

Summary of Tableau 12, Part 1

A potpourri of titillating applications

Central tendency: stock portfolio selection and the curious case of Sir Cyril Burt, psychologist

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Random sample (repeated independent trials): $X, X_1, X_2, \dots, X_n, \dots$ $\mathbf{E}(X) = \mu, \quad \text{Var}(X) = \sigma^2$

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The law of large numbers


$\frac{S_n}{n}$ is asymptotically concentrated at μ

$$\mathbf{P}\left\{\left|\frac{S_n}{n} - \mu\right| > \epsilon\right\} \rightarrow 0$$

or, even, stronger (Lecture 11.2: n)

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The central limit theorem

S_n^* is asymptotically normally distributed

$$\mathbf{P}\{a < S_n^* \leq b\} \rightarrow \int_a^b \phi(x) dx \quad (n \rightarrow \infty)$$

