EXPLORING PROPERTIES OF A DROPOUT MODEL FOR RELATIONSHIP PROBLEMS

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The field of forensic genetics is constantly being introduced to more sensitive methods that allow for samples with very small amounts of DNA to be analysed. Although more information is made available, we may also have to handle problematic phenomena such as dropout. Allelic dropout may commonly appear in relationship problems such as disaster victim identification, identification of missing persons and archeogenetic analysis. Partial profiles may cause incorrect interpretation of profiles, whereas excluding problematic markers could cause loss of valuable information and biased results. In Dørum et al. (submitted) we explored different likelihood ratio models that account for dropout in kinship cases and presented an efficient implementation of a parameterised dropout model. Apart from allelic dropout, phenomena such as silent alleles and mutations may also cause missing alleles and discrepancies between genotypes in related individuals. The likelihood ratio model can account for silent alleles, mutations, population substructure and dropout simultaneously. In this talk we will further explore properties of this dropout model inspired by data from a real case.