

随机模拟方法与应用导论作业二

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2.5 (mammals data, continued)

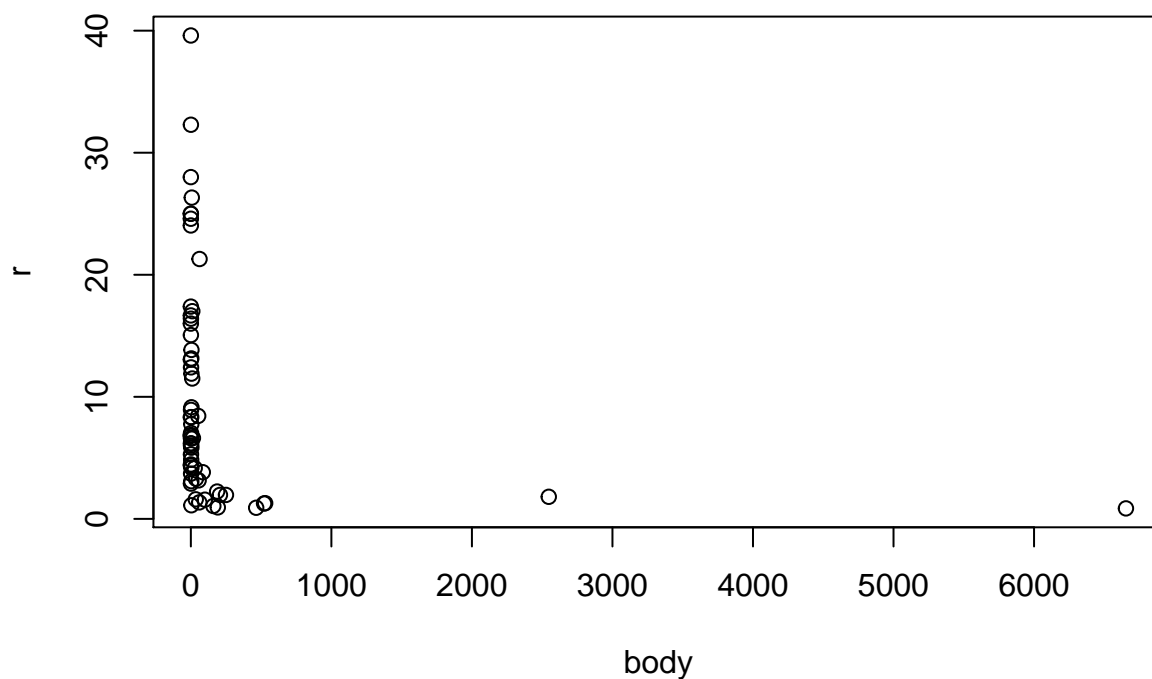
Refer to Exercise 2.4. Construct a scatterplot of the ratio $r = \text{brain}/\text{body}$ vs body size for the full mammals data set.

首先计算题目要求的脑体重量比 $r = \text{brain}/\text{body}$

```
library(MASS)
r = mammals$brain / mammals$body
```

然后以体重 body 为横坐标，以 r 为纵坐标，绘制散点图

```
plot(mammals$body,r,xlab = 'body',ylab = 'r')
```

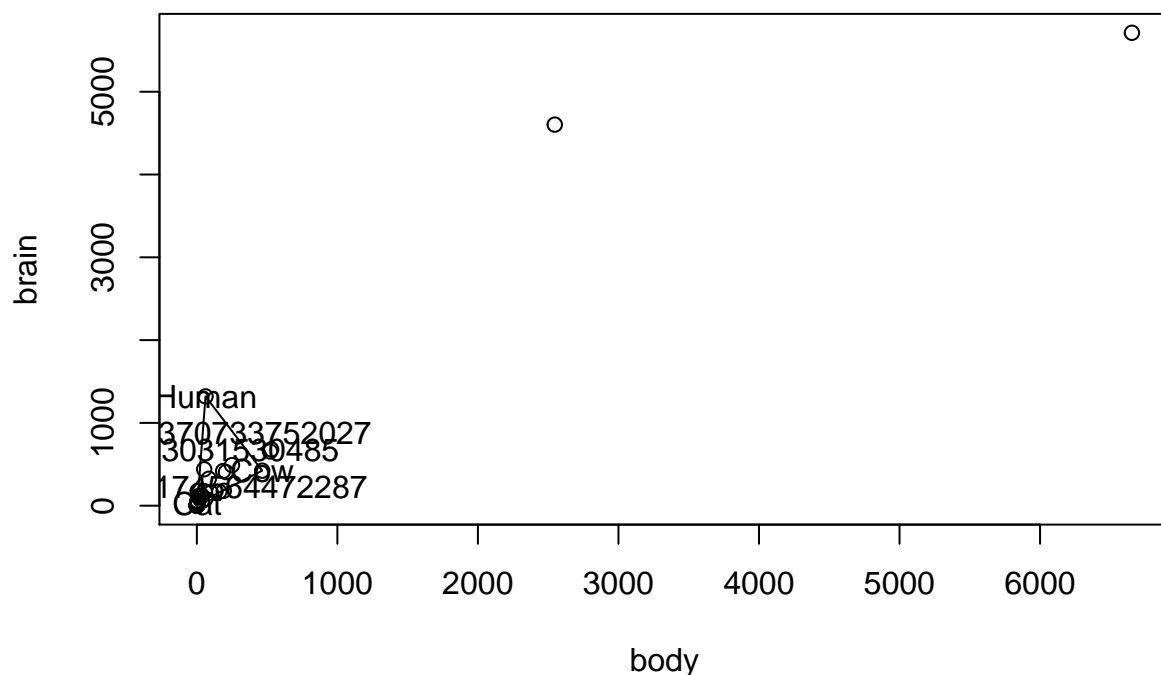


2.13 (mammals data on original scale)

Refer to the mammals data in Example 2.7. Construct a scatterplot like Figure 2.19 on the original scale (Figure 2.19 is on the log-log scale.) Label the points and distances for cat, cow, and human. In this example, which plot is easier to interpret?

首先以各哺乳动物的体重 $body$ 为横坐标，以各哺乳动物的脑重 $brain$ 为纵坐标，绘制散点图；然后计算猫、牛和人之间的“距离”并在图中标出

```
plot(mammals$body,mammals$brain,xlab = 'body',ylab = 'brain')
y = mammals[c('Cat','Cow','Human'),]
polygon(y)
text(y,rownames(y))
pairs = combn(rownames(y),2)
x = (y[c(pairs[1,]),] + y[c(pairs[2,]),]) / 2
d = as.character(dist(y))
text(x,d)
```



由于数据的数量级差异较大，本题图中散点和标注聚集在左下方，难以分辨，还是例2.7中的对数图（图2.19）更为直观。