Paper 475.330 **Assignment 3** **Due: Friday 29 September**

An investigation into the presence of the pesticide dieldrin in human milk was carried out in Western Australia. Dieldrin is used to control termites in Western Australia and new houses, by law, must be treated for termites. There is concern that dieldrin may be present in the milk of nursing mothers who are exposed to it. A data frame called dieldrin.df has been created in Splus on the advanced lab server. This data frame contains data concerning 43 milk donors. The data frame consists of the following variables:

age:	the age of the donor in years
suburb:	1 indicates the donor lives in a new suburb, 0 indicates the donor lives in an old suburb.
treated:	1 indicates the donor lives in a house that has been treated for termites within the last 3 years, 0 indicates the donor's house hasn't been treated.
dieldrin:	1 indicates the donor's milk contains an above average amount (> 0.009 parts per million) of dieldrin, 0 indicates < 0.009 ppm.

To access this data simply logon to the advlab computer, start Splus and type

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> dieldrin.df
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For this assignment, create a logistic regression model that relates the probability that a donor's milk contains > 0.009 parts per million dieldrin, π, to the other variables. Then write a report that uses your model to discuss how these variables affect π. Your report should be understandable to a non-statistics major. It should clearly communicate how π is affected by each of the other variables and what values of π would be expected in practice. Further, your discussion should take into account the uncertainty in your fitted model.

This assignment is intended to test your understanding of the logistic regression model and your ability to use such a model. Therefore, the majority of marks will be given for your explanations of what the model indicates about π.

In addition to your report, your assignment should include a short statistical appendix that briefly explains to the marker what you did. Identifying a suitable model should not be difficult but you need to justify your choice. For this assignment, you are only expected to use the material covered in Lecture Notes 7.

This assignment should be handed in to the appropriate box in the basement of the Maths/Physics building by the Resource Centre, by 4pm on Friday, 29 September.