



# Using the report template with Python

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Using the [reticulate](#) package enables Python usage within R and R Markdown documents.

```
library(reticulate)
```

For example, let's generate some random numbers from the Normal distribution with mean  $\mu$  and standard deviation  $\sigma$  which has the following probability density function:

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

```
import numpy as np

mu, sigma = 0, 0.1 # mean and standard deviation
s = np.random.normal(mu, sigma, 1000)
```

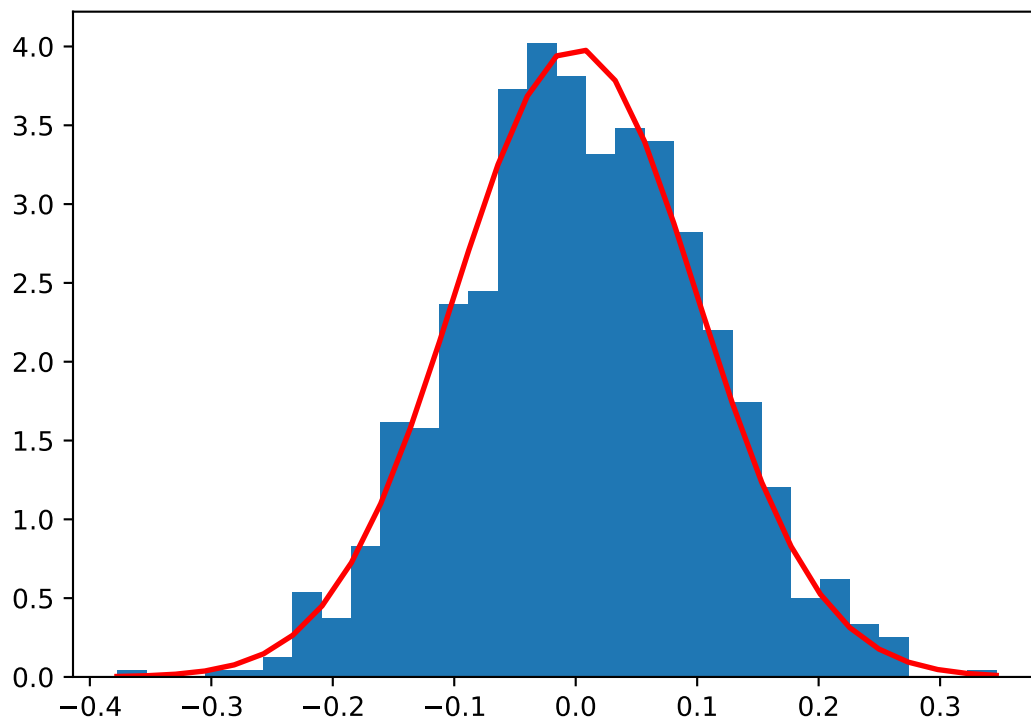
```

import matplotlib
import matplotlib.pyplot as plt

if matplotlib.__version__ < '2.0.0':
    count, bins, ignored = plt.hist(s, 30, normed=True)
else:
    count, bins, ignored = plt.hist(s, 30, density=True)

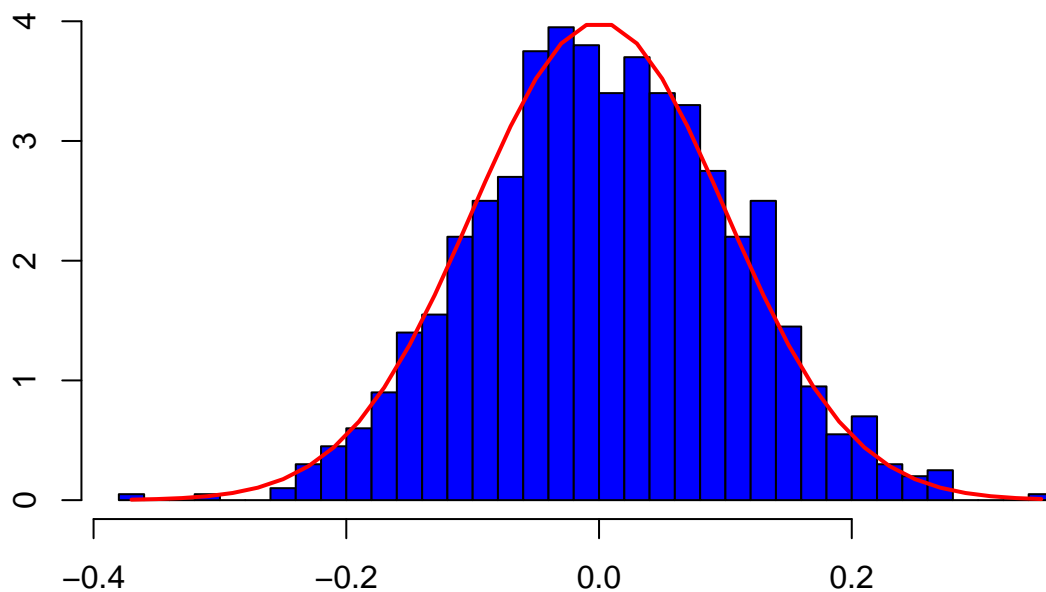
plt.plot(bins, 1/(sigma * np.sqrt(2 * np.pi)) *
         np.exp( - (bins - mu)**2 / (2 * sigma**2) ),
         linewidth=2, color='r')
plt.show()

```



We can also visualize it in R via the exported py object:

```
bins <- hist(py$s, col = "blue", breaks = 30, freq = FALSE,  
            main = NULL, xlab = NULL, ylab = NULL)  
lines(bins$mids, dnorm(bins$mids, py$mu, py$sigma), col = "red", lwd = 2)
```



**Note:** likewise data from R can be accessed in Python using the exported r object.

See [this article](#) for more information on using Python in R Markdown.

## References

Allaire, J., Xie, Y., McPherson, J., Luraschi, J., Ushey, K., Atkins, A., ... Iannone, R. (2019). Rmarkdown: Dynamic documents for r. Retrieved from <https://CRAN.R-project.org/package=rmarkdown>

Popov, M. (2019). Wmfpar: Wikimedia foundation's product analytics reporting template. Retrieved from <https://github.com/bearloga/wmf-product-analytics-report>

R Core Team. (2019). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <https://www.R-project.org/>

Ushey, K., Allaire, J., & Tang, Y. (2019). Reticulate: Interface to 'python'. Retrieved from <https://CRAN.R-project.org/package=reticulate>

Xie, Y. (2019). Knitr: A general-purpose package for dynamic report generation in r. Retrieved from <https://CRAN.R-project.org/package=knitr>

Zhu, H., Tsai, T., & Trivison, T. (2019). Memor: A 'rmarkdown' template that can be highly customized. Retrieved from <https://CRAN.R-project.org/package=memor>