1 ROC Curves

This type of graph is called a Receiver Operating Characteristic curve (or ROC curve.) It is a plot of the true positive rate against the false positive rate for the different possible cutpoints of a diagnostic test.

An ROC curve demonstrates several things:

It shows the tradeoff between sensitivity and specificity (any increase in sensitivity will be accompanied by a decrease in specificity). The closer the curve follows the left-hand border and then the top border of the ROC space, the more accurate the test. The closer the curve comes to the 45-degree diagonal of the ROC space, the less accurate the test. The slope of the tangent line at a cutpoint gives the likelihood ratio (LR) for that value of the test. You can check this out on the graph above. Recall that the LR for T4 ¡ 5 is 52. This corresponds to the far left, steep portion of the curve. The LR for T4 ¿ 9 is 0.2. This corresponds to the far right, nearly horizontal portion of the curve. The area under the curve is a measure of text accuracy.
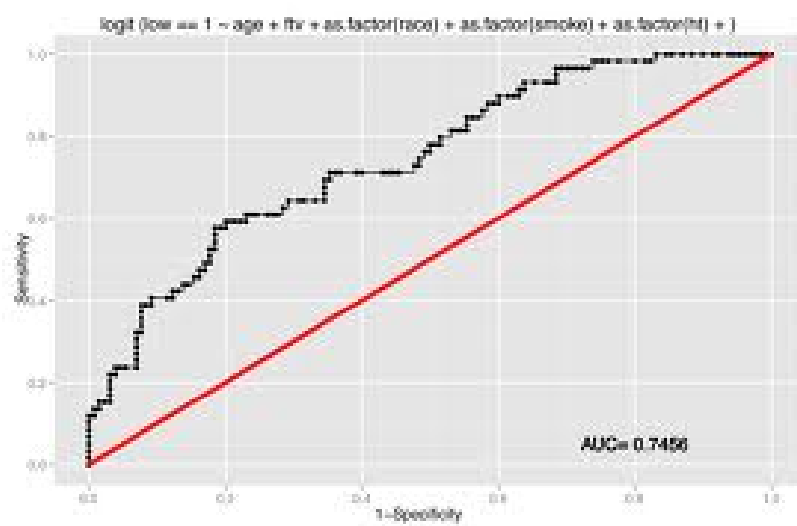
Figure 1.1: