

2nd set 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 μ and σ . 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;
```

- ii) Read out the maximum value of the density function into a macro variable named *max* (Use PROC SQL). Then, add 0.1 to the rounded value of *max*.

```
DATA _NULL_;
call symput('max',round(&max.,0.1)+0.1);
RUN;
```

The word `_NULL_` appears in the DATA statement instead of a SAS data set name. `_NULL_` is a special keyword that tells SAS not to bother making a new data set. The SYMPUT command creates macro variables either from variables in a data step or from previous macro variables.

- iii) Plot the created density function for $\mu = 0.8$ and $\sigma^2 = 0.6$. Try to create a nice(!!!) plot. Use the `goptions` provided in `SAS_session3.sas`. The range of the vertical axis should be from 0 to *max*
- 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.