Decision tree:

Survived

Tree sunburst   Tree diagram   Rules

Survived   Nodes
0.11   0.95   All

< 2
< 41
Age
≥ 41

male
Pclass

≥ 2
< 19
Age
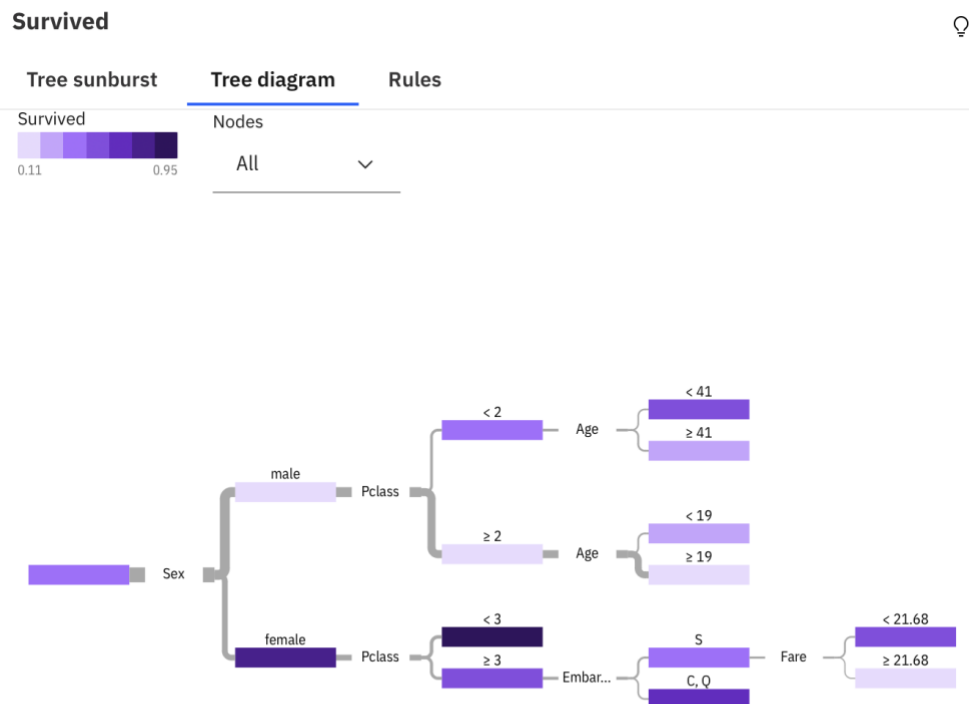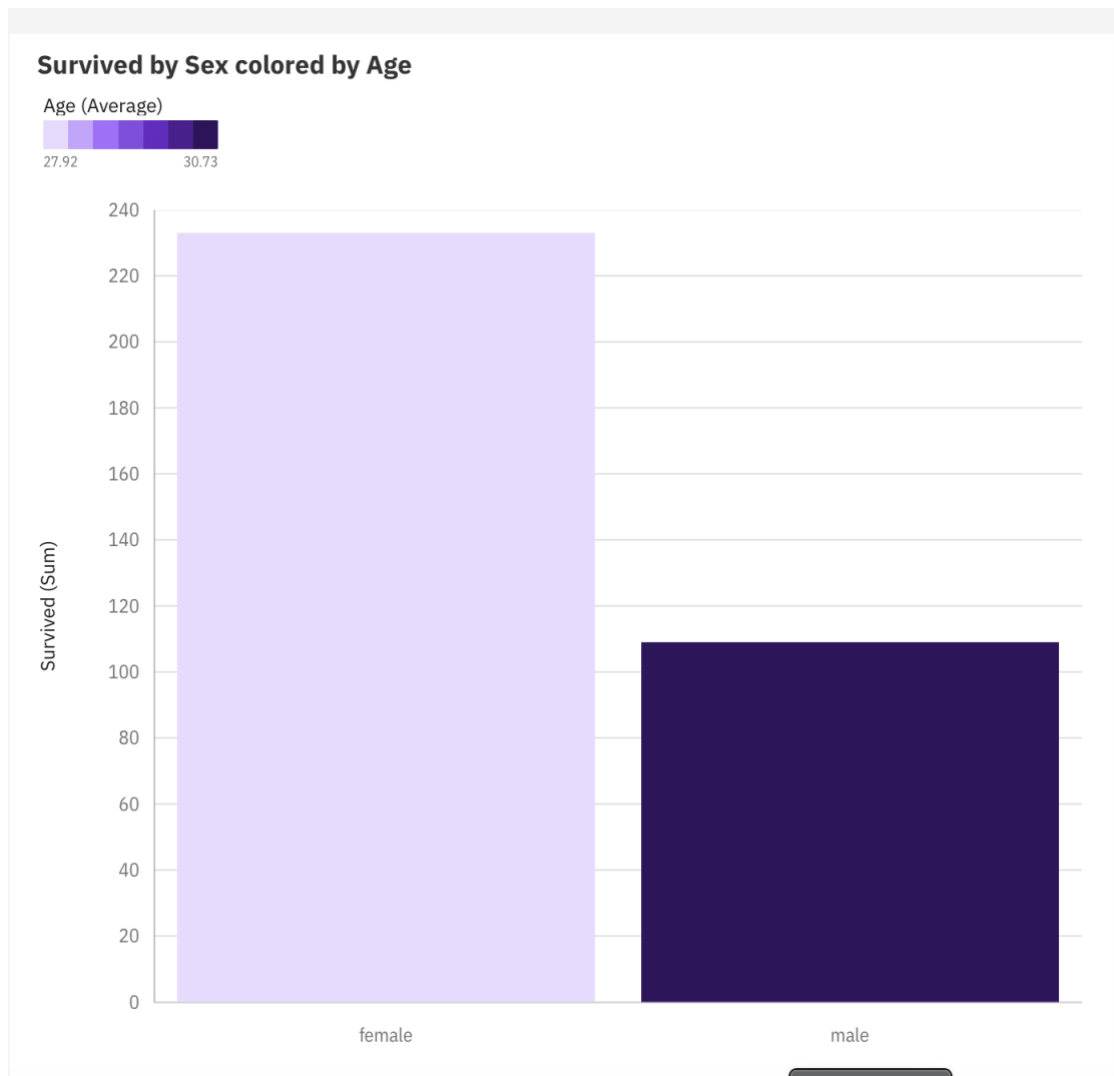≥ 19

Sex

< 3
female
Pclass
≥ 3

S
< 21.68
Fare
≥ 21.68
Embar...
C, Q

Here we see that the survival of any passenger is based heavily on a number of factors such as sex, age, class, amongst others. Looking at the decision tree first, we can estimate that 56% more of females survived then men onboard. Let's take a deeper look at these factors and how they influence the survival rate of a passenger:
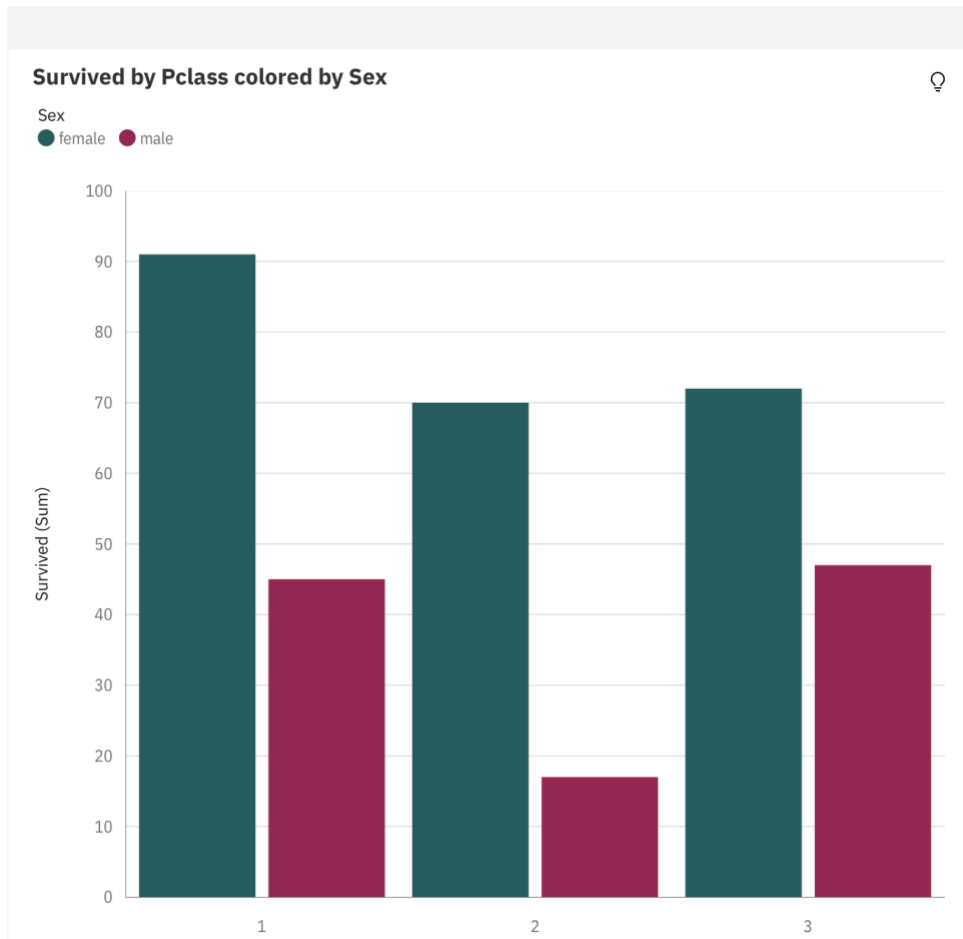
Insight 1:
Here we see that the female survival rate was much larger than that of males. However, the average age of survival in females was about 27.92 while that of men was 30.73 . I assumed passengers below the age of 14 as children. The dataset does indicate people of older age being onboard the ship. However, looking at the graph below, the average age being so low does not add up somehow. Upon further research, I found about the Birkenhead drill which dictates women and children to be saved before men, in life threatening situations such as abandoning ship, etc[1]. This would explain the age discrepancy in the survival rate.
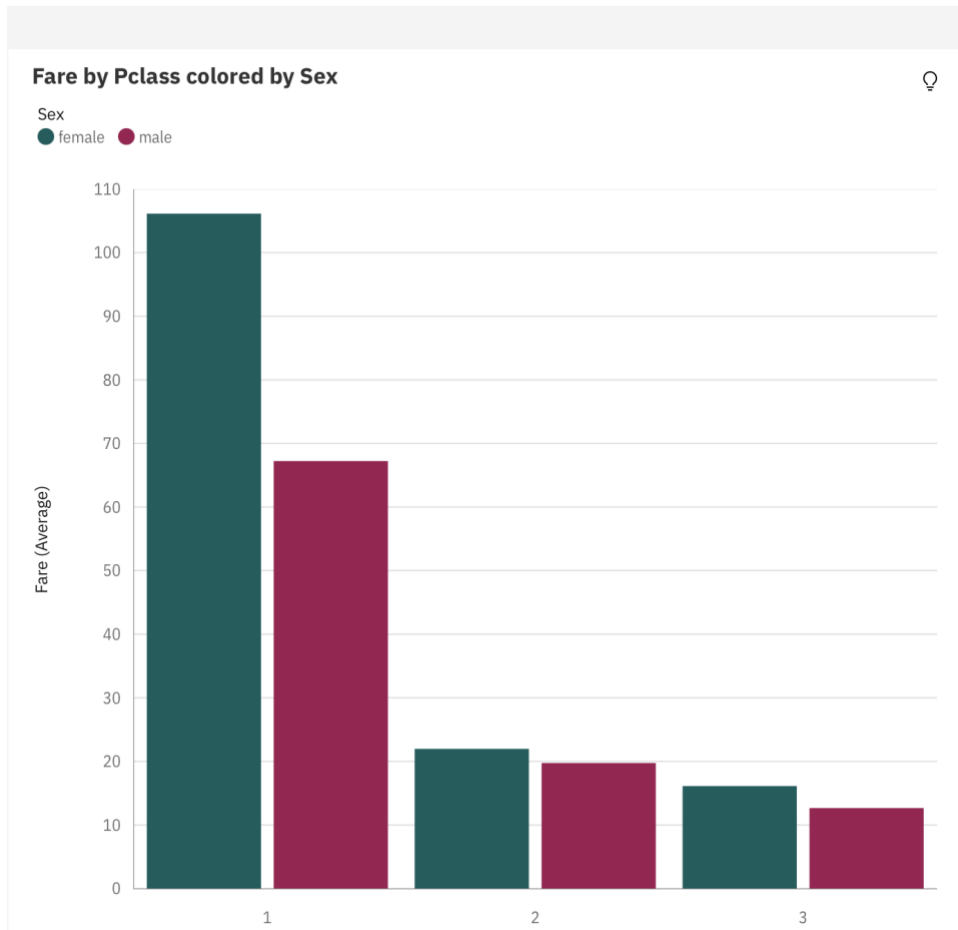
Survived by Sex colored by Age

Age (Average)

27.92   30.73

Insight 2:

According to this graph below along with our decision tree, we can say that females belonging to class 1 had the highest survival rate as opposed to any other categories, i.e. female-pclass 2 or male-pclass 1. This could be because the females in the 1st class were given more priority over the other classes demonstrating the precedence in the safety process.

Survived by Pclass colored by Sex

Sex
● female ● male

Insight 3:

While the general consensus was that females paid a much higher price for their tickets than men, it seems the case was that females in pclass 1 paid significantly more than their counterparts. Females were paying almost 36.65% more than men in pclass1 for their tickets. One of the theories were pertinent to the extra fare being charged for their excess luggage and storage space required to store all their wardrobe. This seems to be one of the plausible explanations as to why their fare was higher.

Fare by Pclass colored by Sex

Sex
● female ● male

What was the single highest driver of survival?

       If we look at the decision tree carefully we can come to a conclusion that females especially belonging to class below 3, had the highest chances of survival. This would be the most characteristic feature of the survival rate.

References:
1. Wikipedia contributors. (2024, February 4). Women and children first. Wikipedia. https://en.wikipedia.org/wiki/Women_and_children_first#:~:text=%22Women%20and%20children%20first%22%2C,no%20basis%20in%20maritime%20law.