In [1]:
```
import numpy as np
import pandas as pd
import datetime
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.dates as mdates
from matplotlib.dates import DateFormatter
import os
import glob
import warnings
warnings.filterwarnings('ignore')
%matplotlib inline
```

In [4]:
```
vac_manufact= pd.read_csv("E:/SEM 5/E1 CS312 DA/DA PROJECT/country_vaccinations_by_manufacturer.csv")
```

In [5]:
```
vac_manufact.index
```

Out[5]:
```
RangeIndex(start=0, stop=9895, step=1)
```

In [6]:
```
# information about dataset
vac_manufact.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9895 entries, 0 to 9894
Data columns (total 4 columns):
 #   Column              Non-Null Count  Dtype 
---  ------              --------------  ----- 
 0   location            9895 non-null   object
 1   date                9895 non-null   object
 2   vaccine             9895 non-null   object
 3   total_vaccinations  9895 non-null   int64 
dtypes: int64(1), object(3)
memory usage: 309.3+ KB
```

In [7]:
```
vac_manufact.shape
```

Out[7]:
```
(9895, 4)
```

In [8]:
```
# check miss value
vac_manufact.isnull().sum()
```

Out[8]:
```
location              0
date                  0
vaccine               0
total_vaccinations    0
dtype: int64
```

In [9]:
```
vac_manufact.head(5)
```

Out[9]:

	location	date	vaccine	total_vaccinations
0	Austria	08-01-2021	Johnson&Johnson	0
1	Austria	08-01-2021	Moderna	0
2	Austria	08-01-2021	Oxford/AstraZeneca	0
3	Austria	08-01-2021	Pfizer/BioNTech	30988
4	Austria	15-01-2021	Johnson&Johnson	0

In [10]:
```
vac_manufact['date'] = pd.to_datetime(vac_manufact['date'], format = '%d-%m-%Y')
vac_manufact
```

Out[10]:

	location	date	vaccine	total_vaccinations
0	Austria	2021-01-08	Johnson&Johnson	0
1	Austria	2021-01-08	Moderna	0
2	Austria	2021-01-08	Oxford/AstraZeneca	0
3	Austria	2021-01-08	Pfizer/BioNTech	30988
4	Austria	2021-01-15	Johnson&Johnson	0
...	...	...	...	...
9890	Uruguay	2021-07-25	Pfizer/BioNTech	1399572
9891	Uruguay	2021-07-25	Sinovac	3183073
9892	Uruguay	2021-07-26	Oxford/AstraZeneca	81183
9893	Uruguay	2021-07-26	Pfizer/BioNTech	1421884
9894	Uruguay	2021-07-26	Sinovac	3191640

9895 rows × 4 columns

In [11]:
```
vac_manufact.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9895 entries, 0 to 9894
Data columns (total 4 columns):
 #   Column              Non-Null Count  Dtype         
---  ------              --------------  -----         
 0   location            9895 non-null   object        
 1   date                9895 non-null   datetime64[ns]
 2   vaccine             9895 non-null   object        
 3   total_vaccinations  9895 non-null   int64         
dtypes: datetime64[ns](1), int64(1), object(2)
memory usage: 309.3+ KB
```

In [16]:
```
Vacc = vac_manufact.groupby('vaccine').sum().sort_values(by=['total_vaccinations'], ascending=False)
Vacc['total_vaccinations'] = Vacc['total_vaccinations'].div(100).round(2)
Vacc
```

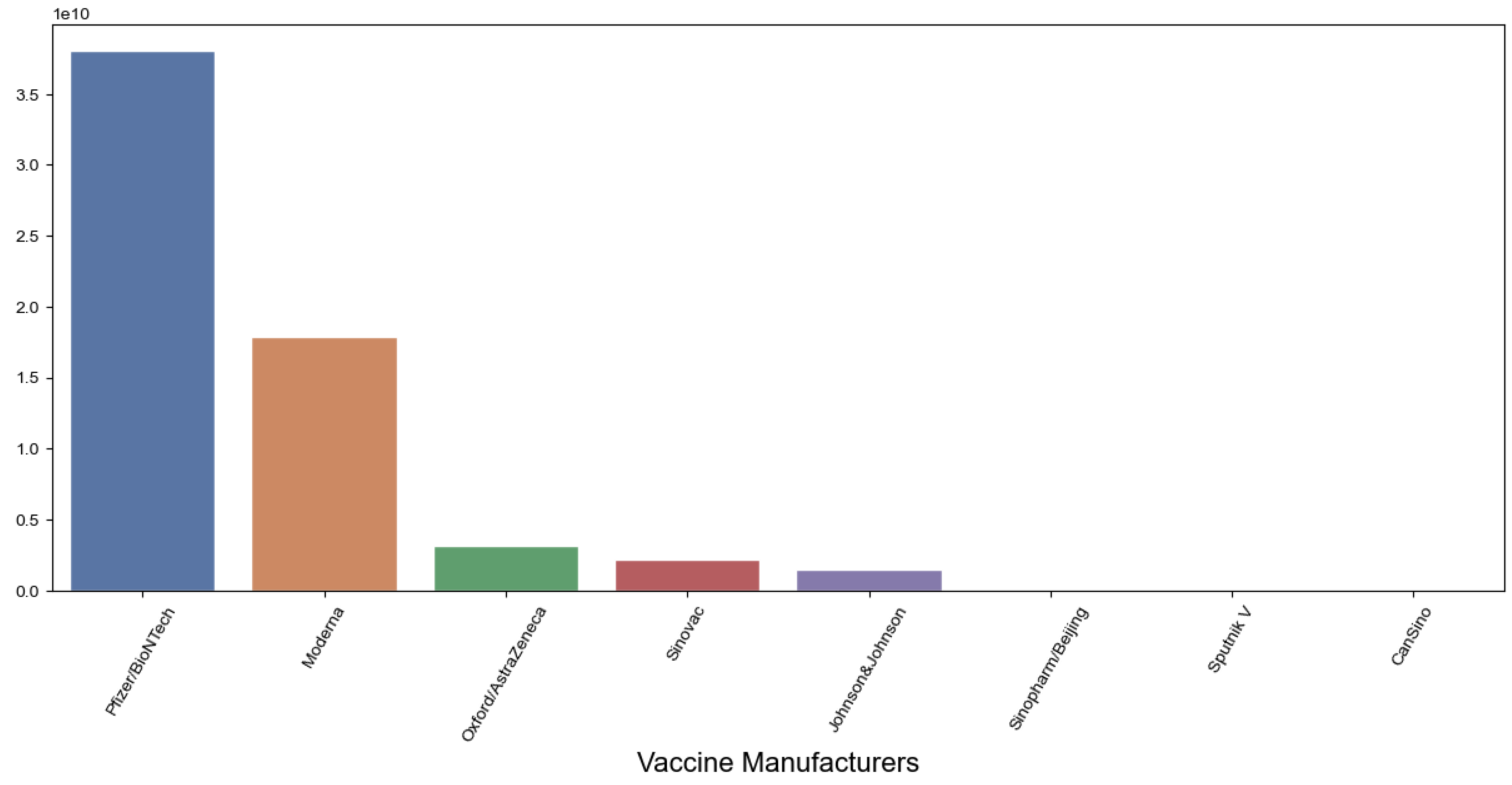
Out[16]:

vaccine	total_vaccinations
Pfizer/BioNTech	3.801997e+08
Moderna	1.786214e+08
Oxford/AstraZeneca	3.141898e+07
Sinovac	2.197000e+07
Johnson&Johnson	1.475870e+07
Sinopharm/Beijing	3.041437e+05
Sputnik V	2.594869e+05
CanSino	1.794493e+05

In [17]:
```
Vacc = vac_manufact.groupby('vaccine').sum().sort_values(by=['total_vaccinations'], ascending=False)

fig, ax = plt.subplots(nrows=1, ncols=1, dpi=100, figsize = (15,6))
sns.set()
sns.barplot(x=Vacc.index, y=Vacc['total_vaccinations'], ax=ax)
ax.set_xlabel("Vaccine Manufacturers", fontsize = 16)
ax.set_ylabel(" ")
for label in ax.xaxis.get_ticklabels():
            label.set_rotation(60)

plt.show()
```



In [ ]: