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In [3]: import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
```

```
In [6]: data = pd.read_csv('Indicators.csv')
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In [7]: data.size
```

```
Out[7]: 33938748
```

```
In [8]: data.head()
```

```
Out[8]:
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	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
0	Arab World	ARB	Adolescent fertility rate (births per 1,000 wo...	SP.ADO.TFRT	1960	1.335609e+02
1	Arab World	ARB	Age dependency ratio (% of working-age populat...	SP.POP.DPND	1960	8.779760e+01
2	Arab World	ARB	Age dependency ratio, old (% of working-age po...	SP.POP.DPND.OL	1960	6.634579e+00
3	Arab World	ARB	Age dependency ratio, young (% of working-age ...	SP.POP.DPND.YG	1960	8.102333e+01
4	Arab World	ARB	Arms exports (SIPRI trend indicator values)	MS.MIL.XPRT.KD	1960	3.000000e+06

```
In [9]: india_data = data[data['CountryCode'].str.contains('IND')]
```

```
In [10]: india_data.head()
```

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Out[10]:
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	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
11561	India	IND	Adolescent fertility rate (births per 1,000 wo...	SP.ADO.TFRT	1960	103.938000
11562	India	IND	Age dependency ratio (% of working-age populat...	SP.POP.DPND	1960	76.559538
11563	India	IND	Age dependency ratio, old (% of working-age po...	SP.POP.DPND.OL	1960	5.403730
11564	India	IND	Age dependency ratio, young (% of working-age ...	SP.POP.DPND.YG	1960	71.155808
11565	India	IND	Agriculture, value added (% of GDP)	NV.AGR.TOTL.ZS	1960	42.561131

```
In [11]: population_indicator = india_data[india_data['IndicatorName'].str.contains('Popul
```

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

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Out[12]:
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	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
11758	India	IND	Population, total	SP.POP.TOTL	1960	449661874.0
36711	India	IND	Population, total	SP.POP.TOTL	1961	458691457.0
64254	India	IND	Population, total	SP.POP.TOTL	1962	468054145.0
92704	India	IND	Population, total	SP.POP.TOTL	1963	477729958.0
121503	India	IND	Population, total	SP.POP.TOTL	1964	487690114.0

```
In [13]: co2emission_indicator = india_data[india_data['IndicatorName'].str.contains('CO2')]
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```
In [14]: co2emission_indicator.head()
```

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Out[14]:
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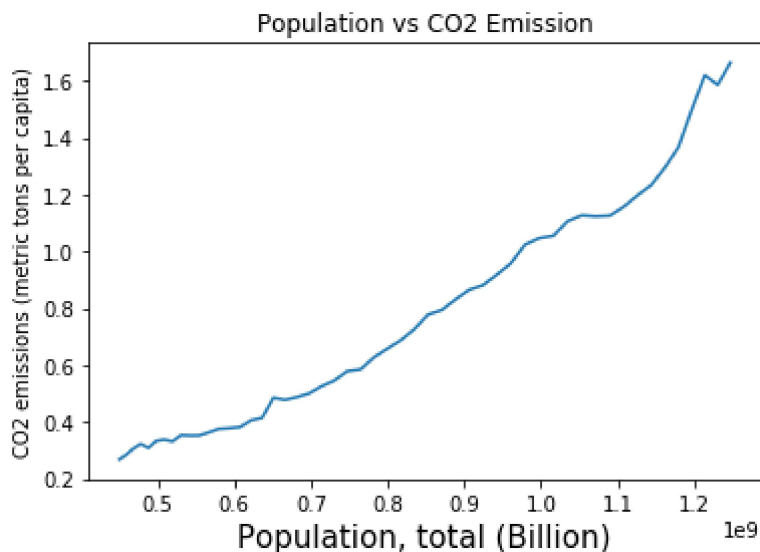
	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
11577	India	IND	CO2 emissions (metric tons per capita)	EN.ATM.CO2E.PC	1960	0.268161
36513	India	IND	CO2 emissions (metric tons per capita)	EN.ATM.CO2E.PC	1961	0.284292
64049	India	IND	CO2 emissions (metric tons per capita)	EN.ATM.CO2E.PC	1962	0.306519
92493	India	IND	CO2 emissions (metric tons per capita)	EN.ATM.CO2E.PC	1963	0.322533
121290	India	IND	CO2 emissions (metric tons per capita)	EN.ATM.CO2E.PC	1964	0.308900

```
In [15]: mask = population_indicator['Year']<=2011
population_indicator = population_indicator[mask]
```

```
In [16]: print(population_indicator['Year'].max() , co2emission_indicator['Year'].max())
print(population_indicator['Year'].min() , co2emission_indicator['Year'].min())
```

```
2011 2011
1960 1960
```

```
In [17]: plt.plot(population_indicator['Value'], co2emission_indicator['Value'])
plt.xlabel(population_indicator['IndicatorName'].iloc[0]+' (Billion)', size = 15)
plt.ylabel(co2emission_indicator['IndicatorName'].iloc[0])
plt.title('Population vs CO2 Emission')
plt.show()
```



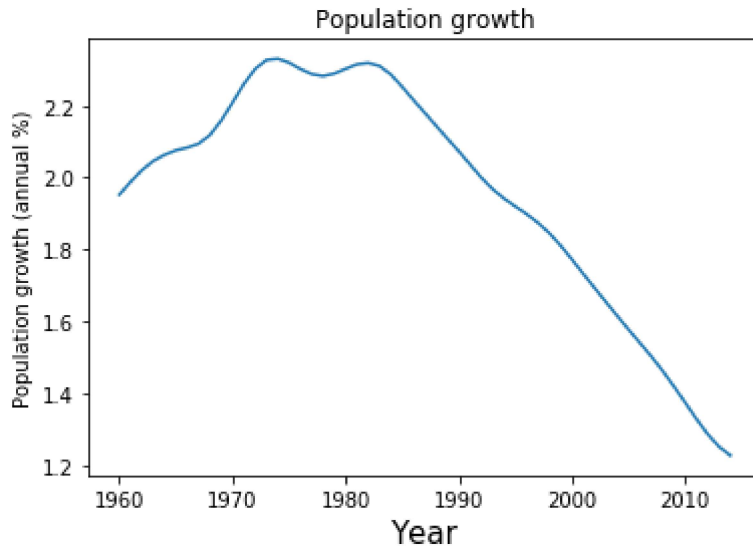
```
In [58]: population_indicator = india_data[india_data['IndicatorName'].str.contains('Popul
```

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In [19]: population_indicator.tail()
```

Out[19]:

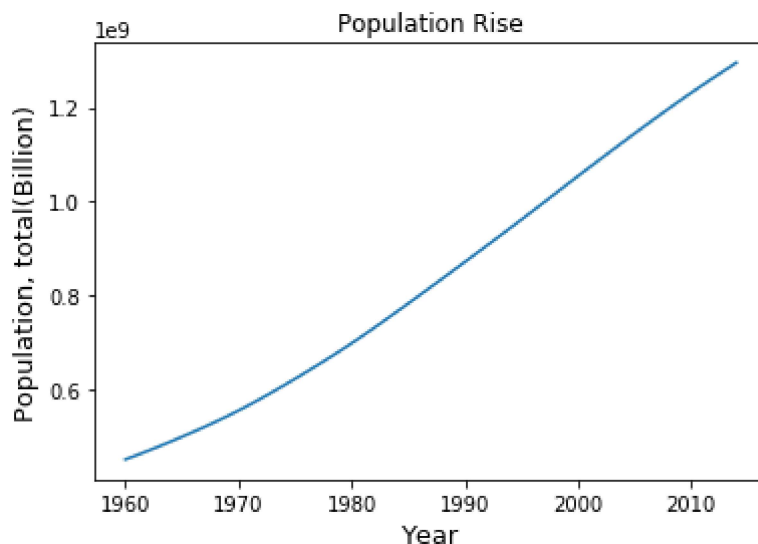
	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
4929882	India	IND	Population growth (annual %)	SP.POP.GROW	2010	1.374351
5111651	India	IND	Population growth (annual %)	SP.POP.GROW	2011	1.328401
5287334	India	IND	Population growth (annual %)	SP.POP.GROW	2012	1.285832
5453470	India	IND	Population growth (annual %)	SP.POP.GROW	2013	1.251191
5585598	India	IND	Population growth (annual %)	SP.POP.GROW	2014	1.226730

```
In [20]: plt.plot(population_indicator['Year'],population_indicator['Value'])
plt.xlabel('Year', size=15)
plt.ylabel(population_indicator['IndicatorName'].iloc[0])
plt.title('Population growth')
plt.show()
```



```
In [41]: population_indicator = india_data[india_data['IndicatorName'].str.contains('Popul
```

```
In [22]: plt.plot(population_indicator['Year'],population_indicator['Value'])
plt.xlabel('Year', size=13)
plt.ylabel(population_indicator['IndicatorName'].iloc[0]+'(Billion)', size = 13)
plt.title('Population Rise')
plt.show()
```



```
In [23]: natural_resources_depletion = india_data[india_data['IndicatorName'].str.contains
```

```
In [24]: natural_resources_depletion.head()
```

```
Out[24]:
```

	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
328934	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1970	1.779013
394096	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1971	1.554959
463093	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1972	1.527562
532794	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1973	2.138715
602684	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1974	2.537905

```
In [25]: mask = population_indicator['Year']>=1970
population_indicator = population_indicator[mask]
population_indicator = population_indicator[:-1]
```

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In [26]: print(population_indicator['Year'].min(),population_indicator['Year'].max())
print(natural_resources_depletion['Year'].min(),natural_resources_depletion['Year'].max())

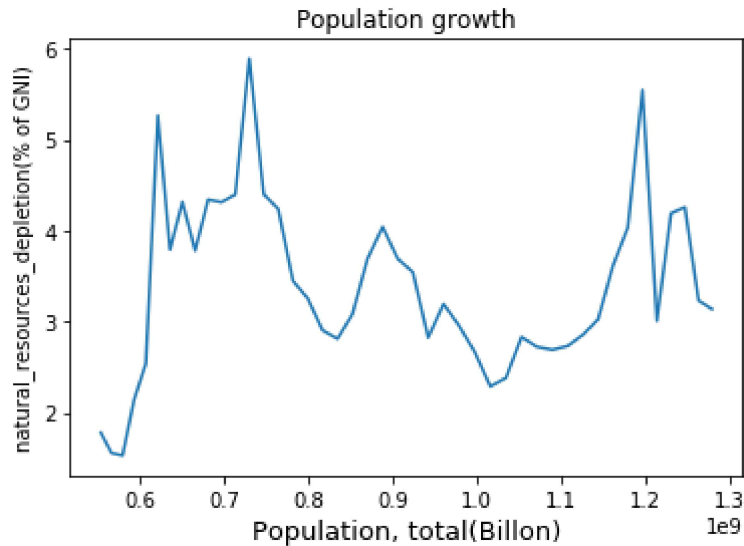
1970 2013
1970 2013
```

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In [27]: natural_resources_depletion.head()
```

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Out[27]:
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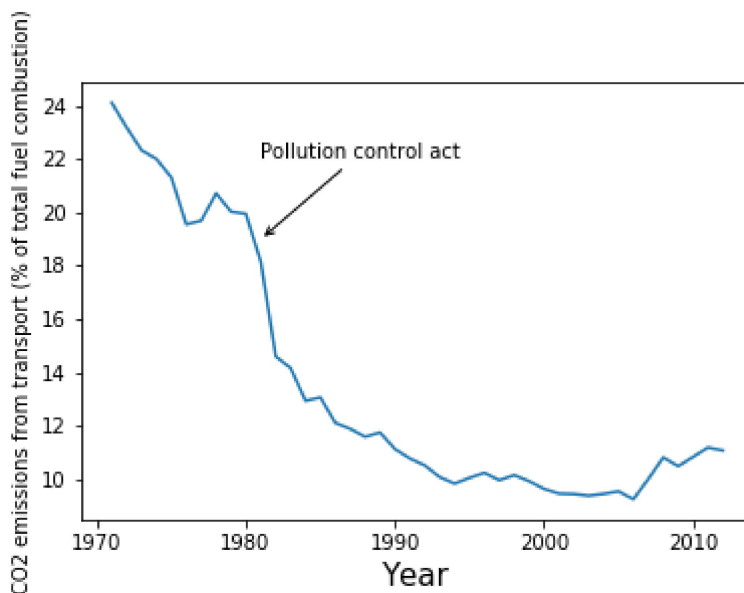
	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
328934	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1970	1.779013
394096	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1971	1.554959
463093	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1972	1.527562
532794	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1973	2.138715
602684	India	IND	Adjusted savings: natural resources depletion ...	NY.ADJ.DRES.GN.ZS	1974	2.537905

```
In [28]: plt.plot(population_indicator['Value'],natural_resources_depletion['Value'])
plt.ylabel('natural_resources_depletion(% of GNI)',size=10)
plt.xlabel(population_indicator['IndicatorName'].iloc[0]+'(Billon)',size = 13)
plt.title('Population growth')
plt.show()
```



```
In [29]: co2_from_transport = india_data[india_data['IndicatorName'].str.contains('CO2 emi
```

```
In [30]: fig, ax = plt.subplots()
ax.annotate("Pollution control act",
            xy = (1981,19), xycoords = 'data',
            xytext = (1981,22), textcoords = 'data',
            arrowprops = dict(arrowstyle = "->",
                              connectionstyle = "arc3"),
            )
plt.plot(co2_from_transport['Year'],co2_from_transport['Value'])
plt.ylabel(co2_from_transport['IndicatorName'].iloc[0])
plt.xlabel('Year',size = 15)
plt.show()
```



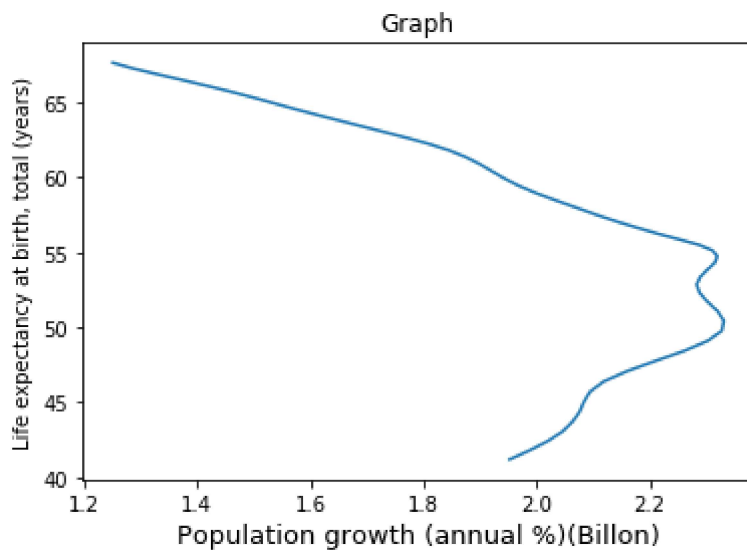
```
In [55]: lif_exp = india_data[india_data['IndicatorName'].str.contains('Life expectancy at
```

```
In [59]: population_indicator = population_indicator[:-1]
print(population_indicator['Year'].min(), population_indicator['Year'].max())
print(lif_exp['Year'].min(), lif_exp['Year'].max())
```

1960 2013

1960 2013

```
In [60]: plt.plot(population_indicator['Value'],lif_exp['Value'])
plt.ylabel(lif_exp['IndicatorName'].iloc[0],size=10)
plt.xlabel(population_indicator['IndicatorName'].iloc[0]+'(Billion)',size = 13)
plt.title('Graph')
plt.show()
```



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In [ ]:
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