



The University of Chicago
Department of Statistics

MASTER'S THESIS PRESENTATION

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**Testing for Hardy-Weinberg Equilibrium in SNP Data
from Outbred, Related Individuals**

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ABSTRACT

Classical approach to test Hardy-Weinberg Equilibrium (HWE) is Pearson's χ^2 goodness-of-fit test (Gof-HW). However, when used in a sample containing related individuals, it would generate an overabundance of small p -values and inflated type I error, because it wrongly assumes the independence among the observations. In this talk, we present a more general approach, the quasi-likelihood score test (QL-HW) and apply it to a sample containing outbred multigenerational families. This test models the correlation between the two alleles of each individual and between the alleles of different individuals due to the pedigree structure. Our application suggests that the QL-HW test can be a useful tool for quality control in SNP data from related individuals.

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