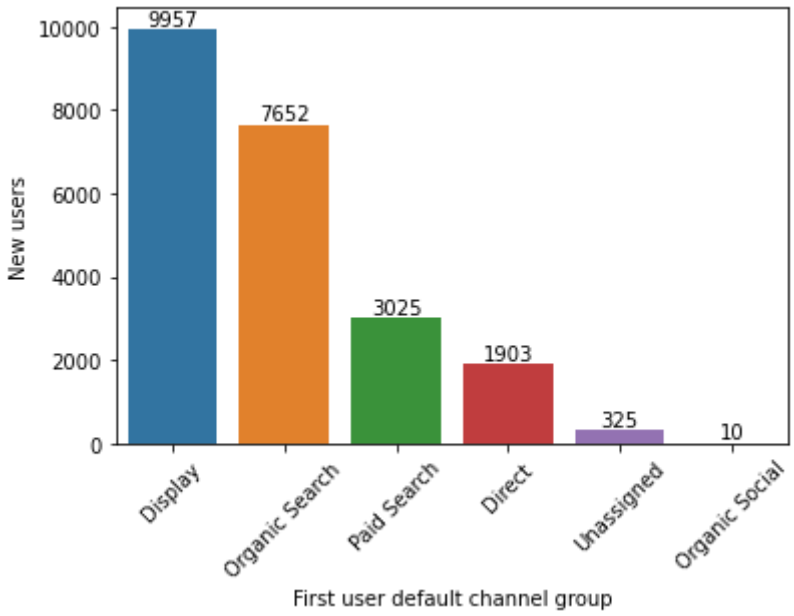
```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



New users on the first user default channel group-wise (User_Acquisition data)

In [5]:
```
data = User_Acquisition
x = User_Acquisition['First user default channel group']
y = User_Acquisition['New users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

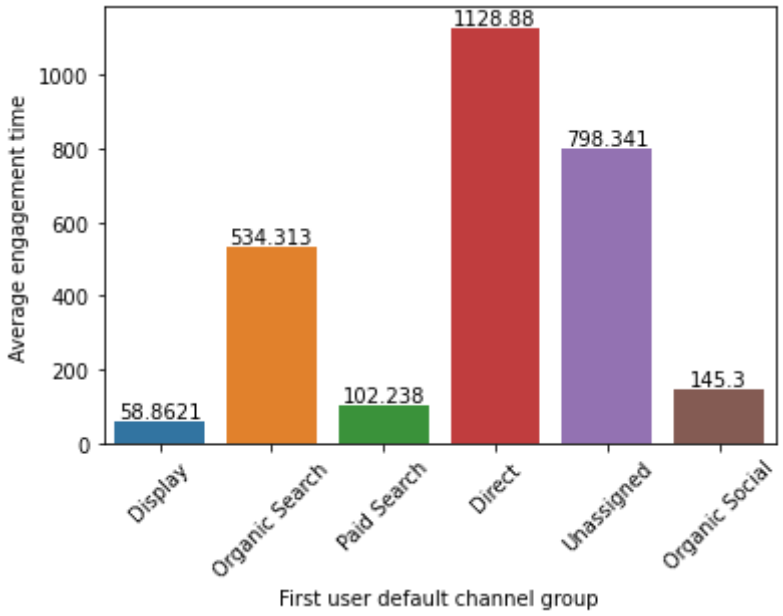


Average engagement time based on the first user's default channel group

(User_Acquisition data)

In [6]:
```
data = User_Acquisition
x = User_Acquisition['First user default channel group']
y = User_Acquisition['Average engagement time']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Traffic Aquisition

In [7]:
```
Traffic_Aquisition = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',she
Traffic_Aquisition
```

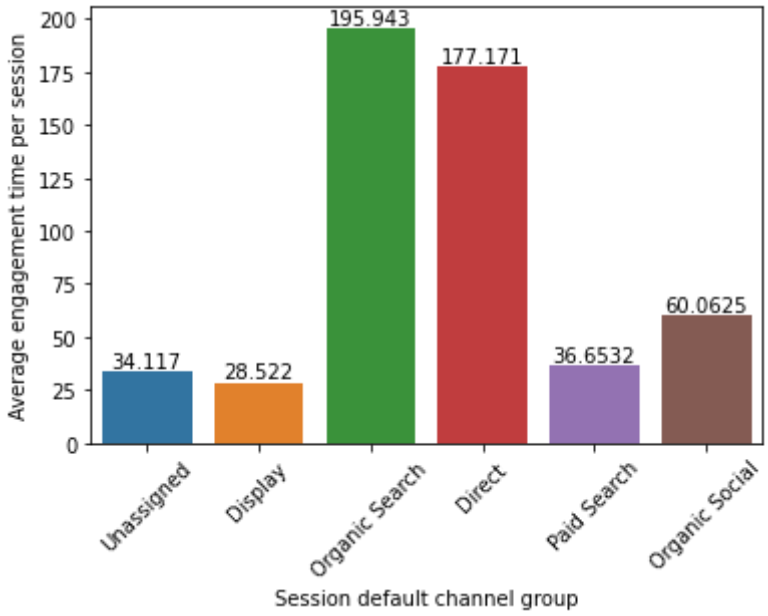
Out[7]:

	Session default channel group	Users	Sessions	Engaged sessions	Average engagement time per session	Engaged sessions per user	Events per session	Engagement rate	Event count
0	Unassigned	20263	13448	1481	34.11704	0.073089	18.023130	0.110128	242375
1	Display	9613	18292	10613	28.52198	1.104026	9.069320	0.580199	165896
2	Organic Search	7689	21241	17814	195.94340	2.316816	29.302290	0.838661	622410
3	Direct	4042	13220	7649	177.17060	1.892380	17.135850	0.578593	226536
4	Paid Search	2909	6788	3452	36.65321	1.186662	8.989982	0.508544	61024
5	Organic Social	11	16	12	60.06250	1.090909	18.000000	0.750000	288

Average engagement time per session based on Session default channel group (Traffic_Aquisition data)

In [8]:
```
data = Traffic_Aquisition
x = Traffic_Aquisition['Session default channel group']
y = Traffic_Aquisition['Average engagement time per session']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

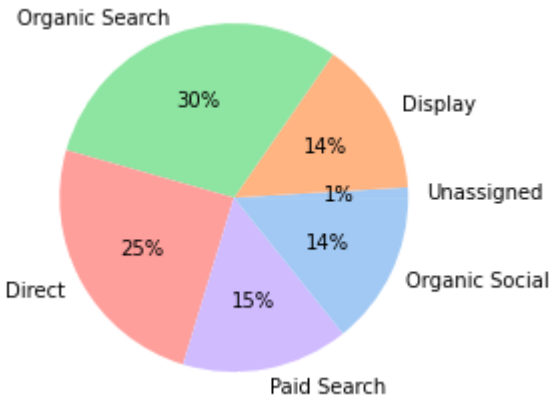


Engaged sessions per user based on Session default channel group (Traffic_Aquisition data)

In [9]:
```
y = Traffic_Aquisition['Session default channel group']
x = Traffic_Aquisition['Engaged sessions per user']

# Create the bar plot
colors = sns.color_palette('pastel')[0:5]
plt.pie(x, labels=y, colors=colors, autopct='%.0f%%')

# Show the plot
plt.show()
```



Event Report

In [10]:
```
Event_Report = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sheet_name
Event_Report
```

Out[10]:

	Event name	Event count	Total users	Event count per user	Total revenue
0	screen_view	694729	23254	30.865870	0
1	notification_receive	125146	1700	138.896800	0
2	user_engagement	124836	22699	5.622230	0
3	notification_dismiss	70128	1369	144.000000	0
4	session_start	61163	23226	3.121357	0
...	...	...	...	...	...
374	Promilo119_myProfile_mediator	1	1	1.000000	0
375	Promilo_feeds	1	1	1.000000	0
376	feeds	1	1	1.000000	0
377	my_interests_screen	1	1	1.000000	0
378	(not set)	0	22269	0.000000	0

379 rows × 5 columns

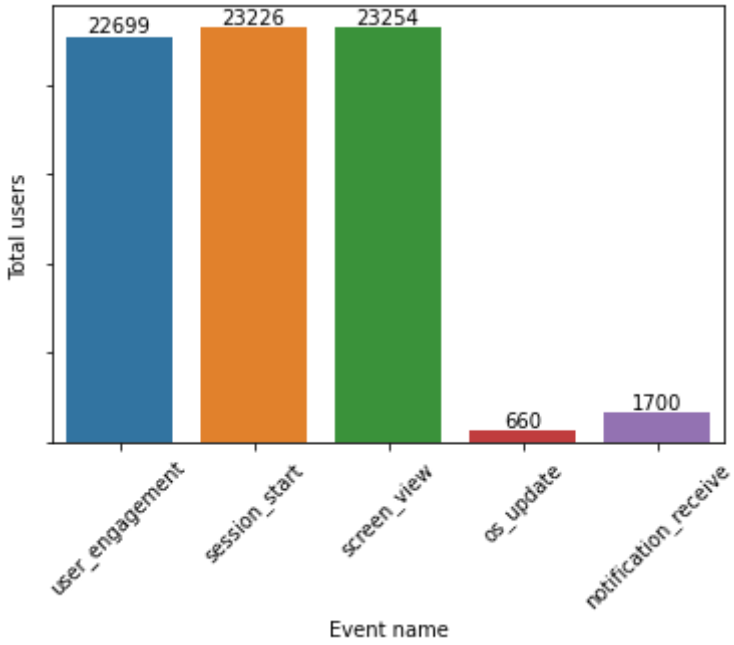
Top 5 Events Name based on Total Users (Event_Report data)

In [72]:
```
highest_EventName_by_Users=Event_Report.sort_values(by=['Event name'],ascending=Fa
```

In [74]:
```
data=highest_EventName_by_Users
x = highest_EventName_by_Users['Event name']
y = highest_EventName_by_Users['Total users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
ax.set_yticklabels(ax.get_yticklabels())#, rotation=45)
```

```
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\1066529168.py:6: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_yticklabels(ax.get_yticklabels())#, rotation=45)
```



Conversion Report

In [12]:
```
Conversion_Report = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',shee
Conversion_Report
```

Out[12]:

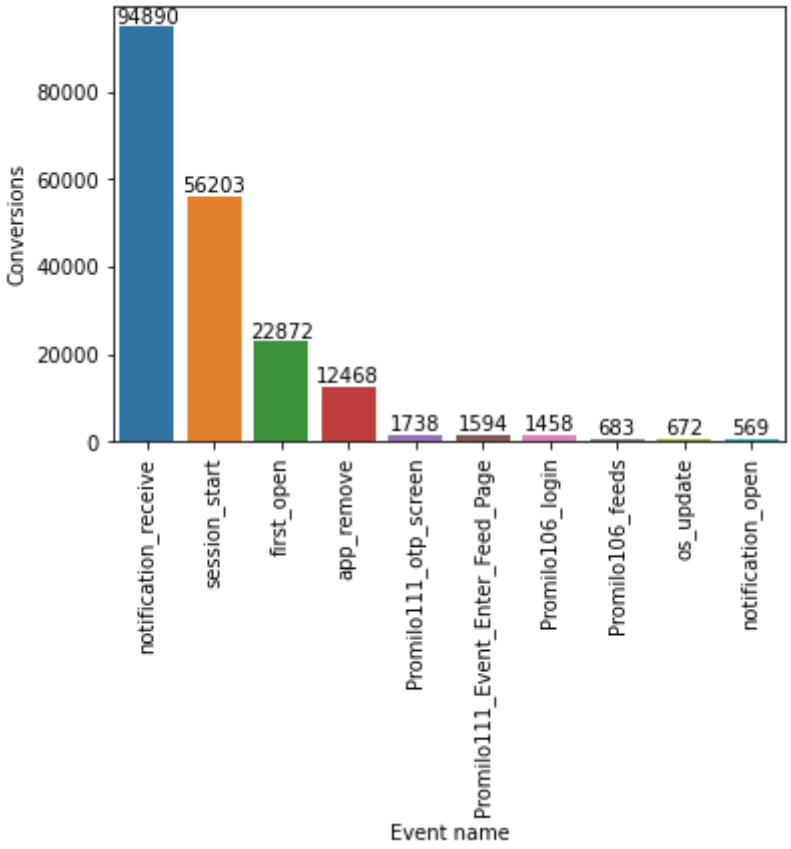
	Event name	Conversions	Total users	Total revenue
0	notification_receive	94890	1311	0
1	session_start	56203	21674	0
2	first_open	22872	23059	0
3	app_remove	12468	12538	0
4	Promilo111_otp_screen	1738	855	0
5	Promilo111_Event_Enter_Feed_Page	1594	969	0
6	Promilo106_login	1458	603	0
7	Promilo106_feeds	683	185	0
8	os_update	672	634	0
9	notification_open	569	308	0
10	Promilo106_feedDetails	195	67	0
11	Promilo106_my_meetings_screen	136	20	0
12	Promilo106_otp_screen	128	90	0
13	Promilo106_resume_builder	127	66	0
14	Promilo106_my_interests_screen	117	23	0
15	Promilo106_dashboard	23	16	0
16	Promilo106_my_profile_learners	21	10	0
17	Promilo106_campaign_interest	20	10	0

Top event name based on highest conversions (Conversion_Report data)

In [92]:
```
highest_EventName_by_Conversions=Conversion_Report.sort_values(by=['Conversions'],a
```

In [93]:
```
data = highest_EventName_by_Conversions
x = highest_EventName_by_Conversions['Event name']
y = highest_EventName_by_Conversions['Conversions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=90)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Pages & Screens Report

In [15]:
```
Pages_and_Screens_Report = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xls
Pages_and_Screens_Report
```

Out[15]:

	Page path and screen class	Views	Users	Views per user	Average engagement time	Event count	Conversi
0	Flutter	156708	8726	17.958740	83.412220	203901	
1	MainActivity	44326	8978	4.937180	78.292160	53374	
2	feeds	18514	4358	4.248279	61.600050	37628	
3	login	16883	7291	2.315595	34.881770	40772	
4	my_rewards_screen	15381	2045	7.521271	94.179950	32910	
5	storyboard	8189	5244	1.561594	5.341152	15676	
6	SignInHubActivity	6650	3778	1.760191	0.003176	6653	
7	registration_screen	5501	3566	1.542625	45.075720	13496	
8	feedDetails	3971	1047	3.792741	69.316140	7820	
9	otp_screen	3291	1678	1.961263	46.864720	10833	
10	video_viewer_screem	2880	1521	1.893491	28.120970	5256	
11	FacebookActivity	2299	675	3.405926	0.524444	2310	
12	resume_builder	1781	828	2.150966	118.043500	3776	
13	CustomTabMainActivity	1301	193	6.740933	0.005181	1302	
14	notification_store	1062	648	1.638889	10.137350	1971	
15	dashboard	1058	411	2.574209	38.114360	2279	
16	myProfile_mediator	1056	600	1.760000	57.020000	2276	
17	WebViewActivity	878	490	1.791837	105.806100	1321	
18	video_tutorial_view	835	722	1.156510	36.303320	1662	
19	my_profile_learners	804	321	2.504673	127.722700	1856	
20	FlutterViewController	758	155	4.890323	15.625810	1060	
21	my_meetings_screen	715	273	2.619048	45.765570	1480	
22	my_interests_screen	688	375	1.834667	29.189330	1340	
23	discovery_screen	486	225	2.160000	70.235560	890	
24	calculator_intro	388	281	1.380783	6.391459	680	
25	campaign_interest	244	58	4.206897	42.379310	459	
26	calculator_one	199	151	1.317881	41.013250	387	
27	UIActivityViewSuccessController	99	18	5.500000	0.111111	101	
28	UIActivityContentViewController	97	17	5.705882	32.411760	177	
29	calculator_two	88	73	1.205479	9.287671	158	
30	SFAuthenticationViewController	76	45	1.688889	12.200000	161	
31	my_profile_professional	67	23	2.913043	184.087000	143	
32	CustomTabActivity	35	24	1.458333	1.666667	36	
33	SFSafariViewController	34	21	1.619048	46.857140	74	
34	CheckoutActivity	24	3	8.000000	304.333300	26	

	Page path and screen class	Views	Users	Views per user	Average engagement time	Event count	Conversi
35	my_profile_others	20	12	1.666667	123.833300	49	
36	PHPickerViewController	13	10	1.300000	9.500000	27	
37	SLComposeViewController	6	4	1.500000	15.250000	13	
38	campaign_meeting	4	3	1.333333	14.333330	7	
39	CAMImagePickerCameraViewController	2	2	1.000000	7.500000	4	
40	UIAlertController	2	2	1.000000	1.000000	4	
41	(not set)	0	9145	0.000000	0.001093	109189	88

Top 5 Highest Page path and screen class based on Average engagement time (Pages_and_Screens_Report data)

In [103…
```
highest_Page_path_and_screen_class_by_Average_engagement_time=Pages_and_Screens_Rep
```

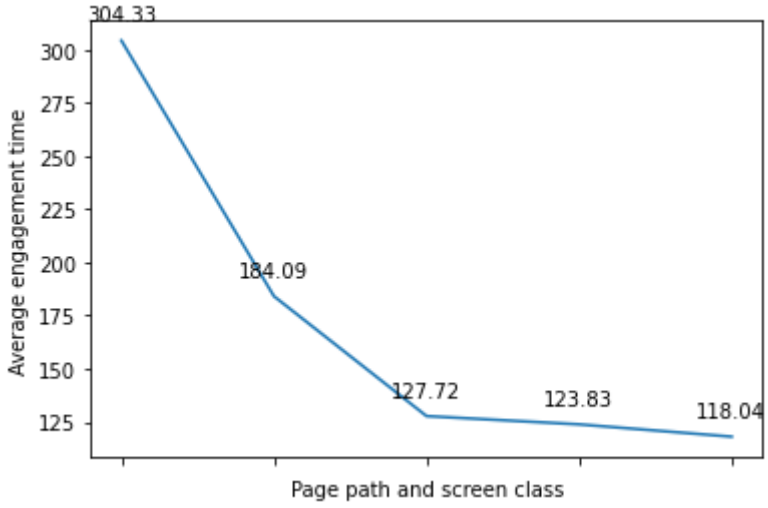
In [104…
```
data = highest_Page_path_and_screen_class_by_Average_engagement_time
x = highest_Page_path_and_screen_class_by_Average_engagement_time['Page path and s
y = highest_Page_path_and_screen_class_by_Average_engagement_time['Average engageme

ax = sns.lineplot(data=data, x=x, y=y)
ax.set_xticklabels(ax.get_xticklabels(), rotation=90)

for x_pos, y_pos in zip(x, y):
    plt.annotate(f'{y_pos:.2f}', (x_pos, y_pos), textcoords="offset points", xytex

plt.show()
```

```
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\4251446356.py:6: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=90)
```



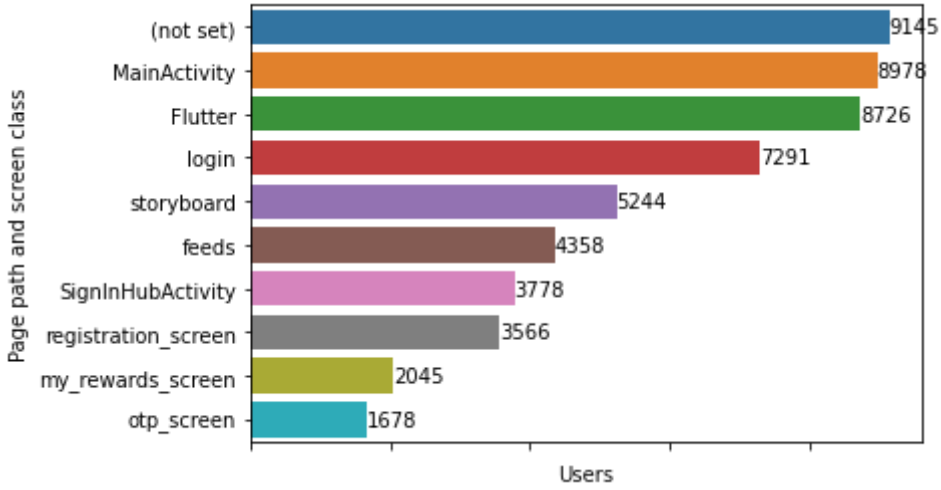
Top 10 Highest Page path and screen class based on users (Pages_and_Screens_Report

data)

In [108…
```
highest_Page_path_and_screen_class_by_Users=Pages_and_Screens_Report.sort_values(by
```

In [111…
```
data = highest_Page_path_and_screen_class_by_Users
x = highest_Page_path_and_screen_class_by_Users['Page path and screen class']
y = highest_Page_path_and_screen_class_by_Users['Users']
ax = sns.barplot(y, x, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\3700780411.py:5: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
```

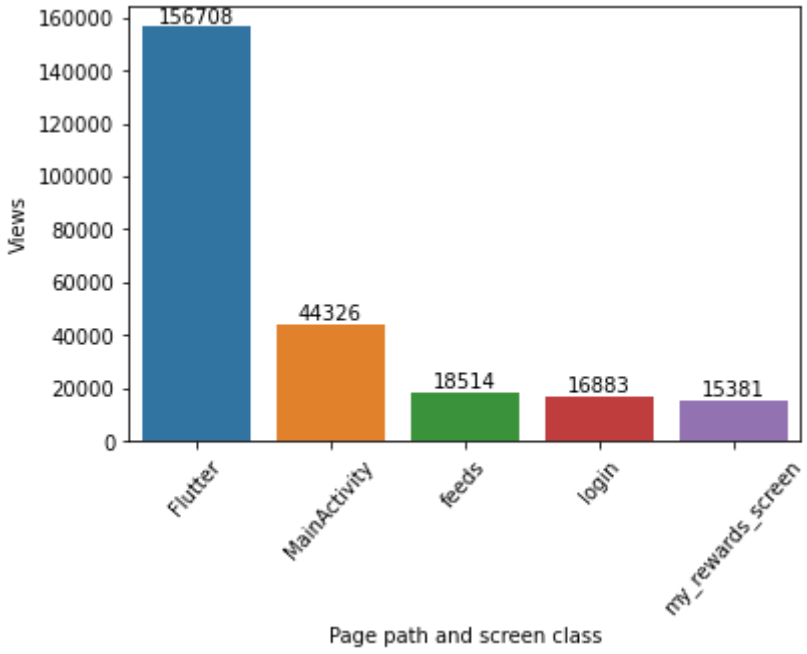


Top 5 Highest Page path and screen class based on views (Pages_and_Screens_Report data)

In [113…
```
highest_Page_path_and_screen_class_by_Views=Pages_and_Screens_Report.sort_values(by
```

In [114…
```
data = highest_Page_path_and_screen_class_by_Views
x = highest_Page_path_and_screen_class_by_Views['Page path and screen class']
y = highest_Page_path_and_screen_class_by_Views['Views']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Demographics Report

In [18]:
```
Demographics_Report = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sh
Demographics_Report
```

Out[18]:

	Country	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversio
0	India	23024	22528	41479	0.593626	1.801555	334.81660	1312097	1927
1	United States	272	213	197	0.491272	0.724265	50.96324	3157	6
2	Canada	37	18	25	0.416667	0.675676	43.21622	410	1
3	(not set)	36	36	17	0.459459	0.472222	24.80556	241	
4	United Kingdom	20	8	13	0.371429	0.650000	61.85000	289	
5	Singapore	17	6	13	0.419355	0.764706	70.00000	299	
6	Japan	11	6	11	0.550000	1.000000	51.45455	283	
7	Australia	10	7	8	0.500000	0.800000	26.90000	132	
8	Bangladesh	7	2	10	0.625000	1.428571	49.85714	121	
9	Germany	7	2	6	0.500000	0.857143	15.42857	82	
10	Malaysia	7	7	7	0.636364	1.000000	536.00000	507	
11	Nepal	7	3	5	0.357143	0.714286	13.85714	74	
12	Saudi Arabia	7	5	6	0.600000	0.857143	25.28571	74	
13	United Arab Emirates	5	3	3	0.300000	0.600000	7.60000	64	
14	Kuwait	4	3	5	0.833333	1.250000	36.50000	91	
15	Myanmar (Burma)	3	2	8	0.533333	2.666667	47.00000	142	
16	Qatar	3	2	3	0.600000	1.000000	20.66667	27	
17	China	2	2	4	1.000000	2.000000	61.00000	42	
18	Indonesia	2	1	2	1.000000	1.000000	8.50000	21	
19	Ireland	2	2	1	0.500000	0.500000	72.00000	61	
20	Italy	2	2	2	0.666667	1.000000	14.50000	23	
21	Netherlands	2	2	2	0.666667	1.000000	156.50000	58	
22	South Korea	2	0	4	0.444444	2.000000	45.00000	49	
23	Switzerland	2	0	1	0.500000	0.500000	2.00000	9	
24	Afghanistan	1	1	1	1.000000	1.000000	17.00000	6	
25	Argentina	1	1	1	1.000000	1.000000	12.00000	6	
26	Bahamas	1	1	1	1.000000	1.000000	13.00000	6	
27	Dominican Republic	1	1	1	1.000000	1.000000	160.00000	25	
28	France	1	0	1	0.333333	1.000000	14.00000	18	
29	Guernsey	1	1	1	1.000000	1.000000	30.00000	8	
30	Iran	1	0	0	0.000000	0.000000	1.00000	3	

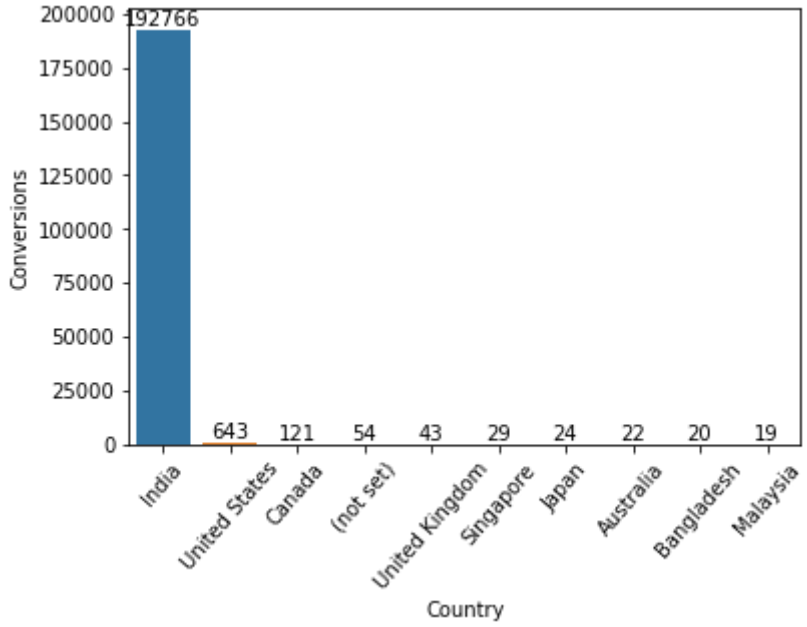
	Country	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversic
31	Kyrgyzstan	1	1	1	1.000000	1.000000	20.00000	11	
32	Latvia	1	1	1	1.000000	1.000000	16.00000	7	
33	Norway	1	0	0	0.000000	0.000000	1.00000	7	
34	Oman	1	1	1	1.000000	1.000000	2.00000	9	
35	Panama	1	0	1	1.000000	1.000000	6.00000	9	
36	Romania	1	1	1	1.000000	1.000000	13.00000	6	
37	Russia	1	1	1	0.500000	1.000000	152.00000	23	
38	Serbia	1	1	1	1.000000	1.000000	32.00000	8	
39	Sweden	1	1	1	1.000000	1.000000	9.00000	8	
40	Czechia	0	0	0	0.000000	0.000000	0.00000	2	
41	Hungary	0	0	0	0.000000	0.000000	0.00000	1	
42	Kenya	0	0	0	0.000000	0.000000	0.00000	1	
43	Maldives	0	0	0	0.000000	0.000000	0.00000	1	
44	Pakistan	0	0	0	0.000000	0.000000	0.00000	3	
45	Sri Lanka	0	0	0	0.000000	0.000000	0.00000	1	
46	Ukraine	0	0	0	0.000000	0.000000	0.00000	7	

Top 10 country based on highest conversion (Demographics_Report data)

In [132…
```
top_Country_by_Conversions=Demographics_Report.sort_values(by=['Conversions'],asce
```

In [133…
```
data = top_Country_by_Conversions
x = top_Country_by_Conversions['Country']
y = top_Country_by_Conversions['Conversions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

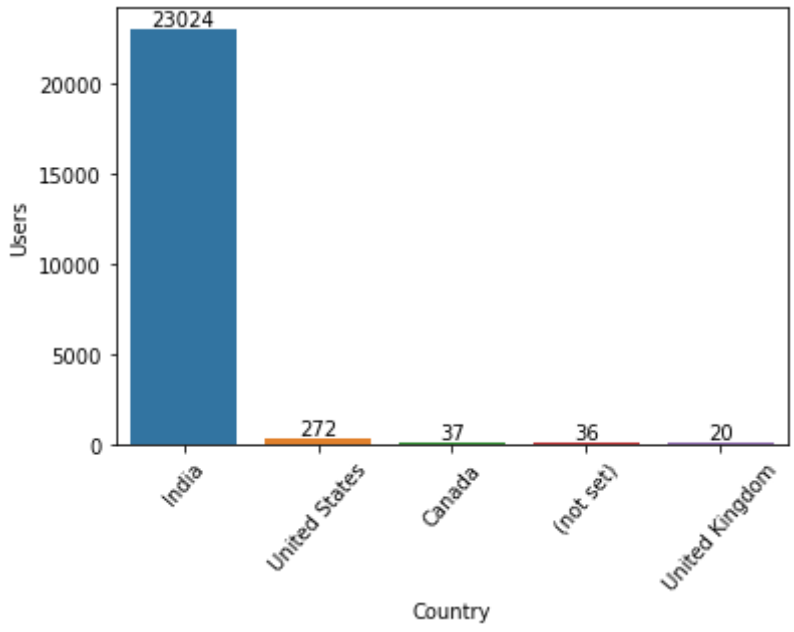


Top 5 country based on highest Users (Demographics_Report data)

In [136…
```
top_Country_by_users=Demographics_Report.sort_values(by=['Users'],ascending=False)
```

In [137…
```
data = top_Country_by_users
x = top_Country_by_users['Country']
y = top_Country_by_users['Users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

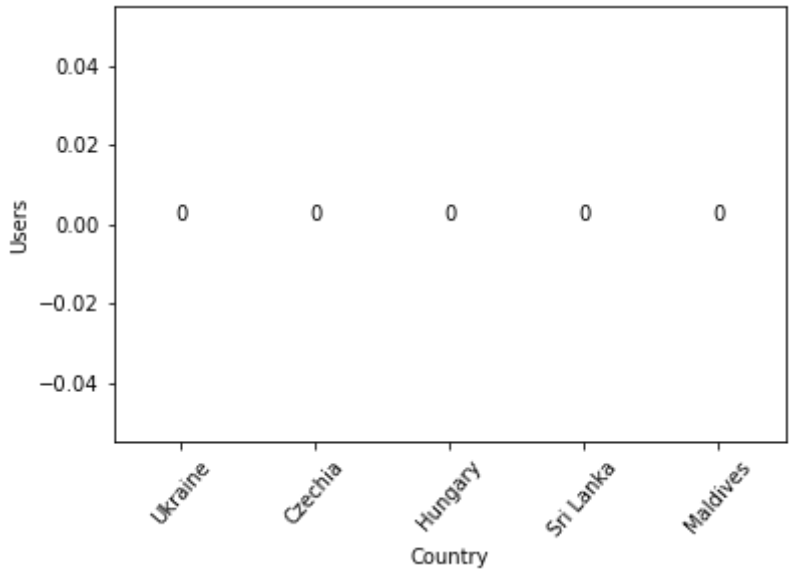


Country with least Users (Demographics_Report data)

In [135…
```
bottom_Country_by_users=Demographics_Report.sort_values(by=['Users'],ascending=Tru
```

In [138…
```
data = bottom_Country_by_users
x = bottom_Country_by_users['Country']
y = bottom_Country_by_users['Users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

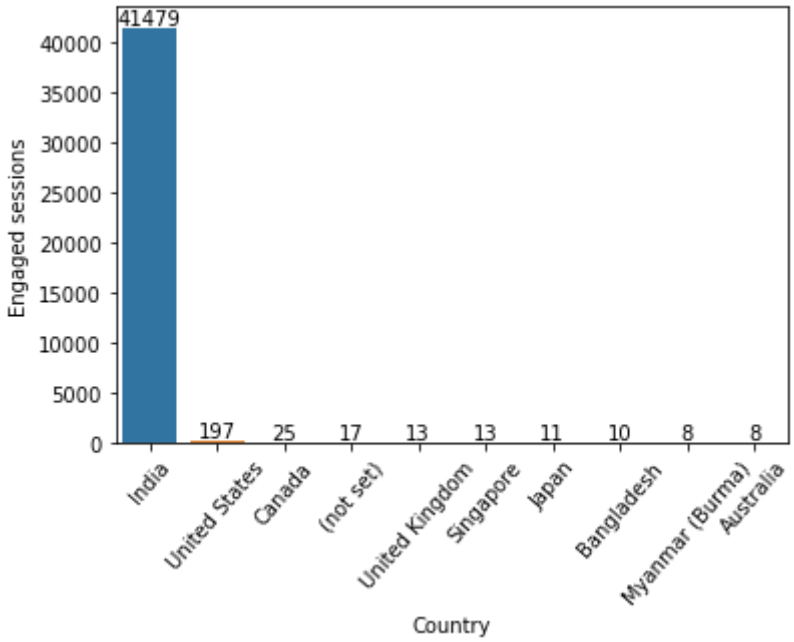


Top 10 country based on highest Engaged sessions (Demographics_Report data)

In [139…
```
top_Country_by_Engaged_sessions=Demographics_Report.sort_values(by=['Engaged sessi
```

In [140…
```
data = top_Country_by_Engaged_sessions
x = top_Country_by_Engaged_sessions['Country']
y = top_Country_by_Engaged_sessions['Engaged sessions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Citiwise Report

In [20]:
```
Citiwise_Report = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sheet_
Citiwise_Report
```

Out[20]:

	Town/City	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversior
0	Bengaluru	6097	5685	15013	0.769385	2.462359	762.20550	607200	6293
1	Patna	1594	1467	2127	0.440646	1.334379	98.22208	38830	698
2	Hyderabad	1038	920	1578	0.569264	1.520231	243.69080	96826	3410
3	Indore	983	915	1241	0.426460	1.262462	67.89115	21383	412
4	Lucknow	897	839	1125	0.450180	1.254181	83.40580	21041	365
...	...	...	...	...	...	...	...	...	
569	Titwala	0	0	0	0.000000	0.000000	0.00000	1	
570	Vagator	0	0	0	0.000000	0.000000	0.00000	16	1
571	Vellakoil	0	0	0	0.000000	0.000000	0.00000	1	
572	Wardha	0	0	0	0.000000	0.000000	0.00000	1	
573	Washington	0	0	0	0.000000	0.000000	0.00000	1	

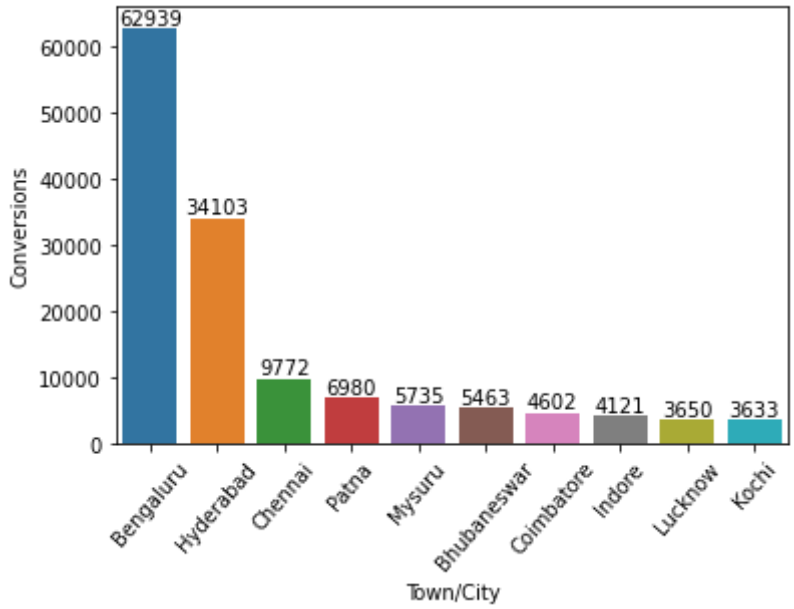
574 rows × 10 columns

Top 10 Town/city based on highest conversions (Citiwise_Report Data)

In [142…
```
top_Town_City_by_Conversions=Citiwise_Report.sort_values(by=['Conversions'],ascend
```

In [143…
```
data = top_Town_City_by_Conversions
x = top_Town_City_by_Conversions['Town/City']
y = top_Town_City_by_Conversions['Conversions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

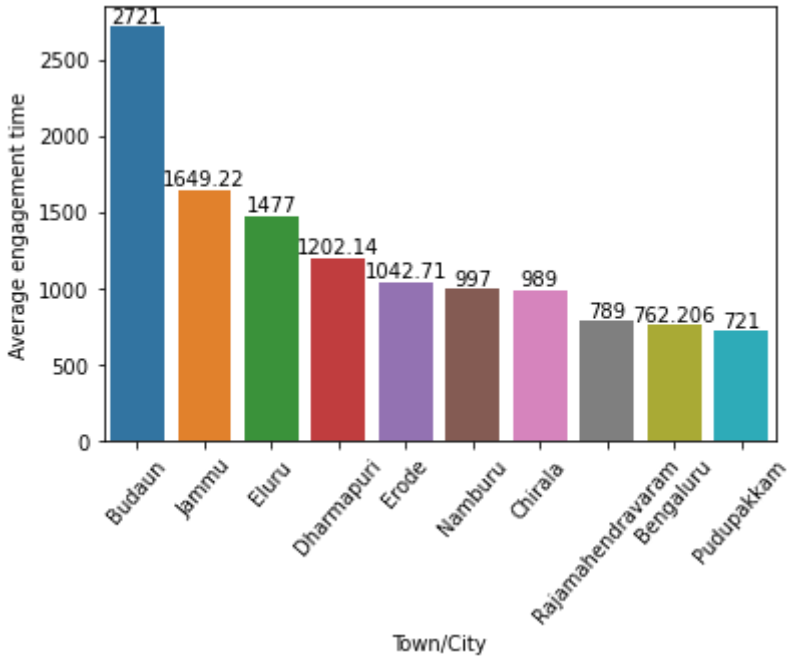


Top 10 Town/city based on highest Average engagement time (Citiwise_Report Data)

In [146…
```
top_Town_City_by_Average_engagement_time=Citiwise_Report.sort_values(by=['Average
```

In [148…
```
data = top_Town_City_by_Average_engagement_time
x = top_Town_City_by_Average_engagement_time['Town/City']
y = top_Town_City_by_Average_engagement_time['Average engagement time']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

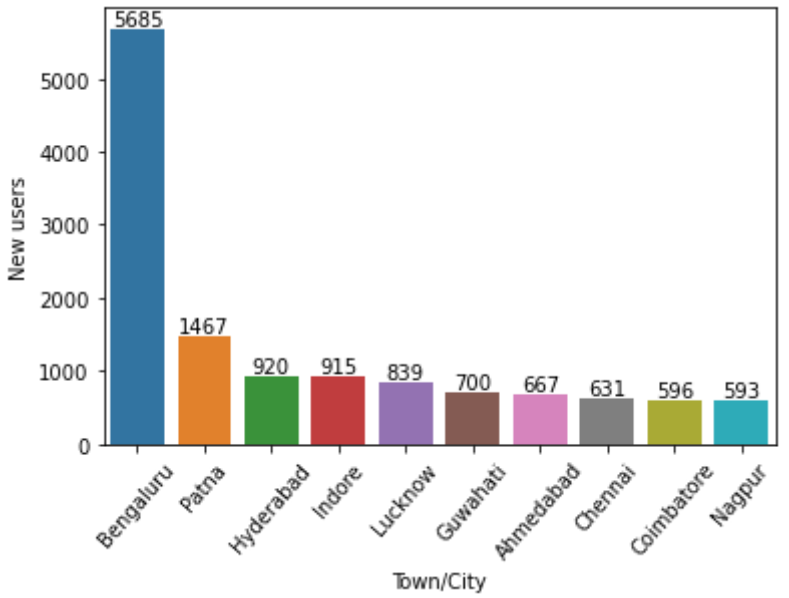


Top 10 Town/city based on highest New users (Citiwise_Report Data)

In [149…
```
top_Town_City_by_New_users=Citiwise_Report.sort_values(by=['New users'],ascending=
```

In [150…
```
data = top_Town_City_by_New_users
x = top_Town_City_by_New_users['Town/City']
y = top_Town_City_by_New_users['New users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Gender Report

In [22]:
```
Gender_Report = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sheet_nar
Gender_Report
```

Out[22]:

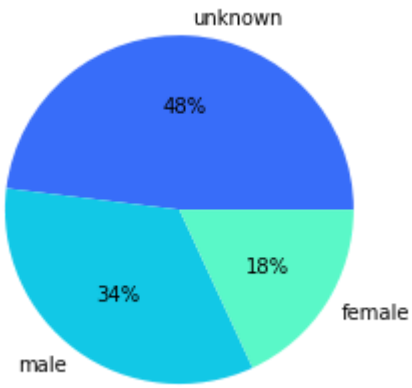
	Gender	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversions
0	unknown	13142	12691	23161	0.564077	1.762365	439.5776	761771	93180
1	male	7218	5877	10467	0.543091	1.450125	128.2319	282504	65651
2	female	4944	4304	7877	0.637710	1.593244	208.7407	274254	35083

Genders based on Conversions (Gender_Report data)

In [123…
```
y = Gender_Report['Gender']
x = Gender_Report['Conversions']

# Create the bar plot
colors = sns.color_palette('rainbow')[0:5]
plt.pie(x, labels=y, colors=colors, autopct='%2.0f%%')

# Show the plot
plt.show()
```

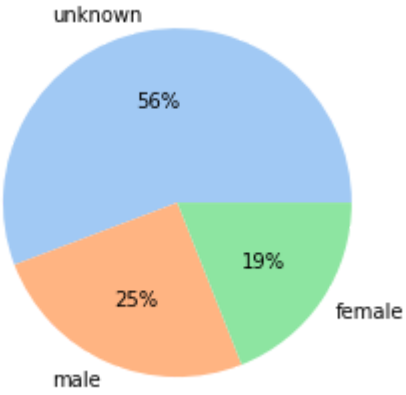


Genders based on Engaged sessions (Gender_Report data)

In [24]:
```
y = Gender_Report['Gender']
x = Gender_Report['Engaged sessions']

# Create the bar plot
colors = sns.color_palette('pastel')[0:5]
plt.pie(x, labels=y, colors=colors, autopct='%.0f%%')
```

```
# Show the plot
plt.show()
```

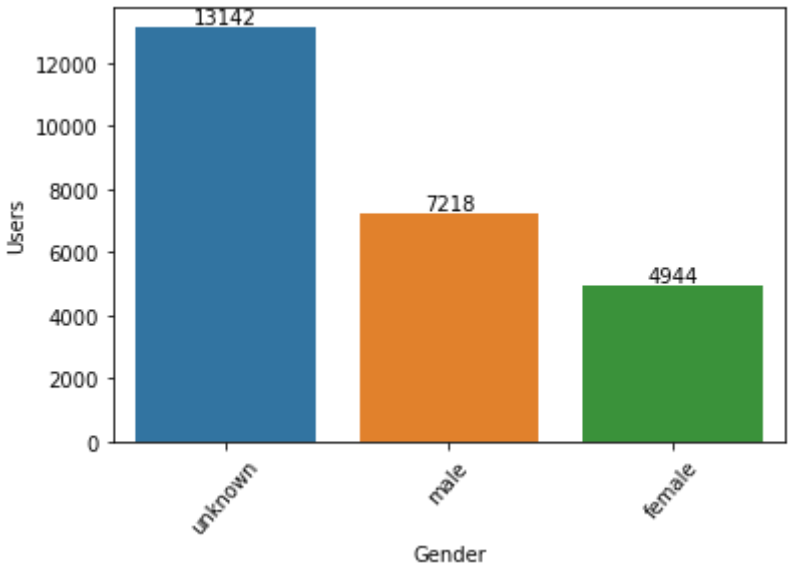


Genders based on Users (Gender_Report data)

In [126…

```
data = Gender_Report
x = Gender_Report['Gender']
y = Gender_Report['Users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



User By Interest

In [159…

```
User_By_Interest = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sheet_
User_By_Interest
```

Out[159]:

	Interests	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	C
0	Shoppers	10950	9256	15652	0.581534	1.429406	162.83470	490664	
1	Media & Entertainment/Comics & Animation Fans	10946	9247	15680	0.583008	1.432487	165.17720	491025	
2	Technology/Mobile Enthusiasts	10934	9239	15619	0.582451	1.428480	162.69450	489353	
3	Food & Dining/Cooking Enthusiasts	8410	6970	12332	0.602325	1.466350	176.95670	409713	
4	Sports & Fitness/Health & Fitness Buffs	5844	4580	8226	0.588328	1.407598	155.14510	257831	
...	...	...	...	...	...	...	...	...	
84	Food & Dining	15	4	24	0.489796	1.600000	70.86667	460	
85	Home & Garden	15	5	12	0.631579	0.800000	133.86670	453	
86	Sports & Fitness/Sports Fans/Racquetball Enthu...	11	11	21	0.840000	1.909091	487.45450	736	
87	Vehicles & Transportation	11	3	9	0.450000	0.818182	71.54545	161	
88	Sports & Fitness/Sports Fans/Fans of American ...	10	4	18	0.782609	1.800000	201.40000	375	

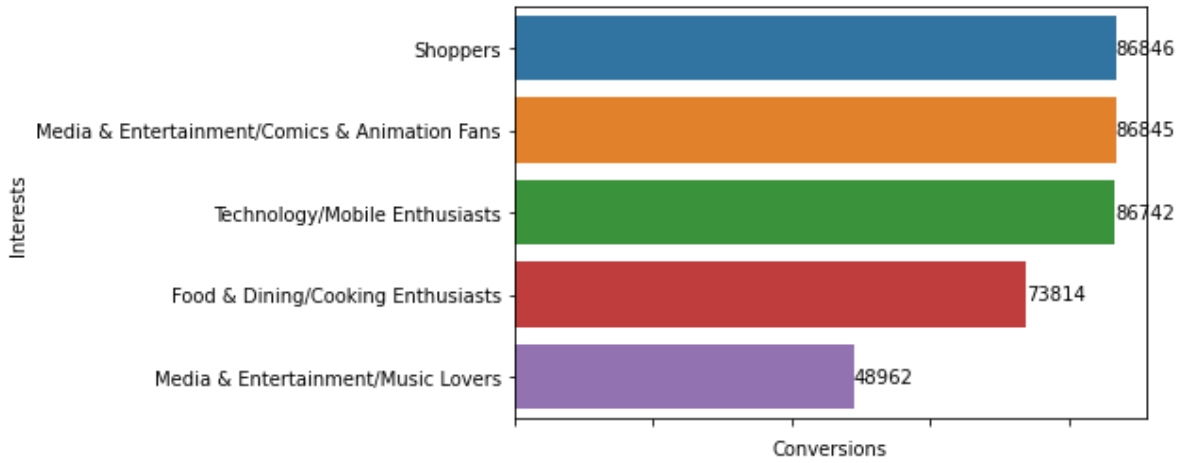
89 rows × 10 columns

Top 5 Interests based on Conversions (User_By_Interest data)

In [153...
```
top_Interests_by_Conversions=User_By_Interest.sort_values(by=['Conversions'],ascen
```

In [154...
```
data = top_Interests_by_Conversions
x = top_Interests_by_Conversions['Conversions']
y = top_Interests_by_Conversions['Interests']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\1531384938.py:5: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
```

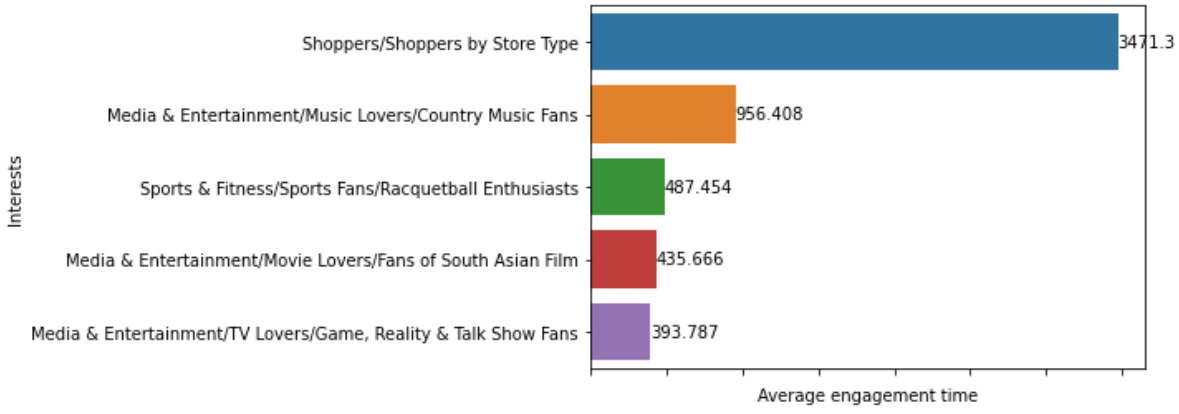


Top 5 Interests based on Average engagement time (User_By_Interest data)

In [163...
```
top_Interests_by_Average_engagement_time=User_By_Interest.sort_values(by=['Average
```

In [166...
```
data = top_Interests_by_Average_engagement_time
x = top_Interests_by_Average_engagement_time['Average engagement time']
y = top_Interests_by_Average_engagement_time['Interests']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\2017850056.py:5: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
```

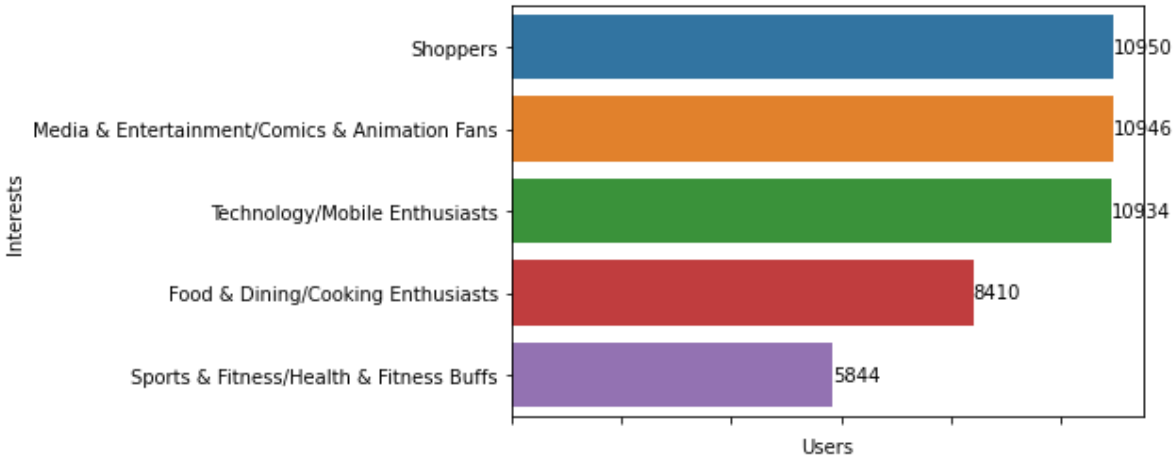


Top 5 Interests based on users (User_By_Interest data)

In [167…
```
top_Interests_by_users=User_By_Interest.sort_values(by=['Users'],ascending=False)[
```

In [168…
```
data = top_Interests_by_users
x = top_Interests_by_users['Users']
y = top_Interests_by_users['Interests']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\3230297912.py:5: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
```

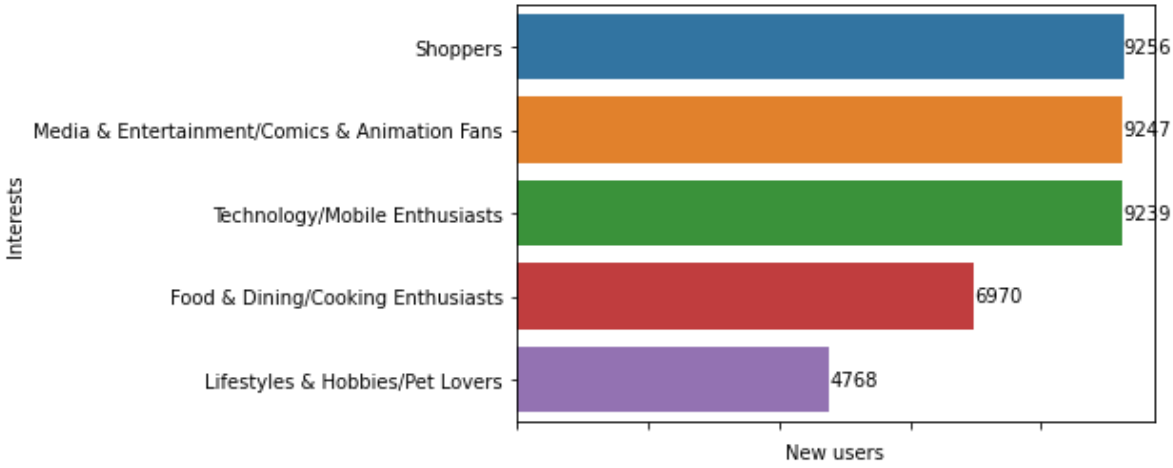


Top 5 Interests based on new users (User_By_Interest data)

In [170…
```
top_Interests_by_New_users=User_By_Interest.sort_values(by=['New users'],ascending
```

In [171…
```
data = top_Interests_by_New_users
x = top_Interests_by_New_users['New users']
y = top_Interests_by_New_users['Interests']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\608256470.py:5: UserWarning: FixedF
ormatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
```



User by Language

In [169…

```
User_By_Language = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sheet_
User_By_Language
```

Out[169]:

	Language	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversior
0	English	22495	21990	40639	0.595147	1.806579	341.36350	1297970	18994
1	Hindi	586	552	798	0.406314	1.361775	60.03413	13523	269
2	Marathi	85	84	98	0.426087	1.152941	38.48235	1589	32
3	Gujarati	78	77	100	0.448430	1.282051	46.53846	1794	32
4	Telugu	43	42	56	0.455285	1.302326	36.65116	812	17
5	Tamil	36	36	43	0.518072	1.194444	45.86111	615	11
6	Malayalam	17	15	36	0.654545	2.117647	161.94120	548	7
7	Bengali	14	11	18	0.600000	1.285714	50.07143	217	3
8	Chinese	13	13	13	1.000000	1.000000	136.76920	138	2
9	Kannada	13	12	31	0.500000	2.384615	249.07690	680	7
10	Panjabi	9	9	17	0.708333	1.888889	92.44444	229	3
11	Persian	8	8	6	0.400000	0.750000	28.25000	99	2
12	Spanish	6	6	8	0.470588	1.333333	22.16667	113	2
13	Finnish	4	3	4	0.571429	1.000000	89.25000	64	1
14	Japanese	4	4	3	0.428571	0.750000	9.25000	49	1
15	Oriya	4	4	2	0.666667	0.500000	7.50000	29	1
16	Afrikaans	1	1	1	1.000000	1.000000	37.00000	12	
17	Assamese	1	0	1	1.000000	1.000000	42.00000	6	
18	German	1	1	0	0.000000	0.000000	0.00000	5	
19	Malay	1	1	1	1.000000	1.000000	2.00000	7	
20	Nepali	1	1	1	1.000000	1.000000	5.00000	7	
21	Russian	1	1	0	0.000000	0.000000	70.00000	12	
22	Urdu	1	1	0	0.000000	0.000000	1.00000	7	
23	Sanskrit	0	0	0	0.000000	0.000000	0.00000	4	

Top 5 Languages based on highest Conversions (User_By_Language data)

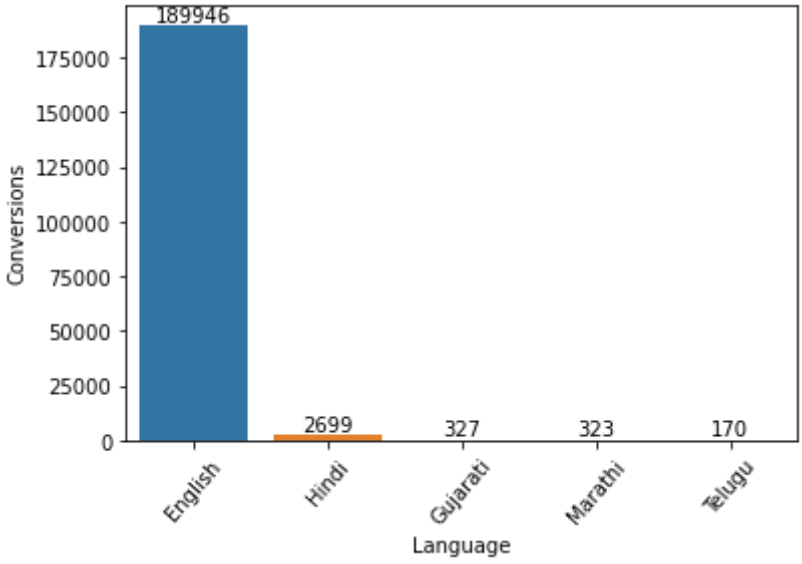
In [174…

```
top_Languages_by_Conversions=User_By_Language.sort_values(by=['Conversions'],ascen
```

In [176…

```
data = top_Languages_by_Conversions
x = top_Languages_by_Conversions['Language']
y = top_Languages_by_Conversions['Conversions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

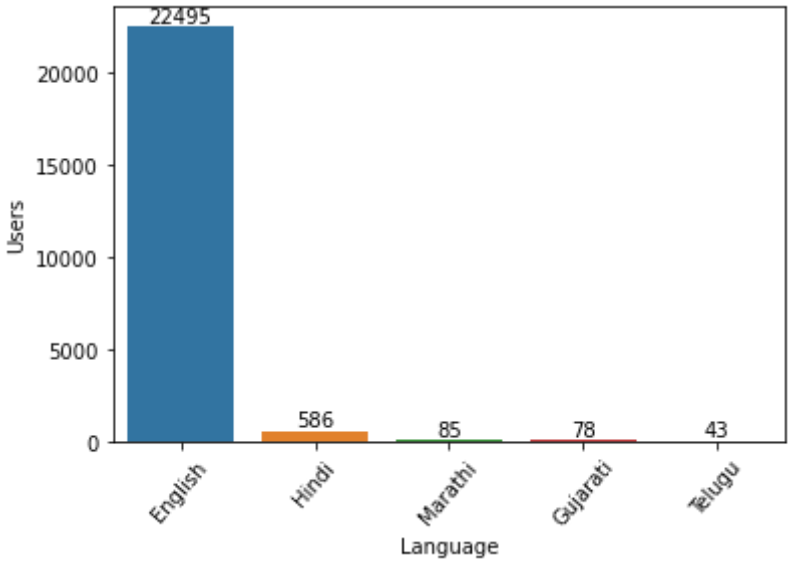


Top 5 Languages based on highest Users (User_By_Language data)

In [177…
```
top_Languages_by_Users=User_By_Language.sort_values(by=['Users'],ascending=False)[
```

In [178…
```
data = top_Languages_by_Users
x = top_Languages_by_Users['Language']
y = top_Languages_by_Users['Users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

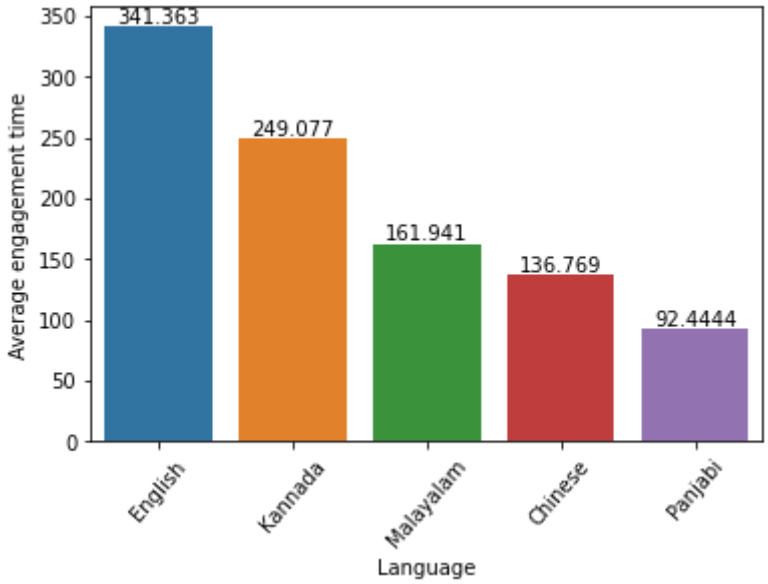


Top 5 Languages based on highest Average engagement time (User_By_Language data)

In [184…
```
top_Language_by_Average_engagement_time=User_By_Language.sort_values(by=['Average
```

In [185…
```
data = top_Language_by_Average_engagement_time
x = top_Language_by_Average_engagement_time['Language']
y = top_Language_by_Average_engagement_time['Average engagement time']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



User By Age

In [31]:
```
User_By_Age = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',sheet_name=
User_By_Age
```

Out[31]:

	Age	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversions
0	unknown	14303	13636	24976	0.569098	1.746207	422.22330	817501	99310
1	18-24	4282	3678	7291	0.695308	1.702709	251.16300	309328	53661
2	25-34	2920	2161	3749	0.504780	1.283904	97.24144	90074	20172
3	65+	1422	1081	1640	0.539829	1.153305	52.30661	24780	4891
4	55-64	1403	979	1552	0.519411	1.106201	55.37063	25169	4823
5	35-44	1202	785	1420	0.510424	1.181364	96.08236	33016	8111
6	45-54	810	552	881	0.561862	1.087654	84.54321	18661	2946

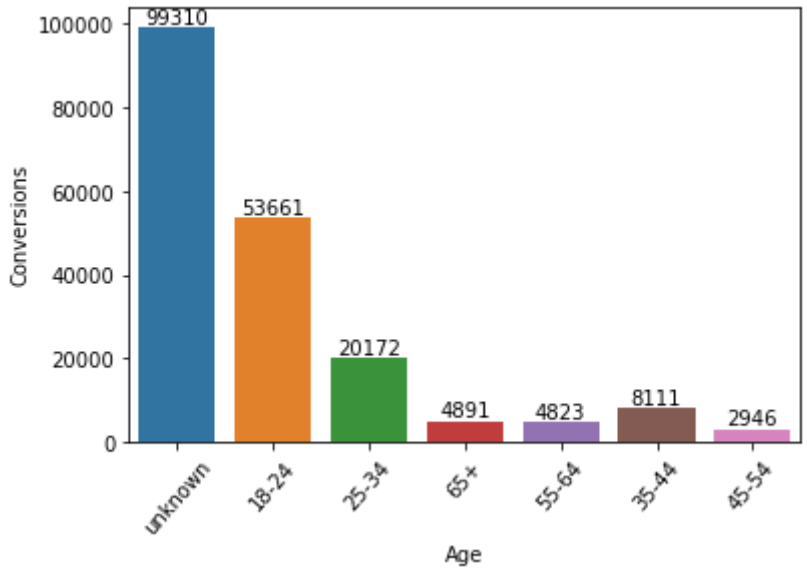
In [ ]:

Age based on conversions (User_By_Age data)

In [191…

```
data = User_By_Age
x = User_By_Age['Age']
y = User_By_Age['Conversions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

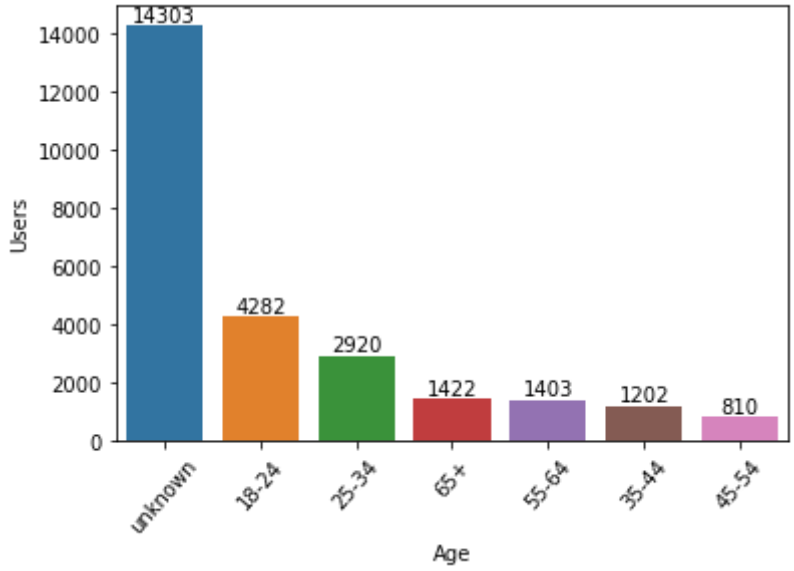
```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Age based on Users (User_By_Age data)

In [189…
```
data = User_By_Age
x = User_By_Age['Age']
y = User_By_Age['Users']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

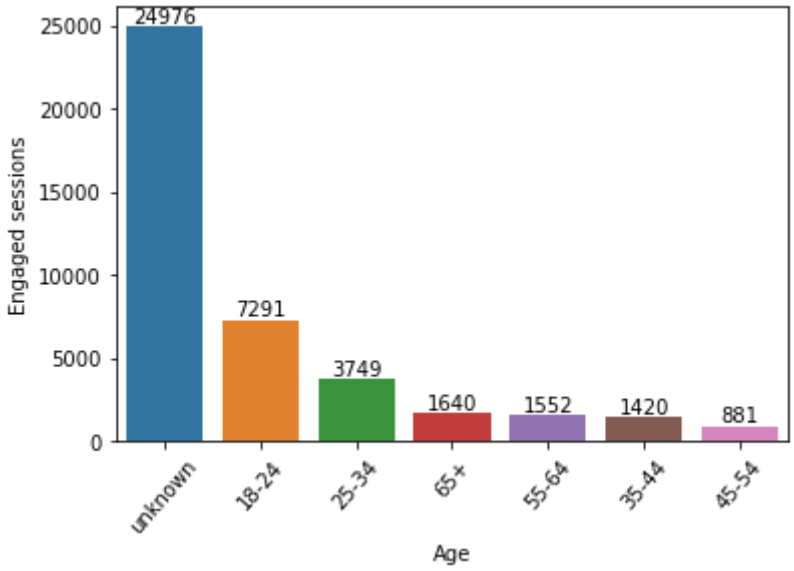
```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Age based on Engaged sessions (User_By_Age data)

In [190…
```
data = User_By_Age
x = User_By_Age['Age']
y = User_By_Age['Engaged sessions']
ax = sns.barplot(x, y, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=49)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Google Ads Report

In [209…

```
Google_Ads_Report = pd.read_excel('I:\p\App Analytics Report-06.05.2023.xlsx',shee
Google_Ads_Report
```

Out[209]:

	Session Google Ads campaign	Users	Sessions	Engaged sessions	Google Ads clicks	Google Ads cost	Google Ads cost per click	Conversions	Cost convers
0	App Installation for May -- Shahid	5429	10936	6276	147100	179175.00000	1.218049	12257	14.618
1	App Install-States-A200Inst-20Jun22	842	1655	968	28742	24309.13000	0.845770	1794	13.550
2	App Install-States-B100Installs-22Jun22	742	1332	780	17809	22374.58000	1.256363	1422	15.734
3	App Install for April -- Shahid	473	976	546	19302	20525.18000	1.063370	1115	18.408
4	Video-AppInstall-PS-Internships-11Jul22	510	966	515	9831	6377.83300	0.648747	1032	6.180
5	App promotion-App-3	732	945	763	5793	12084.04000	2.085972	922	13.106
6	App Instal-States-B200 &A100Inst-22Jun22	373	742	425	10595	11993.01000	1.131950	851	14.092
7	App Install-1to5NC-StateA200-07Jul22	370	610	462	3659	8839.72300	2.415885	709	12.467
8	App Instal-6to10NC-States-A200Inst-07Jul22	242	432	296	4475	9204.69600	2.056915	630	14.610
9	Video-AppInstall-PS-Browsing-11Jul22	91	188	112	1899	1535.27000	0.808462	206	7.452
10	Video-AppInstall-PS-Webinar-11Jul22	78	124	81	893	1903.41800	2.131487	150	12.689
11	Video-AppInstall-PS-Colleges-11Jul22	46	77	50	1851	1263.62500	0.682671	101	12.511
12	Video-AppInstall-	38	75	39	1706	935.72270	0.548489	76	12.312

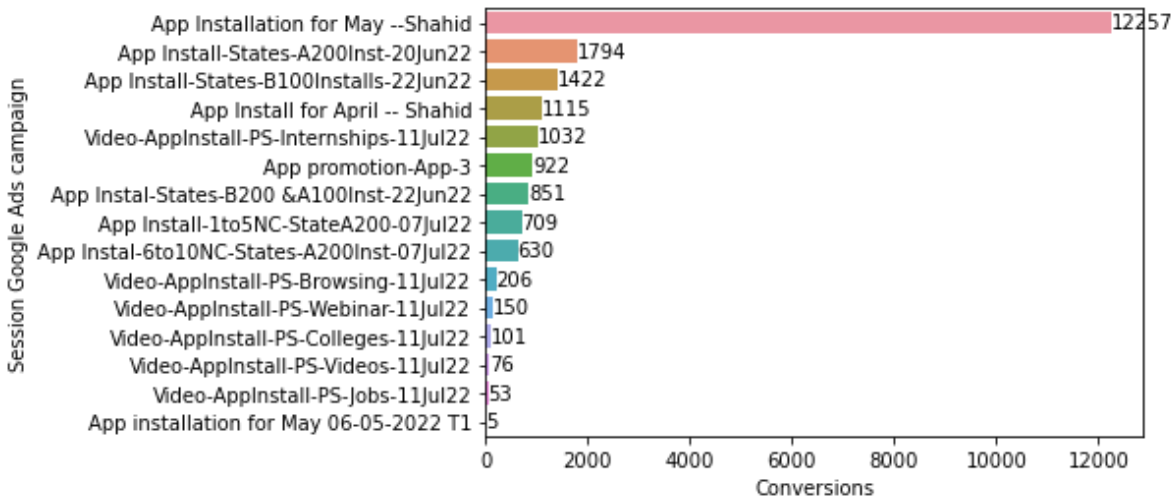
	Session Google Ads campaign	Users	Sessions	Engaged sessions	Google Ads clicks	Google Ads cost	Google Ads cost per click	Conversions	Cost convers
	PS-Videos-11Jul22								
13	Video-AppInstall-PS-Jobs-11Jul22	25	49	32	1649	800.09510	0.485200	53	15.096
14	App installation for May 06-05-2022 T1	2	5	5	14	16.62396	1.187426	5	3.324

Session Google Ads campaign based on Conversions (Google_Ads_Report Data)

In [208…

```
data=Google_Ads_Report
y = Google_Ads_Report['Session Google Ads campaign']
x = Google_Ads_Report['Conversions']
ax = sns.barplot(x, y, data=data)
ax.set_yticklabels(ax.get_yticklabels(), rotation=0)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```



In [ ]:

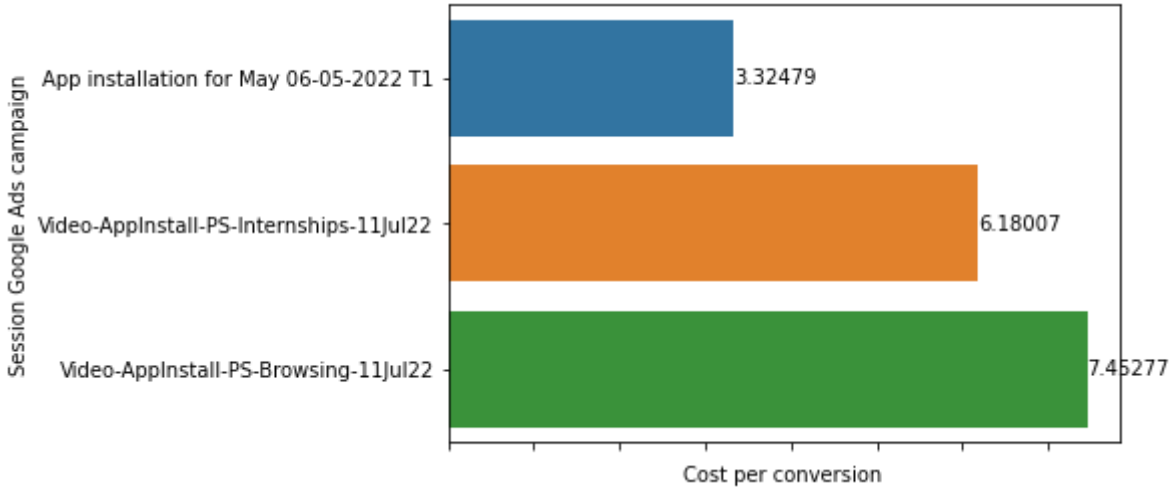
In [ ]:

Top 3 Best Session Google Ads campaign based on Cost per conversion (Google_Ads_Report data)

In [80]:
```
df1=Google_Ads_Report.sort_values(by=['Cost per conversion'])[['Session Google Ads
```

In [195…
```
data = df1
x = df1['Session Google Ads campaign']
y = df1['Cost per conversion']
ax = sns.barplot(y, x, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\2248000660.py:5: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
```

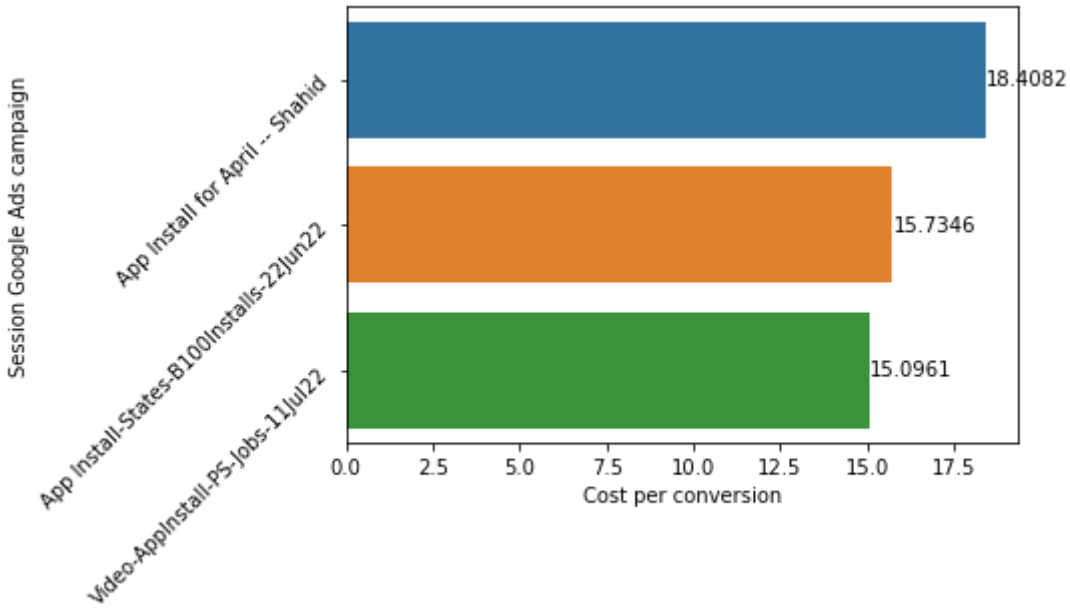


Top 3 Worst Session Google Ads campaign based on Cost per conversion (Google_Ads_Report data)

In [81]:
```
df2=Google_Ads_Report.sort_values(by=['Cost per conversion'],ascending=False)[['Se
```

In [86]:
```
data=df2
y = df2['Session Google Ads campaign']
x = df2['Cost per conversion']
ax = sns.barplot(x, y, data=data)
ax.set_yticklabels(ax.get_yticklabels(), rotation=45)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
```

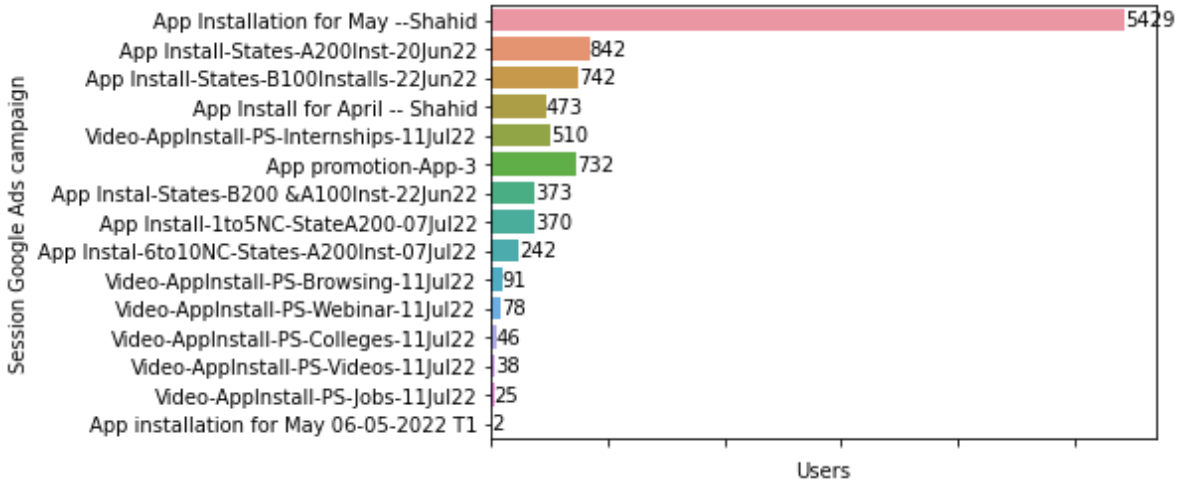


Session Google Ads campaign based on users (Google_Ads_Report data)

In [197…

```
data = Google_Ads_Report
x = Google_Ads_Report['Session Google Ads campaign']
y = Google_Ads_Report['Users']
ax = sns.barplot(y, x, data=data)
ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
for i in ax.containers:
    ax.bar_label(i)
```

```
C:\Users\MSA\anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only va
lid positional argument will be `data`, and passing other arguments without an exp
licit keyword will result in an error or misinterpretation.
  warnings.warn(
C:\Users\MSA\AppData\Local\Temp\ipykernel_9168\3221178683.py:5: UserWarning: Fixed
Formatter should only be used together with FixedLocator
  ax.set_xticklabels(ax.get_xticklabels(), rotation=45)
```



In [ ]: