Statistical Consulting HW1

R26131010

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Detailed Data Description

```r
describe_output <- capture.output(describe(data))
cat(describe_output, sep = "\n")
```

```
data

 12  Variables      891  Observations
--------------------------------------------------------------------------------
PassengerId
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     891        0      891        1      446      446    297.3     45.5
     .10      .25      .50      .75      .90      .95
    90.0    223.5    446.0    668.5    802.0    846.5

lowest :   1   2   3   4   5, highest: 887 888 889 890 891
--------------------------------------------------------------------------------
Survived
       n  missing distinct     Info      Sum     Mean
     891        0        2     0.71      342   0.3838

--------------------------------------------------------------------------------
Pclass
       n  missing distinct     Info     Mean  pMedian      Gmd
     891        0        3     0.81    2.309      2.5   0.8631

Value          1     2     3
Frequency    216   184   491
Proportion 0.242 0.207 0.551

For the frequency table, variable is rounded to the nearest 0
--------------------------------------------------------------------------------
Name
       n  missing distinct
     891        0      891

lowest : Abbing, Mr. Anthony                    Abbott, Mr. Rossmore Edward            Abbott, Mrs. Star
```

```
highest: Youssef, Mr. Gerious                 Yrois, Miss. Henriette ("Mrs Harbeck") Zabour, Miss. Hil
--------------------------------------------------------------------------------
Sex
       n  missing distinct
     891        0        2

Value      female   male
Frequency     314    577
Proportion  0.352  0.648
--------------------------------------------------------------------------------
Age
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     714      177       88    0.999     29.7       29    16.21     4.00
     .10      .25      .50      .75      .90      .95
   14.00    20.12    28.00    38.00    50.00    56.00

lowest : 0.42 0.67 0.75 0.83 0.92, highest: 70   70.5 71   74   80
--------------------------------------------------------------------------------
SibSp
       n  missing distinct     Info     Mean  pMedian      Gmd
     891        0        7    0.669    0.523      0.5    0.823

Value          0     1     2     3     4     5     8
Frequency    608   209    28    16    18     5     7
Proportion 0.682 0.235 0.031 0.018 0.020 0.006 0.008

For the frequency table, variable is rounded to the nearest 0
--------------------------------------------------------------------------------
Parch
       n  missing distinct     Info     Mean  pMedian      Gmd
     891        0        7    0.556   0.3816        0   0.6259

Value          0     1     2     3     4     5     6
Frequency    678   118    80     5     4     5     1
Proportion 0.761 0.132 0.090 0.006 0.004 0.006 0.001

For the frequency table, variable is rounded to the nearest 0
--------------------------------------------------------------------------------
Ticket
       n  missing distinct
     891        0      681

lowest : 110152      110413      110465      110564      110813
highest: W./C. 6608  W./C. 6609  W.E.P. 5734 W/C 14208   WE/P 5735
--------------------------------------------------------------------------------
Fare
       n  missing distinct     Info     Mean  pMedian      Gmd      .05
     891        0      248        1     32.2     19.6    36.78    7.225
     .10      .25      .50      .75      .90      .95
   7.550    7.910   14.454   31.000   77.958  112.079

lowest : 0       4.0125  5       6.2375  6.4375
highest: 227.525 247.521 262.375 263     512.329
--------------------------------------------------------------------------------
```

```
Cabin
       n  missing distinct 
     204      687      147 

lowest : A10 A14 A16 A19 A20, highest: F33 F38 F4  G6  T  
--------------------------------------------------------------------------------
Embarked 
       n  missing distinct 
     889        2        3 
                            
Value          C     Q     S
Frequency    168    77   644
Proportion 0.189 0.087 0.724
--------------------------------------------------------------------------------
```

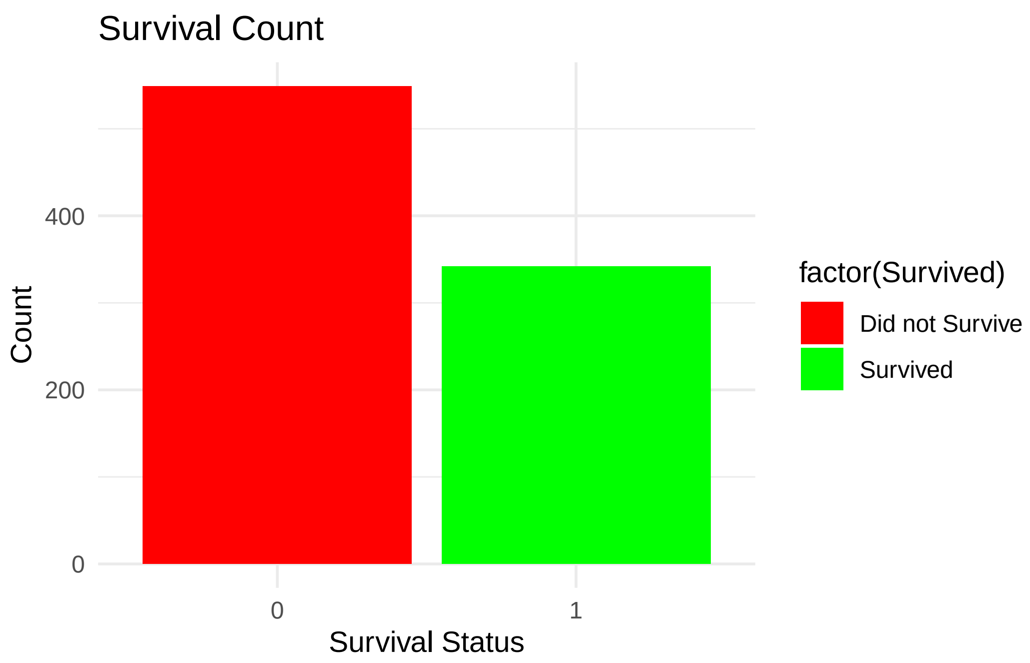
Check for Missing Values

```r
missing_vals <- colSums(is.na(data))
missing_vals[missing_vals > 0]
```

```
Age 
177 
```

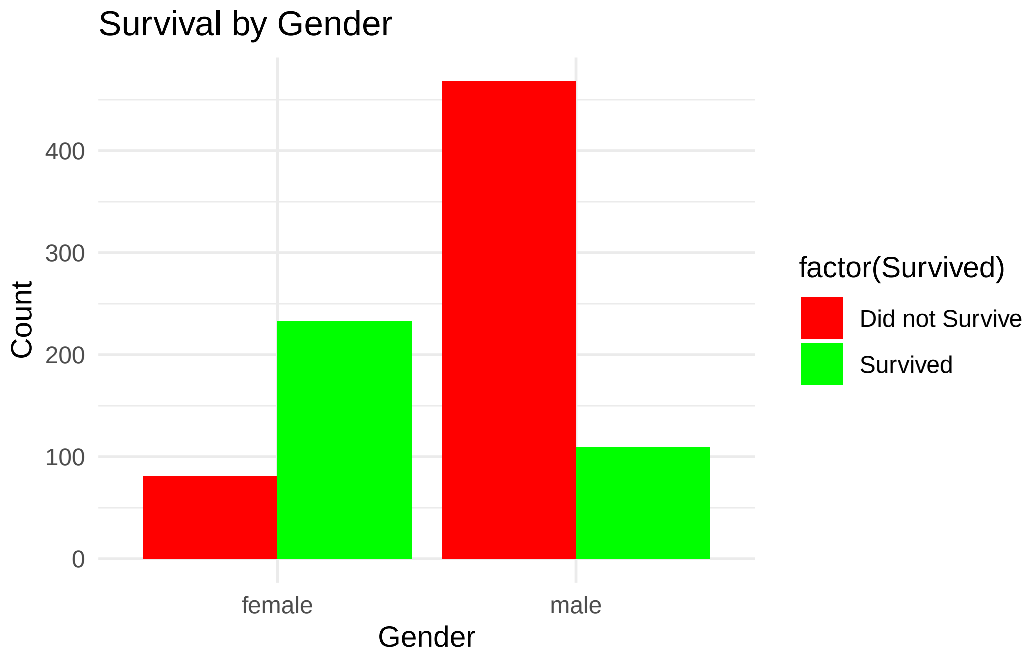
Count Survival Rates

```r
ggplot(data, aes(x = factor(Survived), fill = factor(Survived))) +
  geom_bar() +
  scale_fill_manual(values = c("red", "green"), labels = c("Did not Survive", "Survived")) +
  labs(title = "Survival Count", x = "Survival Status", y = "Count") +
  theme_minimal()
```



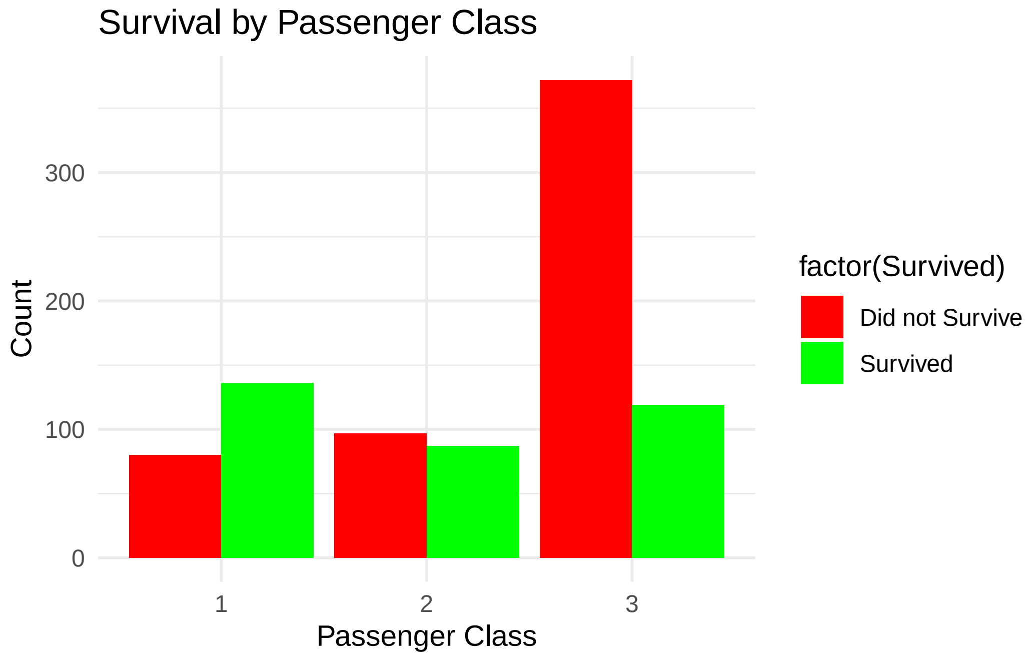
Survival by Gender

```r
ggplot(data, aes(x = Sex, fill = factor(Survived))) +
  geom_bar(position = "dodge") +
  scale_fill_manual(values = c("red", "green"), labels = c("Did not Survive", "Survived")) +
  labs(title = "Survival by Gender", x = "Gender", y = "Count") +
  theme_minimal()
```



Survival by Class

```
ggplot(data, aes(x = factor(Pclass), fill = factor(Survived))) +
  geom_bar(position = "dodge") +
  scale_fill_manual(values = c("red", "green"), labels = c("Did not Survive", "Survived")) +
  labs(title = "Survival by Passenger Class", x = "Passenger Class", y = "Count") +
  theme_minimal()
```



Conclusion

The analysis of the Titanic dataset reveals key insights into survival rates. Notably:

- Passengers in higher classes had better survival rates.
- Women had a significantly higher survival rate compared to men.
- There were missing values in certain variables, which should be considered in further analysis.

Further statistical modeling could help in predicting survival likelihood based on multiple factors.