

4th th set of SAS assignments

1. Create density function of a normally distributed variable

- i) Create a data set with values of the density function of a normal distribution

$$f(x|\mu, \sigma^2) = \frac{1}{\sigma\sqrt{2\pi}} e^{-1/2[(x-\mu)^2/\sigma^2]}$$

with parameters $\mu = 0.8$ and $\sigma^2 = 0.6$. Therefore, use a do loop in a **data step**.

```
DO x=start TO end BY step;
```

```
CALCULATE VALUES OF A NORMAL DENSITY FUNCTION
```

```
output;
```

```
END;
```

Let x run from -4 to 4 in steps of 0.01 . Label the created variable.

- ii) Plot the created density function. Use the **goptions** provided for last week's assignment sheet. Label the axis and save the plot as an Encapsulated Postscript (eps). The range of the vertical axis should be from **0 to 0.6 in steps of 0.05**.
- iii) Create values from a standard normal distribution ($\mu = 0$ and $\sigma^2 = 1$) and plot them together with the values from Task (i) into a graph. Use the **symbol** options to create differently coloured lines for the plots.
- iv) Create a SAS **MACRO** for the steps i) to iii) with the arguments
`%MACRO(path, dataset, startx, endx, step, mu, sigma)`.
path denotes the path where the .eps graph is written out to, *dataset* is any name for your data set, *startx* (*endx*) are any starting (ending) values for which to compute the density function and *mu* and *sigma* are the parameters of your normal distribution.
- v) Call your macro.