ANOTHER LOOK AT THE BOX MODEL

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We revisit the box model, an analogy introduced by Freedman et al. (1978) to teach sampling distributions and inference. The idea is to represent a random phenomenon in terms of random draws of tickets from a box. In this way, random sampling from a population can be modeled in the same way as familiar phenomena like coin-tossing and card-shuffling. However, Freedman et al. present box models only as a thought experiment; calculations are still done using normal approximations. We argue that a simulation-based approach to box models correctly places the emphasis on the modeling rather than the calculations. Furthermore, we demonstrate how the box model is useful beyond an introductory course by showing how it can clarify discrete distributions in a probability course.

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