

```
In [20]: # Data Source: https://www.kaggle.com/worldbank/world-development-indicators
# Folder: 'world-development-indicators'
```

Unemployment with tertiary education in Morocco.

Nowadays in Morocco the population with tertiary education remains one of the populations that suffer most from unemployment. By this study I want to see the evolution of unemployment with tertiary education in Morocco between 1990 and 2012 in a first place. For the second part, it's a comparison between the same unemployment for females and males. The Data used in this study is extracted from the world development indicators provided by the world bank in the link above.

```
In [21]: import pandas as pd
import numpy as np
import random
import matplotlib.pyplot as plt
```

```
In [22]: data = pd.read_csv('./Indicators.csv')
data.shape
```

```
Out[22]: (5656458, 6)
```

```
In [23]: countries = data['CountryName'].unique().tolist()
indicators = data['IndicatorName'].unique().tolist()
#select the country: Morocco
countryFilter = (data['CountryName']=='Morocco')
#Select the indicator unemployment with tertiary education
indicatorFilter = (data['IndicatorName'].str.contains('Unemployment with tertiary education')==True)
```

```
In [24]: #Check all the moroccan indicators whose names contain by "Unemployment with tertiary education"
array_indicators = data[countryFilter & indicatorFilter]['IndicatorName'].unique()
print (array_indicators)
```

```
['Unemployment with tertiary education (% of total unemployment)', 'Unemployment with tertiary education, female (% of female unemployment)', 'Unemployment with tertiary education, male (% of male unemployment)']
```

```
In [25]: #Select the name and the correspondant code of those indicators.
#Drop duplicates is used to keep just one occurrence of the indicators
array_indicators = data[countryFilter & indicatorFilter][['IndicatorName', 'IndicatorCode']].drop_duplicates()
print (array_indicators)
```

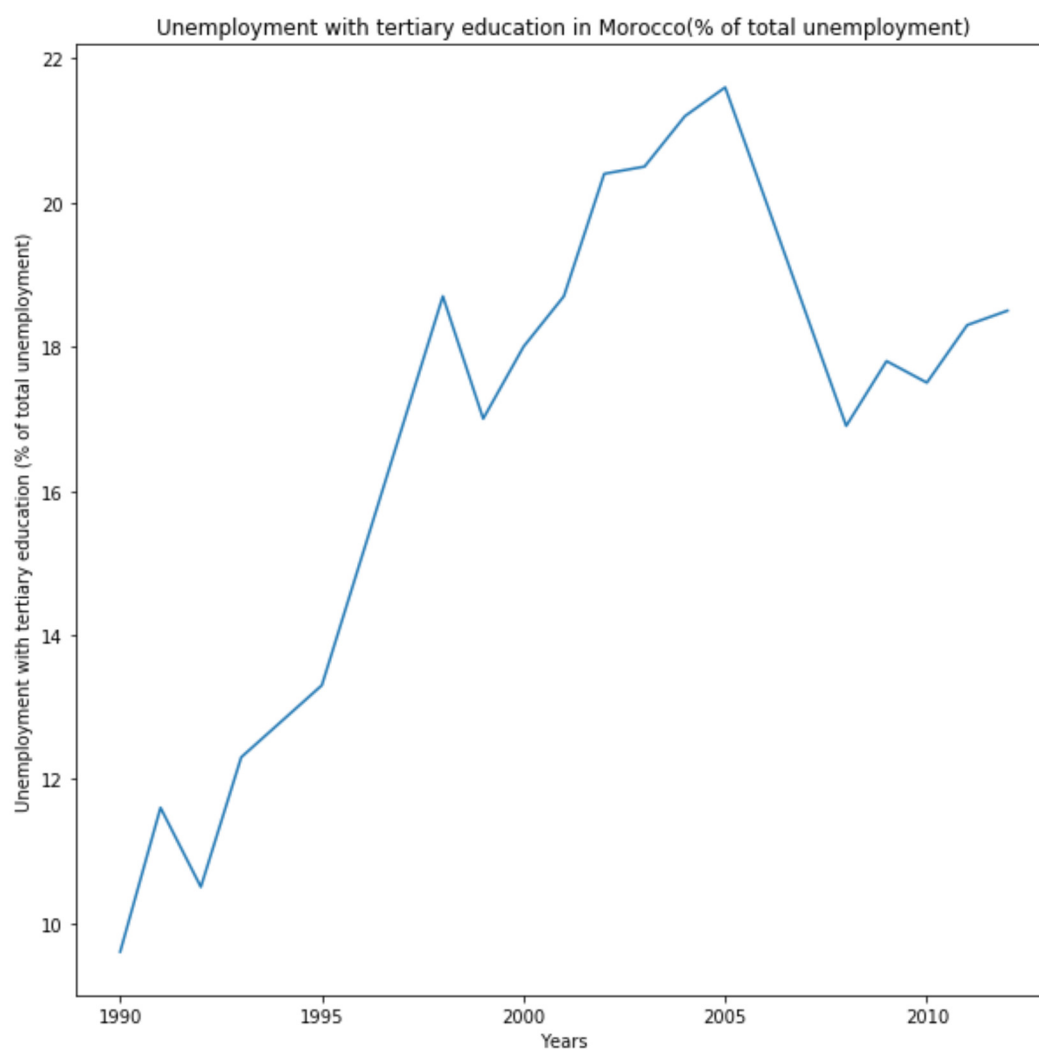
	IndicatorName	IndicatorCode
1958398	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS
1958399	Unemployment with tertiary education, female (...)	SL.UEM.TERT.FE.ZS
1958400	Unemployment with tertiary education, male (% ...)	SL.UEM.TERT.MA.ZS

```
In [26]: #Select the dataset that contains the % of unemployment with tertiary education
of total unemployment
indicatorUnemploymentGeneral = (data['IndicatorCode']=='SL.UEM.TERT.ZS')
DataSetUnemploymentGeneral = data[countryFilter & indicatorFilter2]
DataSetUnemploymentGeneral.head(10)
```

Out [26]:

	CountryName	CountryCode	IndicatorName	IndicatorCode	Year	Value
1958398	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	1990	9.600000
2074921	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	1991	11.600000
2194897	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	1992	10.500000
2318268	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	1993	12.300000
2575353	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	1995	13.300000
2983282	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	1998	18.700001
3123784	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	1999	17.000000
3274878	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	2000	18.000000
3426201	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	2001	18.700001
3579828	Morocco	MAR	Unemployment with tertiary education (% of tot...	SL.UEM.TERT.ZS	2002	20.400000

```
In [27]: #Visulize the data selected
years = DataSetUnemploymentGeneral['Year'].values
unemployment_3e = DataSetUnemploymentGeneral['Value'].values
#Change the size of the figure
plt.figure(figsize=(10,10))
plt.xlabel('Years')
plt.ylabel(myDataSet['IndicatorName'].iloc[0])
#Add a title
plt.title('Unemployment with tertiary education in Morocco(% of total unemploye
nt)')
# Plot
plt.plot(years,unemployment_3e)
plt.show()
```



```
In [28]: #Obtain other statistics
DataSetUnemploymentGeneral.describe()
```

Out [28]:

	Year	Value
count	18.000000	18.000000
mean	2001.277778	16.800000
std	7.110932	3.721638
min	1990.000000	9.600000
25%	1995.750000	14.200000
50%	2001.500000	17.900000
75%	2007.250000	18.700001
max	2012.000000	21.600000

Notes

In the previous graph we can note that the percentage of unemployed people with tertiary education is increasing from 9,6% in 1990 to 21,6 in 2012 with three major decreases. Two in the 90's and the third one from 2005 to 2008. In the current state I can't explain those phenomenons but I can give some suggestions.

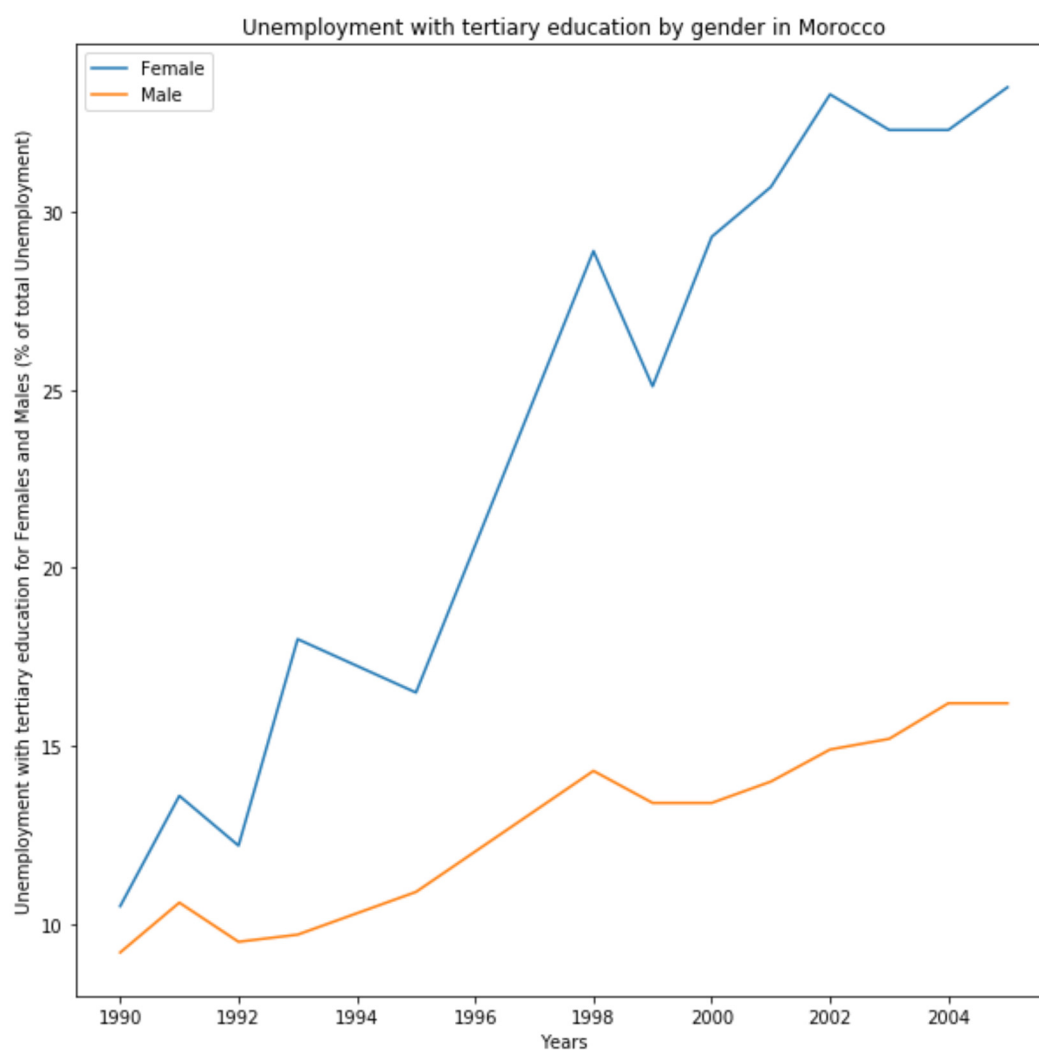
- The increase of unemployment can be caused by the inadequacy of the studies and the needs of the labor market.
- The three decreases can be explained by the possible action of the state by hiring those unemployed people.

Unemployment with tertiary education in Morocco By gender.

Let's compare the unemployment with tertiary education in Morocco between females and males.

```
In [30]: #Filter the two indicators using the codes obtained in the first section
indicatorUnemploymentFemale = (data['IndicatorCode'] == 'SL.UEM.TERT.FE.ZS')
indicatorUnemploymentMale = (data['IndicatorCode'] == 'SL.UEM.TERT.MA.ZS')
#Of course the filter country: Morocco is mandatory
DataSetUnemploymentFemale = data[countryFilter & indicatorUnemploymentFemale]
DataSetUnemploymentMale = data[countryFilter & indicatorUnemploymentMale]
```

```
In [36]: #Visualizing the two plot in the same graph
yearsFemales = DataSetUnemploymentFemale['Year'].values
unemployment_3e_female = DataSetUnemploymentFemale['Value'].values
yearsMales = DataSetUnemploymentMale['Year'].values
unemployment_3e_male = DataSetUnemploymentMale['Value'].values
plt.figure(figsize=(10,10))
plt.xlabel('Years')
plt.ylabel("Unemployment with tertiary education for Females and Males (% of total Unemployment)")
#label the figure
plt.title('Unemployment with tertiary education by gender in Morocco')
# Plot
plt.plot(yearsFemales,unemployment_3e_female,label='Female')
plt.plot(yearsMales,unemployment_3e_male,label='Male')
#Add a legend
plt.legend()
plt.show()
```



```
In [37]: #Statistics of Females
DataSetUnemploymentFemale.describe()
```

Out [37]:

	Year	Value
count	13.000000	13.000000
mean	1997.923077	24.323077
std	5.187510	8.818839
min	1990.000000	10.500000
25%	1993.000000	16.500000
50%	1999.000000	28.900000
75%	2002.000000	32.299999
max	2005.000000	33.500000

```
In [40]: #Statistics of Males
DataSetUnemploymentMale.describe()
```

Out [40]:

	Year	Value
count	13.000000	13.000000
mean	1997.923077	12.884615
std	5.187510	2.574182
min	1990.000000	9.200000
25%	1993.000000	10.600000
50%	1999.000000	13.400000
75%	2002.000000	14.900000
max	2005.000000	16.200001

Notes

By exploring the same indicators by gender other information is revealed. Indeed we can note

- The unemployment with tertiary education of females is higher than males and it's increasing.
- The Unemployment with tertiary education of males is increasing but not at the same rate of females. So why there is this difference between males and females. We can't be sure until we have other informations but we can give some ideas.
- The high rate of the unemployment with tertiary education of females can be caused by the marriage of females.
- The inadequacy of the job opportunities with education level or speciality can push the females to not accept the available jobs.

Conclusion

In this study we have noted that the unemployment with tertiary education in Morocco is increasing. This increase can be caused by several factors. So in order to understand more about the subject, it is important to study other aspects such as, the comparison between Females and Males. Indeed the second study proves that the high rate of unemployment is due to the unemployment of females. Consequently it is important to gather all the information in relationship with the problem in order to diagnose, understand and cope with it.