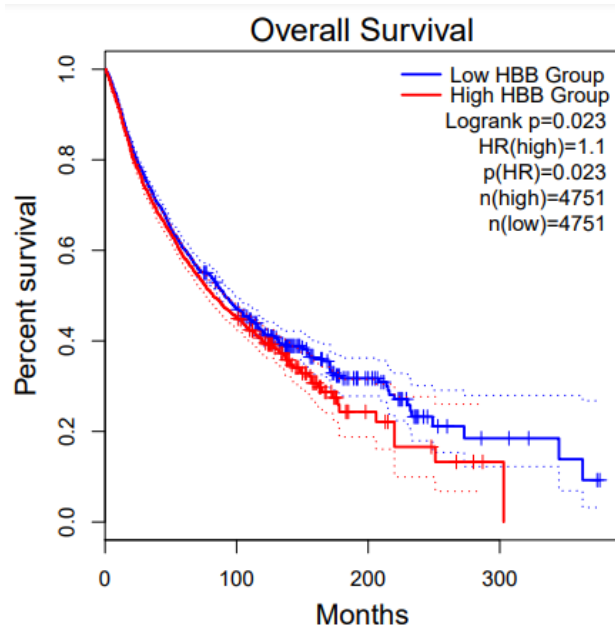
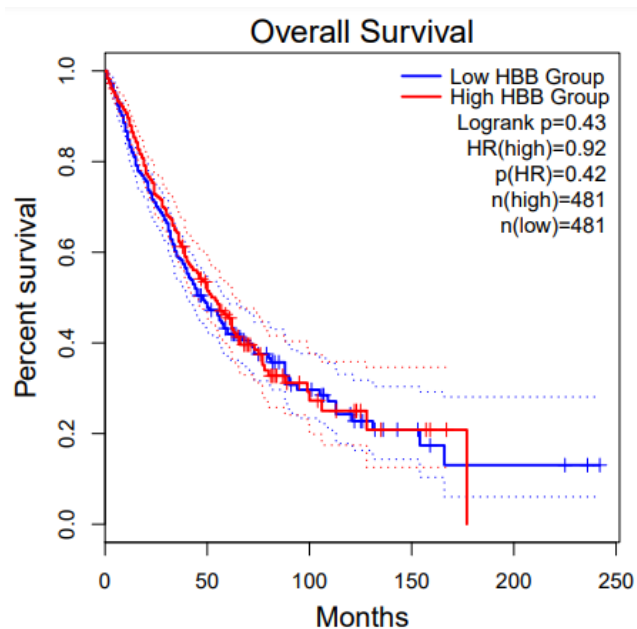


**HBB survival analysis:** I chose to analyze the HBB gene or hemoglobin beta gene, which provides the instructions for making a protein called beta-globin. Beta-globin is a subunit of a larger protein called hemoglobin, which is a molecule in red blood cells that delivers oxygen to cells throughout the body. Mutations in this gene produce several protein variations that are found in genetic disorders like sickle cell disease, which distorts red blood cells into a sickle, or crescent shape. When these red blood cells sickle, they break down prematurely, which can lead to low blood cell levels or anemia, which results in the body's tissues not receiving enough oxygen.



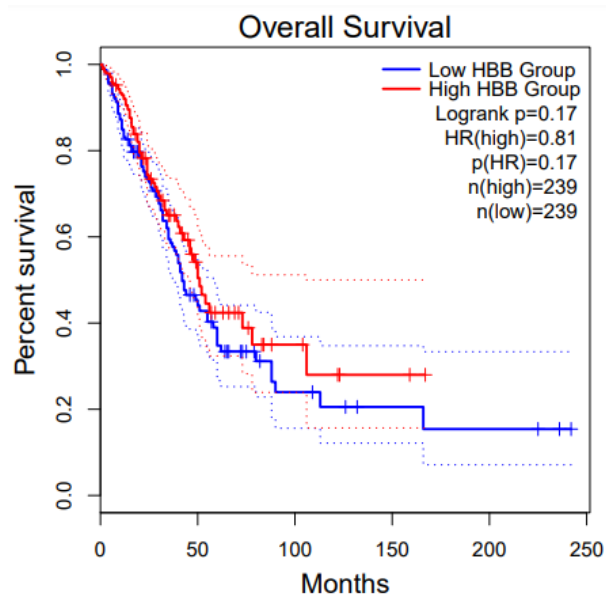
All cancer types



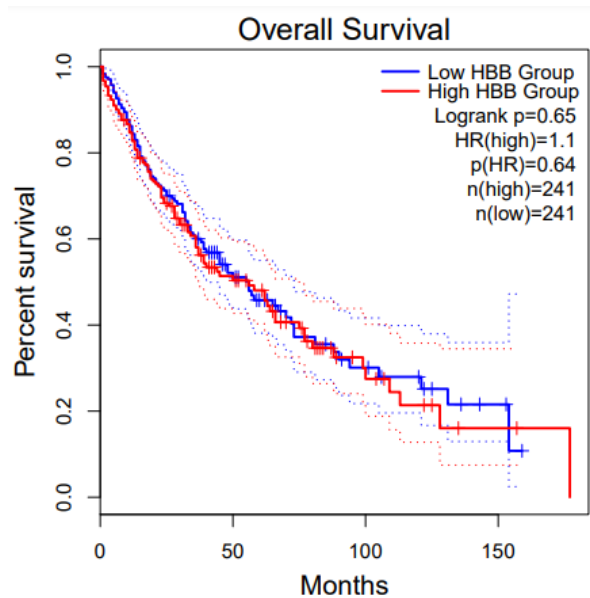
LUAD+LUSC

**Conclusion:** No significant difference until after about 150 months.

**Analysis:** I first compared the survival rate of all cancer types to the survival rate of lung adenocarcinoma and lung squamous cell carcinoma together. This showed that there was not a significant difference until about 150 months. This indicates that in the presence of HBB, there is a higher survival rate.



LUAD



LUSC

**Conclusion:** LUAD survival rate shows a significant difference of survival rate after about 100 months. LUSC survival rate is not significant.

**Analysis:** I compared LUAD to LUSC individually. The survival rate for LUAD in the presence of HBB shows that there is a significant difference in the survival rate after about 100 months. Therefore, this indicates that lung adenocarcinoma is affected in the absence of HBB. But on the other hand, the LUSC survival rate was not significant. This makes sense because I was able to find several articles that showed that hemoglobin subunit beta played an important role in lung cancer metastasis. For example, I found that elevated expression of HBB was detected in circulating tumor cells, but when the expression of HBB was decreased this inhibited lung cancer metastasis. Therefore, more research needs to be done on determining if hemoglobin subunit beta can be used to prevent lung cancer and increase survival rates.