

03. Creating the Target Variable (SLAFail)



```
[1] import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib
from matplotlib import pyplot as plt
from pandas_profiling import ProfileReport
from pathlib import Path
```

```
[2] df = pd.read_csv("data/02.a.Detail_Incident.csv", parse_dates=
['Open_Time', 'Resolved_Time', 'Close_Time'])
```

```
[3] df.dtypes
```

CI_Name_aff	object
CI_Type_aff	object
CI_Subtype_aff	object
Service_Component_WBS_aff	object
Incident_ID	object
Impact	int64
Urgency	int64
Priority	int64
KM_number	object
Count_Reassignments	float64
Open_Time	datetime64[ns]
Resolved_Time	datetime64[ns]
Close_Time	datetime64[ns]
Handle_Time_Hours	float64
Closure_Code	object
Count_Related_Interactions	float64
Related_Interaction	object
Count_Related_Incidents	float64
Count_Related_Changes	float64
Related_Change	object
CI_Name_CBy	object
CI_Type_CBy	object
CI_Subtype_CBy	object
ServiceComp_WBS_CBy	object
ReopenedFlag	int64
dtype:	object

```
[4] df.head()
```

	CI_Name_aff	CI_Type_aff	CI_Subtype_aff	Service_Component_WBS
0	APP000005	application	Citrix	WBS000292
1	DSK000457	computer	Desktop	WBS000187
2	SBA000263	application	Server Based Application	WBS000072
3	SBA000154	application	Server Based Application	WBS000027
4	LAP000019	computer	Laptop	WBS000091

5 rows × 5 columns

```
[5] df['TimeToResolve'] = df.Resolved_Time - df.Open_Time
```

```
[6] df.TimeToResolve.describe()
```

```
count          35208
mean    3 days 16:21:45.273148
std    10 days 08:24:08.475153
min      0 days 00:00:17
25%      0 days 01:12:33.250000
50%      0 days 16:20:28.500000
75%      3 days 02:57:33.500000
max    175 days 06:40:30
Name: TimeToResolve, dtype: object
```

```
[7] df.TimeToResolve.mode()
```

```
0    00:08:22
dtype: timedelta64[ns]
```

```
[8] df.head()
```

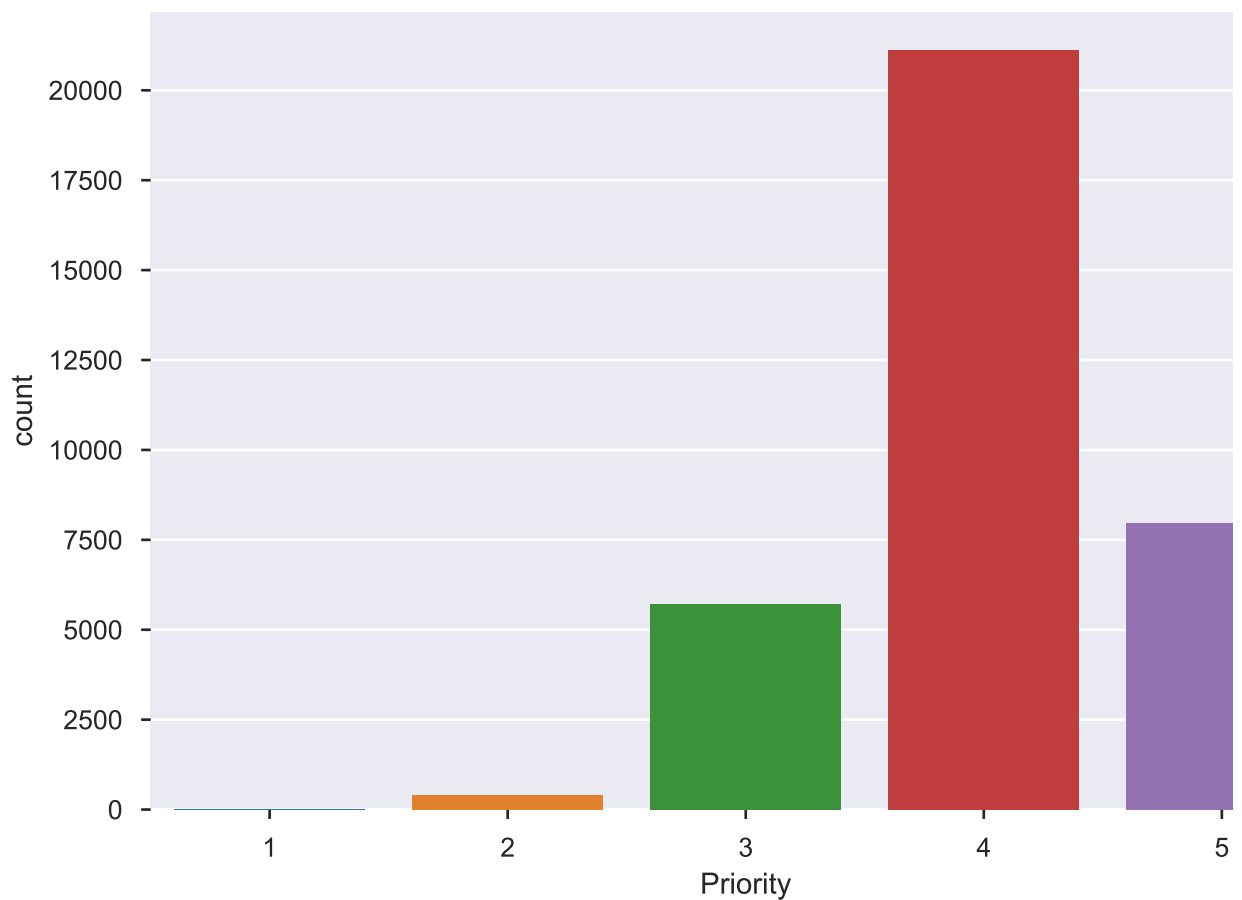
	CI_Name_aff	CI_Type_aff	CI_Subtype_aff	Service_Component_WBS
0	APP000005	application	Citrix	WBS000292

	CI_Name_aff	CI_Type_aff	CI_Subtype_aff	Service_Component_WBS
1	DSK000457	computer	Desktop	WBS000187
2	SBA000263	application	Server Based Application	WBS000072
3	SBA000154	application	Server Based Application	WBS000027
4	LAP000019	computer	Laptop	WBS000091

5 rows × 26 columns

```
[9] sns.countplot(x='Priority', data=df)
```

<matplotlib.axes._subplots.AxesSubplot at 0x1a2c3d5d90>



```
[10] df['TimeToResolve_Minutes'] = df.TimeToResolve.dt.total_seconds()
/ 60
```

```
[11] df.head()
```

	CI_Name_aff	CI_Type_aff	CI_Subtype_aff	Service_Component_WBS
0	APP000005	application	Citrix	WBS000292
1	DSK000457	computer	Desktop	WBS000187
2	SBA000263	application	Server Based Application	WBS000072
3	SBA000154	application	Server Based Application	WBS000027
4	LAP000019	computer	Laptop	WBS000091

5 rows × 27 columns

SLA Business Rule

Priority	SLA in Minutes	SLA in Hours	SLA in Days
1 Very High	240	4	0.16
2 High	480	8	0.3
3 Medium	1440	24	1
4 Low	2880	48	2
5 Very Low	5760	96	4

SLAFail = (Priority == 1 & TimeToResolve_Minutes > 240) | (Priority == 2 & TimeToResolve_Minutes > 480) | (Priority == 3 & TimeToResolve_Minutes > 1440) | (Priority == 4 & TimeToResolve_Minutes > 2880) | (Priority == 5 & TimeToResolve_Minutes > 5760)

```
[12] df['SLAFail'] = ( (df['Priority'] == 1) &
(df['TimeToResolve_Minutes'] > 240) ) | ( (df['Priority'] == 2) &
(df['TimeToResolve_Minutes'] > 480) ) | ( (df['Priority'] == 3) &
(df['TimeToResolve_Minutes'] > 1440) ) | ( (df['Priority'] == 4)
& (df['TimeToResolve_Minutes'] > 2880) ) | ( (df['Priority'] ==
5) & (df['TimeToResolve_Minutes'] > 5760) )
```

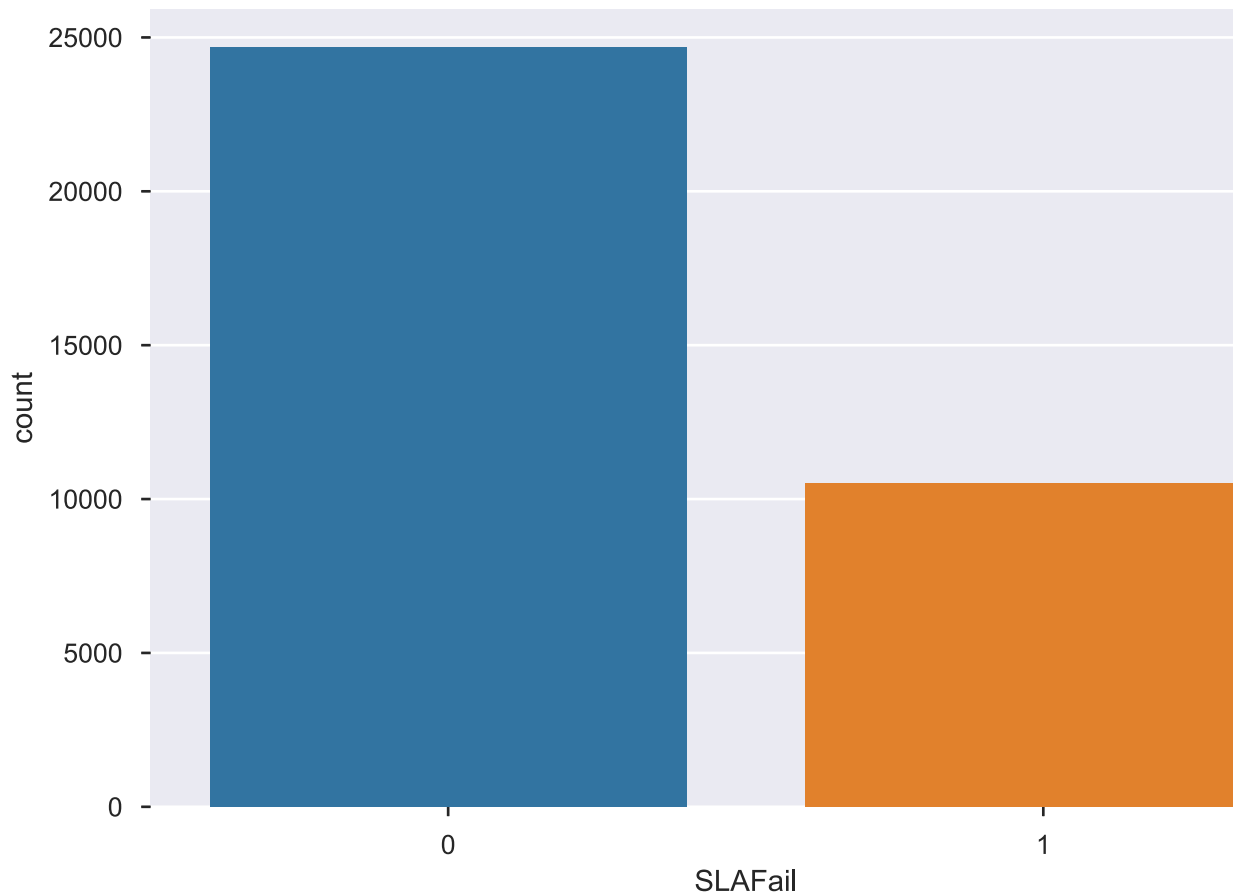
```
[13] df.SLAFail = df.SLAFail.astype(int)
```

```
[14] df.SLAFail.value_counts(normalize=True)
```

```
0    0.701261  
1    0.298739  
Name: SLAFail, dtype: float64
```

```
[15] sns.countplot(x='SLAFail', data=df)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x1a273d6450>
```



```
[16] #  
df = df.drop(['TimeToResolve'], axis='columns')
```

END and OUTPUT

```
[17] with open("data/03.a.Detail_Incident.csv", 'w') as f:  
    df.to_csv(f, index=False)
```

```
[18] df.reset_index(drop=True, inplace=True)
      profile = ProfileReport(df, title="Profile of BPIC 2014
      Detail_Incident Data after Adding SLAFail", html={'style':
      {'full_width': True}})
```

```
[19] profile.to_file(Path(str("reports/03.b.Detail_Incident_Profile.ht
      ml")))
```

```
[ ]
```