coefficient of determination (r^2)
A normalized measure of discrepancy that expresses the fraction of *variance* that is explained by a statistical *model* ("explained variance"). The coefficient is usually denoted by the symbol r^2. Its value is in the interval $[0, 1]$. A large fraction of explained variance indicates a good fit of the model to the data. The coefficient of determination is calculated as follows:

$$r^2 = \frac{TSS - RSS}{TSS} = 1 - \frac{RSS}{TSS} = 1 - \frac{\sum(y - f(x))^2}{\sum(y - \bar{y})^2}$$

where y is an actual outcome, $\bar{y}$ is the mean of outcomes, and $f(x)$ is a prediction based on an *independent variable* x made by the model f. The *residual sum of squares* (RSS) measures the unexplained variance and the *total sum of squares* (TSS) the total variance. Their difference is the explained variance. See figure COD. See also: *linear regression*.

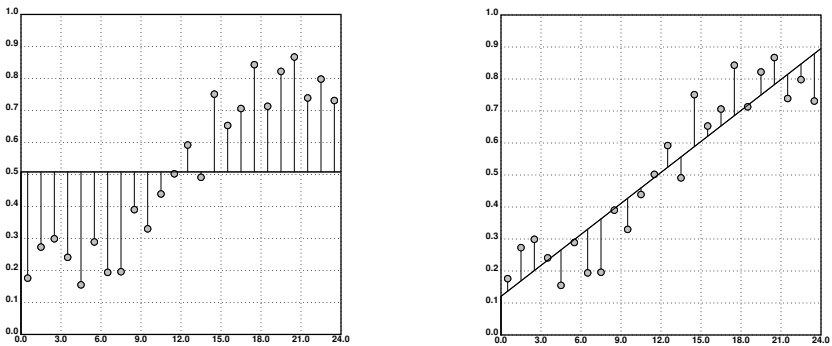

Figure **COD:** left: total variance (TSS); right unexplained variance (RSS) given a linear model; their difference is the explained variance (TSS−RSS) of the model