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

import warnings
warnings.filterwarnings("ignore")
```

In [2]:
```
#Setting the display for our graph display

sns.set_style('darkgrid')
plt.rcParams['font.size'] = 15
plt.rcParams ['figure.figsize'] = (10, 7)
plt.rcParams ['figure.facecolor'] = '#FFE5B4'
```

In [3]:
```
df=pd.read_csv("cause_of_deaths dataset.csv")
df
```

Out[3]:

	Country/Territory	Code	Year	Meningitis	Alzheimer's Disease and Other Dementias	Parkinson's Disease	Nutritional Deficiencies	Malaria	Drowning	Interpersonal Violence	...	Diabetes Mellitus	Chronic Kidney Disease	Poisonings	Protein-Energy Malnutrition	Road Injuries	Chronic Respiratory Diseases	Cirrhosis and Other Chronic Liver Diseases	Digestive Diseases	Fire, Heat, and Hot Substances	Acute Hepatitis
0	Afghanistan	AFG	1990	2159	1116	371	2087	93	1370	1538	...	2108	3709	338	2054	4154	5945	2673	5005	323	2985
1	Afghanistan	AFG	1991	2218	1136	374	2153	189	1391	2001	...	2120	3724	351	2119	4472	6050	2728	5120	332	3092
2	Afghanistan	AFG	1992	2475	1162	378	2441	239	1514	2299	...	2153	3776	386	2404	5106	6223	2830	5335	360	3325
3	Afghanistan	AFG	1993	2812	1187	384	2837	108	1687	2589	...	2195	3862	425	2797	5681	6445	2943	5568	396	3601
4	Afghanistan	AFG	1994	3027	1211	391	3081	211	1809	2849	...	2231	3932	451	3038	6001	6664	3027	5739	420	3816
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6115	Zimbabwe	ZWE	2015	1439	754	215	3019	2518	770	1302	...	3176	2108	381	2990	2373	2751	1956	4202	632	146
6116	Zimbabwe	ZWE	2016	1457	767	219	3056	2050	801	1342	...	3259	2160	393	3027	2436	2788	1962	4264	648	146
6117	Zimbabwe	ZWE	2017	1460	781	223	2990	2116	818	1363	...	3313	2196	398	2962	2473	2818	2007	4342	654	144
6118	Zimbabwe	ZWE	2018	1450	795	227	2918	2088	825	1396	...	3381	2240	400	2890	2509	2849	2030	4377	657	139
6119	Zimbabwe	ZWE	2019	1450	812	232	2884	2068	827	1434	...	3460	2292	405	2855	2554	2891	2065	4437	662	136

6120 rows × 34 columns

In [4]:
```
pd.set_option('display.max_columns',None) #  This will enable us to see truncated columns
df.head()
```

Out[4]:

	Country/Territory	Code	Year	Meningitis	Alzheimer's Disease and Other Dementias	Parkinson's Disease	Nutritional Deficiencies	Malaria	Drowning	Interpersonal Violence	Maternal Disorders	HIV/AIDS	Drug Use Disorders	Tuberculosis	Cardiovascular Diseases	Lower Respiratory Infections	Neonatal Disorders	Alcohol Use Disorders	Self-harm	Exposure to Forces of Nature	D D
0	Afghanistan	AFG	1990	2159	1116	371	2087	93	1370	1538	2655	34	93	4661	44899	23741	15612	72	696	0	
1	Afghanistan	AFG	1991	2218	1136	374	2153	189	1391	2001	2885	41	102	4743	45492	24504	17128	75	751	1347	
2	Afghanistan	AFG	1992	2475	1162	378	2441	239	1514	2299	3315	48	118	4976	46557	27404	20060	80	855	614	
3	Afghanistan	AFG	1993	2812	1187	384	2837	108	1687	2589	3671	56	132	5254	47951	31116	22335	85	943	225	
4	Afghanistan	AFG	1994	3027	1211	391	3081	211	1809	2849	3863	63	142	5470	49308	33390	23288	88	993	160	

In [25]:
```
df.columns
```

Out[25]:
```
Index(['Country/Territory', 'Year', 'Meningitis',
       'Alzheimer's Disease and Other Dementias', 'Parkinson's Disease',
       'Nutritional Deficiencies', 'Malaria', 'Drowning',
       'Interpersonal Violence', 'Maternal Disorders', 'HIV/AIDS',
       'Drug Use Disorders', 'Tuberculosis', 'Cardiovascular Diseases',
       'Lower Respiratory Infections', 'Neonatal Disorders',
       'Alcohol Use Disorders', 'Self-harm', 'Exposure to Forces of Nature',
       'Diarrheal Diseases', 'Environmental Heat and Cold Exposure',
       'Neoplasms', 'Conflict and Terrorism', 'Diabetes Mellitus',
       'Chronic Kidney Disease', 'Poisonings', 'Protein-Energy Malnutrition',
       'Road Injuries', 'Chronic Respiratory Diseases',
       'Cirrhosis and Other Chronic Liver Diseases', 'Digestive Diseases',
       'Fire, Heat, and Hot Substances', 'Acute Hepatitis', 'Total Deaths'],
      dtype='object')
```

In [6]:
```
# Data information
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6120 entries, 0 to 6119
Data columns (total 34 columns):
 #   Column                                     Non-Null Count  Dtype
---  ------                                     --------------  -----
 0   Country/Territory                          6120 non-null   object
 1   Code                                       6120 non-null   object
 2   Year                                       6120 non-null   int64
 3   Meningitis                                 6120 non-null   int64
 4   Alzheimer's Disease and Other Dementias    6120 non-null   int64
 5   Parkinson's Disease                        6120 non-null   int64
 6   Nutritional Deficiencies                   6120 non-null   int64
 7   Malaria                                    6120 non-null   int64
 8   Drowning                                   6120 non-null   int64
 9   Interpersonal Violence                     6120 non-null   int64
 10  Maternal Disorders                         6120 non-null   int64
 11  HIV/AIDS                                   6120 non-null   int64
 12  Drug Use Disorders                         6120 non-null   int64
 13  Tuberculosis                               6120 non-null   int64
 14  Cardiovascular Diseases                    6120 non-null   int64
 15  Lower Respiratory Infections               6120 non-null   int64
 16  Neonatal Disorders                         6120 non-null   int64
 17  Alcohol Use Disorders                      6120 non-null   int64
 18  Self-harm                                  6120 non-null   int64
 19  Exposure to Forces of Nature               6120 non-null   int64
 20  Diarrheal Diseases                         6120 non-null   int64
 21  Environmental Heat and Cold Exposure       6120 non-null   int64
 22  Neoplasms                                  6120 non-null   int64
 23  Conflict and Terrorism                     6120 non-null   int64
 24  Diabetes Mellitus                          6120 non-null   int64
 25  Chronic Kidney Disease                     6120 non-null   int64
 26  Poisonings                                 6120 non-null   int64
 27  Protein-Energy Malnutrition                6120 non-null   int64
 28  Road Injuries                              6120 non-null   int64
 29  Chronic Respiratory Diseases               6120 non-null   int64
 30  Cirrhosis and Other Chronic Liver Diseases 6120 non-null   int64
 31  Digestive Diseases                         6120 non-null   int64
 32  Fire, Heat, and Hot Substances             6120 non-null   int64
 33  Acute Hepatitis                            6120 non-null   int64
dtypes: int64(32), object(2)
memory usage: 1.6+ MB
```

In [7]:
```
df.duplicated().sum()
```

Out[7]:
```
0
```

In [8]:
```
df.isin(['NAN','NA','N/A','-',' ','?',np.nan]).sum().any()
```

Out[8]:
```
False
```

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

Out[9]:
```
0
```

In [10]:
```
# Value counts for each feature data
for i in df.columns:
    print(df[i].value_counts())
    print('*****************')
```

```
Afghanistan         30
Papua New Guinea    30
Niue                30
North Korea         30
North Macedonia     30
                    ..
Greenland           30
Grenada             30
Guam                30
Guatemala           30
Zimbabwe            30
Name: Country/Territory, Length: 204, dtype: int64
*****************
AFG    30
PNG    30
NIU    30
PRK    30
MKD    30
       ..
```

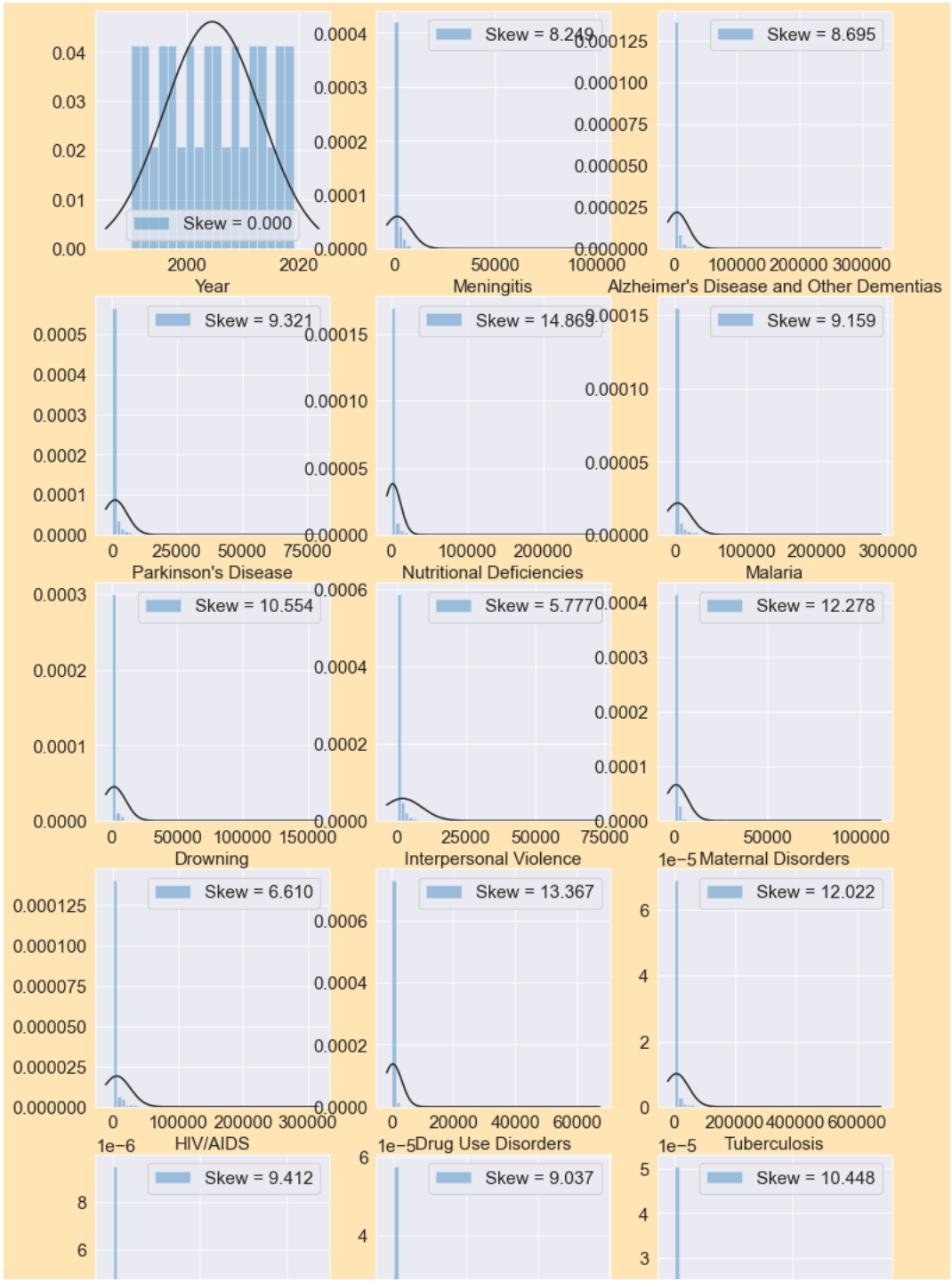
Dropping column "Code" as it is same as country.

In [11]:
```
df.drop("Code",axis=1,inplace=True)
```

Exploratory Data Analysis

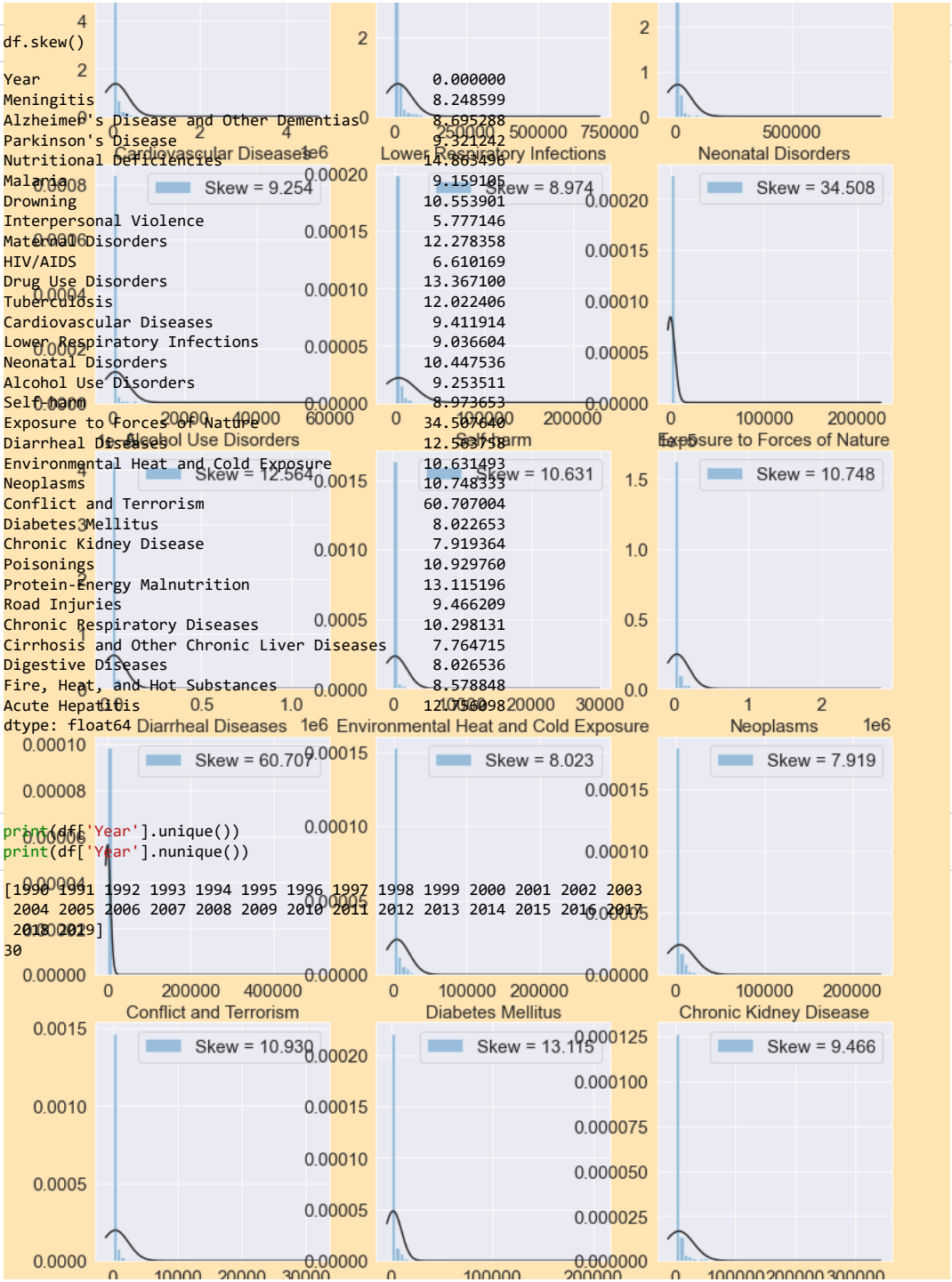
Univariate Analysis

In [12]:
```
#plotting a histogram of each independent feature for visualization
from scipy import stats
cols = df.columns[1:]
fig,ax = plt.subplots(11,3, figsize=(12, 48))
ax = ax.flatten()
i = 0
for col in cols:
    skew = df[col].skew()
    sns.distplot(df[col], ax = ax[i], fit= stats.norm, kde=False, label='Skew = %.3f' %(skew))
    ax[i].legend(loc='best')
    i += 1
plt.show()
```


Skew = 0.000
Year
Skew = 8.249
Meningitis
Skew = 8.695
Alzheimer's Disease and Other Dementias
Skew = 9.321
Parkinson's Disease
Skew = 14.863
Nutritional Deficiencies
Skew = 9.159
Malaria
Skew = 10.554
Drowning
Skew = 5.777
Interpersonal Violence
Skew = 12.278
1e−5 Maternal Disorders
Skew = 6.610
1e−6 HIV/AIDS
Skew = 13.367
1e−5 Drug Use Disorders
Skew = 12.022
1e−5 Tuberculosis
Skew = 9.412
Skew = 9.037
Skew = 10.448

In [13]:
```
df.skew()
```

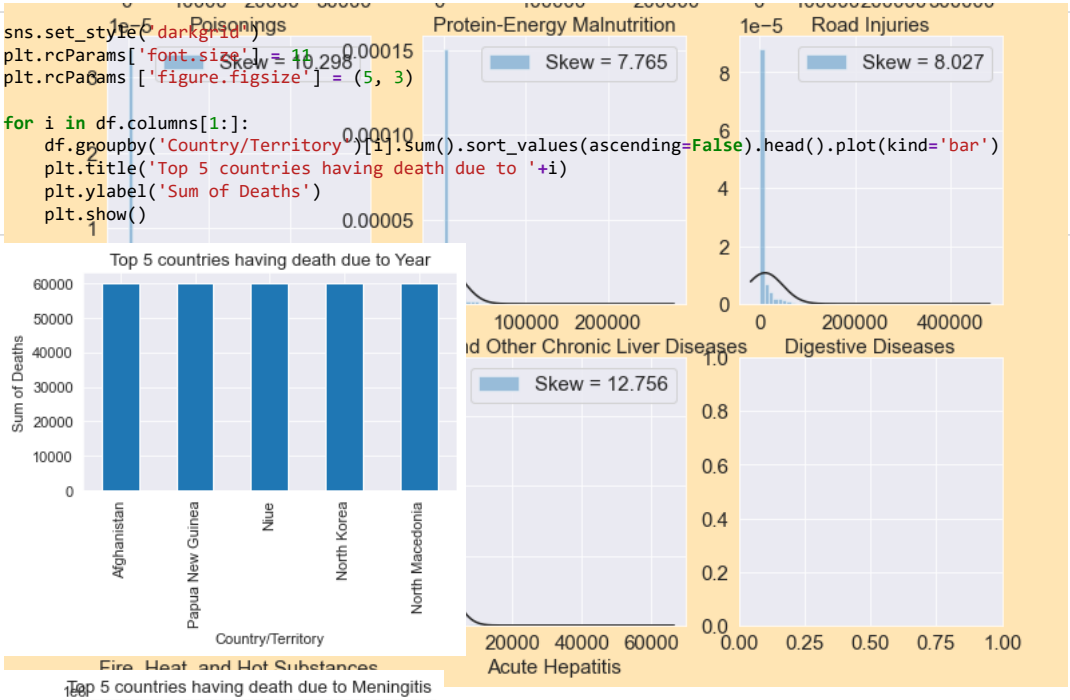
Out[13]:
```
Year                                            0.000000
Meningitis                                      8.248599
Alzheimer's Disease and Other Dementias         8.695288
Parkinson's Disease                             9.321242
Nutritional Deficiencies                       14.863496
Malaria                                         9.159105
Drowning                                       10.553901
Interpersonal Violence                          5.777146
Maternal Disorders                             12.278358
HIV/AIDS                                        6.610169
Drug Use Disorders                             13.367100
Tuberculosis                                   12.022406
Cardiovascular Diseases                         9.411914
Lower Respiratory Infections                    9.036604
Neonatal Disorders                             10.447536
Alcohol Use Disorders                           9.253511
Self-harm                                       8.973653
Exposure to Forces of Nature                   34.507640
Diarrheal Diseases                             12.563758
Environmental Heat and Cold Exposure           10.631493
Neoplasms                                      10.748333
Conflict and Terrorism                         60.707004
Diabetes Mellitus                               8.022653
Chronic Kidney Disease                          7.919364
Poisonings                                     10.929760
Protein-Energy Malnutrition                    13.115196
Road Injuries                                   9.466209
Chronic Respiratory Diseases                   10.298131
Cirrhosis and Other Chronic Liver Diseases      7.764715
Digestive Diseases                              8.026536
Fire, Heat, and Hot Substances                  8.578848
Acute Hepatitis                                12.756098
dtype: float64
```

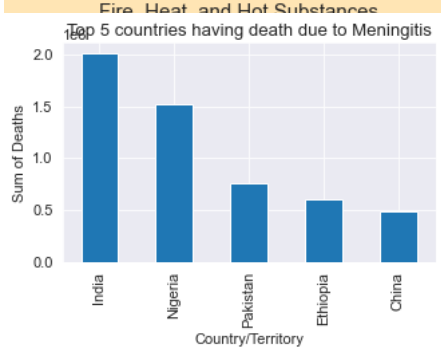


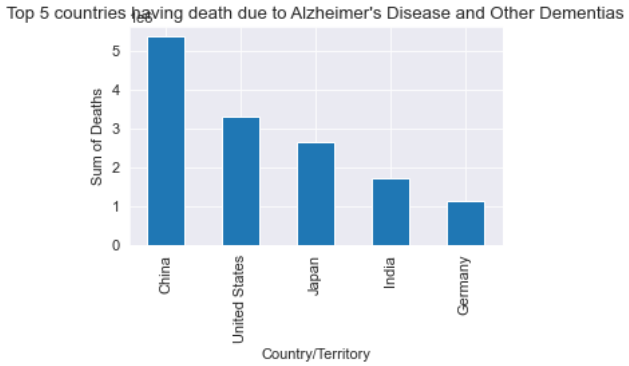
In [14]:
```
print(df['Year'].unique())
print(df['Year'].nunique())
```

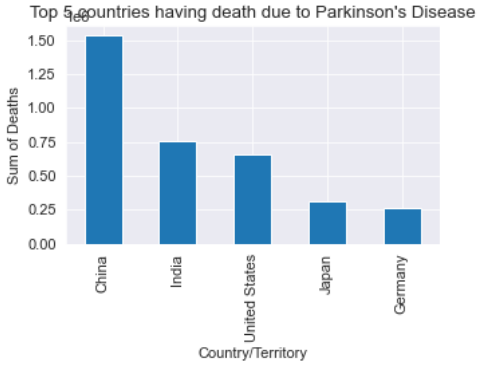
```
[1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003
 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017
 2018 2019]
30
```

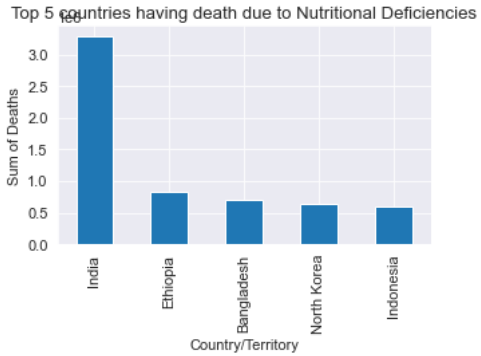
In [15]:
```
sns.set_style('darkgrid')
plt.rcParams['font.size'] = 11
plt.rcParams ['figure.figsize'] = (5, 3)

for i in df.columns[1:]:
    df.groupby('Country/Territory')[i].sum().sort_values(ascending=False).head().plot(kind='bar')
    plt.title('Top 5 countries having death due to '+i)
    plt.ylabel('Sum of Deaths')
    plt.show()
```

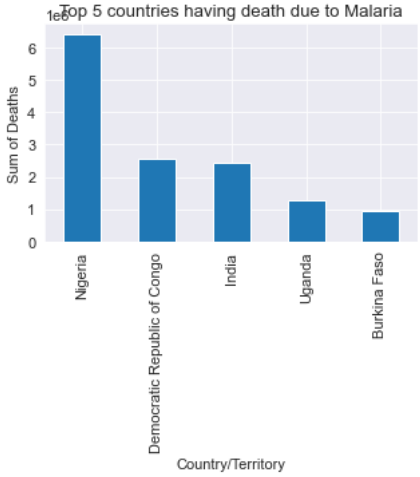


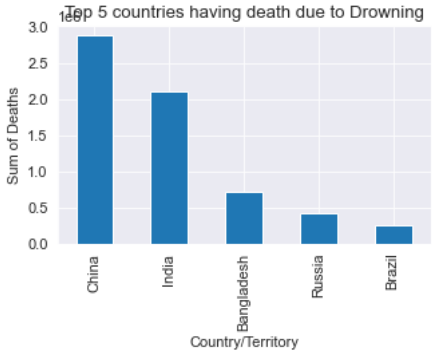


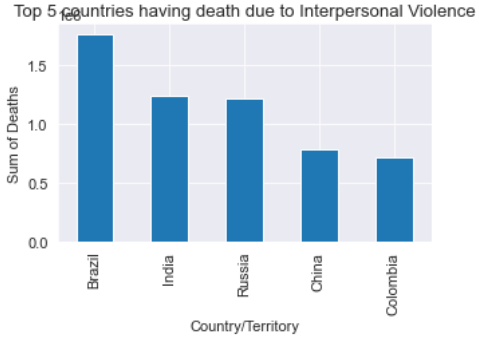


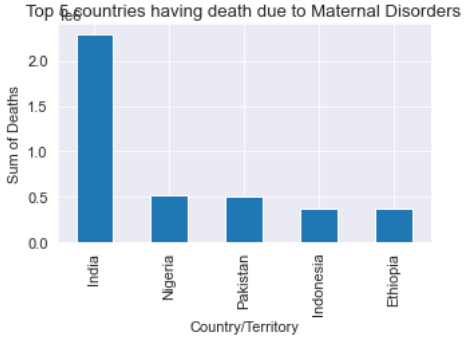

Top 5 countries having death due to Parkinson's Disease
1e8
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Sum of Deaths
China
India
United States
Japan
Germany
Country/Territory

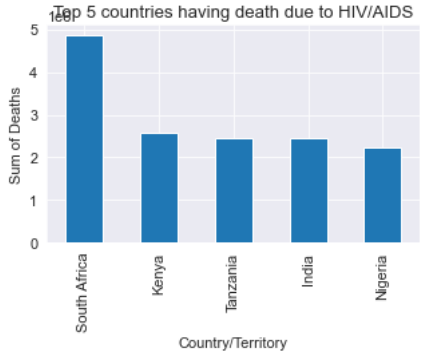

Top 5 countries having death due to Nutritional Deficiencies
1e8
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Sum of Deaths
India
Ethiopia
Bangladesh
North Korea
Indonesia
Country/Territory

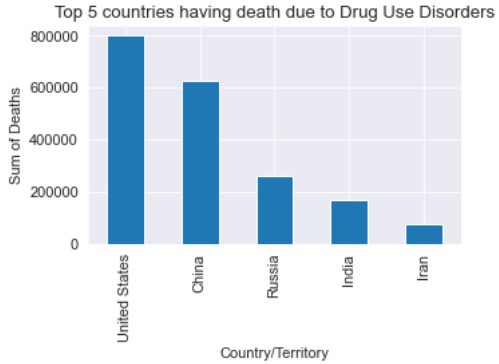

Top 5 countries having death due to Malaria
1e8
6
5
4
3
2
1
0
Sum of Deaths
Nigeria
Democratic Republic of Congo
India
Uganda
Burkina Faso
Country/Territory

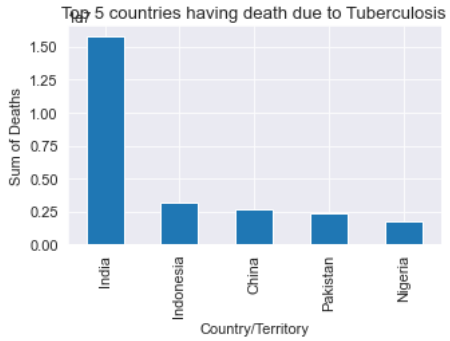

Top 5 countries having death due to Drowning
1e6
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Sum of Deaths
China
India
Bangladesh
Russia
Brazil
Country/Territory

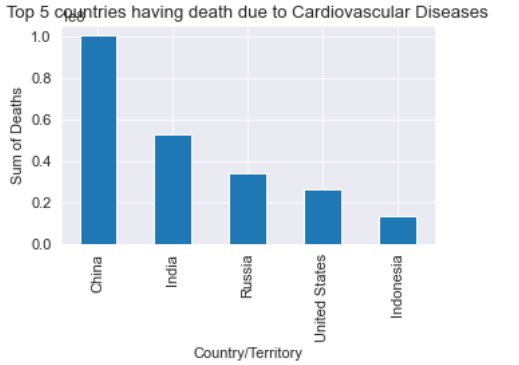

Top 5 countries having death due to Interpersonal Violence
1e6
1.5
1.0
0.5
0.0
Sum of Deaths
Brazil
India
Russia
China
Colombia
Country/Territory

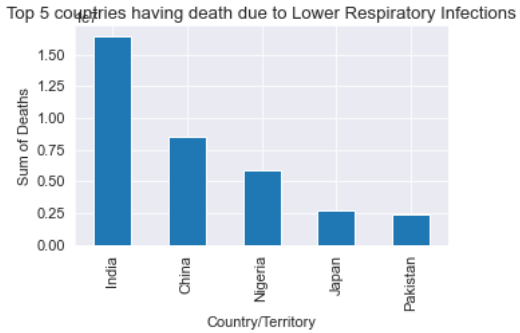

Top 5 countries having death due to Maternal Disorders
1e6
2.0
1.5
1.0
0.5
0.0
Sum of Deaths
India
Nigeria
Pakistan
Indonesia
Ethiopia
Country/Territory

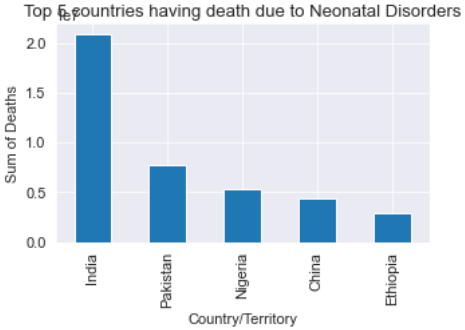

Top 5 countries having death due to HIV/AIDS
1e7
5
4
3
2
1
0
Sum of Deaths
South Africa
Kenya
Tanzania
India
Nigeria
Country/Territory

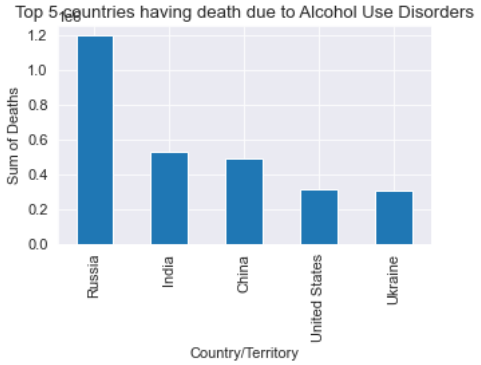

Top 5 countries having death due to Drug Use Disorders
800000
600000
400000
200000
0
Sum of Deaths
United States
China
Russia
India
Iran
Country/Territory

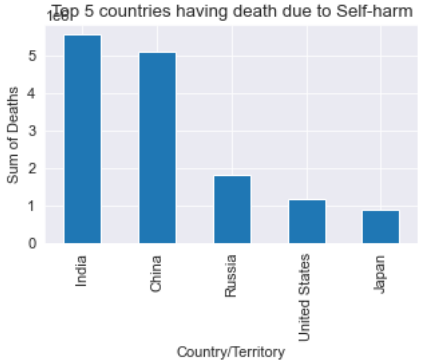

Top 5 countries having death due to Tuberculosis
1e7
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Sum of Deaths
India
Indonesia
China
Pakistan
Nigeria
Country/Territory

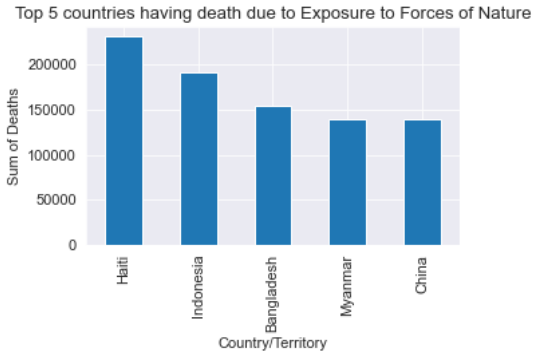

Top 5 countries having death due to Cardiovascular Diseases
1e8
1.0
0.8
0.6
0.4
0.2
0.0
Sum of Deaths
China
India
Russia
United States
Indonesia
Country/Territory

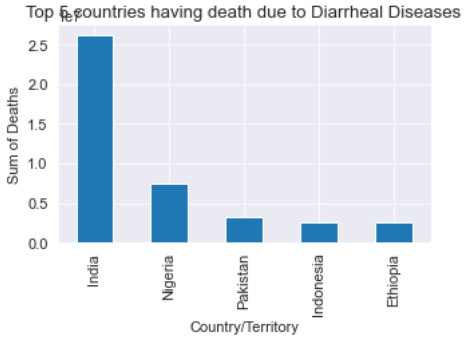

Top 5 countries having death due to Lower Respiratory Infections
1e7
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Sum of Deaths
India
China
Nigeria
Japan
Pakistan
Country/Territory

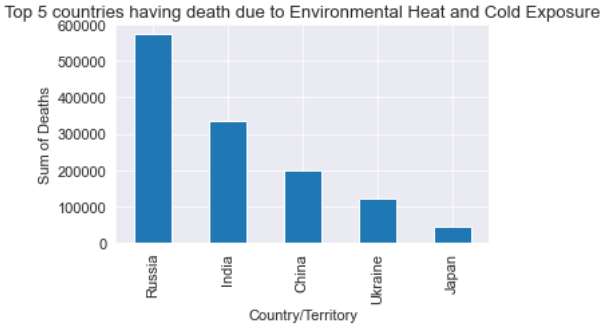

Top 5 countries having death due to Neonatal Disorders
1e7
2.0
1.5
1.0
0.5
0.0
Sum of Deaths
India
Pakistan
Nigeria
China
Ethiopia
Country/Territory

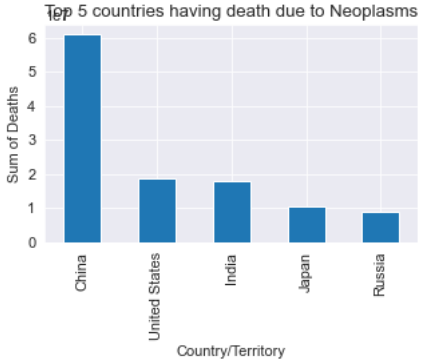

Top 5 countries having death due to Alcohol Use Disorders
1e6
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Sum of Deaths
Russia
India
China
United States
Ukraine
Country/Territory

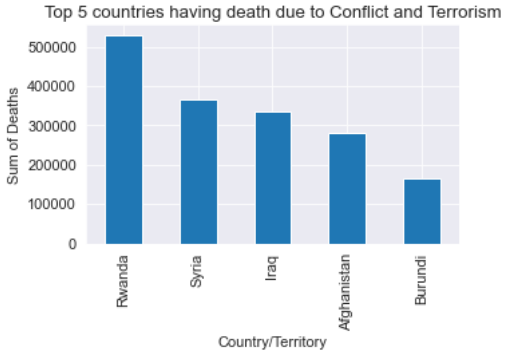

Top 5 countries having death due to Self-harm
1e6
5
4
3
2
1
0
Sum of Deaths
India
China
Russia
United States
Japan
Country/Territory

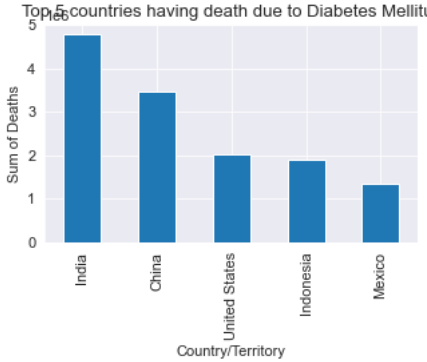

Top 5 countries having death due to Exposure to Forces of Nature
200000
150000
100000
50000
0
Sum of Deaths
Haiti
Indonesia
Bangladesh
Myanmar
China
Country/Territory

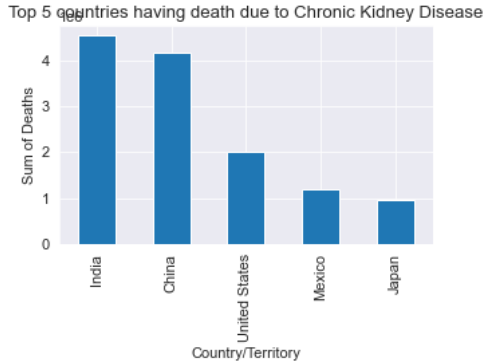

Top 5 countries having death due to Diarrheal Diseases
1e7
2.5
2.0
1.5
1.0
0.5
0.0
Sum of Deaths
India
Nigeria
Pakistan
Indonesia
Ethiopia
Country/Territory

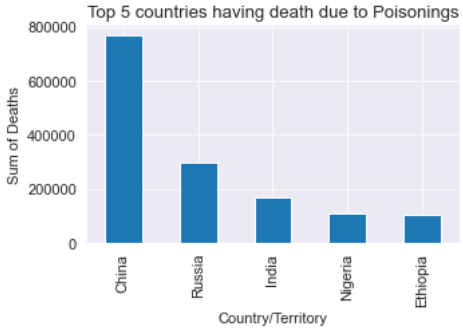

Top 5 countries having death due to Environmental Heat and Cold Exposure
600000
500000
400000
300000
200000
100000
0
Sum of Deaths
Russia
India
China
Ukraine
Japan
Country/Territory

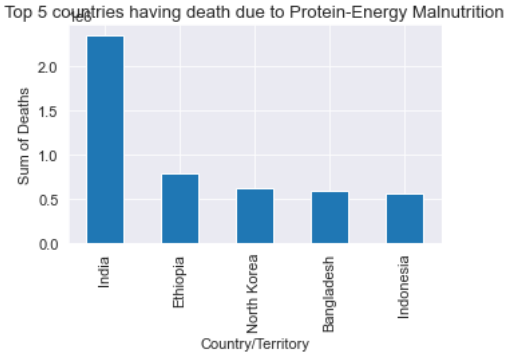

Top 5 countries having death due to Neoplasms
1e7
6
5
4
3
2
1
0
Sum of Deaths
China
United States
India
Japan
Russia
Country/Territory

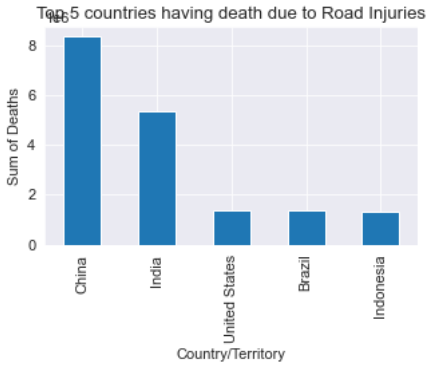

Top 5 countries having death due to Conflict and Terrorism
Sum of Deaths
500000
400000
300000
200000
100000
0
Rwanda
Syria
Iraq
Afghanistan
Burundi
Country/Territory

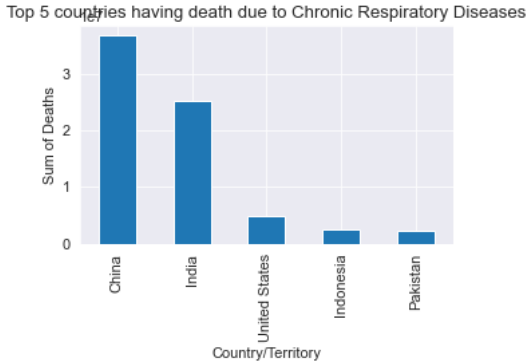

Top 5 countries having death due to Diabetes Mellitus
1e6
Sum of Deaths
5
4
3
2
1
0
India
China
United States
Indonesia
Mexico
Country/Territory

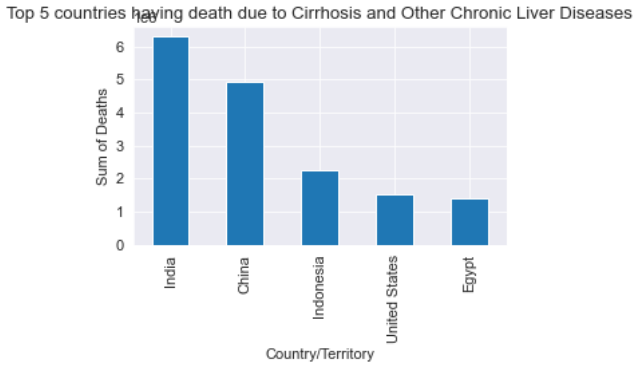

Top 5 countries having death due to Chronic Kidney Disease
1e6
Sum of Deaths
4
3
2
1
0
India
China
United States
Mexico
Japan
Country/Territory

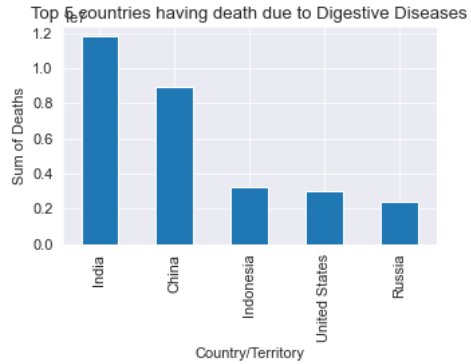

Top 5 countries having death due to Poisonings
800000
600000
400000
200000
0
Sum of Deaths
China
Russia
India
Nigeria
Ethiopia
Country/Territory

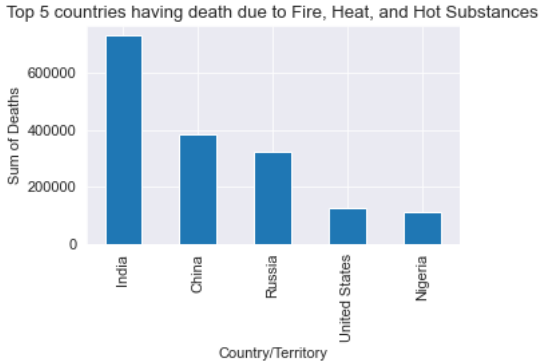

Top 5 countries having death due to Protein-Energy Malnutrition
1e6
2.0
1.5
1.0
0.5
0.0
Sum of Deaths
India
Ethiopia
North Korea
Bangladesh
Indonesia
Country/Territory

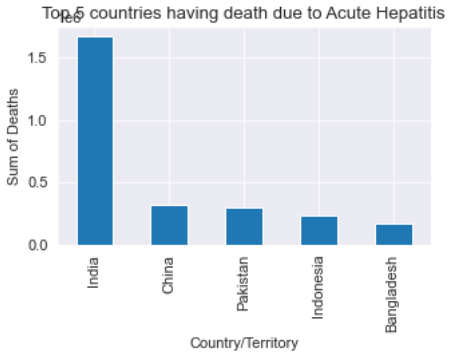

Top 5 countries having death due to Road Injuries
1e6
8
6
4
2
0
Sum of Deaths
China
India
United States
Brazil
Indonesia
Country/Territory


Top 5 countries having death due to Chronic Respiratory Diseases
1e7
3
2
1
0
Sum of Deaths
China
India
United States
Indonesia
Pakistan
Country/Territory


Top 5 countries having death due to Cirrhosis and Other Chronic Liver Diseases
1e6
6
5
4
3
2
1
0
Sum of Deaths
India
China
Indonesia
United States
Egypt
Country/Territory


Top 5 countries having death due to Digestive Diseases
1e7
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Sum of Deaths
India
China
Indonesia
United States
Russia
Country/Territory





Top countries in different death disease/enviroment from above graphs

India---- Meningits, Nutritional Deficiencies, Maternal Disorders, Tuberculosis, Lower Respiratory Infections, Self-harm Neonatal Disorders,Diarrheal Diseases, Diabetes Mellitus,Choronic kidney,Protein-energy malnutrition,Digestive,Acute Hepatitis Cirrhosis & other chronic liver, Fire/heat & hot substances

China---- Alzheimer, Parkinson, Drowning, Cardiovascular Diseases, Neoplasms, Poisonings, Road injuries, Chronic respiratory

Nigeria---- Malaria

Brazil---- Interpersonal Violence

South Africa---- HIV/AIDS

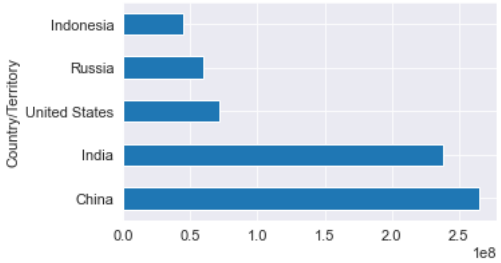
USA---- Drug use Disorders

Russia---- Alcohol use Disorders, Environmental Heat&cold exposure

Haiti---- Exposure to forces of nature

Rwanda---- Conflict & Terrorism

In [16]:
```
df["Total Deaths"]=df.sum(axis=1)
df.groupby('Country/Territory')["Total Deaths"].sum().sort_values(ascending=False).head().plot(kind='barh')
plt.show()
```



In [17]:
```
summ=['Meningitis',
       "Alzheimer's Disease and Other Dementias", "Parkinson's Disease",
       'Nutritional Deficiencies', 'Malaria', 'Drowning',
       'Interpersonal Violence', 'Maternal Disorders', 'HIV/AIDS',
       'Drug Use Disorders', 'Tuberculosis', 'Cardiovascular Diseases',
       'Lower Respiratory Infections', 'Neonatal Disorders',
       'Alcohol Use Disorders', 'Self-harm', 'Exposure to Forces of Nature',
       'Diarrheal Diseases', 'Environmental Heat and Cold Exposure',
       'Neoplasms', 'Conflict and Terrorism', 'Diabetes Mellitus',
       'Chronic Kidney Disease', 'Poisonings', 'Protein-Energy Malnutrition',
       'Road Injuries', 'Chronic Respiratory Diseases',
       'Cirrhosis and Other Chronic Liver Diseases', 'Digestive Diseases',
       'Fire, Heat, and Hot Substances', 'Acute Hepatitis']

sum_of=[]
for i in summ:
    sum_of.append(sum(df[i]))
```

In [18]:
```
df2=pd.DataFrame({
    'Name of diseases':summ,
    'Total diseases':sum_of
})
df2
```

Out[18]:

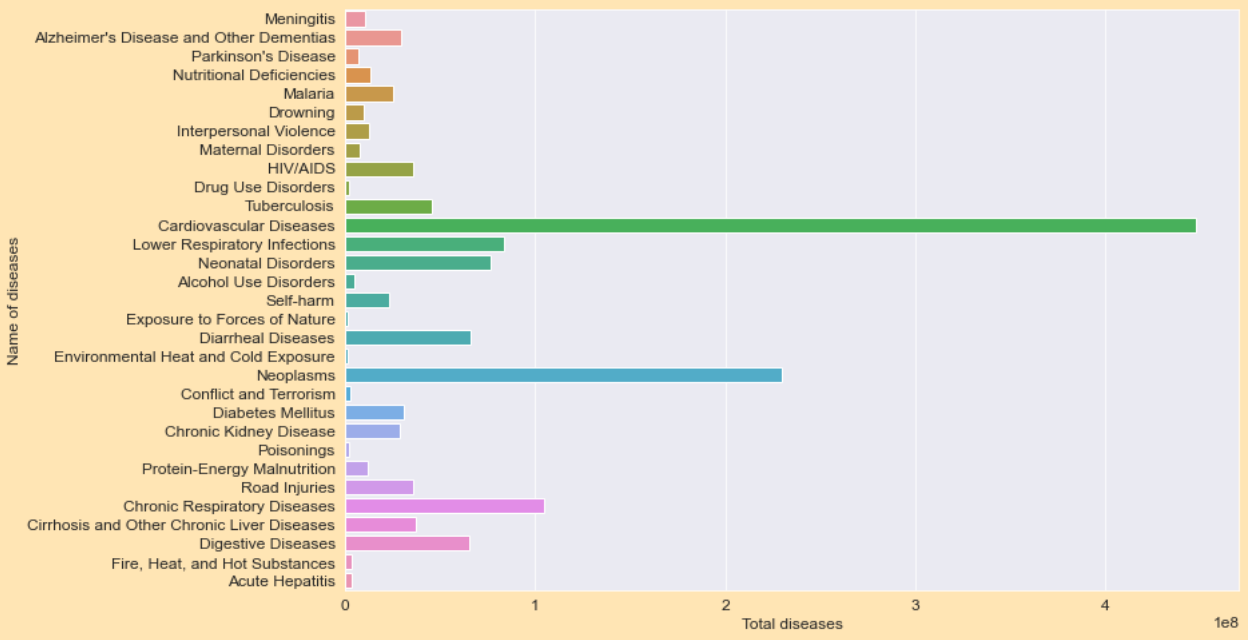
	Name of diseases	Total diseases
0	Meningitis	10524572
1	Alzheimer's Disease and Other Dementias	29768839
2	Parkinson's Disease	7179795
3	Nutritional Deficiencies	13792032
4	Malaria	25342676
5	Drowning	10301999
6	Interpersonal Violence	12752839
7	Maternal Disorders	7727046
8	HIV/AIDS	36364419
9	Drug Use Disorders	2656121
10	Tuberculosis	45850603
11	Cardiovascular Diseases	447741982
12	Lower Respiratory Infections	83770038
13	Neonatal Disorders	76860729
14	Alcohol Use Disorders	4819018
15	Self-harm	23713931
16	Exposure to Forces of Nature	1490132
17	Diarrheal Diseases	66235508
18	Environmental Heat and Cold Exposure	1788851
19	Neoplasms	229758538
20	Conflict and Terrorism	3294053
21	Diabetes Mellitus	31448872
22	Chronic Kidney Disease	28911692
23	Poisonings	2601082
24	Protein-Energy Malnutrition	12031885
25	Road Injuries	36296469
26	Chronic Respiratory Diseases	104605334
27	Cirrhosis and Other Chronic Liver Diseases	37479321
28	Digestive Diseases	65638635
29	Fire, Heat, and Hot Substances	3602914
30	Acute Hepatitis	3784791

In [19]:
```
df2["Total diseases"]
```

Out[19]:
```
0      10524572
1      29768839
2       7179795
3      13792032
4      25342676
5      10301999
6      12752839
7       7727046
8      36364419
9       2656121
10     45850603
11    447741982
12     83770038
13     76860729
14      4819018
15     23713931
16      1490132
17     66235508
18      1788851
19    229758538
20      3294053
21     31448872
22     28911692
23      2601082
24     12031885
25     36296469
26    104605334
27     37479321
28     65638635
29      3602914
30      3784791
Name: Total diseases, dtype: int64
```

In [20]:
```
plt.rcParams['font.size'] = 12
plt.rcParams ['figure.figsize'] = (12, 8)
plt.rcParams ['figure.facecolor'] = '#FFE5B4'
sns.barplot(y=df2["Name of diseases"],x=df2["Total diseases"])
```

Out[20]: <AxesSubplot:xlabel='Total diseases', ylabel='Name of diseases'>



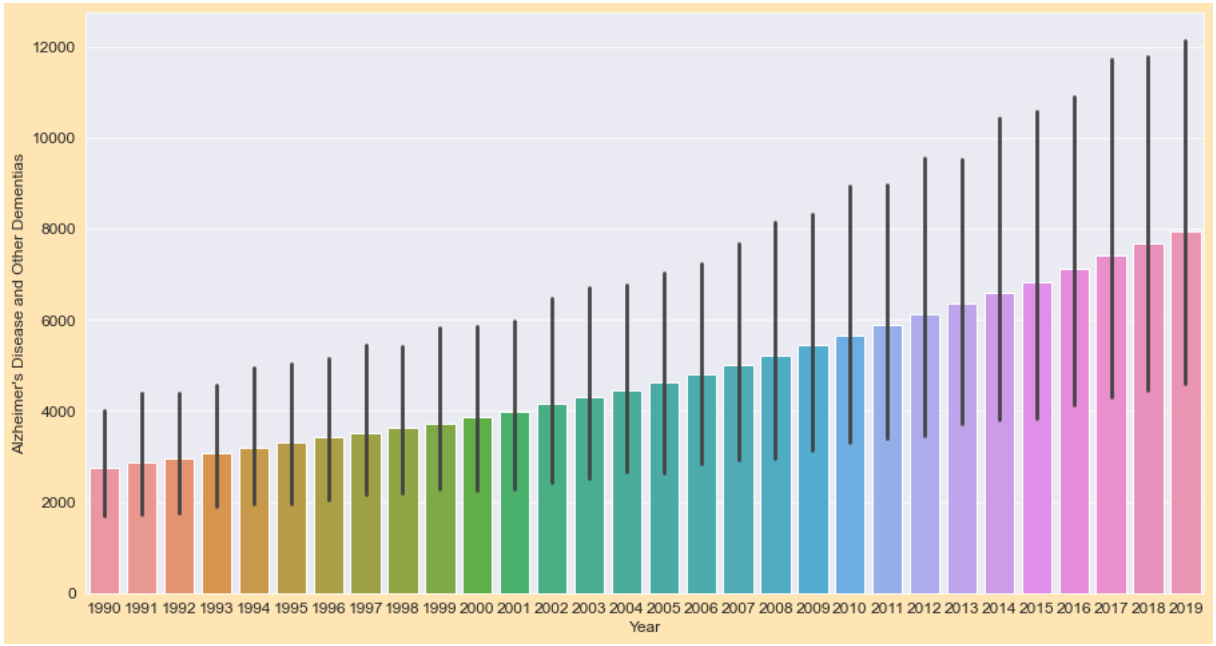
As we observe in the diseases of Cardiovascular there are maximum deth 447741982.

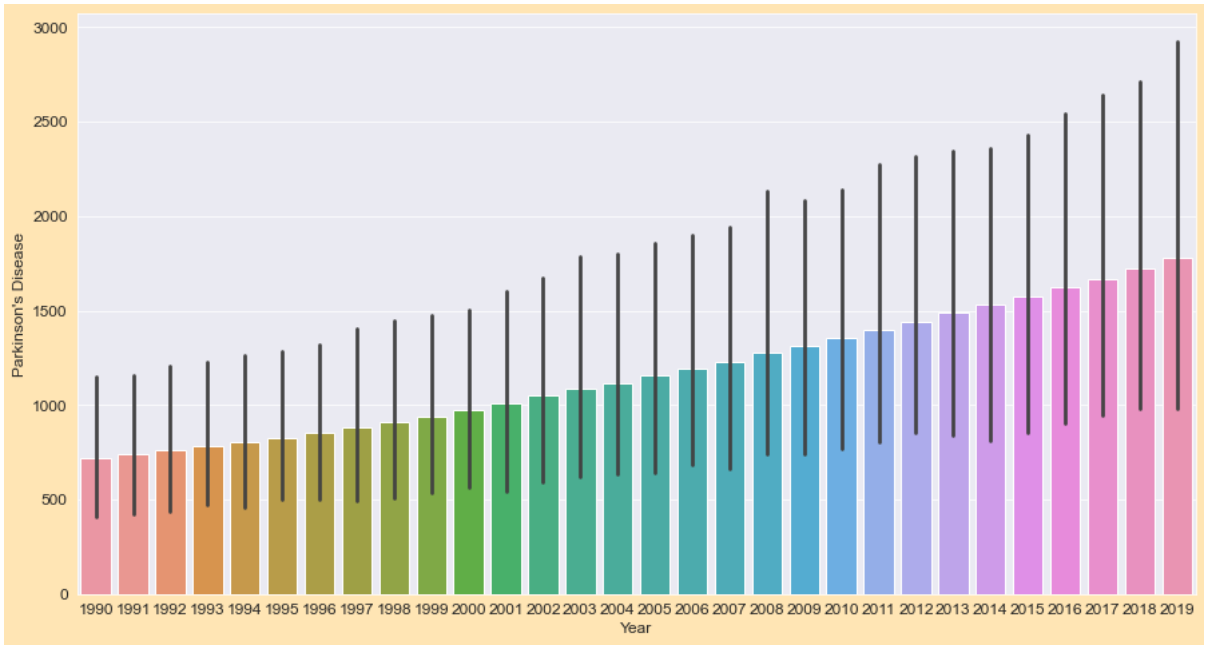
As we observe in the diseases of Exposure to Forces of Nature there are maximum deth 1490132.

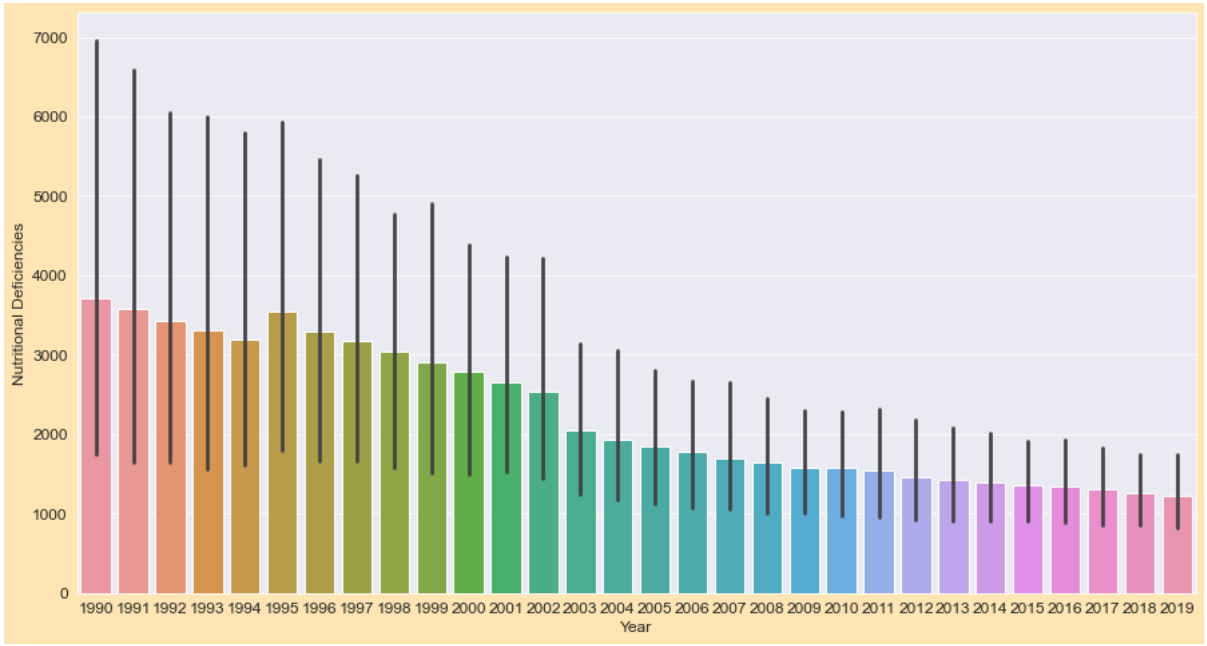
As we observe there are total 1480402256 persons are died.

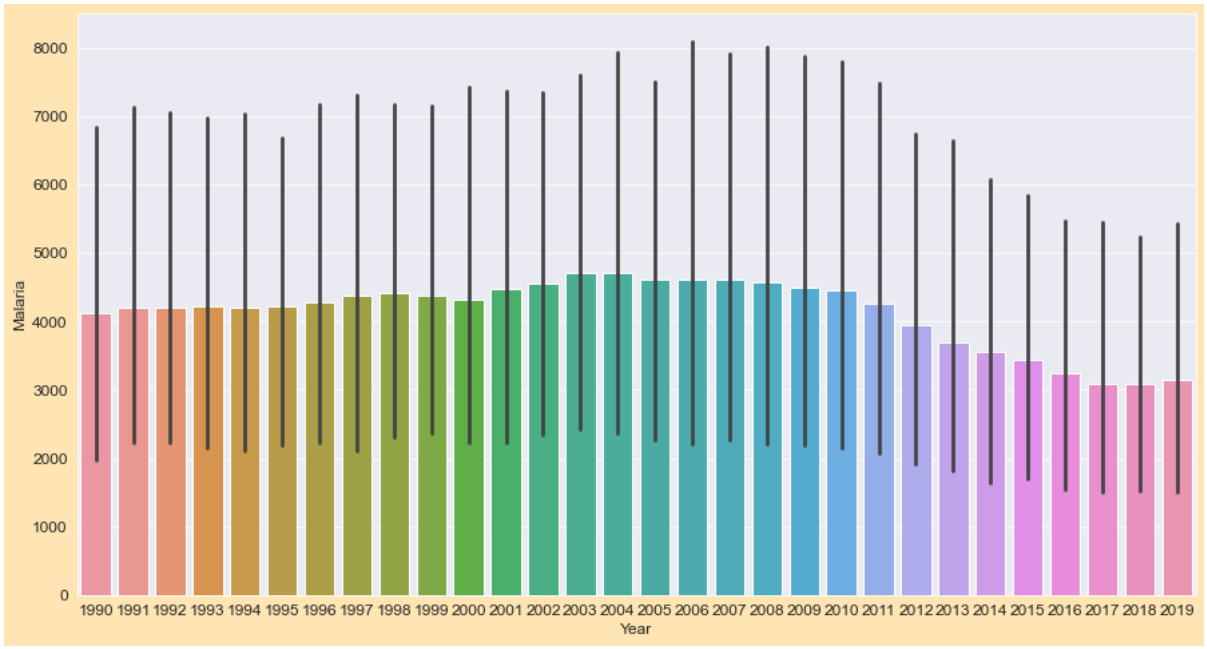
Bivariate Analysis

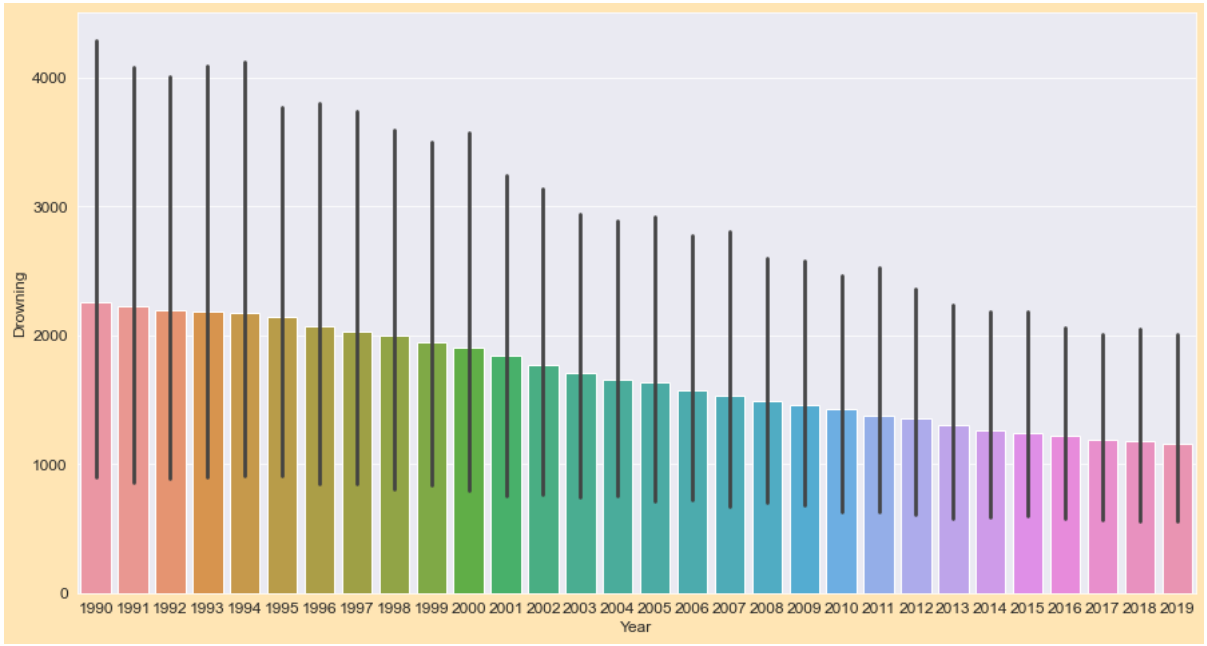
In [21]:
```
for i in summ[1:]:
    plt.figure(figsize=(15,8))
    sns.barplot(x='Year',y=i,data=df)
    plt.show()
```

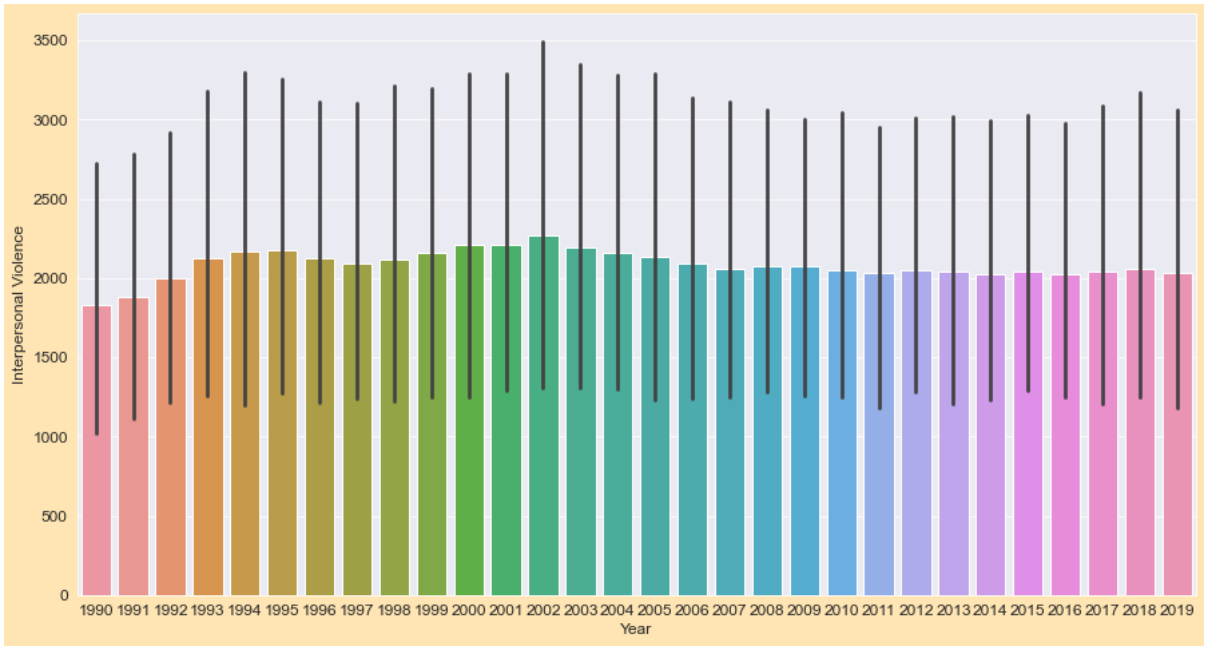


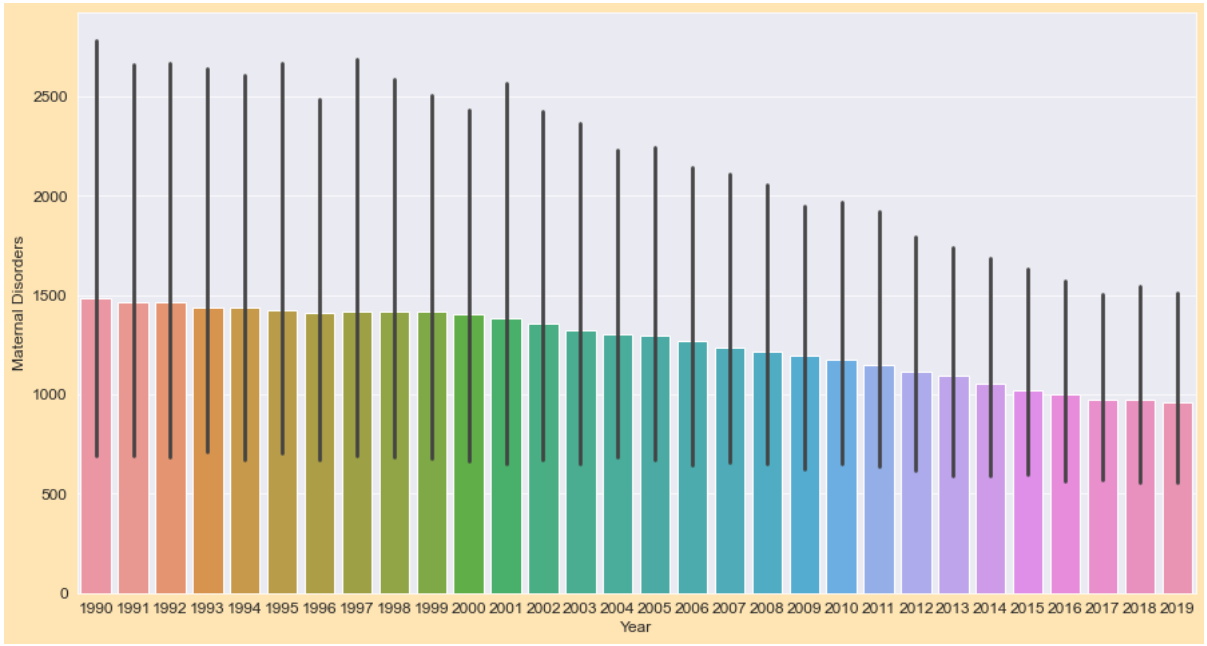


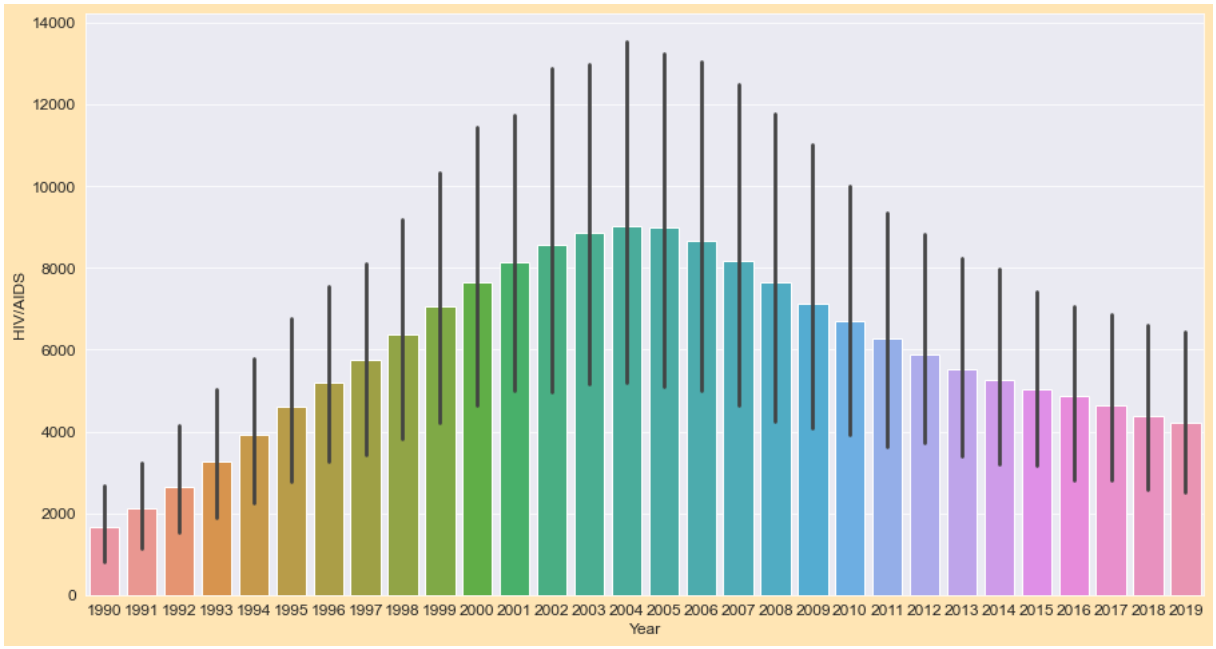

Nutritional Deficiencies
0
1000
2000
3000
4000
5000
6000
7000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

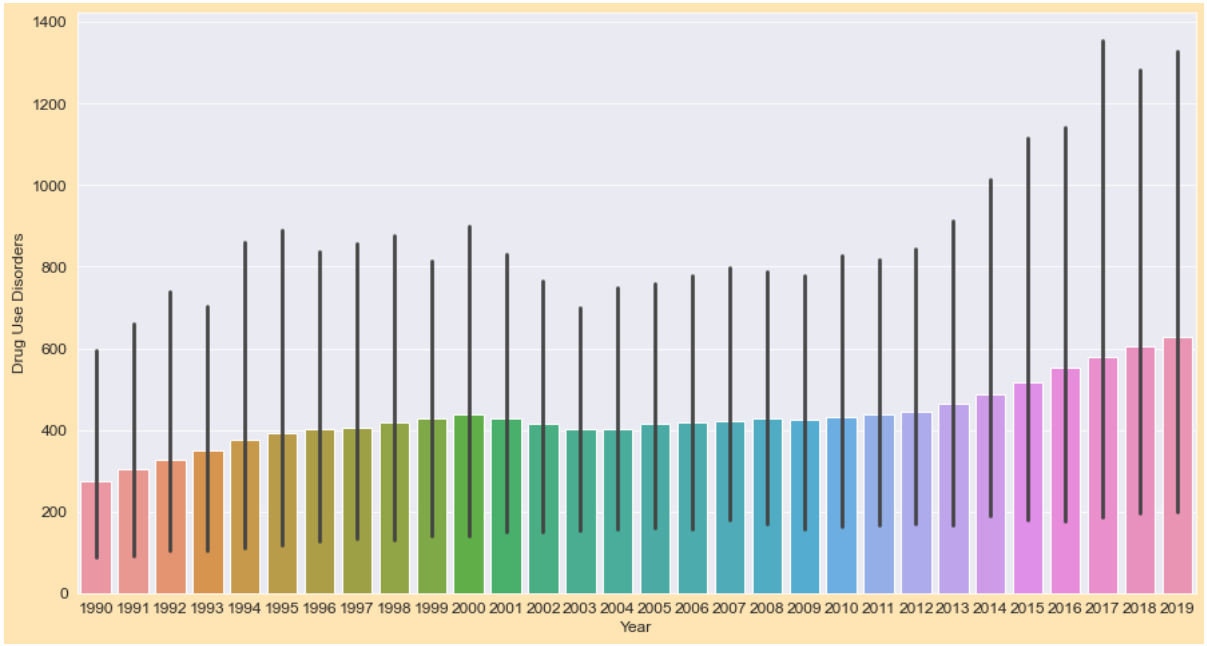

Malaria
0
1000
2000
3000
4000
5000
6000
7000
8000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

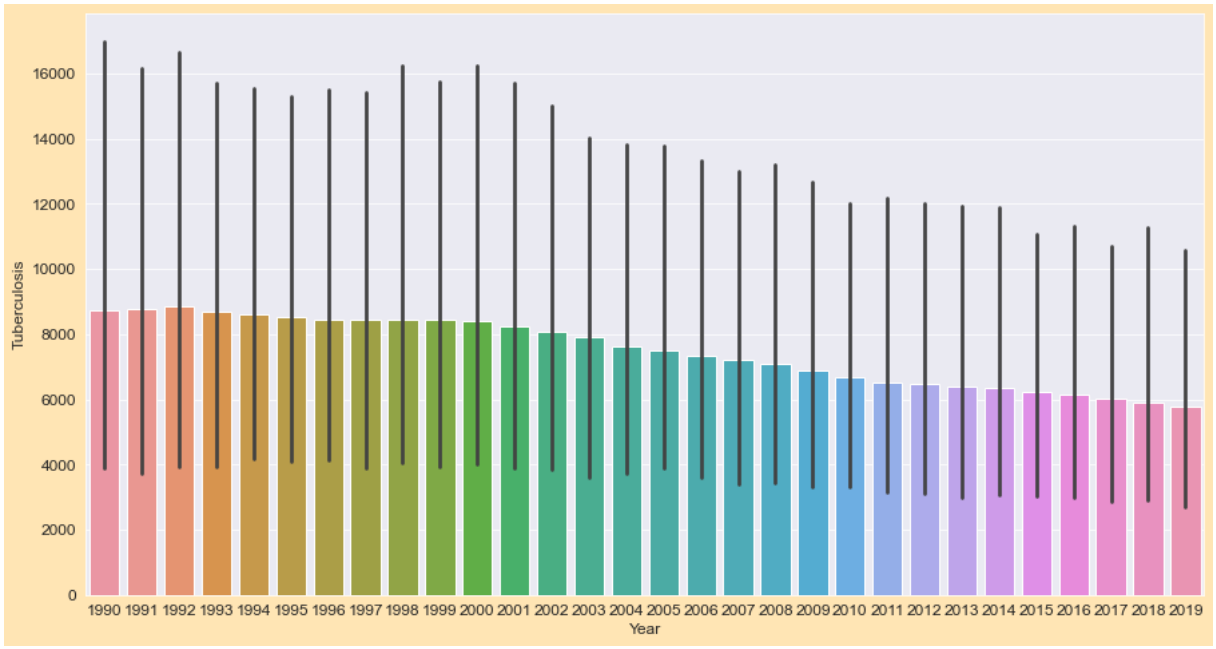

Drowning
0
1000
2000
3000
4000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

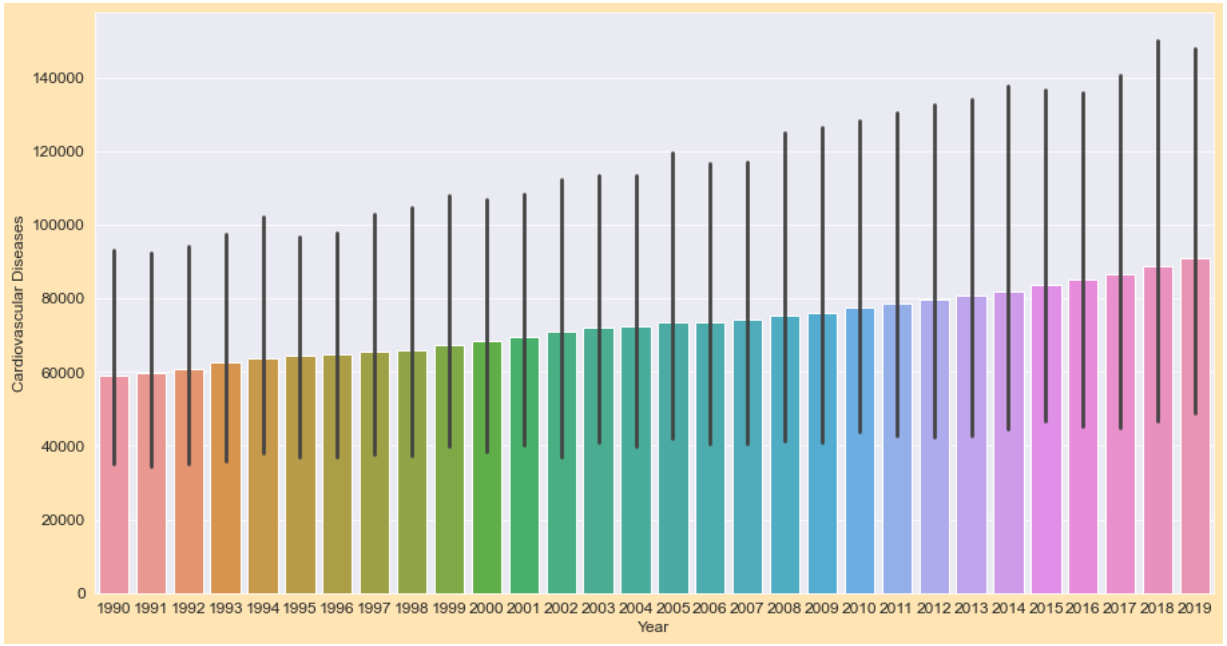

Interpersonal Violence
0
500
1000
1500
2000
2500
3000
3500
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

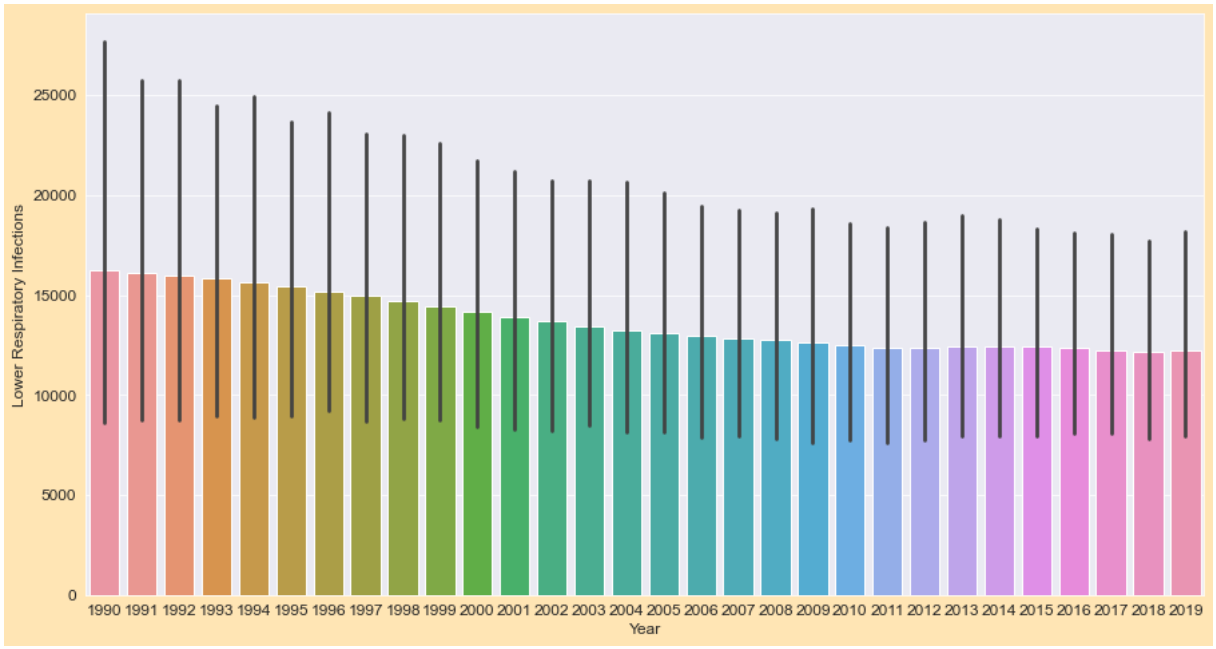

Maternal Disorders
0
500
1000
1500
2000
2500
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

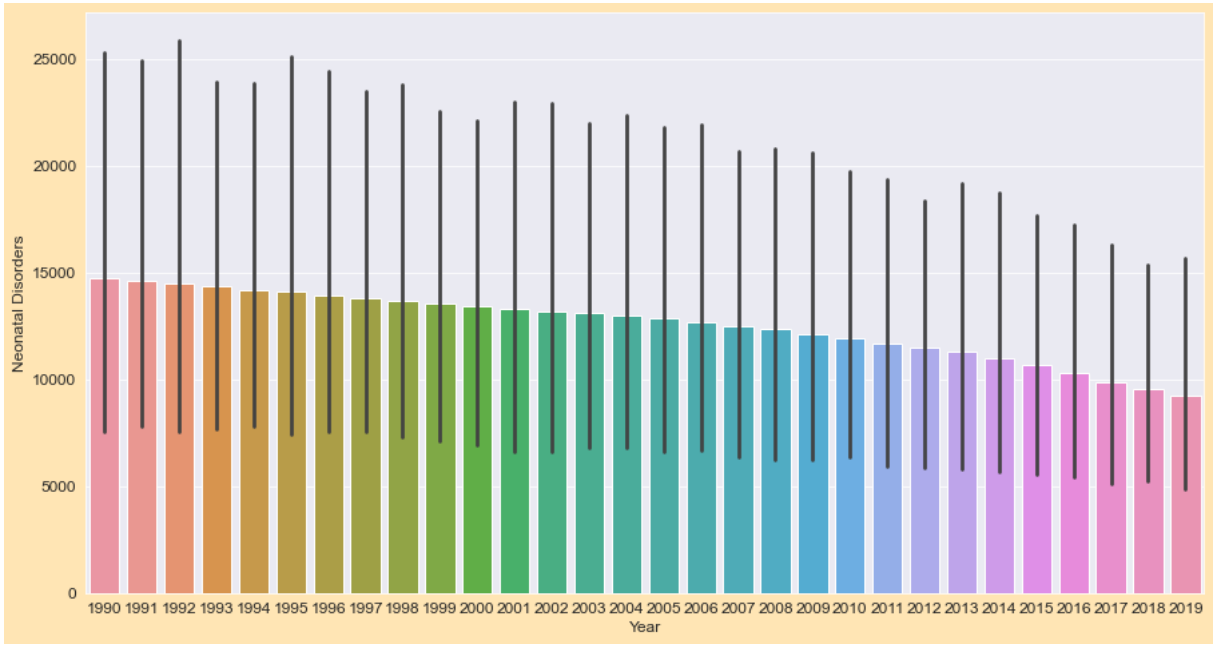

HIV/AIDS
0
2000
4000
6000
8000
10000
12000
14000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

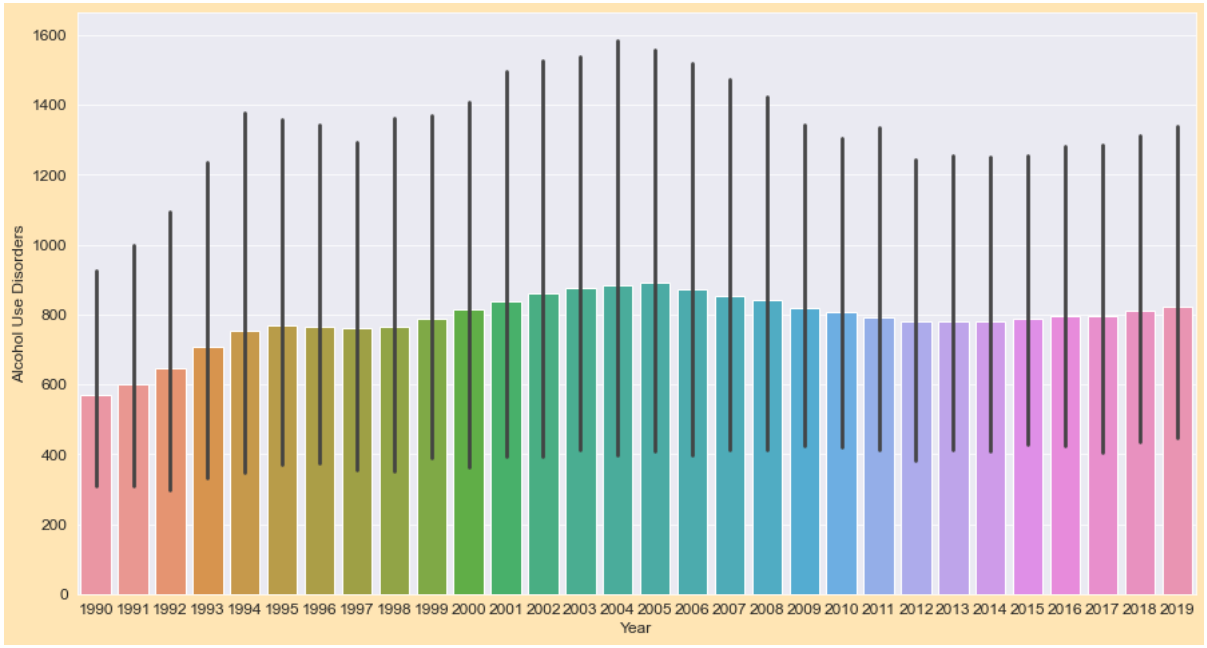

Drug Use Disorders
0
200
400
600
800
1000
1200
1400
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

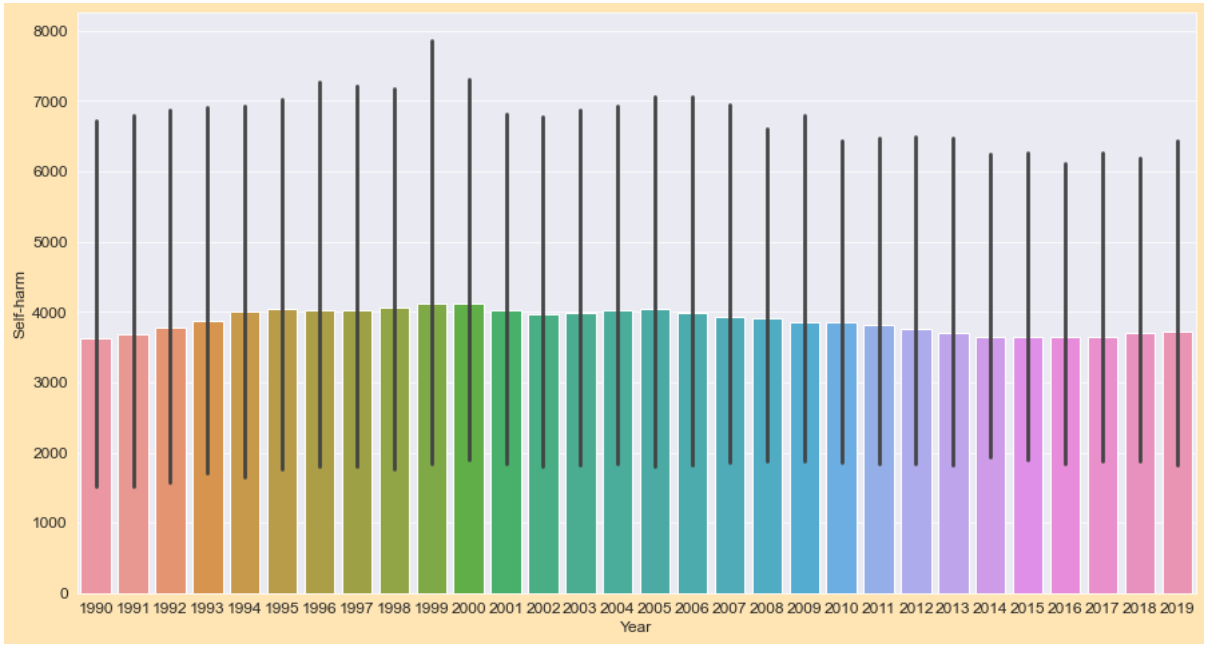

Tuberculosis
0
2000
4000
6000
8000
10000
12000
14000
16000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

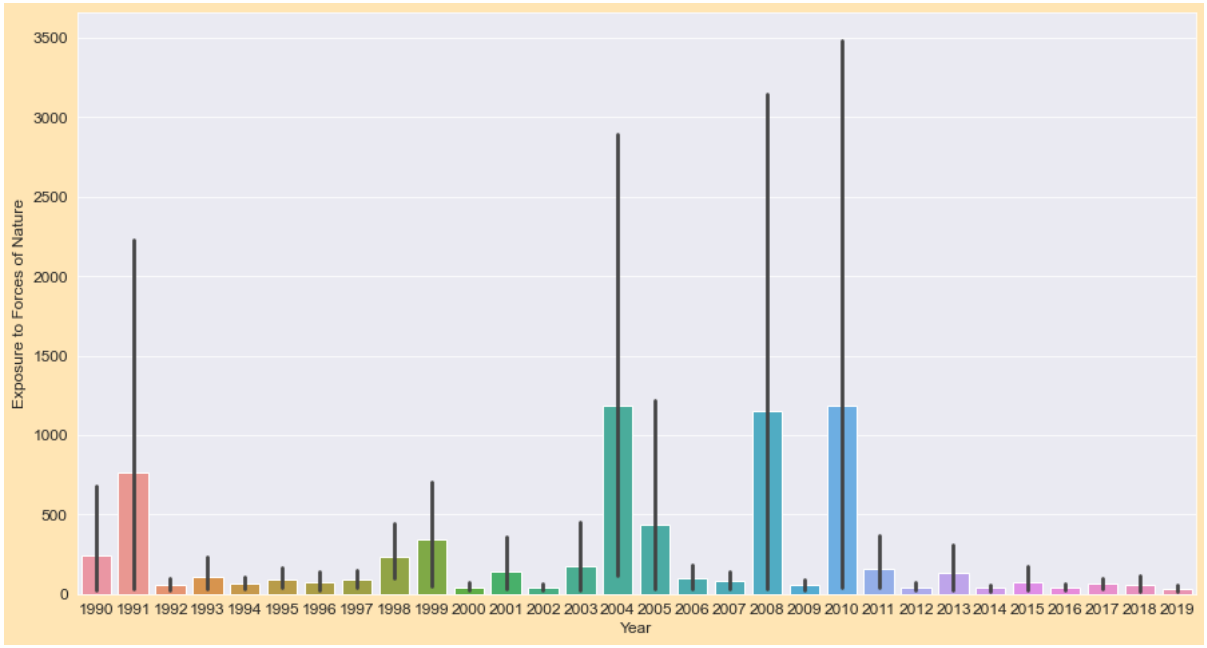

Cardiovascular Diseases
0
20000
40000
60000
80000
100000
120000
140000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

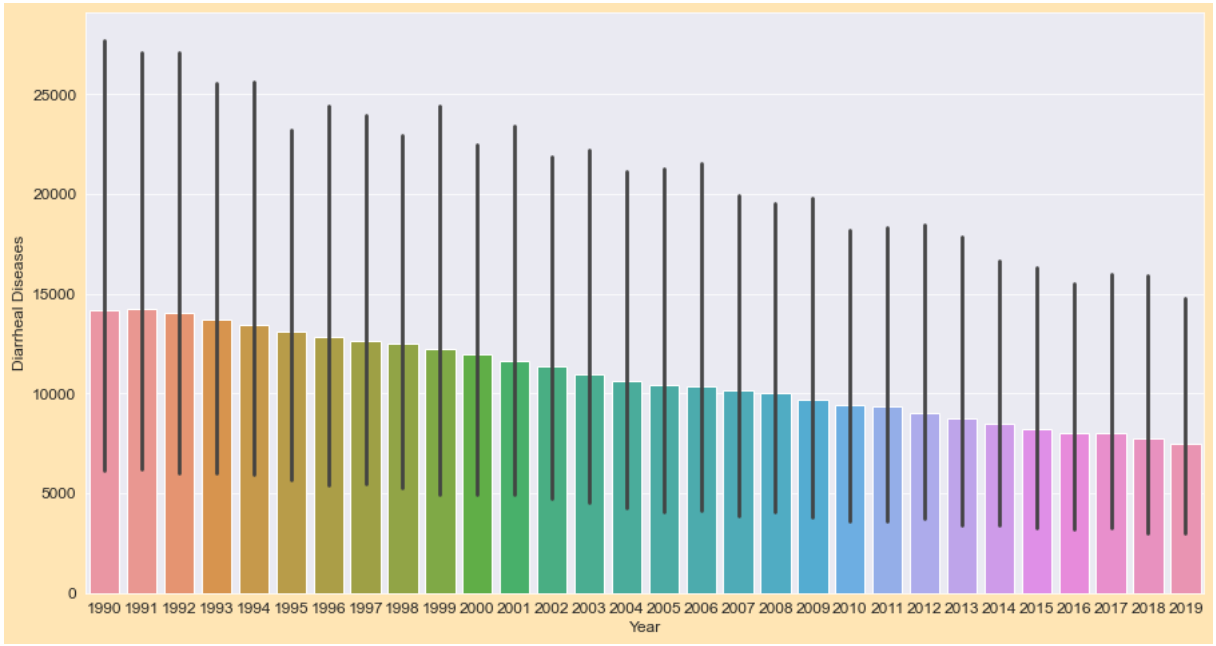

Lower Respiratory Infections
0
5000
10000
15000
20000
25000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

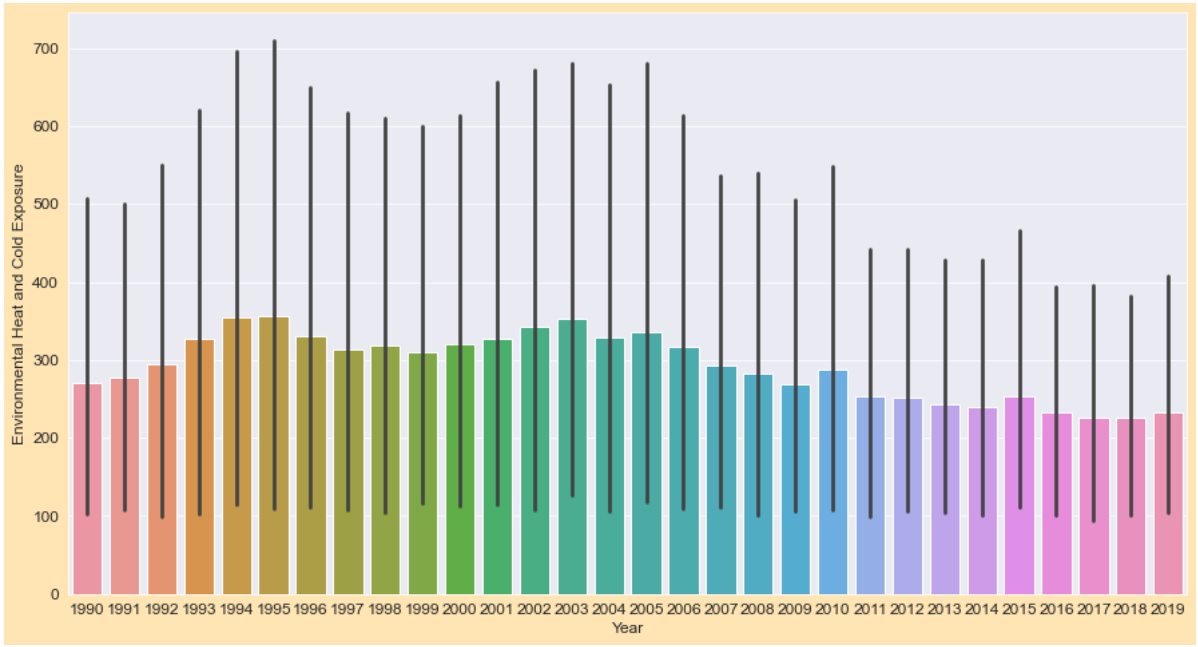

Neonatal Disorders
0
5000
10000
15000
20000
25000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

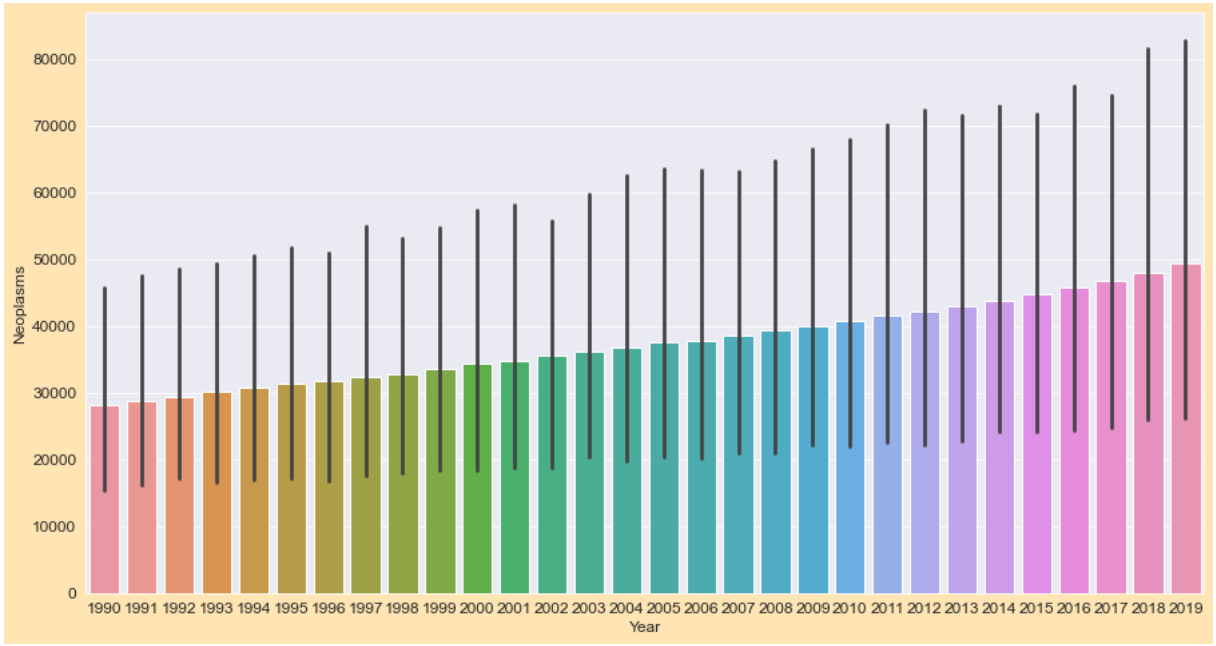

Alcohol Use Disorders
0
200
400
600
800
1000
1200
1400
1600
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

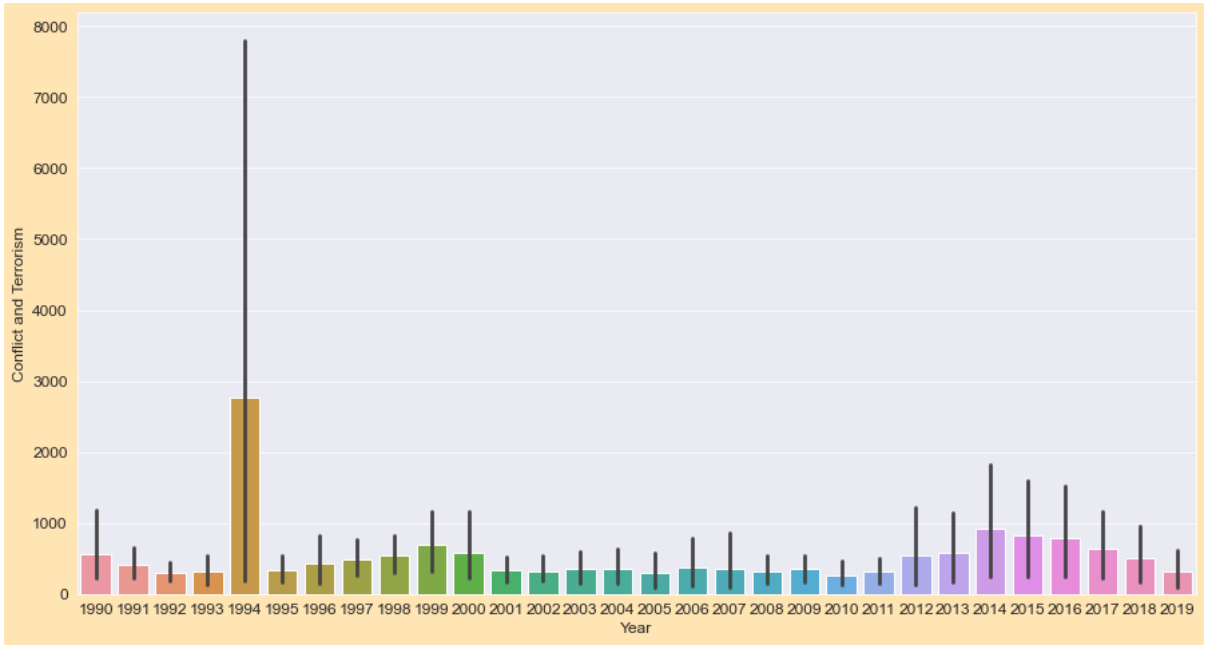

Self-harm
Year
0
1000
2000
3000
4000
5000
6000
7000
8000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019

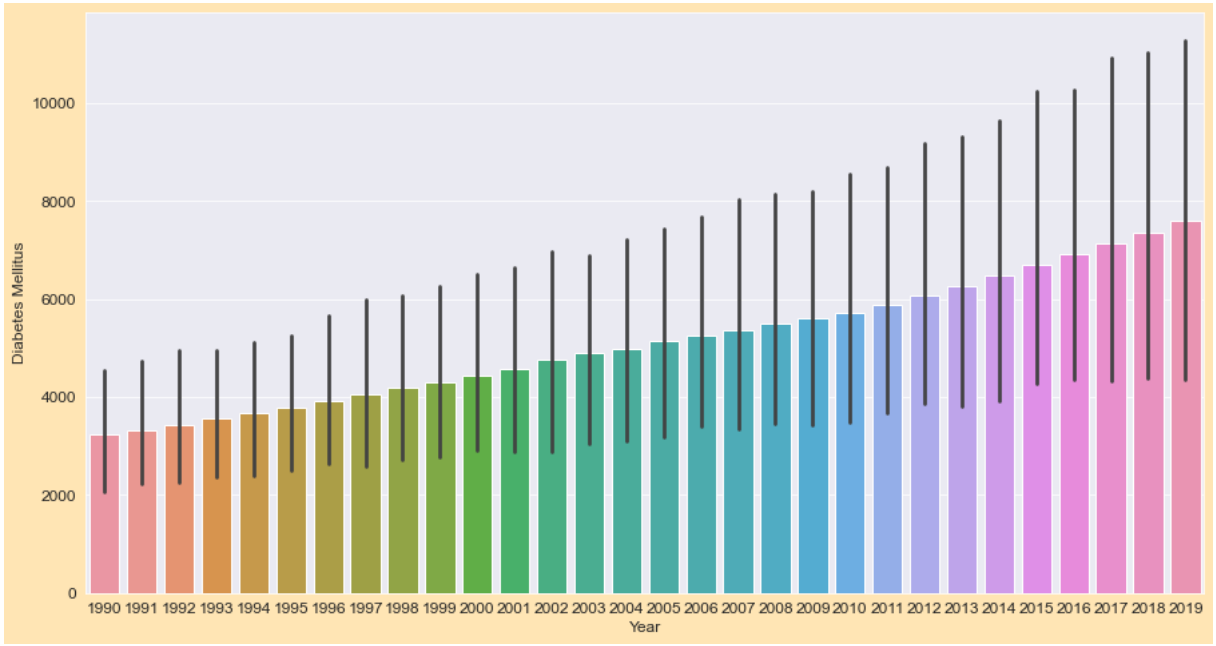

Exposure to Forces of Nature
Year
0
500
1000
1500
2000
2500
3000
3500
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019

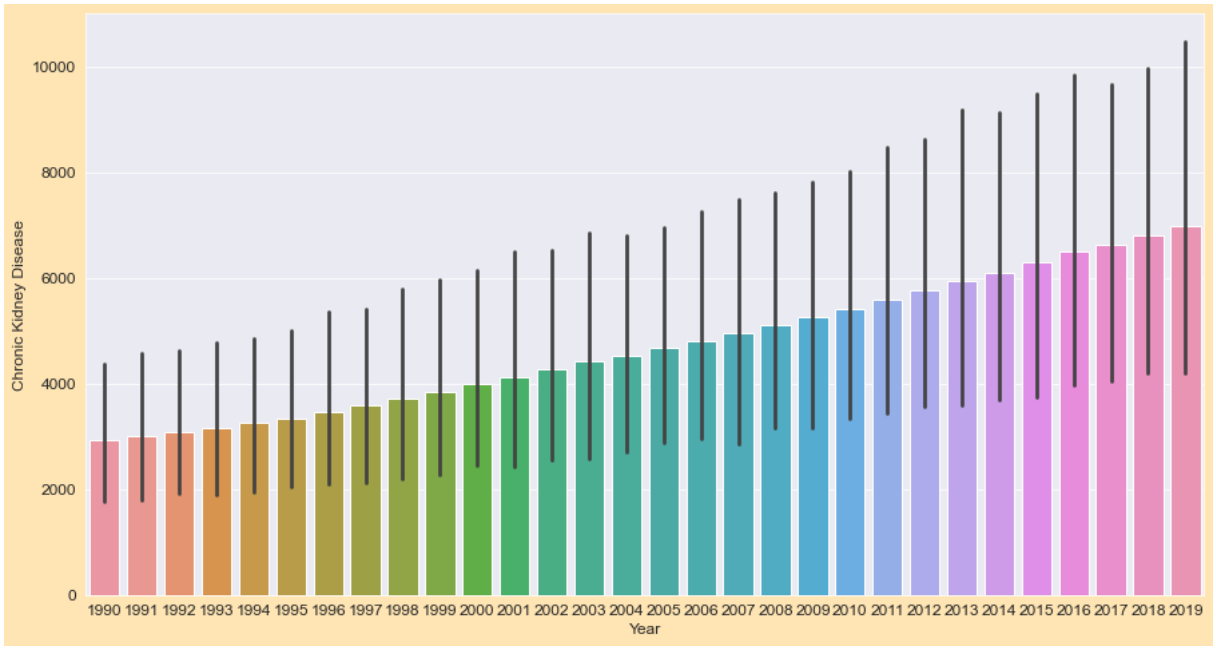

Diarrheal Diseases
0
5000
10000
15000
20000
25000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

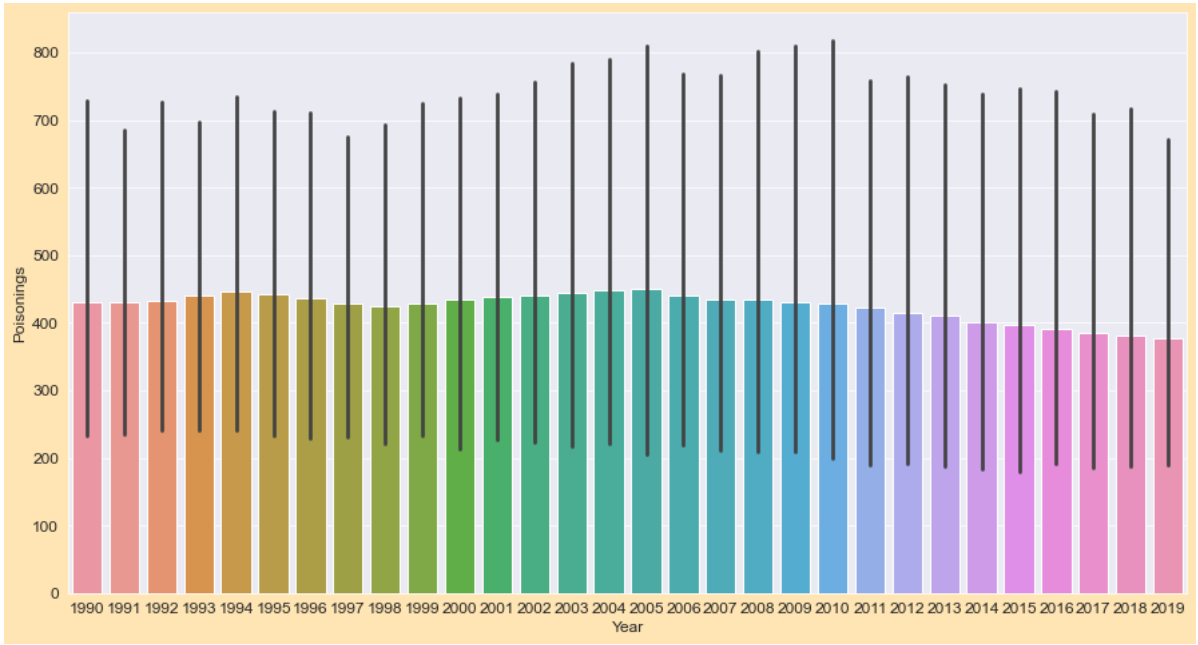

Environmental Heat and Cold Exposure
0
100
200
300
400
500
600
700
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

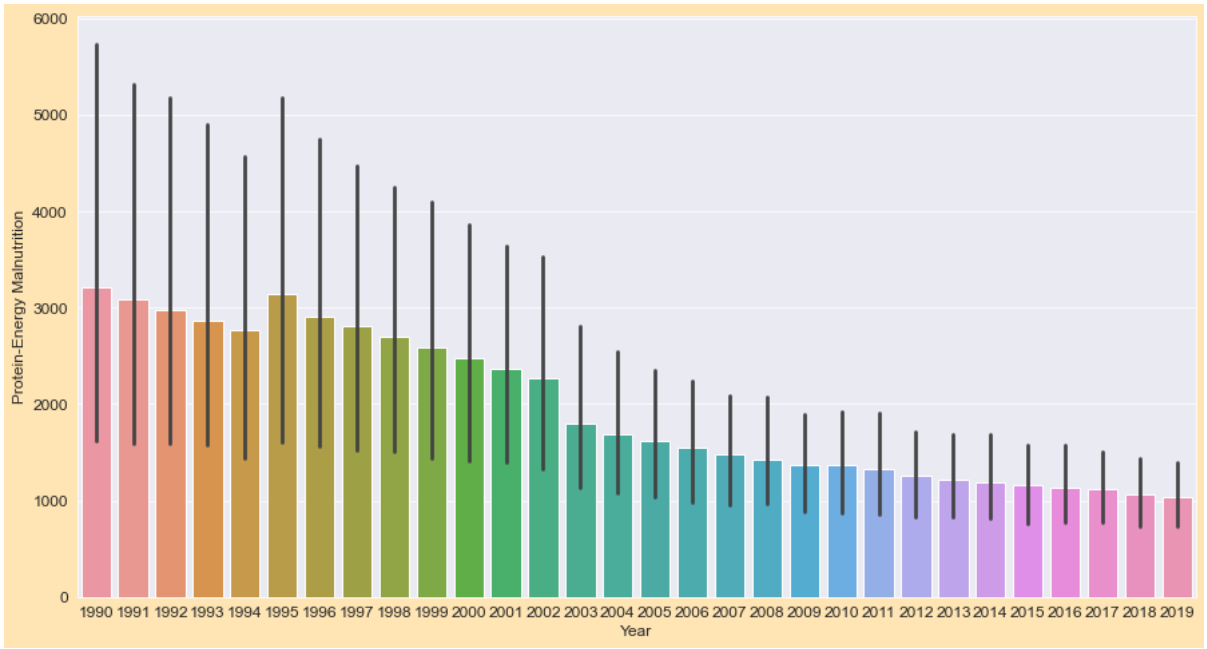

Neoplasms
0
10000
20000
30000
40000
50000
60000
70000
80000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

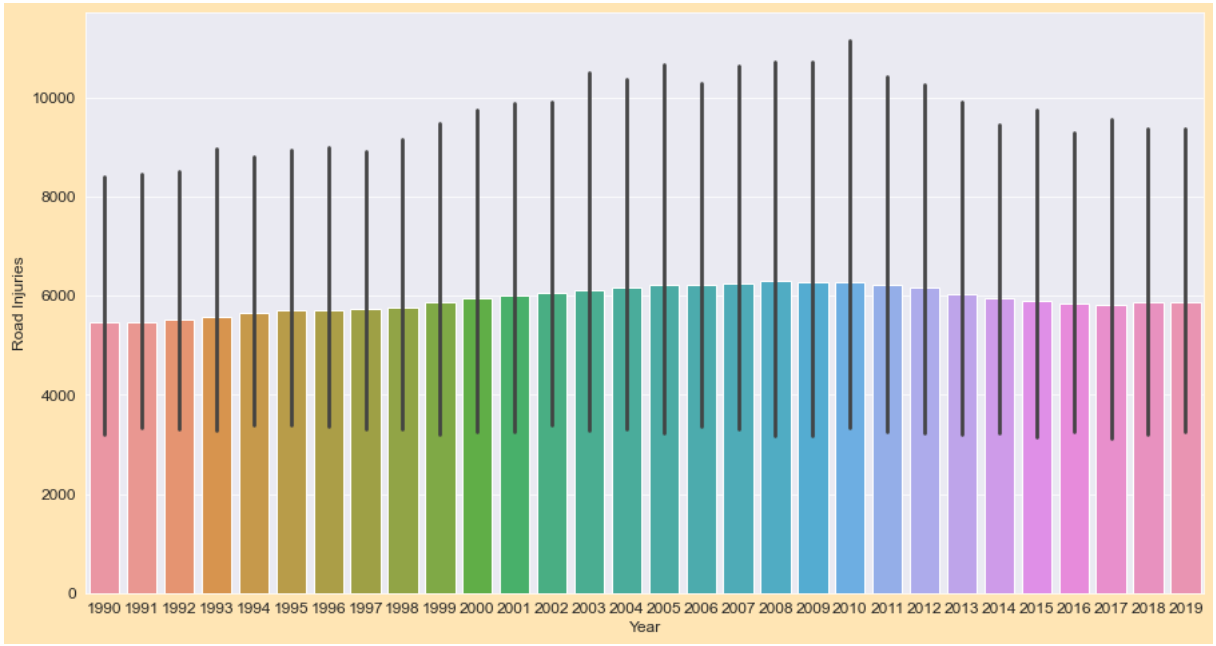

Conflict and Terrorism
0
1000
2000
3000
4000
5000
6000
7000
8000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

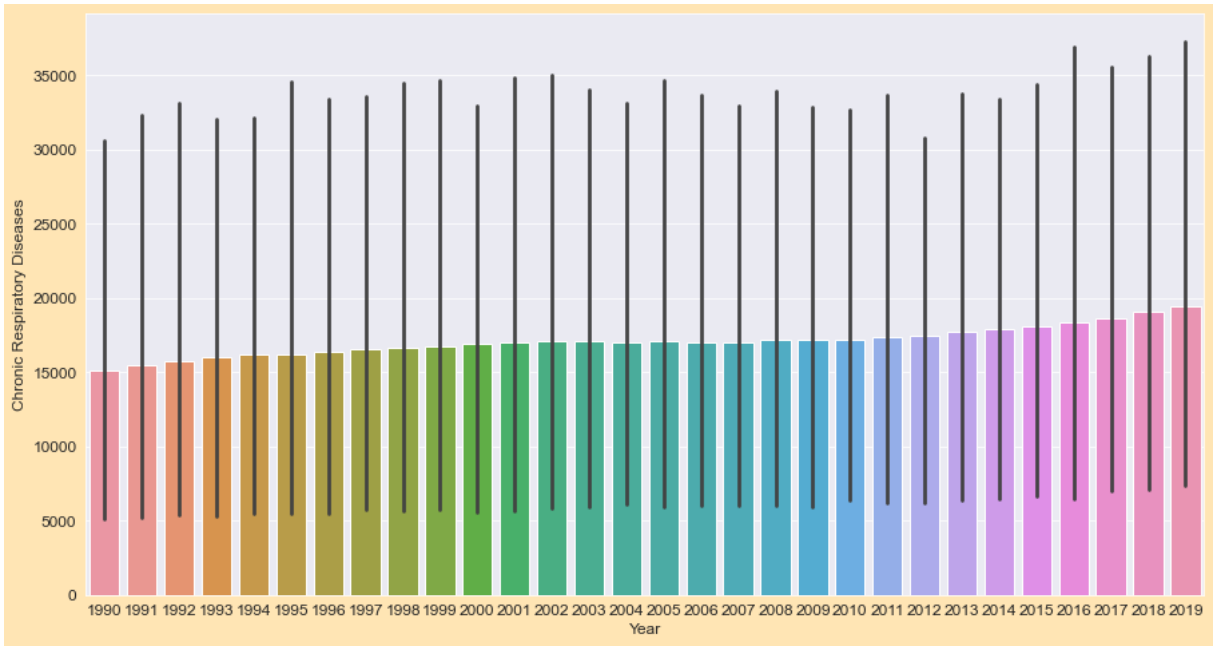

Diabetes Mellitus
0
2000
4000
6000
8000
10000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

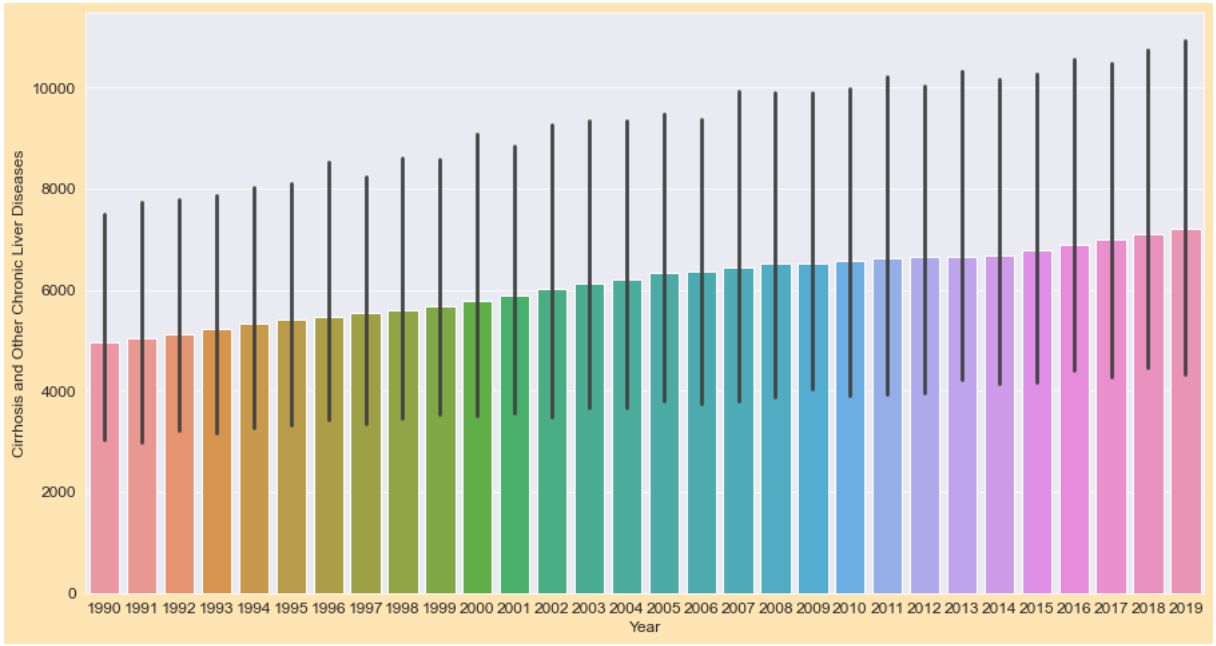

Chronic Kidney Disease
0
2000
4000
6000
8000
10000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

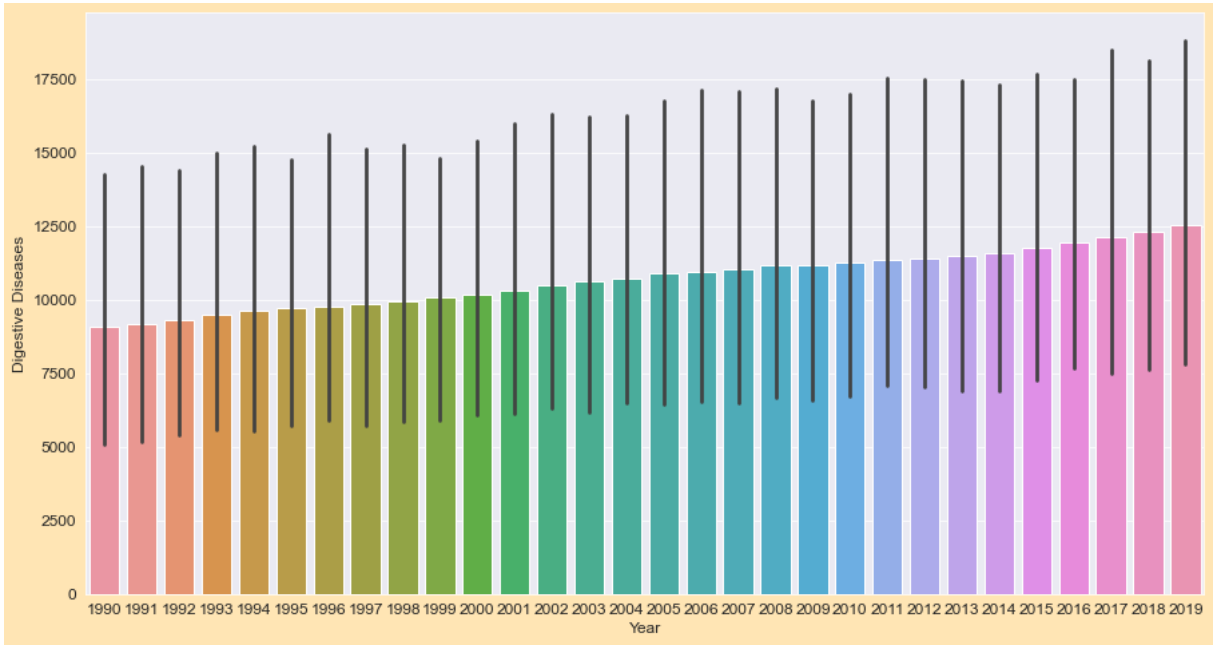

Poisonings
0
100
200
300
400
500
600
700
800
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

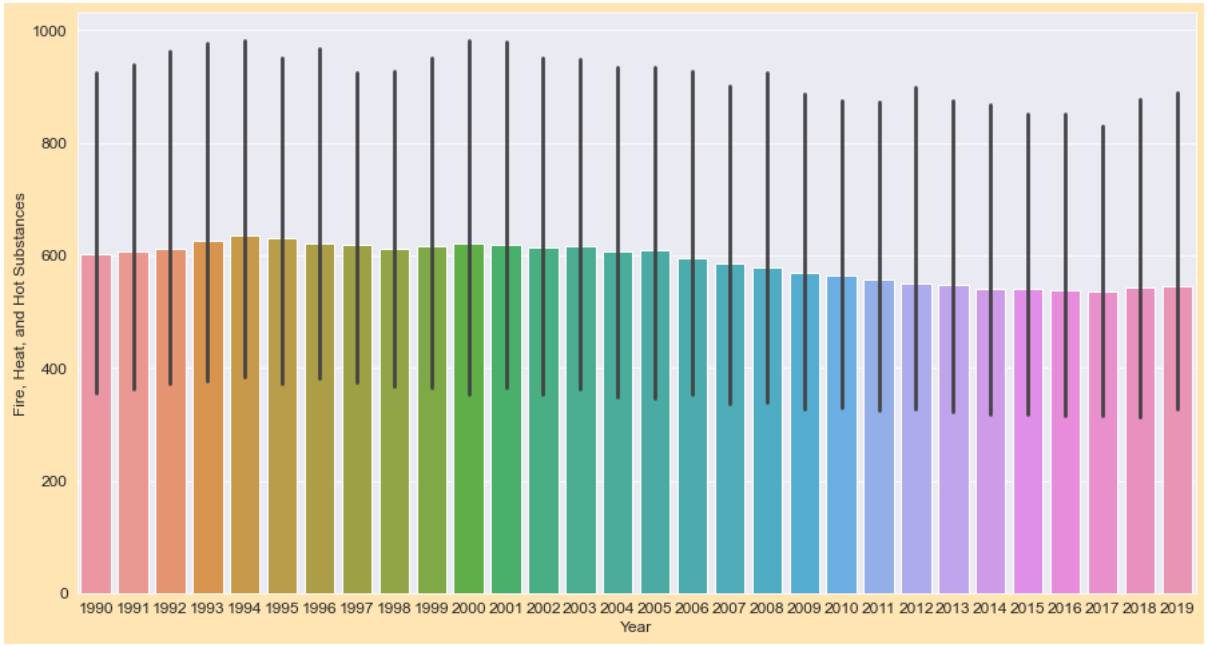

Protein-Energy Malnutrition
0
1000
2000
3000
4000
5000
6000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year

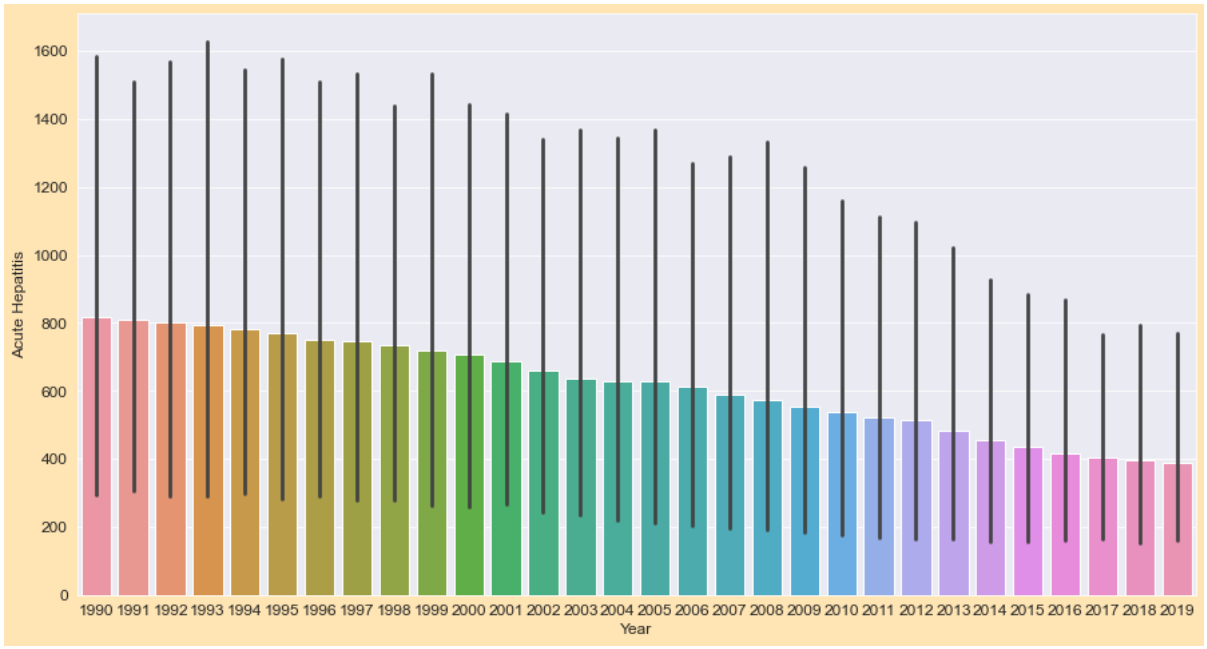

Road Injuries
0
2000
4000
6000
8000
10000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year


Chronic Respiratory Diseases
0
5000
10000
15000
20000
25000
30000
35000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year


Cirrhosis and Other Chronic Liver Diseases
0
2000
4000
6000
8000
10000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year


Digestive Diseases
0
2500
5000
7500
10000
12500
15000
17500
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Year





Observation:- Observation:-

1. As we observe in this figure we observe that by increase year the death is decrease in the Meningitis diseases.
2. As we observe in this figure we observe that by increase year the death is also increase in the Alzheimer's Disease and Other Dementias diseases.
3. As we observe in this figure we observe that by increase year the death is also increase in the Parkinson's Disease diseases.
4. As we observe in this figure we observe that by increase year the death is decrease in the Nutritional Deficiencies diseases.
5. As we observe in this figure we observe that by year this is saturated but in last 4 to 5 years it will decrease the death of Malaria diseases.
6. As we observe in this figure we observe that by increase year the death is decrease in the Drowning diseases.
7. As we observe in this figure we observe that this is saturated and also stable in all the years. for Interpersonal Violence diseases death.
8. As we observe in this figure we observe that by increase year the death is decrease in the Maternal Disorders diseases.
9. As we observe in this figure we observe that in the year of 2001 to 2008 the death is higher now a days it will decrease by year in the HIV//AIDS diseases.
10. As we observe in this figure we observe that by increase year the death is also increase in the Drug Use Disorders diseases.
11. As we observe in this figure we observe that by increase year the death is decrease in the Tuberculosis diseases.
12. As we observe in this figure we observe that by increase year the death is also increase in the Cardiovascular diseases.
13. As we observe in this figure we observe that by increase year the death is decrease in the Lower Respiratory Infections diseases.
14. As we observe in this figure we observe that by increase year the death is decrease in the Neonatal Disorders diseases.
15. As we observe in this figure we observe that by increase year it will increase but in the year of 2004 and 2005 Alcohol Use Disorders diseases is high.
16. As we observe in this figure we observe that this is saturated and also stable in all the years. for Self-harm diseases death.
17. As we observe for Exposure to Forces of Nature death there are only the year of 1990,1991,2004,2008,2010 it was higher.
18. As we observe in this figure we observe that by increase year the death is decrease in the Diarrheal diseases.
19. As we observe in this figure we observe that this is saturated and also stable in all the years. for Environmental Heat and Cold Exposure diseases death.
20. As we observe in this figure we observe that by increase year the death is also increase in the Neoplasms diseases.
21. As we observe for Conflict and Terrorism there are only the year of 1994,2014 it was higher.
22. As we observe in this figure we observe that by increase year the death is also increase in the Diabetes Mellitus diseases.
23. As we observe in this figure we observe that by increase year the death is also increase in the Chronic Kidney Disease diseases.
24. As we observe in this figure we observe that this is saturated and also stable in all the years. for Poisonings diseases death.
25. As we observe in this figure we observe that by increase year the death is decrease in the Protein-Energy Malnutrition diseases.
26. As we observe in this figure we observe that this is saturated and also stable in all the years. for Road Injuries diseases death.
27. As we observe in this figure we observe that by increase year the death is also increase in the Chronic Respiratory diseases.
28. As we observe in this figure we observe that by increase year the death is also increase in the Cirrhosis and Other Chronic Liver diseases.
29. As we observe in this figure we observe that by increase year the death is also increase in the Digestive diseases.
30. As we observe in this figure we observe that this is saturated and also stable in all the years. for Fire, Heat, and Hot Substances diseases death.
31. As we observe in this figure we observe that by increase year the death is decrease in the Acute Hepatitis diseases.

In [22]:
```
df.corr()
```

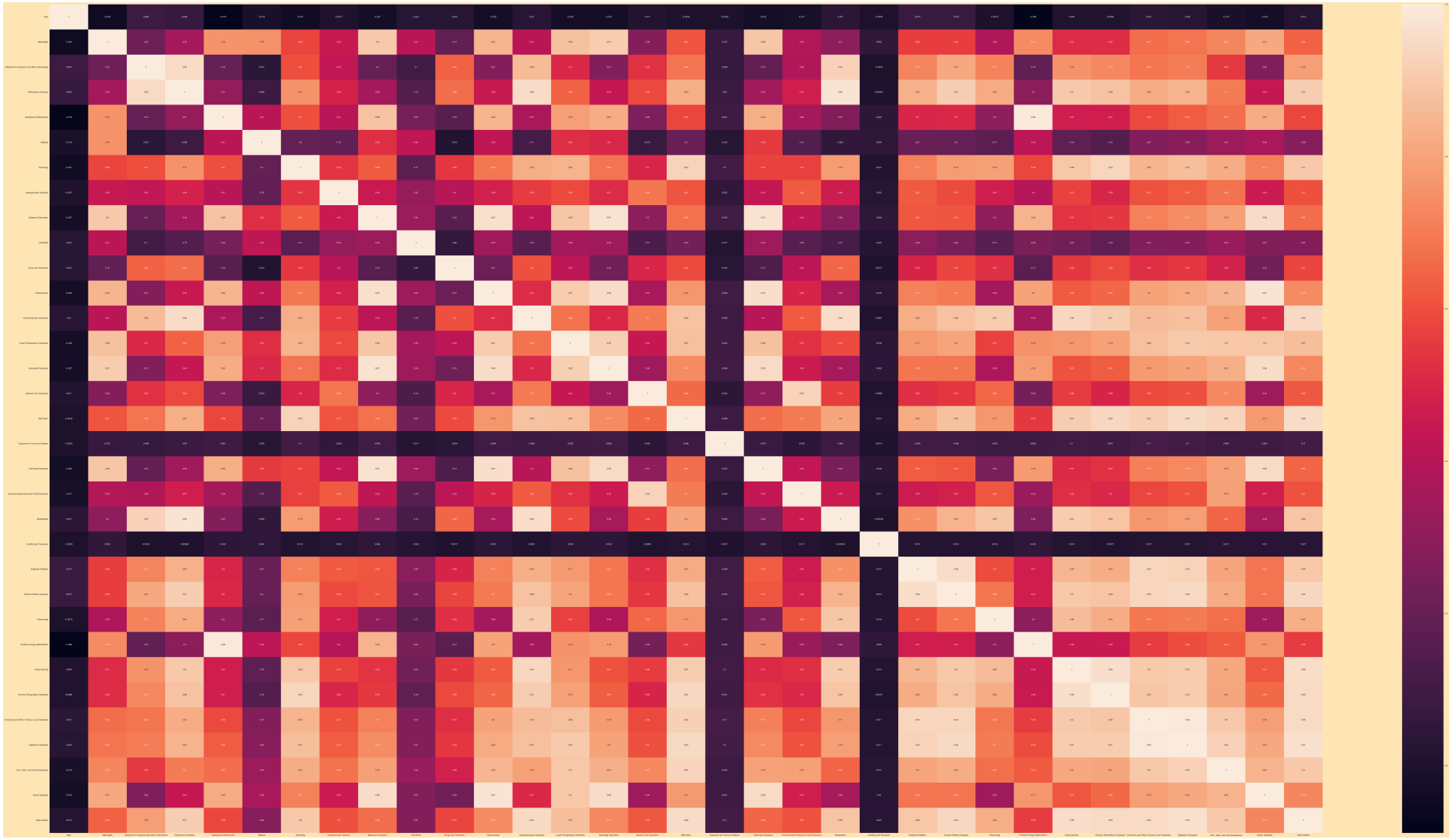
Out[22]:

	Year	Meningitis	Alzheimer's Disease and Other Dementias	Parkinson's Disease	Nutritional Deficiencies	Malaria	Drowning	Interpersonal Violence	Maternal Disorders	HIV/AIDS	Drug Use Disorders	Tuberculosis	Cardiovascular Diseases	Lower Respiratory Infections	Neonatal Disorders	Alcohol Use Disorders	Self-harm	Exposure to Forces of Nature	Di Di
Year	1.000000	-0.043288	0.083710	0.068756	-0.078266	-0.015964	-0.040910	-0.001122	-0.027460	0.022964	0.023917	-0.025297	0.029813	-0.027531	-0.026949	0.011315	-0.004192	-0.005178	-0.
Meningitis	-0.043288	1.000000	0.216713	0.351668	0.760851	0.755261	0.576347	0.447242	0.899507	0.411881	0.187050	0.844494	0.411787	0.879827	0.908737	0.275909	0.609952	0.071674	0.
Alzheimer's Disease and Other Dementias	0.083710	0.216713	1.000000	0.950785	0.193209	0.031290	0.599403	0.429622	0.200315	0.101628	0.641341	0.273336	0.860759	0.503257	0.270157	0.529750	0.682463	0.066285	0.
Parkinson's Disease	0.068756	0.351668	0.950785	1.000000	0.313033	0.084109	0.753663	0.485528	0.356394	0.145521	0.664385	0.445504	0.956667	0.638771	0.435508	0.584208	0.826083	0.080246	0.
Nutritional Deficiencies	-0.078266	0.760851	0.193209	0.313033	1.000000	0.411149	0.596367	0.407065	0.881740	0.241247	0.163638	0.844321	0.370829	0.783957	0.824924	0.256448	0.581602	0.091046	0.
Malaria	-0.015964	0.755261	0.031290	0.084109	0.411149	1.000000	0.195839	0.184469	0.523581	0.424471	0.011560	0.423077	0.107651	0.520901	0.501561	0.073306	0.202015	0.025273	0.
Drowning	-0.040910	0.576347	0.599403	0.753663	0.596367	0.195839	1.000000	0.539339	0.623558	0.171108	0.545004	0.692165	0.829424	0.840597	0.684802	0.497126	0.929865	0.104622	0.
Interpersonal Violence	-0.001122	0.447242	0.429622	0.485528	0.407065	0.184469	0.539339	1.000000	0.449551	0.315642	0.403071	0.478608	0.554629	0.583966	0.512989	0.687922	0.611616	0.052323	0.
Maternal Disorders	-0.027460	0.899507	0.200315	0.356394	0.881740	0.523581	0.623558	0.449551	1.000000	0.336267	0.162381	0.968400	0.420706	0.889648	0.970727	0.300051	0.676702	0.094510	0.
HIV/AIDS	0.022964	0.411881	0.101628	0.145521	0.241247	0.424471	0.171108	0.315642	0.336267	1.000000	0.059646	0.337561	0.162285	0.354663	0.340600	0.128654	0.234264	0.017443	0.
Drug Use Disorders	0.023917	0.187050	0.641341	0.664385	0.163638	0.011560	0.545004	0.403071	0.162381	0.059646	1.000000	0.211535	0.604307	0.416123	0.223560	0.496416	0.591290	0.033969	0.
Tuberculosis	-0.025297	0.844494	0.273336	0.445504	0.844321	0.423077	0.692165	0.478608	0.968400	0.337561	0.211535	1.000000	0.514037	0.907608	0.957286	0.366186	0.763944	0.095517	0.
Cardiovascular Diseases	0.029813	0.411787	0.860759	0.956667	0.370829	0.107651	0.829424	0.554629	0.420706	0.162285	0.604307	0.514037	1.000000	0.680770	0.499263	0.696955	0.884254	0.089049	0.
Lower Respiratory Infections	-0.027531	0.879827	0.503257	0.638771	0.783957	0.520901	0.840597	0.583966	0.889648	0.354663	0.416123	0.907608	0.680770	1.000000	0.919033	0.439216	0.873051	0.092723	0.
Neonatal Disorders	-0.026949	0.908737	0.270157	0.435508	0.824924	0.501561	0.684802	0.512989	0.970727	0.340600	0.223560	0.957286	0.499263	0.919033	1.000000	0.339821	0.738627	0.096297	0.
Alcohol Use Disorders	0.011315	0.275909	0.529750	0.584208	0.256448	0.073306	0.497126	0.687922	0.300051	0.128654	0.496416	0.366186	0.696955	0.439216	0.339821	1.000000	0.655840	0.041517	0.
Self-harm	-0.004192	0.609952	0.682463	0.826083	0.581602	0.202015	0.929865	0.611616	0.676702	0.234264	0.591290	0.763944	0.884254	0.873051	0.738627	0.655840	1.000000	0.086126	0.
Exposure to Forces of Nature	-0.005178	0.071674	0.066285	0.080246	0.091046	0.025273	0.104622	0.052323	0.094510	0.017443	0.033969	0.095517	0.089049	0.092723	0.096297	0.041517	0.086126	1.000000	0.
Diarrheal Diseases	-0.031911	0.892564	0.189659	0.347421	0.829348	0.551661	0.573699	0.432915	0.972465	0.340339	0.132964	0.965385	0.401180	0.879410	0.950567	0.306071	0.668100	0.073635	1.
Environmental Heat and Cold Exposure	-0.017286	0.390214	0.384578	0.469845	0.356665	0.144287	0.566503	0.623965	0.424968	0.163466	0.415009	0.490612	0.625443	0.531604	0.452010	0.929945	0.699520	0.038417	0.
Neoplasms	0.036753	0.299265	0.925096	0.975203	0.266367	0.051927	0.782617	0.460441	0.277511	0.117547	0.647285	0.359362	0.959784	0.587877	0.361755	0.559232	0.804466	0.081805	0.
Conflict and Terrorism	-0.005941	0.052123	-0.004190	0.000944	0.041965	0.043511	0.012436	0.023094	0.045912	0.021714	0.001714	0.034985	0.008075	0.035279	0.041844	0.008946	0.013685	0.001068	0.
Diabetes Mellitus	0.074292	0.561177	0.723417	0.835941	0.495049	0.205493	0.714079	0.621728	0.617109	0.289675	0.492719	0.714916	0.826078	0.772023	0.688876	0.526259	0.820802	0.098244	0.
Chronic Kidney Disease	0.074970	0.562013	0.814841	0.911376	0.504551	0.198686	0.781125	0.589217	0.611581	0.245579	0.578125	0.696064	0.883884	0.803253	0.685575	0.540952	0.879696	0.095391	0.
Poisonings	-0.007414	0.381899	0.719373	0.818444	0.298918	0.169424	0.790391	0.471659	0.303751	0.165169	0.526235	0.356881	0.909155	0.566802	0.377036	0.653446	0.767763	0.083214	0.

	Year	Meningitis	Alzheimer's Disease and Other Dementias	Parkinson's Disease	Nutritional Deficiencies	Malaria	Drowning	Interpersonal Violence	Maternal Disorders	HIV/AIDS	Drug Use Disorders	Tuberculosis	Cardiovascular Diseases	Lower Respiratory Infections	Neonatal Disorders	Alcohol Use Disorders	Self-harm	Exposure to Forces of Nature	Di Di
Protein-Energy Malnutrition	-0.088377	0.738272	0.185030	0.295749	0.991700	0.416539	0.579360	0.396216	0.838607	0.252876	0.167756	0.796778	0.351771	0.754017	0.779840	0.235250	0.546263	0.092298	0.
Road Injuries	0.005982	0.511316	0.760421	0.897982	0.465285	0.178822	0.894074	0.574467	0.533423	0.229103	0.547850	0.621937	0.943531	0.765982	0.607699	0.557400	0.912012	0.102855	0.
Chronic Respiratory Diseases	0.008645	0.516440	0.728337	0.882246	0.472233	0.146132	0.936633	0.494280	0.548051	0.181262	0.583700	0.647316	0.914528	0.792555	0.631947	0.492336	0.941062	0.091015	0.
Cirrhosis and Other Chronic Liver Diseases	0.031126	0.665212	0.686722	0.825476	0.586889	0.271206	0.846058	0.606565	0.713392	0.270776	0.519823	0.798136	0.865009	0.876529	0.776634	0.583672	0.920725	0.109489	0.
Digestive Diseases	0.025539	0.684047	0.703813	0.839807	0.626332	0.282995	0.869528	0.629069	0.741447	0.273079	0.540842	0.820567	0.873869	0.905351	0.797638	0.603802	0.948337	0.104946	0.
Fire, Heat, and Hot Substances	-0.014134	0.724751	0.551121	0.699626	0.665677	0.335181	0.823063	0.679620	0.788030	0.324672	0.478865	0.849928	0.794466	0.896967	0.830993	0.728034	0.935480	0.084200	0.
Acute Hepatitis	-0.032604	0.813554	0.263559	0.438842	0.820830	0.362693	0.711640	0.453349	0.956576	0.269876	0.229646	0.974992	0.505482	0.897106	0.957477	0.340588	0.774276	0.091172	0.
Total Deaths	0.015173	0.641318	0.783616	0.910980	0.582967	0.277913	0.901813	0.604067	0.664417	0.273982	0.574872	0.736988	0.947830	0.869729	0.729620	0.621238	0.956493	0.106314	0.

In [27]:
```
plt.figure(figsize=(150,80))
sns.heatmap(df.corr(),annot=True)
```

Out[27]: <AxesSubplot:>



As we observe in above graph there are majority of the columns are in positively correlated