

```

import warnings
warnings.filterwarnings('ignore')

import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
import plotly.express as px

from google.colab import drive
drive.mount('/content/drive',force_remount=True)

Mounted at /content/drive

pd.set_option('display.max_columns',None)
burnoutDf=pd.read_excel('/content/drive/MyDrive/employee_burnout_analy
sis.xlsx')
burnoutDf

```

Type \	Employee ID	Date of Joining	Gender	Company
0	fffe32003000360033003200	2008-09-30	Female	Service
1	fffe3700360033003500	2008-11-30	Male	Service
2	fffe31003300320037003900	2008-03-10	Female	Product
3	fffe32003400380032003900	2008-11-03	Male	Service
4	fffe31003900340031003600	2008-07-24	Female	Service
...
22745	fffe31003500370039003100	2008-12-30	Female	Service
22746	fffe33003000350031003800	2008-01-19	Female	Product
22747	fffe390032003000	2008-11-05	Male	Service
22748	fffe33003300320036003900	2008-01-10	Female	Service
22749	fffe3400350031003800	2008-01-06	Male	Product

	WFH Setup Available	Designation	Resource Allocation \
0	No	2	3.0
1	Yes	1	2.0
2	Yes	2	NaN
3	Yes	1	1.0
4	No	3	7.0
...

22745	No	1	3.0
22746	Yes	3	6.0
22747	Yes	3	7.0
22748	No	2	5.0
22749	No	3	6.0

	Mental Fatigue Score	Burn Rate
0	3.8	0.16
1	5.0	0.36
2	5.8	0.49
3	2.6	0.20
4	6.9	0.52
...
22745	NaN	0.41
22746	6.7	0.59
22747	NaN	0.72
22748	5.9	0.52
22749	7.8	0.61

[22750 rows x 9 columns]

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

```
burnoutDf["Data of Joining"]=pd.to_datetime(burnoutDf["Date of Joining"])
```

```
burnoutDf.shape
```

(22750, 10)

```
burnoutDf.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 22750 entries, 0 to 22749
```

```
Data columns (total 10 columns):
```

#	Column	Non-Null Count	Dtype
---	-----	-----	-----
0	Employee ID	22750 non-null	object
1	Date of Joining	22750 non-null	datetime64[ns]
2	Gender	22750 non-null	object
3	Company Type	22750 non-null	object
4	WFH Setup Available	22750 non-null	object
5	Designation	22750 non-null	int64
6	Resource Allocation	21369 non-null	float64
7	Mental Fatigue Score	20633 non-null	float64
8	Burn Rate	21626 non-null	float64
9	Data of Joining	22750 non-null	datetime64[ns]

```
dtypes: datetime64[ns](2), float64(3), int64(1), object(4)
```

```
memory usage: 1.7+ MB
```

```
burnoutDf.head()
```

	Employee ID	Date of Joining	Gender	Company Type	\
0	fffe32003000360033003200	2008-09-30	Female	Service	
1	fffe3700360033003500	2008-11-30	Male	Service	
2	fffe31003300320037003900	2008-03-10	Female	Product	
3	fffe32003400380032003900	2008-11-03	Male	Service	
4	fffe31003900340031003600	2008-07-24	Female	Service	

	WFH Setup Available	Designation	Resource Allocation	Mental Fatigue Score	\
0	No	2	3.0	3.8	
1	Yes	1	2.0	5.0	
2	Yes	2	NaN	5.8	
3	Yes	1	1.0	2.6	
4	No	3	7.0	6.9	

	Burn Rate	Data of Joining
0	0.16	2008-09-30
1	0.36	2008-11-30
2	0.49	2008-03-10
3	0.20	2008-11-03
4	0.52	2008-07-24

```
burnoutDf.columns
```

```
Index(['Employee ID', 'Date of Joining', 'Gender', 'Company Type',  
      'WFH Setup Available', 'Designation', 'Resource Allocation',  
      'Mental Fatigue Score', 'Burn Rate', 'Data of Joining'],  
      dtype='object')
```

```
burnoutDf.isna().sum()
```

Employee ID	0
Date of Joining	0
Gender	0
Company Type	0
WFH Setup Available	0
Designation	0
Resource Allocation	1381
Mental Fatigue Score	2117
Burn Rate	1124
Data of Joining	0
dtype:	int64

```
burnoutDf.duplicated().sum()
```

```
0
```

```
burnoutDf.describe()
```

	Designation	Resource Allocation	Mental Fatigue Score
Burn Rate			
count	22750.000000	21369.000000	20633.000000
21626.000000			
mean	2.178725	4.481398	5.728188
0.452005			
std	1.135145	2.047211	1.920839
0.198226			
min	0.000000	1.000000	0.000000
0.000000			
25%	1.000000	3.000000	4.600000
0.310000			
50%	2.000000	4.000000	5.900000
0.450000			
75%	3.000000	6.000000	7.100000
0.590000			
max	5.000000	10.000000	10.000000
1.000000			

```
for i,col in enumerate(burnoutDf.columns):  
    print(f"\n\n{burnoutDf[col].unique()}")  
    print(f"\n{burnoutDf[col].value_counts()}\n\n")
```

```
['fffe32003000360033003200' 'fffe3700360033003500'  
'fffe31003300320037003900' ... 'fffe390032003000'  
'fffe33003300320036003900' 'fffe3400350031003800']
```

```
fffe32003000360033003200    1  
fffe3600360035003500        1  
fffe3800360034003400        1  
fffe31003000310033003600    1  
fffe31003400350031003700    1  
..  
fffe33003400340032003400    1  
fffe32003100370036003600    1  
fffe31003900310035003800    1  
fffe32003400320034003200    1  
fffe3400350031003800        1
```

```
Name: Employee ID, Length: 22750, dtype: int64
```

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'2008-08-18T00:00:00.000000000' '2008-04-05T00:00:00.000000000'
'2008-05-15T00:00:00.000000000' '2008-12-12T00:00:00.000000000'
'2008-10-25T00:00:00.000000000' '2008-04-06T00:00:00.000000000'
'2008-11-13T00:00:00.000000000' '2008-09-04T00:00:00.000000000'
'2008-05-24T00:00:00.000000000' '2008-06-10T00:00:00.000000000'
'2008-03-31T00:00:00.000000000' '2008-12-01T00:00:00.000000000'
'2008-01-05T00:00:00.000000000' '2008-09-15T00:00:00.000000000'
'2008-12-10T00:00:00.000000000' '2008-02-10T00:00:00.000000000'
'2008-12-03T00:00:00.000000000' '2008-02-01T00:00:00.000000000']
```

```
2008-01-06      86
2008-05-21      85
2008-02-04      82
2008-07-16      81
2008-07-13      80
```

```
..
2008-06-27      44
2008-07-06      44
2008-07-04      43
2008-12-24      43
2008-12-07      39
```

```
Name: Date of Joining, Length: 366, dtype: int64
```



```
['Female' 'Male']
```

```
Female    11908
```

```
Male      10842
```

```
Name: Gender, dtype: int64
```

```
['Service' 'Product']
```

```
Service    14833
```

```
Product     7917
```

```
Name: Company Type, dtype: int64
```

```
['No' 'Yes']
```

```
Yes        12290
```

```
No         10460
```

```
Name: WFH Setup Available, dtype: int64
```

```
[2 1 3 0 4 5]
```

```
2         7588
```

```
3         5985
```

```
1         4881
```

```
4         2391
```

```
0         1507
```

```
5          398
```

```
Name: Designation, dtype: int64
```

```
[ 3.  2. nan  1.  7.  4.  6.  5.  8. 10.  9.]
```

```
4.0        3893
```

```
5.0        3861
```

```
3.0        3192
```

```
6.0        2943
```

```
2.0        2075
```

```
7.0        1965
```

```
1.0      1791
8.0      1044
9.0       446
10.0     159
Name: Resource Allocation, dtype: int64
```

```
[ 3.8  5.   5.8  2.6  6.9  3.6  7.9  4.4  nan  5.3  1.8  4.7  5.9  6.7
  4.   7.6  6.3  7.7  6.6  7.4  3.9  3.   8.7  7.3  5.4  6.   7.5 10.
  6.4  5.1  5.6  6.1  3.1  8.   6.8  4.9  9.2  6.5  6.2  8.2  4.1  4.3
  0.8  2.9  2.   9.1  0.   5.7  8.3  5.5  7.   3.3  7.8  7.2  5.2  8.9
  4.5  8.1  8.6  9.5  3.5  4.8  2.4  3.7  1.   8.8  9.3  4.6  9.9  0.5
  2.8  9.   3.4  4.2  1.6  2.7  1.3  3.2  8.4  7.1  9.4  2.1  9.7  2.5
  1.9  1.7  9.6  0.7  0.2  1.2  8.5  9.8  2.2  1.1  0.9  2.3  0.4  1.4
  1.5  0.6  0.3  0.1]
```

```
6.0      470
5.8      464
5.9      458
6.1      457
6.3      454
...
0.5       24
0.2       23
0.4       19
0.1       17
0.3       13
Name: Mental Fatigue Score, Length: 101, dtype: int64
```

```
[0.16 0.36 0.49 0.2  0.52 0.29 0.62 0.33 0.56 0.67 0.5  0.12 0.4  0.51
 0.32 0.39 0.59 0.22 0.68 0.57 0.47 0.46 0.61 0.91 0.44 0.6  0.45 0.19
 0.31 0.81 0.42 0.53  nan 0.94 0.37 0.65 0.38 0.15 0.26 0.28 0.71 0.8
 0.63 0.79 0.72 0.34 0.27 0.66 0.04 0.05 0.11 0.41 0.76 0.43 0.85 0.35
 0.   0.55 0.48 0.7  0.18 0.23 0.25 0.75 0.1  0.73 0.58 0.88 0.77 0.3
 0.06 0.03 0.69 0.24 0.74 0.86 0.92 0.78 0.21 0.98 0.02 0.82 0.93 0.83
 0.87 0.64 0.54 0.17 1.   0.08 0.09 0.14 0.13 0.07 0.84 0.99 0.01 0.97
 0.95 0.9  0.96 0.89]
```

```
0.47      475
0.43      444
0.41      434
0.45      431
0.50      428
...
0.98      18
```

```
0.97      17
0.95      17
0.96      13
0.99       8
```

```
Name: Burn Rate, Length: 101, dtype: int64
```

```
[ '2008-09-30T00:00:00.000000000' '2008-11-30T00:00:00.000000000'
  '2008-03-10T00:00:00.000000000' '2008-11-03T00:00:00.000000000'
  '2008-07-24T00:00:00.000000000' '2008-11-26T00:00:00.000000000'
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  '2008-01-20T00:00:00.000000000' '2008-02-23T00:00:00.000000000'
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  '2008-03-17T00:00:00.000000000' '2008-03-28T00:00:00.000000000'
  '2008-05-29T00:00:00.000000000' '2008-06-27T00:00:00.000000000'
  '2008-08-31T00:00:00.000000000' '2008-01-15T00:00:00.000000000'
  '2008-05-04T00:00:00.000000000' '2008-11-17T00:00:00.000000000'
  '2008-09-14T00:00:00.000000000' '2008-10-09T00:00:00.000000000'
  '2008-10-11T00:00:00.000000000' '2008-09-18T00:00:00.000000000'
  '2008-09-16T00:00:00.000000000' '2008-12-16T00:00:00.000000000'
  '2008-05-03T00:00:00.000000000' '2008-08-04T00:00:00.000000000'
  '2008-07-31T00:00:00.000000000' '2008-06-17T00:00:00.000000000'
  '2008-04-28T00:00:00.000000000' '2008-10-30T00:00:00.000000000'
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  '2008-12-22T00:00:00.000000000' '2008-04-08T00:00:00.000000000'
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  '2008-02-28T00:00:00.000000000' '2008-08-20T00:00:00.000000000'
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  '2008-04-15T00:00:00.000000000' '2008-10-26T00:00:00.000000000'
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'2008-11-15T00:00:00.000000000'	'2008-08-17T00:00:00.000000000'
'2008-08-08T00:00:00.000000000'	'2008-06-28T00:00:00.000000000'
'2008-05-06T00:00:00.000000000'	'2008-12-17T00:00:00.000000000'
'2008-09-08T00:00:00.000000000'	'2008-07-04T00:00:00.000000000'
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'2008-09-02T00:00:00.000000000'	'2008-10-04T00:00:00.000000000'
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'2008-01-26T00:00:00.000000000'	'2008-05-10T00:00:00.000000000'
'2008-05-16T00:00:00.000000000'	'2008-05-07T00:00:00.000000000'
'2008-10-16T00:00:00.000000000'	'2008-07-09T00:00:00.000000000'
'2008-03-11T00:00:00.000000000'	'2008-08-15T00:00:00.000000000'
'2008-08-25T00:00:00.000000000'	'2008-12-14T00:00:00.000000000'
'2008-04-26T00:00:00.000000000'	'2008-04-03T00:00:00.000000000'
'2008-12-19T00:00:00.000000000'	'2008-08-13T00:00:00.000000000'
'2008-03-08T00:00:00.000000000'	'2008-02-05T00:00:00.000000000'
'2008-02-17T00:00:00.000000000'	'2008-04-16T00:00:00.000000000'
'2008-10-24T00:00:00.000000000'	'2008-03-05T00:00:00.000000000'
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'2008-03-14T00:00:00.000000000'	'2008-06-14T00:00:00.000000000'
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'2008-11-04T00:00:00.000000000'	'2008-12-05T00:00:00.000000000'
'2008-07-27T00:00:00.000000000'	'2008-12-07T00:00:00.000000000'
'2008-06-04T00:00:00.000000000'	'2008-09-09T00:00:00.000000000'
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'2008-04-04T00:00:00.000000000'	'2008-07-06T00:00:00.000000000'
'2008-12-28T00:00:00.000000000'	'2008-07-08T00:00:00.000000000'
'2008-01-21T00:00:00.000000000'	'2008-10-19T00:00:00.000000000'
'2008-01-07T00:00:00.000000000'	'2008-12-24T00:00:00.000000000'
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'2008-12-26T00:00:00.000000000'	'2008-05-08T00:00:00.000000000'
'2008-08-12T00:00:00.000000000'	'2008-08-24T00:00:00.000000000'
'2008-09-21T00:00:00.000000000'	'2008-11-10T00:00:00.000000000'
'2008-01-09T00:00:00.000000000'	'2008-05-18T00:00:00.000000000'
'2008-10-08T00:00:00.000000000'	'2008-09-22T00:00:00.000000000'
'2008-08-06T00:00:00.000000000'	'2008-04-30T00:00:00.000000000'
'2008-12-20T00:00:00.000000000'	'2008-04-13T00:00:00.000000000'
'2008-04-12T00:00:00.000000000'	'2008-11-18T00:00:00.000000000'
'2008-02-15T00:00:00.000000000'	'2008-06-07T00:00:00.000000000'
'2008-11-16T00:00:00.000000000'	'2008-06-26T00:00:00.000000000'
'2008-05-11T00:00:00.000000000'	'2008-09-03T00:00:00.000000000'
'2008-03-06T00:00:00.000000000'	'2008-09-24T00:00:00.000000000'
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'2008-11-12T00:00:00.000000000'	'2008-08-26T00:00:00.000000000'
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'2008-08-23T00:00:00.000000000'	'2008-06-05T00:00:00.000000000'
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'2008-01-10T00:00:00.000000000'	'2008-06-13T00:00:00.000000000'
'2008-07-18T00:00:00.000000000'	'2008-07-28T00:00:00.000000000'
'2008-07-26T00:00:00.000000000'	'2008-01-01T00:00:00.000000000'
'2008-08-27T00:00:00.000000000'	'2008-08-30T00:00:00.000000000'

'2008-04-10T00:00:00.000000000'	'2008-07-14T00:00:00.000000000'
'2008-09-28T00:00:00.000000000'	'2008-04-02T00:00:00.000000000'
'2008-10-15T00:00:00.000000000'	'2008-06-30T00:00:00.000000000'
'2008-03-07T00:00:00.000000000'	'2008-10-22T00:00:00.000000000'
'2008-08-02T00:00:00.000000000'	'2008-03-15T00:00:00.000000000'
'2008-03-18T00:00:00.000000000'	'2008-05-28T00:00:00.000000000'
'2008-02-09T00:00:00.000000000'	'2008-08-22T00:00:00.000000000'
'2008-11-02T00:00:00.000000000'	'2008-04-22T00:00:00.000000000'
'2008-11-21T00:00:00.000000000'	'2008-02-12T00:00:00.000000000'
'2008-02-07T00:00:00.000000000'	'2008-07-19T00:00:00.000000000'
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'2008-11-05T00:00:00.000000000'	'2008-08-19T00:00:00.000000000'
'2008-04-17T00:00:00.000000000'	'2008-08-07T00:00:00.000000000'
'2008-12-31T00:00:00.000000000'	'2008-05-27T00:00:00.000000000'
'2008-09-29T00:00:00.000000000'	'2008-05-30T00:00:00.000000000'
'2008-12-18T00:00:00.000000000'	'2008-02-20T00:00:00.000000000'
'2008-12-11T00:00:00.000000000'	'2008-11-27T00:00:00.000000000'
'2008-07-20T00:00:00.000000000'	'2008-11-28T00:00:00.000000000'
'2008-08-03T00:00:00.000000000'	'2008-10-20T00:00:00.000000000'
'2008-07-07T00:00:00.000000000'	'2008-06-08T00:00:00.000000000'
'2008-03-24T00:00:00.000000000'	'2008-12-21T00:00:00.000000000'
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'2008-01-27T00:00:00.000000000'	'2008-10-17T00:00:00.000000000'
'2008-05-09T00:00:00.000000000'	'2008-03-29T00:00:00.000000000'
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'2008-04-07T00:00:00.000000000'	'2008-05-02T00:00:00.000000000'
'2008-06-02T00:00:00.000000000'	'2008-10-02T00:00:00.000000000'
'2008-02-26T00:00:00.000000000'	'2008-07-12T00:00:00.000000000'
'2008-02-06T00:00:00.000000000'	'2008-06-23T00:00:00.000000000'
'2008-11-06T00:00:00.000000000'	'2008-07-16T00:00:00.000000000'
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'2008-02-29T00:00:00.000000000'	'2008-03-25T00:00:00.000000000'
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'2008-11-13T00:00:00.000000000'	'2008-09-04T00:00:00.000000000'
'2008-05-24T00:00:00.000000000'	'2008-06-10T00:00:00.000000000'
'2008-03-31T00:00:00.000000000'	'2008-12-01T00:00:00.000000000'
'2008-01-05T00:00:00.000000000'	'2008-09-15T00:00:00.000000000'
'2008-12-10T00:00:00.000000000'	'2008-02-10T00:00:00.000000000'
'2008-12-03T00:00:00.000000000'	'2008-02-01T00:00:00.000000000']

2008-01-06	86
2008-05-21	85
2008-02-04	82
2008-07-16	81
2008-07-13	80

```

2008-06-27    44
2008-07-06    44
2008-07-04    43
2008-12-24    43
2008-12-07    39
Name: Data of Joining, Length: 366, dtype: int64

```

```
burnoutDf.drop(['Employee ID'],axis=1)
```

	Date of Joining	Gender	Company Type	WFH Setup Available
0	2008-09-30	Female	Service	No
2				
1	2008-11-30	Male	Service	Yes
1				
2	2008-03-10	Female	Product	Yes
2				
3	2008-11-03	Male	Service	Yes
1				
4	2008-07-24	Female	Service	No
3				
...
...				
22745	2008-12-30	Female	Service	No
1				
22746	2008-01-19	Female	Product	Yes
3				
22747	2008-11-05	Male	Service	Yes
3				
22748	2008-01-10	Female	Service	No
2				
22749	2008-01-06	Male	Product	No
3				

	Resource Allocation	Mental Fatigue Score	Burn Rate	Data of Joining
0	3.0	3.8	0.16	2008-09-30
1	2.0	5.0	0.36	2008-11-30
2	NaN	5.8	0.49	2008-03-10
3	1.0	2.6	0.20	2008-11-03
4	7.0	6.9	0.52	2008-07-24
...	

```

...
22745          3.0          NaN          0.41          2008-
12-30
22746          6.0          6.7          0.59          2008-
01-19
22747          7.0          NaN          0.72          2008-
11-05
22748          5.0          5.9          0.52          2008-
01-10
22749          6.0          7.8          0.61          2008-
01-06

```

```
[22750 rows x 9 columns]
```

```

intFloatburnoutDf=burnoutDf.select_dtypes([np.int,np.float])
for i, col in enumerate(intFloatburnoutDf.columns):
    if(intFloatburnoutDf[col].skew()>=0.1):
        print("\n",col,"feature is Positively Skewed and value
is:",intFloatburnoutDf[col].skew())
    elif(intFloatburnoutDf[col].skew()>=0.1):
        print("\n",col,"feature is Negatively Skewed and value
is:",intFloatburnoutDf[col].skew())
    else:
        print("\n",col,"feature is Skewed Normally Distributed and value
is:",intFloatburnoutDf[col].skew())

```

```

Designation feature is Skewed Normally Distributed and value is:
0.09242138478903683

```

```

Resource Allocation feature is Positively Skewed and value is:
0.20457273454318103

```

```

Mental Fatigue Score feature is Skewed Normally Distributed and
value is: -0.4308950578815428

```

```

Burn Rate feature is Skewed Normally Distributed and value is:
0.045737370909640515

```

```

burnoutDf['Resource Allocation'].fillna(burnoutDf['Resource
Allocation'].mean(),inplace=True)
burnoutDf['Mental Fatigue Score'].fillna(burnoutDf['Mental Fatigue
Score'].mean(),inplace=True)
burnoutDf['Burn Rate'].fillna(burnoutDf['Burn
Rate'].mean(),inplace=True)

```

```
burnoutDf.isna().sum()
```

```

Employee ID          0
Date of Joining      0
Gender               0

```



```
Company Type      0
WFH Setup Available 0
Designation      0
Resource Allocation 0
Mental Fatigue Score 0
Burn Rate        0
Data of Joining   0
dtype: int64
```

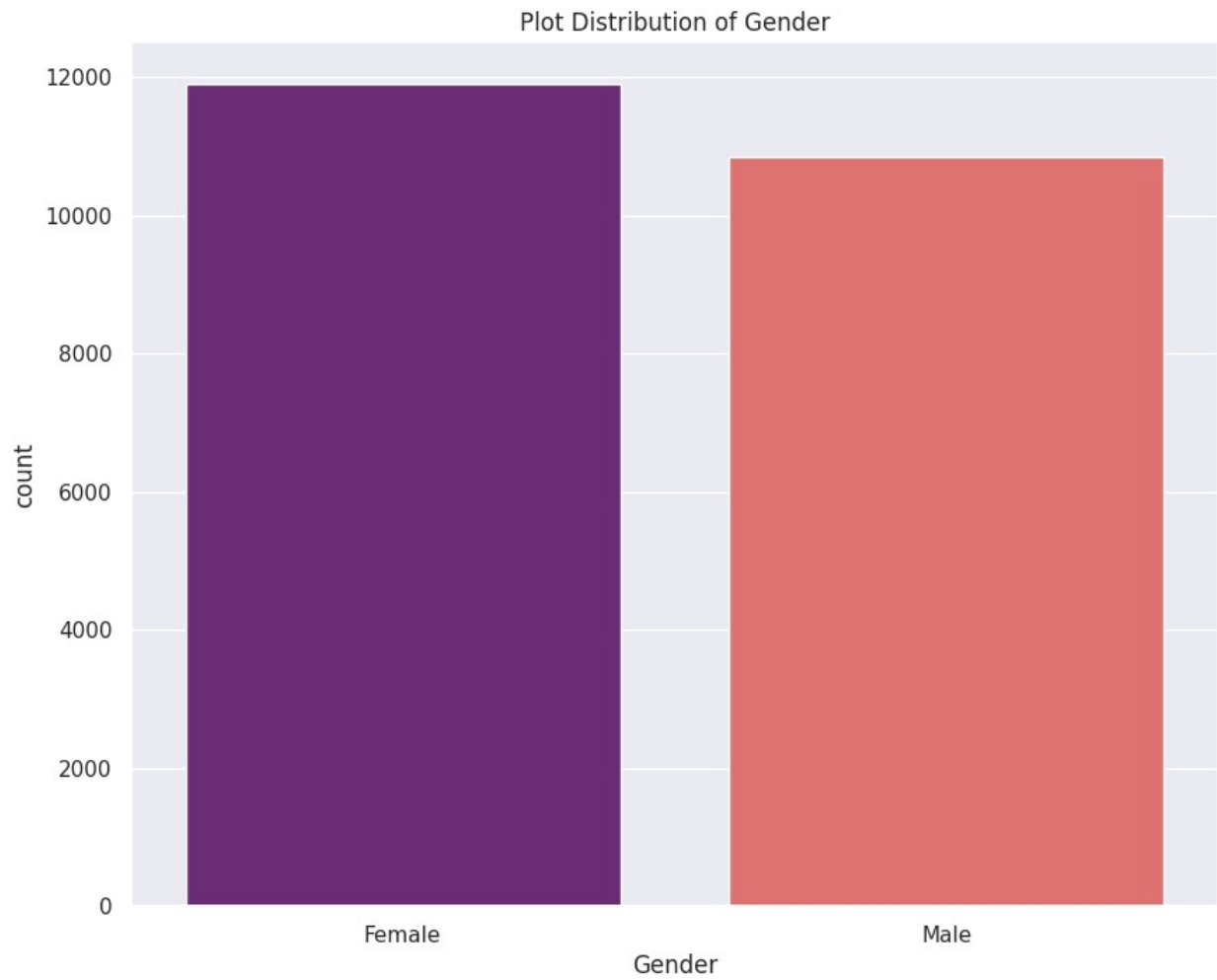
```
burnoutDf.corr()
```

	Designation	Resource Allocation	Mental Fatigue Score \
Designation	1.000000	0.852046	0.656445
Resource Allocation	0.852046	1.000000	0.739268
Mental Fatigue Score	0.656445	0.739268	1.000000
Burn Rate	0.719284	0.811062	0.878217

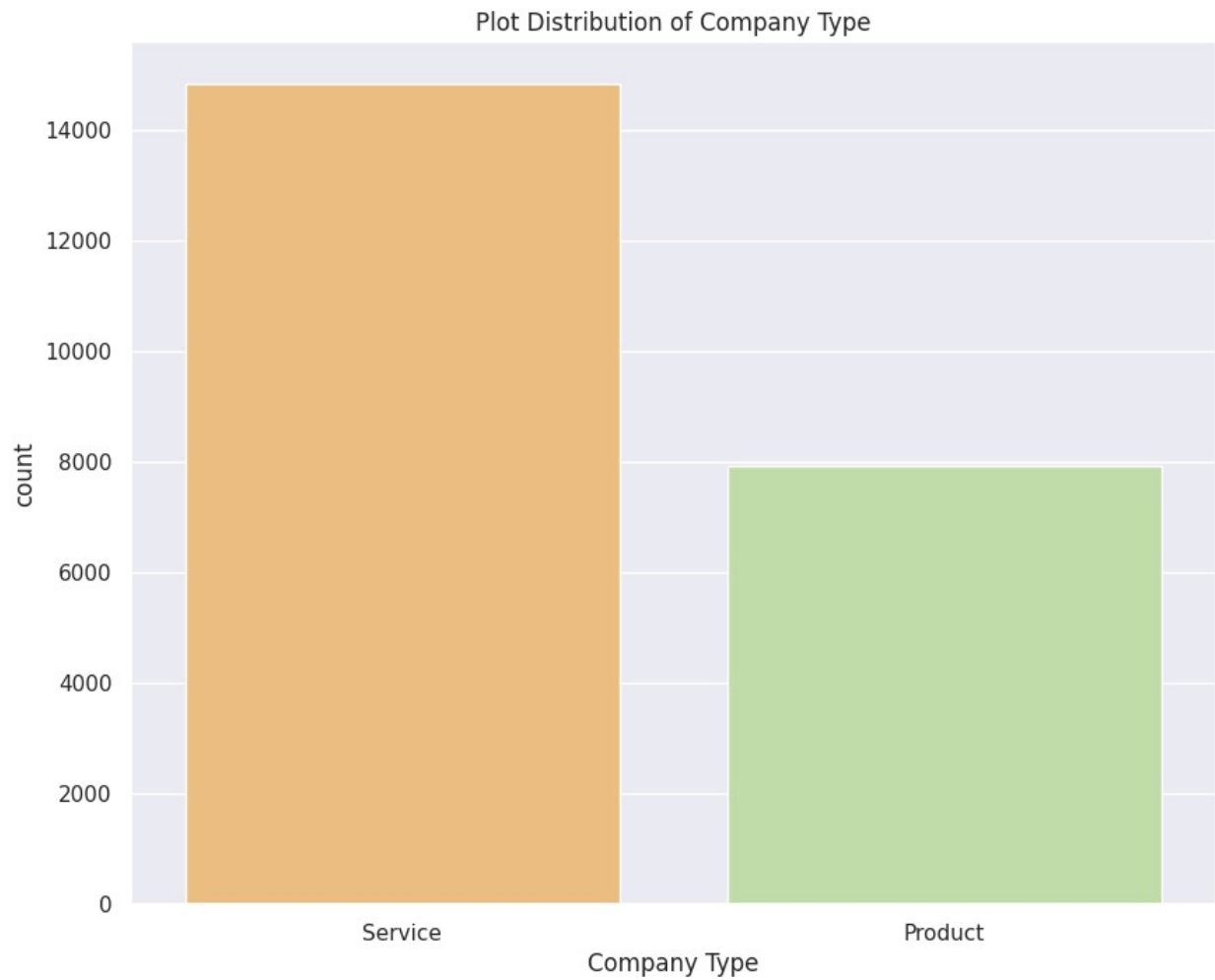
	Burn Rate
Designation	0.719284
Resource Allocation	0.811062
Mental Fatigue Score	0.878217
Burn Rate	1.000000

```
Corr=burnoutDf.corr()
sns.set(rc={'figure.figsize':(14,12)})
fig=px.imshow(Corr,text_auto=True,aspect="auto")
fig.show()
```

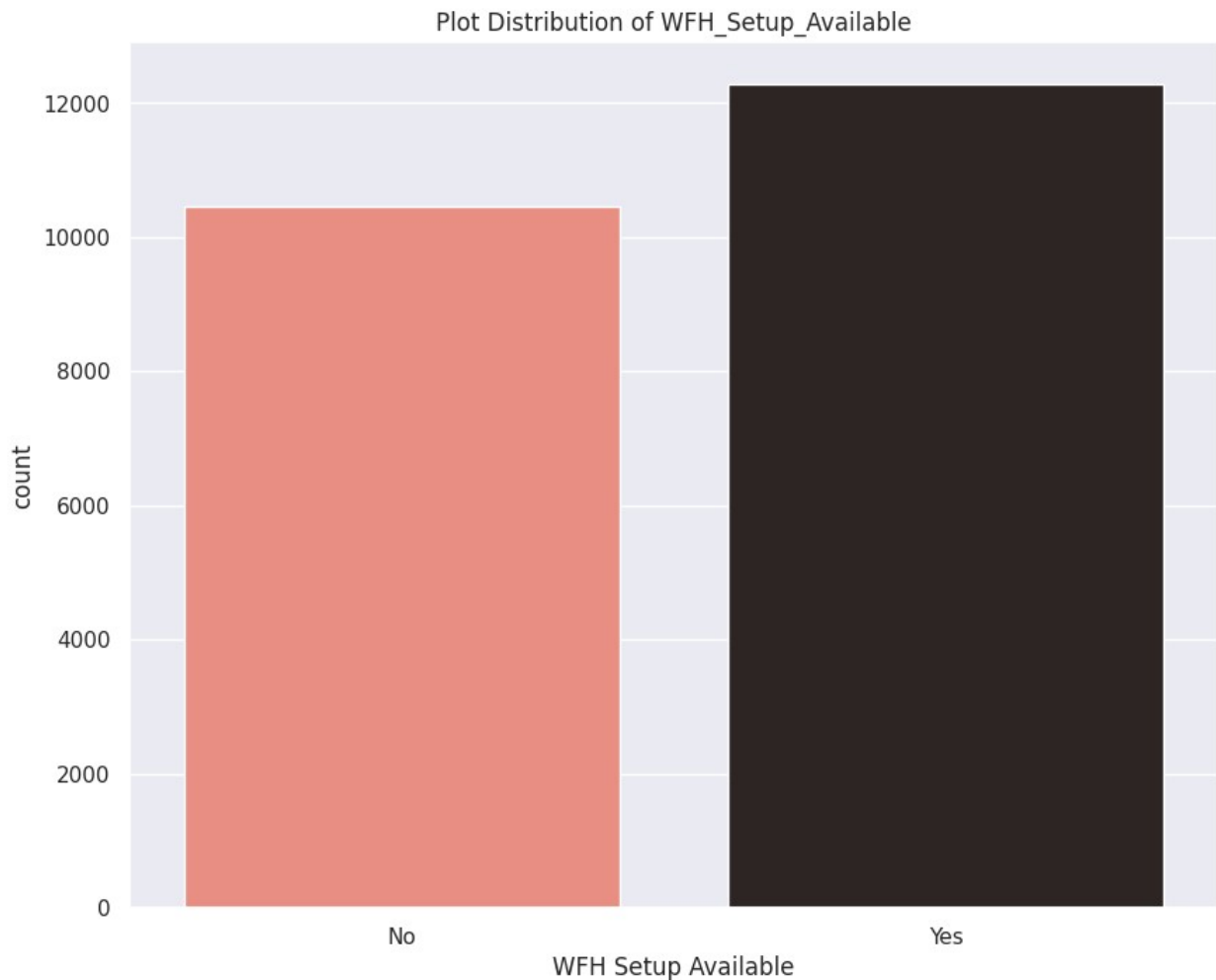
```
plt.figure(figsize=(10,8))
sns.countplot(x="Gender",data=burnoutDf,palette="magma")
plt.title("Plot Distribution of Gender")
plt.show()
```



```
plt.figure(figsize=(10,8))
sns.countplot(x="Company Type",data=burnoutDf,palette='Spectral')
plt.title("Plot Distribution of Company Type")
plt.show()
```



```
plt.figure(figsize=(10,8))
sns.countplot(x="WFH Setup
Available",data=burnoutDf,palette="dark:salmon_r")
plt.title("Plot Distribution of WFH_Setup_Available")
plt.show()
```



```
burn_st=burnoutDf.loc[:, 'Date of Joining': 'Burn Rate']
burn_st=burn_st.select_dtypes([int, float])
for i, col in enumerate(burn_st.columns):
    fig = px.histogram(burn_st, x=col, title="Plot Distribution of "+col, color_discrete_sequence=['indianred'])
    fig.update_layout(bargap=0.2)
    fig.show()

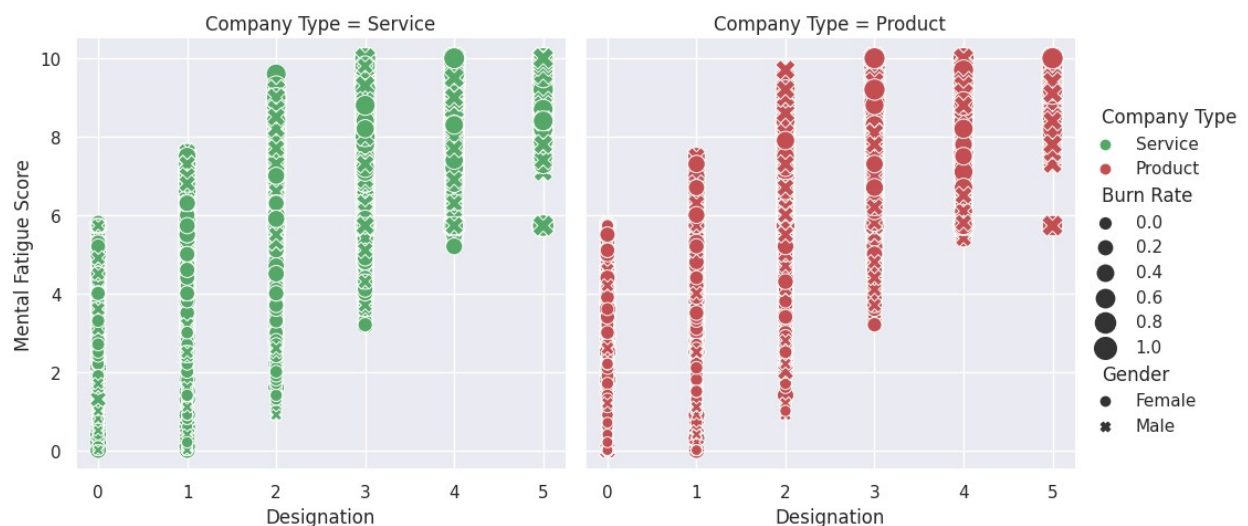
fig=px.line(burnoutDf, y="Burn Rate", color="Designation", title="Burn rate on the basis of Designation", color_discrete_sequence=px.colors.qualitative.Pastell1)
fig.update_layout(bargap=0.2)
fig.show()

fig = px.line(burnoutDf, y="Burn Rate", color='Gender', title="Burn rate on the basis of Gender", color_discrete_sequence=px.colors.qualitative.Pastel)
fig.update_layout(bargap=0.2)
fig.show()
```

```
fig = px.line(burnoutDf, y="Mental Fatigue Score",color='Designation',title="Mental fatigue vs Designation",color_discrete_sequence=px.colors.qualitative.Pastel)
fig.update_layout(bargap=0.2)
fig.show()
```

```
sns.relplot(
    data=burnoutDf, x="Designation",y="Mental Fatigue Score",col='Company Type',
    hue="Company Type",size="Burn Rate",style='Gender',
    palette=["g","r"],sizes=(50,200)
)
```

```
<seaborn.axisgrid.FacetGrid at 0x7effe2f37970>
```



```
from sklearn import preprocessing
k=Label_encode=preprocessing.LabelEncoder()
Label_encode=preprocessing.LabelEncoder()

burnoutDf['GenderLabel']=Label_encode.fit_transform(burnoutDf["Gender"]
).values)
burnoutDf['Company_TypeLabel']=Label_encode.fit_transform(burnoutDf['Company Type'].values)
burnoutDf['WFH_Setup_AvailableLabel']=Label_encode.fit_transform(burnoutDf["WFH Setup Available"].values)

gn=burnoutDf.groupby('Gender')
gn=gn['GenderLabel']
gn.first()
```

```
Gender
Female    0
```

```

Male      1
Name: GenderLabel, dtype: int64

ct=burnoutDf.groupby('Company Type')
ct=ct['Company_TypeLabel']
ct.first()

Company Type
0      0
1      1
Name: Company_TypeLabel, dtype: int64

wsa=burnoutDf.groupby('WFH_Setup_Available')
wsa=wsa['WFH_Setup_AvailableLabel']
wsa.first()

WFH_Setup_Available
0      0
1      1
Name: WFH_Setup_AvailableLabel, dtype: int64

burnoutDf.tail(10)

```

		Employee ID	Date of Joining	Gender	Company Type
\					
22740	fffe33003300380031003100	2008-09-05	Female	0	
22741	fffe31003600350034003800	2008-01-07	Male	0	
22742	fffe33003200310039003000	2008-07-28	Male	0	
22743	fffe3300390030003600	2008-12-15	Female	0	
22744	fffe32003500370033003200	2008-05-27	Male	0	
22745	fffe31003500370039003100	2008-12-30	Female	1	
22746	fffe33003000350031003800	2008-01-19	Female	0	
22747	fffe390032003000	2008-11-05	Male	1	
22748	fffe33003300320036003900	2008-01-10	Female	1	
22749	fffe3400350031003800	2008-01-06	Male	0	

	WFH Setup Available	Designation	Resource Allocation	\
22740	0	3	6.0	
22741	0	2	5.0	
22742	0	3	5.0	
22743	1	1	3.0	
22744	0	3	7.0	

22745	0	1	3.0
22746	1	3	6.0
22747	1	3	7.0
22748	0	2	5.0
22749	0	3	6.0

	Mental Fatigue Score	Burn Rate	Data of Joining	GenderLabel \
22740	7.300000	0.550000	2008-09-05	0
22741	6.000000	0.452005	2008-01-07	1
22742	8.100000	0.690000	2008-07-28	1
22743	6.000000	0.480000	2008-12-15	0
22744	6.200000	0.540000	2008-05-27	1
22745	5.728188	0.410000	2008-12-30	0
22746	6.700000	0.590000	2008-01-19	0
22747	5.728188	0.720000	2008-11-05	1
22748	5.900000	0.520000	2008-01-10	0
22749	7.800000	0.610000	2008-01-06	1

	Company TypeLabel	Company_TypeLabel
22740	0	0
22741	0	0
22742	0	0
22743	0	0
22744	0	0
22745	1	1
22746	0	0
22747	1	1
22748	1	1
22749	0	0

```
Columns=['Designation','Resource Allocation','Mental Fatigue Score',
          'GenderLabel','Company_TypeLabel','WFH_Setup_AvailableLabel']
x=burnoutDf[Columns]
y=burnoutDf['Burn Rate']
print(x)
```

	Designation	Resource Allocation	Mental Fatigue Score
GenderLabel \			
0	2	3.000000	3.800000
0			
1	1	2.000000	5.000000
1			
2	2	4.481398	5.800000
0			
3	1	1.000000	2.600000
1			
4	3	7.000000	6.900000
0			
...

```

...
22745      1      3.000000      5.728188
0
22746      3      6.000000      6.700000
0
22747      3      7.000000      5.728188
1
22748      2      5.000000      5.900000
0
22749      3      6.000000      7.800000
1

```

```

      Company_TypeLabel  WFH_Setup_AvailableLabel
0                1                0
1                1                1
2                0                1
3                1                1
4                1                0
...
22745            1                0
22746            0                1
22747            1                1
22748            1                0
22749            0                0

```

```
[22750 rows x 6 columns]
```

```
print(y)
```

```

0      0.16
1      0.36
2      0.49
3      0.20
4      0.52
...
22745   0.41
22746   0.59
22747   0.72
22748   0.52
22749   0.61

```

```
Name: Burn Rate, Length: 22750, dtype: float64
```

```

from sklearn.decomposition import PCA
pca=PCA(0.95)
x_pca=pca.fit_transform(x)
print("PCA shape of X is:",x_pca.shape, 'and original shape
is:',x.shape)
print("% of importance of selected features
is:",pca.explained_variance_ratio_)

```



```

print("The number of features selected through PCA
is:",pca.n_components_)

PCA shape of X is: (22750, 4) and original shape is: (22750, 6)
% of importance of selected features is: [0.78371089 0.11113597
0.03044541 0.02632422]
The number of features selected through PCA is: 4

from sklearn.model_selection import train_test_split
X_train_pca,X_test,Y_train,Y_test=train_test_split(x_pca,y,test_size=0
.25,random_state=10)

print(X_train_pca.shape,X_test.shape,Y_train.shape,Y_test.shape)

(17062, 4) (5688, 4) (17062,) (5688,)

from sklearn.metrics import r2_score

from sklearn.ensemble import RandomForestRegressor
rf_model=RandomForestRegressor()
rf_model.fit(X_train_pca,Y_train)

train_pred_rf=rf_model.predict(X_train_pca)
train_r2=r2_score(Y_train,train_pred_rf)
test_pred_rf=rf_model.predict(X_test)
test_r2=r2_score(Y_test,test_pred_rf)
print("Accuracy score of train data:"+str(round(100*train_r2,4))+"%")
print("Accuracy score of test data:"+str(round(100*test_r2,4))+"%")

Accuracy score of train data:91.197%
Accuracy score of test data:83.8473%

from sklearn.ensemble import AdaBoostRegressor
abr_model=AdaBoostRegressor()
abr_model.fit(X_train_pca,Y_train)

train_pred_adboost=abr_model.predict(X_train_pca)
train_r2=r2_score(Y_train,train_pred_adboost)
test_pred_adaboost=abr_model.predict(X_test)
test_r2=r2_score(Y_test,test_pred_adaboost)
print("Accuracy score of train data:"+str(round(100*train_r2,4))+"%")
print("Accuracy score of test data:"+str(round(100*test_r2,4))+"%")

Accuracy score of train data:77.7957%
Accuracy score of test data:77.2712%

```