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CPSC4800 – W01

Assignment 3 Part 2

This report summarizes the result of an exploratory data analysis on the Titanic dataset from Kaggle. The dataset contains 891 observations and 12 variables. Below is the information on the variables of the dataset.

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   PassengerId  891 non-null    int64
 1   Survived     891 non-null    int64
 2   Pclass       891 non-null    int64
 3   Name         891 non-null    object
 4   Sex          891 non-null    object
 5   Age          714 non-null    float64
 6   SibSp        891 non-null    int64
 7   Parch        891 non-null    int64
 8   Ticket       891 non-null    object
 9   Fare         891 non-null    float64
 10  Cabin        204 non-null    object
 11  Embarked     889 non-null    object
dtypes: float64(2), int64(5), object(5)
memory usage: 83.7+ KB
```

This data analysis will examine and decide on three hypothesis:

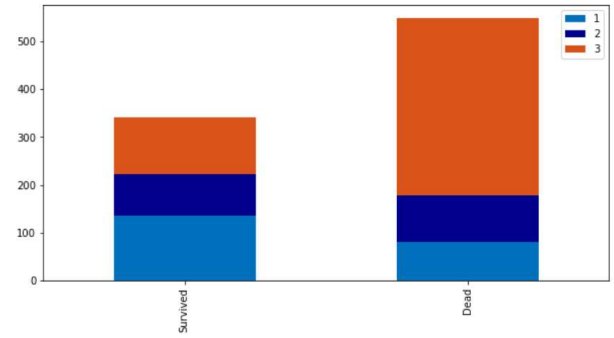
A. Determine if the survival rate is associated to the class of passenger
B. Determine if the survival rate is associated to the gender of passenger
C. Determine if the survival rate is associated to the age of passenger

A. Survival rate vs the Class of Passenger

Chi-Square test was performed :

H_0 : Survival rate and the class of passenger are independent of each other

Ha : Survival rate and the class of passenger are not independent of each other



Pclass	1	2	3	Total
Survived				
0	80	97	372	549
1	136	87	119	342
Total	216	184	491	891

chi-square value is 102.88898875696056

df is 2 and dp is 5.991

Dependent (reject H0)

p value is 4.549251711298793e-23

Dependent (reject H0)

Survival rate is associated to the Class of Passenger

B. Survival rate vs the Gender of Passenger

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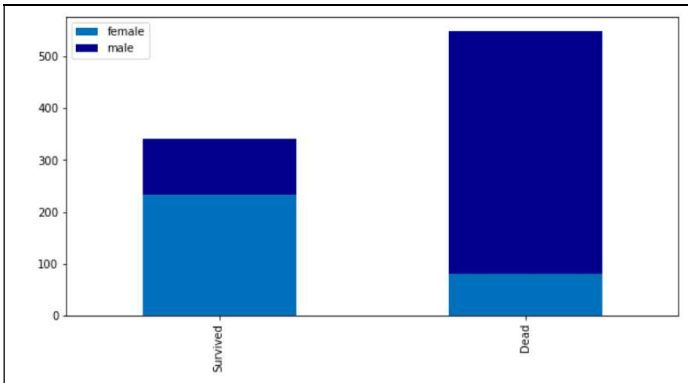
Chi-Square test was performed :

H_0 : Survival rate and the gender of passenger are independent of each other

Ha : Survival rate and the gender of passenger are not independent of each other



Sex	female	male	Total
Survived			
0	81	468	549
1	233	109	342
Total	314	577	891

chi-square value is **260.71702016732104**

df is 1 and dp is 3.841

Dependent (reject H0)

pvalue is 1.1973570627755645e-58

Dependent (reject H0)

Survival rate is associated to the Gender of Passenger

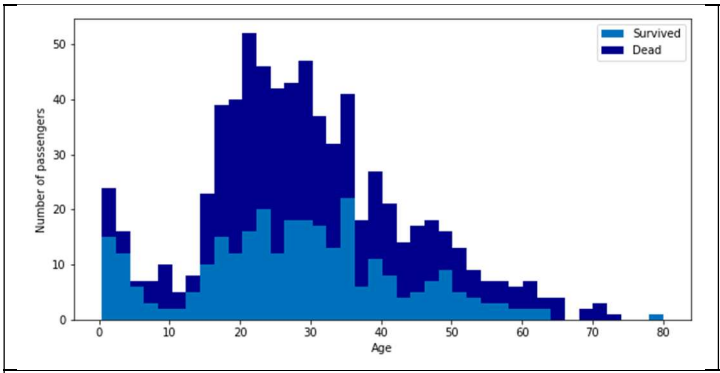
C. Survival rate vs the Age of Passenger

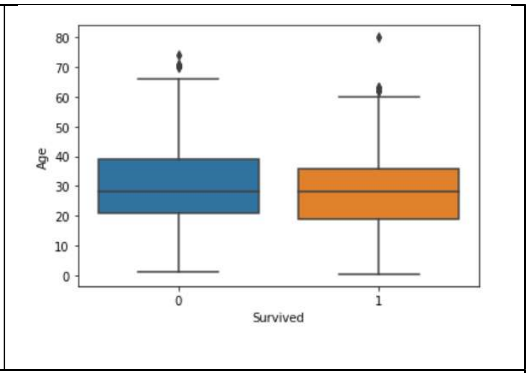
T-test was performed :

H_0 – the mean of age of survivors = the mean of age of the dead

Ha – the mean of age of survivors not = the mean of age of the dead

Before performing the test, the observations with null age value were dropped, resulting in 714 observations only.





Ttest_indResult(statistic=2.06668694625381, pvalue=0.03912465401348249)

p-value < 0.05, reject H0

Survival rate is associated to the Age of Passenger