muertes-en-el-mundo-eua-y-china-da

June 25, 2024

1 1.- Definir el objetivo del proyecto

- El gobierno nos pide analizar el cambio en el numero de muertes por año entre EUA y China y compararlos
- El objetivo es investigar cuáles son las causas de muerte más recurrentes en Estados unidos y China en los años comprendidos.en 1990 a 2019

2 2.- Cargar librerías y dataset

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

[ ]:
```
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

[ ]:
```
df=pd.read_csv('/content/drive/MyDrive/Proyectos personales/Notebooks y␣
↪datasets/annual_deaths_by_causes.csv')
df.head()
```

[ ]:

	country	code	year	meningitis	alzheimer's_diesease	parkinson's_disease	nutritional_deficiency	malaria	drowning
0	Afghanistan	AFG	2007	2933.0	1402.0	450.0	2488.0	393.0	2127.0
1	Afghanistan	AFG	2008	2731.0	1424.0	455.0	2277.0	255.0	1973.0
2	Afghanistan	AFG	2009	2460.0	1449.0	460.0	2040.0	239.0	1852.0
3	Afghanistan	AFG	2011	2327.0	1508.0	473.0	1846.0	390.0	1775.0
4	Afghanistan	AFG	2012	2254.0	1544.0	482.0	1705.0	94.0	1716.0

```
   interpersonal_violence  …  chronic_kidney_disease  poisonings  \
0                  3657.0  …                  4490.0       512.0
1                  3785.0  …                  4534.0       495.0
2                  3874.0  …                  4597.0       483.0
3                  4170.0  …                  4785.0       483.0
4                  4245.0  …                  4846.0       482.0

   protein_energy_malnutrition  terrorism  road_injuries  \
0                       2439.0     1199.0         7425.0
1                       2231.0     1092.0         7355.0
2                       1998.0     1065.0         7290.0
3                       1805.0     1525.0         7432.0
4                       1667.0     3521.0         7494.0

   chronic_respiratory_diseases  chronic_liver_diseases  digestive_diseases  \
0                        7222.0                  3346.0              6458.0
1                        7143.0                  3316.0              6408.0
2                        7045.0                  3291.0              6358.0
3                        6916.0                  3318.0              6370.0
4                        6878.0                  3353.0              6398.0

   fire_heat_hot_substance  acute_hepatitis
0                    481.0           3437.0
1                    462.0           3005.0
2                    448.0           2663.0
3                    448.0           2365.0
4                    445.0           2264.0

[5 rows x 35 columns]
```

3 3.- Exploración, organizacion y visualizaciones de los datos

[ ]:
```
#el df no solo contiene data de paises, tambien de algunas ciudades
df.shape
```

[ ]:
```
(7273, 35)
```

[ ]:
```
#todas las enfermedades
df.columns
```

[ ]:
```
Index(['country', 'code', 'year', 'meningitis', 'alzheimer's_diesease',
       'parkinson's_disease', 'nutritional_deficiency', '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',
       'terrorism', 'road_injuries', 'chronic_respiratory_diseases',
       'chronic_liver_diseases', 'digestive_diseases',
       'fire_heat_hot_substance', 'acute_hepatitis'],
      dtype='object')
```

[ ]:
```
#¿hay datos nulos?
df.isnull().sum()
```

[ ]:
```
country                                   0
code                                   1067
year                                      0
meningitis                              433
alzheimer's_diesease                    433
parkinson's_disease                     433
nutritional_deficiency                  433
malaria                                 433
drowning                                433
interpersonal_violence                  433
maternal_disorders                      433
hiv/aids                                433
drug_use_disorders                      433
tuberculosis                            433
cardiovascular_diseases                 433
lower_respiratory_infections            433
neonatal_disorders                      433
alcohol_use_disorders                   433
self_harm                               433
exposure_to_forces_of_nature            433
diarrheal_diseases                      433
environmental_heat_and_cold_exposure    433
neoplasms                               433
conflict_and_terrorism                  433
diabetes_mellitus                       433
chronic_kidney_disease                  433
poisonings                              433
protein_energy_malnutrition             433
terrorism                              4382
road_injuries                           433
chronic_respiratory_diseases            433
chronic_liver_diseases                  433
digestive_diseases                      433
fire_heat_hot_substance                 433
acute_hepatitis                         433
dtype: int64
```

```
[ ]: pd.options.display.max_rows = None#para no truncar la salida del value_counts
     df['country'].value_counts()
```

```
[ ]: Afghanistan                          30
     Samoa                               30
     Niue                                30
     North America (WB)                  30
     North Korea                         30
     North Macedonia                     30
     Northern Ireland                    30
     Northern Mariana Islands            30
     Norway                              30
     OECD Countries                      30
     Oman                                30
     Pakistan                            30
     Palau                               30
     Palestine                           30
     Panama                              30
     Papua New Guinea                    30
     Paraguay                            30
     Peru                                30
     Philippines                         30
     Poland                              30
     Portugal                            30
     Puerto Rico                         30
     Qatar                               30
     Region of the Americas (WHO)        30
     Romania                             30
     Russia                              30
     Rwanda                              30
     Saint Kitts and Nevis               30
     Saint Lucia                         30
     Nigeria                             30
     Niger                               30
     Nicaragua                           30
     Mexico                              30
     Libya                               30
     Lithuania                           30
     Luxembourg                          30
     Madagascar                          30
     Malawi                              30
     African Region (WHO)                30
     Maldives                            30
     Mali                                30
     Malta                               30
     Marshall Islands                    30
     Mauritania                          30
```

Mauritius	30
Micronesia (country)	30
New Zealand	30
Middle East & North Africa (WB)	30
Moldova	30
Monaco	30
Mongolia	30
Montenegro	30
Morocco	30
Mozambique	30
Myanmar	30
Namibia	30
Nauru	30
Nepal	30
Netherlands	30
Saint Vincent and the Grenadines	30
San Marino	30
Lesotho	30
Sao Tome and Principe	30
Tokelau	30
Tonga	30
Trinidad and Tobago	30
Tunisia	30
Turkey	30
Turkmenistan	30
Tuvalu	30
Uganda	30
Ukraine	30
United Arab Emirates	30
United Kingdom	30
United States	30
United States Virgin Islands	30
Uruguay	30
Uzbekistan	30
Vanuatu	30
Venezuela	30
Vietnam	30
Wales	30
Western Pacific Region (WHO)	30
World	30
World Bank High Income	30
World Bank Low Income	30
World Bank Lower Middle Income	30
World Bank Upper Middle Income	30
Yemen	30
Zambia	30
Togo	30

Timor	30
Thailand	30
South Asia (WB)	30
Saudi Arabia	30
Scotland	30
Senegal	30
Serbia	30
Seychelles	30
Sierra Leone	30
Singapore	30
Slovakia	30
Slovenia	30
Solomon Islands	30
Somalia	30
South Africa	30
South Korea	30
Tanzania	30
South Sudan	30
South-East Asia Region (WHO)	30
Spain	30
Sri Lanka	30
Sub-Saharan Africa (WB)	30
Sudan	30
Suriname	30
Sweden	30
Switzerland	30
Syria	30
Taiwan	30
Tajikistan	30
Liberia	30
Malaysia	30
Lebanon	30
Costa Rica	30
Cambodia	30
Cameroon	30
Canada	30
Cape Verde	30
Central African Republic	30
Chad	30
Chile	30
China	30
Colombia	30
Comoros	30
Congo	30
Cook Islands	30
Cote d'Ivoire	30
El Salvador	30

Croatia	30
Cuba	30
Cyprus	30
Czechia	30
Democratic Republic of Congo	30
Denmark	30
Djibouti	30
Latvia	30
Dominican Republic	30
East Asia & Pacific (WB)	30
Eastern Mediterranean Region (WHO)	30
Ecuador	30
Burundi	30
Burkina Faso	30
Bulgaria	30
Brunei	30
Albania	30
Algeria	30
American Samoa	30
Andorra	30
Angola	30
Antigua and Barbuda	30
Argentina	30
Armenia	30
Australia	30
Austria	30
Azerbaijan	30
Bahamas	30
Bahrain	30
Bangladesh	30
Barbados	30
Belarus	30
Belgium	30
Belize	30
Benin	30
Bermuda	30
Bhutan	30
Bolivia	30
Bosnia and Herzegovina	30
Botswana	30
Brazil	30
Egypt	30
Dominica	30
England	30
Iraq	30
Guam	30
Guatemala	30

Guinea	30
Equatorial Guinea	30
Guyana	30
Haiti	30
Honduras	30
Hungary	30
Iceland	30
India	30
Indonesia	30
Iran	30
Ireland	30
Greenland	30
Israel	30
Italy	30
Jamaica	30
Japan	30
Jordan	30
Kazakhstan	30
Kenya	30
Kiribati	30
Kuwait	30
Kyrgyzstan	30
Laos	30
Latin America & Caribbean (WB)	30
Grenada	30
Guinea-Bissau	30
Finland	30
Gambia	30
Eritrea	30
Estonia	30
Eswatini	30
Ethiopia	30
Europe & Central Asia (WB)	30
European Region (WHO)	30
Fiji	30
France	30
G20	30
Gabon	30
Zimbabwe	30
Germany	30
Georgia	30
Greece	30
Ghana	30
South America	27
Southeast Asia	27
Central Asia	27
Eastern Europe	27

```
Central America & Caribbean           27
Western Europe                        27
Australasia & Oceania                 27
East Asia                             27
North America                         27
Middle East & North Africa            27
South Asia                            27
Sub-Saharan Africa                    27
Bosnia-Herzegovina                    21
Kosovo                                19
Yugoslavia                            12
World (excluding China)               10
Hong Kong                             10
Zaire                                  6
East Timor                             5
Serbia-Montenegro                      4
Macau                                  4
Czechoslovakia                         3
Western Sahara                         2
French Guiana                          2
USSR                                   2
Martinique                             2
East Germany (GDR)                     1
International                          1
West Germany (FRG)                     1
French Polynesia                       1
Wallis and Futuna                      1
New Caledonia                          1
Guadeloupe                             1
Name: country, dtype: int64
```

[ ]:
```
#eliminamos el codigo del pais, pues es irrelevante para las visualizaciones
df=df.drop(["code"], axis=1)
df.shape
```

[ ]:
```
(7273, 34)
```

[ ]:
```
#definimos la data de interés; seleccionar solo las filas que contengan Unites␣
↪states y China
df.set_index('country', inplace=True)
df_u_c= df.loc[['United States', 'China']]
df_u_c#dataset de china-estados unidos
```

[ ]:
```
               year  meningitis  alzheimer's_diesease  parkinson's_disease  \
country
United States  2007      1249.0              114585.0              23705.0
United States  2008      1223.0              117064.0              24369.0
```

United States	2009	1186.0	118965.0	24760.0
United States	2010	1141.0	121781.0	25309.0
United States	2011	1126.0	124656.0	26123.0
United States	2012	1108.0	127120.0	26781.0
United States	2013	1106.0	129640.0	27531.0
United States	2014	1102.0	131616.0	28193.0
United States	2015	1115.0	134411.0	29081.0
United States	2016	1131.0	136673.0	29748.0
United States	1990	1830.0	73079.0	12895.0
United States	1991	1615.0	78365.0	13217.0
United States	1992	1558.0	83053.0	13600.0
United States	1993	1550.0	87768.0	14301.0
United States	1994	1530.0	91491.0	14816.0
United States	1995	1514.0	94855.0	15434.0
United States	1996	1504.0	96526.0	15962.0
United States	1997	1514.0	96342.0	16545.0
United States	1998	1517.0	95816.0	17349.0
United States	1999	1566.0	95512.0	18354.0
United States	2000	1458.0	96426.0	19242.0
United States	2001	1399.0	98558.0	20082.0
United States	2002	1367.0	101170.0	20907.0
United States	2003	1344.0	104024.0	21562.0
United States	2004	1293.0	106572.0	21922.0
United States	2005	1288.0	109900.0	22755.0
United States	2006	1273.0	112291.0	23243.0
United States	2017	1137.0	138750.0	30014.0
United States	2018	1142.0	141681.0	31277.0
United States	2019	1146.0	143919.0	32211.0
China	2007	8407.0	187358.0	52766.0
China	2008	8384.0	197380.0	54828.0
China	2009	8394.0	208139.0	57485.0
China	2010	8341.0	218436.0	60241.0
China	2011	8193.0	225852.0	61781.0
China	2012	8057.0	232656.0	62640.0
China	2013	7971.0	239240.0	63853.0
China	2014	7740.0	249056.0	65555.0
China	2015	7553.0	259217.0	66761.0
China	2016	7550.0	275481.0	69364.0
China	1990	37473.0	93316.0	31920.0
China	1991	36834.0	95470.0	32607.0
China	1992	35086.0	98135.0	33287.0
China	1993	33396.0	100822.0	34129.0
China	1994	31752.0	103621.0	34680.0
China	1995	29319.0	106958.0	35450.0
China	1996	26788.0	111481.0	36703.0
China	1997	23987.0	116489.0	37807.0
China	1998	21485.0	121766.0	38955.0

```
China          1999     19295.0              127660.0              40894.0
China          2000     16947.0              134438.0              43357.0
China          2001     14740.0              141288.0              45240.0
China          2002     12828.0              148675.0              47020.0
China          2003     11265.0              156132.0              48660.0
China          2004     10297.0              163879.0              50802.0
China          2005      9502.0              170967.0              52138.0
China          2006      8824.0              178510.0              51900.0
China          2017      7228.0              291962.0              71490.0
China          2018      6798.0              306747.0              73789.0
China          2019      6465.0              320715.0              76990.0

               nutritional_deficiency  malaria  drowning  \
country
United States                  4238.0      0.0    3864.0
United States                  4280.0      0.0    3819.0
United States                  4277.0      0.0    3753.0
United States                  4367.0      0.0    3684.0
United States                  4538.0      0.0    3669.0
United States                  4707.0      0.0    3647.0
United States                  4943.0      0.0    3606.0
United States                  5268.0      0.0    3627.0
United States                  5661.0      0.0    3727.0
United States                  5952.0      0.0    3846.0
United States                  2795.0      0.0    4370.0
United States                  2855.0      0.0    4246.0
United States                  2945.0      0.0    4069.0
United States                  3148.0      0.0    4075.0
United States                  3312.0      0.0    3999.0
United States                  3530.0      0.0    3967.0
United States                  3741.0      0.0    3857.0
United States                  3978.0      0.0    3810.0
United States                  4263.0      0.0    3831.0
United States                  4617.0      0.0    3749.0
United States                  4760.0      0.0    3728.0
United States                  4736.0      0.0    3720.0
United States                  4704.0      0.0    3772.0
United States                  4570.0      0.0    3761.0
United States                  4392.0      0.0    3747.0
United States                  4372.0      0.0    3850.0
United States                  4257.0      0.0    3888.0
United States                  5814.0      0.0    3769.0
United States                  5934.0      0.0    3687.0
United States                  6090.0      0.0    3615.0
China                         10611.0     21.0   76277.0
China                         10623.0     15.0   73624.0
China                         10874.0      9.0   72888.0
```

```
China                          11293.0     12.0   70955.0
China                          11739.0     11.0   66696.0
China                          12120.0      0.0   65110.0
China                          12748.0      0.0   63152.0
China                          13528.0      0.0   62733.0
China                          14487.0      0.0   61489.0
China                          15827.0      0.0   61049.0
China                          42176.0   1535.0  153773.0
China                          42446.0   2245.0  150399.0
China                          37980.0   2061.0  144949.0
China                          35265.0   1327.0  142119.0
China                          32825.0   1146.0  138993.0
China                          29567.0   1068.0  136083.0
China                          27043.0    930.0  130813.0
China                          24625.0    946.0  124856.0
China                          22088.0    558.0  121543.0
China                          19966.0   1142.0  115349.0
China                          18083.0    120.0  111301.0
China                          16332.0     35.0  105437.0
China                          14403.0     60.0  100416.0
China                          12952.0     46.0   94274.0
China                          12030.0     51.0   90532.0
China                          11457.0     44.0   85898.0
China                          11083.0     36.0   79135.0
China                          16572.0      0.0   59354.0
China                          16630.0      0.0   57898.0
China                          16863.0      0.0   56524.0

               interpersonal_violence  maternal_disorders  hiv/aids  …  \
country                                                              …
United States                 19370.0              1062.0   12444.0  …
United States                 18716.0              1103.0   11400.0  …
United States                 17944.0              1080.0   10551.0  …
United States                 17329.0               991.0    9143.0  …
United States                 17224.0              1050.0    8428.0  …
United States                 17577.0              1090.0    7973.0  …
United States                 16767.0              1172.0    7682.0  …
United States                 16618.0              1188.0    7413.0  …
United States                 18164.0              1200.0    7089.0  …
United States                 19254.0              1252.0    7430.0  …
United States                 25341.0               538.0   27789.0  …
United States                 26081.0               525.0   32425.0  …
United States                 25307.0               509.0   36485.0  …
United States                 25598.0               511.0   40523.0  …
United States                 24898.0               524.0   44959.0  …
United States                 23477.0               489.0   45213.0  …
United States                 21706.0               508.0   33684.0  …
```

```
United States                 20385.0              534.0   19425.0  …
United States                 19286.0              508.0   15921.0  …
United States                 18421.0              575.0   17187.0  …
United States                 18204.0              617.0   16072.0  …
United States                 18723.0              644.0   15493.0  …
United States                 18979.0              634.0   15477.0  …
United States                 18911.0              793.0   15100.0  …
United States                 18767.0              921.0   14416.0  …
United States                 19380.0             1007.0   13839.0  …
United States                 19765.0             1042.0   13265.0  …
United States                 18831.0             1101.0    7338.0  …
United States                 18086.0             1048.0    7200.0  …
United States                 17709.0              990.0    7053.0  …
China                         23339.0             5014.0   14992.0  …
China                         21775.0             4534.0   16310.0  …
China                         20659.0             4207.0   16364.0  …
China                         18926.0             3762.0   16722.0  …
China                         17477.0             3350.0   17075.0  …
China                         16177.0             3015.0   16455.0  …
China                         15134.0             2761.0   17728.0  …
China                         14194.0             2340.0   21784.0  …
China                         13512.0             2341.0   26060.0  …
China                         13076.0             2510.0   29402.0  …
China                         40143.0            17400.0    2698.0  …
China                         39187.0            15505.0    3420.0  …
China                         38179.0            13867.0    4112.0  …
China                         37525.0            12866.0    4830.0  …
China                         38146.0            14144.0    5434.0  …
China                         37763.0            14848.0    6292.0  …
China                         36192.0            14353.0    6758.0  …
China                         34972.0            13783.0    7392.0  …
China                         34164.0            13838.0    8239.0  …
China                         33074.0            13307.0    9004.0  …
China                         31227.0            12385.0    9872.0  …
China                         29311.0            11121.0   11021.0  …
China                         27998.0             9215.0   11773.0  …
China                         27976.0             7814.0   12183.0  …
China                         27869.0             7286.0   13424.0  …
China                         26579.0             6591.0   15090.0  …
China                         25011.0             5755.0   14791.0  …
China                         12523.0             2083.0   31031.0  …
China                         12197.0             1725.0   31707.0  …
China                         11970.0             1537.0   31746.0  …

              chronic_kidney_disease  poisonings  \
country
United States                 72852.0      1414.0
```

United States	76152.0	1435.0
United States	78863.0	1448.0
United States	82391.0	1443.0
United States	86464.0	1477.0
United States	89367.0	1485.0
United States	92802.0	1501.0
United States	96182.0	1540.0
United States	99915.0	1591.0
United States	102601.0	1642.0
United States	33101.0	1330.0
United States	33885.0	1282.0
United States	34919.0	1225.0
United States	36767.0	1216.0
United States	38199.0	1192.0
United States	39946.0	1161.0
United States	41627.0	1137.0
United States	43504.0	1109.0
United States	46077.0	1079.0
United States	49593.0	1086.0
United States	53052.0	1117.0
United States	56223.0	1161.0
United States	59027.0	1224.0
United States	61472.0	1265.0
United States	63437.0	1279.0
United States	67056.0	1343.0
United States	69954.0	1388.0
United States	101751.0	1599.0
United States	104364.0	1562.0
United States	106954.0	1528.0
China	142069.0	27780.0
China	146413.0	28939.0
China	152838.0	30105.0
China	160396.0	30838.0
China	165833.0	30883.0
China	169494.0	30494.0
China	173650.0	30263.0
China	177089.0	29957.0
China	179638.0	29323.0
China	184528.0	29051.0
China	98607.0	22496.0
China	98875.0	21944.0
China	99808.0	21357.0
China	100190.0	20976.0
China	101945.0	20528.0
China	103512.0	20746.0
China	105289.0	20913.0
China	107266.0	20818.0

China	110205.0	21270.0
China	114372.0	21346.0
China	119415.0	22376.0
China	124066.0	23392.0
China	128709.0	24178.0
China	133206.0	25301.0
China	138884.0	26861.0
China	142274.0	27533.0
China	140943.0	27420.0
China	187685.0	28345.0
China	191351.0	27623.0
China	196726.0	27084.0

country	protein_energy_malnutrition	terrorism	road_injuries	\
United States	3861.0	0.0	46498.0	
United States	3907.0	2.0	44535.0	
United States	3924.0	18.0	42561.0	
United States	4024.0	4.0	40874.0	
United States	4192.0	0.0	40383.0	
United States	4360.0	7.0	39985.0	
United States	4601.0	23.0	39785.0	
United States	4918.0	26.0	40155.0	
United States	5301.0	54.0	41198.0	
United States	5586.0	68.0	42360.0	
United States	2419.0	5.0	48970.0	
United States	2481.0	2.0	47833.0	
United States	2569.0	2.0	46690.0	
United States	2748.0	NaN	47119.0	
United States	2900.0	10.0	47262.0	
United States	3103.0	178.0	47551.0	
United States	3298.0	2.0	47416.0	
United States	3519.0	2.0	47374.0	
United States	3783.0	4.0	47341.0	
United States	4122.0	20.0	47717.0	
United States	4261.0	0.0	48207.0	
United States	4255.0	3008.0	48737.0	
United States	4237.0	4.0	49318.0	
United States	4123.0	0.0	49243.0	
United States	3977.0	0.0	48526.0	
United States	3967.0	0.0	48654.0	
United States	3866.0	1.0	48092.0	
United States	5453.0	95.0	42206.0	
United States	5565.0	NaN	41792.0	
United States	5710.0	NaN	41362.0	
China	7878.0	NaN	324159.0	
China	7906.0	39.0	327299.0	

```
China                                8098.0      186.0       329237.0
China                                8425.0        7.0       327545.0
China                                8809.0       19.0       315824.0
China                                9145.0       27.0       300970.0
China                                9690.0       60.0       288937.0
China                               10365.0      322.0       279949.0
China                               11176.0      123.0       268987.0
China                               12262.0       13.0       262951.0
China                               40015.0        2.0       230499.0
China                               40380.0        0.0       226876.0
China                               36013.0        9.0       226374.0
China                               33447.0        NaN       227370.0
China                               31078.0       18.0       233459.0
China                               27874.0        6.0       240786.0
China                               25379.0       23.0       244790.0
China                               23004.0       37.0       248806.0
China                               20420.0       50.0       255467.0
China                               18279.0        5.0       264540.0
China                               16223.0        1.0       279743.0
China                               14261.0        7.0       291418.0
China                               12138.0        1.0       301638.0
China                               10418.0        1.0       312967.0
China                                9232.0        4.0       326303.0
China                                8610.0       12.0       328533.0
China                                8283.0        NaN       324080.0
China                               12850.0       16.0       257068.0
China                               12907.0        NaN       253799.0
China                               13099.0        NaN       250025.0

               chronic_respiratory_diseases  chronic_liver_diseases  \
country
United States                      172341.0                 51575.0
United States                      177366.0                 53086.0
United States                      179468.0                 54496.0
United States                      182265.0                 55472.0
United States                      187463.0                 57598.0
United States                      191590.0                 59351.0
United States                      196459.0                 61199.0
United States                      200484.0                 63045.0
United States                      205998.0                 64842.0
United States                      209980.0                 66395.0
United States                      106098.0                 37386.0
United States                      109587.0                 37417.0
United States                      113036.0                 37599.0
United States                      119371.0                 38715.0
United States                      123547.0                 39290.0
United States                      128157.0                 40019.0
```

United States	131733.0	40254.0
United States	135669.0	40662.0
United States	141289.0	41422.0
United States	148677.0	42462.0
United States	153230.0	43766.0
United States	156917.0	45248.0
United States	160322.0	46713.0
United States	162757.0	47856.0
United States	163040.0	48073.0
United States	167679.0	49642.0
United States	169726.0	50663.0
United States	211269.0	65977.0
United States	218546.0	66816.0
United States	224988.0	67286.0
China	1161612.0	170433.0
China	1149016.0	167955.0
China	1145608.0	164921.0
China	1139700.0	162119.0
China	1115828.0	158710.0
China	1083590.0	155219.0
China	1058374.0	151718.0
China	1042132.0	149653.0
China	1029418.0	148056.0
China	1039047.0	148104.0
China	1301224.0	167671.0
China	1324798.0	169742.0
China	1347922.0	169544.0
China	1364268.0	169199.0
China	1366039.0	167640.0
China	1360352.0	166990.0
China	1357793.0	165875.0
China	1342027.0	164192.0
China	1329613.0	163959.0
China	1335801.0	165625.0
China	1347045.0	168580.0
China	1332957.0	170622.0
China	1323164.0	173440.0
China	1310929.0	175987.0
China	1308091.0	179149.0
China	1275501.0	177980.0
China	1204710.0	174290.0
China	1040384.0	149472.0
China	1054610.0	149792.0
China	1085273.0	152262.0

country	digestive_diseases	fire_heat_hot_substance	acute_hepatitis

United States	103120.0	4301.0	152.0
United States	105255.0	3927.0	144.0
United States	106814.0	3753.0	137.0
United States	108110.0	3504.0	129.0
United States	111120.0	3714.0	124.0
United States	113403.0	3416.0	121.0
United States	116058.0	3831.0	120.0
United States	118754.0	3798.0	120.0
United States	121845.0	3822.0	120.0
United States	124438.0	3899.0	120.0
United States	78301.0	5336.0	202.0
United States	78694.0	5204.0	210.0
United States	79310.0	4878.0	221.0
United States	81626.0	5100.0	232.0
United States	82913.0	4794.0	243.0
United States	84395.0	4688.0	257.0
United States	85128.0	4961.0	264.0
United States	86166.0	4472.0	275.0
United States	87807.0	4380.0	289.0
United States	90133.0	4342.0	323.0
United States	92314.0	4296.0	301.0
United States	94619.0	4470.0	282.0
United States	96726.0	4190.0	264.0
United States	98219.0	4470.0	242.0
United States	98223.0	4021.0	218.0
United States	100617.0	4040.0	189.0
United States	101979.0	4229.0	168.0
United States	124473.0	3577.0	124.0
United States	127040.0	3683.0	129.0
United States	129343.0	3616.0	131.0
China	297567.0	11500.0	5017.0
China	292928.0	11363.0	4757.0
China	288756.0	11346.0	4509.0
China	285663.0	11362.0	4334.0
China	281834.0	11152.0	4212.0
China	277791.0	10934.0	4158.0
China	273718.0	10851.0	4160.0
China	271449.0	10766.0	4143.0
China	270036.0	10738.0	4171.0
China	271648.0	10789.0	4234.0
China	322746.0	17289.0	26162.0
China	325511.0	17205.0	25305.0
China	323758.0	16846.0	23933.0
China	320315.0	16377.0	22477.0
China	315647.0	16504.0	20915.0
China	311593.0	15467.0	19407.0
China	306420.0	14665.0	17930.0

```
China                    300603.0                 14047.0          16588.0
China                    297422.0                 13430.0          15359.0
China                    298457.0                 12925.0          14446.0
China                    302427.0                 12911.0          13143.0
China                    304363.0                 11924.0          11459.0
China                    308400.0                 11754.0           9706.0
China                    312770.0                 11998.0           8001.0
China                    318172.0                 12410.0           6840.0
China                    314833.0                 12271.0           6039.0
China                    305990.0                 11739.0           5510.0
China                    273724.0                 10829.0           4080.0
China                    273223.0                 10914.0           3843.0
China                    277142.0                 11096.0           3726.0

[60 rows x 33 columns]
```

[ ]:
```
df_u_c.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 60 entries, United States to China
Data columns (total 33 columns):
 #   Column                                Non-Null Count  Dtype
---  ------                                --------------  -----
 0   year                                  60 non-null     int64
 1   meningitis                            60 non-null     float64
 2   alzheimer's_diesease                  60 non-null     float64
 3   parkinson's_disease                   60 non-null     float64
 4   nutritional_deficiency                60 non-null     float64
 5   malaria                               60 non-null     float64
 6   drowning                              60 non-null     float64
 7   interpersonal_violence                60 non-null     float64
 8   maternal_disorders                    60 non-null     float64
 9   hiv/aids                              60 non-null     float64
 10  drug_use_disorders                    60 non-null     float64
 11  tuberculosis                          60 non-null     float64
 12  cardiovascular_diseases               60 non-null     float64
 13  lower_respiratory_infections          60 non-null     float64
 14  neonatal_disorders                    60 non-null     float64
 15  alcohol_use_disorders                 60 non-null     float64
 16  self_harm                             60 non-null     float64
 17  exposure_to_forces_of_nature          60 non-null     float64
 18  diarrheal_diseases                    60 non-null     float64
 19  environmental_heat_and_cold_exposure  60 non-null     float64
 20  neoplasms                             60 non-null     float64
 21  conflict_and_terrorism                60 non-null     float64
 22  diabetes_mellitus                     60 non-null     float64
 23  chronic_kidney_disease                60 non-null     float64
```

```
 24  poisonings                          60 non-null     float64
 25  protein_energy_malnutrition         60 non-null     float64
 26  terrorism                           52 non-null     float64
 27  road_injuries                       60 non-null     float64
 28  chronic_respiratory_diseases        60 non-null     float64
 29  chronic_liver_diseases              60 non-null     float64
 30  digestive_diseases                  60 non-null     float64
 31  fire_heat_hot_substance             60 non-null     float64
 32  acute_hepatitis                     60 non-null     float64
dtypes: float64(32), int64(1)
memory usage: 15.9+ KB
```

[ ]:
```
df_u_c.shape
```

[ ]:
```
(60, 33)
```

[ ]:
```
df_u_c.value_counts('country')
```

[ ]:
```
country
China            30
United States    30
dtype: int64
```

[ ]:
```
#data de Estados unidos
df_unites=df_u_c.loc[['United States']]
df_unites
```

[ ]:
```
                year  meningitis  alzheimer's_diesease  parkinson's_disease  \
country
United States  2007      1249.0              114585.0              23705.0
United States  2008      1223.0              117064.0              24369.0
United States  2009      1186.0              118965.0              24760.0
United States  2010      1141.0              121781.0              25309.0
United States  2011      1126.0              124656.0              26123.0
United States  2012      1108.0              127120.0              26781.0
United States  2013      1106.0              129640.0              27531.0
United States  2014      1102.0              131616.0              28193.0
United States  2015      1115.0              134411.0              29081.0
United States  2016      1131.0              136673.0              29748.0
United States  1990      1830.0               73079.0              12895.0
United States  1991      1615.0               78365.0              13217.0
United States  1992      1558.0               83053.0              13600.0
United States  1993      1550.0               87768.0              14301.0
United States  1994      1530.0               91491.0              14816.0
United States  1995      1514.0               94855.0              15434.0
United States  1996      1504.0               96526.0              15962.0
United States  1997      1514.0               96342.0              16545.0
```

```
United States  1998      1517.0              95816.0             17349.0
United States  1999      1566.0              95512.0             18354.0
United States  2000      1458.0              96426.0             19242.0
United States  2001      1399.0              98558.0             20082.0
United States  2002      1367.0             101170.0             20907.0
United States  2003      1344.0             104024.0             21562.0
United States  2004      1293.0             106572.0             21922.0
United States  2005      1288.0             109900.0             22755.0
United States  2006      1273.0             112291.0             23243.0
United States  2017      1137.0             138750.0             30014.0
United States  2018      1142.0             141681.0             31277.0
United States  2019      1146.0             143919.0             32211.0

               nutritional_deficiency  malaria  drowning  \
country
United States                  4238.0      0.0    3864.0
United States                  4280.0      0.0    3819.0
United States                  4277.0      0.0    3753.0
United States                  4367.0      0.0    3684.0
United States                  4538.0      0.0    3669.0
United States                  4707.0      0.0    3647.0
United States                  4943.0      0.0    3606.0
United States                  5268.0      0.0    3627.0
United States                  5661.0      0.0    3727.0
United States                  5952.0      0.0    3846.0
United States                  2795.0      0.0    4370.0
United States                  2855.0      0.0    4246.0
United States                  2945.0      0.0    4069.0
United States                  3148.0      0.0    4075.0
United States                  3312.0      0.0    3999.0
United States                  3530.0      0.0    3967.0
United States                  3741.0      0.0    3857.0
United States                  3978.0      0.0    3810.0
United States                  4263.0      0.0    3831.0
United States                  4617.0      0.0    3749.0
United States                  4760.0      0.0    3728.0
United States                  4736.0      0.0    3720.0
United States                  4704.0      0.0    3772.0
United States                  4570.0      0.0    3761.0
United States                  4392.0      0.0    3747.0
United States                  4372.0      0.0    3850.0
United States                  4257.0      0.0    3888.0
United States                  5814.0      0.0    3769.0
United States                  5934.0      0.0    3687.0
United States                  6090.0      0.0    3615.0

               interpersonal_violence  maternal_disorders  hiv/aids  …  \
```

```
country                                                                 …
United States                 19370.0              1062.0   12444.0  …
United States                 18716.0              1103.0   11400.0  …
United States                 17944.0              1080.0   10551.0  …
United States                 17329.0               991.0    9143.0  …
United States                 17224.0              1050.0    8428.0  …
United States                 17577.0              1090.0    7973.0  …
United States                 16767.0              1172.0    7682.0  …
United States                 16618.0              1188.0    7413.0  …
United States                 18164.0              1200.0    7089.0  …
United States                 19254.0              1252.0    7430.0  …
United States                 25341.0               538.0   27789.0  …
United States                 26081.0               525.0   32425.0  …
United States                 25307.0               509.0   36485.0  …
United States                 25598.0               511.0   40523.0  …
United States                 24898.0               524.0   44959.0  …
United States                 23477.0               489.0   45213.0  …
United States                 21706.0               508.0   33684.0  …
United States                 20385.0               534.0   19425.0  …
United States                 19286.0               508.0   15921.0  …
United States                 18421.0               575.0   17187.0  …
United States                 18204.0               617.0   16072.0  …
United States                 18723.0               644.0   15493.0  …
United States                 18979.0               634.0   15477.0  …
United States                 18911.0               793.0   15100.0  …
United States                 18767.0               921.0   14416.0  …
United States                 19380.0              1007.0   13839.0  …
United States                 19765.0              1042.0   13265.0  …
United States                 18831.0              1101.0    7338.0  …
United States                 18086.0              1048.0    7200.0  …
United States                 17709.0               990.0    7053.0  …

               chronic_kidney_disease  poisonings  \
country
United States                 72852.0      1414.0
United States                 76152.0      1435.0
United States                 78863.0      1448.0
United States                 82391.0      1443.0
United States                 86464.0      1477.0
United States                 89367.0      1485.0
United States                 92802.0      1501.0
United States                 96182.0      1540.0
United States                 99915.0      1591.0
United States                102601.0      1642.0
United States                 33101.0      1330.0
United States                 33885.0      1282.0
United States                 34919.0      1225.0
```

```
United States                36767.0      1216.0
United States                38199.0      1192.0
United States                39946.0      1161.0
United States                41627.0      1137.0
United States                43504.0      1109.0
United States                46077.0      1079.0
United States                49593.0      1086.0
United States                53052.0      1117.0
United States                56223.0      1161.0
United States                59027.0      1224.0
United States                61472.0      1265.0
United States                63437.0      1279.0
United States                67056.0      1343.0
United States                69954.0      1388.0
United States               101751.0      1599.0
United States               104364.0      1562.0
United States               106954.0      1528.0

              protein_energy_malnutrition  terrorism  road_injuries  \
country
United States                       3861.0        0.0        46498.0
United States                       3907.0        2.0        44535.0
United States                       3924.0       18.0        42561.0
United States                       4024.0        4.0        40874.0
United States                       4192.0        0.0        40383.0
United States                       4360.0        7.0        39985.0
United States                       4601.0       23.0        39785.0
United States                       4918.0       26.0        40155.0
United States                       5301.0       54.0        41198.0
United States                       5586.0       68.0        42360.0
United States                       2419.0        5.0        48970.0
United States                       2481.0        2.0        47833.0
United States                       2569.0        2.0        46690.0
United States                       2748.0        NaN        47119.0
United States                       2900.0       10.0        47262.0
United States                       3103.0      178.0        47551.0
United States                       3298.0        2.0        47416.0
United States                       3519.0        2.0        47374.0
United States                       3783.0        4.0        47341.0
United States                       4122.0       20.0        47717.0
United States                       4261.0        0.0        48207.0
United States                       4255.0     3008.0        48737.0
United States                       4237.0        4.0        49318.0
United States                       4123.0        0.0        49243.0
United States                       3977.0        0.0        48526.0
United States                       3967.0        0.0        48654.0
United States                       3866.0        1.0        48092.0
```

```
United States                      5453.0       95.0        42206.0
United States                      5565.0        NaN        41792.0
United States                      5710.0        NaN        41362.0

               chronic_respiratory_diseases  chronic_liver_diseases  \
country
United States                     172341.0                 51575.0
United States                     177366.0                 53086.0
United States                     179468.0                 54496.0
United States                     182265.0                 55472.0
United States                     187463.0                 57598.0
United States                     191590.0                 59351.0
United States                     196459.0                 61199.0
United States                     200484.0                 63045.0
United States                     205998.0                 64842.0
United States                     209980.0                 66395.0
United States                     106098.0                 37386.0
United States                     109587.0                 37417.0
United States                     113036.0                 37599.0
United States                     119371.0                 38715.0
United States                     123547.0                 39290.0
United States                     128157.0                 40019.0
United States                     131733.0                 40254.0
United States                     135669.0                 40662.0
United States                     141289.0                 41422.0
United States                     148677.0                 42462.0
United States                     153230.0                 43766.0
United States                     156917.0                 45248.0
United States                     160322.0                 46713.0
United States                     162757.0                 47856.0
United States                     163040.0                 48073.0
United States                     167679.0                 49642.0
United States                     169726.0                 50663.0
United States                     211269.0                 65977.0
United States                     218546.0                 66816.0
United States                     224988.0                 67286.0

               digestive_diseases  fire_heat_hot_substance  acute_hepatitis
country
United States              103120.0                   4301.0            152.0
United States              105255.0                   3927.0            144.0
United States              106814.0                   3753.0            137.0
United States              108110.0                   3504.0            129.0
United States              111120.0                   3714.0            124.0
United States              113403.0                   3416.0            121.0
United States              116058.0                   3831.0            120.0
United States              118754.0                   3798.0            120.0
```

```
United States            121845.0                  3822.0            120.0
United States            124438.0                  3899.0            120.0
United States             78301.0                  5336.0            202.0
United States             78694.0                  5204.0            210.0
United States             79310.0                  4878.0            221.0
United States             81626.0                  5100.0            232.0
United States             82913.0                  4794.0            243.0
United States             84395.0                  4688.0            257.0
United States             85128.0                  4961.0            264.0
United States             86166.0                  4472.0            275.0
United States             87807.0                  4380.0            289.0
United States             90133.0                  4342.0            323.0
United States             92314.0                  4296.0            301.0
United States             94619.0                  4470.0            282.0
United States             96726.0                  4190.0            264.0
United States             98219.0                  4470.0            242.0
United States             98223.0                  4021.0            218.0
United States            100617.0                  4040.0            189.0
United States            101979.0                  4229.0            168.0
United States            124473.0                  3577.0            124.0
United States            127040.0                  3683.0            129.0
United States            129343.0                  3616.0            131.0

[30 rows x 33 columns]
```

[ ]:
```
#data de china
df_chi=df_u_c.loc[['China']]
df_chi
```

[ ]:
```
         year  meningitis  alzheimer's_diesease  parkinson's_disease  \
country
China    2007      8407.0              187358.0              52766.0
China    2008      8384.0              197380.0              54828.0
China    2009      8394.0              208139.0              57485.0
China    2010      8341.0              218436.0              60241.0
China    2011      8193.0              225852.0              61781.0
China    2012      8057.0              232656.0              62640.0
China    2013      7971.0              239240.0              63853.0
China    2014      7740.0              249056.0              65555.0
China    2015      7553.0              259217.0              66761.0
China    2016      7550.0              275481.0              69364.0
China    1990     37473.0               93316.0              31920.0
China    1991     36834.0               95470.0              32607.0
China    1992     35086.0               98135.0              33287.0
China    1993     33396.0              100822.0              34129.0
China    1994     31752.0              103621.0              34680.0
China    1995     29319.0              106958.0              35450.0
```

China	1996	26788.0	111481.0	36703.0
China	1997	23987.0	116489.0	37807.0
China	1998	21485.0	121766.0	38955.0
China	1999	19295.0	127660.0	40894.0
China	2000	16947.0	134438.0	43357.0
China	2001	14740.0	141288.0	45240.0
China	2002	12828.0	148675.0	47020.0
China	2003	11265.0	156132.0	48660.0
China	2004	10297.0	163879.0	50802.0
China	2005	9502.0	170967.0	52138.0
China	2006	8824.0	178510.0	51900.0
China	2017	7228.0	291962.0	71490.0
China	2018	6798.0	306747.0	73789.0
China	2019	6465.0	320715.0	76990.0

country	nutritional_deficiency	malaria	drowning	interpersonal_violence	\
China	10611.0	21.0	76277.0	23339.0	
China	10623.0	15.0	73624.0	21775.0	
China	10874.0	9.0	72888.0	20659.0	
China	11293.0	12.0	70955.0	18926.0	
China	11739.0	11.0	66696.0	17477.0	
China	12120.0	0.0	65110.0	16177.0	
China	12748.0	0.0	63152.0	15134.0	
China	13528.0	0.0	62733.0	14194.0	
China	14487.0	0.0	61489.0	13512.0	
China	15827.0	0.0	61049.0	13076.0	
China	42176.0	1535.0	153773.0	40143.0	
China	42446.0	2245.0	150399.0	39187.0	
China	37980.0	2061.0	144949.0	38179.0	
China	35265.0	1327.0	142119.0	37525.0	
China	32825.0	1146.0	138993.0	38146.0	
China	29567.0	1068.0	136083.0	37763.0	
China	27043.0	930.0	130813.0	36192.0	
China	24625.0	946.0	124856.0	34972.0	
China	22088.0	558.0	121543.0	34164.0	
China	19966.0	1142.0	115349.0	33074.0	
China	18083.0	120.0	111301.0	31227.0	
China	16332.0	35.0	105437.0	29311.0	
China	14403.0	60.0	100416.0	27998.0	
China	12952.0	46.0	94274.0	27976.0	
China	12030.0	51.0	90532.0	27869.0	
China	11457.0	44.0	85898.0	26579.0	
China	11083.0	36.0	79135.0	25011.0	
China	16572.0	0.0	59354.0	12523.0	
China	16630.0	0.0	57898.0	12197.0	
China	16863.0	0.0	56524.0	11970.0	

country	maternal_disorders	hiv/aids	…	chronic_kidney_disease	\
China	5014.0	14992.0	…	142069.0	
China	4534.0	16310.0	…	146413.0	
China	4207.0	16364.0	…	152838.0	
China	3762.0	16722.0	…	160396.0	
China	3350.0	17075.0	…	165833.0	
China	3015.0	16455.0	…	169494.0	
China	2761.0	17728.0	…	173650.0	
China	2340.0	21784.0	…	177089.0	
China	2341.0	26060.0	…	179638.0	
China	2510.0	29402.0	…	184528.0	
China	17400.0	2698.0	…	98607.0	
China	15505.0	3420.0	…	98875.0	
China	13867.0	4112.0	…	99808.0	
China	12866.0	4830.0	…	100190.0	
China	14144.0	5434.0	…	101945.0	
China	14848.0	6292.0	…	103512.0	
China	14353.0	6758.0	…	105289.0	
China	13783.0	7392.0	…	107266.0	
China	13838.0	8239.0	…	110205.0	
China	13307.0	9004.0	…	114372.0	
China	12385.0	9872.0	…	119415.0	
China	11121.0	11021.0	…	124066.0	
China	9215.0	11773.0	…	128709.0	
China	7814.0	12183.0	…	133206.0	
China	7286.0	13424.0	…	138884.0	
China	6591.0	15090.0	…	142274.0	
China	5755.0	14791.0	…	140943.0	
China	2083.0	31031.0	…	187685.0	
China	1725.0	31707.0	…	191351.0	
China	1537.0	31746.0	…	196726.0	

country	poisonings	protein_energy_malnutrition	terrorism	road_injuries	\
China	27780.0	7878.0	NaN	324159.0	
China	28939.0	7906.0	39.0	327299.0	
China	30105.0	8098.0	186.0	329237.0	
China	30838.0	8425.0	7.0	327545.0	
China	30883.0	8809.0	19.0	315824.0	
China	30494.0	9145.0	27.0	300970.0	
China	30263.0	9690.0	60.0	288937.0	
China	29957.0	10365.0	322.0	279949.0	
China	29323.0	11176.0	123.0	268987.0	
China	29051.0	12262.0	13.0	262951.0	
China	22496.0	40015.0	2.0	230499.0	

```
China       21944.0                    40380.0        0.0       226876.0
China       21357.0                    36013.0        9.0       226374.0
China       20976.0                    33447.0        NaN       227370.0
China       20528.0                    31078.0       18.0       233459.0
China       20746.0                    27874.0        6.0       240786.0
China       20913.0                    25379.0       23.0       244790.0
China       20818.0                    23004.0       37.0       248806.0
China       21270.0                    20420.0       50.0       255467.0
China       21346.0                    18279.0        5.0       264540.0
China       22376.0                    16223.0        1.0       279743.0
China       23392.0                    14261.0        7.0       291418.0
China       24178.0                    12138.0        1.0       301638.0
China       25301.0                    10418.0        1.0       312967.0
China       26861.0                     9232.0        4.0       326303.0
China       27533.0                     8610.0       12.0       328533.0
China       27420.0                     8283.0        NaN       324080.0
China       28345.0                    12850.0       16.0       257068.0
China       27623.0                    12907.0        NaN       253799.0
China       27084.0                    13099.0        NaN       250025.0

         chronic_respiratory_diseases  chronic_liver_diseases  \
country
China                       1161612.0                170433.0
China                       1149016.0                167955.0
China                       1145608.0                164921.0
China                       1139700.0                162119.0
China                       1115828.0                158710.0
China                       1083590.0                155219.0
China                       1058374.0                151718.0
China                       1042132.0                149653.0
China                       1029418.0                148056.0
China                       1039047.0                148104.0
China                       1301224.0                167671.0
China                       1324798.0                169742.0
China                       1347922.0                169544.0
China                       1364268.0                169199.0
China                       1366039.0                167640.0
China                       1360352.0                166990.0
China                       1357793.0                165875.0
China                       1342027.0                164192.0
China                       1329613.0                163959.0
China                       1335801.0                165625.0
China                       1347045.0                168580.0
China                       1332957.0                170622.0
China                       1323164.0                173440.0
China                       1310929.0                175987.0
China                       1308091.0                179149.0
```

```
China                      1275501.0               177980.0
China                      1204710.0               174290.0
China                      1040384.0               149472.0
China                      1054610.0               149792.0
China                      1085273.0               152262.0

         digestive_diseases  fire_heat_hot_substance  acute_hepatitis
country
China                297567.0                  11500.0           5017.0
China                292928.0                  11363.0           4757.0
China                288756.0                  11346.0           4509.0
China                285663.0                  11362.0           4334.0
China                281834.0                  11152.0           4212.0
China                277791.0                  10934.0           4158.0
China                273718.0                  10851.0           4160.0
China                271449.0                  10766.0           4143.0
China                270036.0                  10738.0           4171.0
China                271648.0                  10789.0           4234.0
China                322746.0                  17289.0          26162.0
China                325511.0                  17205.0          25305.0
China                323758.0                  16846.0          23933.0
China                320315.0                  16377.0          22477.0
China                315647.0                  16504.0          20915.0
China                311593.0                  15467.0          19407.0
China                306420.0                  14665.0          17930.0
China                300603.0                  14047.0          16588.0
China                297422.0                  13430.0          15359.0
China                298457.0                  12925.0          14446.0
China                302427.0                  12911.0          13143.0
China                304363.0                  11924.0          11459.0
China                308400.0                  11754.0           9706.0
China                312770.0                  11998.0           8001.0
China                318172.0                  12410.0           6840.0
China                314833.0                  12271.0           6039.0
China                305990.0                  11739.0           5510.0
China                273724.0                  10829.0           4080.0
China                273223.0                  10914.0           3843.0
China                277142.0                  11096.0           3726.0

[30 rows x 33 columns]
```

[ ]:
```
#EUA
df_unites.describe()
```

[ ]:
```
              year   meningitis  alzheimer's_diesease  parkinson's_disease  \
count    30.000000    30.000000             30.000000            30.000000
mean   2004.500000  1334.400000         110086.966667         22042.933333
```

```
std       8.803408   199.012666          19757.283337          5875.396485
min    1990.000000  1102.000000          73079.000000         12895.000000
25%    1997.250000  1141.250000          95947.500000         16746.000000
50%    2004.500000  1290.500000         108236.000000         22338.500000
75%    2011.750000  1514.000000         126504.000000         26616.500000
max    2019.000000  1830.000000         143919.000000         32211.000000

       nutritional_deficiency  malaria     drowning  interpersonal_violence  \
count                30.00000     30.0    30.000000                30.000000
mean               4434.80000      0.0  3825.066667             19893.933333
std                 910.49681      0.0   179.842064              2870.394325
min                2795.00000      0.0  3606.000000             16618.000000
25%                4043.00000      0.0  3721.750000             18105.500000
50%                4382.00000      0.0  3770.500000             18871.000000
75%                4754.00000      0.0  3862.250000             20230.000000
max                6090.00000      0.0  4370.000000             26081.000000

       maternal_disorders      hiv/aids  …  chronic_kidney_disease  \
count           30.000000     30.000000  …               30.000000
mean           840.200000  17613.900000  …            67283.233333
std            275.032964  11956.977583  …            24602.902169
min            489.000000   7053.000000  …            33101.000000
25%            535.000000   8086.750000  …            44147.250000
50%            955.500000  14127.500000  …            65246.500000
75%           1075.500000  18865.500000  …            88641.250000
max           1252.000000  45213.000000  …           106954.000000

        poisonings  protein_energy_malnutrition    terrorism  road_injuries  \
count    30.000000                    30.000000    27.000000      30.000000
mean   1341.966667                  4034.333333   130.925926   45324.800000
std     173.044639                   919.310661   576.316615    3401.309742
min    1079.000000                  2419.000000     0.000000   39785.000000
25%    1198.000000                  3585.000000     1.500000   41895.500000
50%    1336.500000                  4000.500000     4.000000   47190.500000
75%    1483.000000                  4335.250000    21.500000   48027.250000
max    1642.000000                  5710.000000  3008.000000   49318.000000

       chronic_respiratory_diseases  chronic_liver_diseases  \
count                     30.000000               30.000000
mean                  164968.400000            50477.500000
std                    34211.827894            10219.366877
min                   106098.000000            37386.000000
25%                   137074.000000            40852.000000
50%                   165359.500000            48857.500000
75%                   190558.250000            58912.750000
max                   224988.000000            67286.000000
```

```
       digestive_diseases  fire_heat_hot_substance  acute_hepatitis
count           30.000000                30.000000        30.000000
mean        100898.100000              4223.733333       195.033333
std          15863.267575               532.044718        67.106957
min          78301.000000              3416.000000       120.000000
25%          86576.250000              3804.000000       129.000000
50%          99420.000000              4209.500000       195.500000
75%         112832.250000              4471.500000       253.500000
max         129343.000000              5336.000000       323.000000

[8 rows x 33 columns]
```

- El promedio de gente muerta en 30 años, desde 1990 hasta 2019, por enfermedad:
- por meninguitis: 1334
- por violencia interpersonal: 19893
- .....
- El minimo y maximo numero de muertes que hubo en esos 30 años en un año determinado por enfermedad:
- Por violencia interpersonal: 16618.000000 y 26081.000000
- ....etc

[ ]:
```
df_unites.shape
```

[ ]:
```
(30, 33)
```

[ ]:
```
#data nula de eua
df_unites.isnull().sum()
```

[ ]:
```
year                                0
meningitis                          0
alzheimer's_diesease                0
parkinson's_disease                 0
nutritional_deficiency              0
malaria                             0
drowning                            0
interpersonal_violence              0
maternal_disorders                  0
hiv/aids                            0
drug_use_disorders                  0
tuberculosis                        0
cardiovascular_diseases             0
lower_respiratory_infections        0
neonatal_disorders                  0
alcohol_use_disorders               0
self_harm                           0
exposure_to_forces_of_nature        0
diarrheal_diseases                  0
```

```
environmental_heat_and_cold_exposure    0
neoplasms                               0
conflict_and_terrorism                  0
diabetes_mellitus                       0
chronic_kidney_disease                  0
poisonings                              0
protein_energy_malnutrition             0
terrorism                               3
road_injuries                           0
chronic_respiratory_diseases            0
chronic_liver_diseases                  0
digestive_diseases                      0
fire_heat_hot_substance                 0
acute_hepatitis                         0
dtype: int64
```

[ ]:
```
#china
df_chi.describe()
```

[ ]:
```
              year    meningitis  alzheimer's_diesease  parkinson's_disease  \
count    30.000000     30.000000             30.000000            30.000000
mean   2004.500000  16029.966667         179394.866667         51103.066667
std       8.803408  10592.869226          69154.539350         13801.021042
min    1990.000000   6465.000000          93316.000000         31920.000000
25%    1997.250000   8091.000000         117808.250000         38094.000000
50%    2004.500000   9899.500000         167423.000000         51351.000000
75%    2011.750000  23361.500000         230955.000000         62425.250000
max    2019.000000  37473.000000         320715.000000         76990.000000

       nutritional_deficiency      malaria      drowning  \
count               30.000000    30.000000      30.00000
mean             19474.533333   447.266667   95787.30000
std               9878.354860   676.220375   32654.10694
min              10611.000000     0.000000   56524.00000
25%              12052.500000     2.250000   65506.50000
50%              16079.500000    40.000000   88215.00000
75%              23990.750000   942.000000  124027.75000
max              42446.000000  2245.000000  153773.00000

       interpersonal_violence  maternal_disorders      hiv/aids  …  \
count               30.000000           30.000000     30.000000  …
mean             25875.833333         8108.566667  14456.966667  …
std               9675.094818         5247.966579   8608.553567  …
min              11970.000000         1537.000000   2698.000000  …
25%              16502.000000         3098.750000   7603.750000  …
50%              27224.000000         6938.500000  14107.500000  …
75%              34770.000000        13664.000000  16986.750000  …
```

```
max              40143.000000        17400.000000  31746.000000  …

       chronic_kidney_disease    poisonings  protein_energy_malnutrition  \
count               30.000000     30.000000                    30.000000
mean            139842.533333  25671.333333                16922.133333
std              32386.190419   3783.090967                10299.718017
min              98607.000000  20528.000000                 7878.000000
25%             108000.750000  21503.750000                 9166.750000
50%             139913.500000  26972.500000                12556.000000
75%             168578.750000  29023.000000                22358.000000
max             196726.000000  30883.000000                40380.000000

        terrorism  road_injuries  chronic_respiratory_diseases  \
count   25.000000      30.000000                  3.000000e+01
mean    39.520000  278346.633333                  1.222561e+06
std     72.493747   36633.979027                  1.270699e+05
min      0.000000  226374.000000                  1.029418e+06
25%      5.000000  249110.750000                  1.092912e+06
50%     13.000000  274365.000000                  1.288362e+06
75%     37.000000  315109.750000                  1.335090e+06
max    322.000000  329237.000000                  1.366039e+06

       chronic_liver_diseases  digestive_diseases  fire_heat_hot_substance  \
count               30.000000           30.000000                30.000000
mean            163963.300000       297496.866667             12780.066667
std               9362.052417        18175.895663              2195.396264
min             148056.000000       270036.000000             10738.000000
25%             156091.750000       278801.750000             11110.000000
50%             166432.500000       299530.000000             11839.000000
75%             169692.500000       312475.750000             13892.750000
max             179149.000000       325511.000000             17289.000000

       acute_hepatitis
count        30.000000
mean      10618.800000
std        7629.913998
min        3726.000000
25%        4217.500000
50%        6439.500000
75%       16280.750000
max       26162.000000

[8 rows x 33 columns]
```

- Se puede hacer el mismo analisis que con eua (se omite aqui por practicidad)

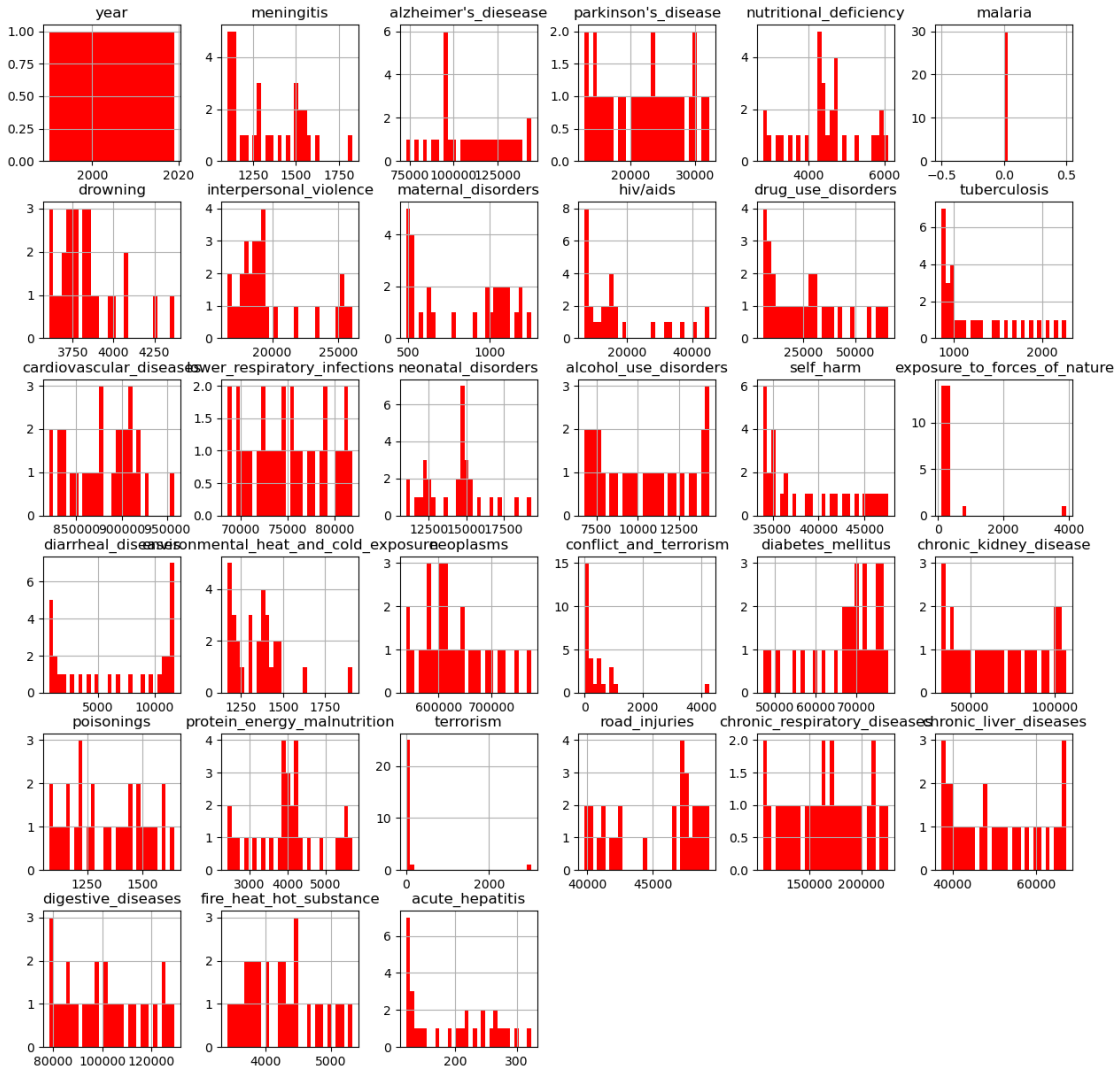
[ ]:
```
#data nula de china
df_chi.isnull().sum()
```

[ ]:
```
year                                    0
meningitis                              0
alzheimer's_diesease                    0
parkinson's_disease                     0
nutritional_deficiency                  0
malaria                                 0
drowning                                0
interpersonal_violence                  0
maternal_disorders                      0
hiv/aids                                0
drug_use_disorders                      0
tuberculosis                            0
cardiovascular_diseases                 0
lower_respiratory_infections            0
neonatal_disorders                      0
alcohol_use_disorders                   0
self_harm                               0
exposure_to_forces_of_nature            0
diarrheal_diseases                      0
environmental_heat_and_cold_exposure    0
neoplasms                               0
conflict_and_terrorism                  0
diabetes_mellitus                       0
chronic_kidney_disease                  0
poisonings                              0
protein_energy_malnutrition             0
terrorism                               5
road_injuries                           0
chronic_respiratory_diseases            0
chronic_liver_diseases                  0
digestive_diseases                      0
fire_heat_hot_substance                 0
acute_hepatitis                         0
dtype: int64
```

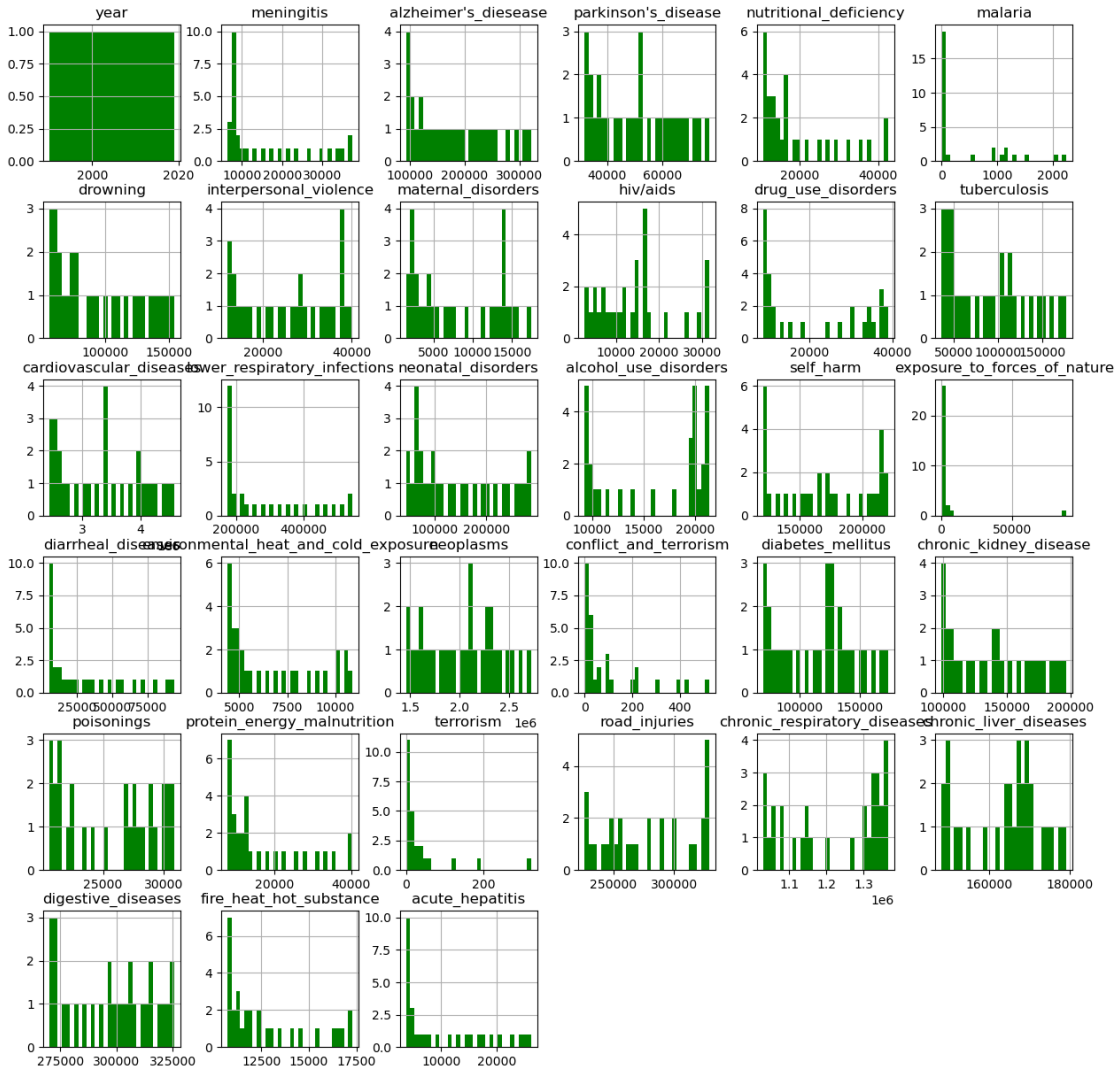
Notamos que en los datasets de eua y china hay data nula minima, podemos rellenarla con algun metodo, pero al ser menos del 15% de la data total de la observacion correspondiente, lo omitimos.

3.0.1 Visuzalizaciones

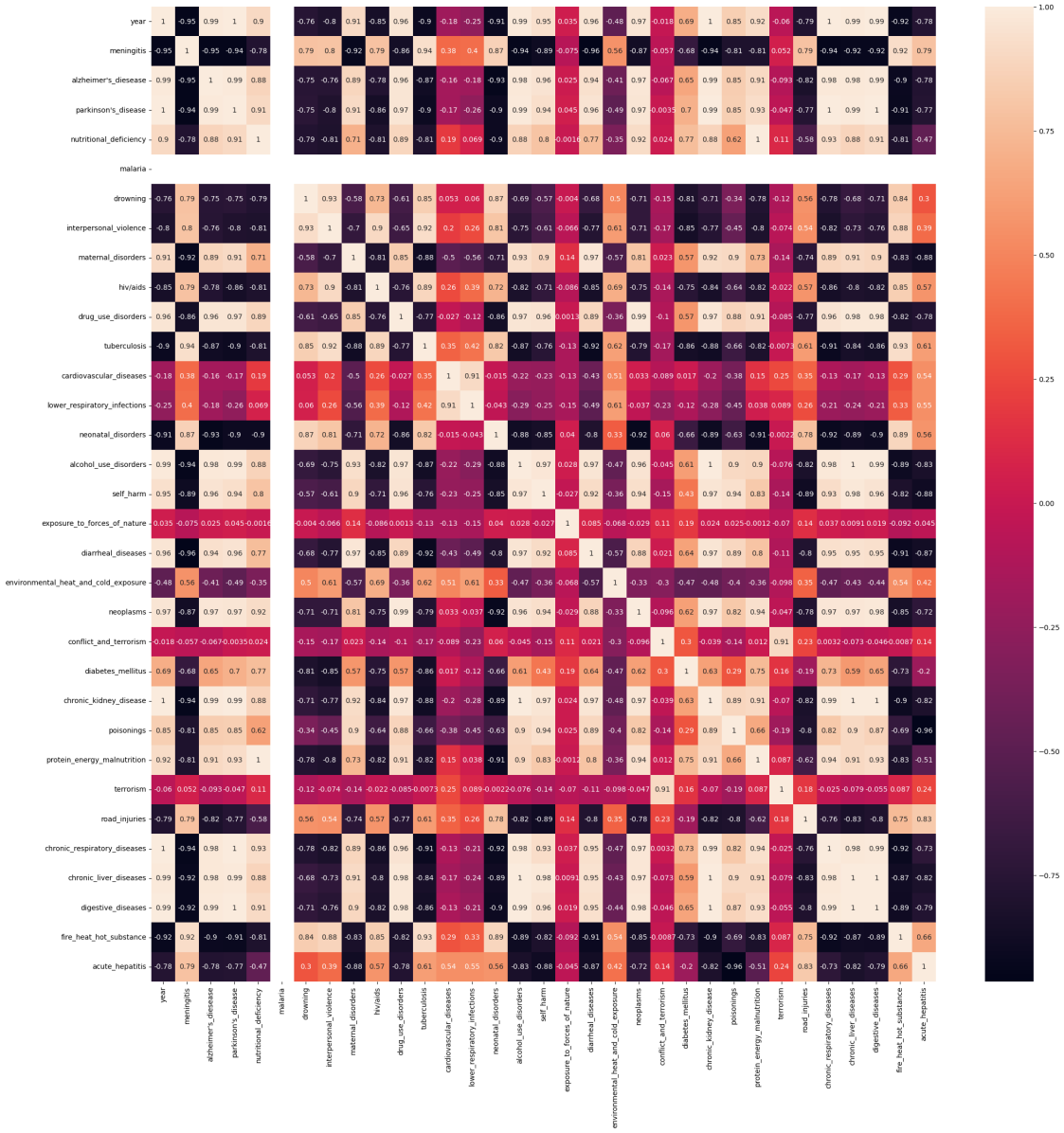
[ ]:
```
#distribuciones de las enfermedades en EUA
df_unites.hist(bins=30, figsize=(15, 15), color='r')
plt.show()
```



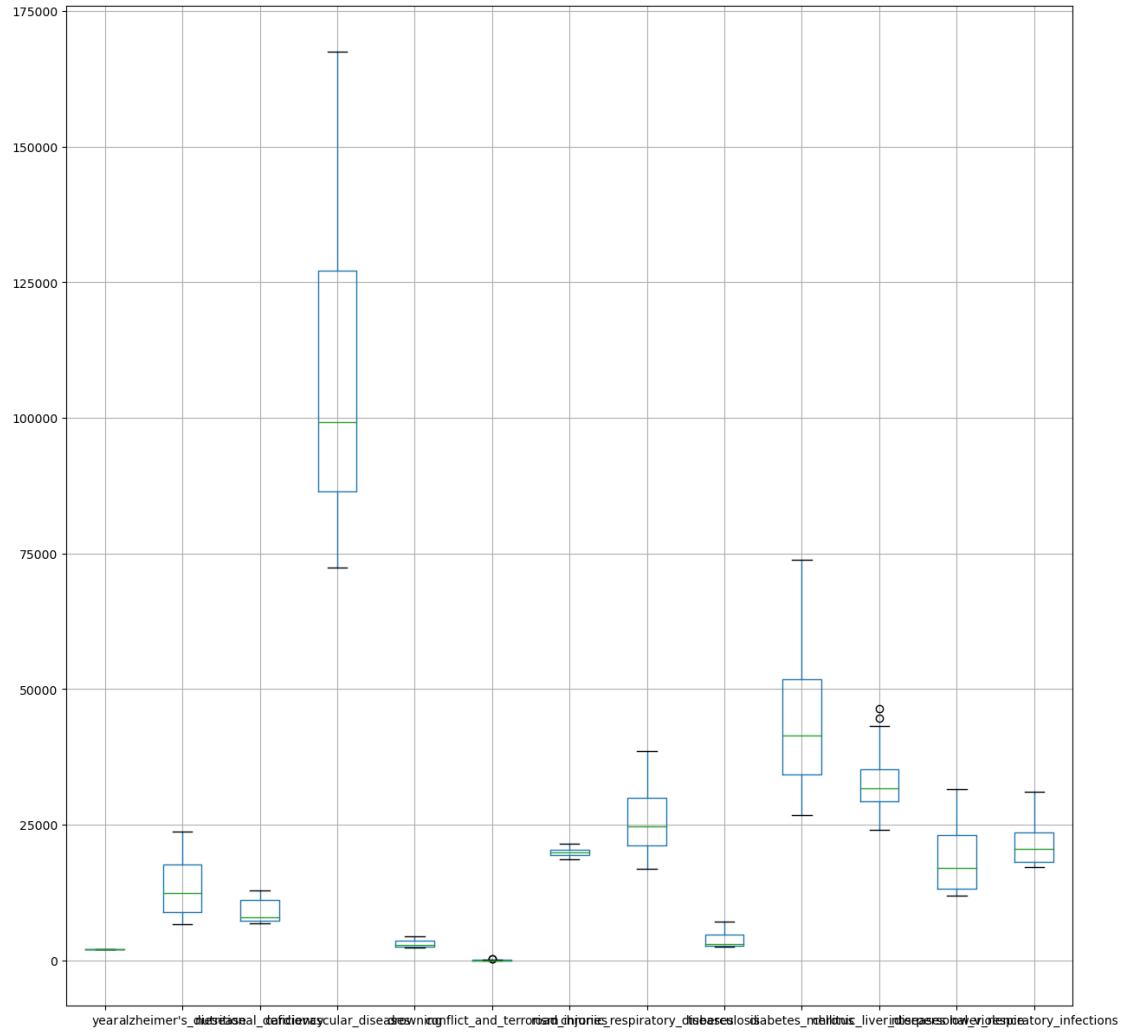
[ ]:
```
#china
df_chi.hist(bins=30, figsize=(15, 15), color='g')
plt.show()
```



[ ]:
```
#matriz de correlaciones (en forma de calor para saber el grado de relacion␣
 ↪lineal entre las variables)
correlations=df_unites.corr()
f, ax = plt.subplots(figsize = (25,25))
sns.heatmap(correlations, annot=True)
plt.show()
```

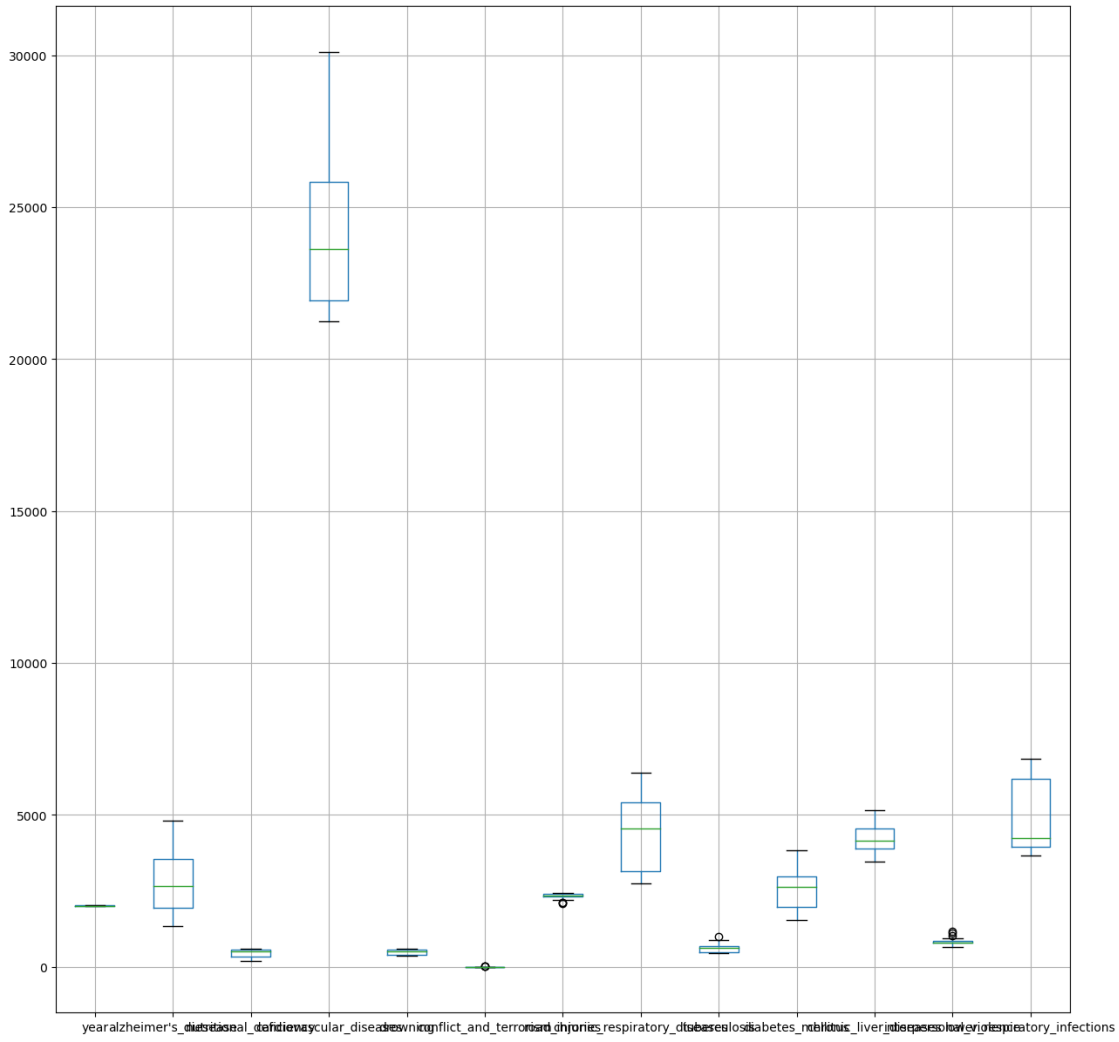


[ ]:
```
#EUA, box plot
df_unites.boxplot(figsize=(15,15))
plt.show()
```



[ ]:
```
#para china
correlations=df_chi.corr()
f, ax = plt.subplots(figsize = (25,25))
sns.heatmap(correlations, annot=True)
plt.show()
```

[ ]:
```
#china
df_chi.boxplot(figsize=(15,15))
plt.show()
```



Para estos ultimos 4 graficos se le puede dar un analisis mucho mas profundo y obtener insights.

[ ]:
```
df_unites.head(2)
```

[ ]:
```
                year  meningitis  alzheimer's_diesease  parkinson's_disease  \
country
United States  2007      1249.0              114585.0              23705.0
United States  2008      1223.0              117064.0              24369.0

               nutritional_deficiency  malaria  drowning  \
country
United States                  4238.0      0.0    3864.0
United States                  4280.0      0.0    3819.0

               interpersonal_violence  maternal_disorders  hiv/aids  …  \
```

```
country                                                        …
United States                19370.0             1062.0   12444.0  …
United States                18716.0             1103.0   11400.0  …

              chronic_kidney_disease  poisonings  \
country
United States                72852.0      1414.0
United States                76152.0      1435.0

              protein_energy_malnutrition  terrorism  road_injuries  \
country
United States                       3861.0        0.0        46498.0
United States                       3907.0        2.0        44535.0

              chronic_respiratory_diseases  chronic_liver_diseases  \
country
United States                      172341.0                51575.0
United States                      177366.0                53086.0

              digestive_diseases  fire_heat_hot_substance  acute_hepatitis
country
United States            103120.0                   4301.0            152.0
United States            105255.0                   3927.0            144.0

[2 rows x 33 columns]
```

[ ]:
```
df_unites.columns
```

[ ]:
```
Index(['year', 'meningitis', 'alzheimer's_diesease', 'parkinson's_disease',
       'nutritional_deficiency', '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',
       'terrorism', 'road_injuries', 'chronic_respiratory_diseases',
       'chronic_liver_diseases', 'digestive_diseases',
       'fire_heat_hot_substance', 'acute_hepatitis'],
      dtype='object')
```

[ ]:
```
df_unites.shape
```

[ ]:
```
(30, 33)
```

[ ]:
```
#ordenamos del menor año al mayor año
df_unites = df_unites.sort_values('year', ascending=True)
df_unites.head(30)
```

[ ]:

country	year	meningitis	alzheimer's_diesease	parkinson's_disease	\
United States	1990	1830.0	73079.0	12895.0	
United States	1991	1615.0	78365.0	13217.0	
United States	1992	1558.0	83053.0	13600.0	
United States	1993	1550.0	87768.0	14301.0	
United States	1994	1530.0	91491.0	14816.0	
United States	1995	1514.0	94855.0	15434.0	
United States	1996	1504.0	96526.0	15962.0	
United States	1997	1514.0	96342.0	16545.0	
United States	1998	1517.0	95816.0	17349.0	
United States	1999	1566.0	95512.0	18354.0	
United States	2000	1458.0	96426.0	19242.0	
United States	2001	1399.0	98558.0	20082.0	
United States	2002	1367.0	101170.0	20907.0	
United States	2003	1344.0	104024.0	21562.0	
United States	2004	1293.0	106572.0	21922.0	
United States	2005	1288.0	109900.0	22755.0	
United States	2006	1273.0	112291.0	23243.0	
United States	2007	1249.0	114585.0	23705.0	
United States	2008	1223.0	117064.0	24369.0	
United States	2009	1186.0	118965.0	24760.0	
United States	2010	1141.0	121781.0	25309.0	
United States	2011	1126.0	124656.0	26123.0	
United States	2012	1108.0	127120.0	26781.0	
United States	2013	1106.0	129640.0	27531.0	
United States	2014	1102.0	131616.0	28193.0	
United States	2015	1115.0	134411.0	29081.0	
United States	2016	1131.0	136673.0	29748.0	
United States	2017	1137.0	138750.0	30014.0	
United States	2018	1142.0	141681.0	31277.0	
United States	2019	1146.0	143919.0	32211.0	

country	nutritional_deficiency	malaria	drowning	\
United States	2795.0	0.0	4370.0	
United States	2855.0	0.0	4246.0	
United States	2945.0	0.0	4069.0	
United States	3148.0	0.0	4075.0	
United States	3312.0	0.0	3999.0	
United States	3530.0	0.0	3967.0	
United States	3741.0	0.0	3857.0	
United States	3978.0	0.0	3810.0	

```
United States                  4263.0      0.0    3831.0
United States                  4617.0      0.0    3749.0
United States                  4760.0      0.0    3728.0
United States                  4736.0      0.0    3720.0
United States                  4704.0      0.0    3772.0
United States                  4570.0      0.0    3761.0
United States                  4392.0      0.0    3747.0
United States                  4372.0      0.0    3850.0
United States                  4257.0      0.0    3888.0
United States                  4238.0      0.0    3864.0
United States                  4280.0      0.0    3819.0
United States                  4277.0      0.0    3753.0
United States                  4367.0      0.0    3684.0
United States                  4538.0      0.0    3669.0
United States                  4707.0      0.0    3647.0
United States                  4943.0      0.0    3606.0
United States                  5268.0      0.0    3627.0
United States                  5661.0      0.0    3727.0
United States                  5952.0      0.0    3846.0
United States                  5814.0      0.0    3769.0
United States                  5934.0      0.0    3687.0
United States                  6090.0      0.0    3615.0

               interpersonal_violence  maternal_disorders  hiv/aids  … \
country                                                              …
United States                 25341.0               538.0   27789.0  …
United States                 26081.0               525.0   32425.0  …
United States                 25307.0               509.0   36485.0  …
United States                 25598.0               511.0   40523.0  …
United States                 24898.0               524.0   44959.0  …
United States                 23477.0               489.0   45213.0  …
United States                 21706.0               508.0   33684.0  …
United States                 20385.0               534.0   19425.0  …
United States                 19286.0               508.0   15921.0  …
United States                 18421.0               575.0   17187.0  …
United States                 18204.0               617.0   16072.0  …
United States                 18723.0               644.0   15493.0  …
United States                 18979.0               634.0   15477.0  …
United States                 18911.0               793.0   15100.0  …
United States                 18767.0               921.0   14416.0  …
United States                 19380.0              1007.0   13839.0  …
United States                 19765.0              1042.0   13265.0  …
United States                 19370.0              1062.0   12444.0  …
United States                 18716.0              1103.0   11400.0  …
United States                 17944.0              1080.0   10551.0  …
United States                 17329.0               991.0    9143.0  …
United States                 17224.0              1050.0    8428.0  …
```

```
United States                17577.0             1090.0    7973.0  …
United States                16767.0             1172.0    7682.0  …
United States                16618.0             1188.0    7413.0  …
United States                18164.0             1200.0    7089.0  …
United States                19254.0             1252.0    7430.0  …
United States                18831.0             1101.0    7338.0  …
United States                18086.0             1048.0    7200.0  …
United States                17709.0              990.0    7053.0  …

              chronic_kidney_disease  poisonings  \
country
United States                33101.0      1330.0
United States                33885.0      1282.0
United States                34919.0      1225.0
United States                36767.0      1216.0
United States                38199.0      1192.0
United States                39946.0      1161.0
United States                41627.0      1137.0
United States                43504.0      1109.0
United States                46077.0      1079.0
United States                49593.0      1086.0
United States                53052.0      1117.0
United States                56223.0      1161.0
United States                59027.0      1224.0
United States                61472.0      1265.0
United States                63437.0      1279.0
United States                67056.0      1343.0
United States                69954.0      1388.0
United States                72852.0      1414.0
United States                76152.0      1435.0
United States                78863.0      1448.0
United States                82391.0      1443.0
United States                86464.0      1477.0
United States                89367.0      1485.0
United States                92802.0      1501.0
United States                96182.0      1540.0
United States                99915.0      1591.0
United States               102601.0      1642.0
United States               101751.0      1599.0
United States               104364.0      1562.0
United States               106954.0      1528.0

              protein_energy_malnutrition  terrorism  road_injuries  \
country
United States                       2419.0        5.0        48970.0
United States                       2481.0        2.0        47833.0
United States                       2569.0        2.0        46690.0
```

United States	2748.0	NaN	47119.0
United States	2900.0	10.0	47262.0
United States	3103.0	178.0	47551.0
United States	3298.0	2.0	47416.0
United States	3519.0	2.0	47374.0
United States	3783.0	4.0	47341.0
United States	4122.0	20.0	47717.0
United States	4261.0	0.0	48207.0
United States	4255.0	3008.0	48737.0
United States	4237.0	4.0	49318.0
United States	4123.0	0.0	49243.0
United States	3977.0	0.0	48526.0
United States	3967.0	0.0	48654.0
United States	3866.0	1.0	48092.0
United States	3861.0	0.0	46498.0
United States	3907.0	2.0	44535.0
United States	3924.0	18.0	42561.0
United States	4024.0	4.0	40874.0
United States	4192.0	0.0	40383.0
United States	4360.0	7.0	39985.0
United States	4601.0	23.0	39785.0
United States	4918.0	26.0	40155.0
United States	5301.0	54.0	41198.0
United States	5586.0	68.0	42360.0
United States	5453.0	95.0	42206.0
United States	5565.0	NaN	41792.0
United States	5710.0	NaN	41362.0

country	chronic_respiratory_diseases	chronic_liver_diseases	\
United States	106098.0	37386.0	
United States	109587.0	37417.0	
United States	113036.0	37599.0	
United States	119371.0	38715.0	
United States	123547.0	39290.0	
United States	128157.0	40019.0	
United States	131733.0	40254.0	
United States	135669.0	40662.0	
United States	141289.0	41422.0	
United States	148677.0	42462.0	
United States	153230.0	43766.0	
United States	156917.0	45248.0	
United States	160322.0	46713.0	
United States	162757.0	47856.0	
United States	163040.0	48073.0	
United States	167679.0	49642.0	
United States	169726.0	50663.0	

United States	172341.0	51575.0
United States	177366.0	53086.0
United States	179468.0	54496.0
United States	182265.0	55472.0
United States	187463.0	57598.0
United States	191590.0	59351.0
United States	196459.0	61199.0
United States	200484.0	63045.0
United States	205998.0	64842.0
United States	209980.0	66395.0
United States	211269.0	65977.0
United States	218546.0	66816.0
United States	224988.0	67286.0

country	digestive_diseases	fire_heat_hot_substance	acute_hepatitis
United States	78301.0	5336.0	202.0
United States	78694.0	5204.0	210.0
United States	79310.0	4878.0	221.0
United States	81626.0	5100.0	232.0
United States	82913.0	4794.0	243.0
United States	84395.0	4688.0	257.0
United States	85128.0	4961.0	264.0
United States	86166.0	4472.0	275.0
United States	87807.0	4380.0	289.0
United States	90133.0	4342.0	323.0
United States	92314.0	4296.0	301.0
United States	94619.0	4470.0	282.0
United States	96726.0	4190.0	264.0
United States	98219.0	4470.0	242.0
United States	98223.0	4021.0	218.0
United States	100617.0	4040.0	189.0
United States	101979.0	4229.0	168.0
United States	103120.0	4301.0	152.0
United States	105255.0	3927.0	144.0
United States	106814.0	3753.0	137.0
United States	108110.0	3504.0	129.0
United States	111120.0	3714.0	124.0
United States	113403.0	3416.0	121.0
United States	116058.0	3831.0	120.0
United States	118754.0	3798.0	120.0
United States	121845.0	3822.0	120.0
United States	124438.0	3899.0	120.0
United States	124473.0	3577.0	124.0
United States	127040.0	3683.0	129.0
United States	129343.0	3616.0	131.0

[30 rows x 33 columns]

[ ]:
```
#ordenamos del mayor al menor año
df_chi = df_chi.sort_values('year', ascending=True)
df_chi.head(30)
```

[ ]:

country	year	meningitis	alzheimer's_diesease	parkinson's_disease	\
China	1990	37473.0	93316.0	31920.0	
China	1991	36834.0	95470.0	32607.0	
China	1992	35086.0	98135.0	33287.0	
China	1993	33396.0	100822.0	34129.0	
China	1994	31752.0	103621.0	34680.0	
China	1995	29319.0	106958.0	35450.0	
China	1996	26788.0	111481.0	36703.0	
China	1997	23987.0	116489.0	37807.0	
China	1998	21485.0	121766.0	38955.0	
China	1999	19295.0	127660.0	40894.0	
China	2000	16947.0	134438.0	43357.0	
China	2001	14740.0	141288.0	45240.0	
China	2002	12828.0	148675.0	47020.0	
China	2003	11265.0	156132.0	48660.0	
China	2004	10297.0	163879.0	50802.0	
China	2005	9502.0	170967.0	52138.0	
China	2006	8824.0	178510.0	51900.0	
China	2007	8407.0	187358.0	52766.0	
China	2008	8384.0	197380.0	54828.0	
China	2009	8394.0	208139.0	57485.0	
China	2010	8341.0	218436.0	60241.0	
China	2011	8193.0	225852.0	61781.0	
China	2012	8057.0	232656.0	62640.0	
China	2013	7971.0	239240.0	63853.0	
China	2014	7740.0	249056.0	65555.0	
China	2015	7553.0	259217.0	66761.0	
China	2016	7550.0	275481.0	69364.0	
China	2017	7228.0	291962.0	71490.0	
China	2018	6798.0	306747.0	73789.0	
China	2019	6465.0	320715.0	76990.0	

country	nutritional_deficiency	malaria	drowning	interpersonal_violence	\
China	42176.0	1535.0	153773.0	40143.0	
China	42446.0	2245.0	150399.0	39187.0	
China	37980.0	2061.0	144949.0	38179.0	
China	35265.0	1327.0	142119.0	37525.0	
China	32825.0	1146.0	138993.0	38146.0	
China	29567.0	1068.0	136083.0	37763.0	

China	27043.0	930.0	130813.0	36192.0	
China	24625.0	946.0	124856.0	34972.0	
China	22088.0	558.0	121543.0	34164.0	
China	19966.0	1142.0	115349.0	33074.0	
China	18083.0	120.0	111301.0	31227.0	
China	16332.0	35.0	105437.0	29311.0	
China	14403.0	60.0	100416.0	27998.0	
China	12952.0	46.0	94274.0	27976.0	
China	12030.0	51.0	90532.0	27869.0	
China	11457.0	44.0	85898.0	26579.0	
China	11083.0	36.0	79135.0	25011.0	
China	10611.0	21.0	76277.0	23339.0	
China	10623.0	15.0	73624.0	21775.0	
China	10874.0	9.0	72888.0	20659.0	
China	11293.0	12.0	70955.0	18926.0	
China	11739.0	11.0	66696.0	17477.0	
China	12120.0	0.0	65110.0	16177.0	
China	12748.0	0.0	63152.0	15134.0	
China	13528.0	0.0	62733.0	14194.0	
China	14487.0	0.0	61489.0	13512.0	
China	15827.0	0.0	61049.0	13076.0	
China	16572.0	0.0	59354.0	12523.0	
China	16630.0	0.0	57898.0	12197.0	
China	16863.0	0.0	56524.0	11970.0	

	maternal_disorders	hiv/aids	…	chronic_kidney_disease	\
country			…		
China	17400.0	2698.0	…	98607.0	
China	15505.0	3420.0	…	98875.0	
China	13867.0	4112.0	…	99808.0	
China	12866.0	4830.0	…	100190.0	
China	14144.0	5434.0	…	101945.0	
China	14848.0	6292.0	…	103512.0	
China	14353.0	6758.0	…	105289.0	
China	13783.0	7392.0	…	107266.0	
China	13838.0	8239.0	…	110205.0	
China	13307.0	9004.0	…	114372.0	
China	12385.0	9872.0	…	119415.0	
China	11121.0	11021.0	…	124066.0	
China	9215.0	11773.0	…	128709.0	
China	7814.0	12183.0	…	133206.0	
China	7286.0	13424.0	…	138884.0	
China	6591.0	15090.0	…	142274.0	
China	5755.0	14791.0	…	140943.0	
China	5014.0	14992.0	…	142069.0	
China	4534.0	16310.0	…	146413.0	
China	4207.0	16364.0	…	152838.0	

```
China                3762.0   16722.0  …                160396.0
China                3350.0   17075.0  …                165833.0
China                3015.0   16455.0  …                169494.0
China                2761.0   17728.0  …                173650.0
China                2340.0   21784.0  …                177089.0
China                2341.0   26060.0  …                179638.0
China                2510.0   29402.0  …                184528.0
China                2083.0   31031.0  …                187685.0
China                1725.0   31707.0  …                191351.0
China                1537.0   31746.0  …                196726.0

         poisonings  protein_energy_malnutrition  terrorism  road_injuries  \
country
China       22496.0                      40015.0        2.0       230499.0
China       21944.0                      40380.0        0.0       226876.0
China       21357.0                      36013.0        9.0       226374.0
China       20976.0                      33447.0        NaN       227370.0
China       20528.0                      31078.0       18.0       233459.0
China       20746.0                      27874.0        6.0       240786.0
China       20913.0                      25379.0       23.0       244790.0
China       20818.0                      23004.0       37.0       248806.0
China       21270.0                      20420.0       50.0       255467.0
China       21346.0                      18279.0        5.0       264540.0
China       22376.0                      16223.0        1.0       279743.0
China       23392.0                      14261.0        7.0       291418.0
China       24178.0                      12138.0        1.0       301638.0
China       25301.0                      10418.0        1.0       312967.0
China       26861.0                       9232.0        4.0       326303.0
China       27533.0                       8610.0       12.0       328533.0
China       27420.0                       8283.0        NaN       324080.0
China       27780.0                       7878.0        NaN       324159.0
China       28939.0                       7906.0       39.0       327299.0
China       30105.0                       8098.0      186.0       329237.0
China       30838.0                       8425.0        7.0       327545.0
China       30883.0                       8809.0       19.0       315824.0
China       30494.0                       9145.0       27.0       300970.0
China       30263.0                       9690.0       60.0       288937.0
China       29957.0                      10365.0      322.0       279949.0
China       29323.0                      11176.0      123.0       268987.0
China       29051.0                      12262.0       13.0       262951.0
China       28345.0                      12850.0       16.0       257068.0
China       27623.0                      12907.0        NaN       253799.0
China       27084.0                      13099.0        NaN       250025.0

         chronic_respiratory_diseases  chronic_liver_diseases  \
country
China                       1301224.0                167671.0
```

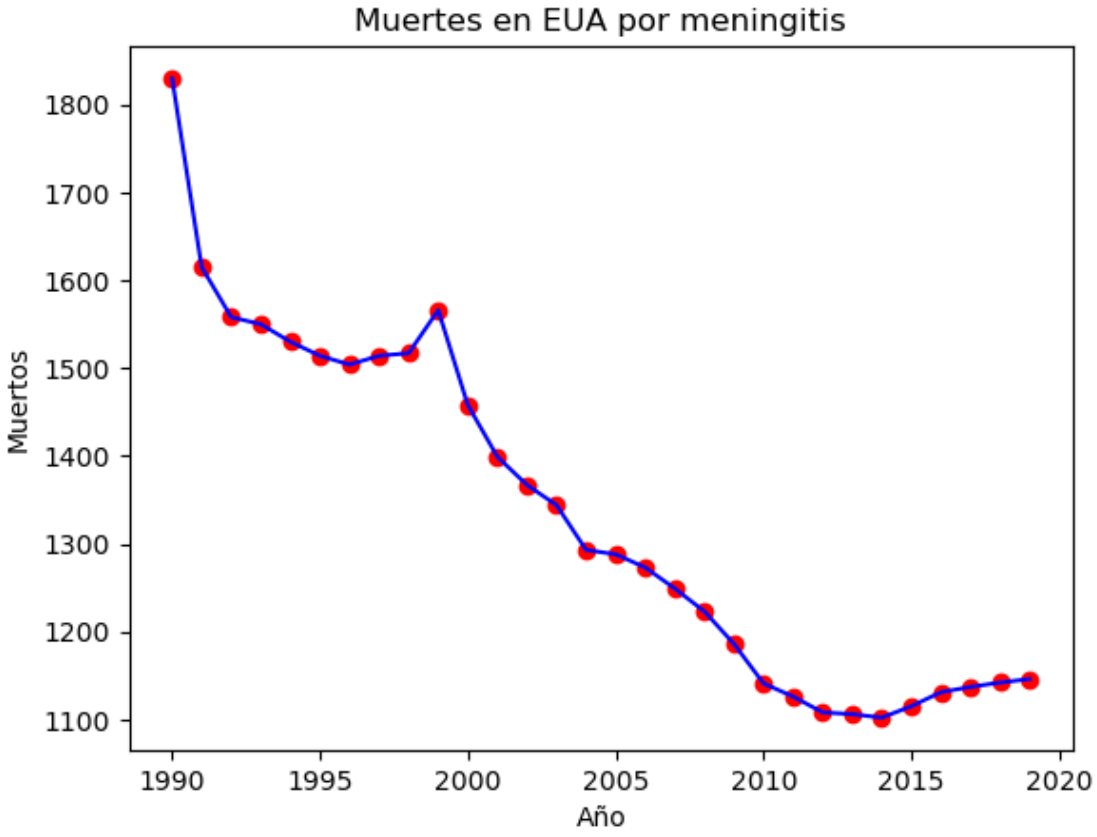
China	1324798.0	169742.0
China	1347922.0	169544.0
China	1364268.0	169199.0
China	1366039.0	167640.0
China	1360352.0	166990.0
China	1357793.0	165875.0
China	1342027.0	164192.0
China	1329613.0	163959.0
China	1335801.0	165625.0
China	1347045.0	168580.0
China	1332957.0	170622.0
China	1323164.0	173440.0
China	1310929.0	175987.0
China	1308091.0	179149.0
China	1275501.0	177980.0
China	1204710.0	174290.0
China	1161612.0	170433.0
China	1149016.0	167955.0
China	1145608.0	164921.0
China	1139700.0	162119.0
China	1115828.0	158710.0
China	1083590.0	155219.0
China	1058374.0	151718.0
China	1042132.0	149653.0
China	1029418.0	148056.0
China	1039047.0	148104.0
China	1040384.0	149472.0
China	1054610.0	149792.0
China	1085273.0	152262.0

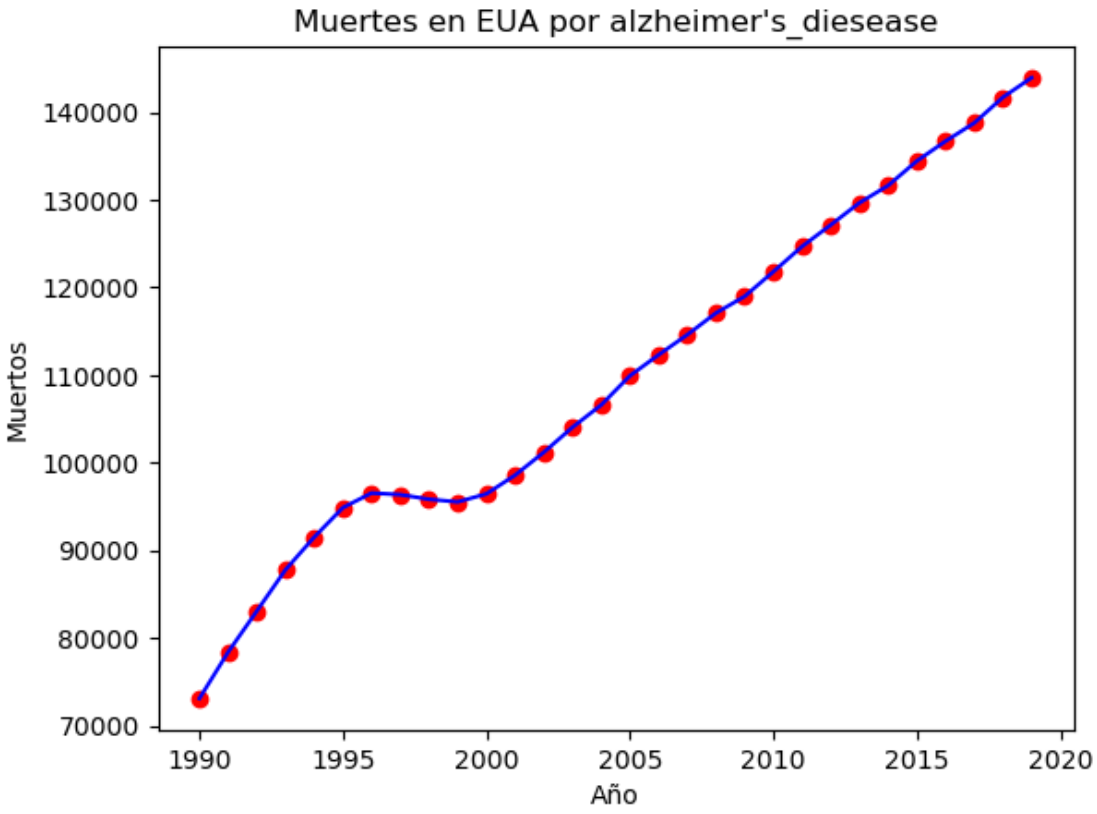
country	digestive_diseases	fire_heat_hot_substance	acute_hepatitis
China	322746.0	17289.0	26162.0
China	325511.0	17205.0	25305.0
China	323758.0	16846.0	23933.0
China	320315.0	16377.0	22477.0
China	315647.0	16504.0	20915.0
China	311593.0	15467.0	19407.0
China	306420.0	14665.0	17930.0
China	300603.0	14047.0	16588.0
China	297422.0	13430.0	15359.0
China	298457.0	12925.0	14446.0
China	302427.0	12911.0	13143.0
China	304363.0	11924.0	11459.0
China	308400.0	11754.0	9706.0
China	312770.0	11998.0	8001.0
China	318172.0	12410.0	6840.0

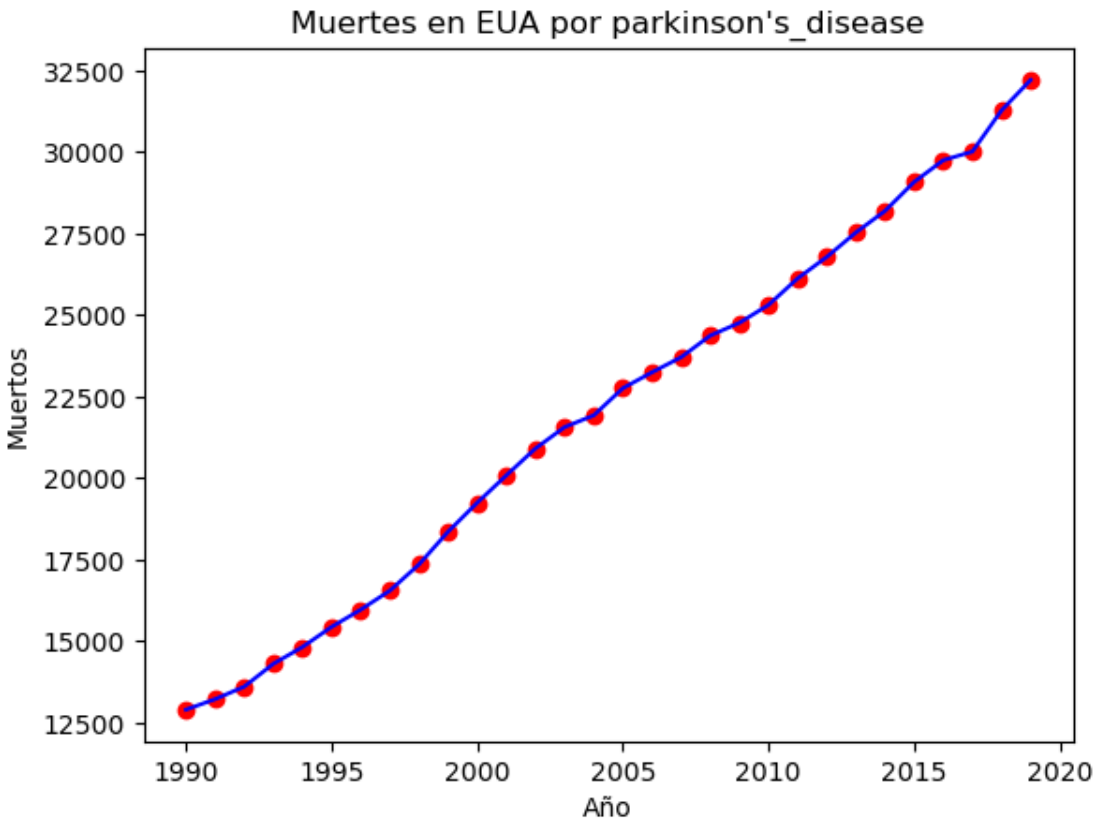
```
China                314833.0                12271.0          6039.0
China                305990.0                11739.0          5510.0
China                297567.0                11500.0          5017.0
China                292928.0                11363.0          4757.0
China                288756.0                11346.0          4509.0
China                285663.0                11362.0          4334.0
China                281834.0                11152.0          4212.0
China                277791.0                10934.0          4158.0
China                273718.0                10851.0          4160.0
China                271449.0                10766.0          4143.0
China                270036.0                10738.0          4171.0
China                271648.0                10789.0          4234.0
China                273724.0                10829.0          4080.0
China                273223.0                10914.0          3843.0
China                277142.0                11096.0          3726.0

[30 rows x 33 columns]
```

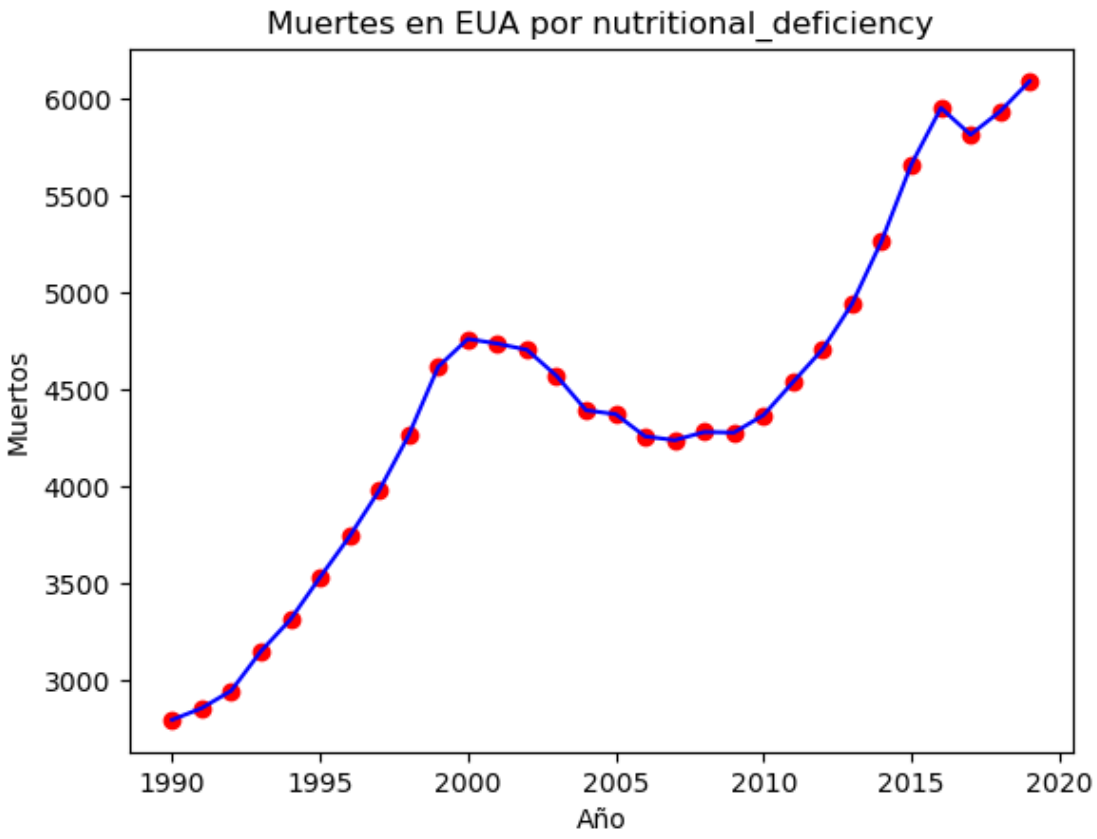
[ ]:
```python
#Graficos para EUA; variacion en las causas de muertes desde 1990 a 2019

# Lista de valores de i

i_values = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,␣
 ↪20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 30, 31, 32]

# Lista de valores de r
r_values = ['meningitis', "alzheimer's_diesease", "parkinson's_disease",
       'nutritional_deficiency', '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',
       'terrorism', 'road_injuries', 'chronic_respiratory_diseases',
       'chronic_liver_diseases', 'digestive_diseases',
       'fire_heat_hot_substance', 'acute_hepatitis']

# Iteramos sobre los valores de i y r
for i, r in zip(i_values, r_values):
    # Seleccionamos los datos correspondientes
    x_data = df_unites.iloc[:, [0]]
    y_data = df_unites.iloc[:, [i]]

    # Graficamos el gráfico de dispersión
    plt.plot(x_data, y_data, color='blue')
```

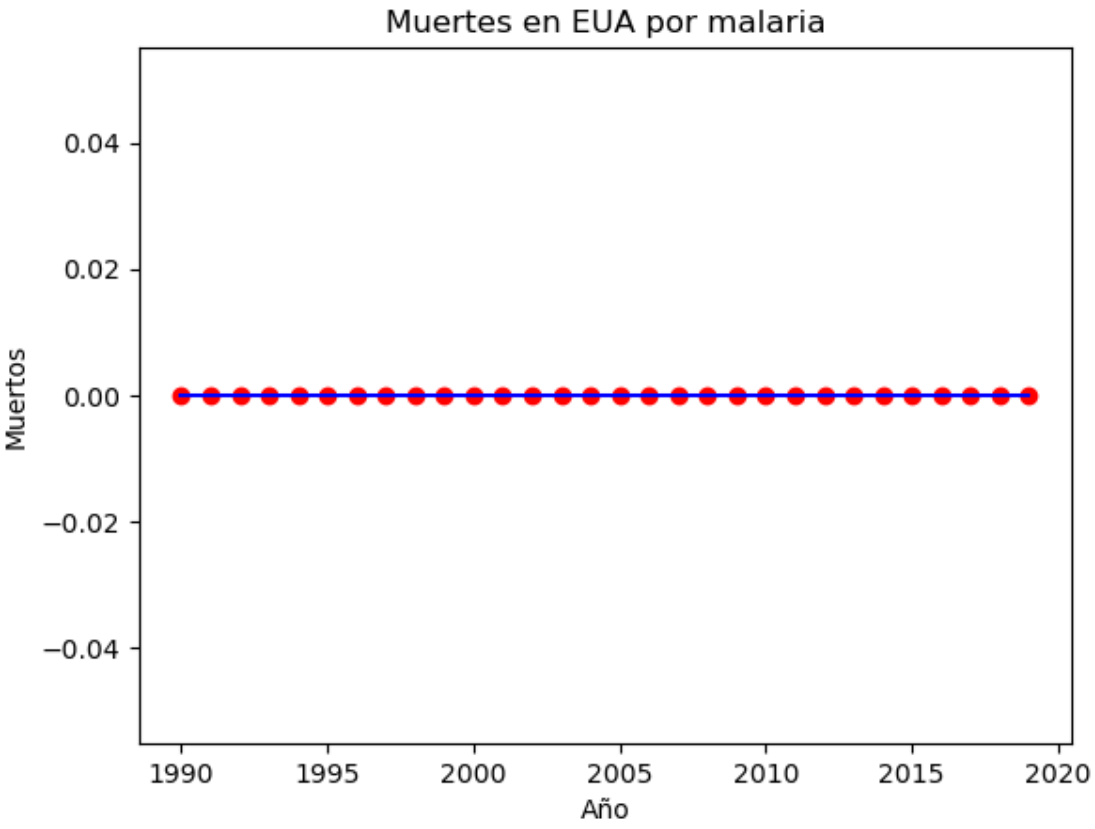
```
    plt.scatter(x_data, y_data, color='red')
    plt.title(f'Muertes en EUA por {r}')
    plt.xlabel('Año')
    plt.ylabel('Muertos')
    plt.show()
```

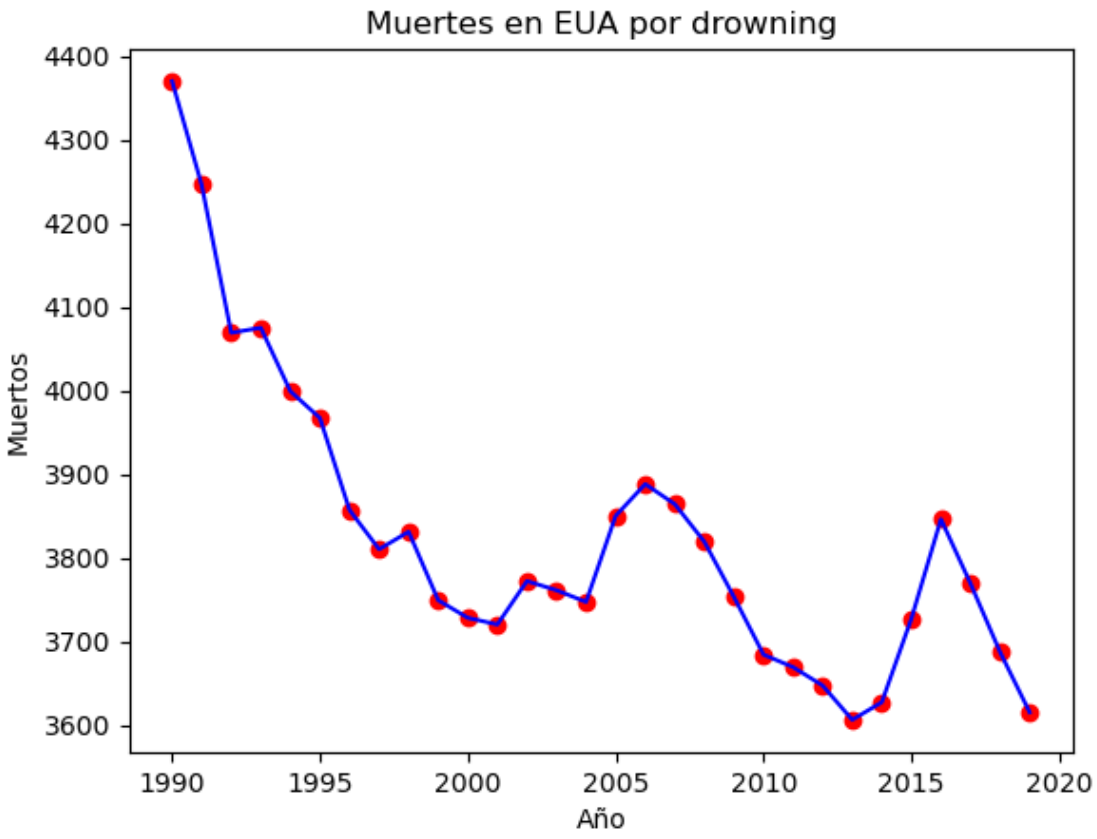


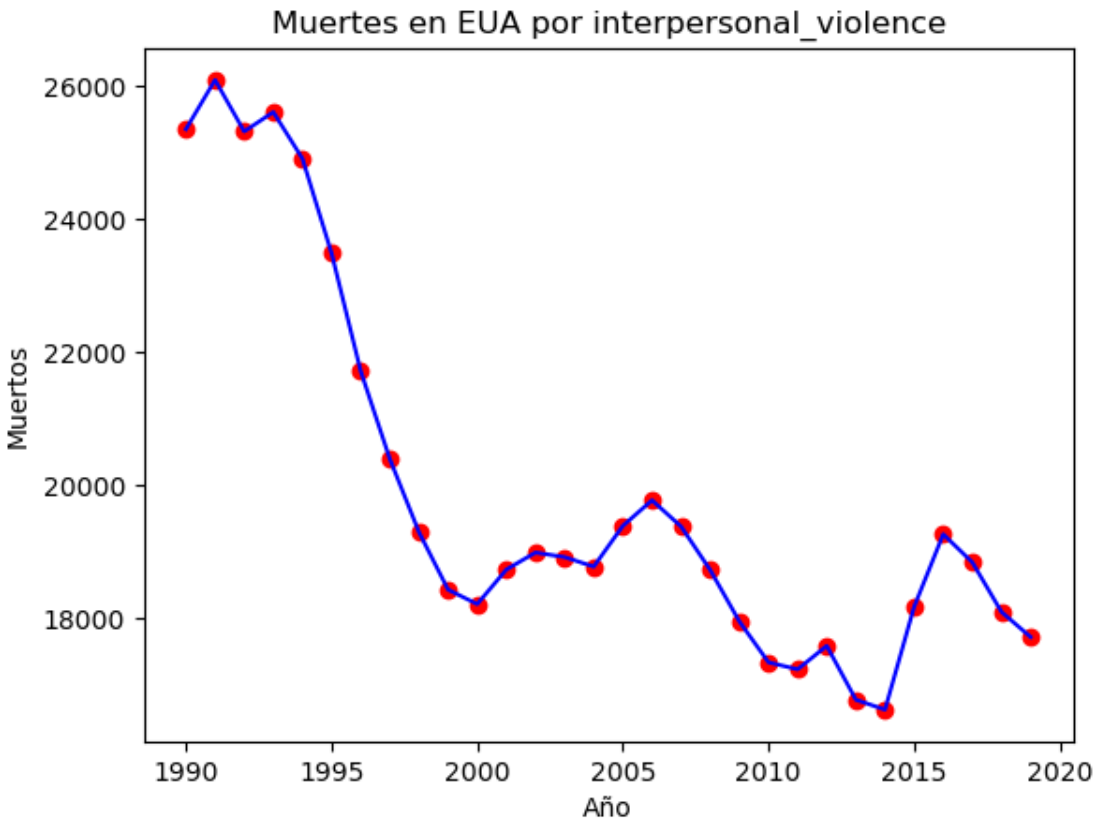

Muertes en EUA por alzheimer's_diesease
Muertos
140000
130000
120000
110000
100000
90000
80000
70000
1990
1995
2000
2005
2010
2015
2020
Año

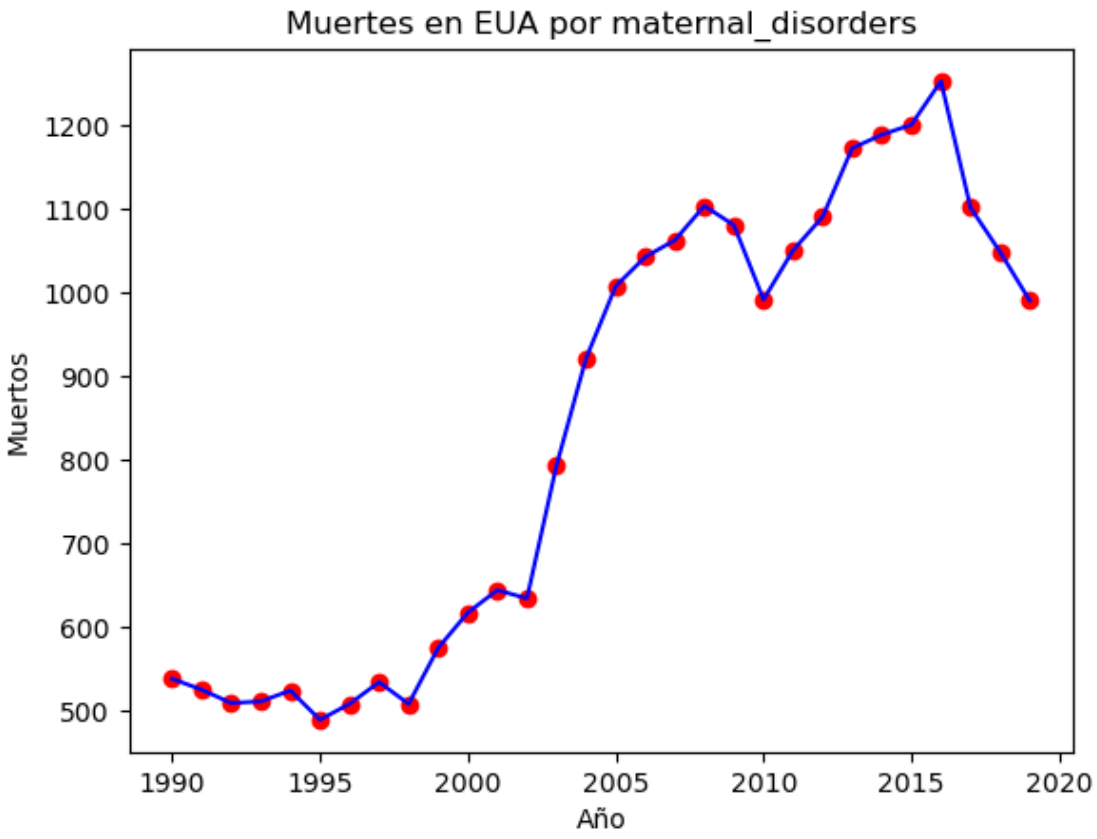

Muertes en EUA por parkinson's_disease
Muertos
Año
32500
30000
27500
25000
22500
20000
17500
15000
12500
1990
1995
2000
2005
2010
2015
2020

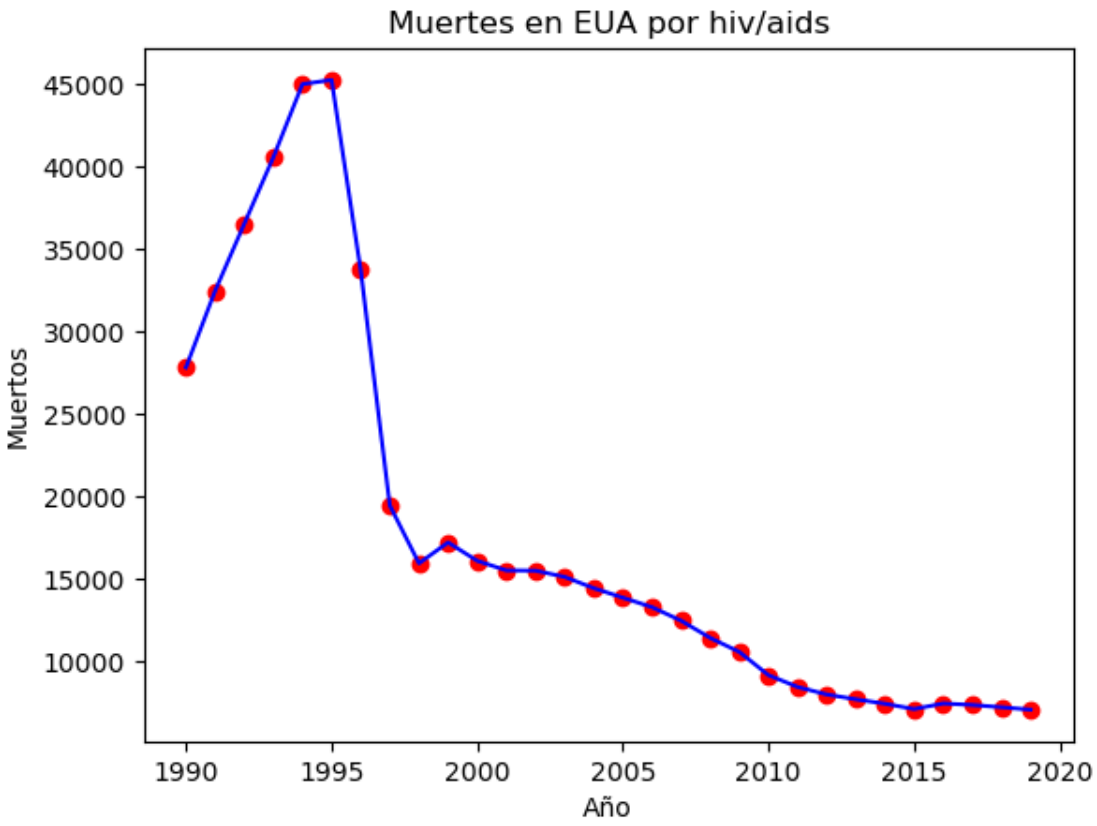

Muertes en EUA por nutritional_deficiency
Muertos
6000
5500
5000
4500
4000
3500
3000
1990
1995
2000
2005
2010
2015
2020
Año

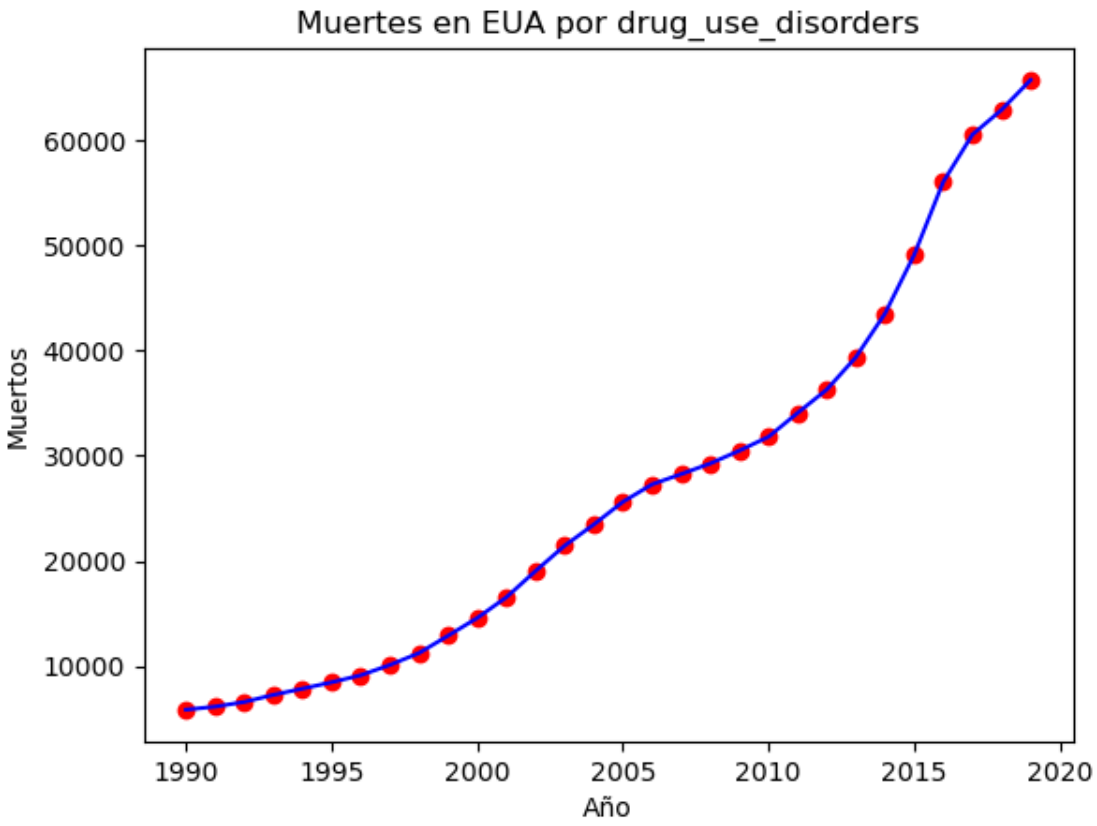

Muertes en EUA por malaria
Muertos
0.04
0.02
0.00
−0.02
−0.04
1990
1995
2000
2005
2010
2015
2020
Año

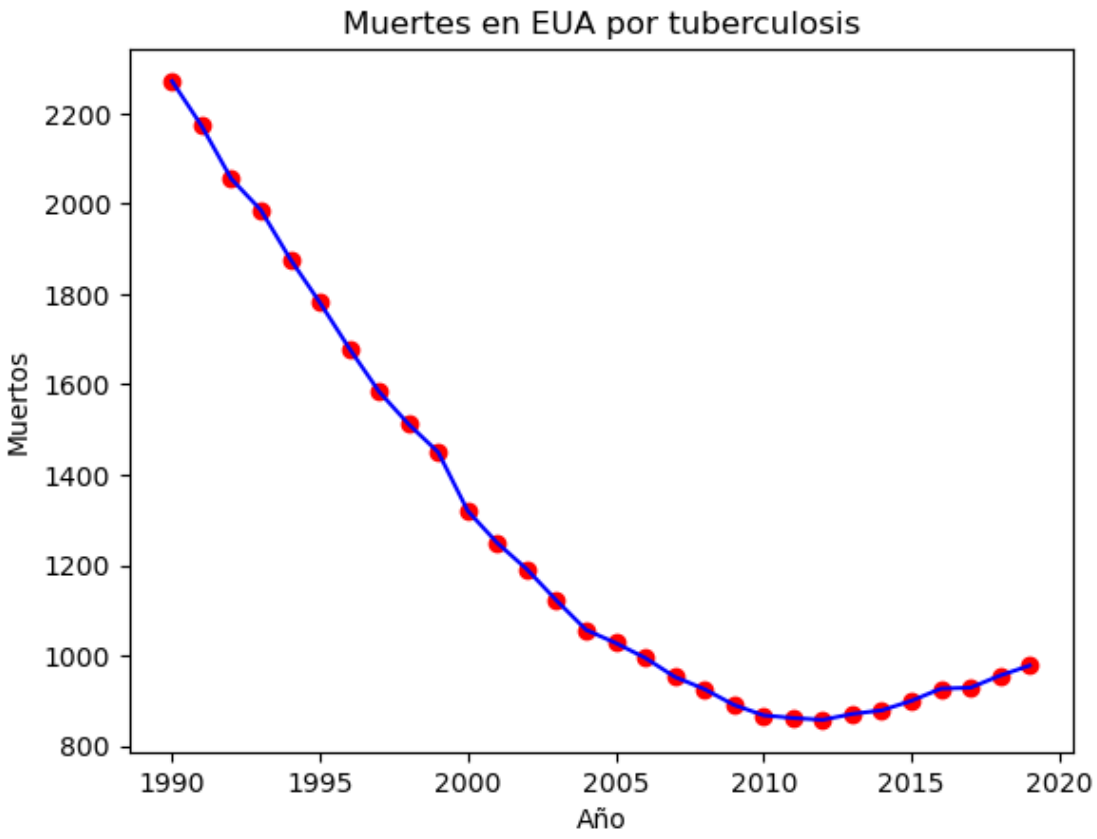

Muertes en EUA por drowning
Muertos
Año
4400
4300
4200
4100
4000
3900
3800
3700
3600
1990
1995
2000
2005
2010
2015
2020

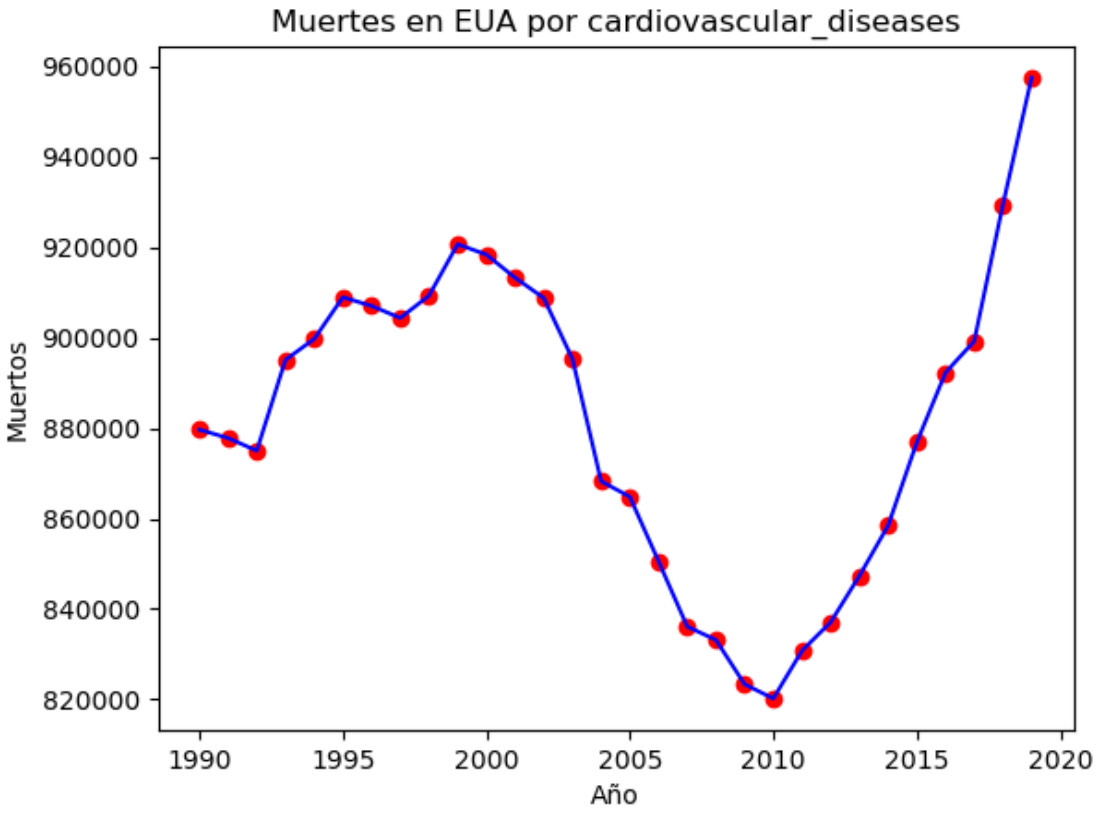

Muertes en EUA por interpersonal_violence
Muertos
26000
24000
22000
20000
18000
1990
1995
2000
2005
2010
2015
2020
Año

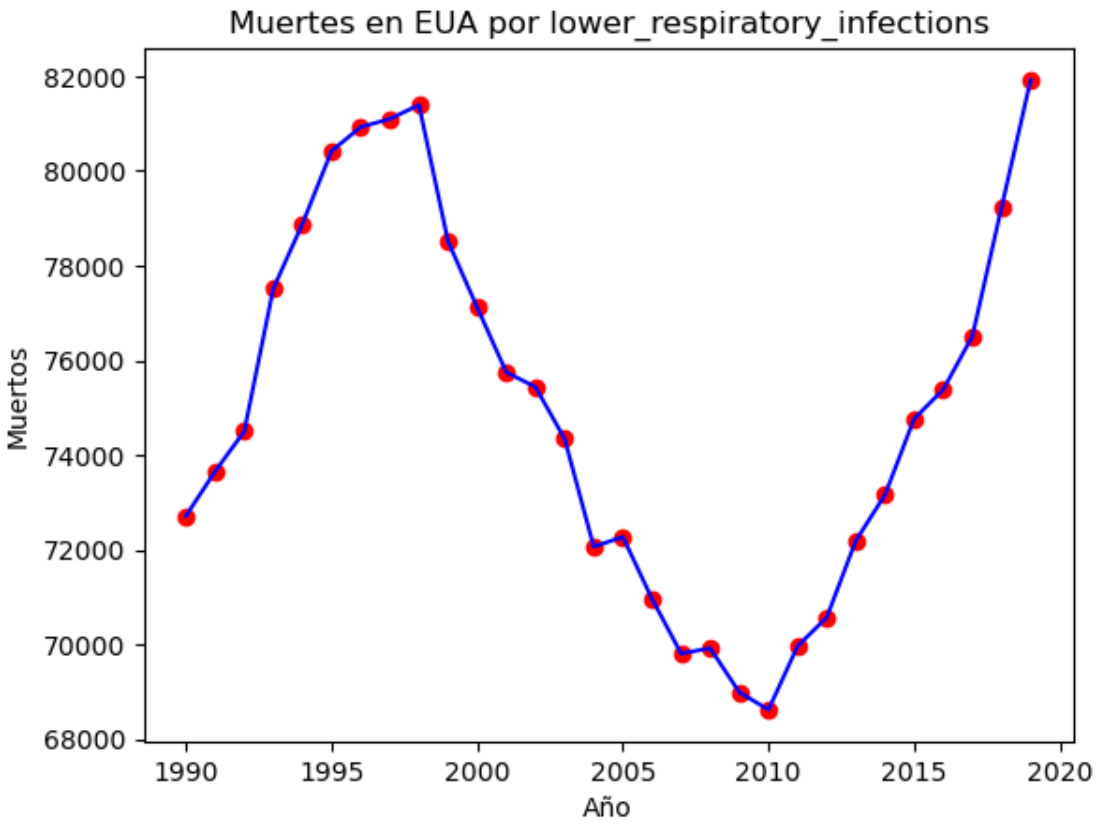

Muertes en EUA por maternal_disorders
Muertos
Año
1200
1100
1000
900
800
700
600
500
1990
1995
2000
2005
2010
2015
2020

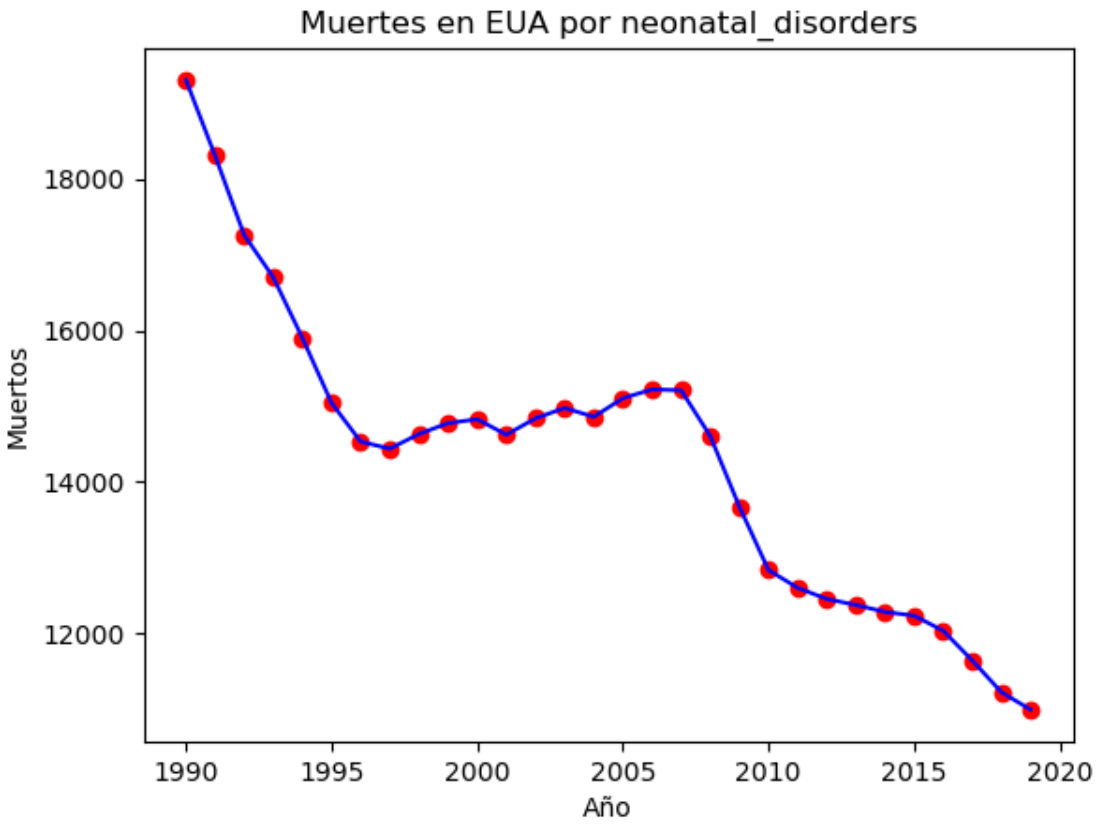

Muertes en EUA por hiv/aids
Muertos
45000
40000
35000
30000
25000
20000
15000
10000
1990
1995
2000
2005
2010
2015
2020
Año

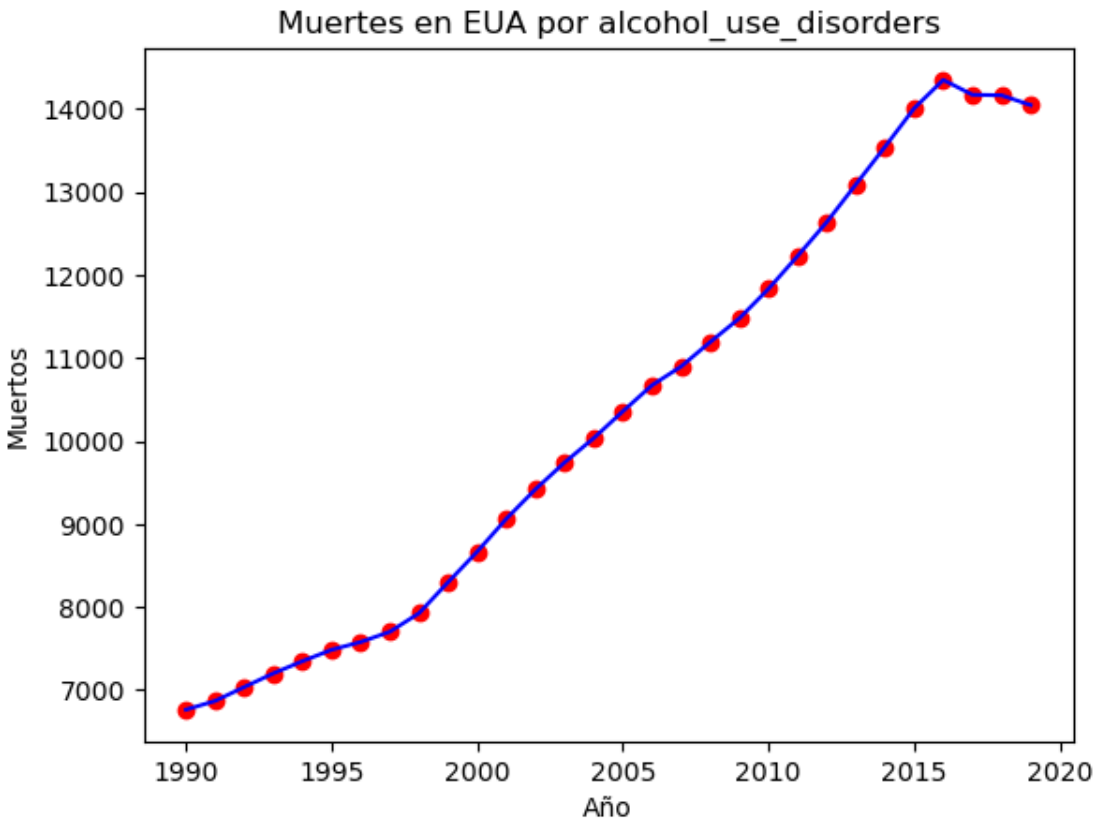

Muertes en EUA por drug_use_disorders
Muertos
60000
50000
40000
30000
20000
10000
1990
1995
2000
2005
2010
2015
2020
Año

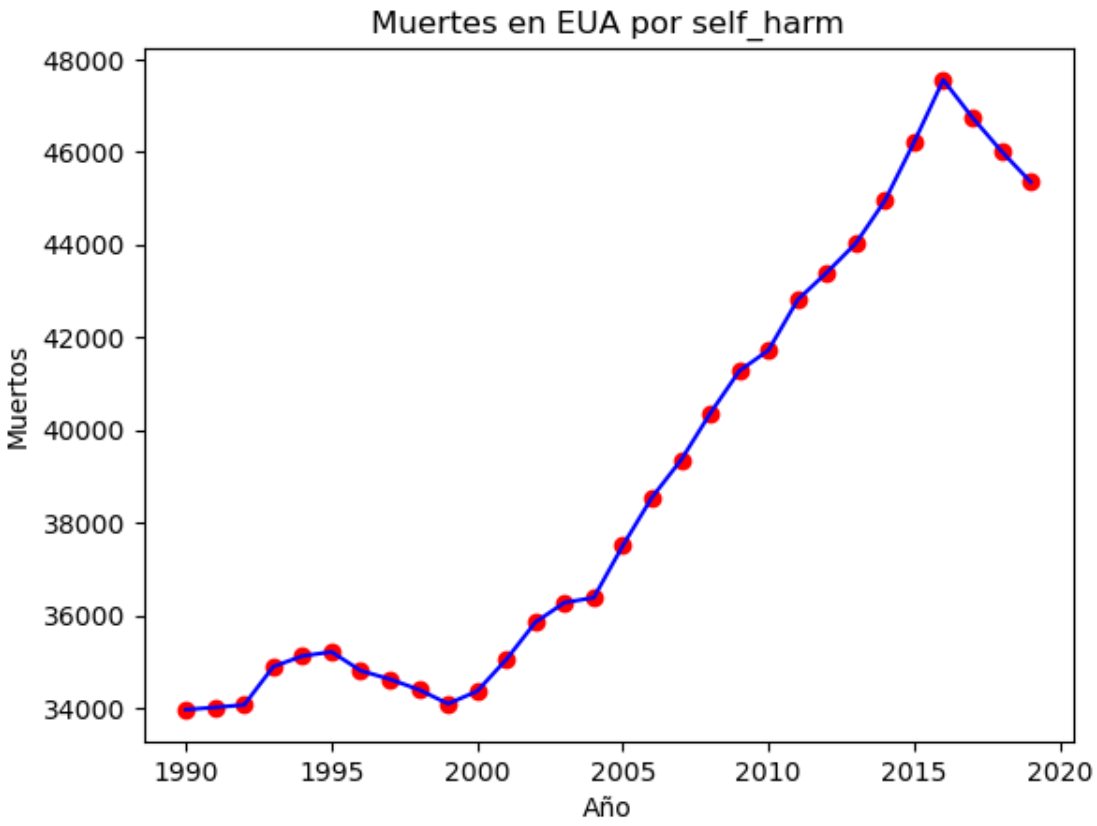

Muertes en EUA por tuberculosis
Muertos
2200
2000
1800
1600
1400
1200
1000
800
1990
1995
2000
2005
2010
2015
2020
Año

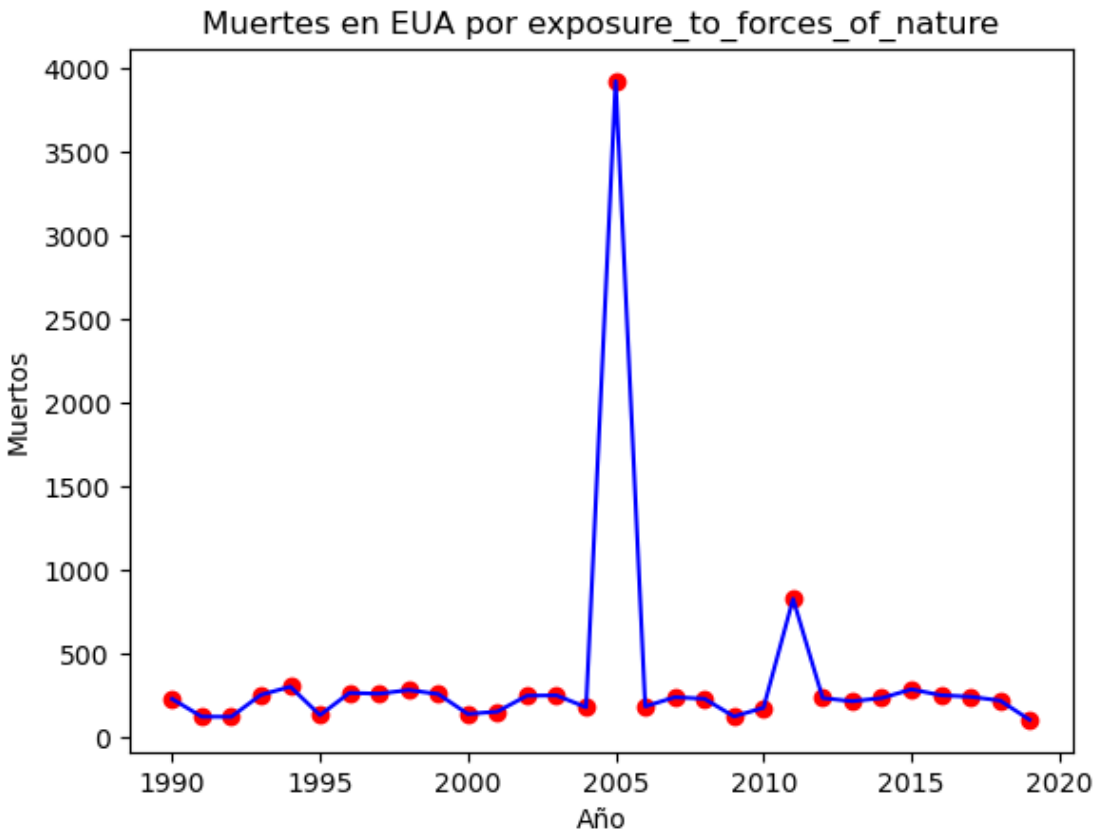

Muertes en EUA por cardiovascular_diseases
960000
940000
920000
900000
880000
860000
840000
820000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año

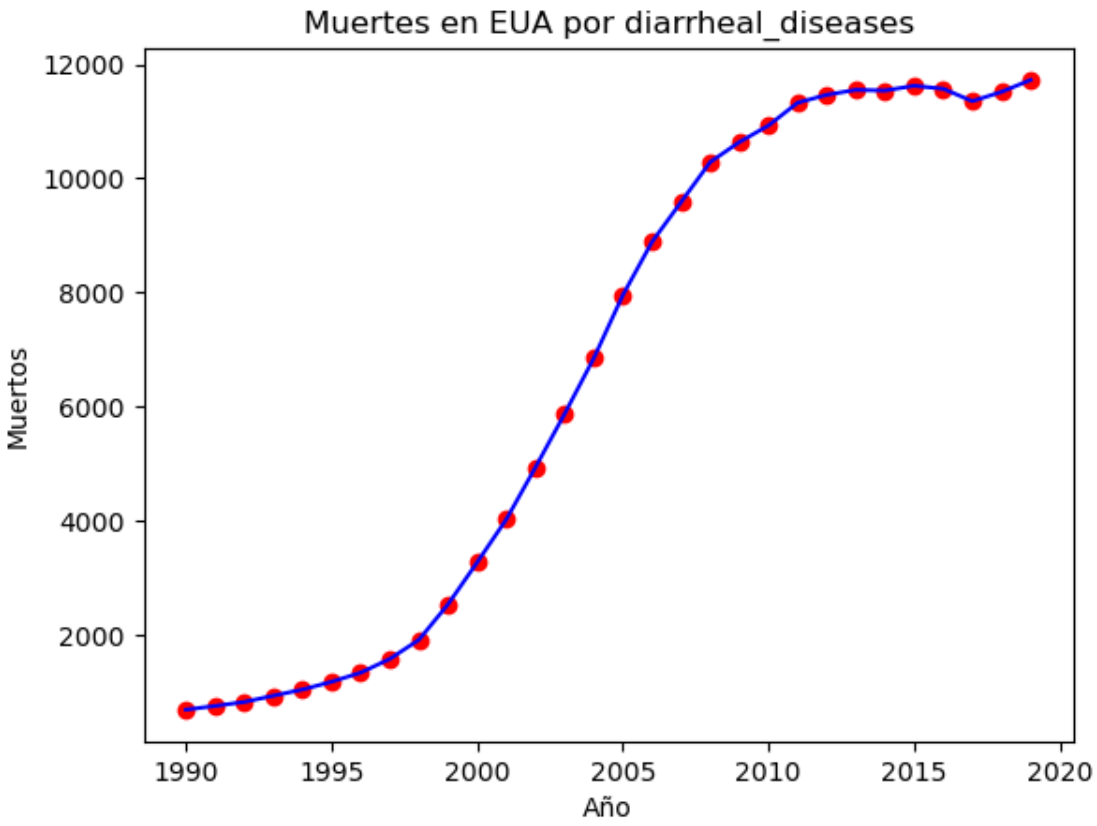

Muertes en EUA por lower_respiratory_infections
Muertos
Año
82000
80000
78000
76000
74000
72000
70000
68000
1990
1995
2000
2005
2010
2015
2020

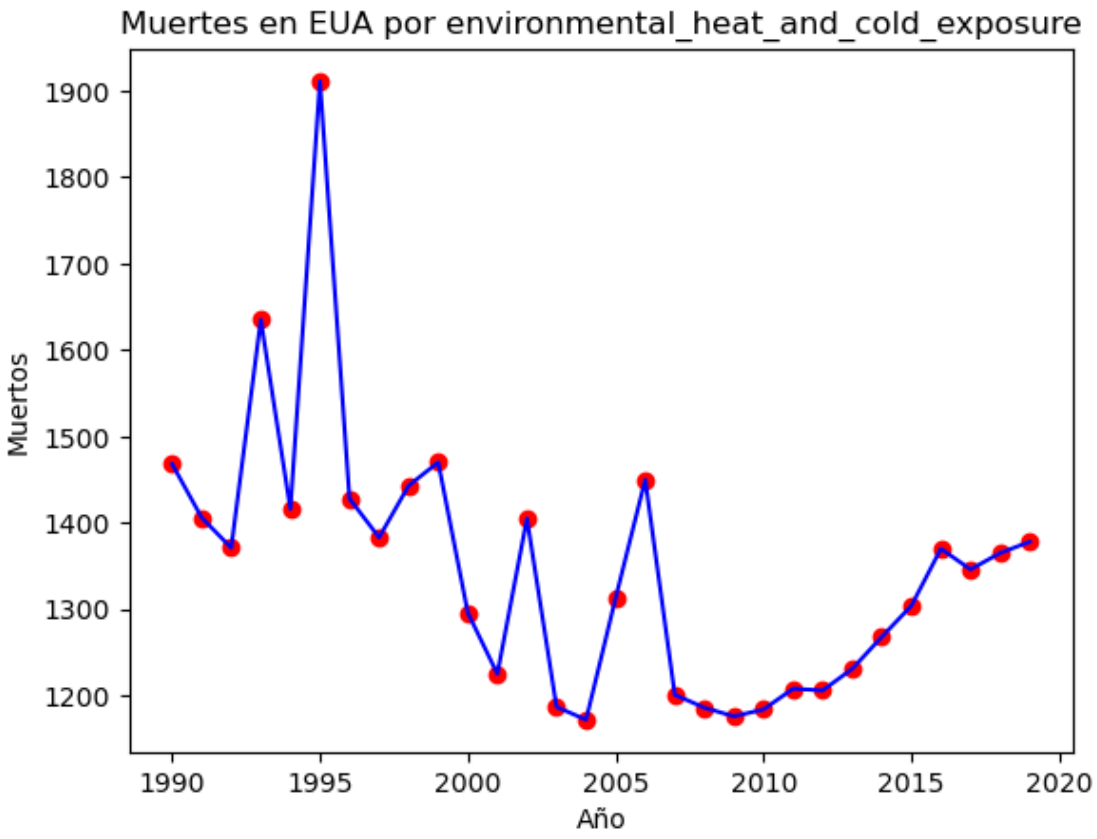

Muertes en EUA por neonatal_disorders
Muertos
18000
16000
14000
12000
1990
1995
2000
2005
2010
2015
2020
Año

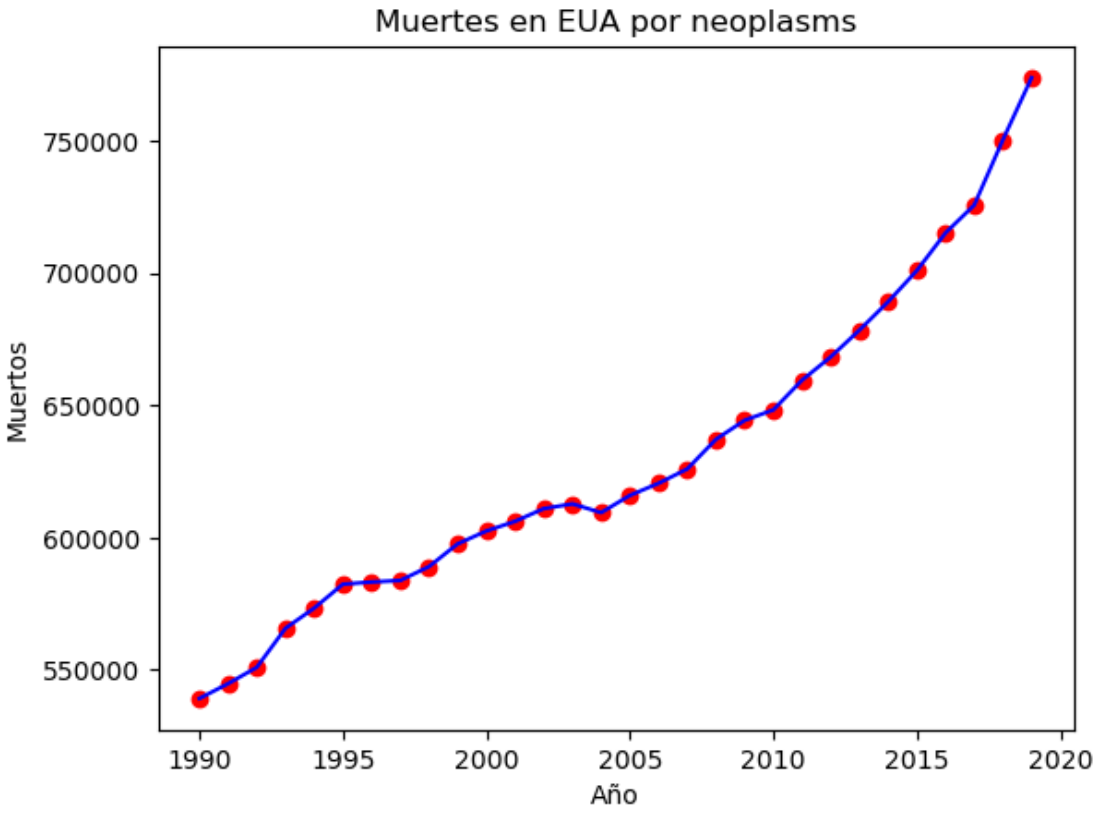

Muertes en EUA por alcohol_use_disorders
Muertos
14000
13000
12000
11000
10000
9000
8000
7000
1990
1995
2000
2005
2010
2015
2020
Año

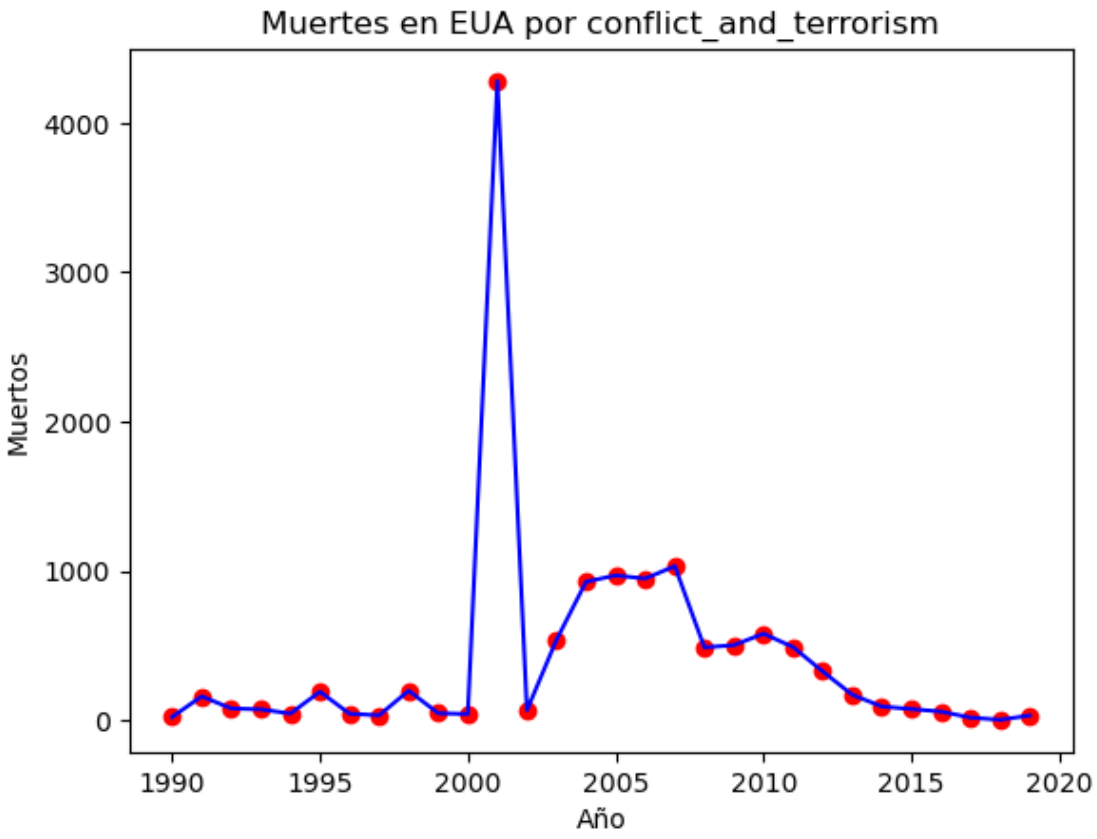

Muertes en EUA por self_harm
Muertos
Año
48000
46000
44000
42000
40000
38000
36000
34000
1990
1995
2000
2005
2010
2015
2020

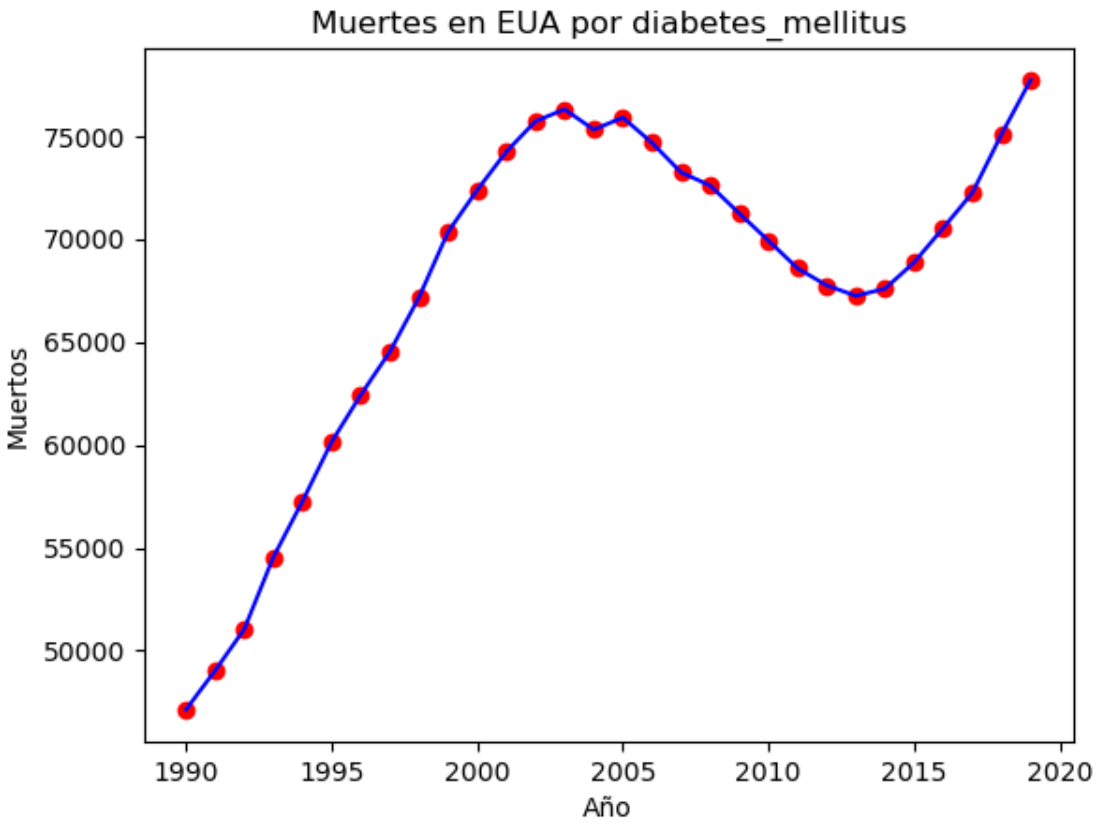

Muertes en EUA por exposure_to_forces_of_nature
Muertos
Año
0
500
1000
1500
2000
2500
3000
3500
4000
1990
1995
2000
2005
2010
2015
2020

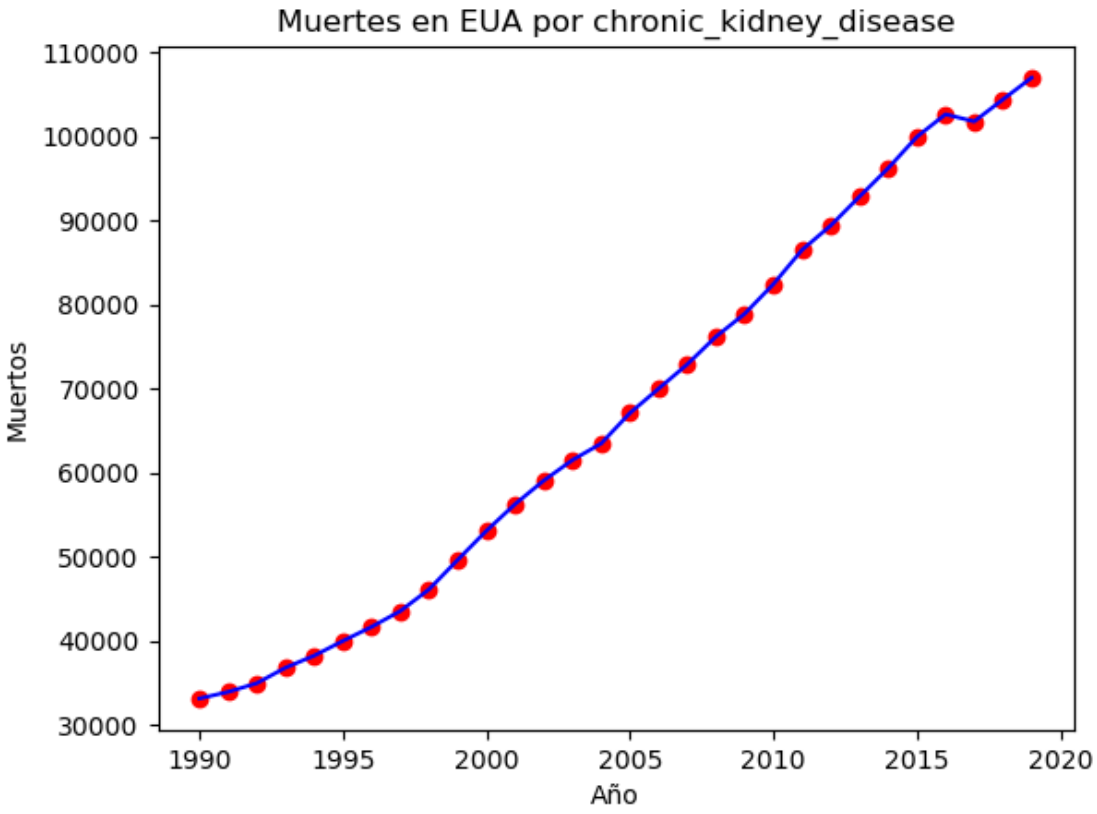

Muertes en EUA por diarrheal_diseases
Muertos
Año
12000
10000
8000
6000
4000
2000
1990
1995
2000
2005
2010
2015
2020

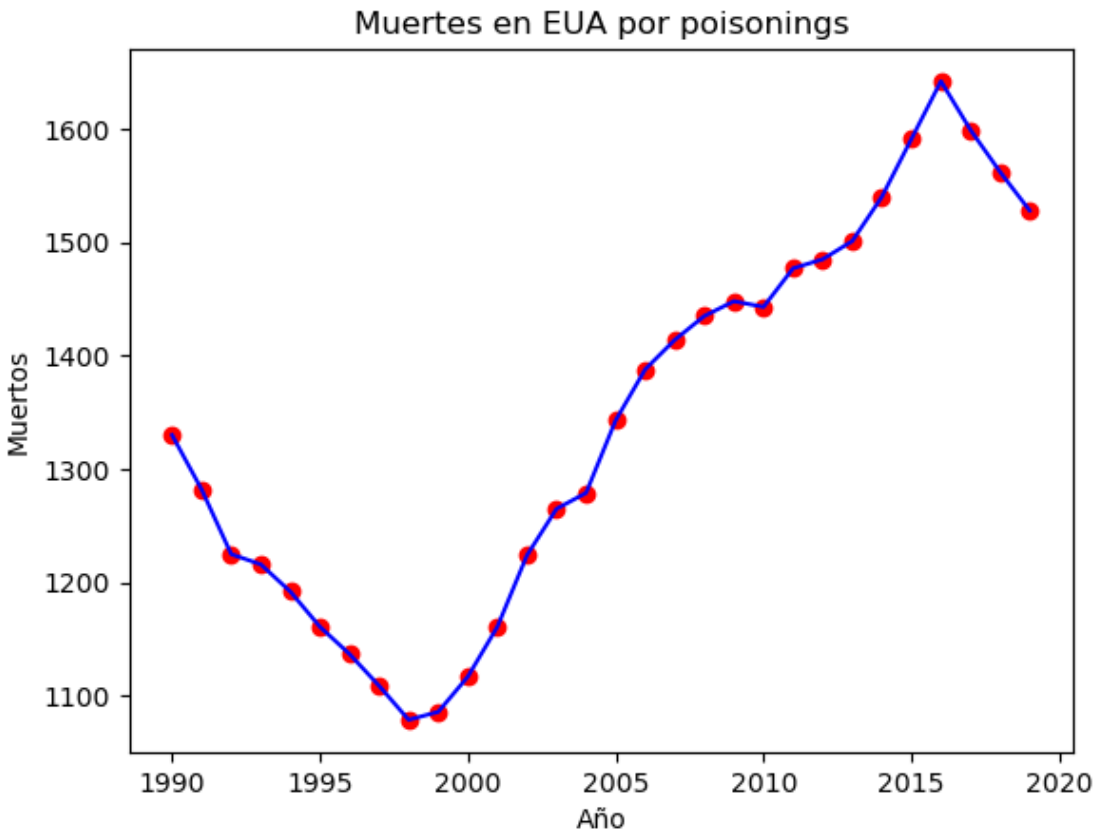

Muertes en EUA por environmental_heat_and_cold_exposure
Muertos
1900
1800
1700
1600
1500
1400
1300
1200
1990
1995
2000
2005
2010
2015
2020
Año

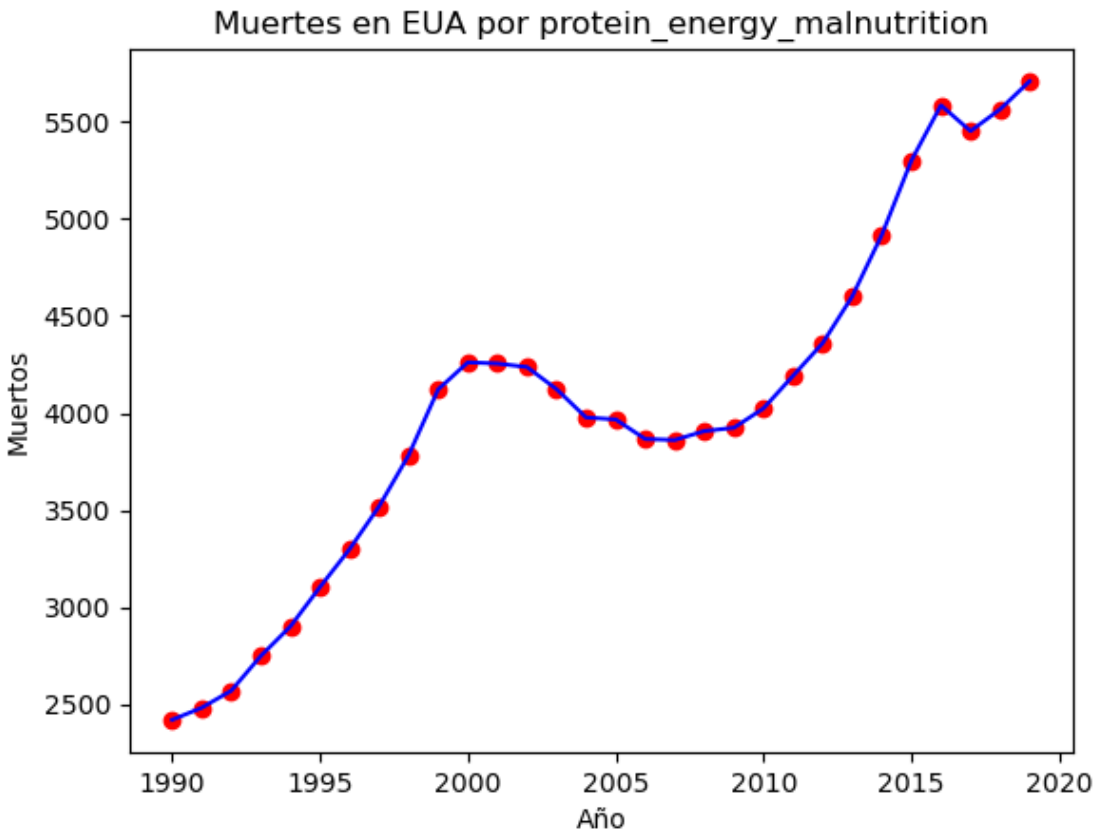

Muertes en EUA por neoplasms
Muertos
750000
700000
650000
600000
550000
1990
1995
2000
2005
2010
2015
2020
Año

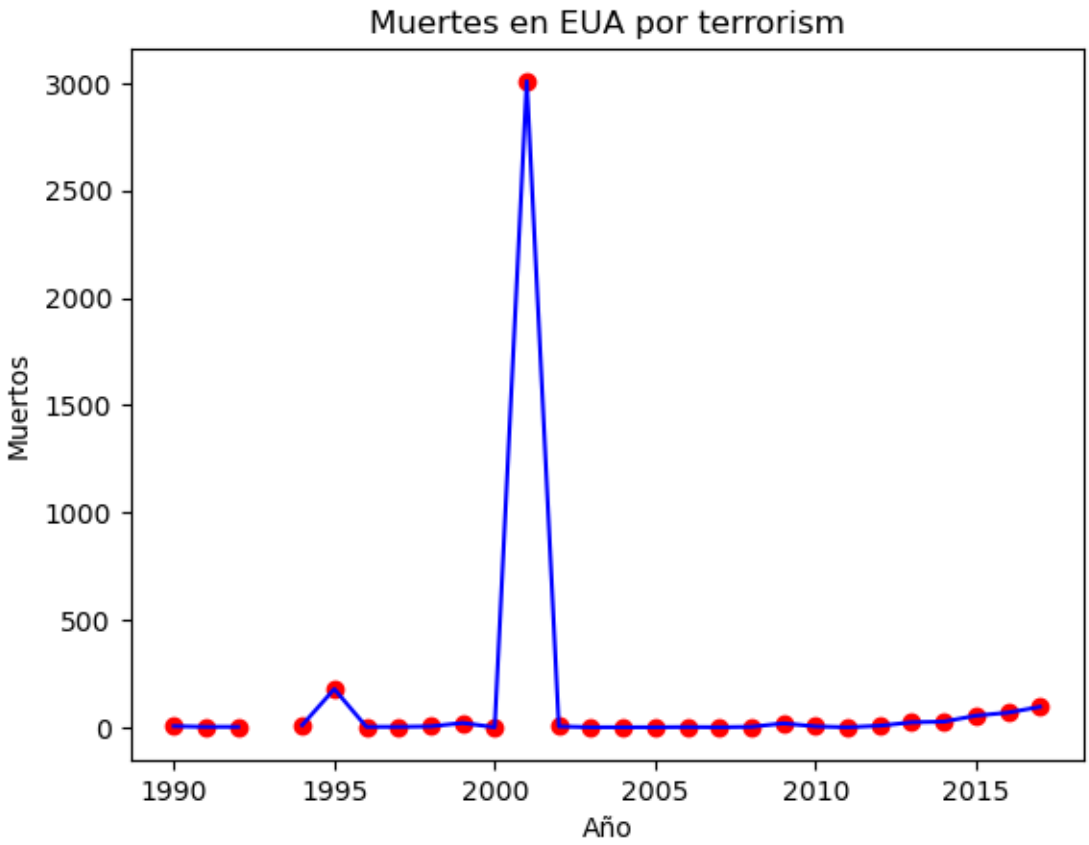

Muertes en EUA por conflict_and_terrorism
Muertos
Año
0
1000
2000
3000
4000
1990
1995
2000
2005
2010
2015
2020

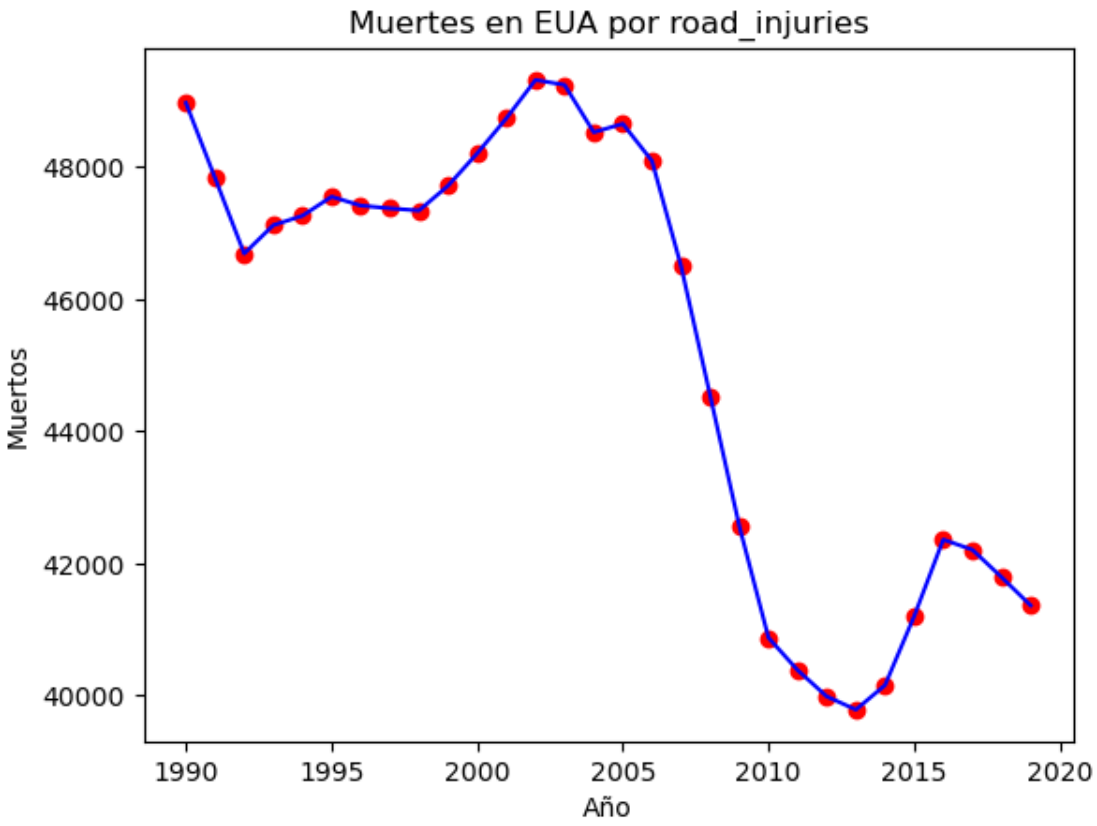

Muertes en EUA por diabetes_mellitus
Muertos
75000
70000
65000
60000
55000
50000
1990
1995
2000
2005
2010
2015
2020
Año

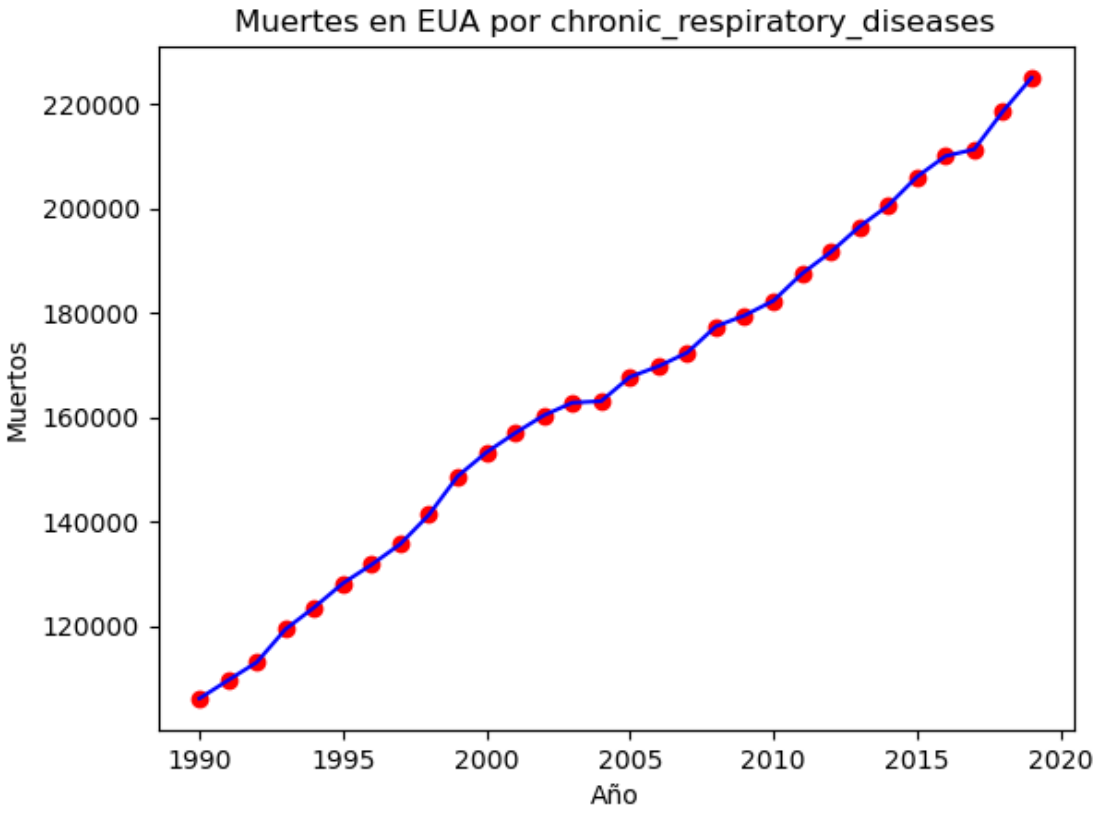

Muertes en EUA por chronic_kidney_disease
Muertos
Año
110000
100000
90000
80000
70000
60000
50000
40000
30000
1990
1995
2000
2005
2010
2015
2020

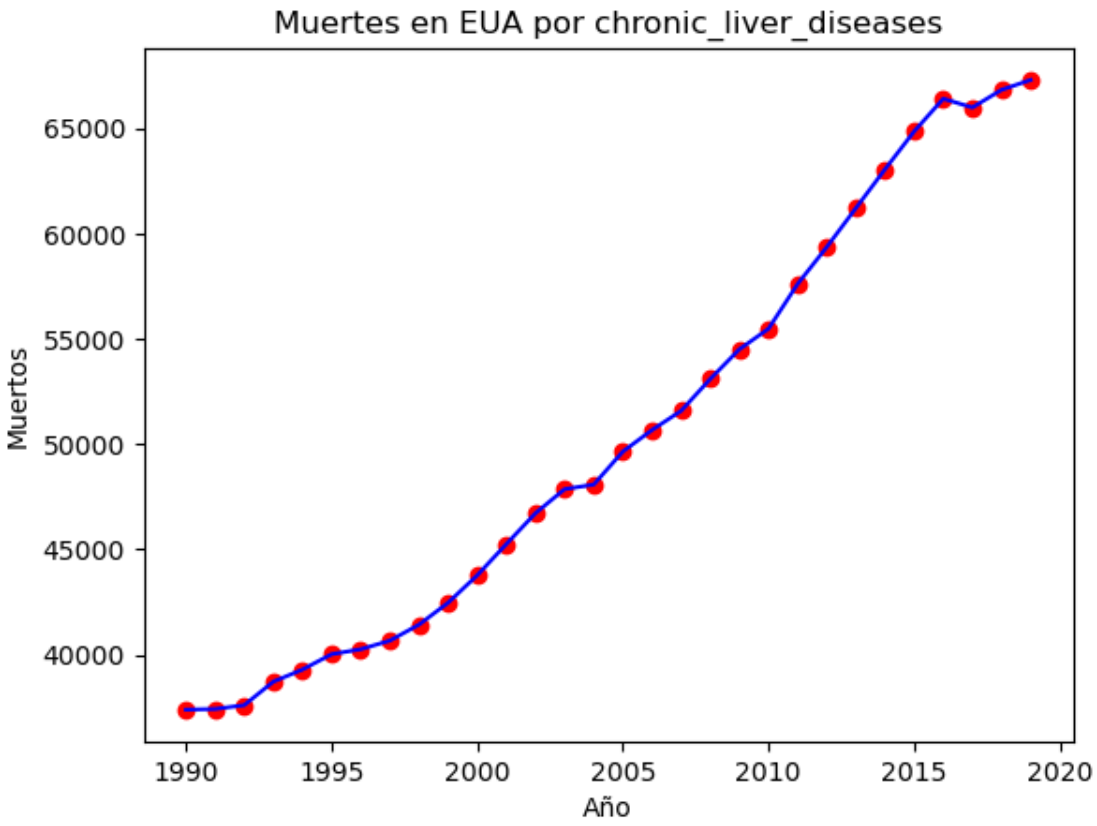

Muertes en EUA por poisonings
Muertos
1600
1500
1400
1300
1200
1100
1990
1995
2000
2005
2010
2015
2020
Año

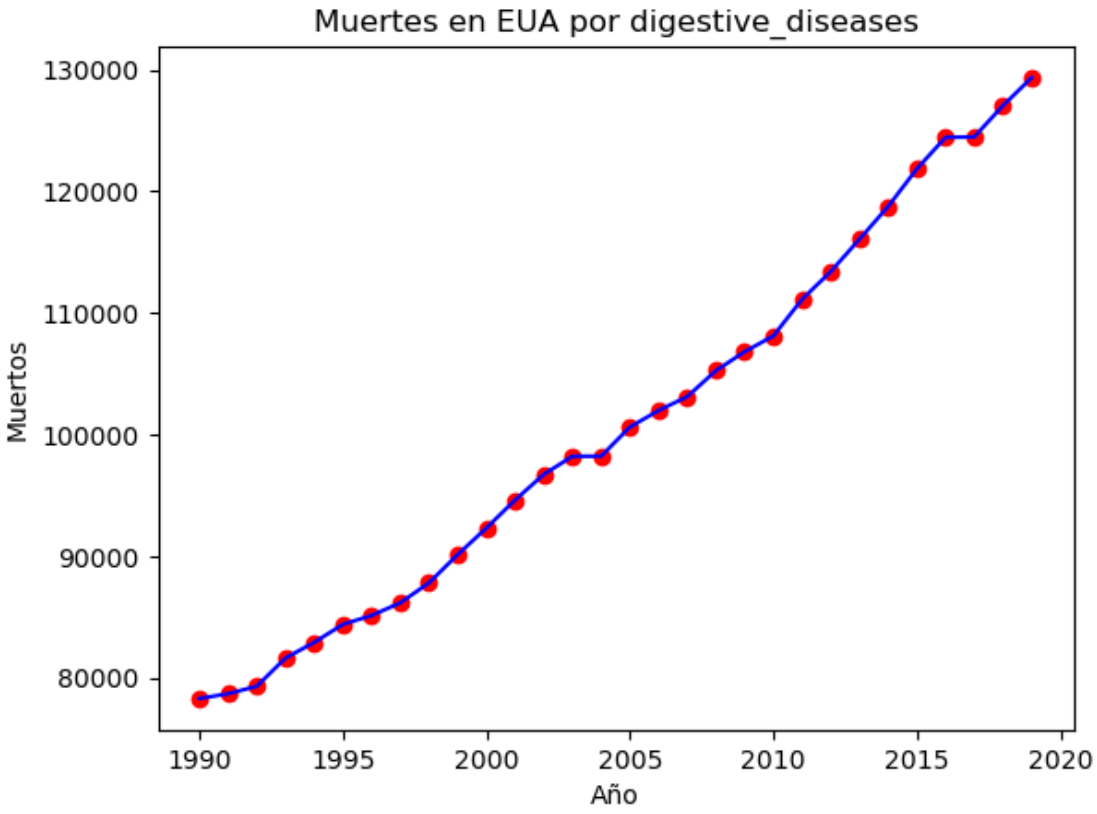

Muertes en EUA por protein_energy_malnutrition
Muertos
Año
2500
3000
3500
4000
4500
5000
5500
1990
1995
2000
2005
2010
2015
2020

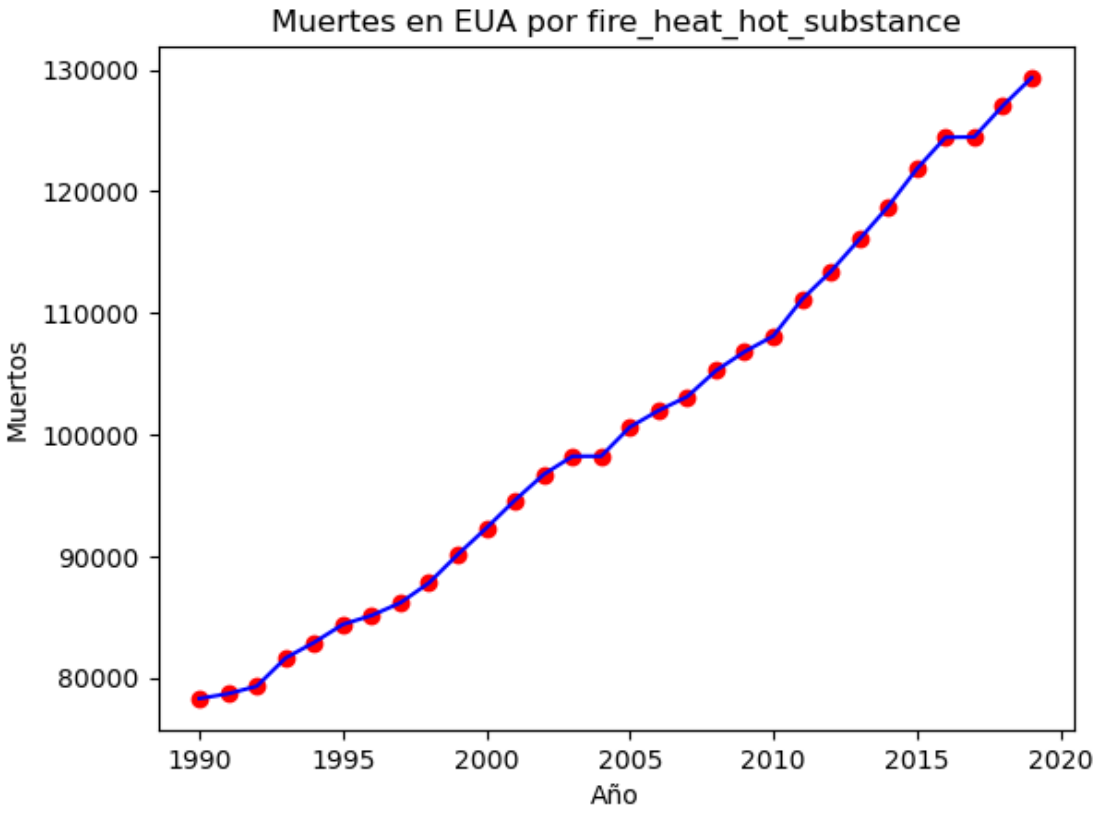

Muertes en EUA por terrorism
Muertos
3000
2500
2000
1500
1000
500
0
1990
1995
2000
2005
2010
2015
Año


Muertes en EUA por road_injuries
Muertos
48000
46000
44000
42000
40000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA por chronic_respiratory_diseases
Muertos
220000
200000
180000
160000
140000
120000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA por chronic_liver_diseases
Muertos
65000
60000
55000
50000
45000
40000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA por digestive_diseases
130000
120000
110000
100000
90000
80000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA por fire_heat_hot_substance
130000
120000
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100000
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80000
Muertos
1990
1995
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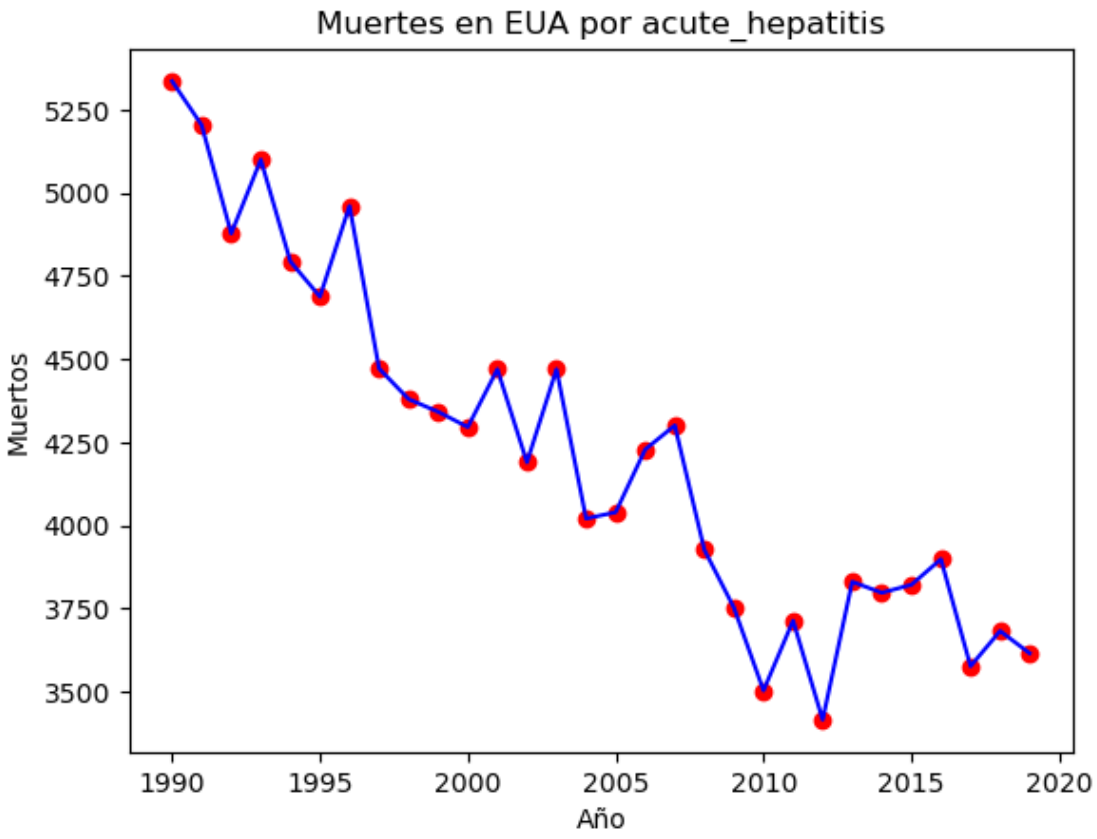
2015
2020
Año



4 Explicacion explicita del codigo para generar graficos:

El objetivo del código es crear gráficos de dispersión para distintos tipos de enfermedades y causas de muerte en Estados Unidos (EUA) utilizando los datos de un DataFrame `df_unites`.

4.0.1 Desglose del bucle `for`

1. **Iteración sobre `i` y `r`**:

   ```
   for i, r in zip(i_values, r_values):
   ```

   - `zip(i_values, r_values)` empareja los elementos de `i_values` y `r_values`.
   - `i` tomará cada valor de `i_values` (que son índices de columnas del DataFrame).
   - `r` tomará cada valor correspondiente de `r_values` (que son nombres de las enfermedades o causas de muerte).

2. **Selección de los datos**:

   ```
   x_data = df_unites.iloc[:, [0]]
   y_data = df_unites.iloc[:, [i]]
   ```

   - `x_data` selecciona la primera columna del DataFrame `df_unites`, que se asume contiene los años.

- `y_data` selecciona la columna en el índice `i` del DataFrame, que corresponde a una causa específica de muerte.

3. **Creación del gráfico**:

```
plt.plot(x_data, y_data, color='blue')
plt.scatter(x_data, y_data, color='red')
plt.title(f'Muertes en EUA por {r}')
plt.xlabel('Año')
plt.ylabel('Muertos')
plt.show()
```

- `plt.plot(x_data, y_data, color='blue')` crea una línea azul que conecta los puntos de datos.
- `plt.scatter(x_data, y_data, color='red')` añade puntos rojos en cada dato (año, número de muertos).
- `plt.title(f'Muertes en EUA por {r}')` establece el título del gráfico, utilizando el nombre de la enfermedad/causa de muerte `r`.
- `plt.xlabel('Año')` y `plt.ylabel('Muertos')` etiquetan los ejes.
- `plt.show()` muestra el gráfico.

#Profundizaación en la funcion zip:

`zip` es una función incorporada en Python que se utiliza para emparejar elementos de múltiples iterables (como listas o tuplas). El resultado es un iterador de tuplas donde el i-ésimo elemento proviene de los i-ésimos elementos de cada uno de los iterables proporcionados. Vamos a profundizar en cómo funciona `zip` con algunos ejemplos:

4.0.2 Uso Básico de `zip`

Supongamos que tenemos dos listas:

```
i_values = [1, 2, 3]
r_values = ['a', 'b', 'c']
```

Si utilizamos `zip` con estas dos listas:

```
zipped = zip(i_values, r_values)
print(list(zipped))
```

La salida será:

```
[(1, 'a'), (2, 'b'), (3, 'c')]
```

4.0.3 Funcionamiento de `zip`

1. **Creación de Pares**: `zip` toma el primer elemento de cada iterable y los agrupa en una tupla, luego toma el segundo elemento de cada iterable y los agrupa en otra tupla, y así sucesivamente.

2. **Iterador**: El resultado de `zip` es un iterador de tuplas. Para ver los resultados, a menudo convertimos este iterador en una lista usando `list()`.

3. **Longitud de los Iterables**: Si los iterables tienen longitudes diferentes, `zip` detendrá la agrupación cuando el iterable más corto se haya agotado.

4.0.4 Ejemplos Detallados

Ejemplo 1: Emparejando Dos Listas de Igual Longitud

```
numbers = [1, 2, 3]
letters = ['a', 'b', 'c']

zipped = zip(numbers, letters)
print(list(zipped))  # Output: [(1, 'a'), (2, 'b'), (3, 'c')]
```

Ejemplo 2: Emparejando Listas de Longitudes Diferentes

```
numbers = [1, 2, 3, 4]
letters = ['a', 'b']

zipped = zip(numbers, letters)
print(list(zipped))  # Output: [(1, 'a'), (2, 'b')]
```

En este caso, `zip` se detiene después de emparejar todos los elementos de la lista más corta (`letters`).

Ejemplo 3: Desempaquetando Con `zip` También se puede usar `zip` para desempacar listas o tuplas. Por ejemplo, si tienes una lista de pares y quieres separarlas en dos listas individuales:

```
pairs = [(1, 'a'), (2, 'b'), (3, 'c')]

numbers, letters = zip(*pairs)
print(numbers)  # Output: (1, 2, 3)
print(letters)  # Output: ('a', 'b', 'c')
```

El operador `*` en `zip(*pairs)` desempaqueta los pares en elementos individuales que luego se reagrupan por `zip` en dos tuplas.

4.0.5 En el Contexto del Código

En tu código original:

```
for i, r in zip(i_values, r_values):
    # Rest of the code
```

`zip(i_values, r_values)` crea un iterador de tuplas emparejando elementos de `i_values` y `r_values`. En cada iteración del bucle `for`: - `i` toma el valor de la primera lista (`i_values`). - `r` toma el valor correspondiente de la segunda lista (`r_values`).

Esto permite iterar simultáneamente sobre dos listas y usar estos valores emparejados en el cuerpo del bucle.

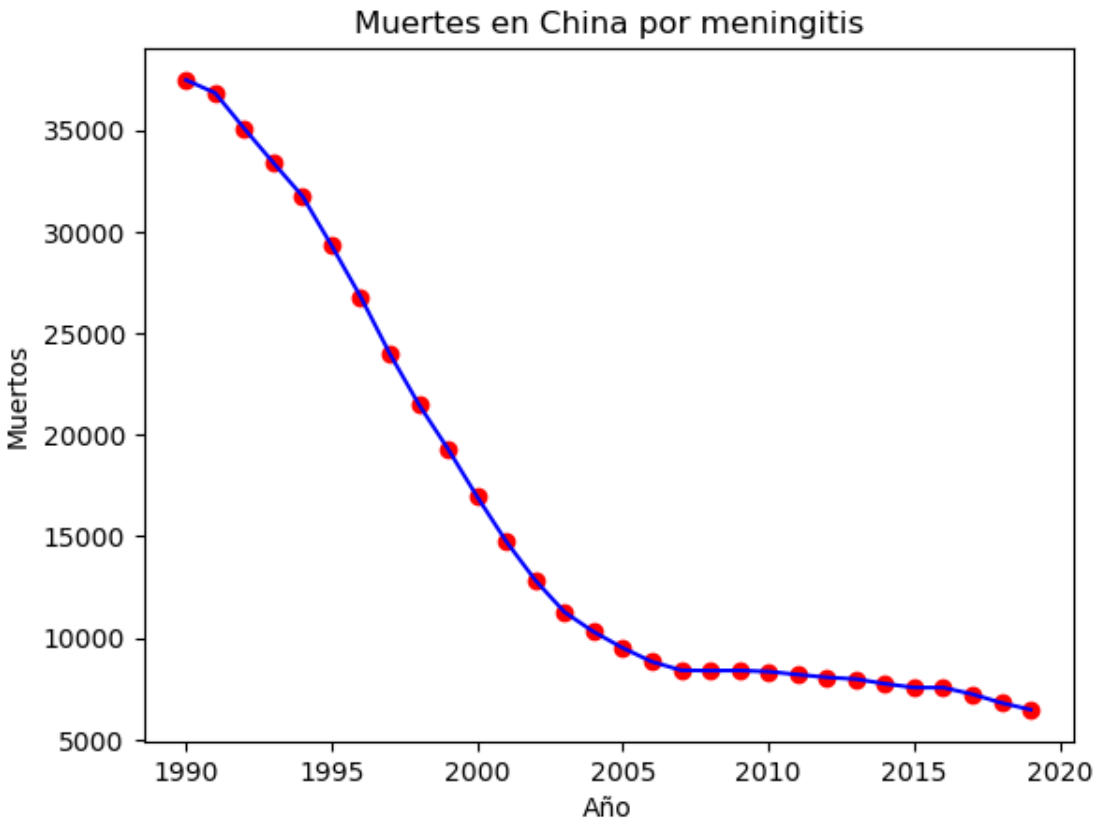
[ ]:
```
#Graficos para China; cambio en las muertes desde 1990 a 2019
```

```
# Lista de valores de i
j_values = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,␣
 ↪20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 30, 31, 32]

# Lista de valores de r
s_values = ['meningitis', "alzheimer's_diesease", "parkinson's_disease",
       'nutritional_deficiency', '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',
       'terrorism', 'road_injuries', 'chronic_respiratory_diseases',
       'chronic_liver_diseases', 'digestive_diseases',
       'fire_heat_hot_substance', 'acute_hepatitis']

# Iteramos sobre los valores de i y r
for j, s in zip(j_values, s_values):
    # Seleccionamos los datos correspondientes
    x_data = df_chi.iloc[:, [0]]
    y_data = df_chi.iloc[:, [j]]

    # Graficamos el gráfico de dispersión
    plt.plot(x_data, y_data, color='blue')
    plt.scatter(x_data, y_data, color='red')
    plt.title(f'Muertes en China por {s}')
    plt.xlabel('Año')
    plt.ylabel('Muertos')
    plt.show()
```


Muertes en China por meningitis
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25000
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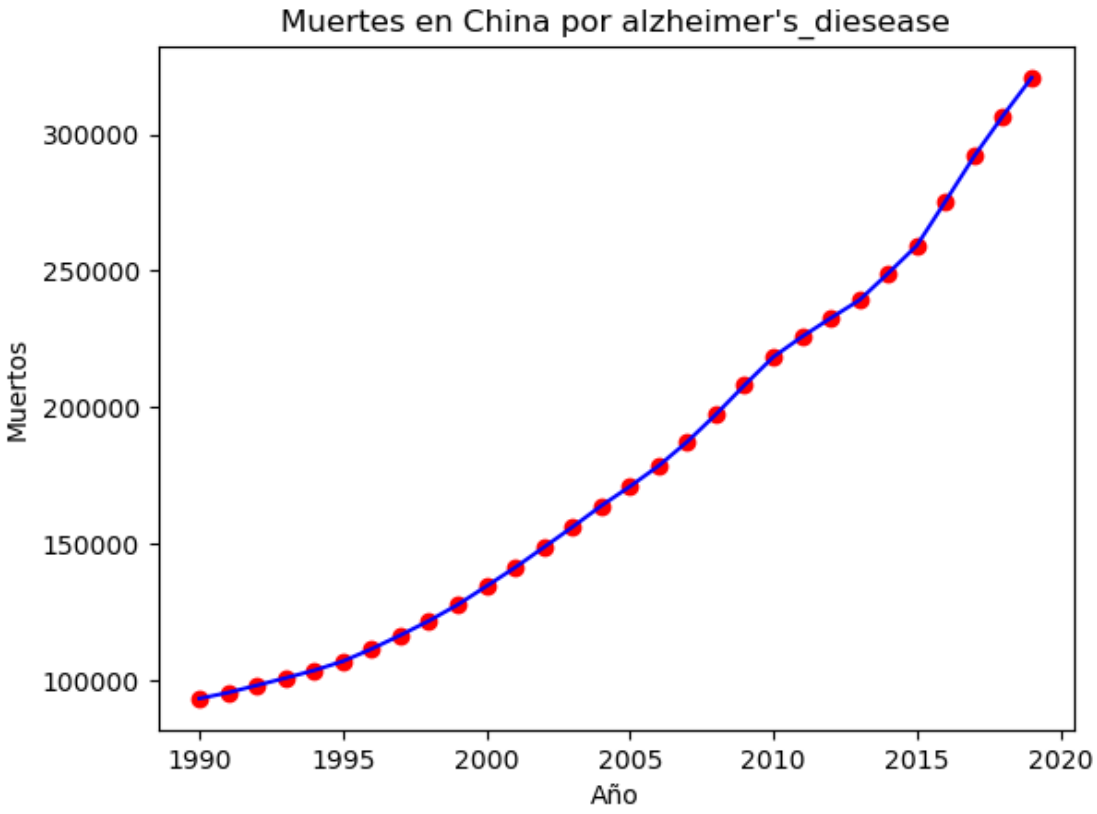
15000
10000
5000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por alzheimer's_diesease
Muertos
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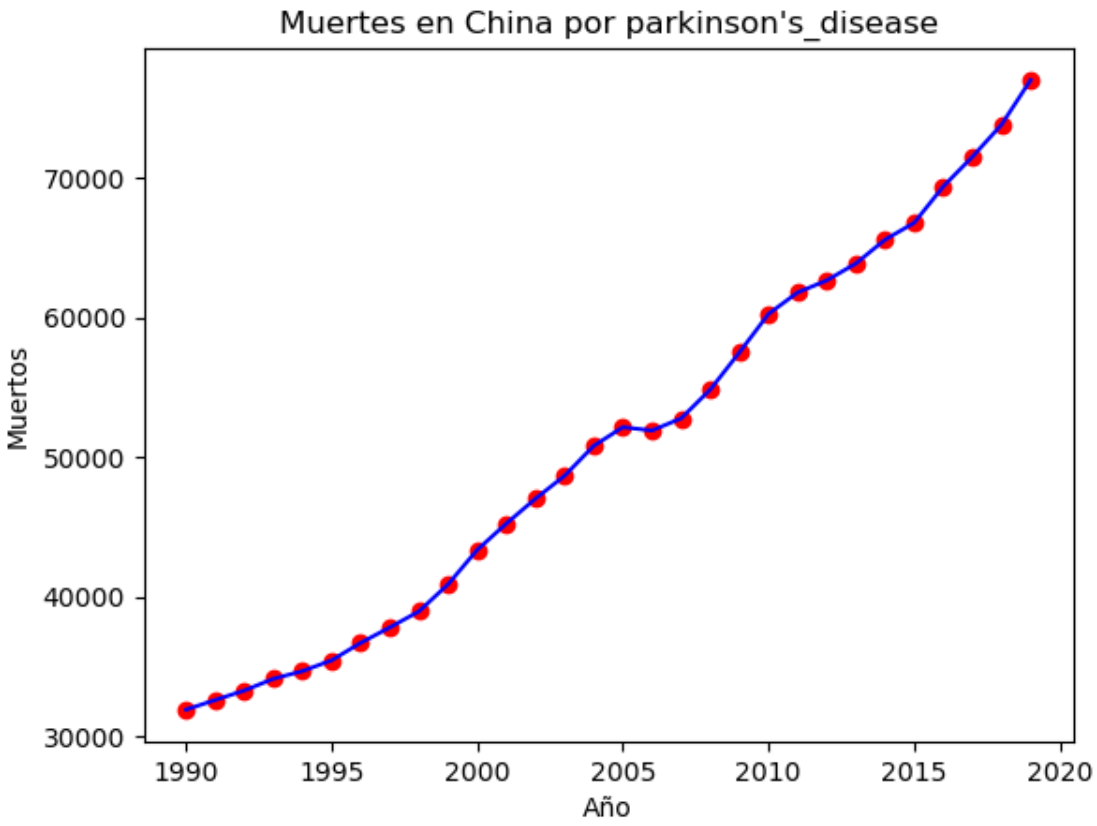
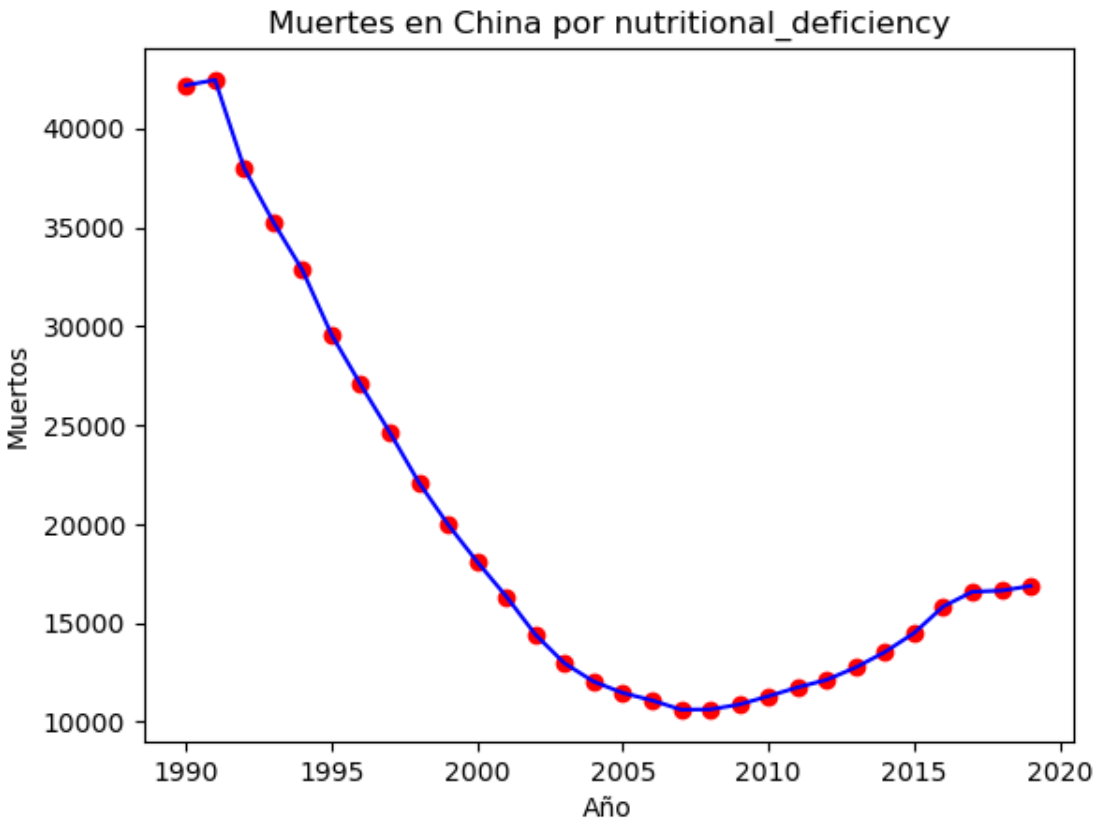
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por parkinson's_disease
Muertos
70000
60000
50000
40000
30000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por nutritional_deficiency
Muertos
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25000
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1990
1995
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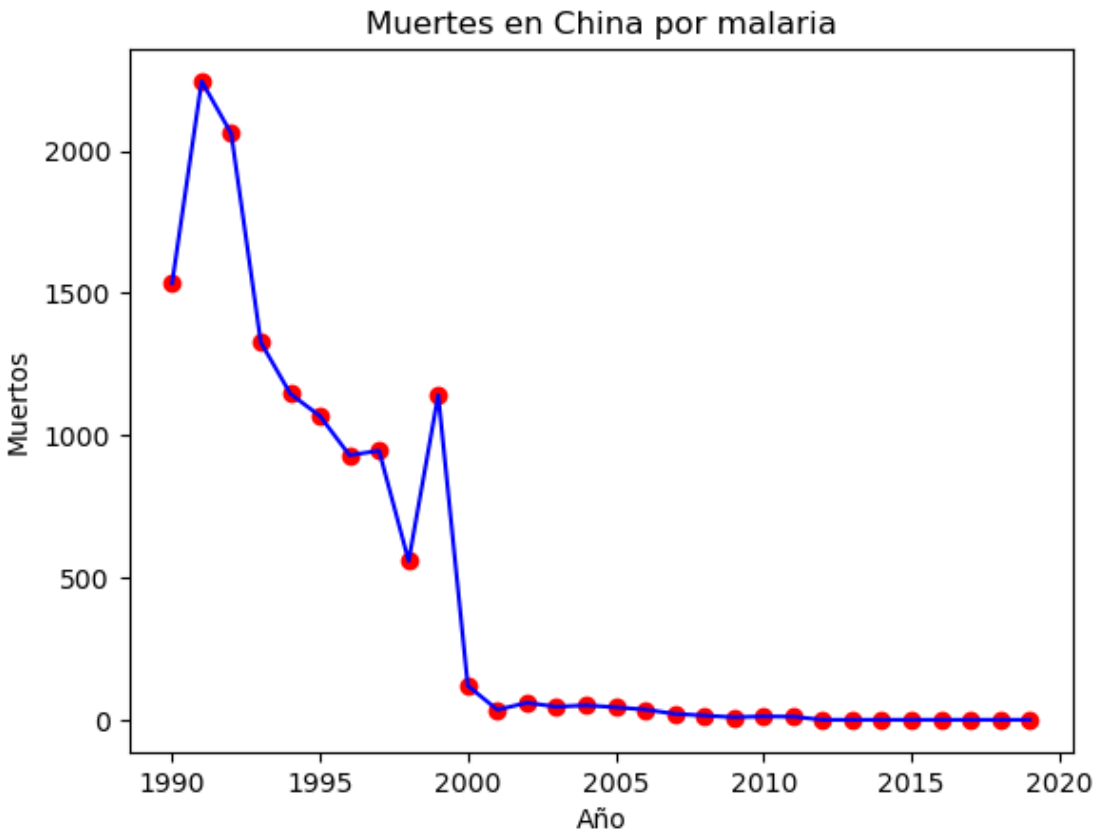
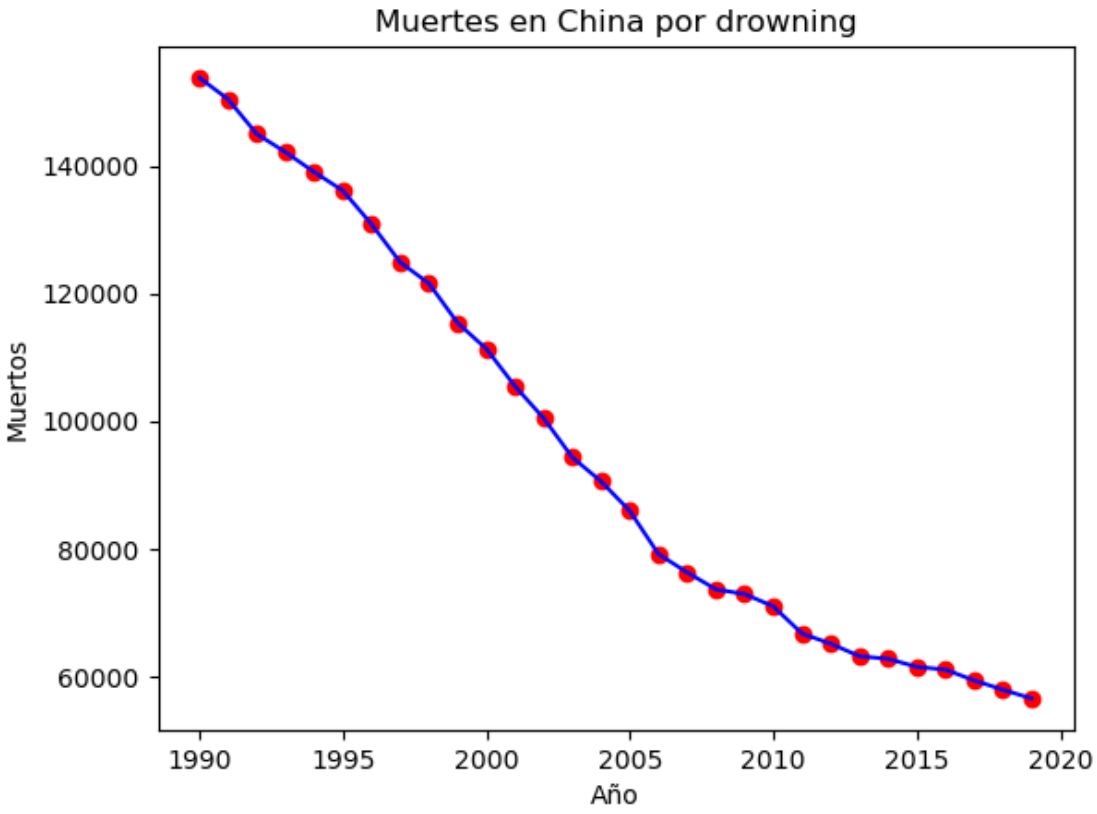
2005
2010
2015
2020
Año


Muertes en China por malaria
Muertos
2000
1500
1000
500
0
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por drowning
Muertos
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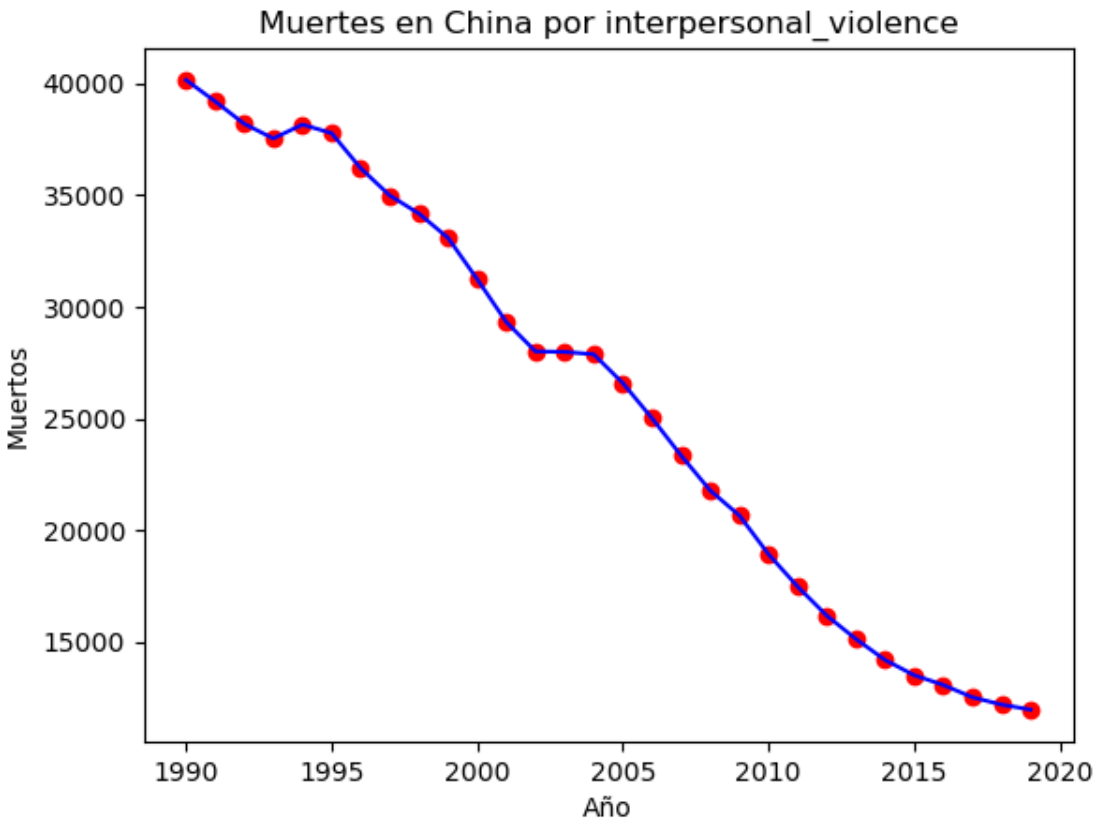
100000
80000
60000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por interpersonal_violence
Muertos
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30000
25000
20000
15000
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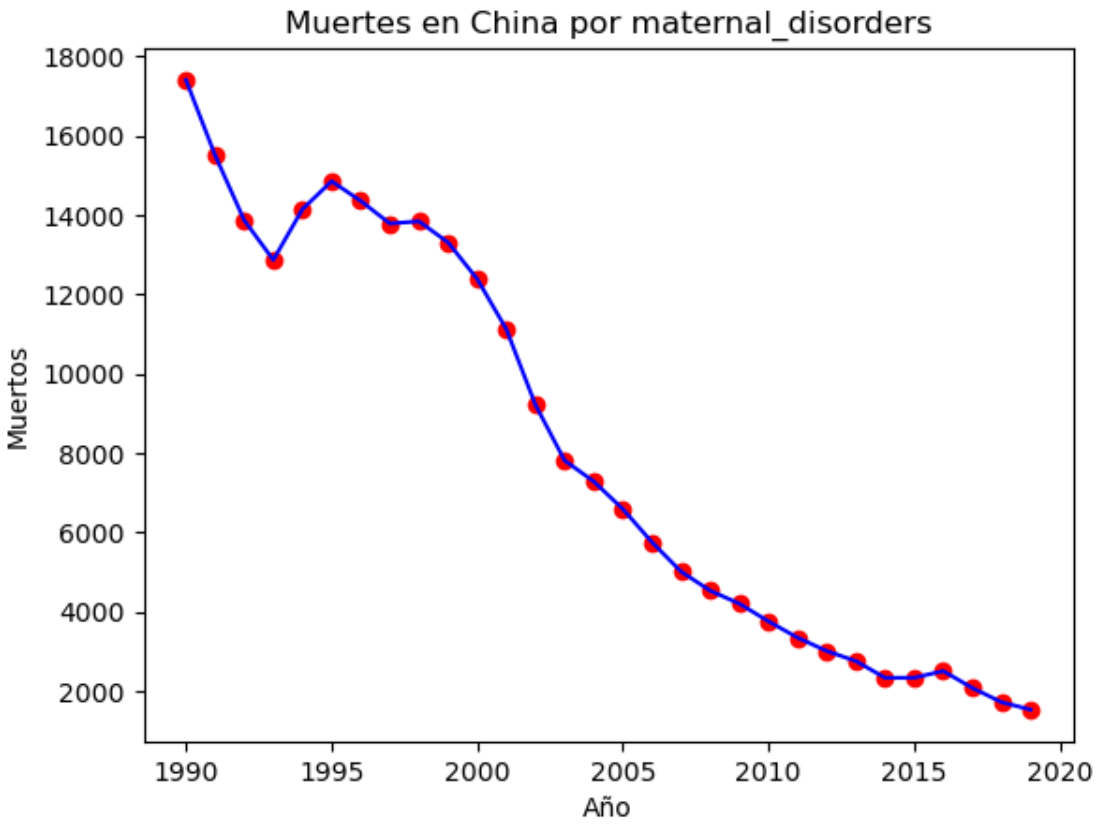
1995
2000
2005
2010
2015
2020
Año


Muertes en China por maternal_disorders
Muertos
Año
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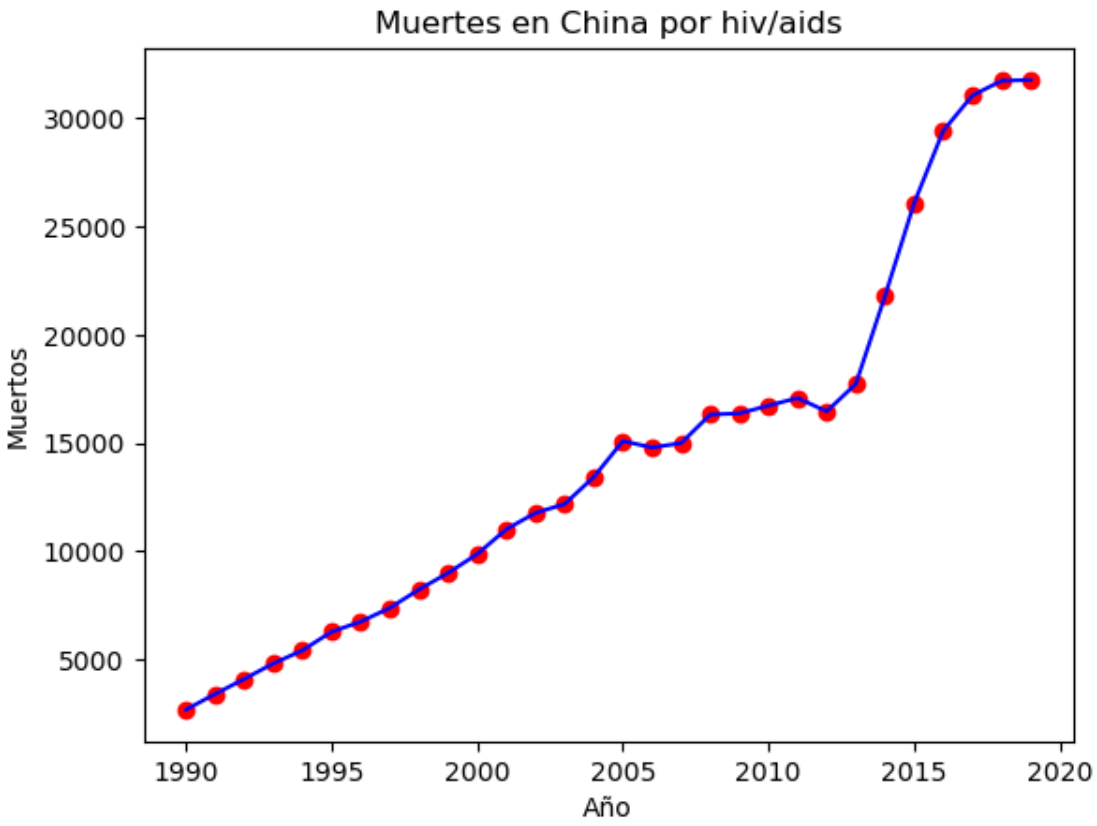
10000
8000
6000
4000
2000
1990
1995
2000
2005
2010
2015
2020


Muertes en China por hiv/aids
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5000
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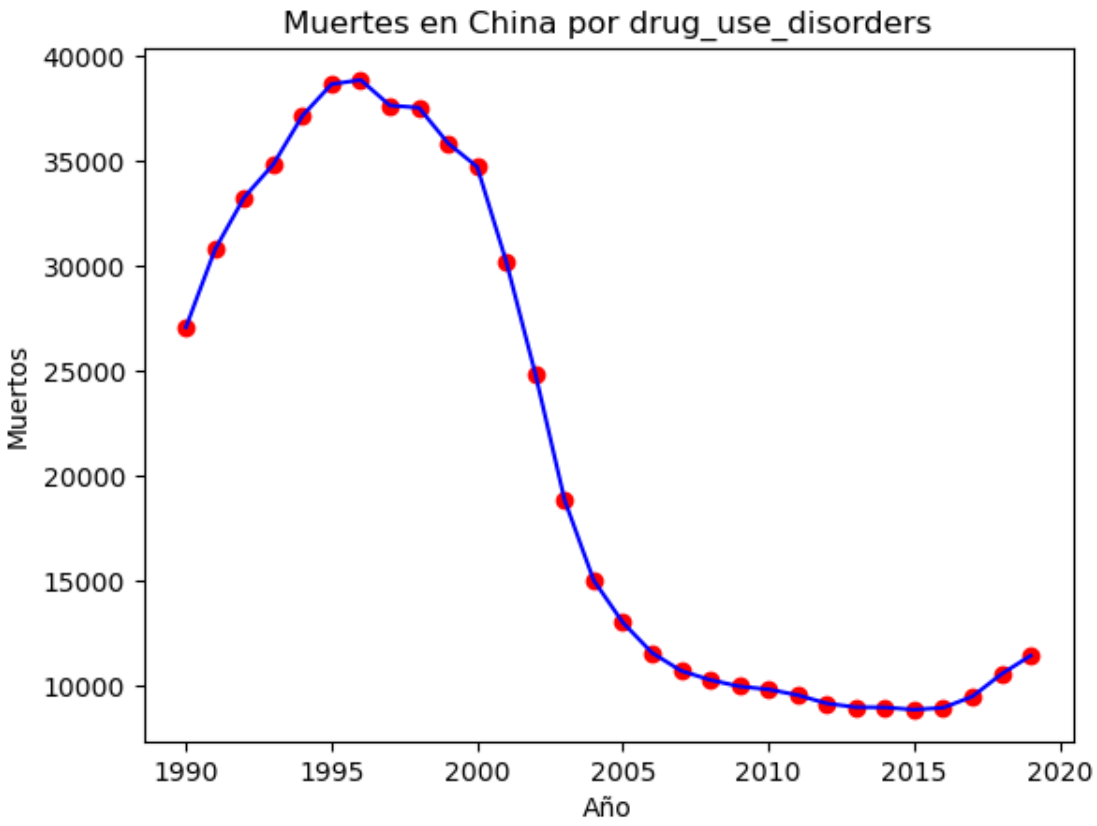
1995
2000
2005
2010
2015
2020
Año


Muertes en China por drug_use_disorders
Muertos
Año
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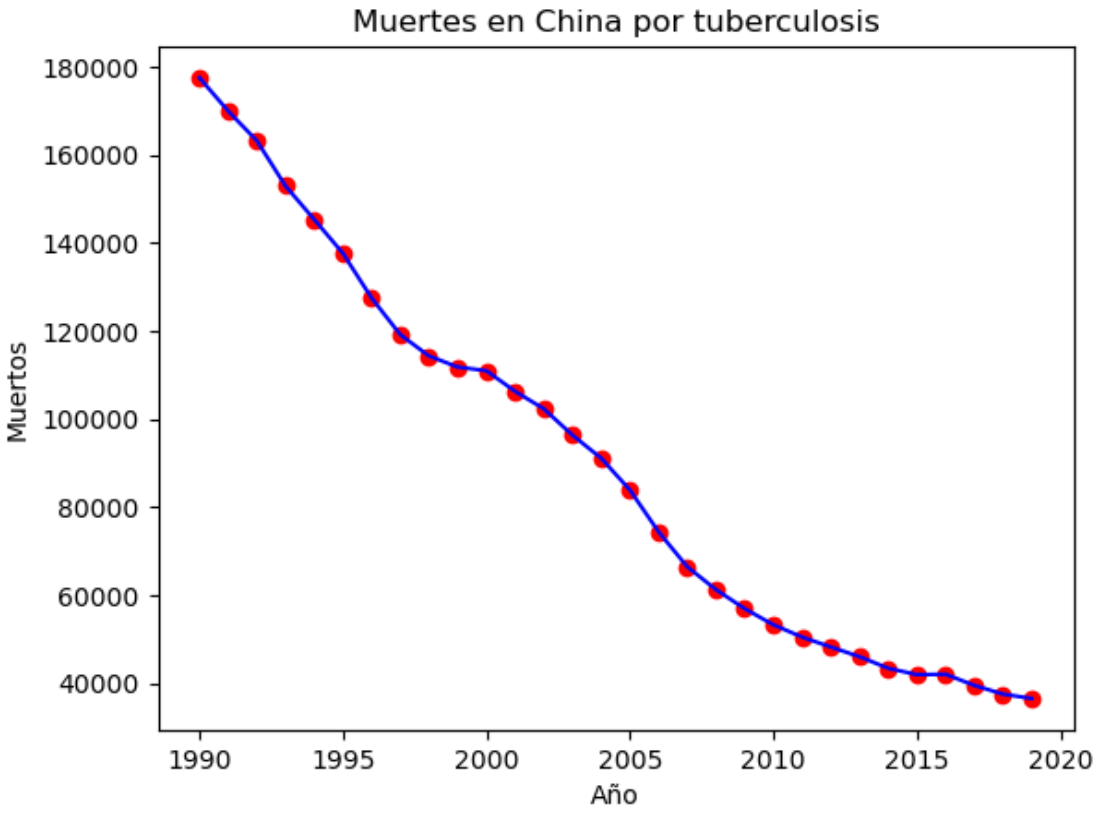
35000
30000
25000
20000
15000
10000
1990
1995
2000
2005
2010
2015
2020


Muertes en China por tuberculosis
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100000
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60000
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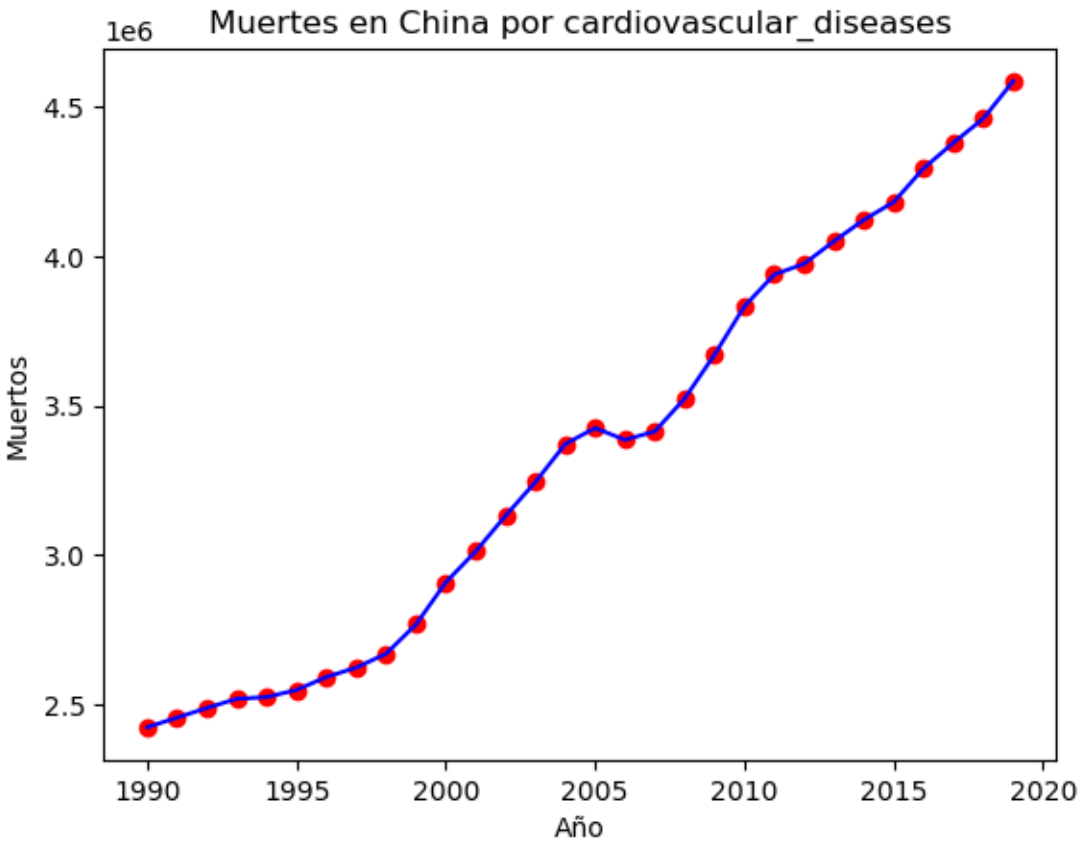
2010
2015
2020
Año


Muertes en China por cardiovascular_diseases
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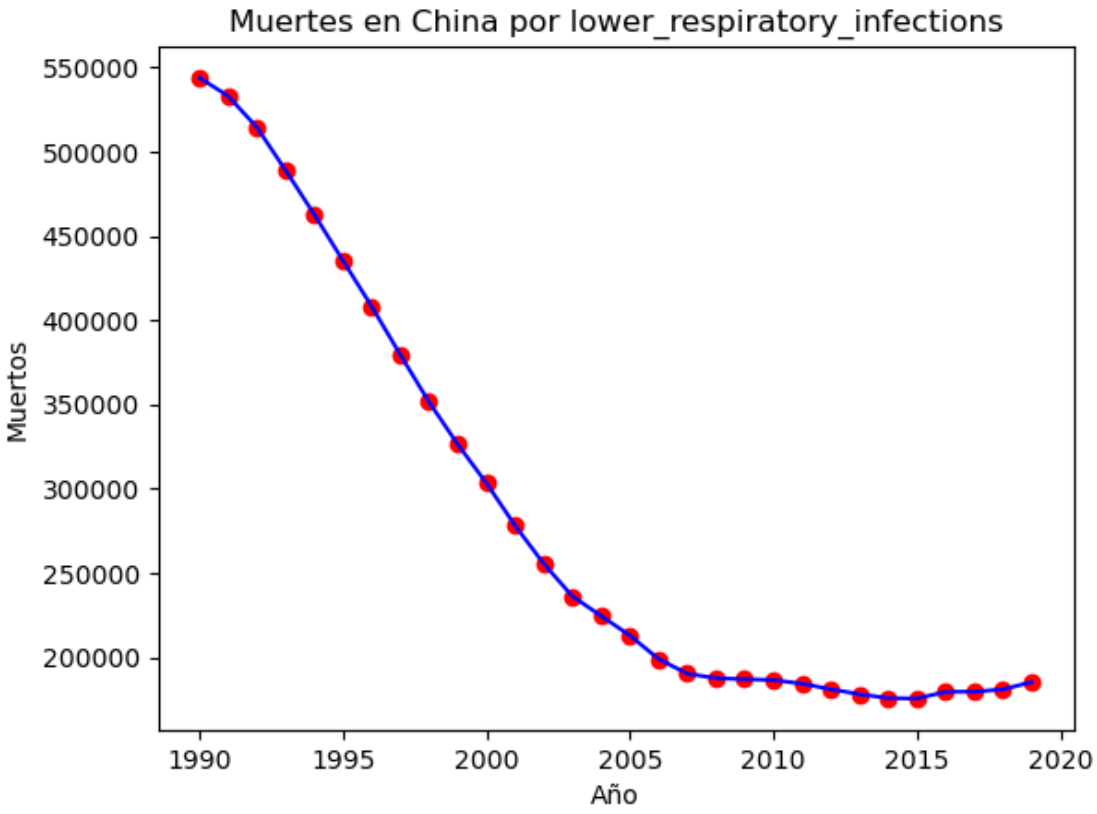
4.5
4.0
3.5
3.0
2.5
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por lower_respiratory_infections
Muertos
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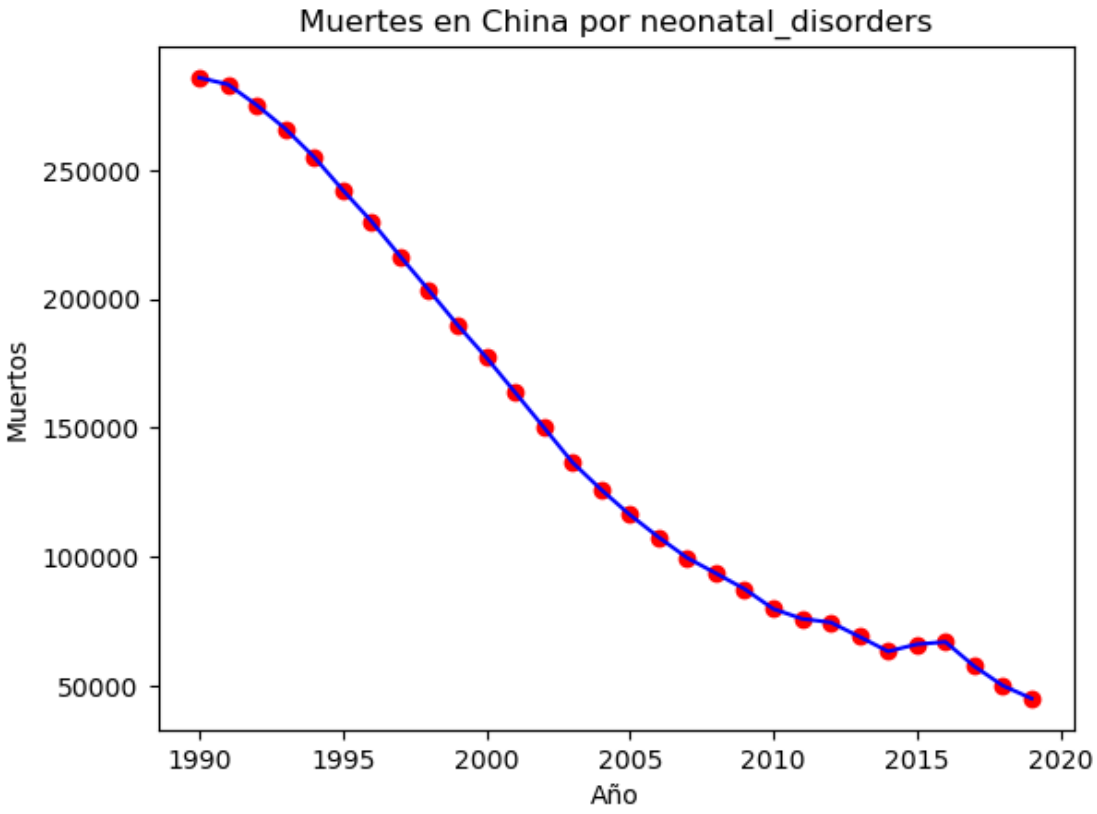
2000
2005
2010
2015
2020
Año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50000
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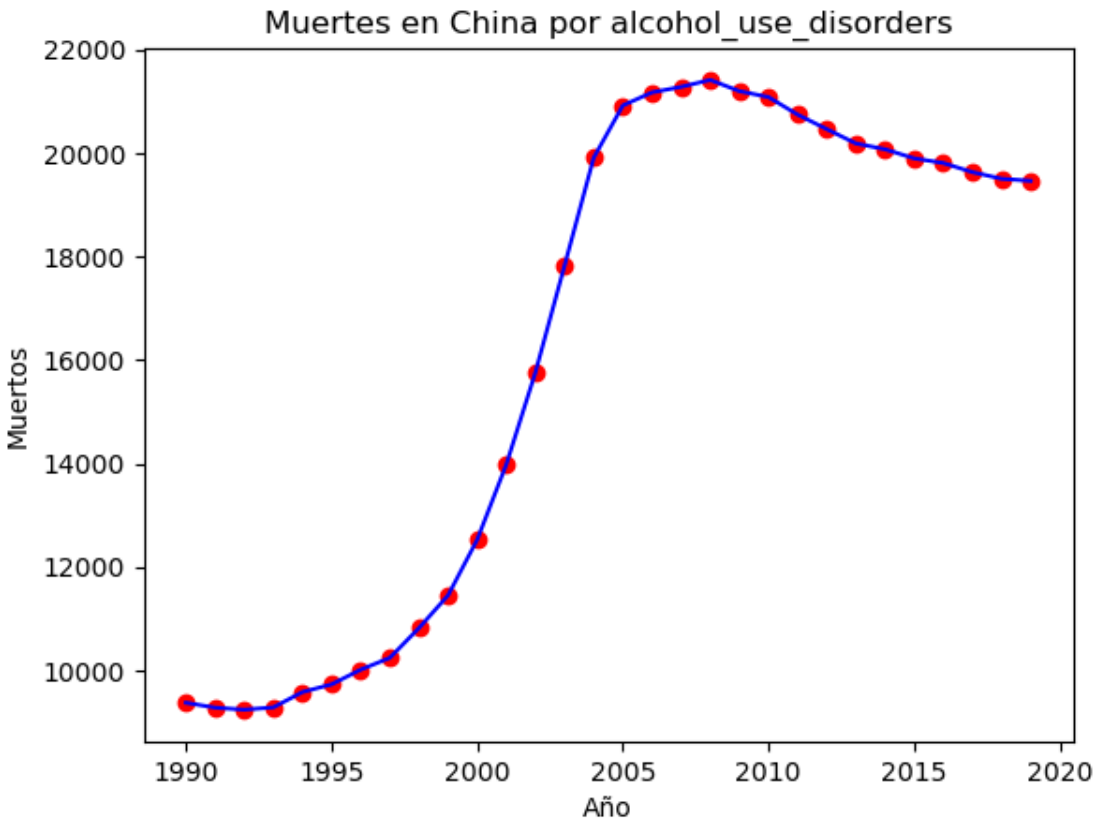
2010
2015
2020
Año


Muertes en China por alcohol_use_disorders
Muertos
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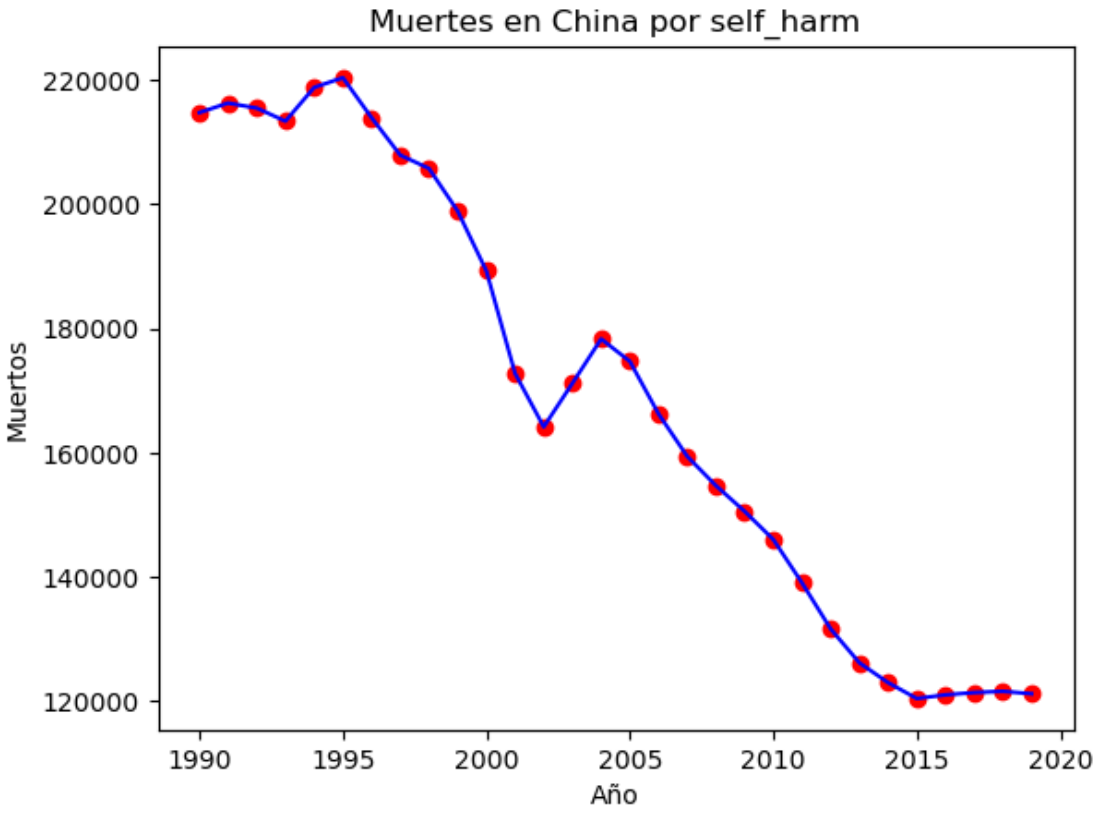
2015
2020


Muertes en China por self_harm
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1995
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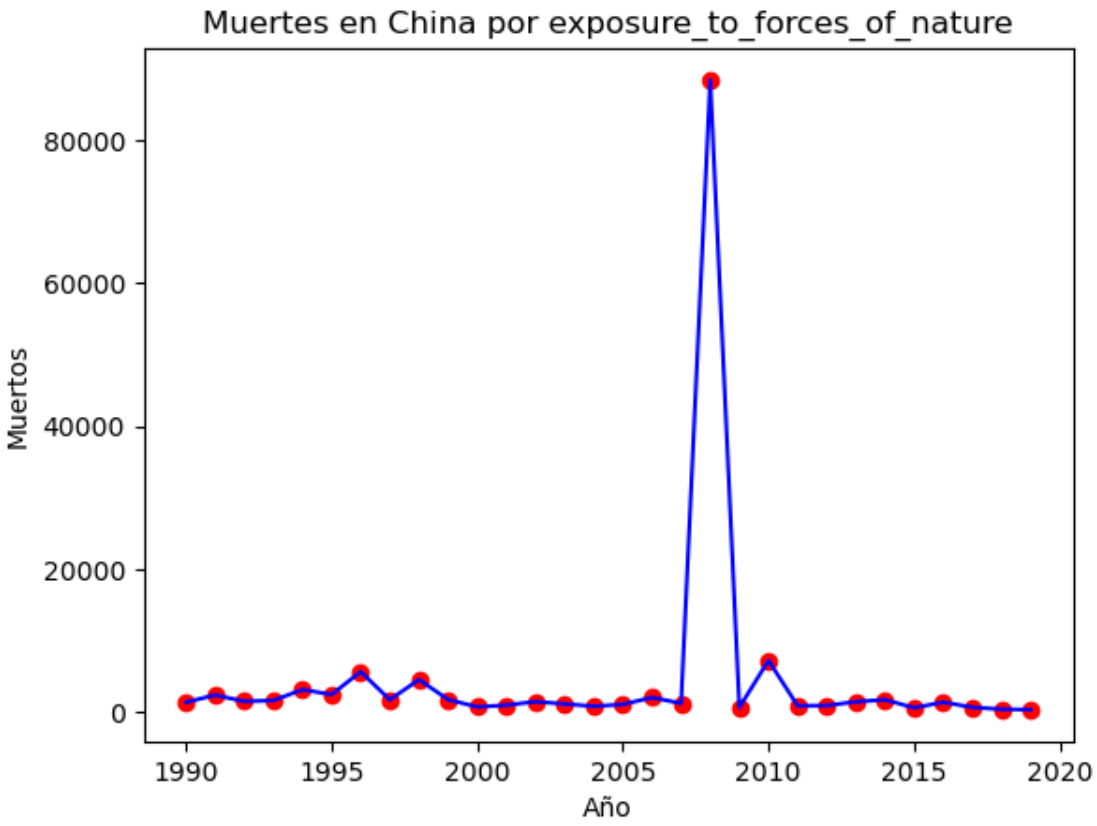
2020
Año


Muertes en China por exposure_to_forces_of_nature
Muertos
80000
60000
40000
20000
0
1990
1995
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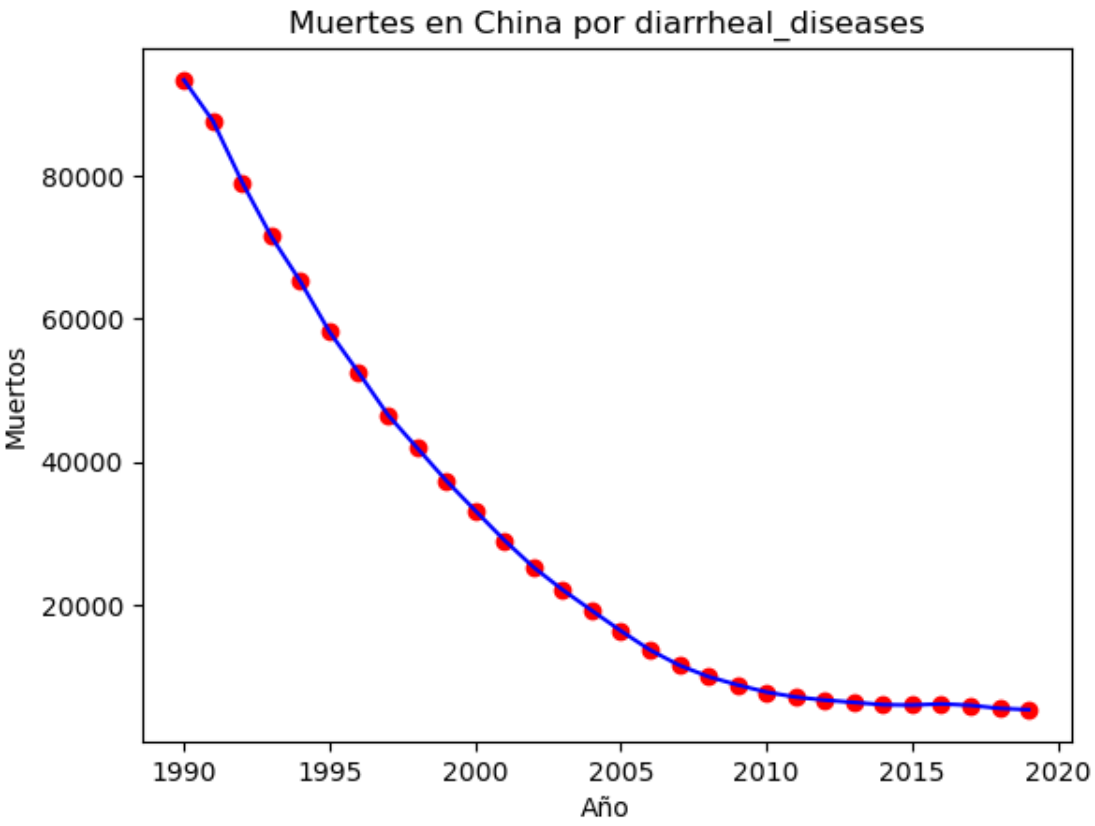
2020
Año


Muertes en China por diarrheal_diseases
Muertos
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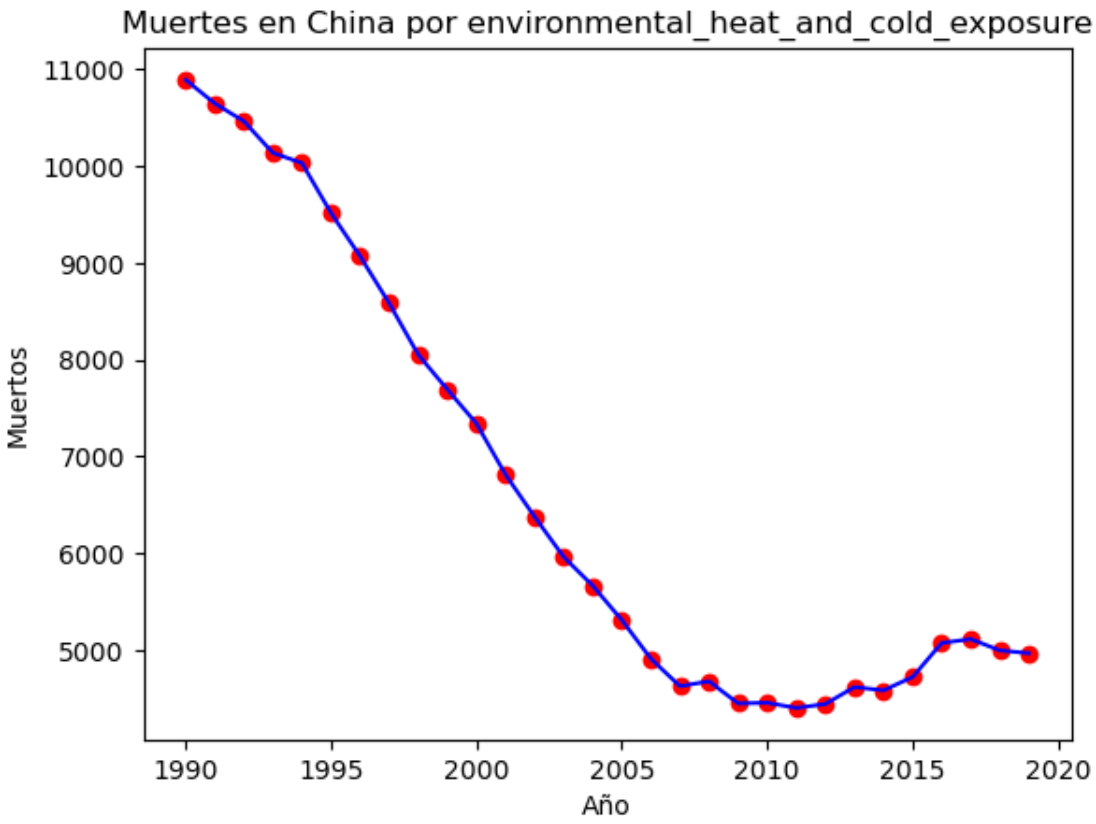
2020
Año


Muertes en China por environmental_heat_and_cold_exposure
Muertos
Año
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8000
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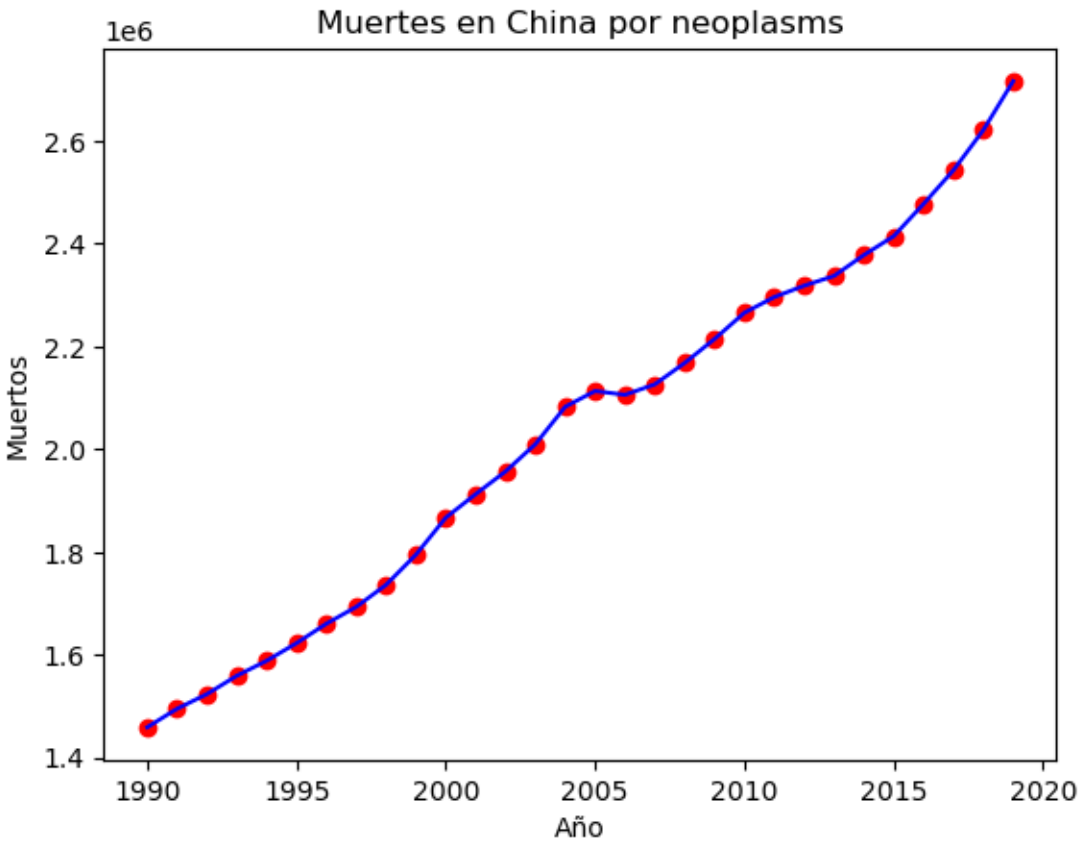
2020


Muertes en China por neoplasms
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2.4
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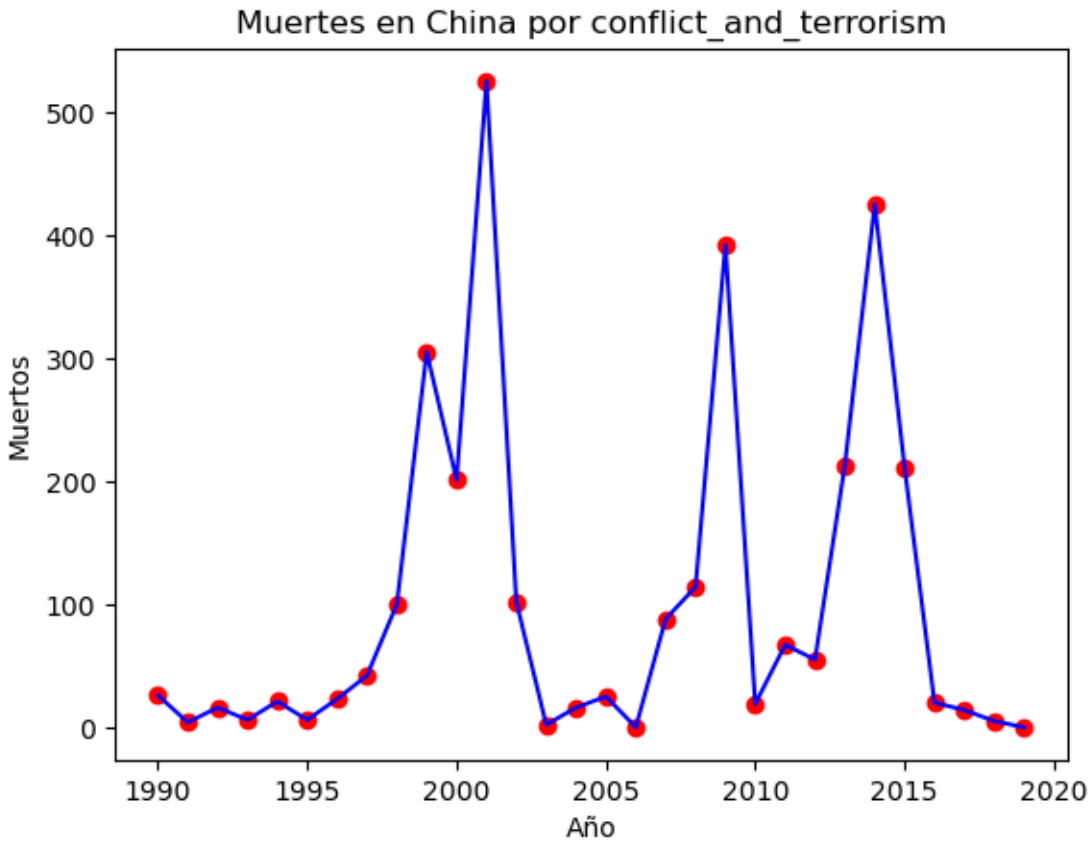
1.4
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por conflict_and_terrorism
Muertos
Año
0
100
200
300
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500
1990
1995
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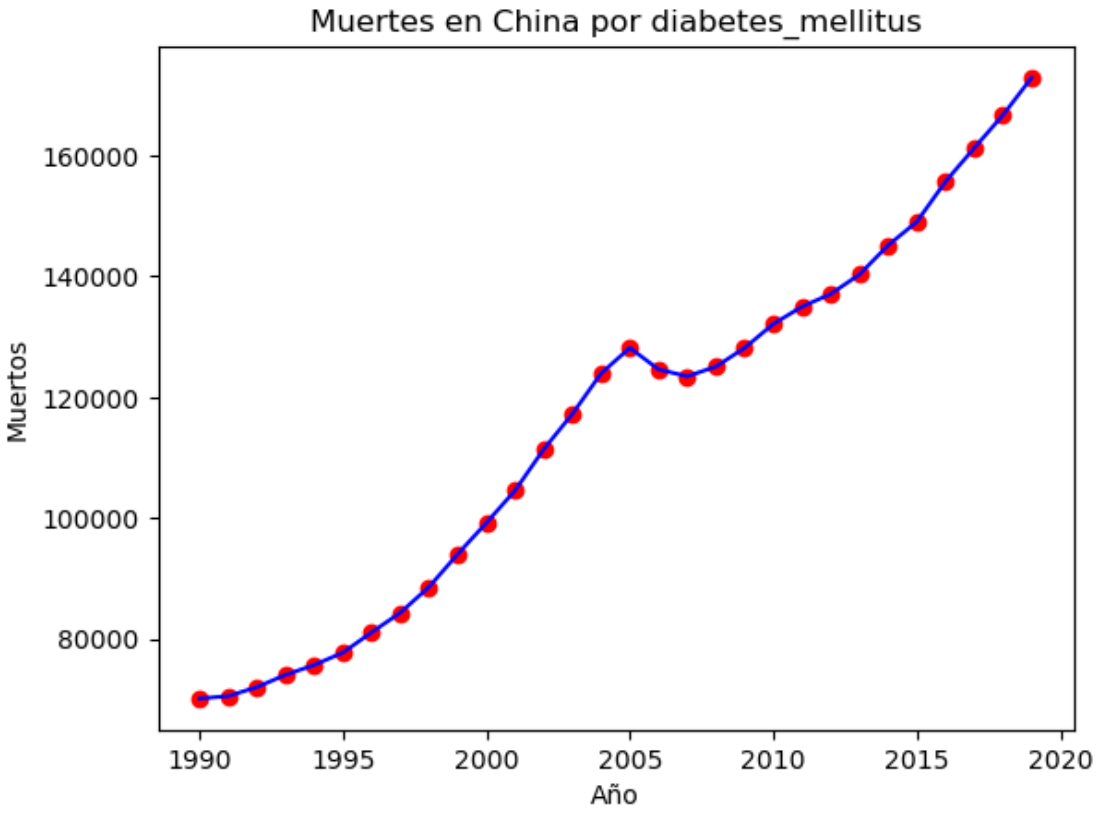
Muertes en China por diabetes_mellitus
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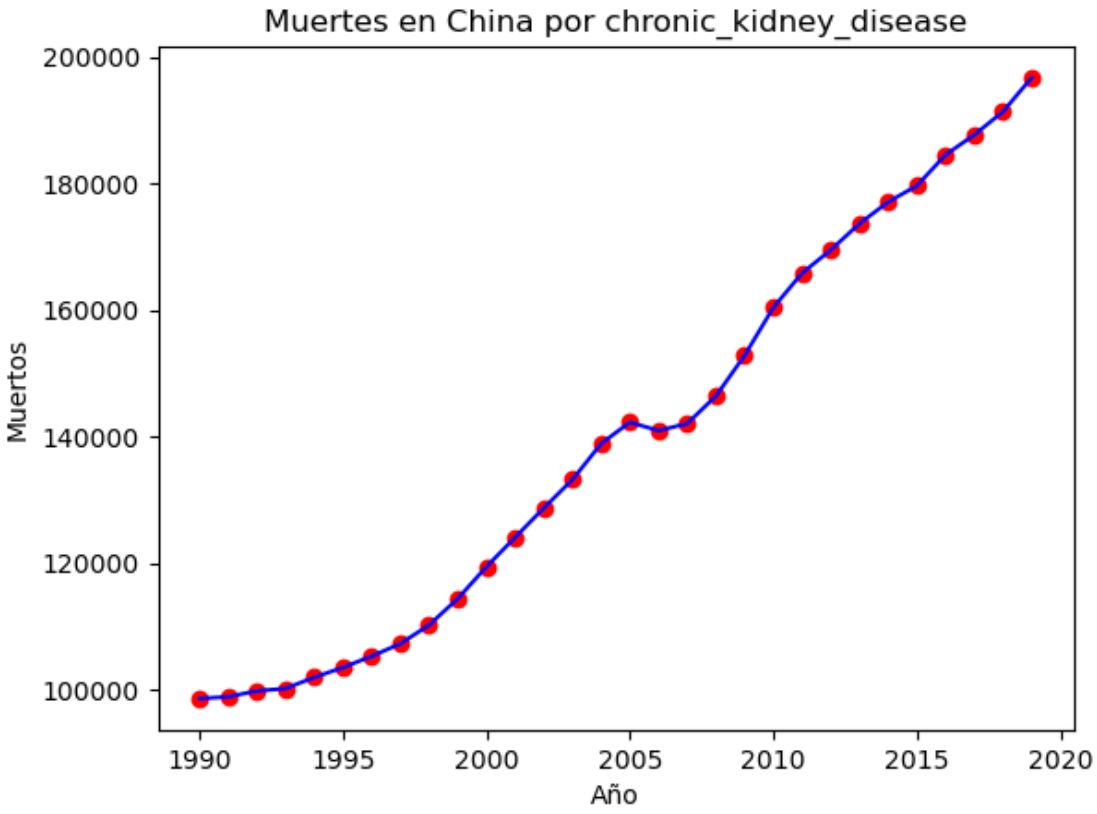
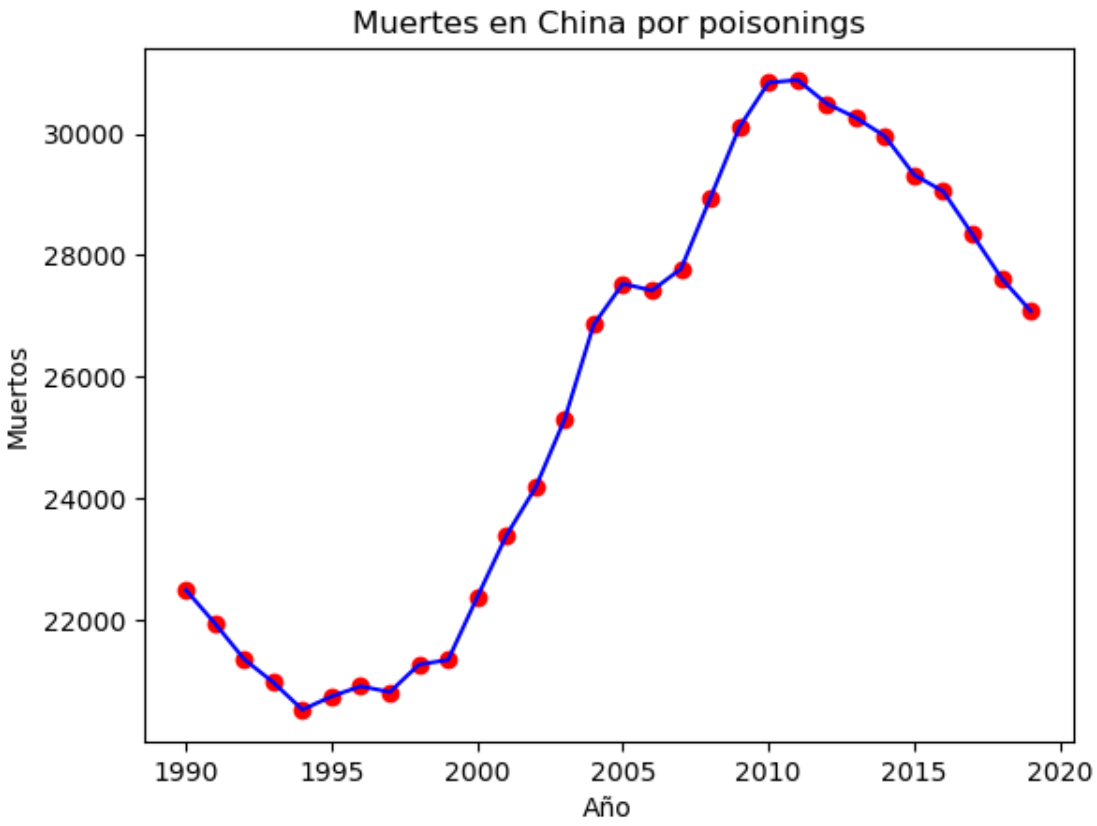
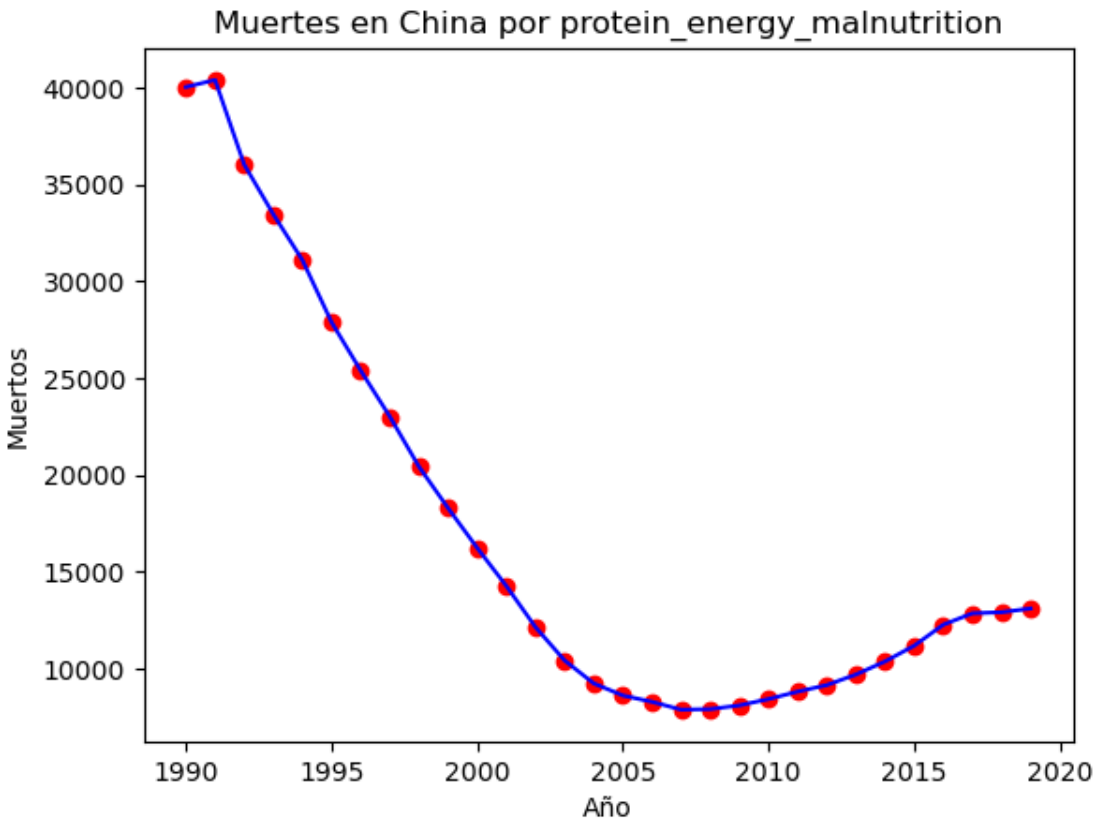
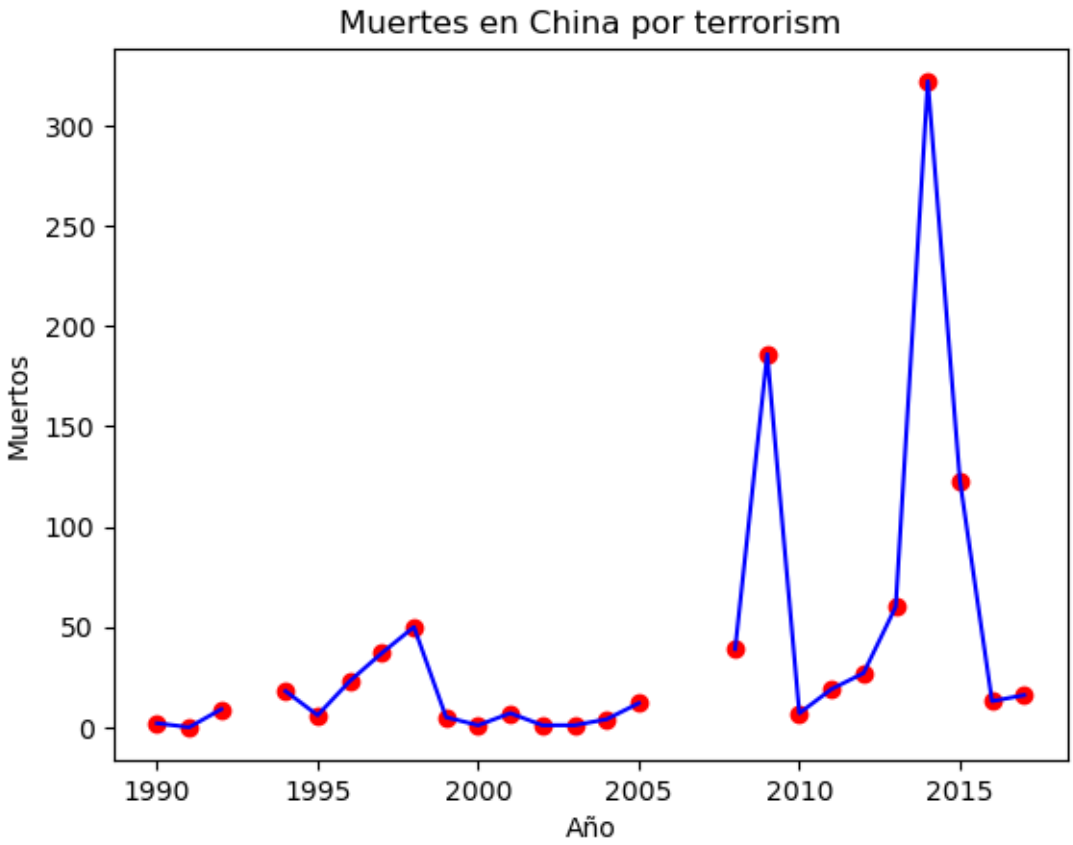
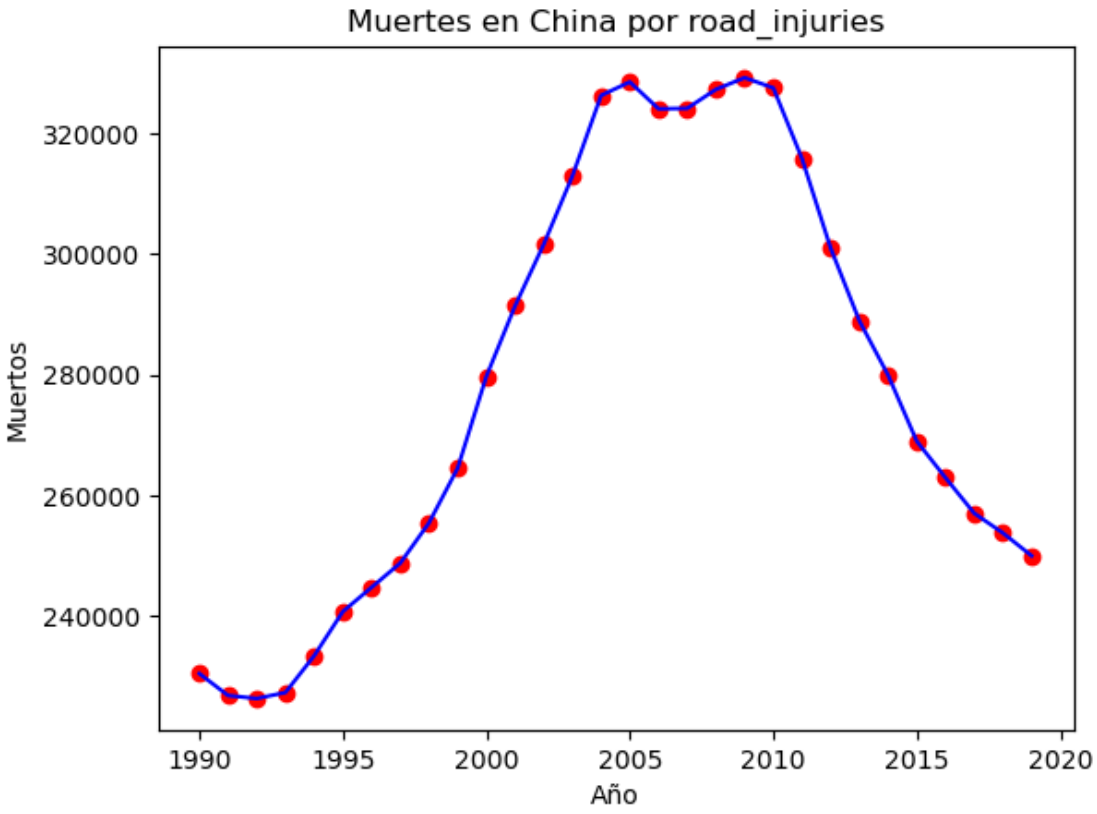
2020
Año

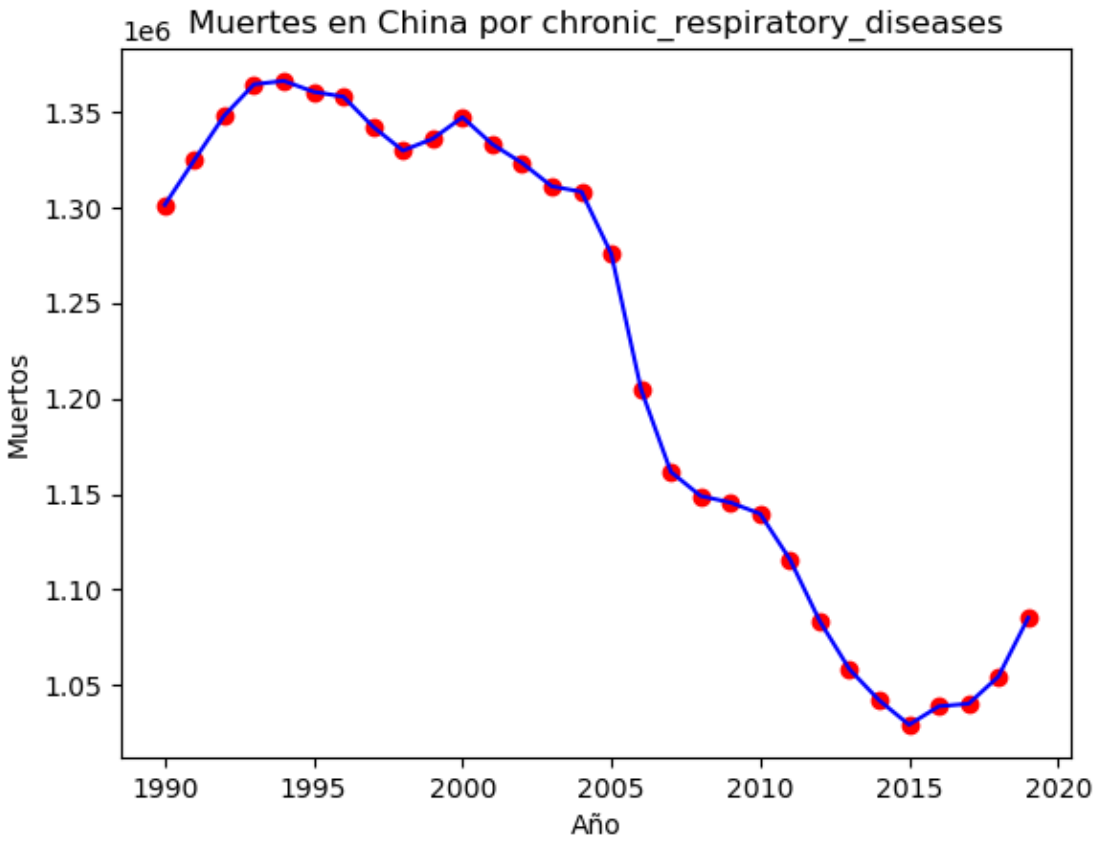

Muertes en China por chronic_kidney_disease
200000
180000
160000
140000
120000
100000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año

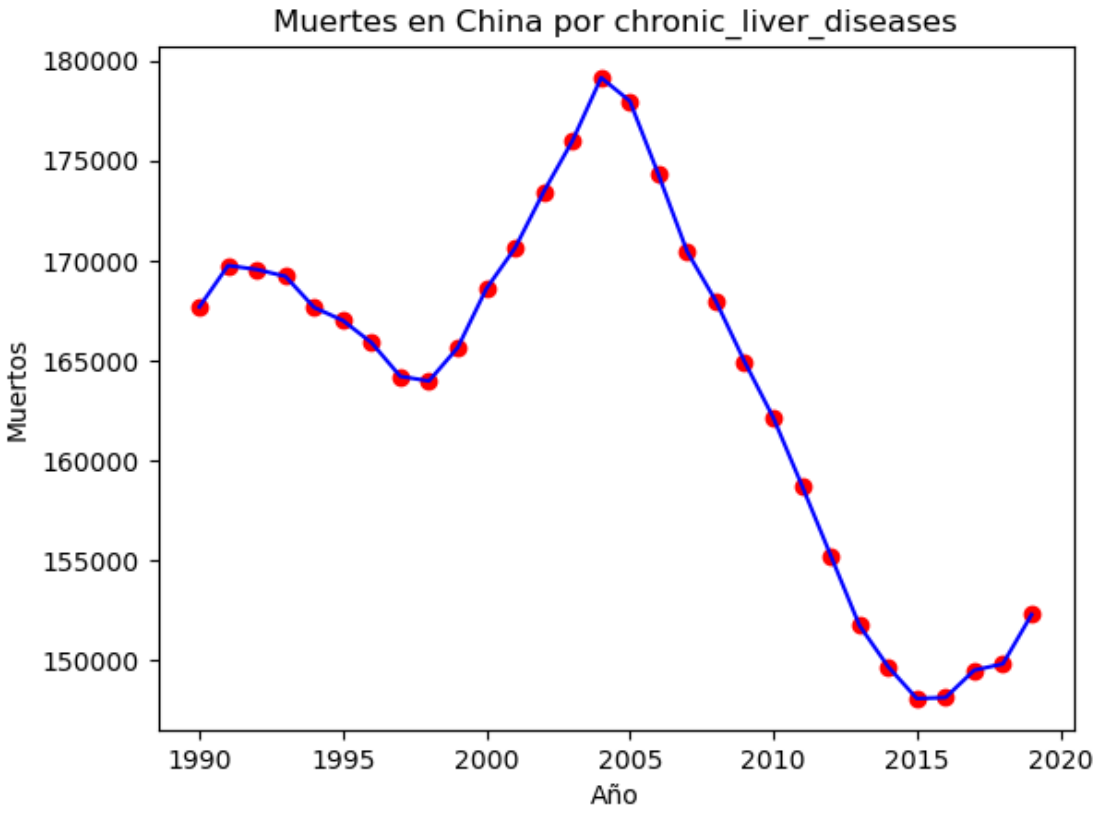

Muertes en China por poisonings
Muertos
30000
28000
26000
24000
22000
1990
1995
2000
2005
2010
2015
2020
Año

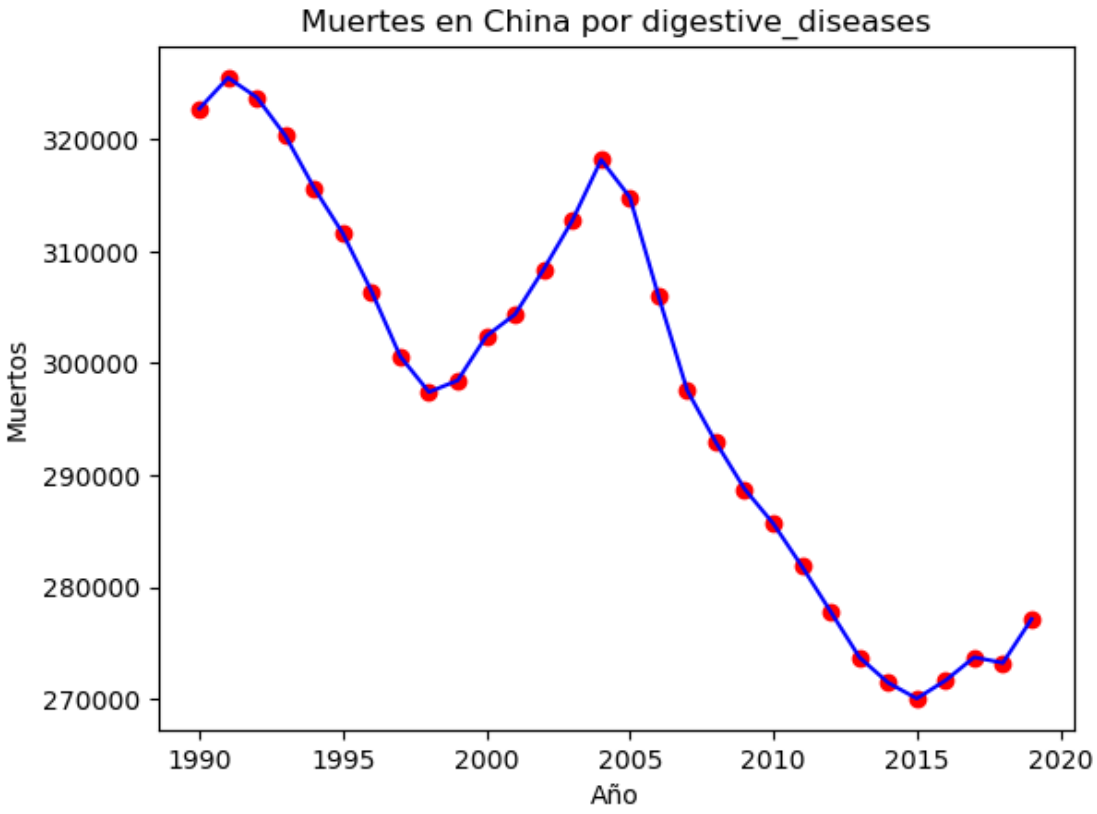

Muertes en China por protein_energy_malnutrition
Muertos
40000
35000
30000
25000
20000
15000
10000
1990
1995
2000
2005
2010
2015
2020
Año

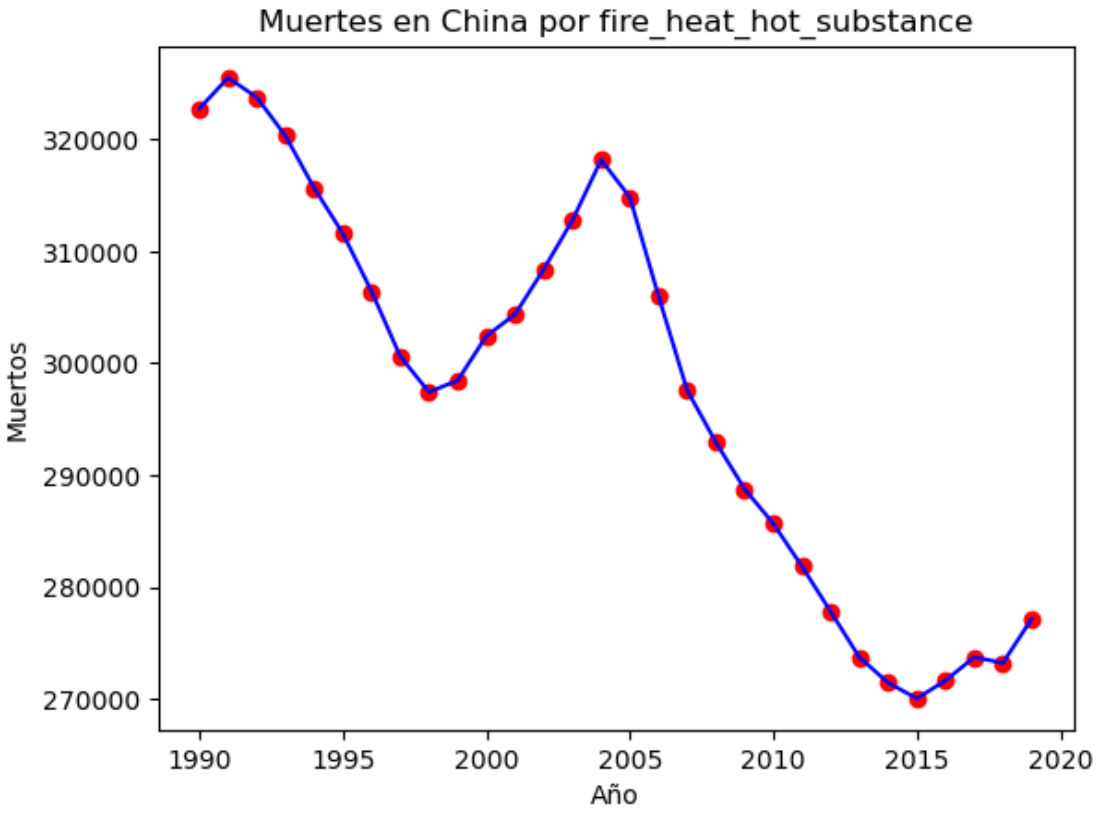

Muertes en China por terrorism
Muertos
Año
0
50
100
150
200
250
300
1990
1995
2000
2005
2010
2015

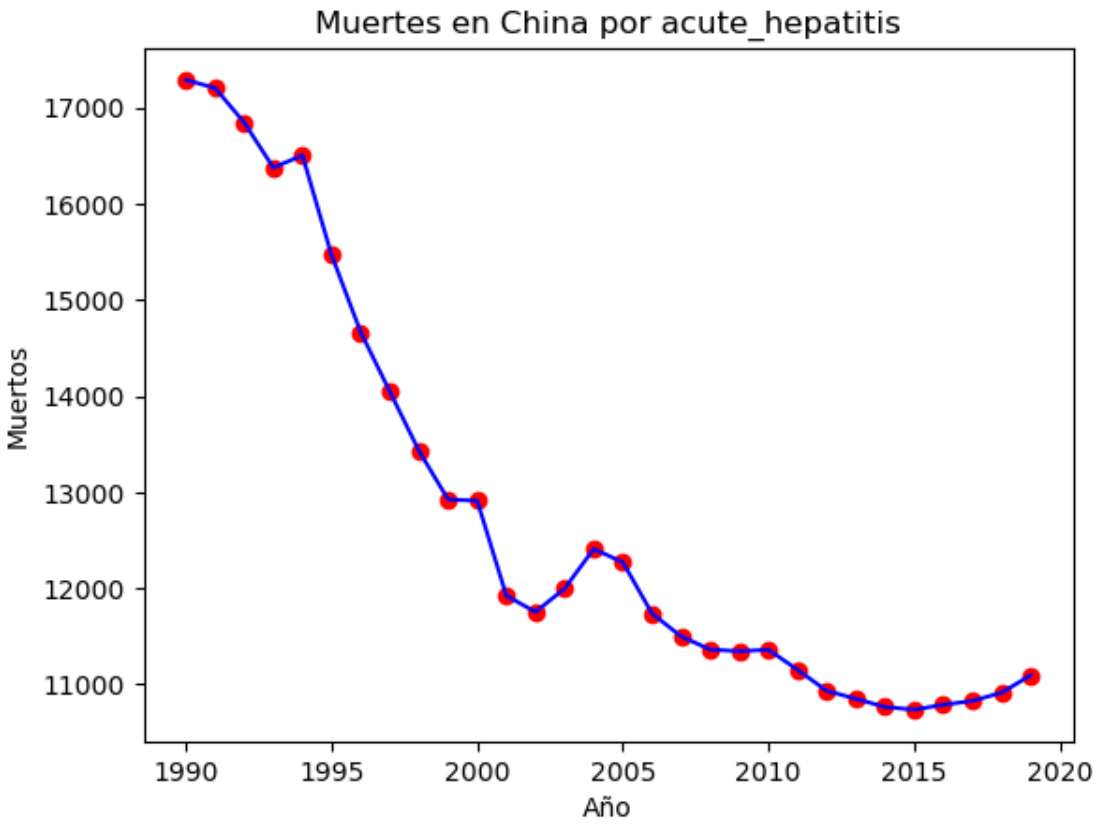

Muertes en China por road_injuries
Muertos
320000
300000
280000
260000
240000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por chronic_respiratory_diseases
1e6
1.35
1.30
1.25
1.20
1.15
1.10
1.05
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por chronic_liver_diseases
180000
175000
170000
165000
160000
155000
150000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por digestive_diseases
Muertos
320000
310000
300000
290000
280000
270000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en China por fire_heat_hot_substance
Muertos
320000
310000
300000
290000
280000
270000
1990
1995
2000
2005
2010
2015
2020
Año



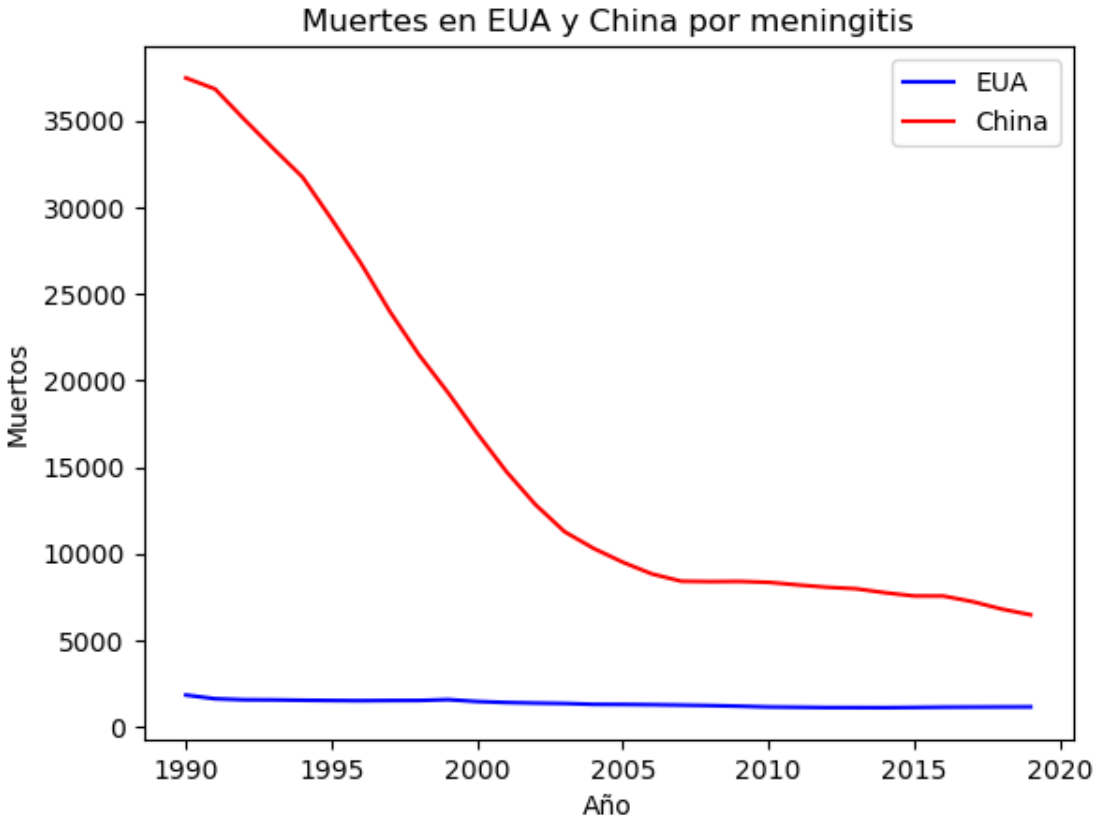
4.0.6 Análisis de resultados; comparación entre EUA y China

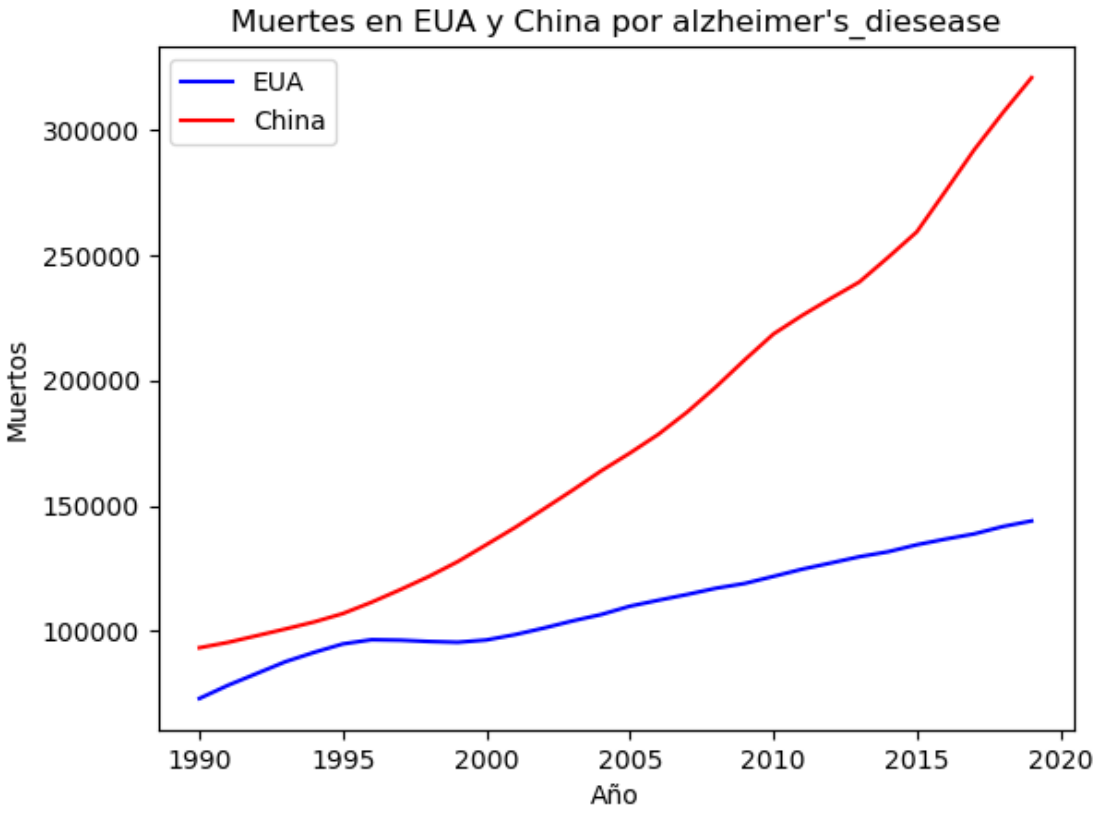
[ ]:
```
df_chi.shape
```

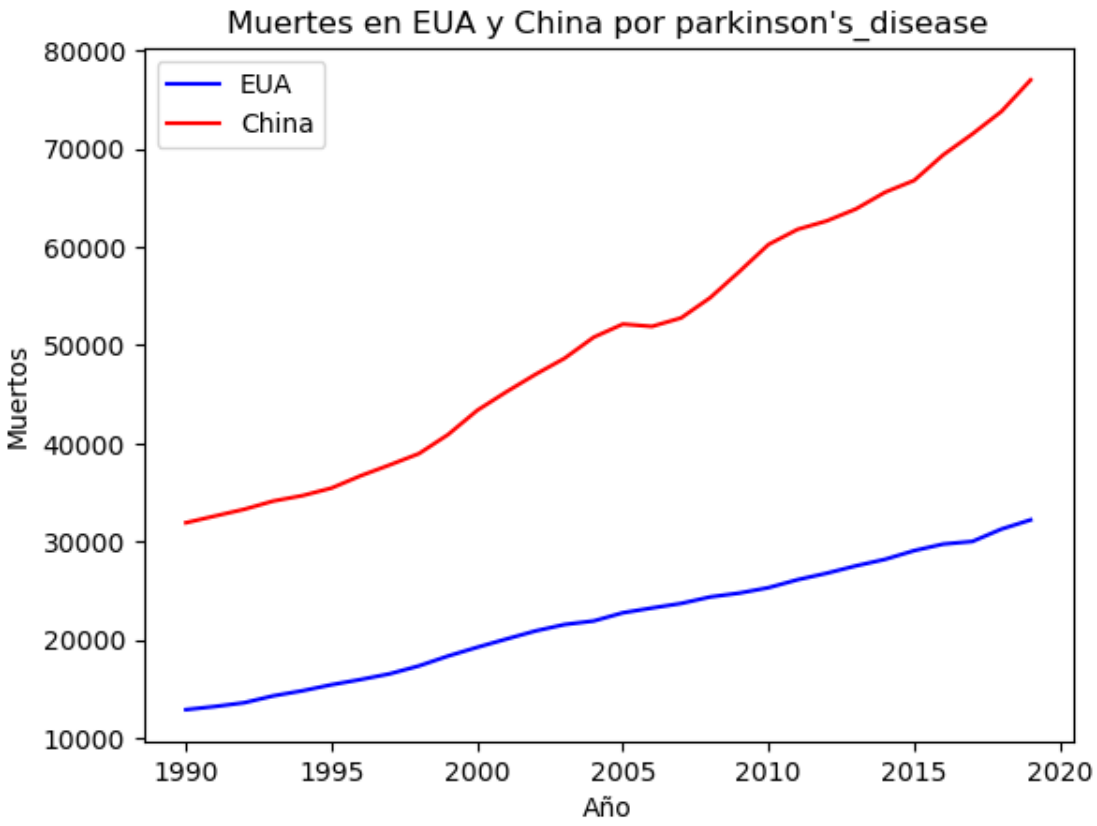
[ ]: (30, 33)

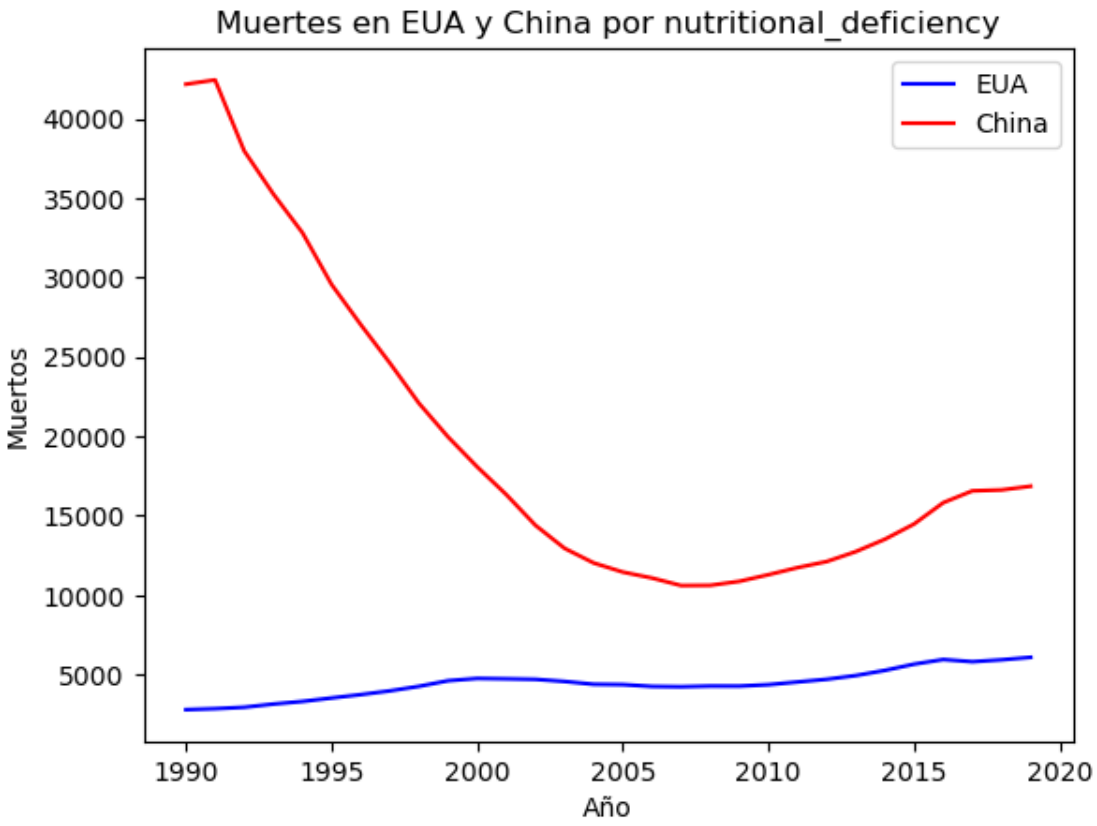
[ ]:
```
#Comparaciones
# Lista de valores de i
i_values = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,␣
 ↪20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 30, 31, 32]

# Lista de valores de r
r_values = ['meningitis', "alzheimer's_diesease", "parkinson's_disease",
       'nutritional_deficiency', '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',
```

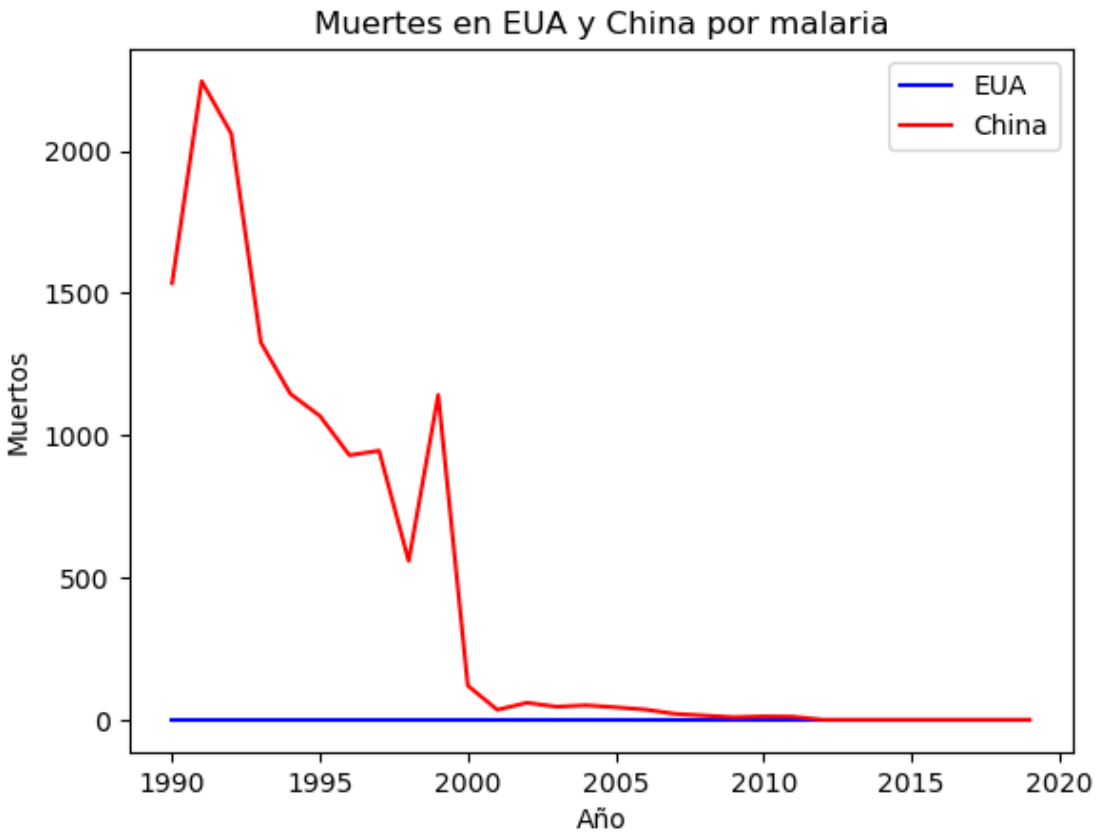
```
       'chronic_kidney_disease', 'poisonings', 'protein_energy_malnutrition',
       'terrorism', 'road_injuries', 'chronic_respiratory_diseases',
       'chronic_liver_diseases', 'digestive_diseases',
       'fire_heat_hot_substance', 'acute_hepatitis']

# Iteramos sobre los valores de i y r
for i, r in zip(i_values, r_values):
    # Seleccionamos los datos
    x_data = df_unites.iloc[:, [0]]
    y_data1 = df_unites.iloc[:, [i]]
    y_data2 = df_chi.iloc[:, [i]]

    # Graficamos
    plt.plot(x_data, y_data1, color='blue', label='EUA')
    plt.plot(x_data, y_data2, color='red', label='China')
    plt.title(f'Muertes en EUA y China por {r}')
    plt.xlabel('Año')
    plt.ylabel('Muertos')
    plt.legend()
    plt.show()
```

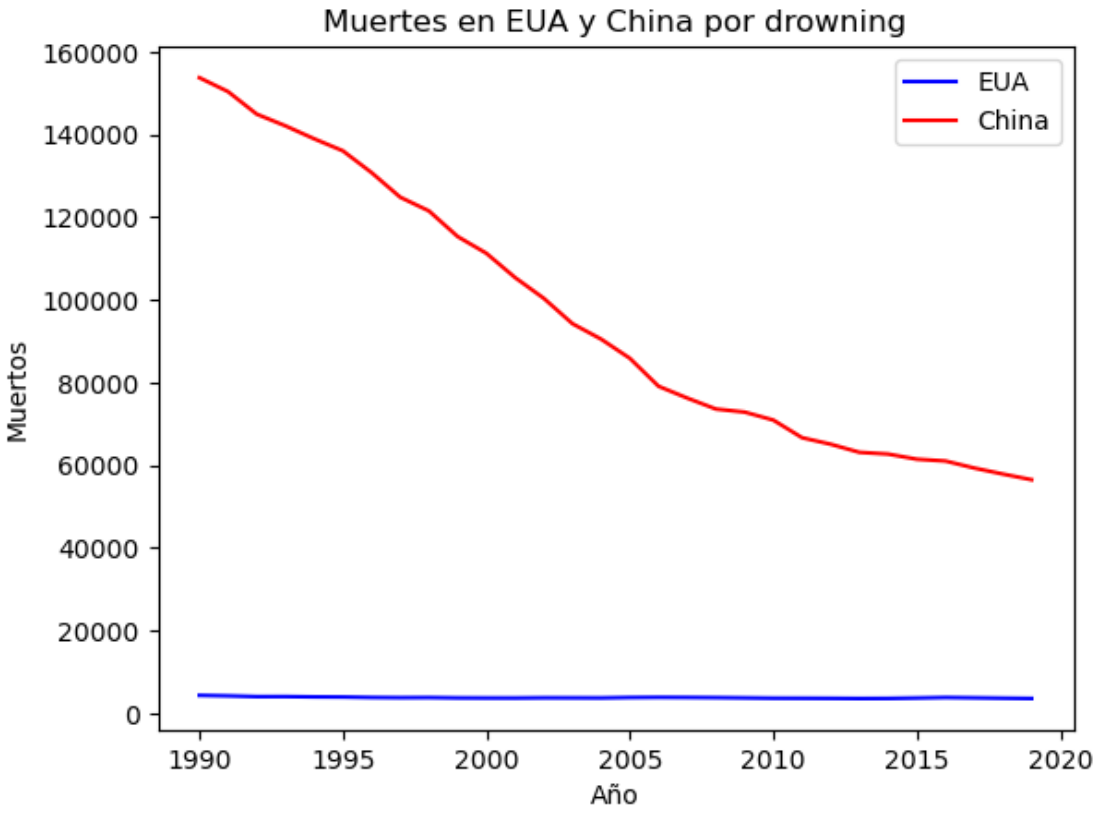


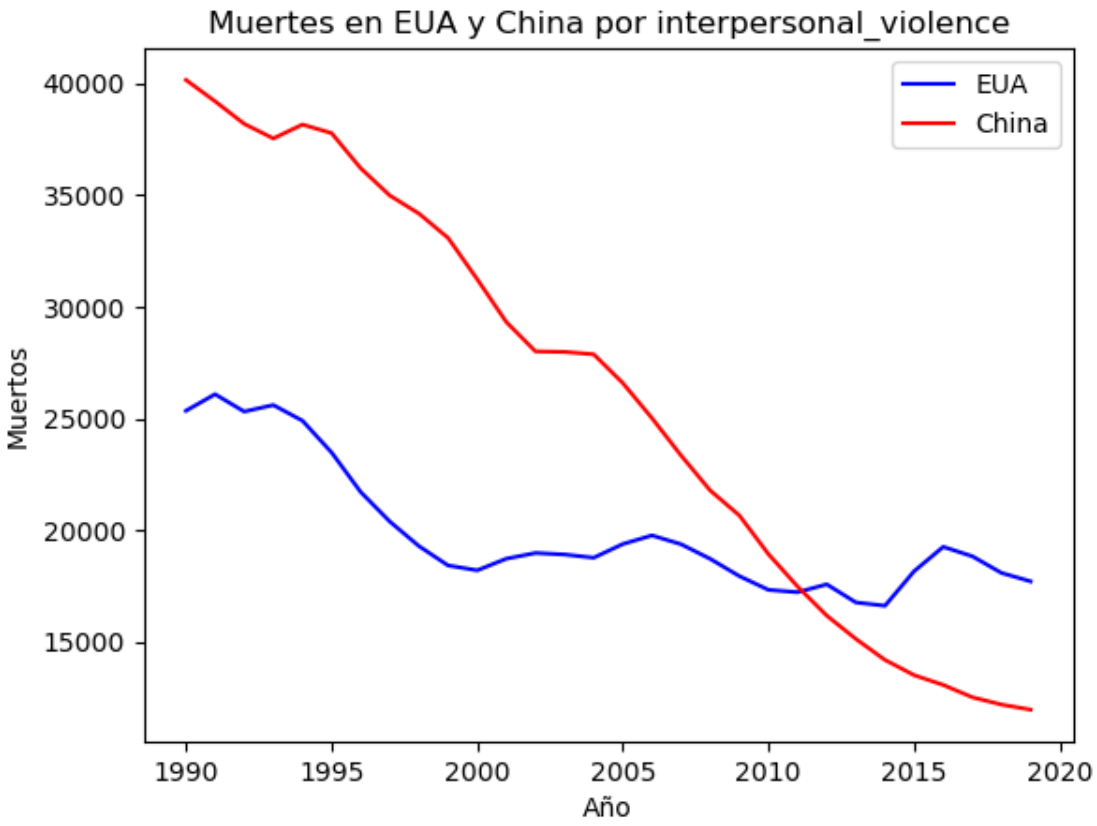

Muertes en EUA y China por alzheimer's_diesease
EUA
China
300000
250000
200000
150000
100000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año

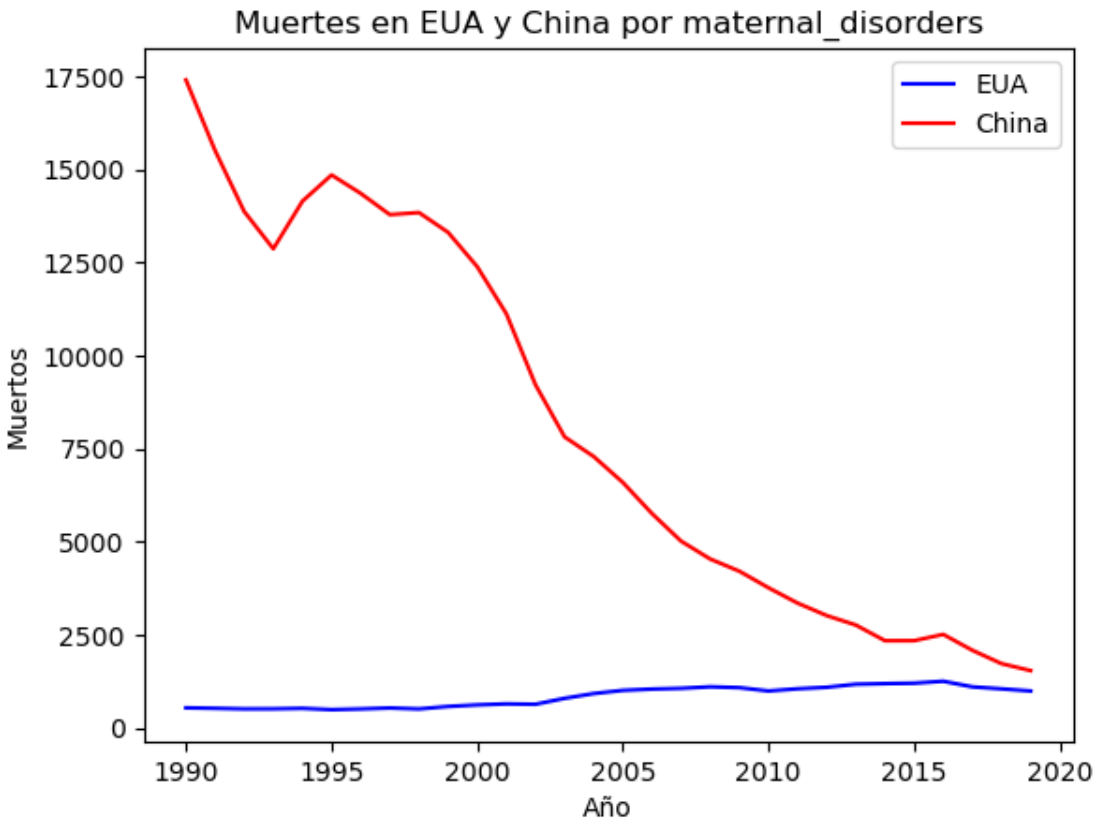

Muertes en EUA y China por parkinson's_disease
EUA
China
Muertos
Año
80000
70000
60000
50000
40000
30000
20000
10000
1990
1995
2000
2005
2010
2015
2020

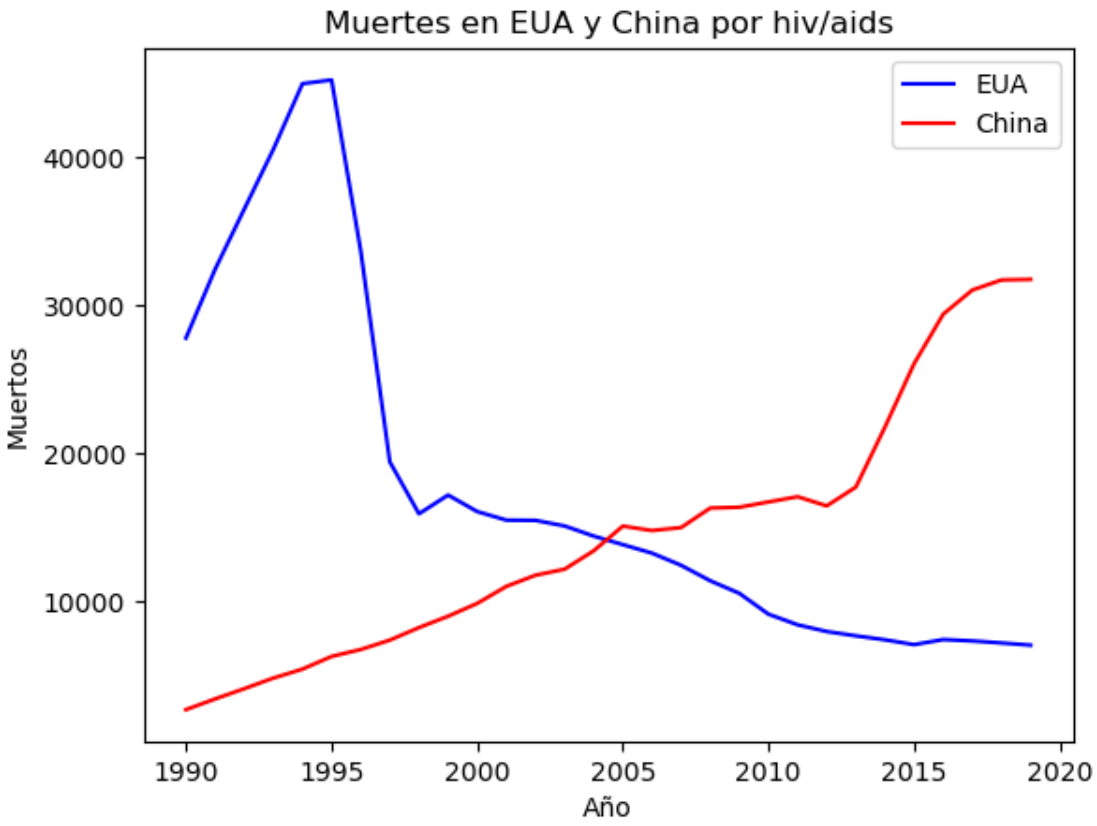

Muertes en EUA y China por nutritional_deficiency
EUA
China
Muertos
40000
35000
30000
25000
20000
15000
10000
5000
1990
1995
2000
2005
2010
2015
2020
Año

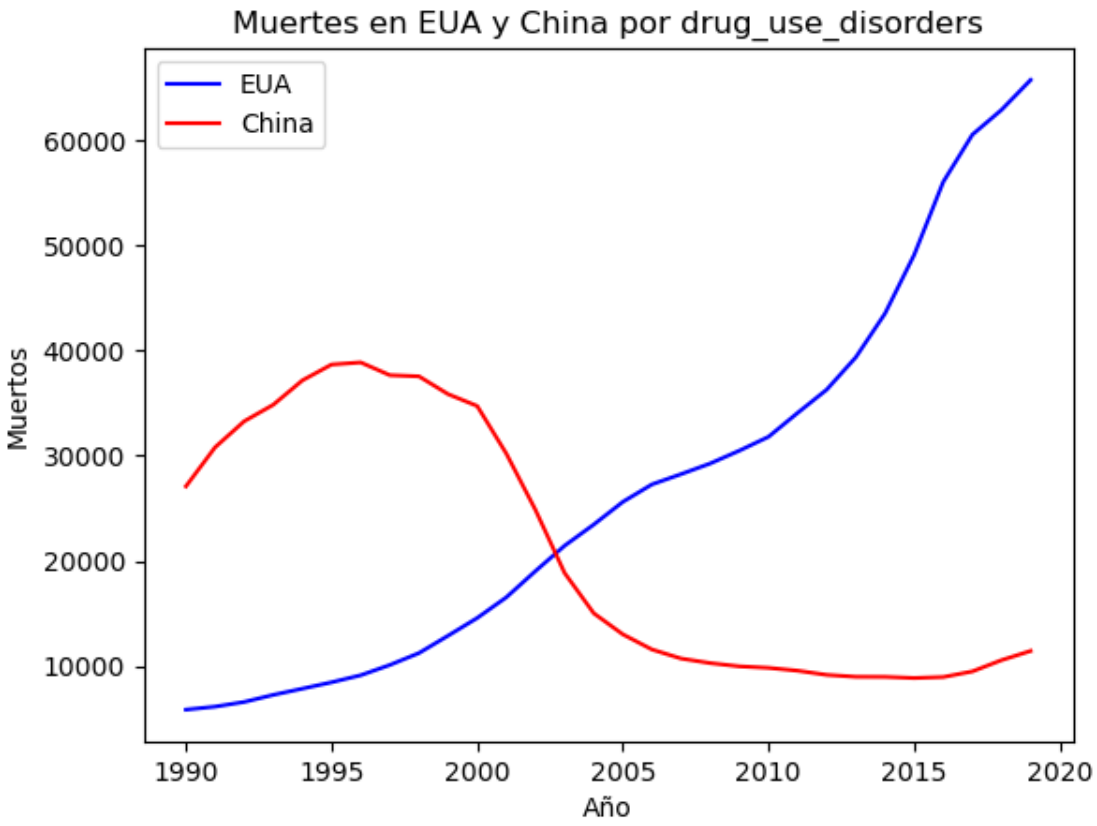

Muertes en EUA y China por malaria
EUA
China
2000
1500
1000
500
0
Muertos
1990
1995
2000
2005
2010
2015
2020
Año

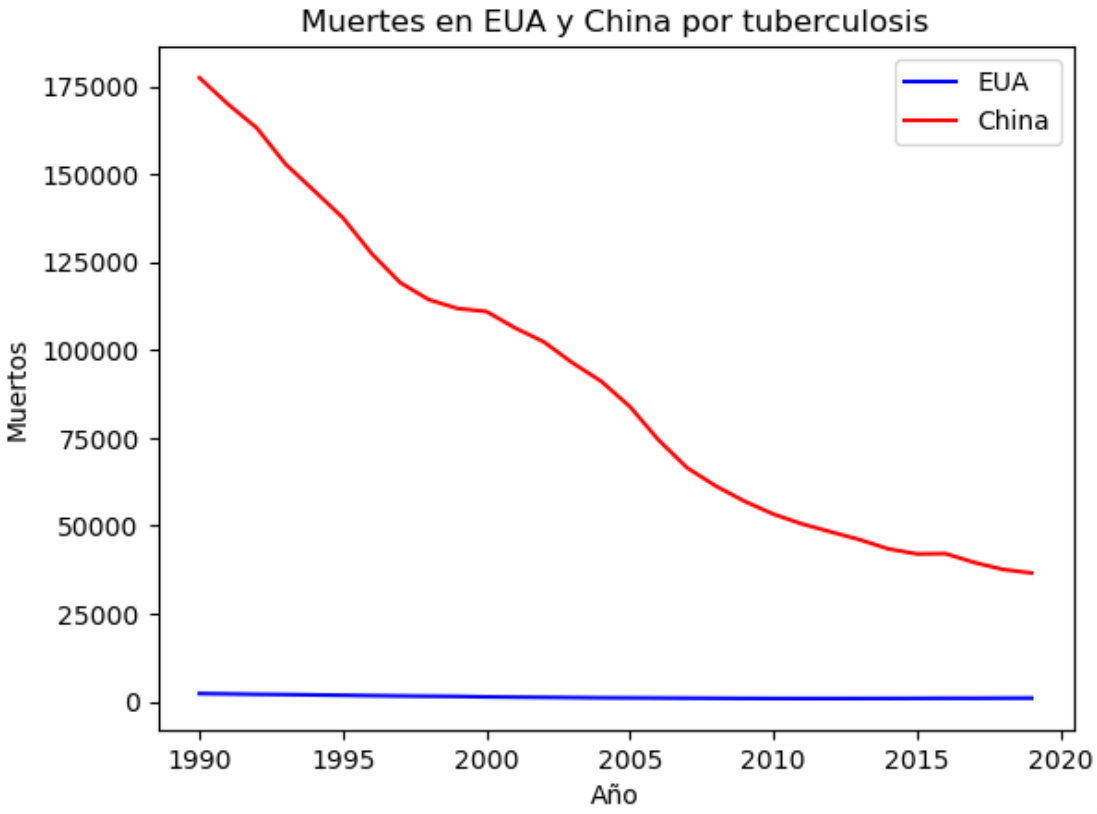

Muertes en EUA y China por drowning
EUA
China
Muertos
Año
160000
140000
120000
100000
80000
60000
40000
20000
0
1990
1995
2000
2005
2010
2015
2020

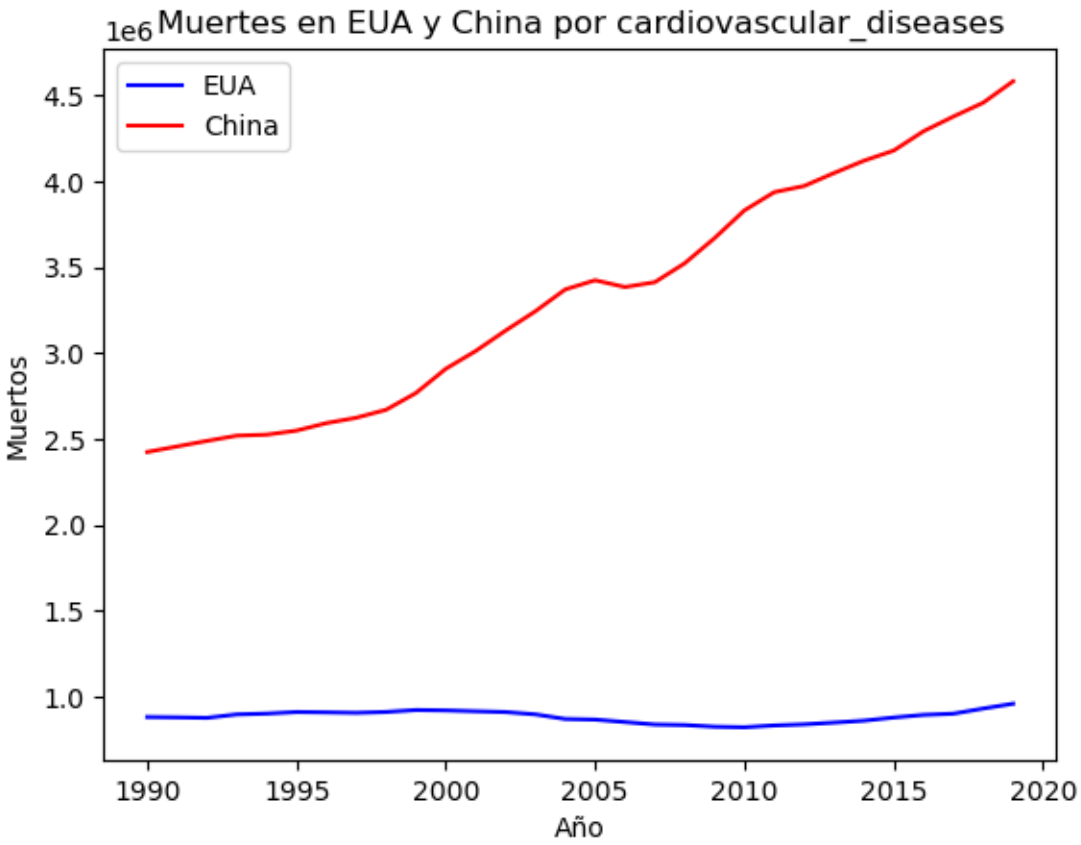

Muertes en EUA y China por interpersonal_violence
EUA
China
Muertos
40000
35000
30000
25000
20000
15000
1990
1995
2000
2005
2010
2015
2020
Año

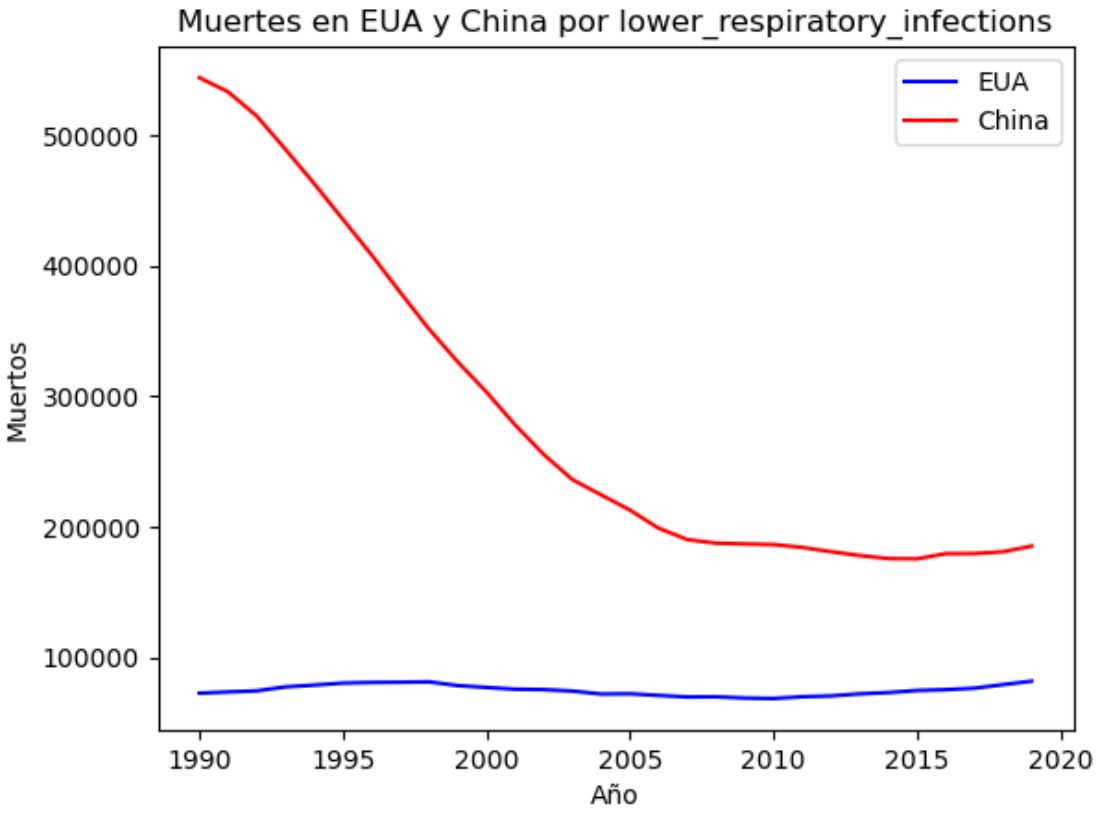

Muertes en EUA y China por maternal_disorders
EUA
China
Muertos
17500
15000
12500
10000
7500
5000
2500
0
1990
1995
2000
2005
2010
2015
2020
Año

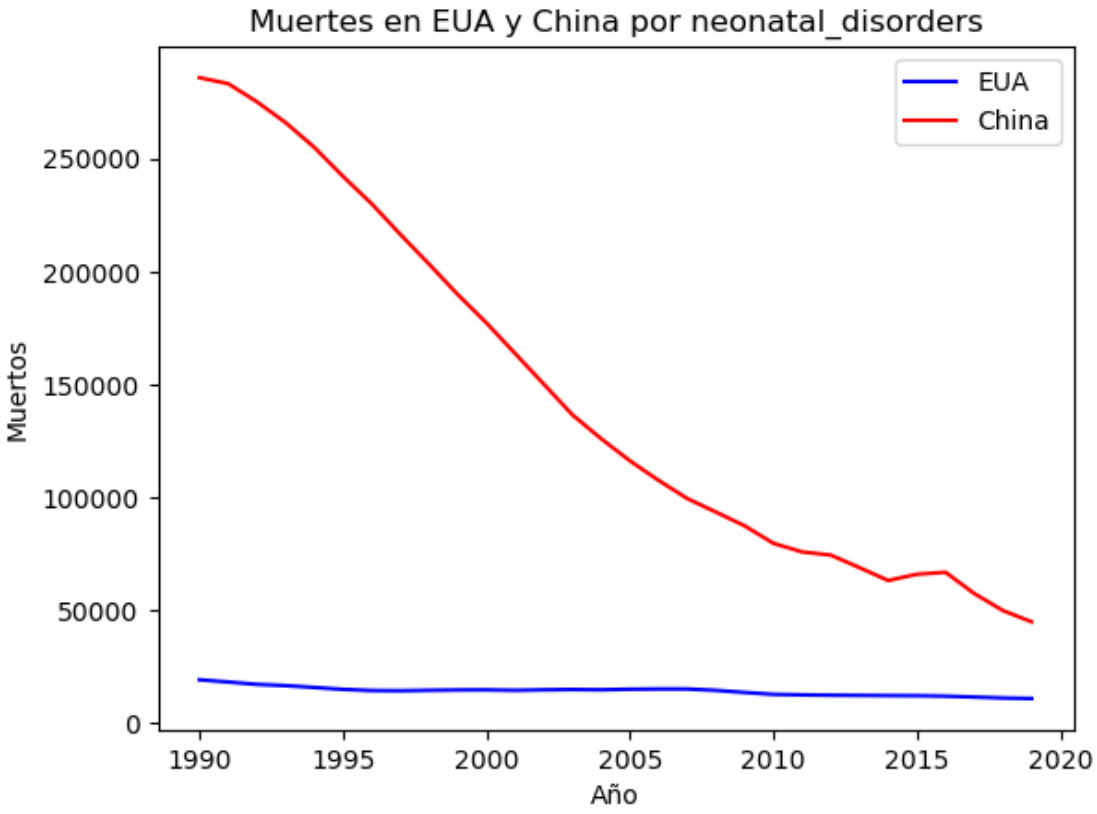

Muertes en EUA y China por hiv/aids
EUA
China
40000
30000
20000
10000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por drug_use_disorders
EUA
China
60000
50000
40000
30000
20000
10000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por tuberculosis
EUA
China
175000
150000
125000
100000
75000
50000
25000
0
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por cardiovascular_diseases
1e6
EUA
China
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por lower_respiratory_infections
EUA
China
500000
400000
300000
200000
100000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por neonatal_disorders
EUA
China
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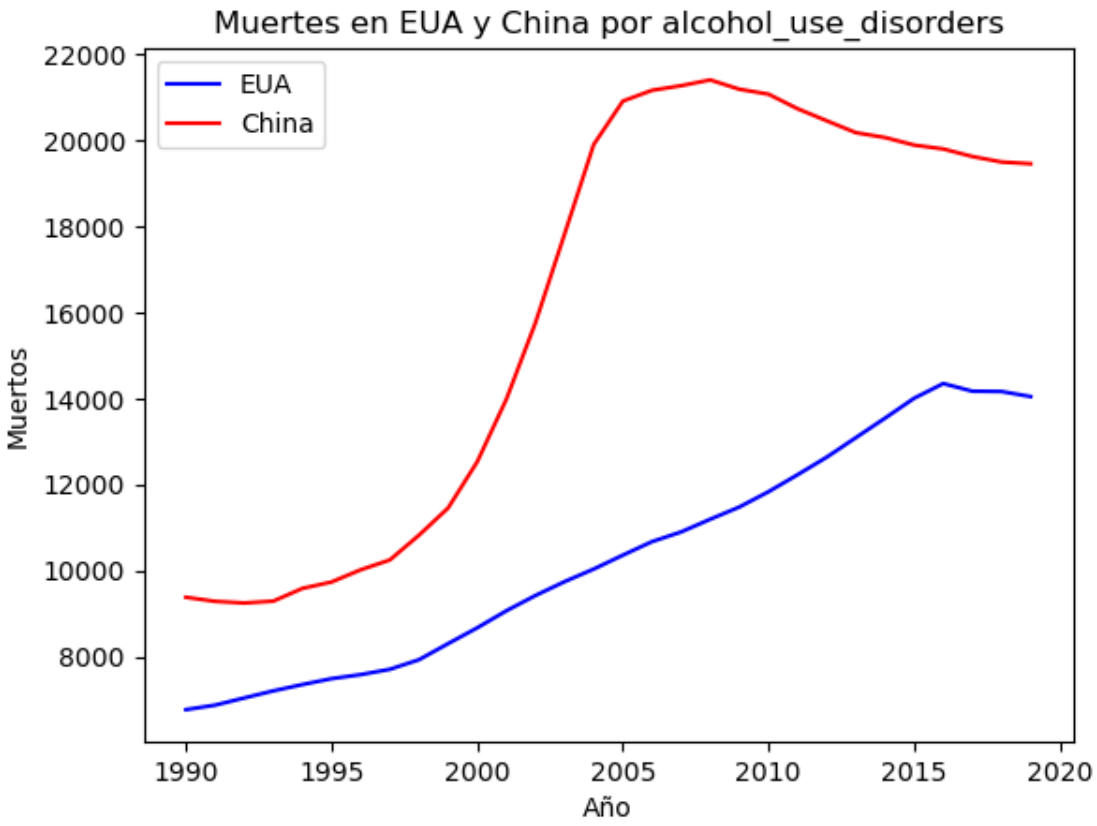
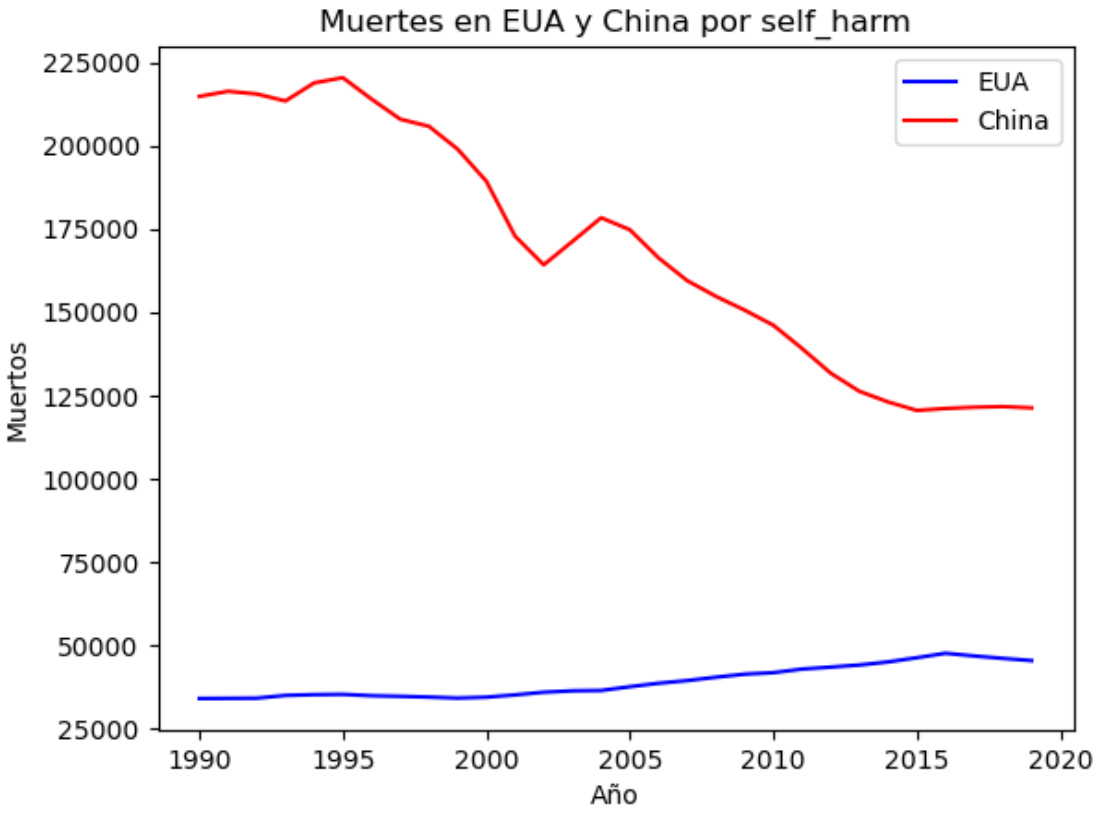
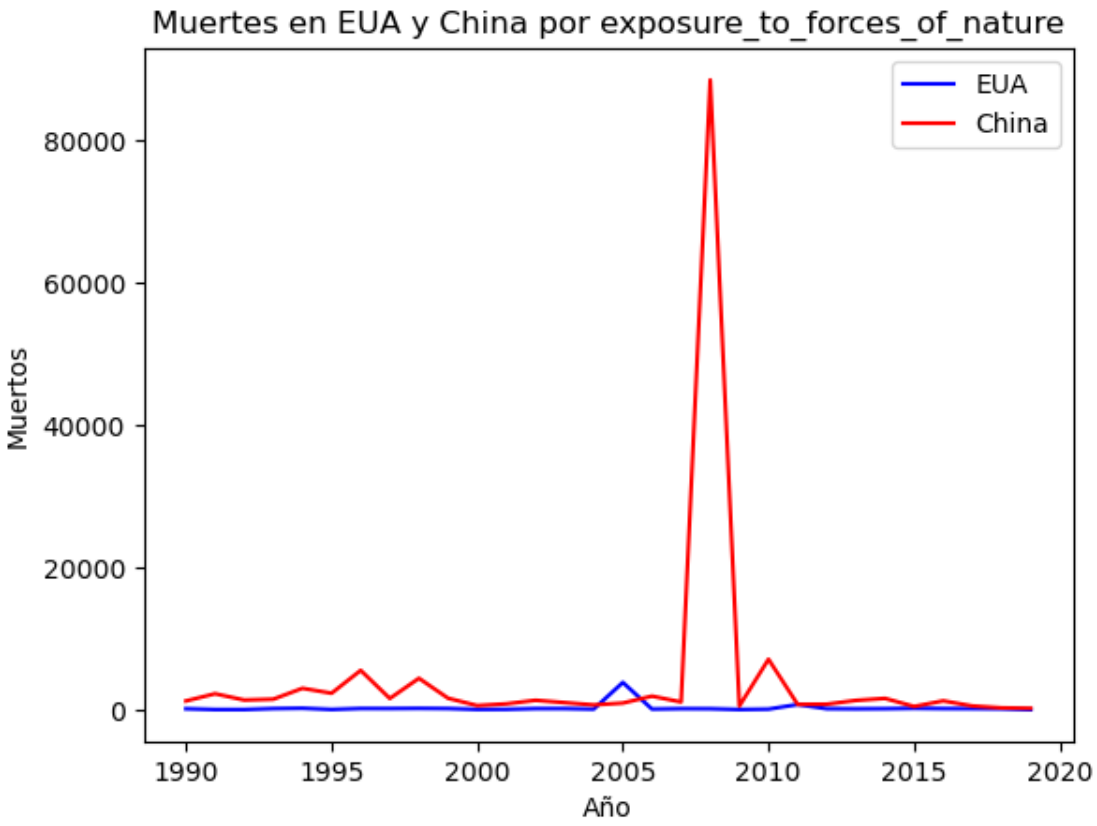
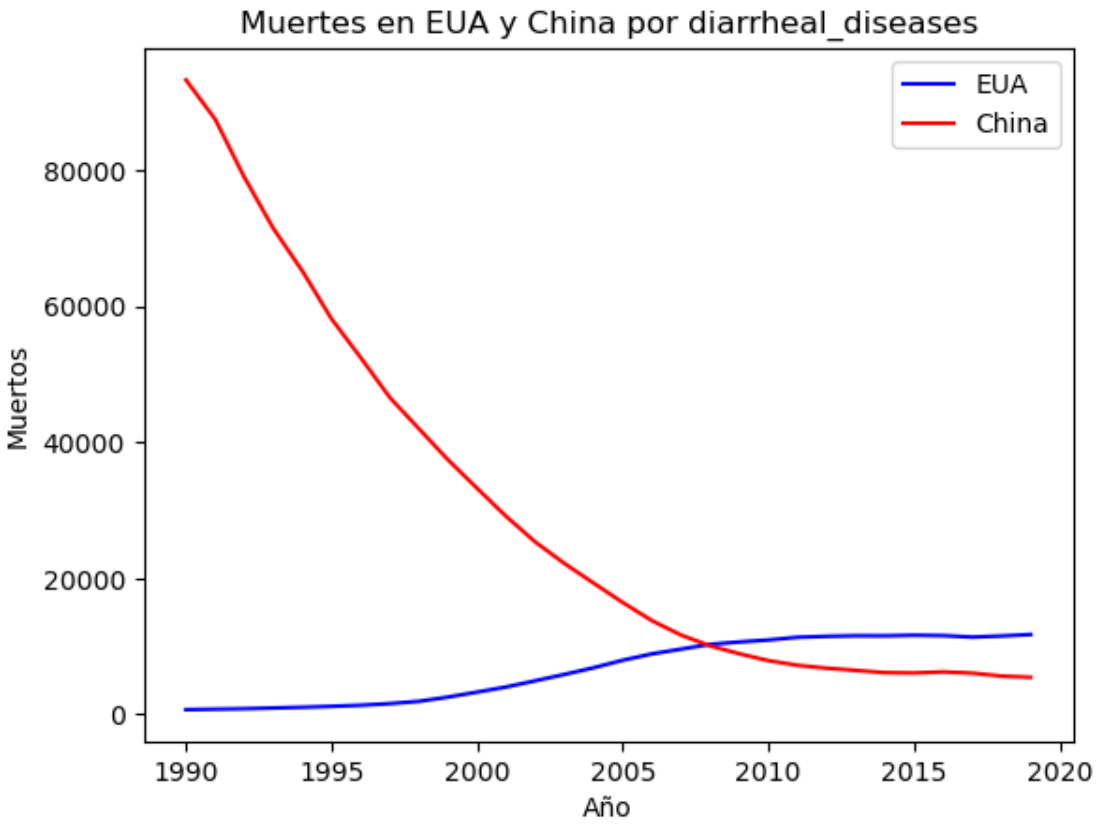
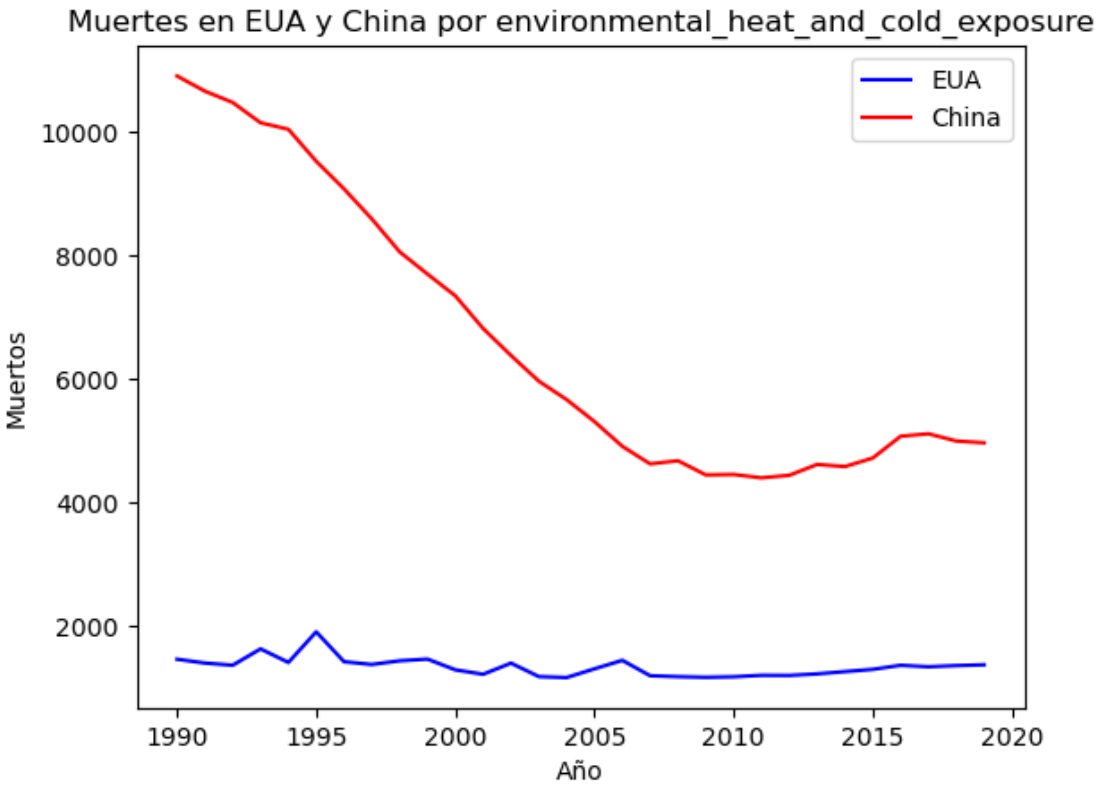
200000
150000
100000
50000
0
Muertos
1990
1995
2000
2005
2010
2015
2020
Año

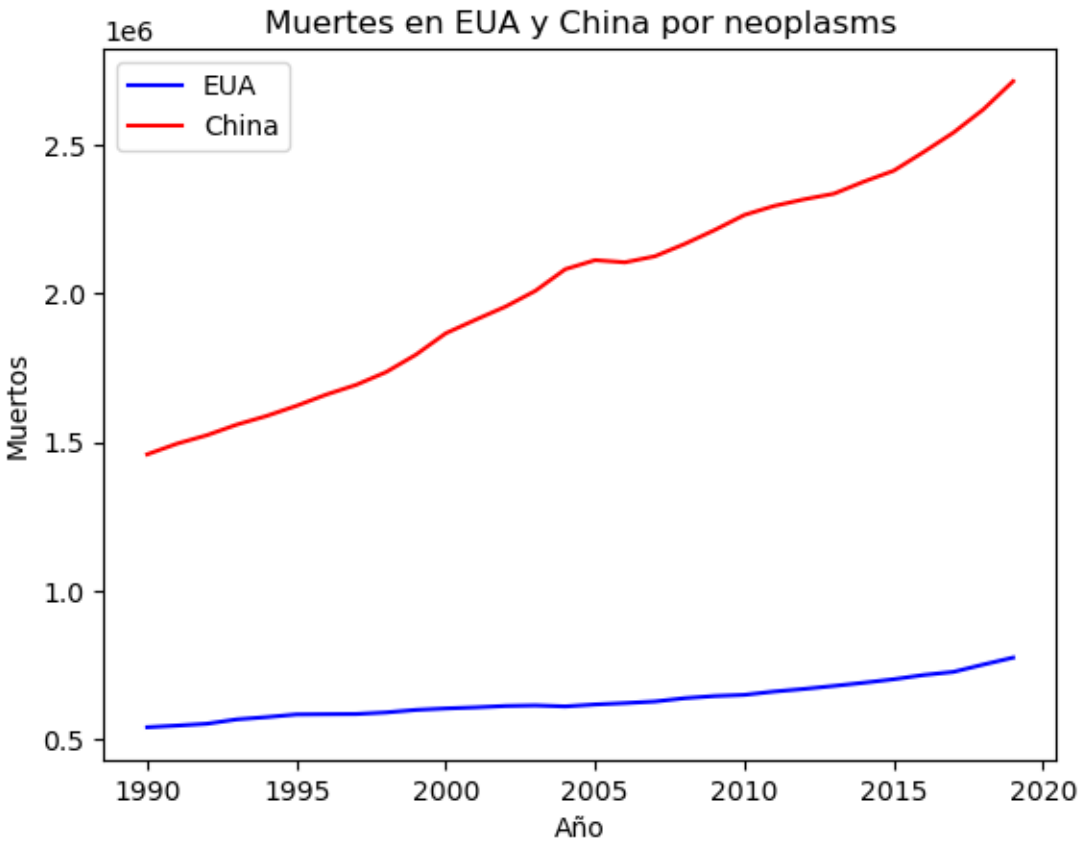

Muertes en EUA y China por alcohol_use_disorders
EUA
China
Muertos
Año
22000
20000
18000
16000
14000
12000
10000
8000
1990
1995
2000
2005
2010
2015
2020

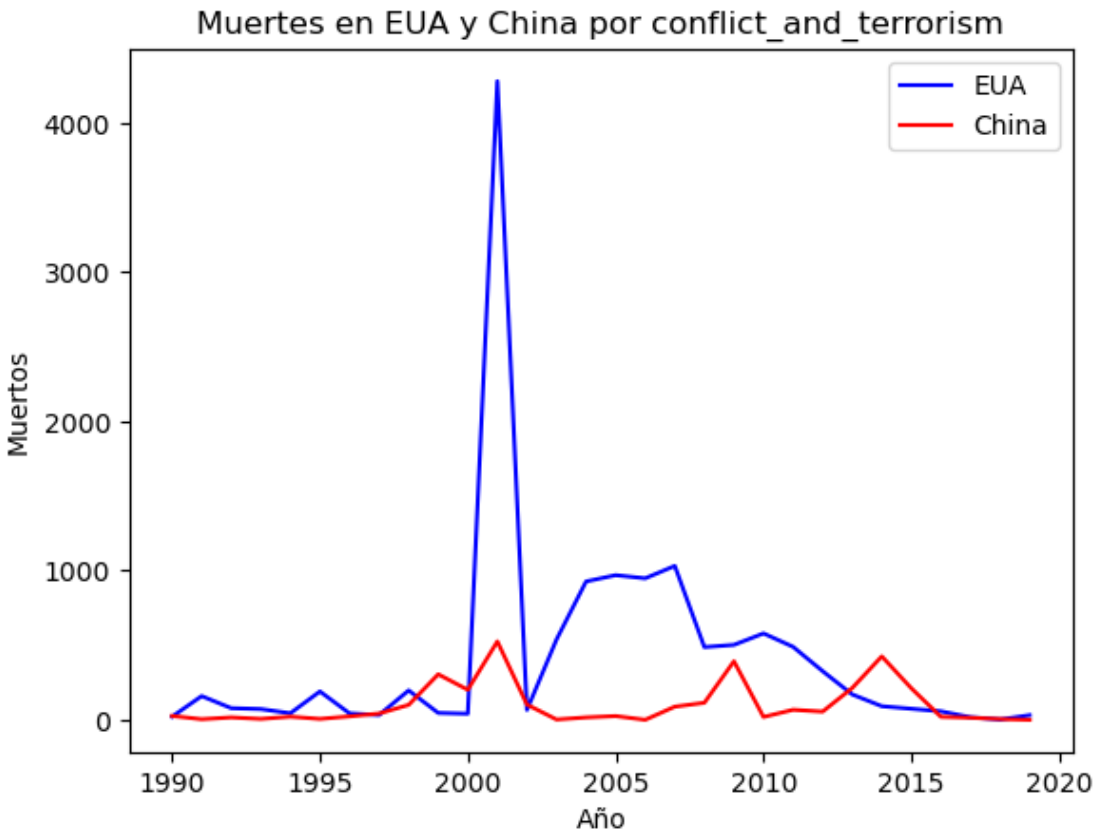

Muertes en EUA y China por self_harm
EUA
China
Muertos
Año
225000
200000
175000
150000
125000
100000
75000
50000
25000
1990
1995
2000
2005
2010
2015
2020

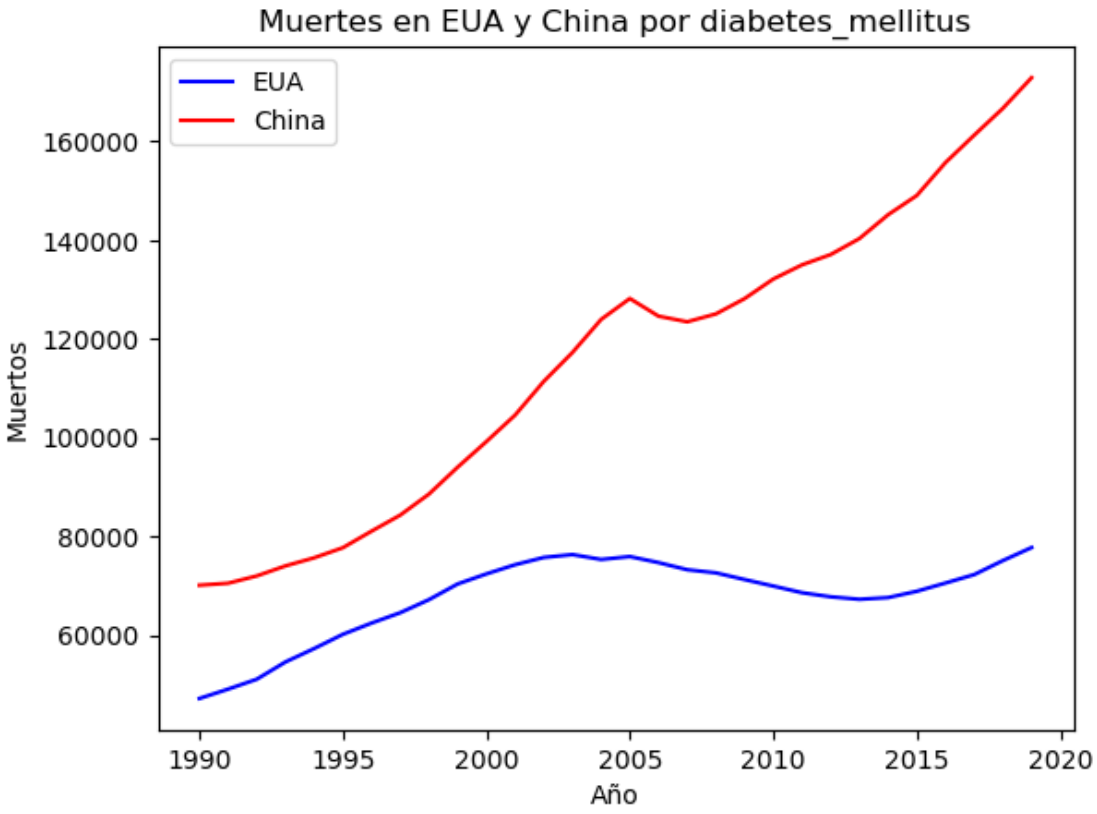

Muertes en EUA y China por exposure_to_forces_of_nature
EUA
China
Muertos
80000
60000
40000
20000
0
1990
1995
2000
2005
2010
2015
2020
Año

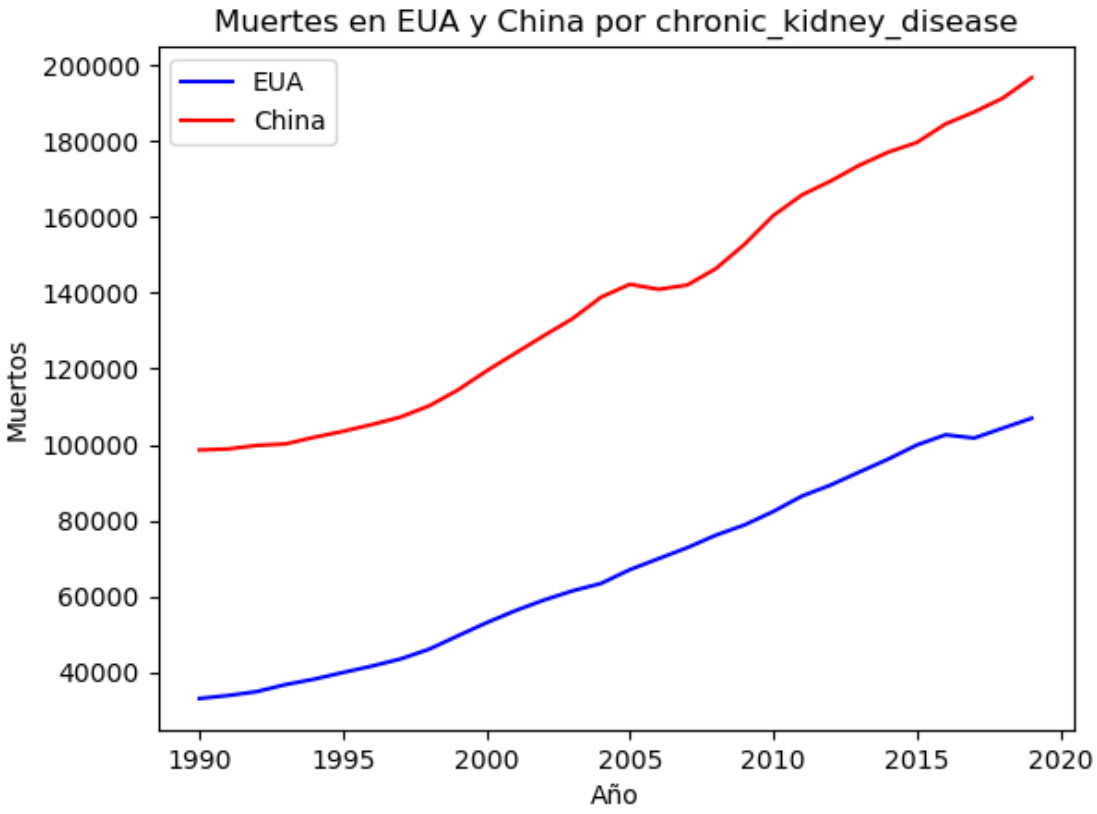

Muertes en EUA y China por diarrheal_diseases
EUA
China
Muertos
80000
60000
40000
20000
0
1990
1995
2000
2005
2010
2015
2020
Año

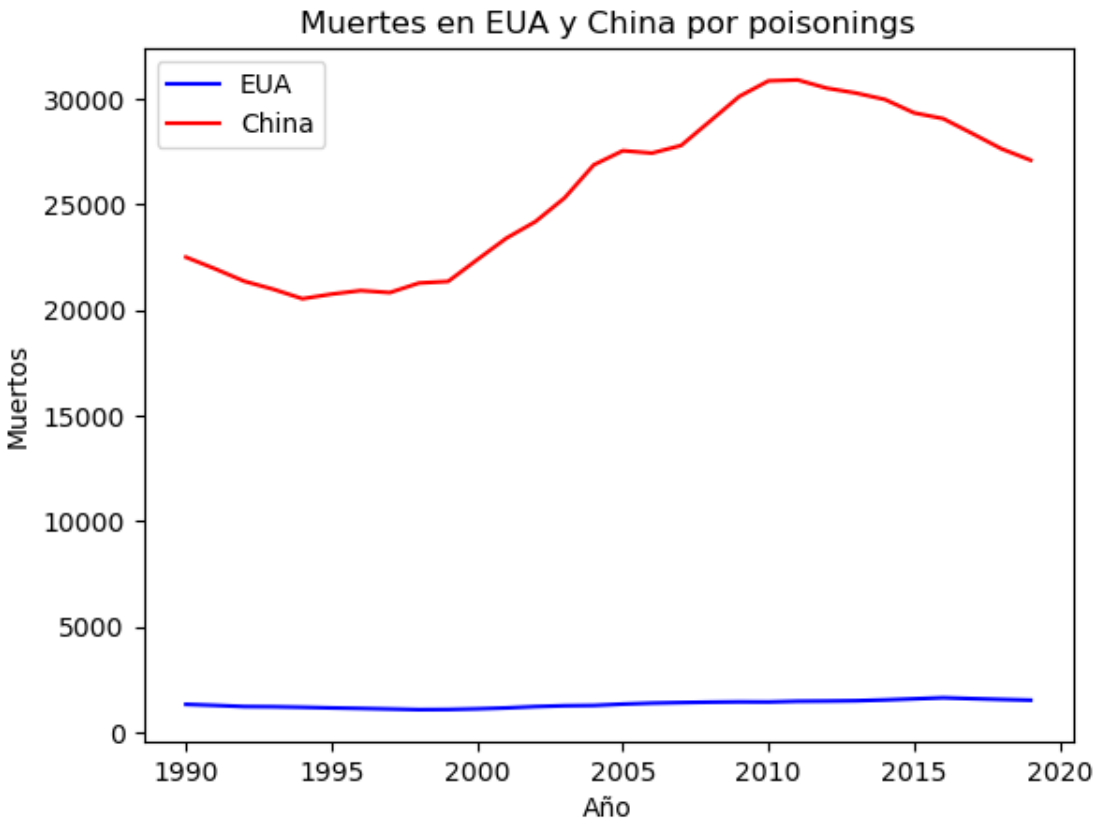

Muertes en EUA y China por environmental_heat_and_cold_exposure
EUA
China
Muertos
10000
8000
6000
4000
2000
1990
1995
2000
2005
2010
2015
2020
Año

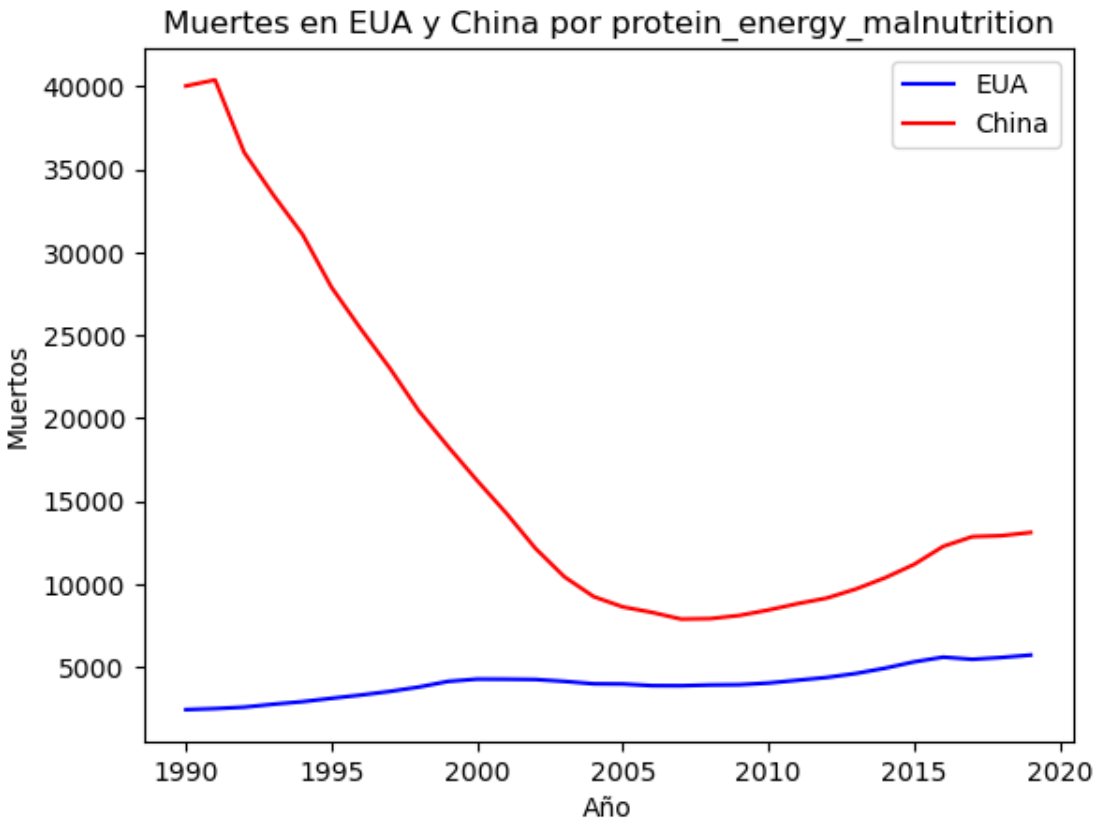

Muertes en EUA y China por neoplasms
1e6
EUA
China
2.5
2.0
1.5
1.0
0.5
Muertos
1990
1995
2000
2005
2010
2015
2020
Año

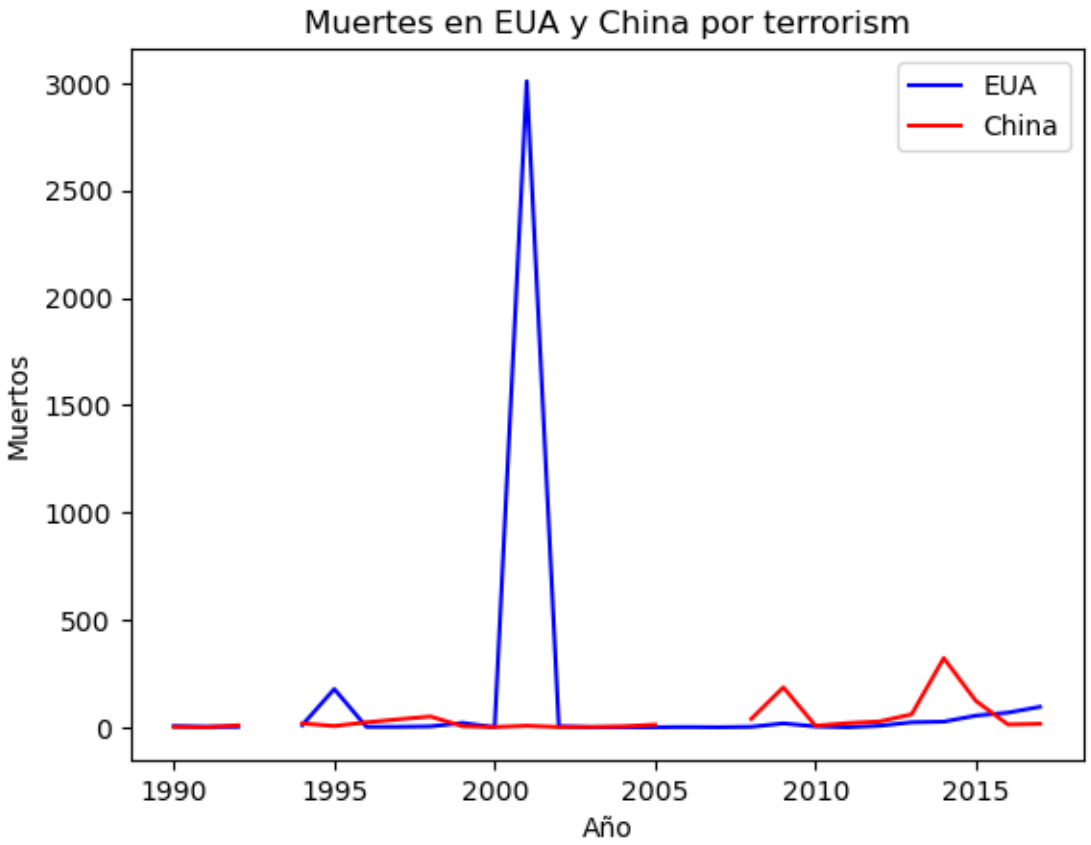

Muertes en EUA y China por conflict_and_terrorism
EUA
China
Muertos
4000
3000
2000
1000
0
1990
1995
2000
2005
2010
2015
2020
Año

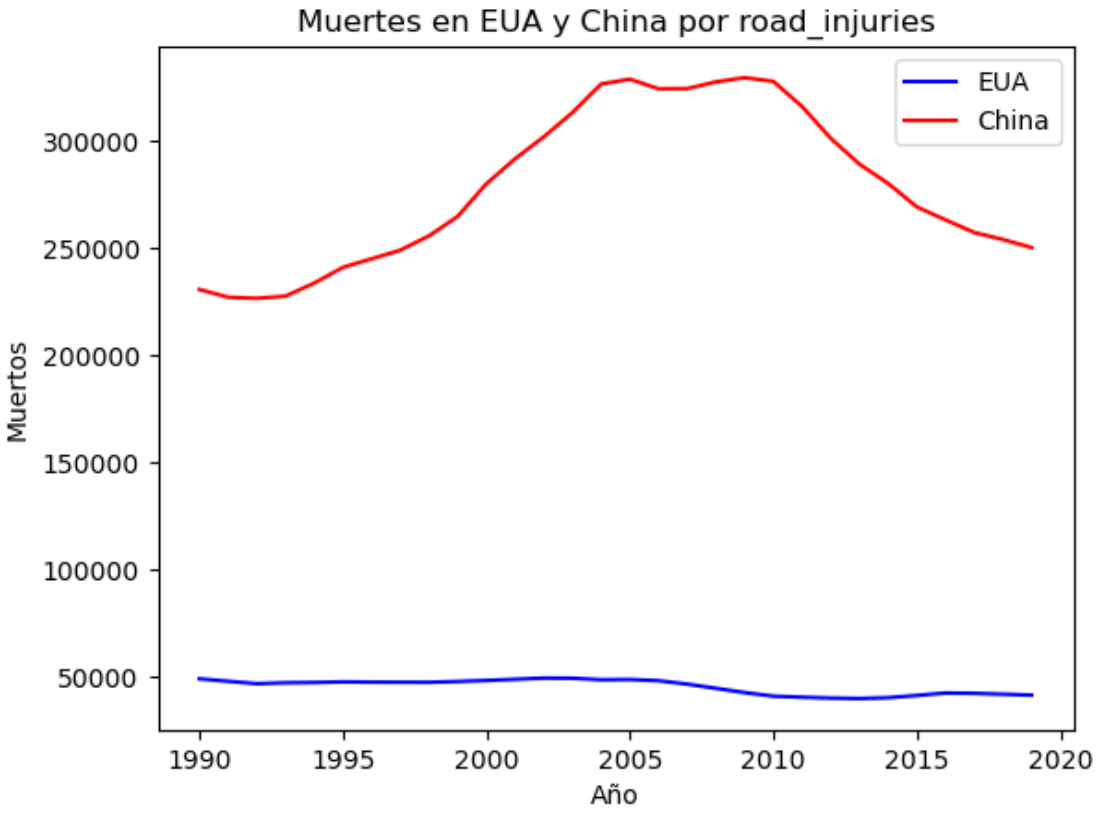

Muertes en EUA y China por diabetes_mellitus
EUA
China
160000
140000
120000
100000
80000
60000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año

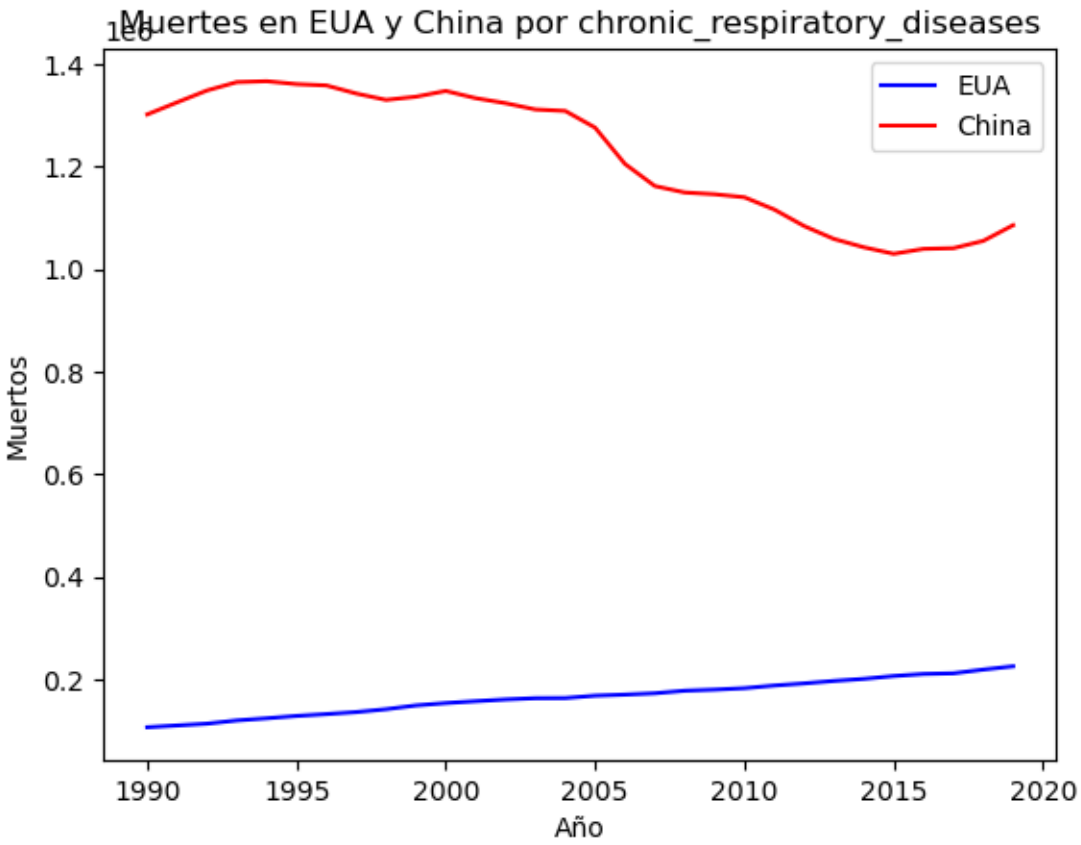

Muertes en EUA y China por chronic_kidney_disease
EUA
China
Muertos
Año
200000
180000
160000
140000
120000
100000
80000
60000
40000
1990
1995
2000
2005
2010
2015
2020

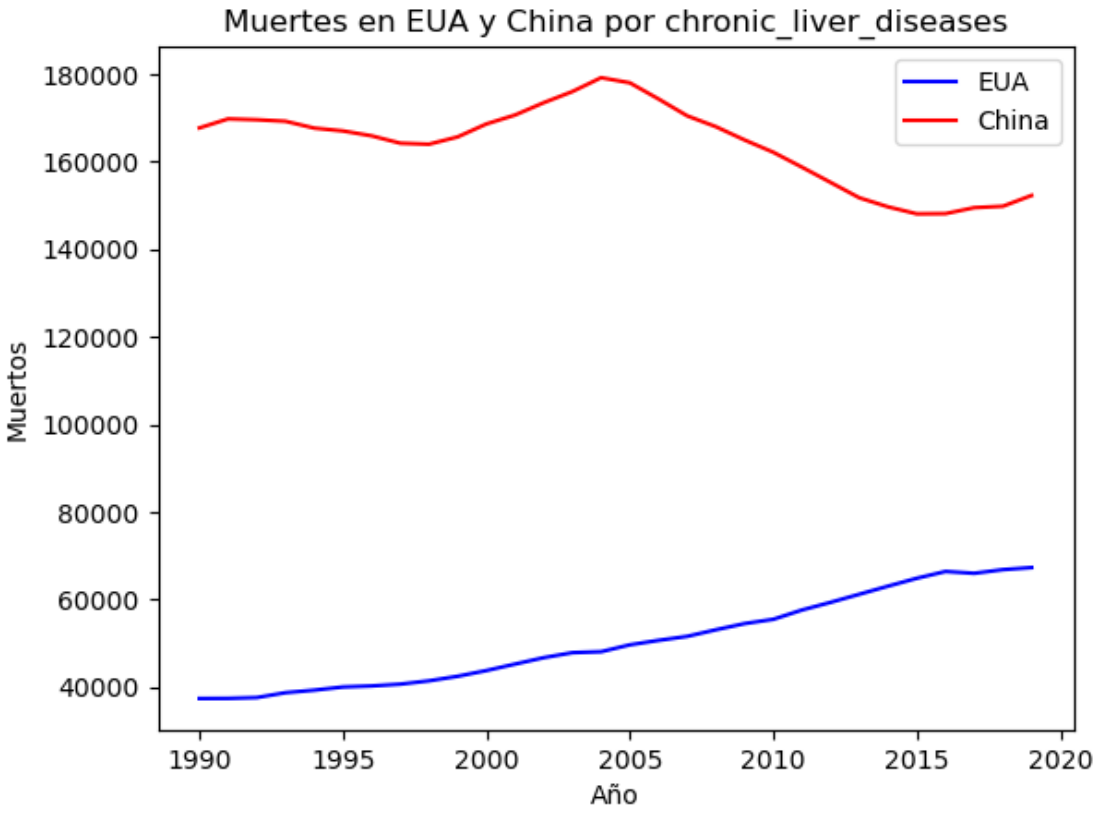

Muertes en EUA y China por poisonings
EUA
China
Muertos
Año
0
5000
10000
15000
20000
25000
30000
1990
1995
2000
2005
2010
2015
2020

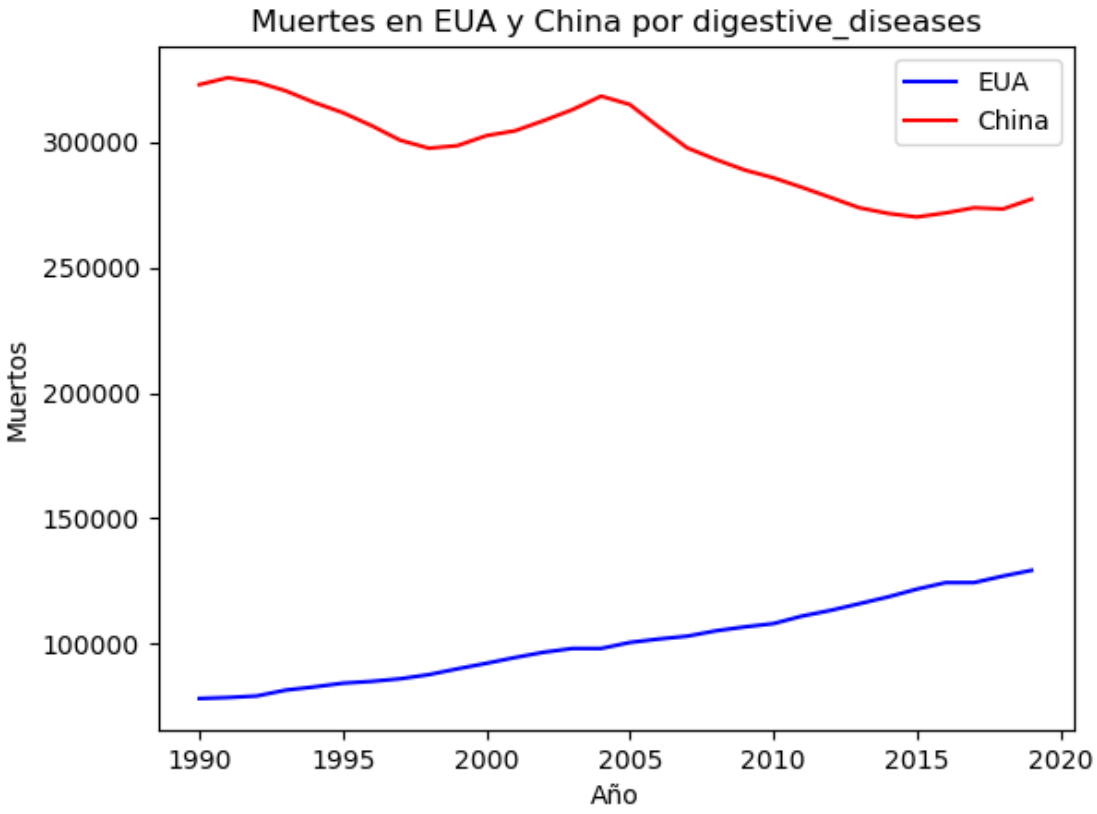

Muertes en EUA y China por protein_energy_malnutrition
EUA
China
Muertos
40000
35000
30000
25000
20000
15000
10000
5000
1990
1995
2000
2005
2010
2015
2020
Año

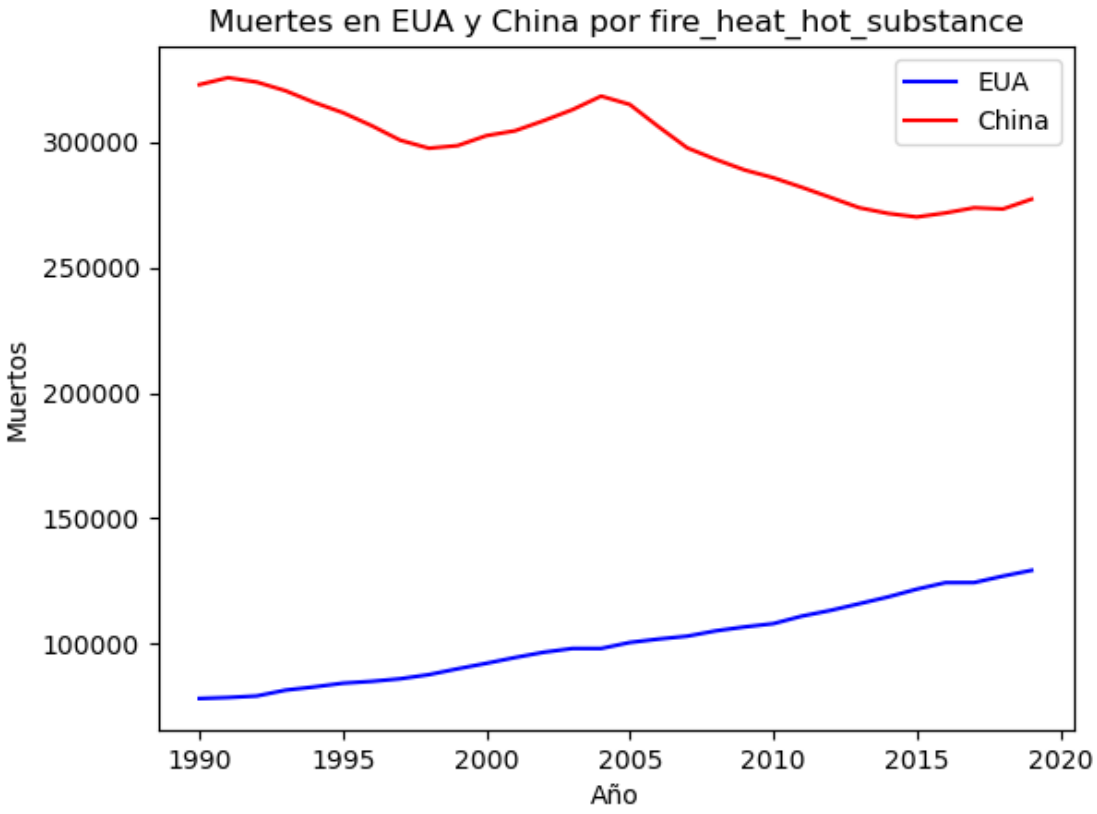

Muertes en EUA y China por terrorism
EUA
China
Muertos
Año
3000
2500
2000
1500
1000
500
0
1990
1995
2000
2005
2010
2015

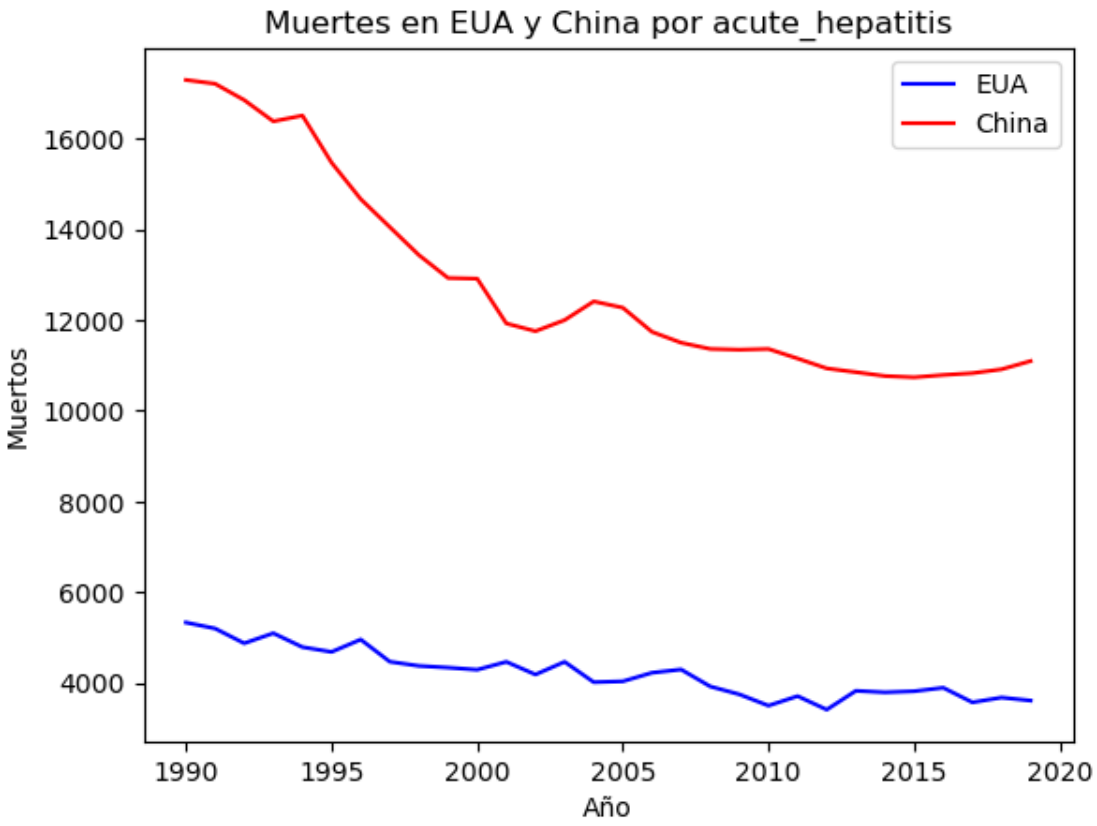

Muertes en EUA y China por road_injuries
EUA
China
Muertos
300000
250000
200000
150000
100000
50000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por chronic_respiratory_diseases
1e8
1.4
1.2
1.0
0.8
0.6
0.4
0.2
Muertos
1990
1995
2000
2005
2010
2015
2020
Año
EUA
China


Muertes en EUA y China por chronic_liver_diseases
EUA
China
Muertos
Año
180000
160000
140000
120000
100000
80000
60000
40000
1990
1995
2000
2005
2010
2015
2020


Muertes en EUA y China por digestive_diseases
EUA
China
Muertos
300000
250000
200000
150000
100000
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por fire_heat_hot_substance
EUA
China
300000
250000
200000
150000
100000
Muertos
1990
1995
2000
2005
2010
2015
2020
Año


Muertes en EUA y China por acute_hepatitis
EUA
China
Muertos
16000
14000
12000
10000
8000
6000
4000
1990
1995
2000
2005
2010
2015
2020
Año