Homework 1

David M. Rocke

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Suppose we have data on 100 cases of myocardial infarction and 150 healthy individuals (mi = 1 if MI, 0 otherwise) matched as a group to the the MI group by age and sex. From their medical records before the MI (if they had one), we classify the individuals as diabetic, metabolic disorder, and normal blood glucose (bg = norm, metdis, diabetic). The table on the next page shows the number of individuals in each group.

	norm	metdis	diabetic	Total
Control	85	50	15	150
MI	35	30	35	100
Total	120	80	50	250

Table: Hypothetical Results of a study relating myocardial infarction to diabetes status.

1. Find the odds ratio for MI with respect to normal/diabetic (ignoring the metabolic disorder individuals). Find the log odds ratio. Interpret.

2. As with the hypertension example in the lecture, make a 3×2 table called MI.Table with three rows (corresponding to normal, metabolic disorder, and diabetic) and columns for MI and Control. This table is in the form $(x, n - x)$ as needed for the LHS of a logistic regression specification in R. Define a factor Disease as follows (the second part makes "Normal" the comparison level):

```
> MI <- c(35,30,35)
> Control <- c(85,50,15)
> MI.Table <- cbind(MI,Control)
> Disease <- factor(c("Normal","MetabolicDisorder","Diabetes"),
            levels=c("Normal","MetabolicDisorder","Diabetes"))
> summary(glm(MI.Table ~ Disease, binomial))
```

Find the log odds ratio for MI with respect to normal/diabetic in the output from this command. Explain. What other log odds ratio can you read off the output? What log odds ratio that you might want to know is not immediately obvious from this output?