

# L<sup>A</sup>T<sub>E</sub>X-Examples

## 1 Introduction

The art and science of reasoning with numbers has evolved over a long period of time. So has the term “statistics”. We could say that the science of statistics has deep roots as well as a relatively long history. The large bodies of method and theory have been accumulated during the past two centuries, stimulated by all possible fields of application. Up to the present day there is no end to the need and development of new statistical methods. Porter’s book (Porter [2]) is a good source to study the development of statistics in the nineteenth century.

If you begin a new paragraph, indentation will be done automatically by L<sup>A</sup>T<sub>E</sub>X. If you don’t want indentation, you should write: `\parindent=0pt` in the preamble. The rate of inflation was 5%.

## 2 Some First Examples

Bla bla. Here is a plot to illustrate the CLT. This plot is shown in Figure 1. Here is a beautiful photo (see Figure 2).

## 3 Some Further Examples

Our intention here is to sketch the history of ideas, as it led to today’s conception of statistics, rather than the history of methods and theories. Thinking of the origins, statisticians should take a lenient view of the unfortunate but popular association of their subject with mere numbers gathered for governments.

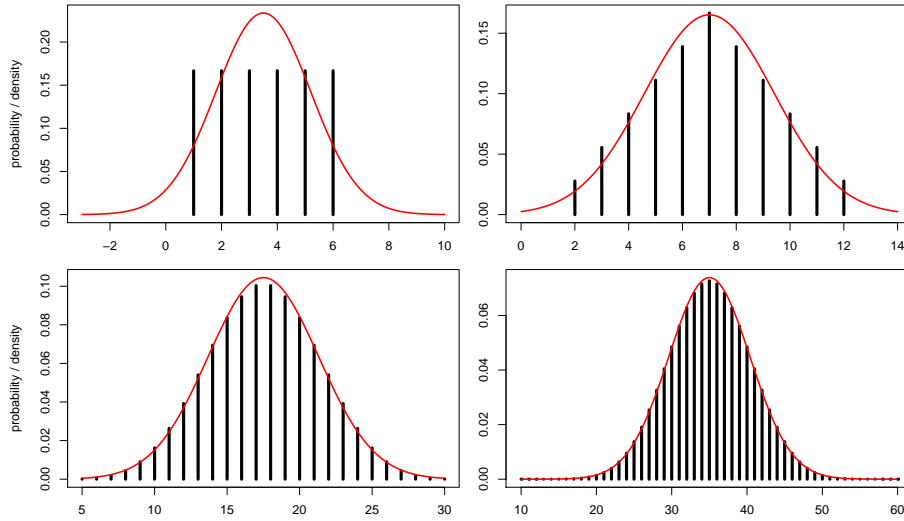


Figure 1: Illustration of the CLT

$$f(x; \alpha, \beta) = \frac{x^{\alpha-1}(1-x)^{\beta-1}}{\int_0^1 u^{\alpha-1}(1-u)^{\beta-1} du} \quad (1)$$

$$= \frac{\Gamma(\alpha + \beta)}{\Gamma(\alpha)\Gamma(\beta)} x^{\alpha-1}(1-x)^{\beta-1} \quad (2)$$

$$= \frac{1}{B(\alpha, \beta)} x^{\alpha-1}(1-x)^{\beta-1} \quad (3)$$

Consider this fraction:  $\frac{a}{b}$ . In displaystyle this looks different:

$$\frac{a}{b}$$

$$x \mapsto f(x) = \sqrt{x} = x^{1/2}$$

Here is another formula:

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



Figure 2: Fireworks show

Also:

$$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}, \quad x \in \mathbb{R} \quad (4)$$

$$f(x) = \lambda e^{-\lambda x}, \quad x > 0 \quad (5)$$

$$p(i) = \frac{\lambda^i}{i!} e^{-\lambda}, \quad i \in \mathbb{N} \quad (6)$$

A numbered equation:

$$\sqrt{9} = 3 \quad (7)$$

Another numbered equation:

$$\sqrt{\pi} = 1.772454 \quad (8)$$

A *list* can be produced by...

1. the `itemize` environment,
2. the `enumerate` environment.
3. Of course, these environments may be nested:
  - (a) This is the first sub-item,

(b) ...to be continued by the second one.

year	physicians	traffic accidents	population (mill.)
1986	37442	92468	51.638
1987	38829	110207	52.821
1988	42502	107651	54.003
1989	46708	103758	55.185
1990	50639	115295	56.367
1991	53264	142145	57.546
1992	56985	171741	58.725
1993	61050	208823	59.904
1994	65832	233803	61.082
1995	69349	279663	62.261
1996	70947	344643	63.392
1997	73659	387533	64.522
1998	77344	440149	65.68
1999	81988	438338	66.87

## References

- [1] HOWIE, D.: *Interpreting Probability. Controversies and Developments in the Early Twentieth Century*. Cambridge University Press, 2004.
- [2] PORTER, T.M.: *The Rise of Statistical Thinking 1820–1900*. Princeton University Press, 1986.
- [3] VENABLES, W.N. & RIPLEY, B.D.: *Modern Applied Statistics with S*, fourth edition. Springer, 2002.