Empirical study of Fisher's principle in the Census 2000 of Korea

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In evolutionary biology, Fisher's principle argues that the number of male offspring should be equal to that of female offspring. Even when all its underlying assumptions hold, every real population has a finite size, which leads to a statistical deviation from Fisher's principle: If we consider the central limit theorem, it is plausible to hypothesise that the deviation of the sex ratio from 1:1 will behave as $N^{-1/2}$, where N is the size of the population under consideration. We have checked this hypothesis with the Population and Housing Census 2000 of Korea. Our finding is that the actual data points systematically deviate from the hypothesis when we check the sex ratio for each family. It implies that the dynamics of family names is more complicated than has been assumed in the simple Galton-Watson process.