Statistical Methods

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<div style="background:#e0e0e0; text-align:center">Course Program</div>

Day 1 **Introduction to statistics, the R programming language, and reproducible research.**
- Introduction to main statistical concepts.
- Introduction to the R programming language and to R studio.
- Introduction to reproducible research, version control, cloud computing.

Day 2 **Introduction to probability and statistical inference.**
- Introduction to basic concepts of probability.
- Discrete and continuous probability distributions: Binomial, Poisson, Gaussian.
- Distributions derived from the Gaussian: Chi-square, Student's t, Fisher's F.

Day 3 **Parameter estimation.**
- Data and empirical distributions.
- Parameters and estimates.
- The central limit theorem.

Day 4 **Statistical inference**
- The distribution of the sample mean
- Confidence intervals.
- Hypothesis testing
- The boostrap

Day 5 **Regression models**
- The simple linear model.
- Multiple linear regression.
- Least squares
- Normal linear model

Day 6 **Regression models**
- Regression for binary data.
- Regression for count data.
- Goodness of fit.
- Model selection.
- Experimental design.

Day 7 **Student presentations**