Mini project

Analysis of life expectancy in various countries

In [1]:

```
import numpy as np
import pandas as pd
import random
import matplotlib.pyplot as plt
```

In [2]:

```
data = pd.read_csv('./Indicators.csv')
data.shape
```

Out[2]:

```
(5656458, 6)
```

In [132]:

```
countries = data['CountryName'].unique().tolist()
indicators = data['IndicatorName'].unique().tolist()
print("Number of countries : ",len(countries))
print("Number of indicators : ",len(indicators))
```

```
Number of countries :  247
Number of indicatrs :  1344
```

Indicators available

In [311]:

```
# indicators
```

Analysing Life expectancy in different countries

In [141]:

```
#Getting the indicator code for life expectancy
data[data['IndicatorName'].str.contains("Life expectancy at birth, total")]["IndicatorC
ode"].iloc[0]
```

Out[141]:

```
'SP.DYN.LE00.IN'
```

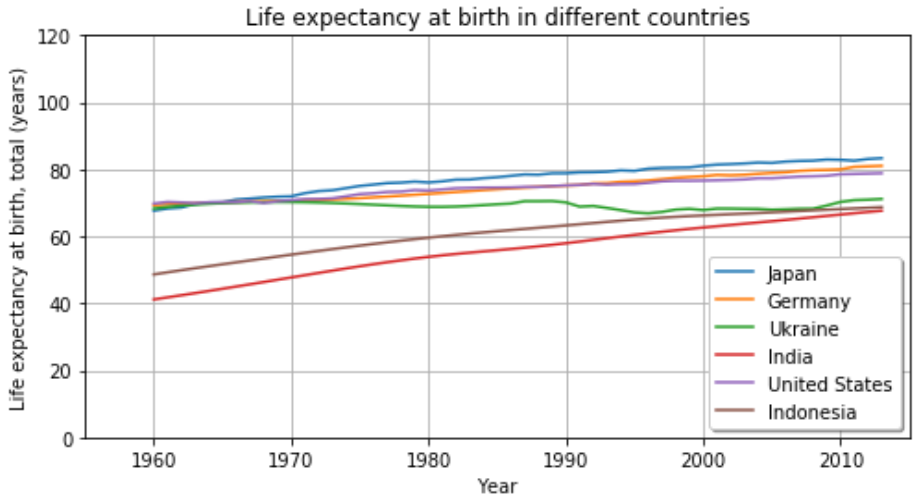
In [302]:

```
life_expectancy = data[data['IndicatorCode'] == 'SP.DYN.LE00.IN' ]

plt.figure(1).set_size_inches(8,4)
styles = ['orange', 'b', 'g', 'r', 'magenta', 'black', 'olive', 'yellow', 'cyan', ]
for c in ['JPN', 'DEU', 'UKR',"IND",'USA','IDN']:
    d = life_expectancy[ life_expectancy['CountryCode'] == c ]

    c=data[data['CountryCode'] == c]
    countryName =c['CountryName'].iloc[0]
    plt.plot(d['Year'].values, d['Value'].values,label = countryName)
plt.axis([1955, 2015,0,120])
```

```
plt.ylabel('Life expectancy at birth, total (years)')
plt.xlabel('Year')
plt.title("Life expectancy at birth in different countries")
plt.legend(loc='lower right', shadow=True)
plt.grid()
plt.show()
```



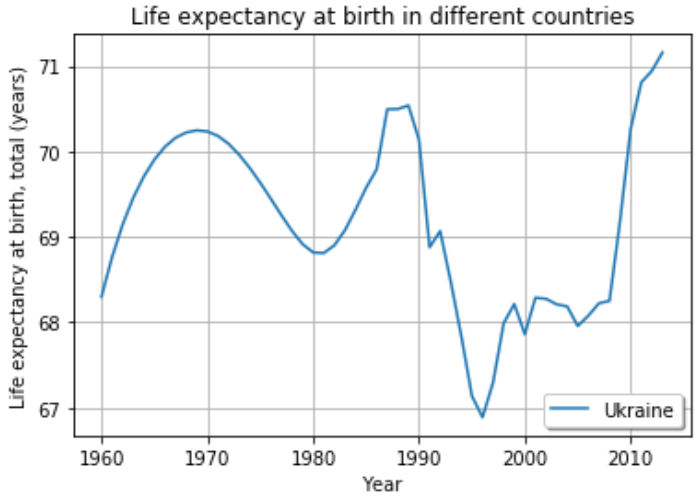
Ukraine(green) showed a different trend. Some of the indicators will be explored to see if it has contributed to the change

Closer look in the variation in Ukraine to understand where it has a steep decline

In [308]:

```
d = life_expectancy[ life_expectancy['CountryCode'] == "UKR" ]
plt.plot(d['Year'].values, d['Value'].values,label = "Ukraine")
# plt.axis([1955, 2015,0,73])

plt.ylabel('Life expectancy at birth, total (years)')
plt.xlabel('Year')
plt.title("Life expectancy at birth in different countries")
plt.legend(loc='lower right', shadow=True)
plt.grid()
plt.show()
```



Increase in life expectancy

In [145]:

```
avg={}
for i in ['JPN', 'DEU', 'UKR',"IND",'USA','IDN']:
    d=data[data.CountryCode==i]
```

```
    d=d[d['IndicatorName'].str.contains('Life expectancy at birth, total')]
    s=d[d['Year']==2013]['Value'].tolist()
    e=d[d['Year']==1960]['Value'].tolist()
    c=d[d['CountryCode'] == i]
    avg[c['CountryName'].iloc[0]]=s[0]-e[0]
```

In [146]:

```
avg
```

Out[146]:

```
{'Japan': 15.665853658536605,
 'Germany': 11.730951219512207,
 'Ukraine': 2.8599756097561055,
 'India': 26.488463414634104,
 'United States': 9.07073170731698,
 'Indonesia': 20.064292682926897}
```

In [25]:

```
# average increase in life expectancy in developed countries
avg_increase=0
for i in ['Germany','Japan','United States']:
    avg_increase+=avg[i]
avg_increase/=3
avg_increase
```

Out[25]:

```
12.155845528455265
```

Analysis of various factors that could have been contributed for the unexpected trend in life expectancy in Ukraine

In [255]:

```
ukr=data[data['CountryName']=='Ukraine']
```

In [287]:

```
mask1=ukr['IndicatorName'].str.contains('Inflation, GDP deflator')
mask2=ukr['IndicatorName'].str.contains('Food production index')
mask3=ukr['IndicatorName'].str.contains('Hospital beds')
mask4=ukr['IndicatorName'].str.contains('Life expectancy at birth, total')
mask5=ukr['IndicatorName'].str.contains('Physicians')
```

In [299]:

```
print(" Inflation : ",min(ukr[mask1]['Year']),max(ukr[mask1]['Year']))
print(" FDI : ",min(ukr[mask2]['Year']),max(ukr[mask2]['Year']))
print(" Hospital beds : ",min(ukr[mask3]['Year']),max(ukr[mask3]['Year']))
print(" Life expectancy : ",min(ukr[mask4]['Year']),max(ukr[mask4]['Year']))
print(" Physicians : ",min(ukr[mask5]['Year']),max(ukr[mask5]['Year']))
```

```
 Inflation :  1988 2014
 FDI :  1992 2013
 Hospital beds :  1980 2012
 Life expectancy :  1960 2013
 Physicians :  1980 2013
```

Not every indicators has data collected for the entire 53 year period as for in life expectancy, since from the graph it is understood that the decline is more sharp in the 1990s, we will be concentrating in the 1990s

In [172]:

```
d=data[data.CountryCode=="UKR"]
life_expc=d[d['IndicatorName'].str.contains('Life expectancy at birth, total')]['Value'
```

```
]
```

Hospital beds(per 1000 people)

In [164]:

```
#Getting the indicator code
data[data['IndicatorName'].str.contains('Hospital beds')]['IndicatorCode'].iloc[0]
```

Out[164]:

```
'SH.MED.BEDS.ZS'
```

In [165]:

```
hsptl = data[data['IndicatorCode'] == 'SH.MED.BEDS.ZS' ]

plt.figure(1).set_size_inches(6,4)
d = hsptl[ hsptl['CountryCode'] == "UKR" ]
plt.plot(d['Year'].values, d['Value'].values, label = 'Ukraine')
plt.axis([1975, 2015,0,15])

plt.ylabel('Hospital beds (per 1,000 people)')
plt.xlabel('Year')
plt.legend(loc='lower left', shadow=True)
plt.title('Hospital beds (per 1,000 people) in Ukraine')
plt.grid()
plt.show()
```

Physicians (per 1,000 people)

In [166]:

```
#Getting the indicator code
data[data['IndicatorName'].str.contains('Physicians')]['IndicatorCode'].iloc[0]
```

Out[166]:

```
'SH.MED.PHYS.ZS'
```

In [238]:

```
hsptl = data[data['IndicatorCode'] == 'SH.MED.PHYS.ZS' ]

# plt.figure(1).set_size_inches(6,4)
d = hsptl[ hsptl['CountryCode'] == "UKR" ]
plt.plot(d['Year'].values, d['Value'].values, label = 'Ukraine')
plt.axis([1975, 2015,0,5])

plt.ylabel('Physicians (per 1,000 people)')
plt.xlabel('Year')
```

```
plt.legend(loc='lower left', shadow=True)
plt.title('Physicians (per 1,000 people) in Ukraine')
plt.grid()
plt.show()
```

Food production index (2004-2006 = 100)

In [168]:

```
#Getting the indicator code
data[data['IndicatorName'].str.contains('Food production index')]['IndicatorCode'].iloc
[0]
```

Out[168]:

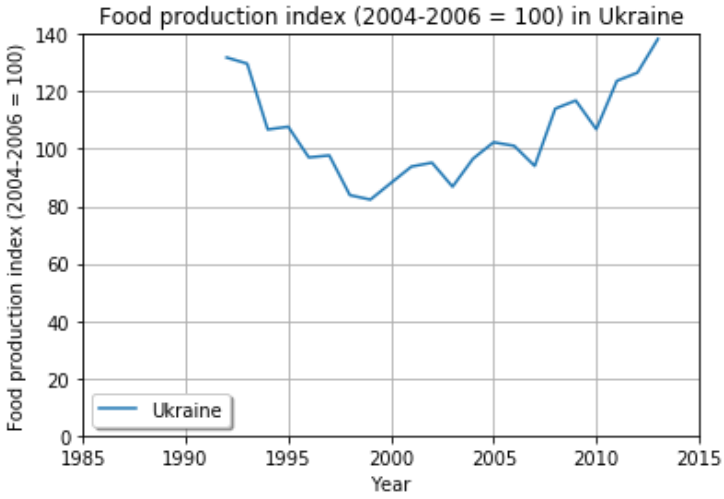
```
'AG.PRD.FOOD.XD'
```

In [169]:

```
fpi= data[data['IndicatorCode'] == 'AG.PRD.FOOD.XD' ]

fpi = fpi[ fpi['CountryCode'] == "UKR" ]
plt.plot(fpi['Year'].values, fpi['Value'].values, label = 'Ukraine')
plt.axis([1985, 2015,0,140])

plt.ylabel('Food production index (2004-2006 = 100)')
plt.xlabel('Year')
plt.legend(loc='lower left', shadow=True)
plt.title('Food production index (2004-2006 = 100) in Ukraine')
plt.grid()
plt.show()
```



Inflation, GDP deflator (annual %)

In [170]:

```
#Getting the indicator code
data[data['IndicatorName'].str.contains('Inflation, GDP deflator')]['IndicatorCode'].il
oc[0]
```

Out[170]:

```
'NY.GDP.DEFL.KD.ZG'
```

In [171]:

```
inf = data[data['IndicatorName'] == 'Inflation, GDP deflator (annual %)' ]

gdp = inf[ inf['CountryCode'] == "UKR" ]
plt.plot(gdp['Year'].values, gdp['Value'].values, label = 'Ukraine')
gdp1=gdp['Value']

plt.ylabel('Inflation, GDP deflator (annual %)')
plt.xlabel('Year')
plt.legend(loc='upper right', shadow=True)
plt.title('Inflation, GDP deflator (annual %) in Ukraine')
plt.grid()
plt.show()
```