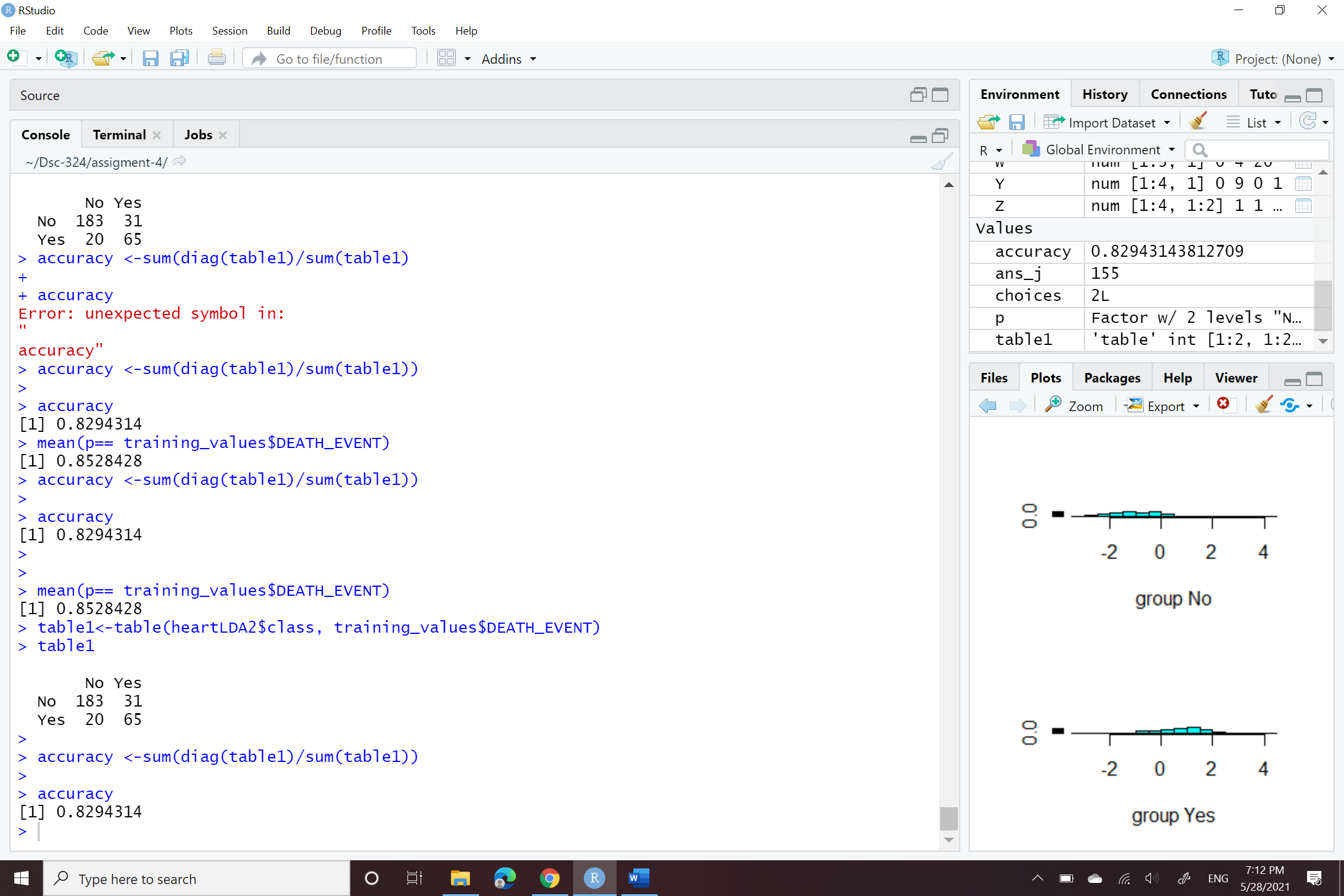
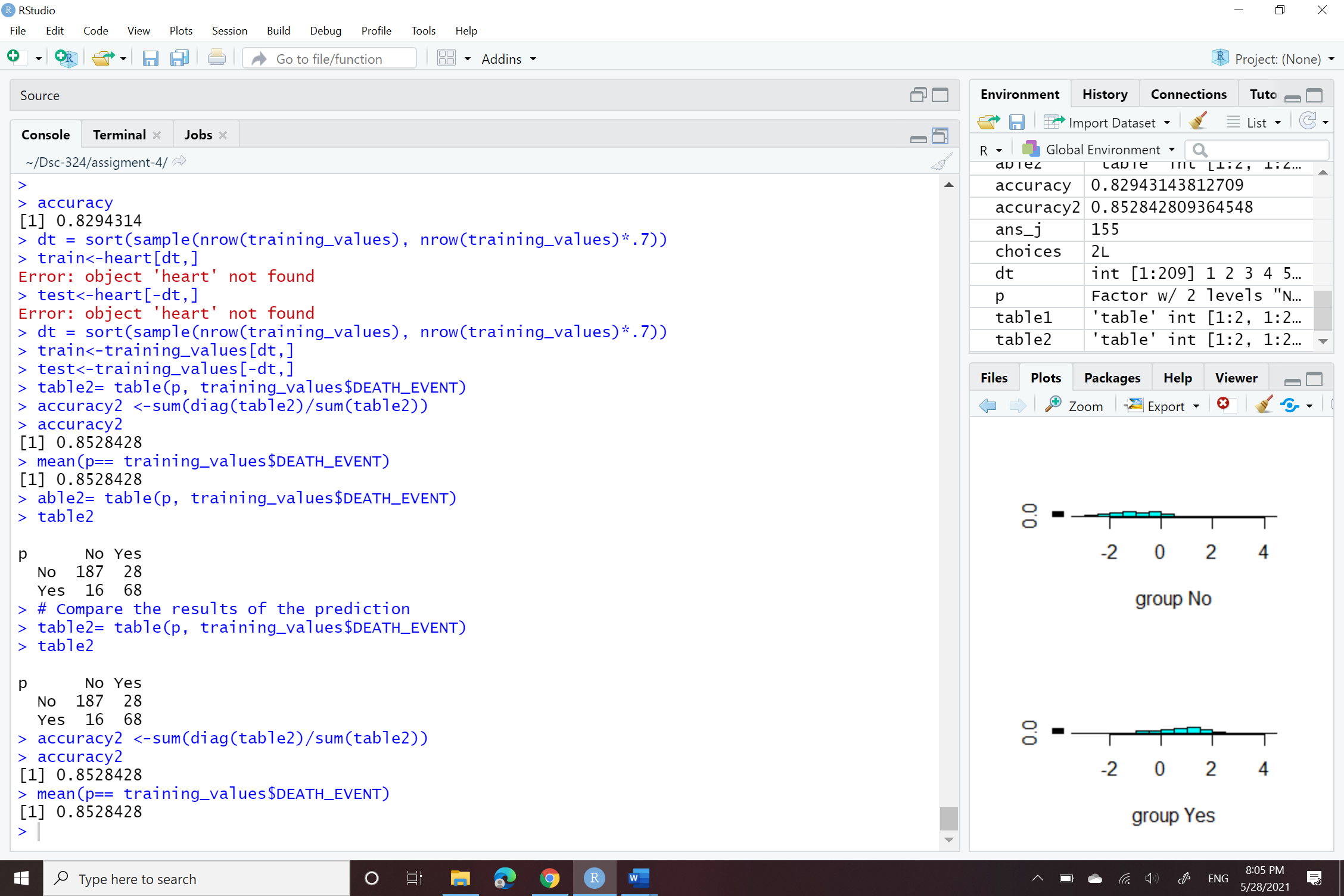
**Problem 2)**

A)

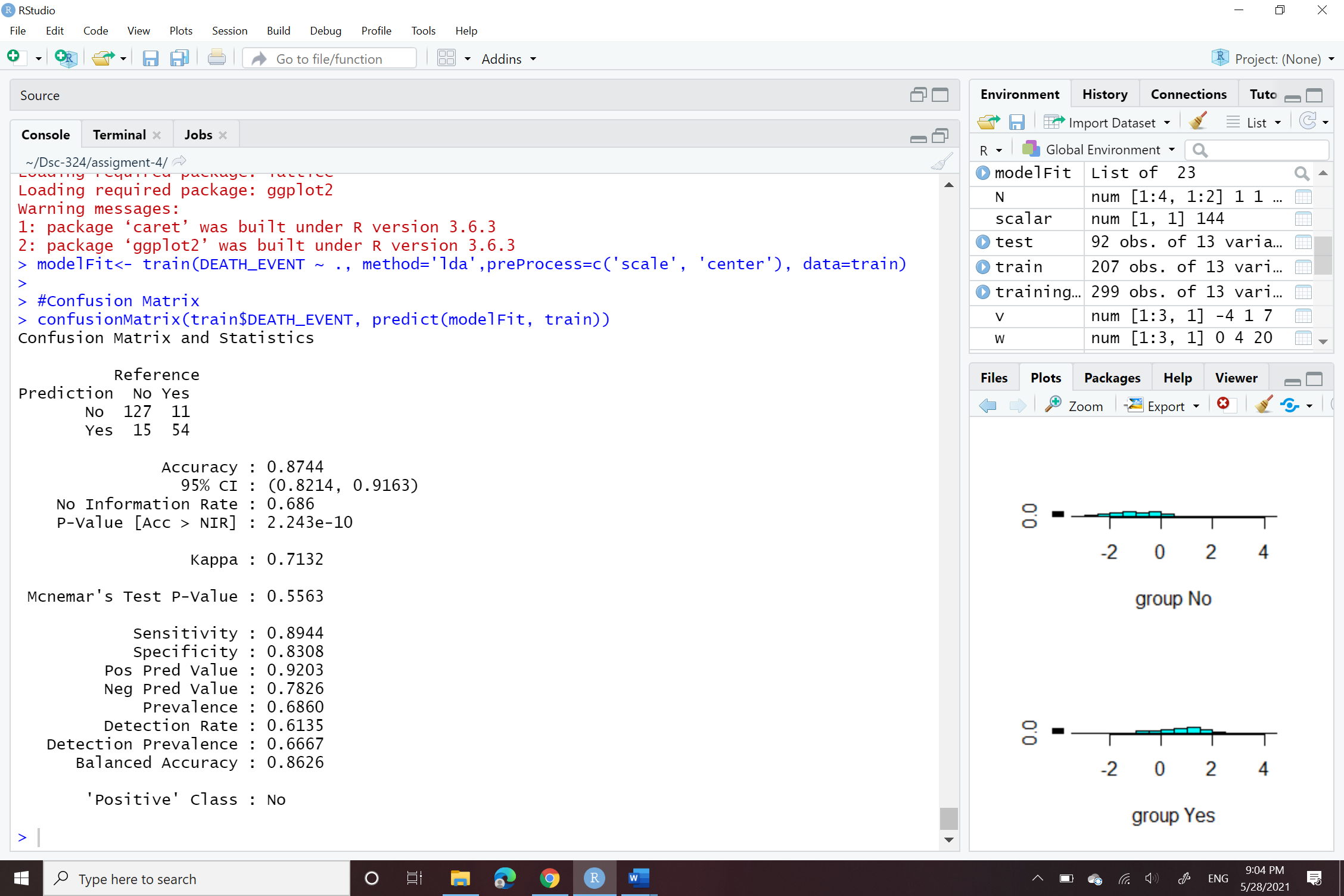


**The** performance of the classifier obtained by using the Cross validation is 0.8294314. This is the result obtained while the **DEATH\_EVENT** is transformed to categorical type.

B)

  
The performance of the classifier obtained by using the training and testing is 0.8528428 . This is the result obtained while the **DEATH\_EVENT** is transformed to categorical type.

C)



As a result, this both type of error are harmful and it can be measured using the confusion matrix.

**Problem 3**

I read this article about Asthma impacts significantly on the rising burden of chronic disease in the United States . It is a very interesting article that discusses a number of factors that affect the risk for developing asthma, including: Genetics-people with a genetic predisposition to asthma are more likely than those without a genetic predisposition to develop an infection. The study also found that individuals with a genetic predisposition to asthma have higher rates of developing asthma compared to individuals with no predisposition. This finding was supported by studies that have been conducted over the past few years. In addition, there has been a significant increase in the incidence of asthma among women who were diagnosed as having a genetic predisposition to develop an infection. they use multivariate mathematical technique, to estimate the likelihood of developing an infection. These statistical models can be used to predict whether or how much exposure to certain environmental factors will cause an infection. to study this they use k-means cluster analysis, for identifying distinct phenotypic groups.

* "they performed k-means cluster analysis in three independent asthma populations. Clusters of a population managed in primary care (n = 184) with predominantly mild to moderate disease, were compared with a refractory asthma population managed in secondary care (n = 187)".(Abstract) They found that the most common type of lung cancer was associated with high levels of acute bronchial and pulmonary hypertension. The second type of lung cancer is more severe than the first one due to the presence of an inflammatory response. than they compare "third population of 68 subjects with predominantly refractory asthma, clustered at entry into a randomized trial comparing a strategy of minimizing eosinophilic inflammation (inflammation-guided strategy) with standard care".( Abstract) This study shows that there are many factors which can influence the risk of developing asthma."In the inflammation-predominant cluster (3.53 [SD, 1.18] vs. 0.38 [SD, 0.13] exacerbation/patient/yr, P = 0.002) and a dose reduction of inhaled corticosteroid in the symptom-predominant cluster (mean difference, 1,829 μg beclomethasone equivalent/d [95% confidence interval, 307–3,349 μg]; P = 0.02)." (Abstract)
* To conclusion the study was very helpful for me because it showed that there is no significant relationship between the severity of asthma and the number of patients with asthma. I also found that there are some differences between acute patients with asthma and chronic patients who have asthma.

Work cites:

Pranab Haldar, Ian D. Pavord, Dominic E. Shaw, Michael A. Berry, Michael Thomas, Christopher E. Brightling, Andrew J. Wardlaw, & Ruth H. Green. (n.d.). American Journal of Respiratory and Critical Care Medicine. https://www.atsjournals.org/doi/full/10.1164/rccm.200711-1754OC.