

September 21, 2024

```
[1]: !pip install pandas numpy matplotlib seaborn
```

```
Requirement already satisfied: pandas in /usr/local/lib/python3.10/dist-packages (2.1.4)
Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (1.26.4)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packages (3.7.1)
Requirement already satisfied: seaborn in /usr/local/lib/python3.10/dist-packages (0.13.1)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.10/dist-packages (from pandas) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/dist-packages (from pandas) (2024.2)
Requirement already satisfied: tzdata>=2022.1 in /usr/local/lib/python3.10/dist-packages (from pandas) (2024.1)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.3.0)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (4.53.1)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.4.7)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (24.1)
Requirement already satisfied: pillow>=6.2.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (10.4.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (3.1.4)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
```

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

```
import seaborn as sns
```

```
[3]: df=pd.read_csv('/content/country_wise_latest.csv')
```

```
[4]: df.head()
```

/usr/local/lib/python3.10/dist-packages/pandas/core/nanops.py:1010:

RuntimeWarning: invalid value encountered in subtract

sqr = _ensure_numeric((avg - values) ** 2)

```
[4]:
```

	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	New deaths	\
0	Afghanistan	36263	1269	25198	9796	106	10	
1	Albania	4880	144	2745	1991	117	6	
2	Algeria	27973	1163	18837	7973	616	8	
3	Andorra	907	52	803	52	10	0	
4	Angola	950	41	242	667	18	1	

	New recovered	Deaths / 100 Cases	Recovered / 100 Cases	\
0	18	3.50	69.49	
1	63	2.95	56.25	
2	749	4.16	67.34	
3	0	5.73	88.53	
4	0	4.32	25.47	

	Deaths / 100 Recovered	Confirmed last week	1 week change	\
0	5.04	35526	737	
1	5.25	4171	709	
2	6.17	23691	4282	
3	6.48	884	23	
4	16.94	749	201	

	1 week % increase	WHO Region
0	2.07	Eastern Mediterranean
1	17.00	Europe
2	18.07	Africa
3	2.60	Europe
4	26.84	Africa

```
[5]: df.tail()
```

```
[5]:
```

	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	\
182	West Bank and Gaza	10621	78	3752	6791	152	
183	Western Sahara	10	1	8	1	0	
184	Yemen	1691	483	833	375	10	
185	Zambia	4552	140	2815	1597	71	
186	Zimbabwe	2704	36	542	2126	192	

	New deaths	New recovered	Deaths / 100 Cases	Recovered / 100 Cases	\
--	------------	---------------	--------------------	-----------------------	---

182	2	0	0.73	35.33
183	0	0	10.00	80.00
184	4	36	28.56	49.26
185	1	465	3.08	61.84
186	2	24	1.33	20.04

	Deaths / 100 Recovered	Confirmed last week	1 week change \
182	2.08	8916	1705
183	12.50	10	0
184	57.98	1619	72
185	4.97	3326	1226
186	6.64	1713	991

	1 week % increase	WHO Region
182	19.12	Eastern Mediterranean
183	0.00	Africa
184	4.45	Eastern Mediterranean
185	36.86	Africa
186	57.85	Africa

```
[6]: df.columns
```

```
[6]: 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')
```

```
[7]: df.info()
```

```
<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

```

```
[8]: df.describe()
```

```

/usr/local/lib/python3.10/dist-packages/pandas/core/nanops.py:1010:
RuntimeWarning: invalid value encountered in subtract
  sqr = _ensure_numeric((avg - values) ** 2)
/usr/local/lib/python3.10/dist-packages/pandas/core/nanops.py:1010:
RuntimeWarning: invalid value encountered in subtract
  sqr = _ensure_numeric((avg - values) ** 2)

```

```
[8]:
```

	Confirmed	Deaths	Recovered	Active	New cases \
count	1.870000e+02	187.000000	1.870000e+02	1.870000e+02	187.000000
mean	8.813094e+04	3497.518717	5.063148e+04	3.400194e+04	1222.957219
std	3.833187e+05	14100.002482	1.901882e+05	2.133262e+05	5710.374790
min	1.000000e+01	0.000000	0.000000e+00	0.000000e+00	0.000000
25%	1.114000e+03	18.500000	6.265000e+02	1.415000e+02	4.000000
50%	5.059000e+03	108.000000	2.815000e+03	1.600000e+03	49.000000
75%	4.046050e+04	734.000000	2.260600e+04	9.149000e+03	419.500000
max	4.290259e+06	148011.000000	1.846641e+06	2.816444e+06	56336.000000

	New deaths	New recovered	Deaths / 100 Cases	Recovered / 100 Cases \
count	187.000000	187.000000	187.000000	187.000000
mean	28.957219	933.812834	3.019519	64.820535
std	120.037173	4197.719635	3.454302	26.287694
min	0.000000	0.000000	0.000000	0.000000
25%	0.000000	0.000000	0.945000	48.770000
50%	1.000000	22.000000	2.150000	71.320000
75%	6.000000	221.000000	3.875000	86.885000
max	1076.000000	33728.000000	28.560000	100.000000

	Deaths / 100 Recovered	Confirmed last week	1 week change \
count	187.00	1.870000e+02	187.000000
mean	inf	7.868248e+04	9448.459893
std	NaN	3.382737e+05	47491.127684
min	0.00	1.000000e+01	-47.000000
25%	1.45	1.051500e+03	49.000000
50%	3.62	5.020000e+03	432.000000
75%	6.44	3.708050e+04	3172.000000
max	inf	3.834677e+06	455582.000000

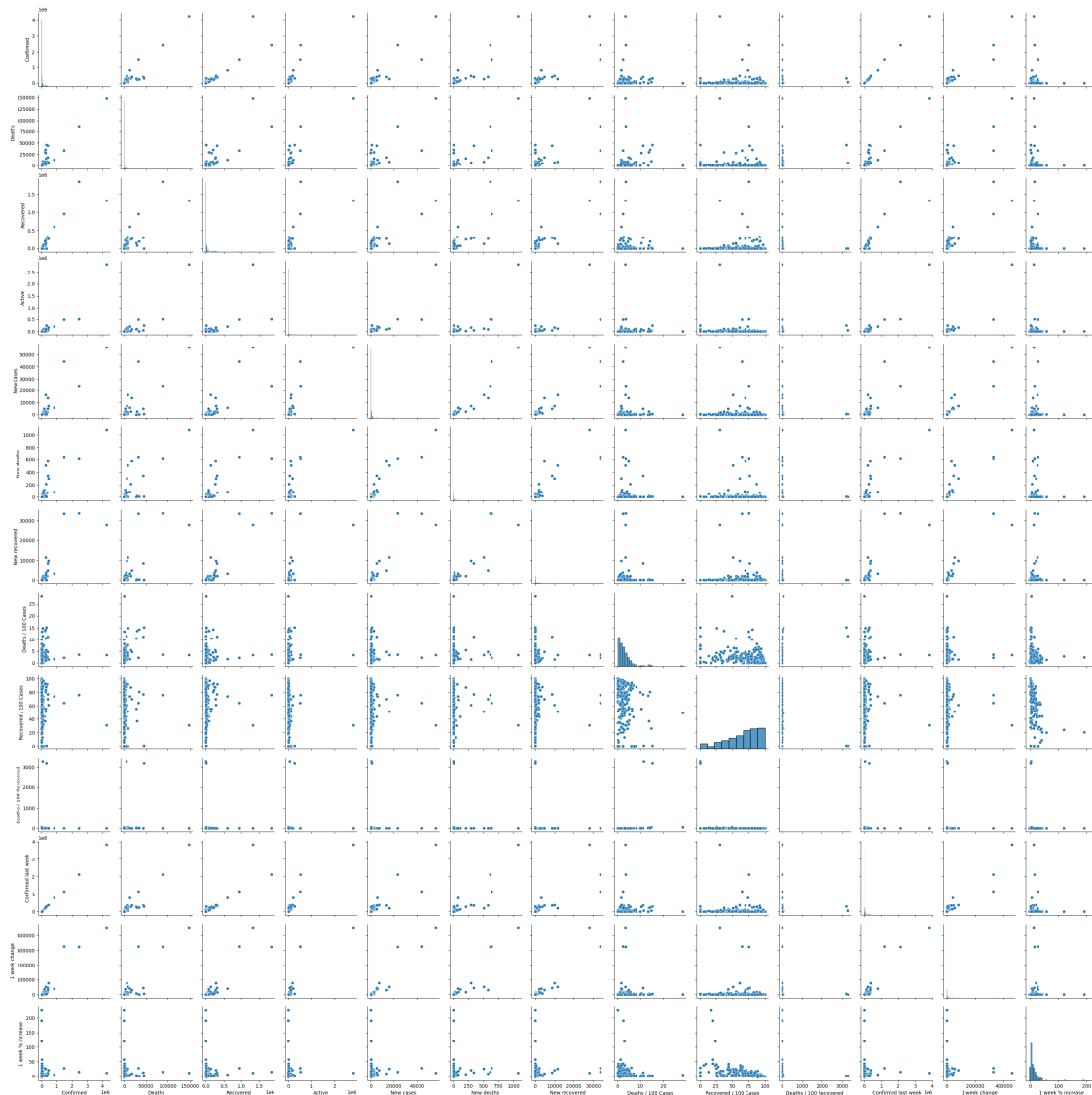
	1 week % increase
count	187.000000
mean	13.606203

std	24.509838
min	-3.840000
25%	2.775000
50%	6.890000
75%	16.855000
max	226.320000

```
[9]: df.isnull().sum()
```

```
[9]: Country/Region      0
Confirmed              0
Deaths                0
Recovered              0
Active                0
New cases              0
New deaths             0
New recovered          0
Deaths / 100 Cases     0
Recovered / 100 Cases  0
Deaths / 100 Recovered 0
Confirmed last week    0
1 week change          0
1 week % increase      0
WHO Region             0
dtype: int64
```

```
[10]: sns.pairplot(df)
plt.show()
```



```
[12]: sns.distplot(df['Recovered'])
```

<ipython-input-12-2a1a6a52dfa9>:1: UserWarning:

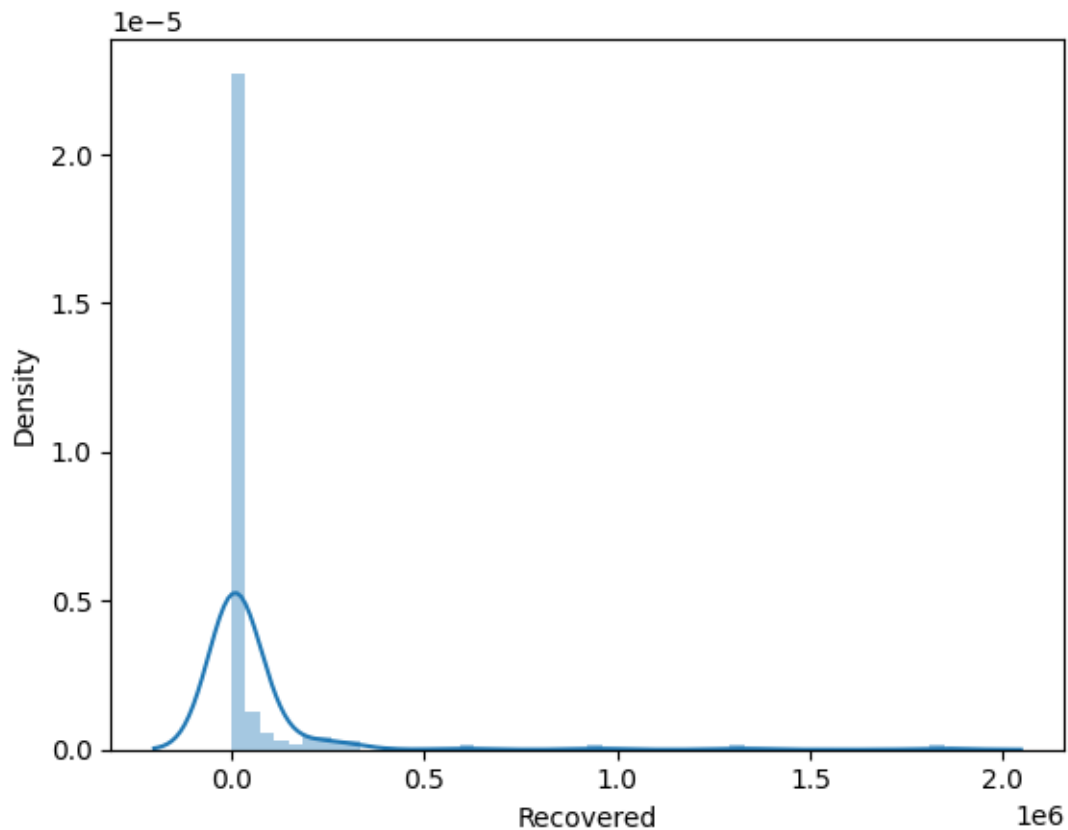
`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see <https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751>

```
sns.distplot(df['Recovered'])
```

```
[12]: <Axes: xlabel='Recovered', ylabel='Density'>
```



```
[14]: sns.distplot(df['Deaths'])
```

<ipython-input-14-ba9ecddcbd66>:1: UserWarning:

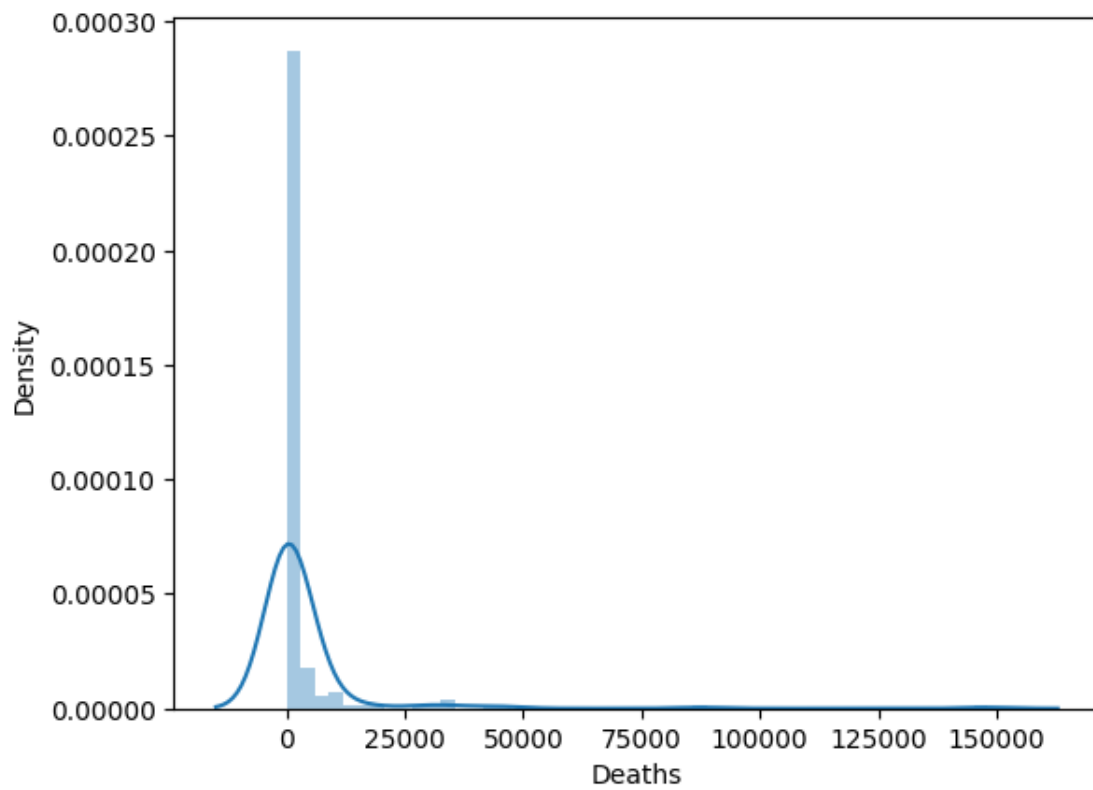
`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).

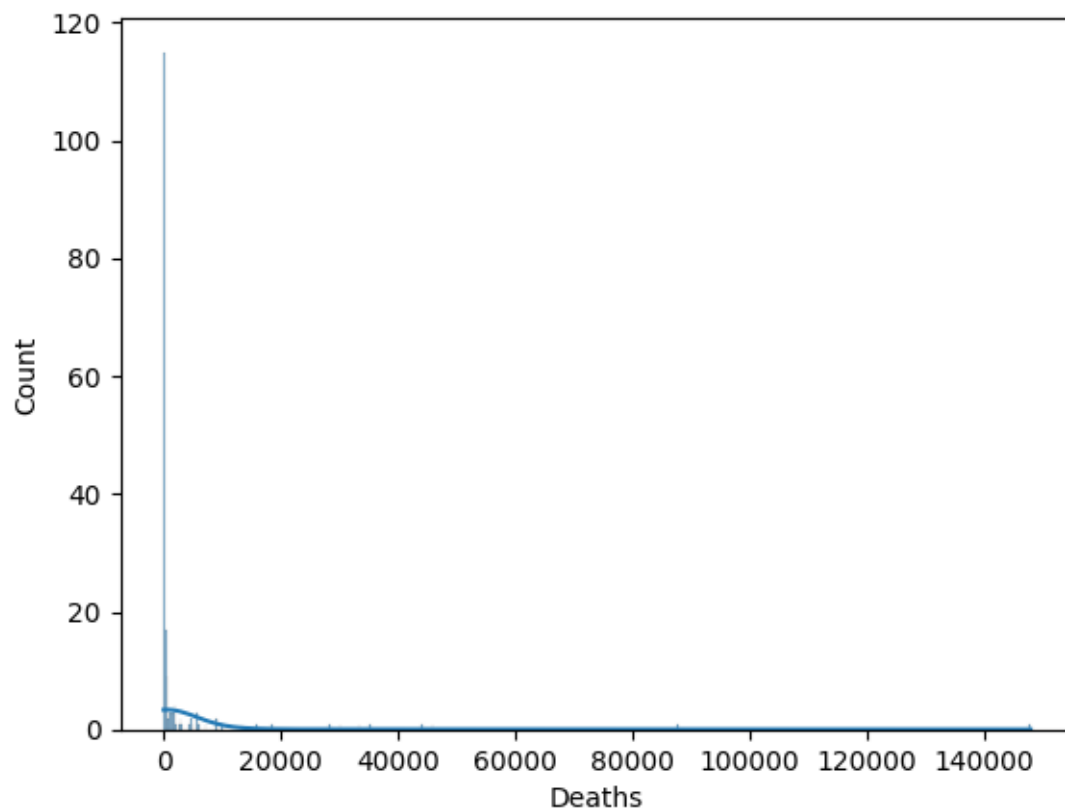
For a guide to updating your code to use the new functions, please see <https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751>

```
sns.distplot(df['Deaths'])
```

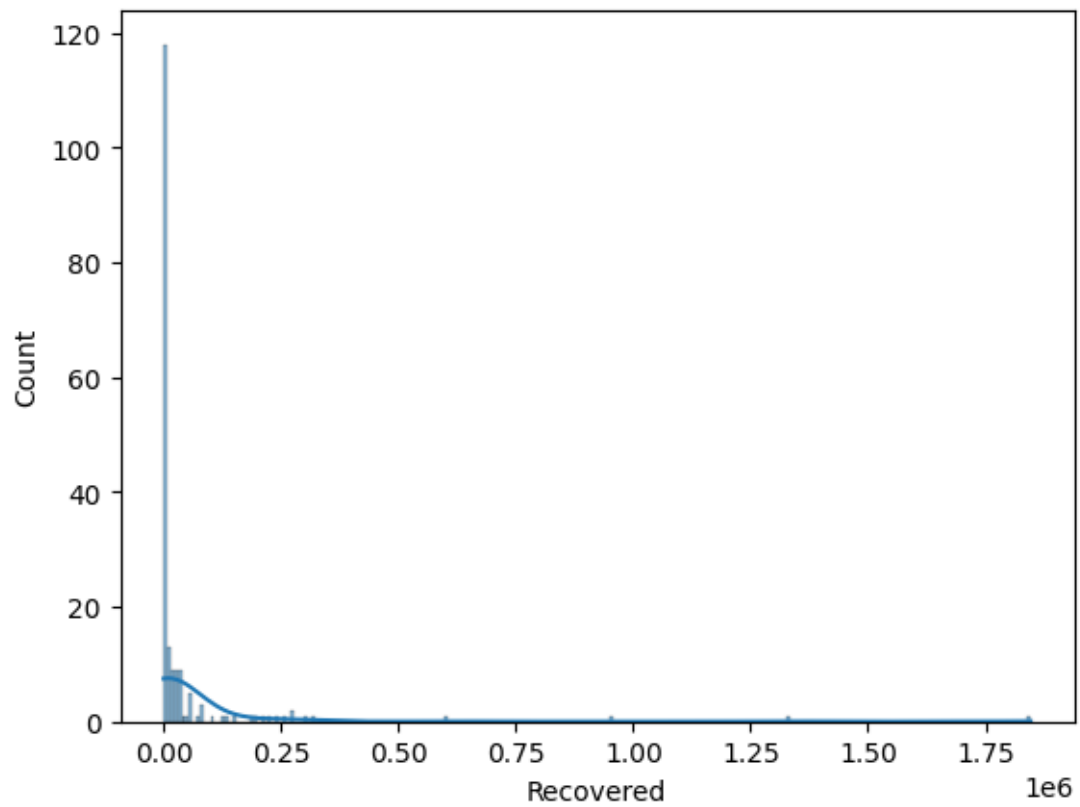
```
[14]: <Axes: xlabel='Deaths', ylabel='Density'>
```



```
[15]: sns.histplot(df, x="Deaths", kde=True)  
plt.show()
```

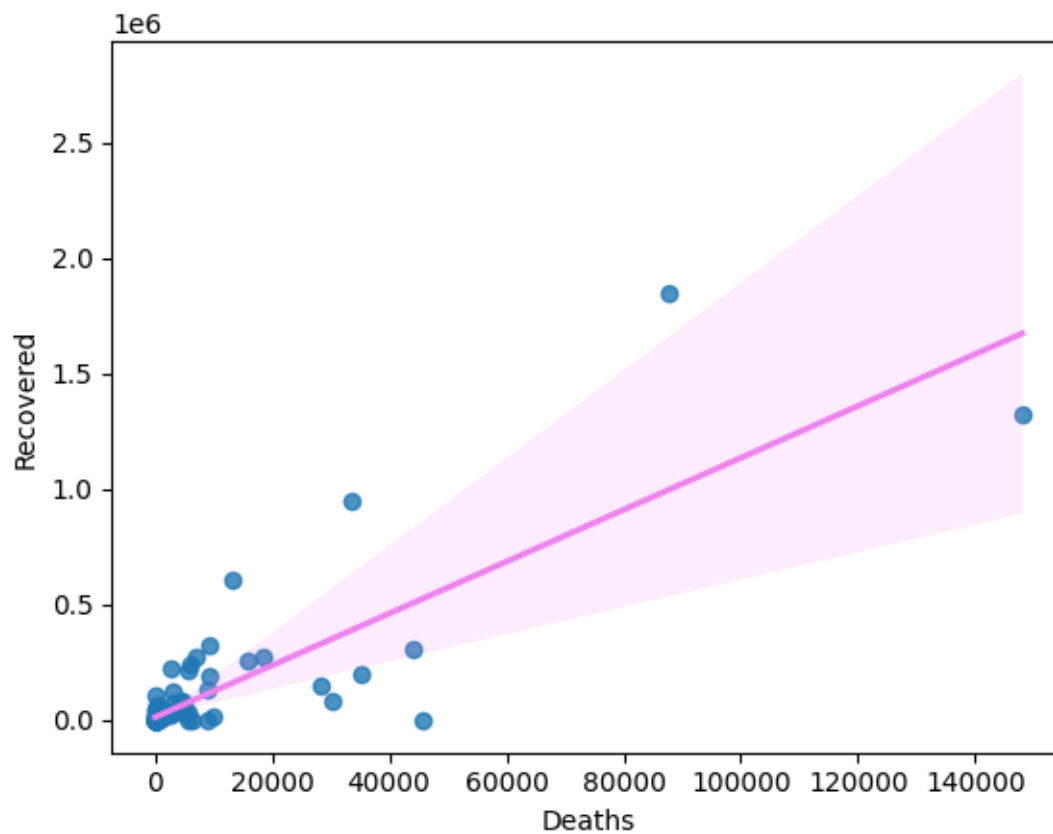



```
[16]: sns.histplot(df, x="Recovered", kde=True)  
plt.show()
```

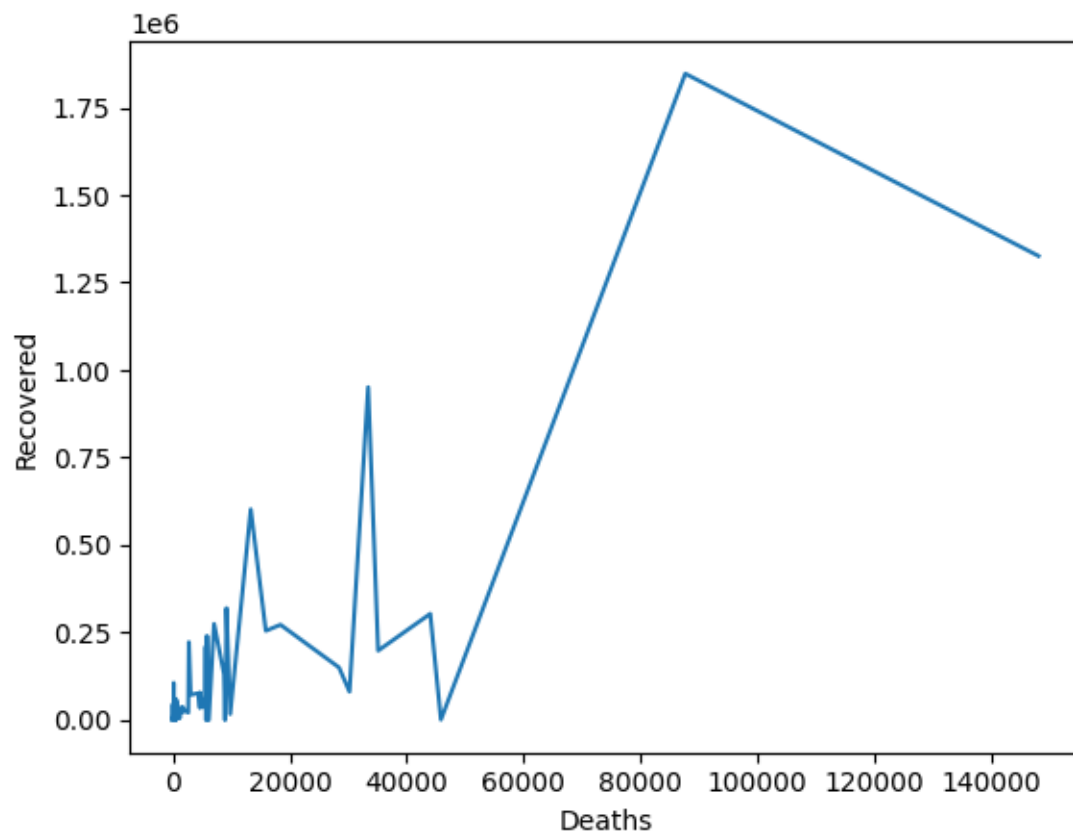


```
[17]: sns.regplot(x='Deaths',y='Recovered',data=df,line_kws={"color":"violet"})
```

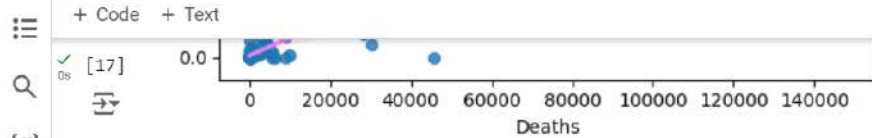
```
[17]: <Axes: xlabel='Deaths', ylabel='Recovered'>
```



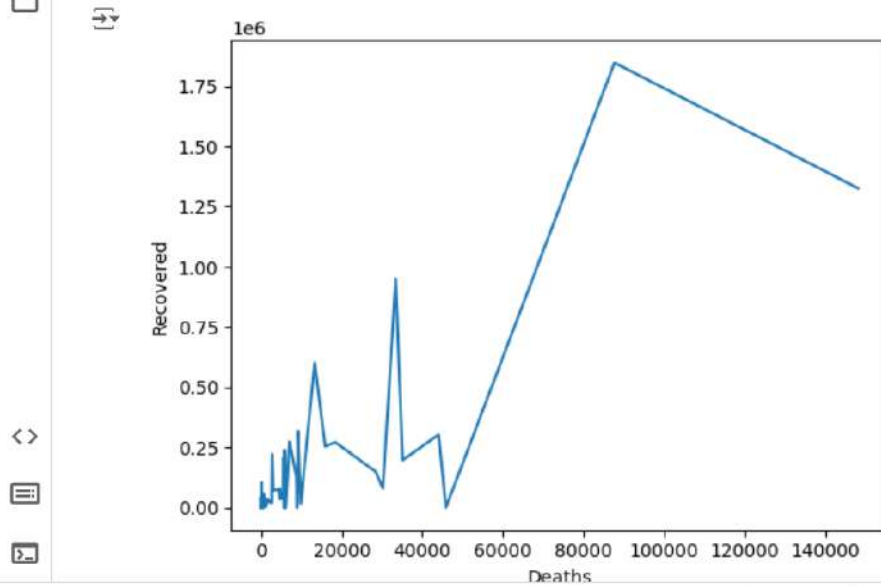
```
[18]: sns.lineplot(x='Deaths',y='Recovered',data=df)  
plt.show()
```



[]:



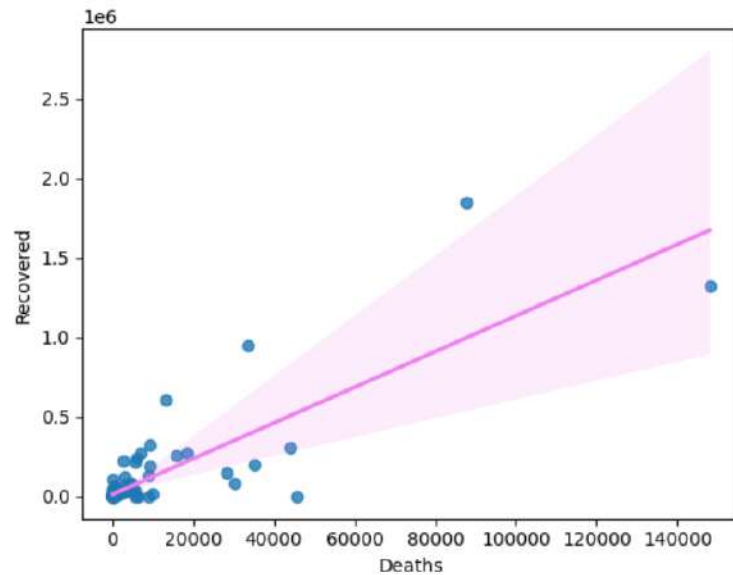
```
sns.lineplot(x='Deaths',y='Recovered',data=df)
plt.show()
```



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```
sns.regplot(x='Deaths',y='Recovered',data=df,line_kws={"color":"violet"})
```

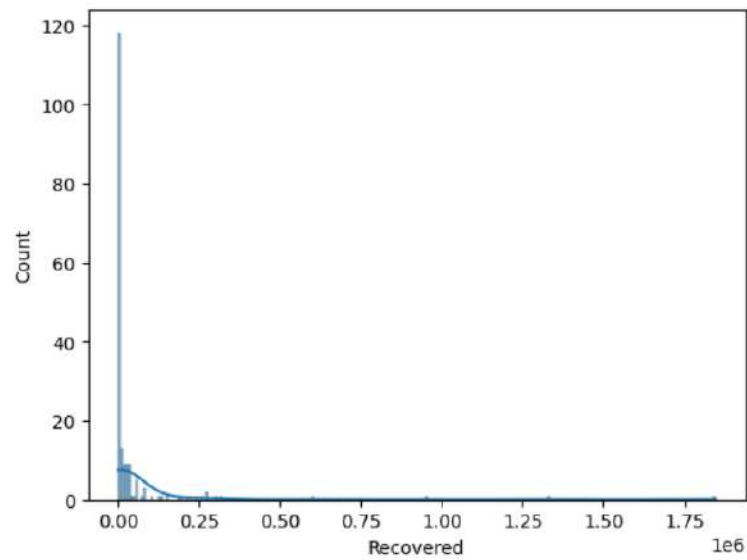
```
<Axes: xlabel='Deaths', ylabel='Recovered'>
```



```
[18] sns.lineplot(x='Deaths',y='Recovered',data=df)  
plt.show()
```

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```
sns.histplot(df, x="Recovered", kde=True)  
plt.show()
```

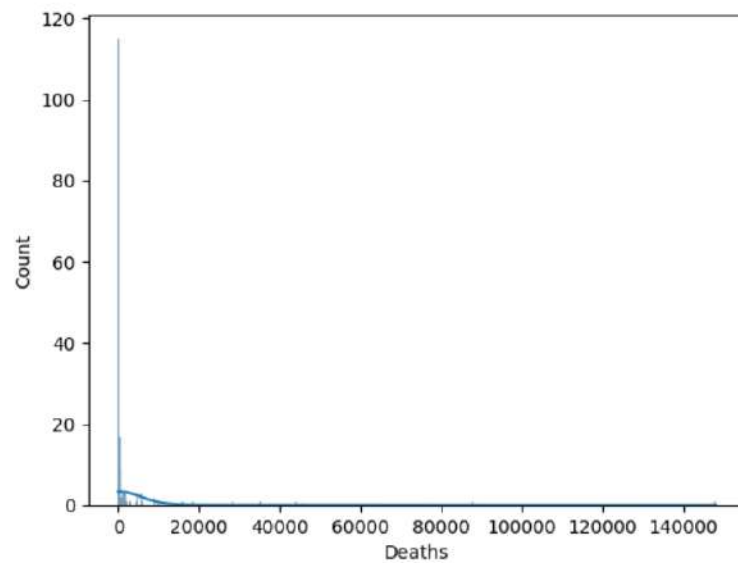


```
[17] sns.regplot(x='Deaths', y='Recovered', data=df, line_kws={"color": "violet"})  
<Axes: xlabel='Deaths', ylabel='Recovered'>
```

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```
sns.histplot(df, x="Deaths", kde=True)  
plt.show()
```



```
[16] sns.histplot(df, x="Recovered", kde=True)  
plt.show()
```

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```
sns.distplot(df['Deaths'])
```

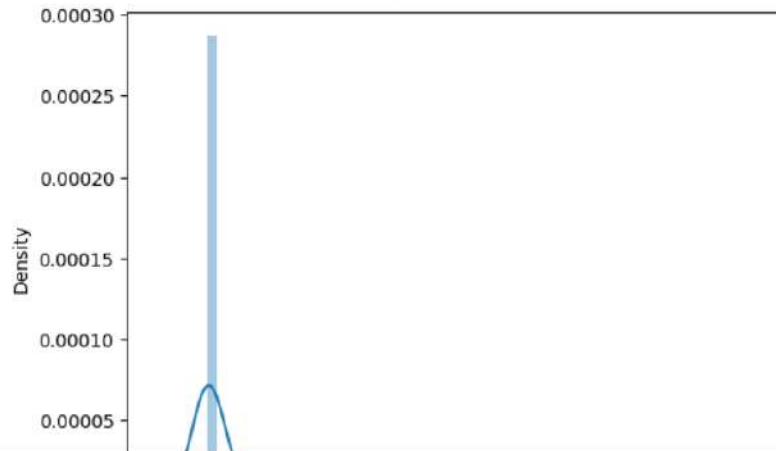
<ipython-input-14-ba9ecddcbd66>:1: UserWarning:

'distplot' is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either 'displot' (a figure-level function with similar flexibility) or 'histplot' (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see <https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751>

```
sns.distplot(df['Deaths'])  
<Axes: xlabel='Deaths', ylabel='Density'>
```



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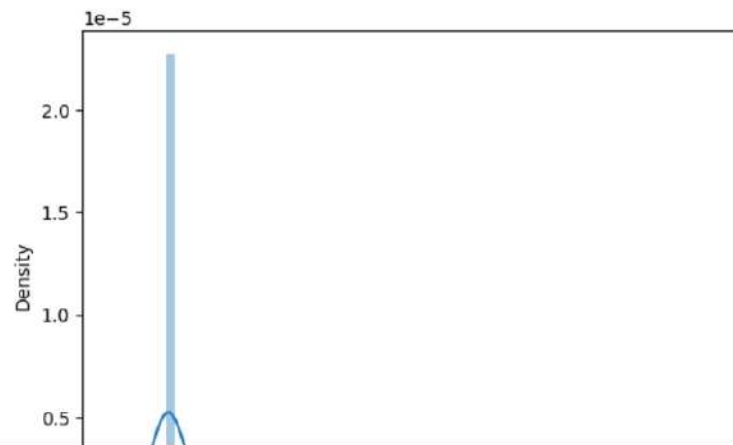
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```
sns.distplot(df['Recovered'])
```

<ipython-input-12-2a1a6a52dfa9>:1: UserWarning:
`distplot` is a deprecated function and will be removed in seaborn v0.14.0.
Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
<https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751>

```
sns.distplot(df['Recovered'])  
<Axes: xlabel='Recovered', ylabel='Density'>
```

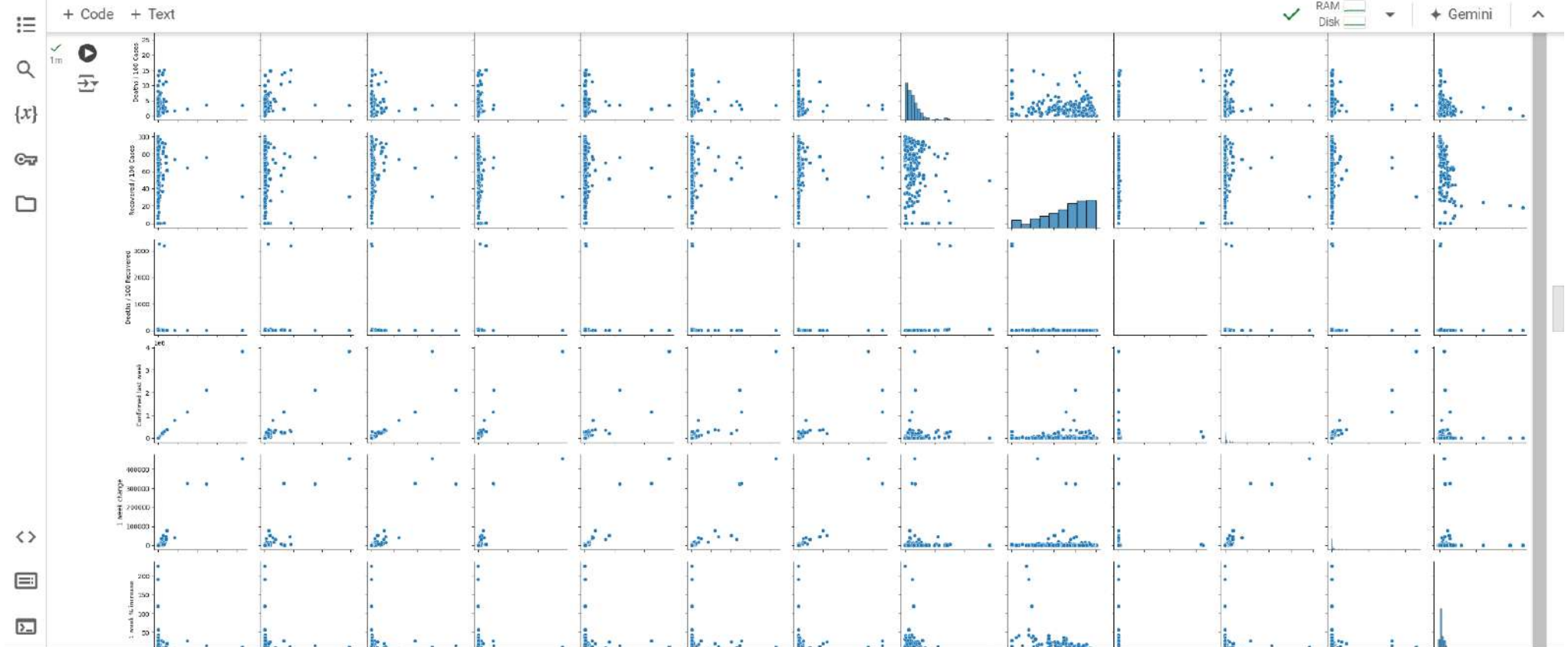


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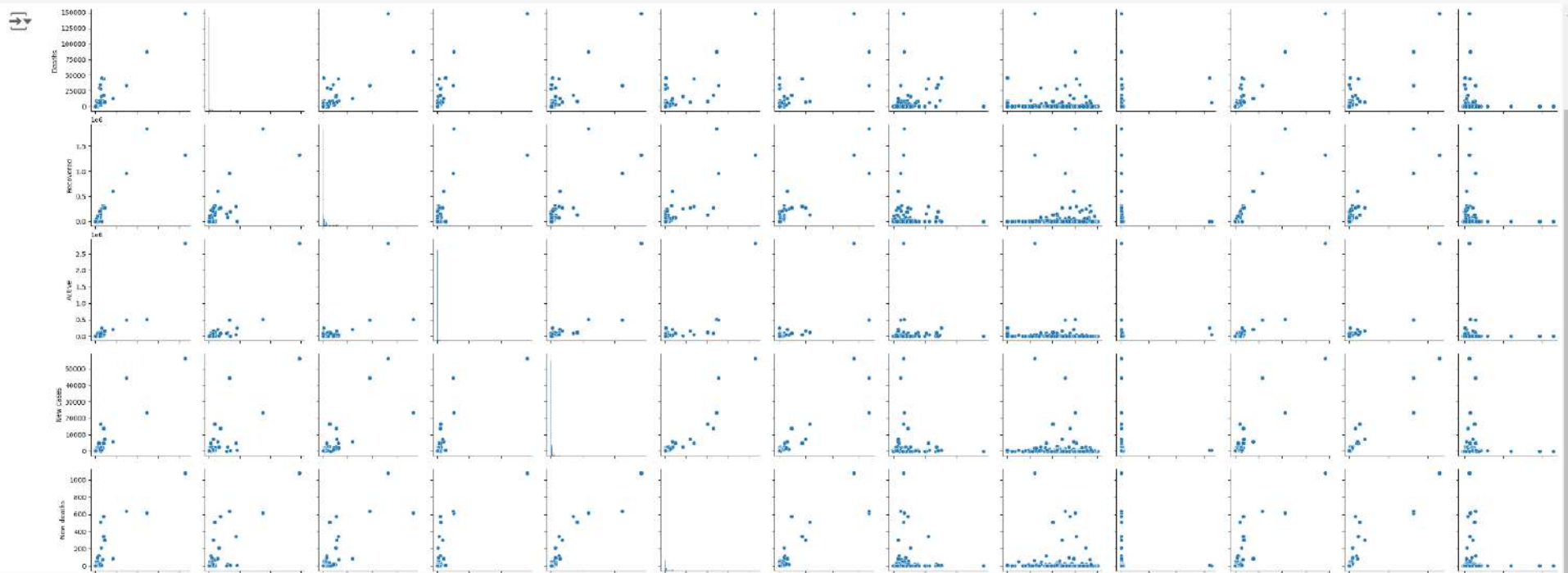
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```
sns.pairplot(df)  
plt.show()
```



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Deaths 0
Recovered 0
Active 0
New cases 0
New deaths 0
New recovered 0
Deaths / 100 Cases 0
Recovered / 100 Cases 0
Deaths / 100 Recovered 0
Confirmed last week 0
1 week change 0
1 week % increase 0
WHO Region 0

dtype: int64

```
[10] sns.pairplot(df)
plt.show()
```



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[8] df.describe()

```
/usr/local/lib/python3.10/dist-packages/pandas/core/nanops.py:1010: RuntimeWarning: invalid value encountered in subtract
sqr = _ensure_numeric((avg - values) ** 2)
/usr/local/lib/python3.10/dist-packages/pandas/core/nanops.py:1010: RuntimeWarning: invalid value encountered in subtract
sqr = _ensure_numeric((avg - values) ** 2)
```

	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
count	1.870000e+02	187.000000	1.870000e+02	1.870000e+02	187.000000	187.000000	187.000000	187.000000	187.000000	187.00	1.870000e+02	187.000000	187.000000
mean	8.813094e+04	3497.518717	5.063148e+04	3.400194e+04	1222.957219	28.957219	933.812834	3.019519	64.820535	inf	7.868248e+04	9448.459893	13.606203
std	3.833187e+05	14100.002482	1.901882e+05	2.133262e+05	5710.374790	120.037173	4197.719635	3.454302	26.287694	NaN	3.382737e+05	47491.127684	24.509838
min	1.000000e+01	0.000000	0.000000e+00	0.000000e+00	0.000000	0.000000	0.000000	0.000000	0.000000	0.00	1.000000e+01	-47.000000	-3.840000
25%	1.114000e+03	18.500000	6.265000e+02	1.415000e+02	4.000000	0.000000	0.000000	0.945000	48.770000	1.45	1.051500e+03	49.000000	2.775000
50%	5.059000e+03	108.000000	2.815000e+03	1.600000e+03	49.000000	1.000000	22.000000	2.150000	71.320000	3.62	5.020000e+03	432.000000	6.890000
75%	4.046050e+04	734.000000	2.260600e+04	9.149000e+03	419.500000	6.000000	221.000000	3.875000	86.885000	6.44	3.708050e+04	3172.000000	16.855000
max	4.290259e+06	148011.000000	1.846641e+06	2.816444e+06	56336.000000	1076.000000	33728.000000	28.560000	100.000000	inf	3.834677e+06	455582.000000	226.320000

[9] df.isnull().sum()

	0
Country/Region	0
Confirmed	0

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[6] df.columns

```
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')
```

[7] df.info()

```
<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
```

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	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
0	Afghanistan	36263	1269	25198	9796	106	10	18	3.50	69.49	5.04	35526	737	2.07	Eastern Mediterranean
1	Albania	4880	144	2745	1991	117	6	63	2.95	56.25	5.25	4171	709	17.00	Europe
2	Algeria	27973	1163	18837	7973	616	8	749	4.16	67.34	6.17	23691	4282	18.07	Africa
3	Andorra	907	52	803	52	10	0	0	5.73	88.53	6.48	884	23	2.60	Europe
4	Angola	950	41	242	667	18	1	0	4.32	25.47	16.94	749	201	26.84	Africa

[5] df.tail()

	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
182	West Bank and Gaza	10621	78	3752	6791	152	2	0	0.73	35.33	2.08	8916	1705	19.12	Eastern Mediterranean
183	Western Sahara	10	1	8	1	0	0	0	10.00	80.00	12.50	10	0	0.00	Africa
184	Yemen	1691	483	833	375	10	4	36	28.56	49.26	57.98	1619	72	4.45	Eastern Mediterranean
185	Zambia	4552	140	2815	1597	71	1	465	3.08	61.84	4.97	3326	1226	36.86	Africa
186	Zimbabwe	2704	36	542	2126	192	2	24	1.33	20.04	6.64	1713	991	57.85	Africa

[6] df.columns

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```
!pip install pandas numpy matplotlib seaborn
```

```
Requirement already satisfied: pandas in /usr/local/lib/python3.10/dist-packages (2.1.4)
Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (1.26.4)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packages (3.7.1)
Requirement already satisfied: seaborn in /usr/local/lib/python3.10/dist-packages (0.13.1)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.10/dist-packages (from pandas) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/dist-packages (from pandas) (2024.2)
Requirement already satisfied: tzdata>=2022.1 in /usr/local/lib/python3.10/dist-packages (from pandas) (2024.1)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.3.0)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (4.53.1)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.4.7)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (24.1)
Requirement already satisfied: pillow>=6.2.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (10.4.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (3.1.4)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
```

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

```
[3] df=pd.read_csv('/content/country_wise_latest.csv')
```

```
[4] df.head()
```

```
/usr/local/lib/python3.10/dist-packages/pandas/core/nanops.py:1010: RuntimeWarning: invalid value encountered in subtract
    src = ensure_numeric((avg - values) ** 2)
```

Connected to Python 3 Google Compute Engine backend