Airlines Data Analytics for Aviation Industry

Team ID:PNT2022TMID18548

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px

df=pd.read_csv("/content/airports.csv")

df.describe()
```

```
                  id  latitude_deg  longitude_deg  elevation_ft
count   67312.000000  67312.000000   67312.000000  54335.000000
mean   130355.261944     25.945866     -31.136863   1268.620006
std    147216.979862     26.380436      84.227690   1624.730666
min         2.000000    -90.000000    -179.876999  -1266.000000
25%     16962.750000     11.195161     -93.801077    208.000000
50%     36279.500000     35.437555     -70.799722    725.000000
75%    322275.250000     43.035376      18.963488   1558.000000
max    347611.000000     82.750000     179.975700  22000.000000
```

```
df.continent.unique()
```

```
array([nan, 'OC', 'AF', 'AN', 'EU', 'AS', 'SA'], dtype=object)
```

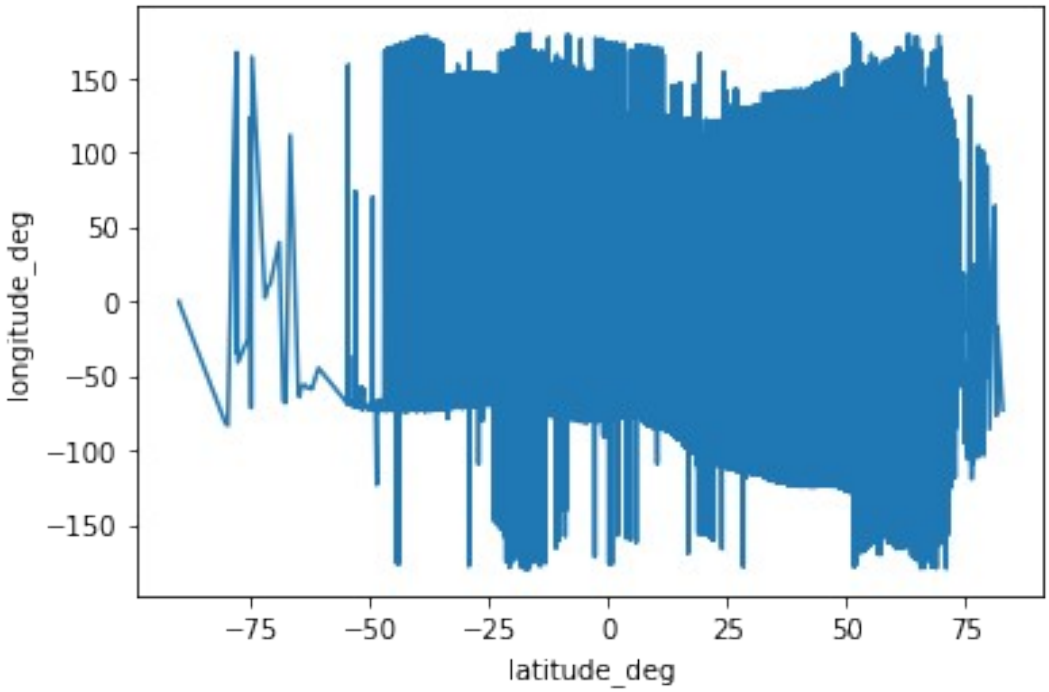
```
df=df.replace("no",0)
df=df.replace("yes",1)
#df = df.drop(['continent'],axis=1)
print(df.tail())
```

```
           id    ident           type                        name  \
67307   46378  ZZ-0001       heliport            Sealand Helipad
67308  307326  ZZ-0002  small_airport  Glorioso Islands Airstrip
67309  346788  ZZ-0003  small_airport      Fainting Goat Airport
67310  342102     ZZZW         closed     Scandium City Heliport
67311  313629     ZZZZ  small_airport     Satsuma Iōjima Airport

       latitude_deg  longitude_deg  elevation_ft continent iso_country
\
67307     51.894444       1.482500          40.0        EU          GB

67308    -11.584278      47.296389          11.0        AF          TF

67309     32.110587     -97.356312         690.0       NaN          US

67310     69.355287    -138.939310           4.0       NaN          CA

67311     30.784722     130.270556         338.0        AS          JP


      iso_region         municipality  scheduled_service gps_code
iata_code  \
67307     GB-ENG              Sealand                  0      NaN
```

```
NaN
67308     TF-U-A     Grande Glorieuse                  0      NaN
NaN
67309      US-TX                 Blum                  0     87TX
NaN
67310      CA-YT  (Old) Scandium City                  0     ZZZW
ZYW
67311      JP-46              Mishima                  0     RJX7
NaN

      local_code                    home_link  \
67307        NaN  http://www.sealandgov.org/
67308        NaN                          NaN
67309       87TX                          NaN
67310       YK96                          NaN
67311       RJX7                          NaN

                                        wikipedia_link
keywords
67307  https://en.wikipedia.org/wiki/Principality_of_...  Roughs Tower
Helipad
67308                                                NaN
NaN
67309                                                NaN
NaN
67310                                                NaN
NaN
67311  http://wikimapia.org/6705190/Satsuma-Iwo-jima-...
SATSUMA,IWOJIMA,RJX7
```

```
sns.lineplot(df['latitude_deg'],df['longitude_deg'])
plt.show()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43:
FutureWarning: Pass the following variables as keyword args: x, y.
From version 0.12, the only valid positional argument will be `data`,
and passing other arguments without an explicit keyword will result in
an error or misinterpretation.
  FutureWarning
```

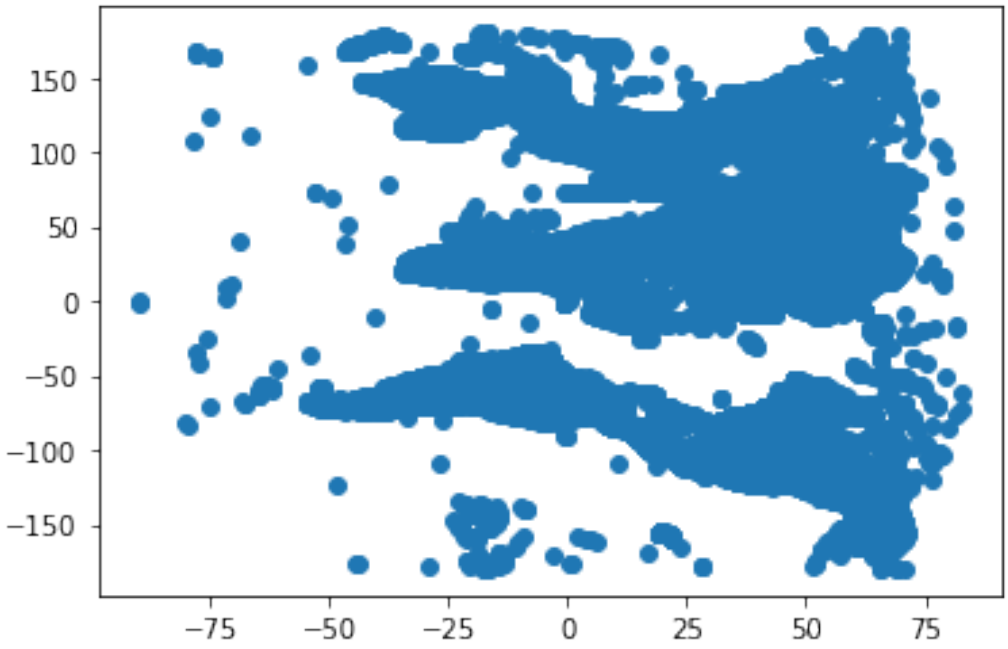



```
print(df.shape)
n = len(pd.unique(df['name']))
d=len(pd.unique(df['type']))
print("name",n,"type",d)
df['scheduled_service'].value_counts()
```

```
(67312, 18)
name 63826 type 7
```

```
0    63228
1     4084
Name: scheduled_service, dtype: int64
```

```
plt.scatter(x=df['latitude_deg'], y=df['longitude_deg'])
plt.show()
```




```
df=df.replace('NaN',0)
df=df.replace('OC',1)
df=df.replace('AF',2)
df=df.replace('AN',3)
df=df.replace('EU',4)
df=df.replace('AS',5)
df=df.replace('SA',6)
print(df)
```

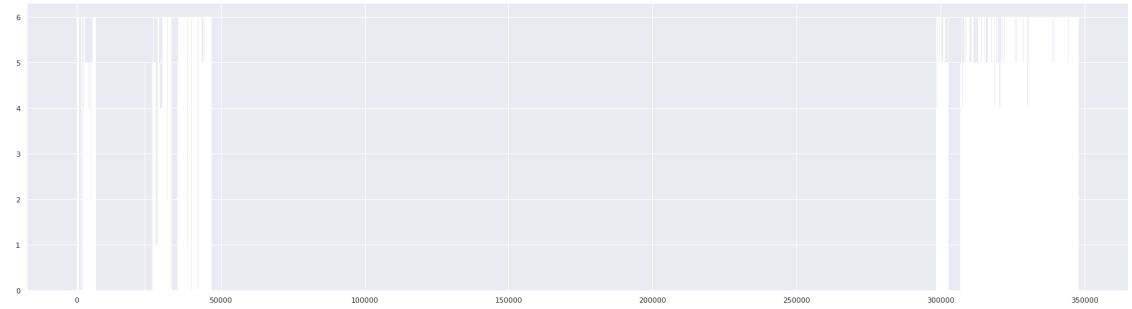
```
           id    ident           type
name  \
0        6523      00A       heliport                   Total Rf
Heliport
1      323361     00AA  small_airport                Aero B Ranch
Airport
2        6524     00AK  small_airport                       Lowell
Field
3        6525     00AL  small_airport                       Epps
Airpark
4        6526     00AR         closed  Newport Hospital & Clinic
Heliport
...       ...      ...            ...
...
67307   46378  ZZ-0001       heliport                     Sealand
Helipad
67308  307326  ZZ-0002  small_airport           Glorioso Islands
Airstrip
67309  346788  ZZ-0003  small_airport               Fainting Goat
Airport
67310  342102     ZZZW         closed              Scandium City
```

```
Heliport
67311  313629     ZZZZ  small_airport              Satsuma Iōjima
Airport

       latitude_deg  longitude_deg  elevation_ft  continent
iso_country  \
0         40.070801     -74.933601          11.0        NaN
US
1         38.704022    -101.473911        3435.0        NaN
US
2         59.947733    -151.692524         450.0        NaN
US
3         34.864799     -86.770302         820.0        NaN
US
4         35.608700     -91.254898         237.0        NaN
US
...             ...            ...           ...        ...         ..
.
67307     51.894444       1.482500          40.0        4.0
GB
67308    -11.584278      47.296389          11.0        2.0
TF
67309     32.110587     -97.356312         690.0        NaN
US
67310     69.355287    -138.939310           4.0        NaN
CA
67311     30.784722     130.270556         338.0        5.0
JP

      iso_region         municipality  scheduled_service gps_code
iata_code  \
0          US-PA             Bensalem                  0      00A
NaN
1          US-KS                Leoti                  0     00AA
NaN
2          US-AK         Anchor Point                  0     00AK
NaN
3          US-AL              Harvest                  0     00AL
NaN
4          US-AR              Newport                  0      NaN
NaN
...          ...                  ...                ...      ...
...
67307     GB-ENG              Sealand                  0      NaN
NaN
67308     TF-U-A     Grande Glorieuse                  0      NaN
NaN
67309      US-TX                 Blum                  0     87TX
NaN
67310      CA-YT  (Old) Scandium City                  0     ZZZW
```

```
ZYW
67311      JP-46              Mishima                   0     RJX7
NaN

      local_code                    home_link  \
0            00A                          NaN
1           00AA                          NaN
2           00AK                          NaN
3           00AL                          NaN
4            NaN                          NaN
...          ...                          ...
67307        NaN  http://www.sealandgov.org/
67308        NaN                          NaN
67309       87TX                          NaN
67310       YK96                          NaN
67311       RJX7                          NaN

                                       wikipedia_link
keywords
0                                                 NaN
NaN
1                                                 NaN
NaN
2                                                 NaN
NaN
3                                                 NaN
NaN
4                                                 NaN
00AR
...                                               ...
...
67307  https://en.wikipedia.org/wiki/Principality_of_...  Roughs Tower
Helipad
67308                                             NaN
NaN
67309                                             NaN
NaN
67310                                             NaN
NaN
67311  http://wikimapia.org/6705190/Satsuma-Iwo-jima-...
SATSUMA,IWOJIMA,RJX7

[67312 rows x 18 columns]
```

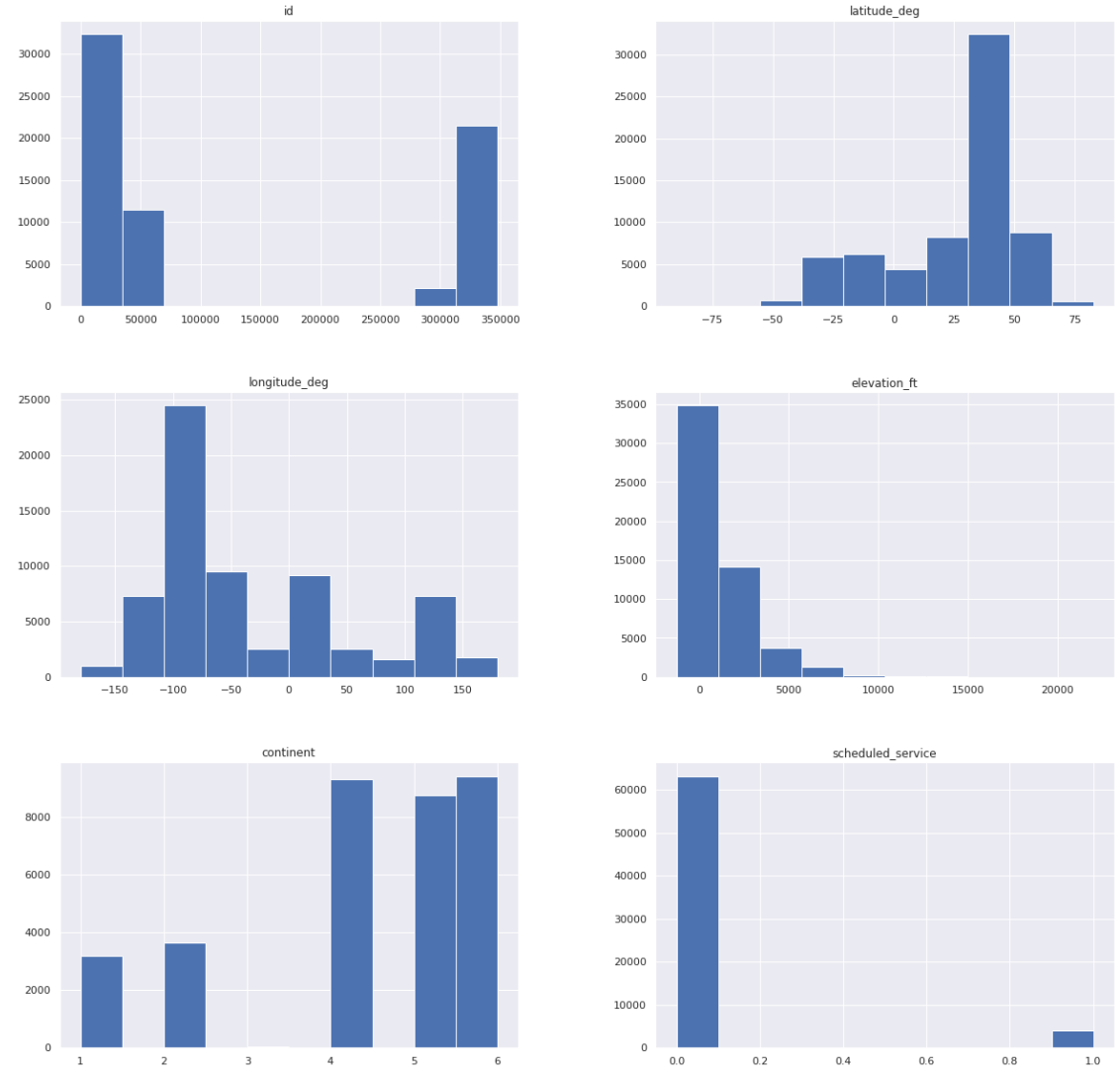
```
import plotly.express as px
fig = px.scatter_geo(df,lat='latitude_deg',lon='longitude_deg',
hover_name="iso_country")
fig.show()
```

```
plt.bar(df['id'],df['continent'])
plt.show()
```



```
df.hist(figsize=(20,20))
plt.show
```

```
<function matplotlib.pyplot.show(*args, **kw)>
```



```
plt.figure(figsize=(10,5))
c= df.corr()
sns.heatmap(c,cmap="BrBG",annot=True)
c
```

	id	latitude_deg	longitude_deg	elevation_ft	continent	scheduled_service
id	1.000000	0.001865	0.260659	0.077109	0.049291	-0.164086
latitude_deg	0.001865	1.000000	-0.232559	-0.098446	0.043923	-0.020139
longitude_deg	0.260659	-0.232559	1.000000	-0.051163	-0.468754	0.135450
elevation_ft	0.077109	-0.098446	-0.051163	1.000000	-0.073561	-0.048313
continent	0.049291	0.043923	-0.468754	-0.073561	1.000000	-0.073231
scheduled_service	-0.164086	-0.020139	0.135450	-0.048313	-0.073231	1.000000