In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
#import plotly.express as px
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

In [2]:
```
country_wise = pd.read_csv("country_wise_latest.csv")
Covid_19_clean = pd.read_csv("covid_19_clean_complete.csv")
day_wise = pd.read_csv("day_wise.csv")
full_grouped = pd.read_csv("full_grouped.csv")
usa_country_wise = pd.read_csv("usa_county_wise.csv")
worldometer_data = pd.read_csv("worldometer_data.csv")
```

Country_wise Dataset EDA

In [3]:
```
country_wise.head(2)
```

Out[3]:

	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	New deaths	New recovered	Deaths / 100 Cases	Recoverec / 10(Case:
0	Afghanistan	36263	1269	25198	9796	106	10	18	3.50	69.4
1	Albania	4880	144	2745	1991	117	6	63	2.95	56.2

In [4]:
```
# Shape and Information of the dataset
print("Shape of country_wise Data = {}".format(country_wise.shape))
print("Columns Name =\n", country_wise.columns)
print("\n Data Information")
country_wise.info()
```

```
Shape of country_wise Data = (187, 15)
Columns Name =
 Index(['Country/Region', 'Confirmed', 'Deaths', 'Recovered', 'Active',
       'New cases', 'New deaths', 'New recovered', 'Deaths / 100 Cases',
       'Recovered / 100 Cases', 'Deaths / 100 Recovered',
       'Confirmed last week', '1 week change', '1 week % increase',
       'WHO Region'],
      dtype='object')

 Data Information
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 187 entries, 0 to 186
Data columns (total 15 columns):
 #   Column                  Non-Null Count  Dtype
---  ------                  --------------  -----
 0   Country/Region          187 non-null    object
 1   Confirmed               187 non-null    int64
 2   Deaths                  187 non-null    int64
```

```
 3   Recovered               187 non-null    int64
 4   Active                  187 non-null    int64
 5   New cases               187 non-null    int64
 6   New deaths              187 non-null    int64
 7   New recovered           187 non-null    int64
 8   Deaths / 100 Cases      187 non-null    float64
 9   Recovered / 100 Cases   187 non-null    float64
 10  Deaths / 100 Recovered  187 non-null    float64
 11  Confirmed last week     187 non-null    int64
 12  1 week change           187 non-null    int64
 13  1 week % increase       187 non-null    float64
 14  WHO Region              187 non-null    object
dtypes: float64(4), int64(9), object(2)
memory usage: 22.0+ KB
```

In [5]:

```
#Describe of the dataset
country_wise.describe().T
```

Out[5]:

	count	mean	std	min	25%	50%	75%	max
Confirmed	187.0	88130.935829	383318.663831	10.00	1114.000	5059.00	40460.500	4290259.00
Deaths	187.0	3497.518717	14100.002482	0.00	18.500	108.00	734.000	148011.00
Recovered	187.0	50631.481283	190188.189643	0.00	626.500	2815.00	22606.000	1846641.00
Active	187.0	34001.935829	213326.173371	0.00	141.500	1600.00	9149.000	2816444.00
New cases	187.0	1222.957219	5710.374790	0.00	4.000	49.00	419.500	56336.00
New deaths	187.0	28.957219	120.037173	0.00	0.000	1.00	6.000	1076.00
New recovered	187.0	933.812834	4197.719635	0.00	0.000	22.00	221.000	33728.00
Deaths / 100 Cases	187.0	3.019519	3.454302	0.00	0.945	2.15	3.875	28.56
Recovered / 100 Cases	187.0	64.820535	26.287694	0.00	48.770	71.32	86.885	100.00
Deaths / 100 Recovered	187.0	39.473850	332.178192	0.00	1.295	3.51	6.190	3259.26
Confirmed last week	187.0	78682.475936	338273.676567	10.00	1051.500	5020.00	37080.500	3834677.00
1 week change	187.0	9448.459893	47491.127684	-47.00	49.000	432.00	3172.000	455582.00
1 week % increase	187.0	13.606203	24.509838	-3.84	2.775	6.89	16.855	226.32

In [6]:

```
#Unique Values counts
unique_values = {}
for col in country_wise.columns:
  unique_values[col] = country_wise[col].value_counts().shape[0]

pd.DataFrame(unique_values, index =['Unique value count']).T
```

Out[6]:

	Unique value count
Country/Region	187
Confirmed	184
Deaths	150
Recovered	178
Active	173
New cases	122
New deaths	38
New recovered	103
Deaths / 100 Cases	145
Recovered / 100 Cases	177
Deaths / 100 Recovered	154
Confirmed last week	183
1 week change	162
1 week % increase	169
WHO Region	6

In [7]:
```
#Shape of the dataset
country_wise.shape
```

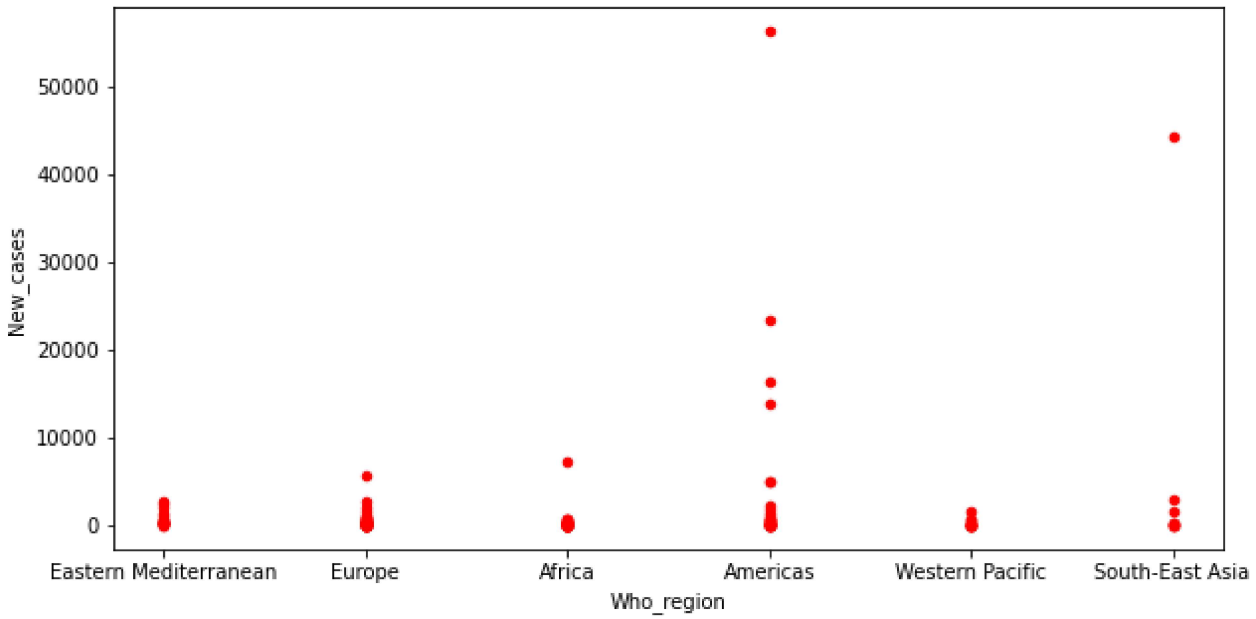
Out[7]:
```
(187, 15)
```

In [8]:
```
#Duplicate checking
duplicates = country_wise[country_wise.duplicated(keep = 'first')]
print("Duplicate rows ",len(duplicates))
```

```
Duplicate rows  0
```

In [9]:
```
#Visualization of the two varaible
Who_region =[country_wise["WHO Region"]]
New_cases = [country_wise["New cases"]]
data={'Who_region':country_wise["WHO Region"],
      'New_cases':country_wise["New cases"],
      'country':country_wise["Country/Region"]}

# Load data into DataFrame
df = pd.DataFrame(data = data);
df.plot.scatter(x = 'Who_region', y = 'New_cases',c='red',colormap='viridis',figsize=(1
```

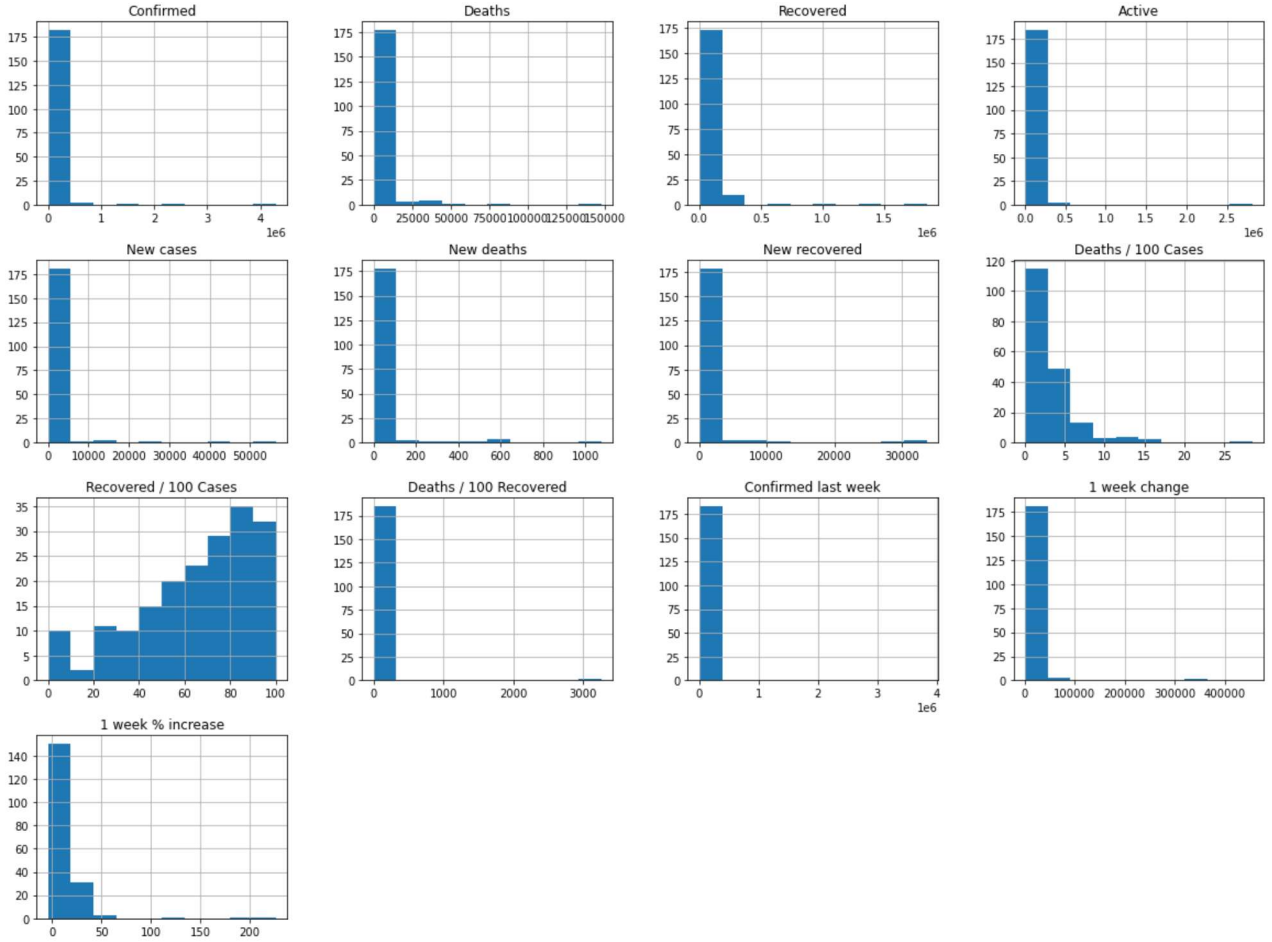


In [10]:
```
#numeric columns
numeric_columns = list(country_wise.select_dtypes(include=np.number).columns)
numeric_columns
```

Out[10]:
```
['Confirmed',
 'Deaths',
 'Recovered',
 'Active',
 'New cases',
 'New deaths',
 'New recovered',
 'Deaths / 100 Cases',
 'Recovered / 100 Cases',
 'Deaths / 100 Recovered',
 'Confirmed last week',
 '1 week change',
 '1 week % increase']
```

In [11]:
```
country_wise.hist(figsize=(20,15))
```

Out[11]:
```
array([[<AxesSubplot:title={'center':'Confirmed'}>,
        <AxesSubplot:title={'center':'Deaths'}>,
        <AxesSubplot:title={'center':'Recovered'}>,
        <AxesSubplot:title={'center':'Active'}>],
       [<AxesSubplot:title={'center':'New cases'}>,
        <AxesSubplot:title={'center':'New deaths'}>,
        <AxesSubplot:title={'center':'New recovered'}>,
        <AxesSubplot:title={'center':'Deaths / 100 Cases'}>],
       [<AxesSubplot:title={'center':'Recovered / 100 Cases'}>,
        <AxesSubplot:title={'center':'Deaths / 100 Recovered'}>,
        <AxesSubplot:title={'center':'Confirmed last week'}>,
        <AxesSubplot:title={'center':'1 week change'}>],
       [<AxesSubplot:title={'center':'1 week % increase'}>,
        <AxesSubplot:>, <AxesSubplot:>, <AxesSubplot:>]], dtype=object)
```



Covid_19_clean EDA

In [12]:
```
Covid_19_clean.head()
```

Out[12]:

	Province/State	Country/Region	Lat	Long	Date	Confirmed	Deaths	Recovered	Active
0	NaN	Afghanistan	33.93911	67.709953	2020-01-22	0	0	0	0
1	NaN	Albania	41.15330	20.168300	2020-01-22	0	0	0	0
2	NaN	Algeria	28.03390	1.659600	2020-01-22	0	0	0	0
3	NaN	Andorra	42.50630	1.521800	2020-01-22	0	0	0	0
4	NaN	Angola	-11.20270	17.873900	2020-01-22	0	0	0	0

In [13]:
```
# Shape and Information of the dataset
print("Shape of country_wise Data = {}".format(Covid_19_clean.shape))
print("Columns Name =\n", Covid_19_clean.columns)
print("\n Data Information")
Covid_19_clean.info()
```

```
Shape of country_wise Data = (49068, 10)
Columns Name =
 Index(['Province/State', 'Country/Region', 'Lat', 'Long', 'Date', 'Confirmed',
       'Deaths', 'Recovered', 'Active', 'WHO Region'],
      dtype='object')

 Data Information
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 49068 entries, 0 to 49067
Data columns (total 10 columns):
 #   Column          Non-Null Count  Dtype
---  ------          --------------  -----
 0   Province/State  14664 non-null  object
 1   Country/Region  49068 non-null  object
 2   Lat             49068 non-null  float64
 3   Long            49068 non-null  float64
 4   Date            49068 non-null  object
 5   Confirmed       49068 non-null  int64
 6   Deaths          49068 non-null  int64
 7   Recovered       49068 non-null  int64
 8   Active          49068 non-null  int64
 9   WHO Region      49068 non-null  object
dtypes: float64(2), int64(4), object(4)
memory usage: 3.7+ MB
```

In [14]:

```
#Describe of the dataset
Covid_19_clean.describe().T
```

Out[14]:

	count	mean	std	min	25%	50%	75%	
Lat	49068.0	21.433730	24.950320	-51.7963	7.873054	23.6345	41.204380	7.170690
Long	49068.0	23.528236	70.442740	-135.0000	-15.310100	21.7453	80.771797	1.780650
Confirmed	49068.0	16884.904255	127300.205272	0.0000	4.000000	168.0000	1518.250000	4.290259
Deaths	49068.0	884.179160	6313.584411	0.0000	0.000000	2.0000	30.000000	1.480110
Recovered	49068.0	7915.713479	54800.918731	0.0000	0.000000	29.0000	666.000000	1.846641
Active	49068.0	8085.011617	76258.903026	-14.0000	0.000000	26.0000	606.000000	2.816444

In [15]:

```
#Unique Values counts
unique_values = {}
for col in Covid_19_clean.columns:
  unique_values[col] = Covid_19_clean[col].value_counts().shape[0]

pd.DataFrame(unique_values, index =['Unique value count']).T
```

Out[15]:

	Unique value count
Province/State	78
Country/Region	187
Lat	260
Long	261

	Unique value count
Date	188
Confirmed	10861
Deaths	3640
Recovered	7609
Active	8641
WHO Region	6

In [16]:
```
#Shape of the dataset
Covid_19_clean.shape
```

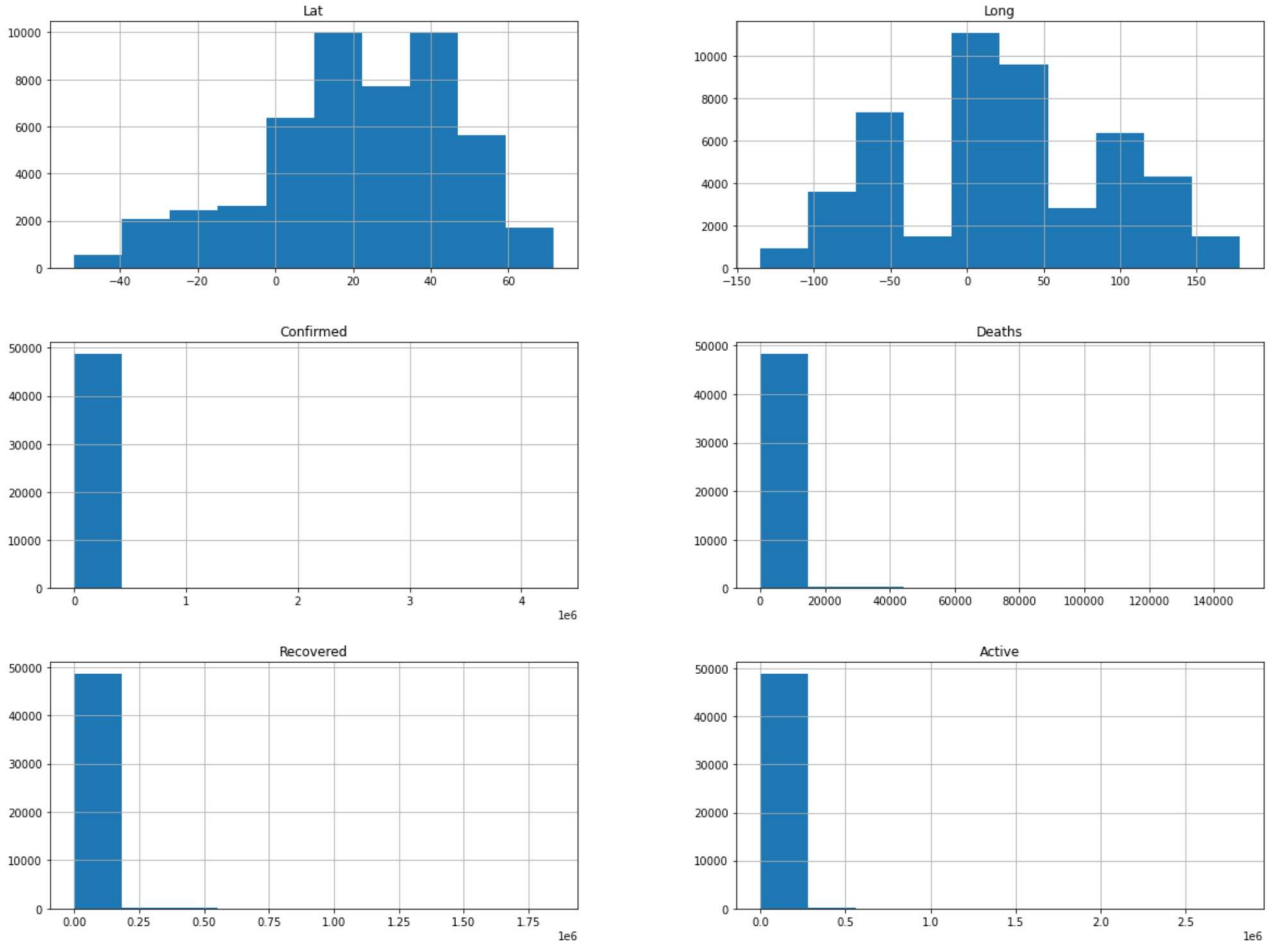
Out[16]:
```
(49068, 10)
```

In [17]:
```
#Duplicate checking
duplicates = Covid_19_clean[Covid_19_clean.duplicated(keep = 'first')]
print("Duplicate rows ",len(duplicates))
```

```
Duplicate rows  0
```

In [18]:
```
Covid_19_clean.hist(figsize=(20,15))
```

Out[18]:
```
array([[<AxesSubplot:title={'center':'Lat'}>,
        <AxesSubplot:title={'center':'Long'}>],
       [<AxesSubplot:title={'center':'Confirmed'}>,
        <AxesSubplot:title={'center':'Deaths'}>],
       [<AxesSubplot:title={'center':'Recovered'}>,
        <AxesSubplot:title={'center':'Active'}>]], dtype=object)
```



day_wise Dataset EDA

In [19]:
```
day_wise.head()
```

Out[19]:

	Date	Confirmed	Deaths	Recovered	Active	New cases	New deaths	New recovered	Deaths / 100 Cases	Recovered / 100 Cases	Death 1 Recover
0	2020-01-22	555	17	28	510	0	0	0	3.06	5.05	60.
1	2020-01-23	654	18	30	606	99	1	2	2.75	4.59	60.
2	2020-01-24	941	26	36	879	287	8	6	2.76	3.83	72.
3	2020-01-25	1434	42	39	1353	493	16	3	2.93	2.72	107.
4	2020-01-26	2118	56	52	2010	684	14	13	2.64	2.46	107.

In [20]:
```
# Shape and Information of the dataset
print("Shape of country_wise Data = {}".format(day_wise.shape))
print("Columns Name =\n", day_wise.columns)
```

```
print("\n Data Information")
```

```
Shape of country_wise Data = (188, 12)
Columns Name =
 Index(['Date', 'Confirmed', 'Deaths', 'Recovered', 'Active', 'New cases',
       'New deaths', 'New recovered', 'Deaths / 100 Cases',
       'Recovered / 100 Cases', 'Deaths / 100 Recovered', 'No. of countries'],
      dtype='object')

 Data Information
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 188 entries, 0 to 187
Data columns (total 12 columns):
 #   Column                  Non-Null Count  Dtype
---  ------                  --------------  -----
 0   Date                    188 non-null    object
 1   Confirmed               188 non-null    int64
 2   Deaths                  188 non-null    int64
 3   Recovered               188 non-null    int64
 4   Active                  188 non-null    int64
 5   New cases               188 non-null    int64
 6   New deaths              188 non-null    int64
 7   New recovered           188 non-null    int64
 8   Deaths / 100 Cases      188 non-null    float64
 9   Recovered / 100 Cases   188 non-null    float64
 10  Deaths / 100 Recovered  188 non-null    float64
 11  No. of countries        188 non-null    int64
dtypes: float64(3), int64(8), object(1)
memory usage: 17.8+ KB
```

In [21]:

```
#Describe of the dataset
day_wise.describe().T
```

Out[21]:

	count	mean	std	min	25%	50%	75%	ma
Confirmed	188.0	4.406960e+06	4.757988e+06	555.00	112191.000	2848733.00	7.422046e+06	16480485.(
Deaths	188.0	2.307708e+05	2.179291e+05	17.00	3935.000	204190.00	4.186345e+05	654036.(
Recovered	188.0	2.066001e+06	2.627976e+06	28.00	60441.250	784784.00	3.416396e+06	9468087.(
Active	188.0	2.110188e+06	1.969670e+06	510.00	58641.750	1859759.00	3.587015e+06	6358362.(
New cases	188.0	8.777102e+04	7.529529e+04	0.00	5568.500	81114.00	1.315025e+05	282756.(
New deaths	188.0	3.478824e+03	2.537736e+03	0.00	250.750	4116.00	5.346000e+03	9966.(
New recovered	188.0	5.036202e+04	5.609089e+04	0.00	2488.250	30991.50	7.970625e+04	284394.(
Deaths / 100 Cases	188.0	4.860638e+00	1.579541e+00	2.04	3.510	4.85	6.297500e+00	7.1
Recovered / 100 Cases	188.0	3.434394e+01	1.620616e+01	1.71	22.785	35.68	4.894500e+01	57.4
Deaths / 100 Recovered	188.0	2.210452e+01	2.256831e+01	6.26	9.650	15.38	2.534250e+01	134.4

	count	mean	std	min	25%	50%	75%	ma
No. of countries	188.0	1.443511e+02	6.517598e+01	6.00	101.250	184.00	1.870000e+02	187.(

In [22]:
```
#Unique Values counts
unique_values = {}
for col in day_wise.columns:
  unique_values[col] = day_wise[col].value_counts().shape[0]

pd.DataFrame(unique_values, index =['Unique value count']).T
```

Out[22]:

	Unique value count
Date	188
Confirmed	188
Deaths	188
Recovered	188
Active	188
New cases	188
New deaths	185
New recovered	188
Deaths / 100 Cases	162
Recovered / 100 Cases	185
Deaths / 100 Recovered	182
No. of countries	56

In [23]:
```
#Shape of the dataset
day_wise.shape
```

Out[23]:
```
(188, 12)
```

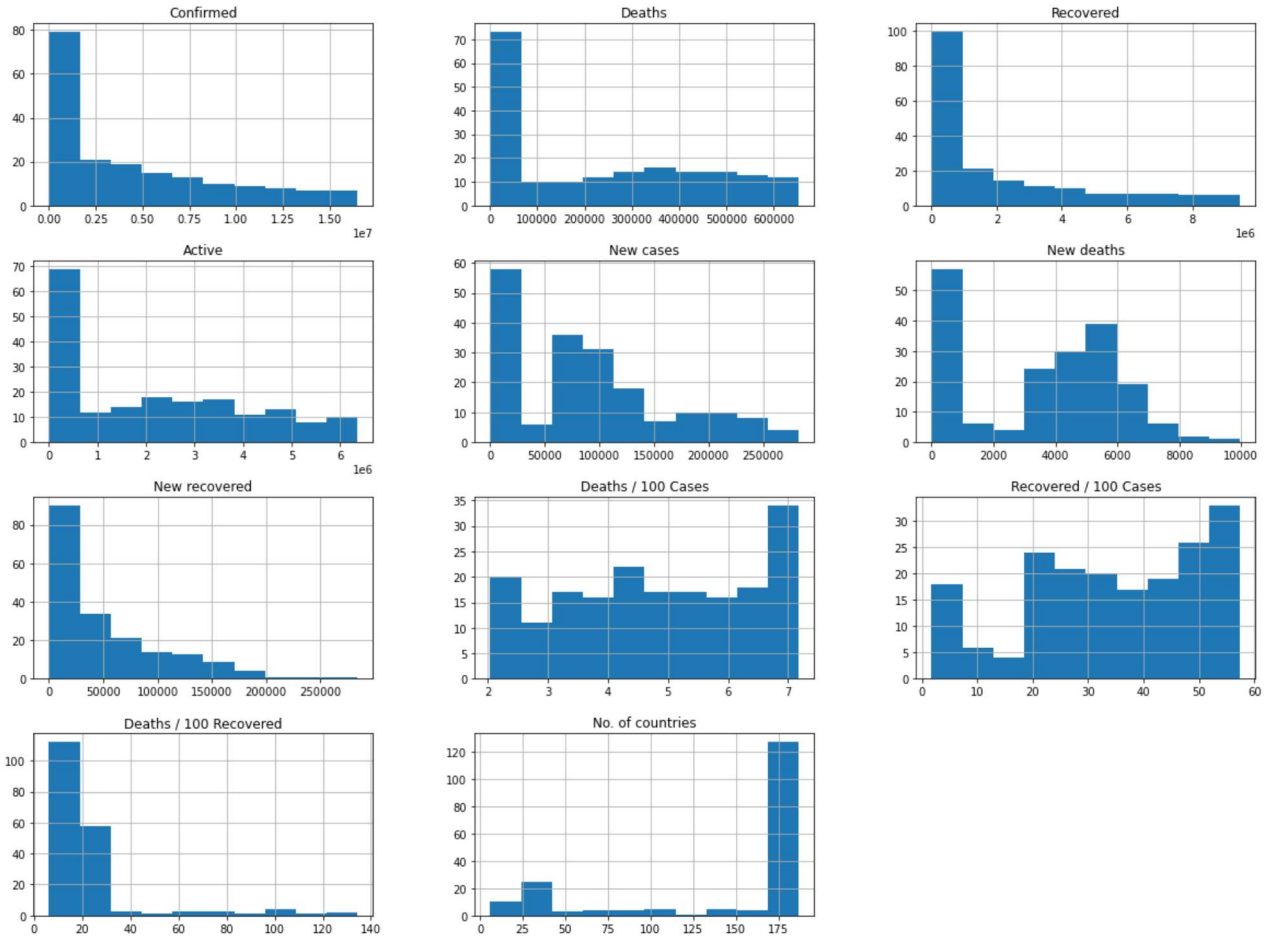
In [24]:
```
#Duplicate checking
duplicates = day_wise[day_wise.duplicated(keep = 'first')]
print("Duplicate rows ",len(duplicates))
```

```
Duplicate rows  0
```

In [25]:
```
day_wise.hist(figsize=(20,15))
```

Out[25]:
```
array([[<AxesSubplot:title={'center':'Confirmed'}>,
        <AxesSubplot:title={'center':'Deaths'}>,
        <AxesSubplot:title={'center':'Recovered'}>],
       [<AxesSubplot:title={'center':'Active'}>,
        <AxesSubplot:title={'center':'New cases'}>,
```

```
 <AxesSubplot:title={'center':'New deaths'}>],
[<AxesSubplot:title={'center':'New recovered'}>,
 <AxesSubplot:title={'center':'Deaths / 100 Cases'}>,
 <AxesSubplot:title={'center':'Recovered / 100 Cases'}>],
[<AxesSubplot:title={'center':'Deaths / 100 Recovered'}>,
 <AxesSubplot:title={'center':'No. of countries'}>,
 <AxesSubplot:>]], dtype=object)
```



Data Visualization for Full_Grouped CSV

> Indented block

In [26]:
```
full_grouped.head()
```

Out[26]:

	Date	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	New deaths	New recovered	WHO Regi
0	2020-01-22	Afghanistan	0	0	0	0	0	0	0	Easte Mediterrane
1	2020-01-22	Albania	0	0	0	0	0	0	0	Euro
2	2020-01-22	Algeria	0	0	0	0	0	0	0	Afr
3	2020-01-22	Andorra	0	0	0	0	0	0	0	Euro

	Date	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	New deaths	New recovered	WHO Regi
4	2020-01-22	Angola	0	0	0	0	0	0	0	Afr

In [27]:
```
#shape of the Dataset
print(full_grouped.shape)
```

```
(35156, 10)
```

In [28]:
```
#Information of dataset
full_grouped.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 35156 entries, 0 to 35155
Data columns (total 10 columns):
 #   Column          Non-Null Count  Dtype 
---  ------          --------------  ----- 
 0   Date            35156 non-null  object
 1   Country/Region  35156 non-null  object
 2   Confirmed       35156 non-null  int64 
 3   Deaths          35156 non-null  int64 
 4   Recovered       35156 non-null  int64 
 5   Active          35156 non-null  int64 
 6   New cases       35156 non-null  int64 
 7   New deaths      35156 non-null  int64 
 8   New recovered   35156 non-null  int64 
 9   WHO Region      35156 non-null  object
dtypes: int64(7), object(3)
memory usage: 2.7+ MB
```

In [29]:
```
#numeric columns
numeric_columns = list(full_grouped.select_dtypes(include=np.number).columns)
numeric_columns
```

Out[29]:
```
['Confirmed',
 'Deaths',
 'Recovered',
 'Active',
 'New cases',
 'New deaths',
 'New recovered']
```

In [30]:
```
#Columns with unique count less than equal to 10 alongwith their values
dict_unique_count = {
    'Column' : [],
    'Count' : []
}

for col in full_grouped.columns:
    dict_unique_count['Column'].append(col)
    dict_unique_count['Count'].append(full_grouped[col].nunique())

df_unique = pd.DataFrame(dict_unique_count)
```

```
df_unique = df_unique[df_unique['Count'] <= 10]

for col in df_unique['Column']:
    print(f"{col} has {full_grouped[col].unique()} values\n")
```

```
WHO Region has ['Eastern Mediterranean' 'Europe' 'Africa' 'Americas' 'Western Pacific'
 'South-East Asia'] values
```

In [31]:

```
#Duplicates
Duplicated = full_grouped[full_grouped.duplicated(keep='first')]
print('Duplicate count : ', Duplicated.shape[0])
full_grouped = full_grouped.drop_duplicates(inplace=False)
```

```
Duplicate count :  0
```

In [32]:

```
#Null values
dft = pd.DataFrame({ 'Count': full_grouped.isnull().sum(), '% age': full_grouped.isnull
print(dft.sort_values(by=['Count']))
```

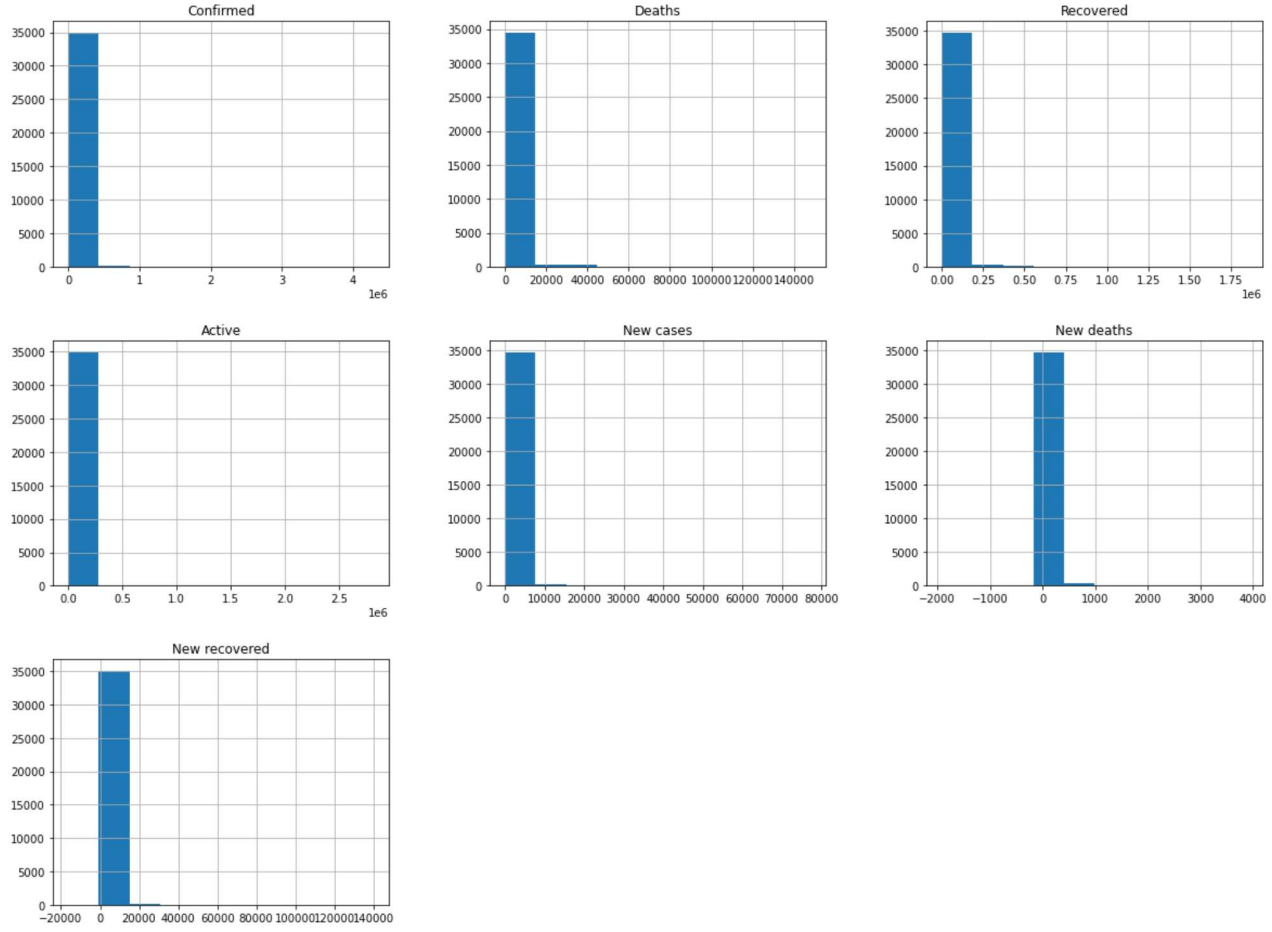
```
                Count  % age
Date                0    0.0
Country/Region      0    0.0
Confirmed           0    0.0
Deaths              0    0.0
Recovered           0    0.0
Active              0    0.0
New cases           0    0.0
New deaths          0    0.0
New recovered       0    0.0
WHO Region          0    0.0
```

In [34]:

```
full_grouped.hist(figsize=(20,15))
```

Out[34]:

```
array([[<AxesSubplot:title={'center':'Confirmed'}>,
        <AxesSubplot:title={'center':'Deaths'}>,
        <AxesSubplot:title={'center':'Recovered'}>],
       [<AxesSubplot:title={'center':'Active'}>,
        <AxesSubplot:title={'center':'New cases'}>,
        <AxesSubplot:title={'center':'New deaths'}>],
       [<AxesSubplot:title={'center':'New recovered'}>, <AxesSubplot:>,
        <AxesSubplot:>]], dtype=object)
```



USA_Country_Dataset

```
# This is formatted as code
```

In [35]:
```
usa_country_wise.head()
```

Out[35]:

	UID	iso2	iso3	code3	FIPS	Admin2	Province_State	Country_Region	Lat	Lo
0	16	AS	ASM	16	60.0	NaN	American Samoa	US	-14.271000	-170.132
1	316	GU	GUM	316	66.0	NaN	Guam	US	13.444300	144.793
2	580	MP	MNP	580	69.0	NaN	Northern Mariana Islands	US	15.097900	145.673
3	63072001	PR	PRI	630	72001.0	Adjuntas	Puerto Rico	US	18.180117	-66.754
4	63072003	PR	PRI	630	72003.0	Aguada	Puerto Rico	US	18.360255	-67.175

In [36]:
```
#shape of the dataset
print(usa_country_wise.shape)
```

```
(627920, 14)
```

In [37]:
```
#information of the dataset
usa_country_wise.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 627920 entries, 0 to 627919
Data columns (total 14 columns):
 #   Column          Non-Null Count   Dtype  
---  ------          --------------   -----  
 0   UID             627920 non-null  int64  
 1   iso2            627920 non-null  object 
 2   iso3            627920 non-null  object 
 3   code3           627920 non-null  int64  
 4   FIPS            626040 non-null  float64
 5   Admin2          626792 non-null  object 
 6   Province_State  627920 non-null  object 
 7   Country_Region  627920 non-null  object 
 8   Lat             627920 non-null  float64
 9   Long_           627920 non-null  float64
 10  Combined_Key    627920 non-null  object 
 11  Date            627920 non-null  object 
 12  Confirmed       627920 non-null  int64  
 13  Deaths          627920 non-null  int64  
dtypes: float64(3), int64(4), object(7)
memory usage: 67.1+ MB
```

In [38]:
```
#numeric columns
numeric_columns = list(usa_country_wise.select_dtypes(include=np.number).columns)
numeric_columns
```

Out[38]:
```
['UID', 'code3', 'FIPS', 'Lat', 'Long_', 'Confirmed', 'Deaths']
```

In [39]:
```
#Columns with unique count less than equal to 10 alongwith their values

dict_unique_count = {
    'Column' : [],
    'Count' : []
}

for col in usa_country_wise.columns:
    dict_unique_count['Column'].append(col)
    dict_unique_count['Count'].append(usa_country_wise[col].nunique())

df_unique = pd.DataFrame(dict_unique_count)
df_unique = df_unique[df_unique['Count'] <= 10]

for col in df_unique['Column']:
    print(f"{col} has {usa_country_wise[col].unique()} values\n")
```

```
iso2 has ['AS' 'GU' 'MP' 'PR' 'VI' 'US'] values

iso3 has ['ASM' 'GUM' 'MNP' 'PRI' 'VIR' 'USA'] values

code3 has [ 16 316 580 630 850 840] values

Country_Region has ['US'] values
```

In [40]:
```
#Duplicate counts
Duplicated = usa_country_wise[usa_country_wise.duplicated(keep='first')]
print('Duplicate count : ', Duplicated.shape[0])
usa_county_wise = usa_country_wise.drop_duplicates(inplace=False)
```

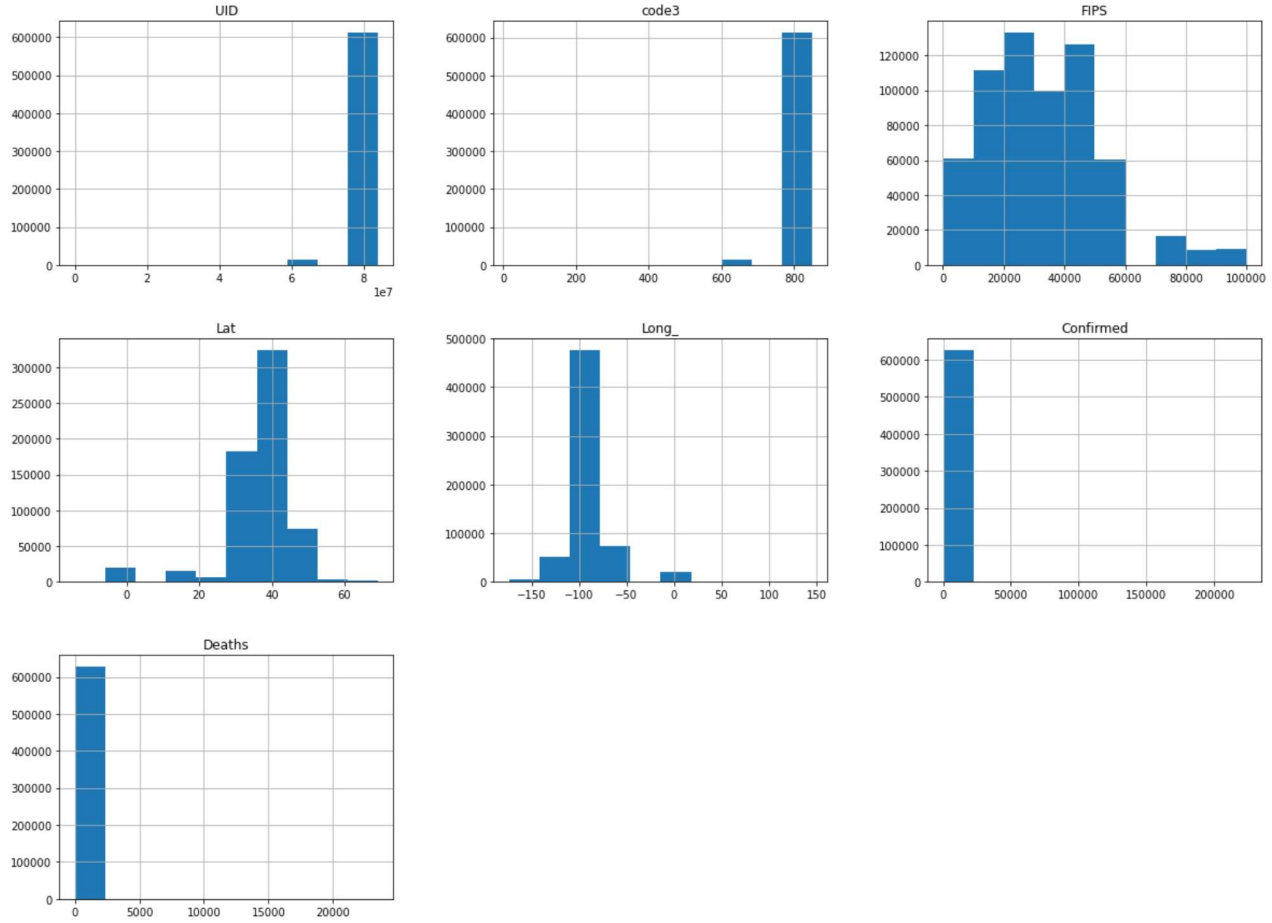
```
Duplicate count :  0
```

In [41]:
```
#check Null in the dataset
dft = pd.DataFrame({ 'Count': usa_country_wise.isnull().sum(), '% age': usa_country_wis
print(dft.sort_values(by=['Count']))
```

```
                Count     % age
UID                 0  0.000000
iso2                0  0.000000
iso3                0  0.000000
code3               0  0.000000
Province_State      0  0.000000
Country_Region      0  0.000000
Lat                 0  0.000000
Long_               0  0.000000
Combined_Key        0  0.000000
Date                0  0.000000
Confirmed           0  0.000000
Deaths              0  0.000000
Admin2           1128  0.179641
FIPS             1880  0.299401
```

In [42]:
```
#Check Distribution of numeric values
usa_country_wise.hist(figsize=(20,15))
```

Out[42]:
```
array([[<AxesSubplot:title={'center':'UID'}>,
        <AxesSubplot:title={'center':'code3'}>,
        <AxesSubplot:title={'center':'FIPS'}>],
       [<AxesSubplot:title={'center':'Lat'}>,
        <AxesSubplot:title={'center':'Long_'}>,
        <AxesSubplot:title={'center':'Confirmed'}>],
       [<AxesSubplot:title={'center':'Deaths'}>, <AxesSubplot:>,
        <AxesSubplot:>]], dtype=object)
```



worldometer_data DataSet

```
# This is formatted as code
```

In [43]:
```
worldometer_data.head()
```

Out[43]:

	Country/Region	Continent	Population	TotalCases	NewCases	TotalDeaths	NewDeaths	TotalReco
0	USA	North America	3.311981e+08	5032179	NaN	162804.0	NaN	2576
1	Brazil	South America	2.127107e+08	2917562	NaN	98644.0	NaN	2047
2	India	Asia	1.381345e+09	2025409	NaN	41638.0	NaN	1377
3	Russia	Europe	1.459409e+08	871894	NaN	14606.0	NaN	676
4	South Africa	Africa	5.938157e+07	538184	NaN	9604.0	NaN	387

In [44]:
```
#Shape of the dataset
print(worldometer_data.shape)
```

```
(209, 16)
```

In [45]:
```
#Information of the dataset
worldometer_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 209 entries, 0 to 208
Data columns (total 16 columns):
 #   Column            Non-Null Count  Dtype  
---  ------            --------------  -----  
 0   Country/Region    209 non-null    object 
 1   Continent         208 non-null    object 
 2   Population        208 non-null    float64
 3   TotalCases        209 non-null    int64  
 4   NewCases          4 non-null      float64
 5   TotalDeaths       188 non-null    float64
 6   NewDeaths         3 non-null      float64
 7   TotalRecovered    205 non-null    float64
 8   NewRecovered      3 non-null      float64
 9   ActiveCases       205 non-null    float64
 10  Serious,Critical  122 non-null    float64
 11  Tot Cases/1M pop  208 non-null    float64
 12  Deaths/1M pop     187 non-null    float64
 13  TotalTests        191 non-null    float64
 14  Tests/1M pop      191 non-null    float64
 15  WHO Region        184 non-null    object 
dtypes: float64(12), int64(1), object(3)
memory usage: 26.2+ KB
```

In [46]:
```
#Numeric Columns
numeric_columns = list(worldometer_data.select_dtypes(include=np.number).columns)
numeric_columns
```

Out[46]:
```
['Population',
 'TotalCases',
 'NewCases',
 'TotalDeaths',
 'NewDeaths',
 'TotalRecovered',
 'NewRecovered',
 'ActiveCases',
 'Serious,Critical',
 'Tot Cases/1M pop',
 'Deaths/1M pop',
 'TotalTests',
 'Tests/1M pop']
```

In [47]:
```
# Columns with unique count less than equal to 10 alongwith their values
dict_unique_count = {
    'Column' : [],
    'Count' : []
}

for col in worldometer_data.columns:
    dict_unique_count['Column'].append(col)
    dict_unique_count['Count'].append(worldometer_data[col].nunique())

df_unique = pd.DataFrame(dict_unique_count)
df_unique = df_unique[df_unique['Count'] <= 10]
```

```
for col in df_unique['Column']:
    print(f"{col} has {worldometer_data[col].unique()} values\n")
```

```
Continent has ['North America' 'South America' 'Asia' 'Europe' 'Africa'
 'Australia/Oceania' nan] values

NewCases has [  nan 6590. 1282.   20.   30.] values

NewDeaths has [ nan 819.  80.   1.] values

NewRecovered has [  nan 4140.  936.   42.] values

WHO Region has ['Americas' 'South-EastAsia' 'Europe' 'Africa' 'EasternMediterranean'
 'WesternPacific' nan] values
```

In [48]:

```
#Checking duplicates
Duplicated = worldometer_data[worldometer_data.duplicated(keep='first')]
print('Duplicate count : ', Duplicated.shape[0])
worldometer_data = worldometer_data.drop_duplicates(inplace=False)
```

```
Duplicate count :  0
```

In [49]:

```
#Check Null values
dft = pd.DataFrame({ 'Count': worldometer_data.isnull().sum(), '% age': worldometer_dat
print(dft.sort_values(by=['Count']))
```

```
                 Count      % age
Country/Region       0   0.000000
TotalCases           0   0.000000
Continent            1   0.478469
Population           1   0.478469
Tot Cases/1M pop     1   0.478469
TotalRecovered       4   1.913876
ActiveCases          4   1.913876
TotalTests          18   8.612440
Tests/1M pop        18   8.612440
TotalDeaths         21  10.047847
Deaths/1M pop       22  10.526316
WHO Region          25  11.961722
Serious,Critical    87  41.626794
NewCases           205  98.086124
NewDeaths          206  98.564593
NewRecovered       206  98.564593
```

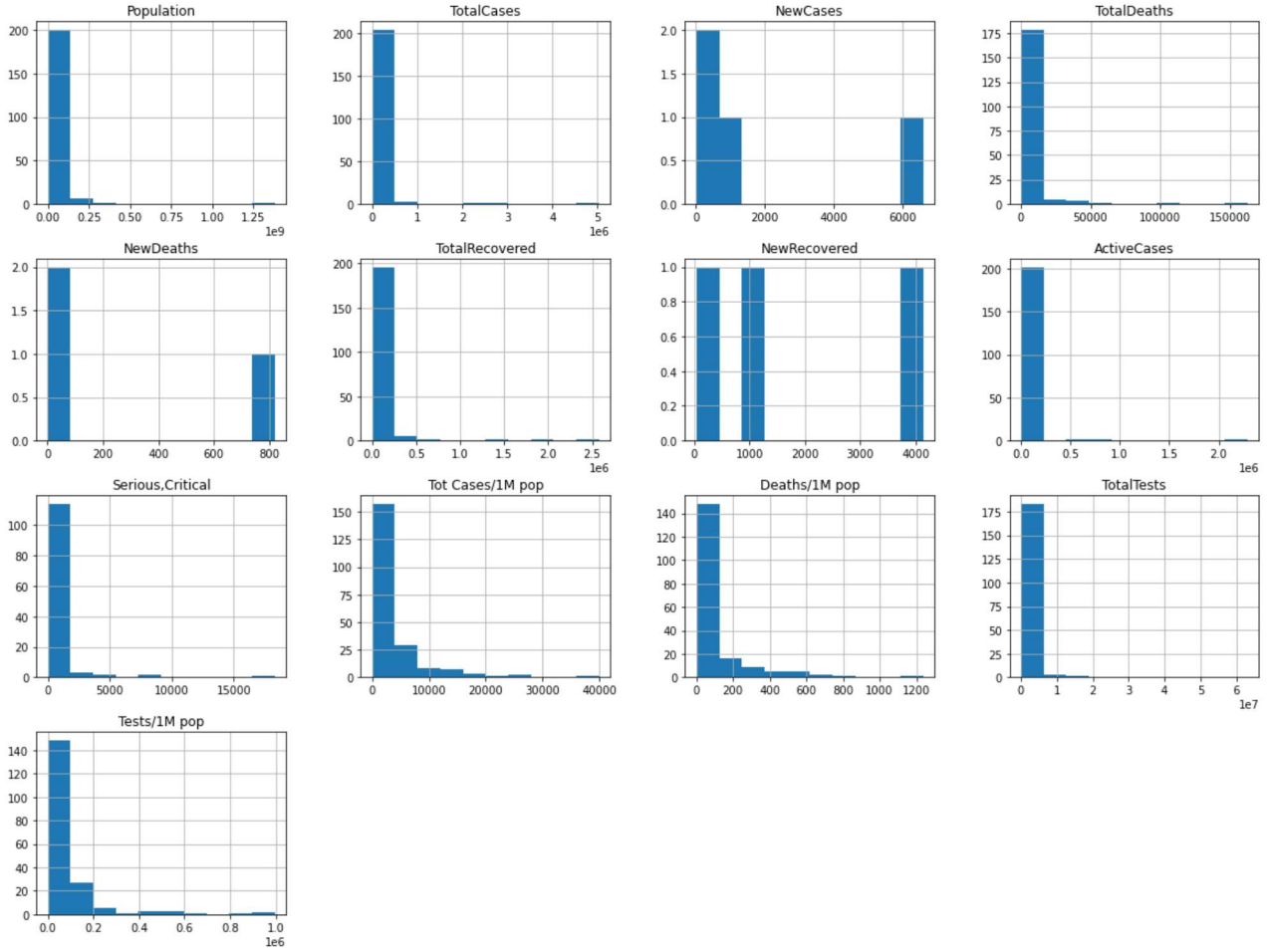
In [50]:

```
#Check distribution of numeric values
worldometer_data.hist(figsize=(20,15))
```

Out[50]:

```
array([[<AxesSubplot:title={'center':'Population'}>,
        <AxesSubplot:title={'center':'TotalCases'}>,
        <AxesSubplot:title={'center':'NewCases'}>,
        <AxesSubplot:title={'center':'TotalDeaths'}>],
       [<AxesSubplot:title={'center':'NewDeaths'}>,
        <AxesSubplot:title={'center':'TotalRecovered'}>,
        <AxesSubplot:title={'center':'NewRecovered'}>,
        <AxesSubplot:title={'center':'ActiveCases'}>],
       [<AxesSubplot:title={'center':'Serious,Critical'}>,
        <AxesSubplot:title={'center':'Tot Cases/1M pop'}>,
```

```
 <AxesSubplot:title={'center':'Deaths/1M pop'}>,
 <AxesSubplot:title={'center':'TotalTests'}>],
[<AxesSubplot:title={'center':'Tests/1M pop'}>, <AxesSubplot:>,
 <AxesSubplot:>, <AxesSubplot:>]], dtype=object)
```



In [ ]: