

You are to analyse data from patients who received heart transplants at Stanford during the period from January 1968 through April 1974.

You can use the command:

```
16:22:12 advlab$ cp /users/classes/475330/data/heart.data heart.data
```

to copy a set of the data into your account.

This data contains values for five variables:

T5S A measure of the degree to which the donor and recipient were mismatched for tissue type. It measures the degree of dissimilarity with respect to HL-A antigens and is therefore related (potentially) to the phenomenon of rejection of the donor heart by the recipient's immune system. A low score (<1) represents a good match and a high score (>1) represents a poor match.

AGE The age of the patient at time of operation. It was thought that young patients should fare better.

WT (waiting time) the number of days from entry into the program until the operation was performed.

CT (calendar time) the number of days after 1 January 1968 that the operation was performed.

SUR a binary variable that is 1 if the patient survived 100 or more days after the transplant and is 0 otherwise.

Analyse this data to see if you can gain insight into which factors were important for longer survival. Some questions that are of particular interest are:

1. What factors seem important for longer survival?
2. How useful is the T5S mismatch score in predicting survival?
3. Is there evidence of a time trend? (We might expect that the probability of survival would increase as the transplant team gained more experience.)
4. Is there a trade-off involved between accepting a poor mismatch score or increasing waiting time?

Answer these questions and any others that strike you as being of interest.

Your report will (again) consist of two sections. The first section should summarise your findings in a manner that someone not familiar with statistical techniques and terminology can understand. The second part of your report should be a Statistical Appendix that explains how you analysed the data. You should include and comment on the diagnostic procedures you used to check the validity of your fitted model.