

Midterm 1 2005

Practice Problems for Midterm 1 2006

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1 Instructions

Produce a \LaTeX document formatted like this one. Include this paragraph as it appears here.

2 Vectors, matrices, and data frames in R

2.1 Creating a matrix object

```
> M <- matrix(rbeta(8, 0.5, 0.5), nrow = 4)
> M[3, ]
```

```
[1] 0.83822325 0.05961634
```

3 More \LaTeX

3.1 Math

$$\text{logit}(\pi) = \log\left(\frac{\pi}{1-\pi}\right)$$

3.2 Bibliographic references

The first attempt by statisticians to validate surrogate endpoints was the method for estimating the “proportion of treatment effect captured” (*PTE*) by a surrogate endpoint [1].

4 R functions and the nonparametric bootstrap

```
> bootfunc <- function(x, B) {
+   n <- length(x)
```

```
+   Morig <- median(x)
+   Mboot <- rep(0, B)
+   for (i in 1:B) {
+     Mboot[i] <- median(x[sample(n, replace = T)])
+   }
+   list(Morig = Morig, Mboot = Mboot)
+ }
> x <- rgamma(10, 4, 2)
> bootfunc(x, 5)

$Morig
[1] 1.723725

$Mboot
[1] 1.475453 1.605568 1.723725 1.825865 1.484238
```

References

- [1] L. S. Freedman, B. I. Graubard, A. Schatzkin, Statistical validation of intermediate endpoints for chronic diseases, *Statistics in Medicine* 11 (2) (1992) 167–178.