

Hardy–Weinberg Equilibrium Diagnostics

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Abstract

We propose two diagnostics for the statistical assessment of Hardy–Weinberg equilibrium. One diagnostic is the posterior probability of the complement of the smallest highest posterior density credible region that includes points in the parameter space consistent with the hypothesis of equilibrium. The null hypothesis of equilibrium is to be rejected if this probability is less than a pre-selected critical level. The second diagnostic is the proportion of the parameter space occupied by the highest posterior density credible region associated with the critical level. These Bayesian diagnostics can be interpreted as analogues of the classical types I and II error probabilities. They are broadly applicable: they can be computed for any hypothesis test, using samples of any size generated according to any distribution.

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