DSS Statistics Seminar

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https://meet.google.com/cyr-uemi-abf

Population size estimation based upon zero-truncated, one-inflated and sparse count data

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Estimating the size of a hard-to-count population is a challenging matter. In particular, this is true when only few observations of the population to be estimated are available. The matter gets even more complex when one-inflation occurs. This situation is illustrated with the help of several examples including estimating the size of a dice snake population in Graz (Austria) and an example from astrophysics where interest is in the number of flare stars in the Pleiades. The paper discusses how one-inflation can be easily handled in likelihood approaches including conditional and unconditional approaches, and also discusses how variances and confidence intervals can be obtained by means of a semi-parametric bootstrap. A Bayesian approach is mentioned as well and all approaches result in similar estimates of the hidden size of the population. Finally, a simulation study is provided which shows that the unconditional likelihood approach as well as the Bayesian approach using Jeffreys' prior perform favourable.

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