

COMPUTER ASSIGNMENTS (v. 2)

Write an individual report and submit it via LISAM. **Deadline is Friday 1st November at 23:30.** The grade for the computer assignment is PASS/FAIL.

1. Computer Exercises from Course's book

Do the following applet exercises from the book using R (see Appendix below for useful functions) and write your comments on the results. Explain what you have learned from each exercise.

Exercises: 4.84, 4.117, 4.118, 10.19, 10.21, 11.31, 11.69

If you want to try the book applets, they can be accessed at the following URL:

http://www.cengage.com/cgi-wadsworth/course_products_wp.pl?fid=M20b&product_isbn_issn=9780495110811&token

To be able to use the applets on the book's web-page you may have to upload Java to the latest version and configure your Java settings. Still, they seem not to work well with the latest versions of web browsers (that's why we changed to R).

Security Setup for Java applets (Windows):

1. Open the Control Panel (Control Panel)
2. Open Java
3. In the Java Control Panel, go to the Security tab
4. The list for Website Exceptions to edit and add <http://www.cengage.com>
5. Close the two windows in the Java control panel, click OK and OK.

2. Imputation techniques

For the course 732A93 you shall read the chapter on the link:

<http://www.stat.columbia.edu/~gelman/arm/missing.pdf>

and include in your report the answers to the following:

1. Which type of missing mechanism do you prefer to get a good imputation?
2. Say something about simple random imputation and regression imputation of a single variable.
3. Explain shortly what Multiple Imputation is.

APPENDIX: Functions for random variables in R (d,p,q,r)

The functions d,p,q,r allow for a quick calculation of densities, probabilities, quantiles and samples from random variables in R. Below I show examples for the normal distribution, but you have equivalent functions for gamma, beta, T, etc. For a comprehensive list of the available distributions visit the CRAN Task View on probability distributions:

<https://cran.r-project.org/web/views/Distributions.html>

- dnorm: Calculates densities for a normal distribution, i.e. $f(y)$

```
> dnorm(0,mean=0,sd=1)
[1] 0.3989423
```
- pnorm: Calculates probabilities for a normal distribution, i.e. $F(y)$

```
> pnorm(0,mean=0,sd=1)
[1] 0.5
```
- qnorm: Obtains the quantile q from a normal probability $0 < p < 1$, i.e. $F(q) = p$

```
> qnorm(0.5,mean=0,sd=1)
[1] 0
```
- rnorm: Obtains a random sample from a normal distribution

```
> v = rnorm(10000,mean=0,sd=1)
> hist(v,breaks=50)
```

