

CORRELATION ANALYSIS

1. Attrition vs. Years at company

```
import numpy as n
import pandas as pd
import matplotlib.pyplot as m
from scipy.stats import pearsonr as pear, mannwhitneyu as
man,ttest_ind as ttest
from sklearn.preprocessing import LabelEncoder
count=0
ds=pd.read_csv("general_data.csv")
ds.dropna()
ds.drop_duplicates()
le=LabelEncoder()
ds["Attrition"]=le.fit_transform(ds["Attrition"])
stats,p=pear(ds.Attrition,ds.YearsAtCompany)
print("the value pf p is: ",p)
```

the value pf p is: 3.1638831224877484e-19

since the value of p is < 0.05 H_0 is true and there is significant relation between attrition and years at company

2. Attrition vs. Monthly income

```
stats,p=pear(ds.Attrition,ds.MonthlyIncome)
print("the value pf p is: ",p)
```

the value pf p is: 0.03842748490600132

since the value of p is < 0.05 H_0 is true and there is significant relation between attrition and Monthly income

3. Attrition vs. Training Times Last Year

```
stats,p=pear(ds.Attrition,ds.TrainingTimesLastYear)  
print("the value pf p is: ",p)
```

the value pf p is: 0.0010247061915362814

since the value of p is <0.05 H_0 is true and there is significant relation between attrition and Monthly income

4. Attrition vs years with curret manager

```
stats,p=pear(ds.Attrition,ds.YearsWithCurrManager)  
print("the value pf p is: ",p)
```

the value pf p is: 1.7339322652900218e-25

since the value of p is <0.05 H_0 is true and there is significant relation between attrition and years with current manager

Correlation matrix

Index	Age	Attrition	DistanceFromHome	Education	EmployeeID	JobLevel	MonthlyIncome	NumCompaniesWorked	PercentSalaryHike	StockOptionLevel	TotalWorkingYears	TrainingTimesLastYear	YearsAtCompany	YearsSinceLastPromotion	YearsWithCurrManager
Age	1	-0.159205	0.00696333	-0.0357063	0.00864882	-0.00288375	-0.0443139	0.299243	-0.0331366	-0.0317528	0.680661	-0.0273079	0.311309	0.216513	0.202089
Attrition	-0.159205	1	-0.00973014	-0.0151112	-0.00472912	-0.0102897	-0.0311763	0.0423454	0.0325326	-0.00683885	-0.170338	-0.0494306	-0.134392	-0.0330188	-0.156199
DistanceFromHome	0.00696333	-0.00973014	1	-0.00863818	-0.00109663	-0.0373295	-0.021607	-0.0138428	0.0381246	0.0111687	0.00937367	-0.00900146	0.031684	0.0022896	0.0215837
Education	-0.0357063	-0.0151112	-0.00863818	1	-0.00967972	0.0457461	0.00641006	-0.0162502	-0.0405314	0.00126084	-0.0107167	0.0104722	0.00608037	0.0224896	0.00535752
EmployeeID	0.00864882	-0.00472912	-0.00109663	-0.00967972	1	-0.00330256	0.00733763	-0.00111666	-0.0044565	-0.0142541	-0.00106287	-0.0101909	0.00408594	0.000256122	0.0085788
JobLevel	-0.00288375	-0.0102897	-0.0373295	0.0457461	-0.00330256	1	0.0473157	-0.00987482	0.010973	0.000992749	-0.0369569	-0.0325003	-0.0642188	-0.0608111	-0.0552511
MonthlyIncome	-0.0443139	-0.0311763	-0.021607	0.00641006	0.00733763	0.0473157	1	-0.0207262	0.0043247	0.0269298	-0.0337871	0.0501123	0.000994946	0.0652193	0.0243042
NumCompaniesWorked	0.299243	0.0423454	-0.0138428	-0.0162502	-0.00111666	-0.00987482	-0.0207262	1	0.0308601	0.0171633	0.238807	-0.0322858	-0.117959	-0.0366563	-0.109667
PercentSalaryHike	-0.0331366	0.0325326	0.0381246	-0.0405314	-0.0044565	0.010973	0.0043247	0.0308601	1	0.0125483	-0.0187359	-0.0373921	-0.0297069	-0.0295424	-0.0408636
StockOptionLevel	-0.0317528	-0.00683885	0.0111687	0.00126084	-0.0142541	0.000992749	0.0269298	0.0171633	0.0125483	1	0.00269431	-0.0699018	0.00788588	0.0190627	0.0177573
TotalWorkingYears	0.680661	-0.170338	0.00937367	-0.0107167	-0.00106287	-0.0369569	-0.0337871	0.238807	-0.0187359	0.00269431	1	-0.040762	0.627703	0.404444	0.4588
TrainingTimesLastYear	-0.0273079	-0.0494306	-0.00900146	0.0104722	-0.0101909	-0.0325003	0.0501123	-0.0322858	-0.0373921	-0.0699018	-0.040762	1	-0.00789363	0.016121	-0.0132701
YearsAtCompany	0.311309	-0.134392	0.031684	0.00608037	0.00408594	-0.0642188	0.000994946	-0.117959	-0.0297069	0.00788588	0.627703	-0.00789363	1	0.618409	0.769212
YearsSinceLastPromotion	0.216513	-0.0330188	0.0022896	0.0224896	0.000256122	-0.0608111	0.0652193	-0.0366563	-0.0295424	0.0190627	0.404444	0.016121	0.618409	1	0.510224
YearsWithCurrManager	0.202089	-0.156199	0.0215837	0.00535752	0.0085788	-0.0552511	0.0243042	-0.109667	-0.0408636	0.0177573	0.4588	-0.0132701	0.769212	0.510224	1

INFERENCE:

- 1.theres low and negative correlation between attrition and age,total working years ,with current manager,distance from home,job level,monthly income ,education,stock option level,
2. theres low and positive correlation between attrition and number of companies worked,%salary hike