

Review of: "A trial-dependent N-player game"

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Potential competing interests: No potential competing interests to declare.

The paper titled 'A trial-dependent game with N-player' deals with an interesting gambler's problem. However, it has not been written to communicate the same.

The paper in the present form will not be suitable for publishing. The basic idea of the author is to create two groups with group G₁ having all players with minimum budget and group G₂ with the rest of the players and to determine the fortune and variance of any player in G₁ or/and G₂. The authors should address to the comments:

Title : The title 'A trial-dependent game with N-player' is incomplete in itself. The game is a gamblers problem dealing with N players.

2. Abstract

(a) The statement 'the number of trials first reaches the minimum of the initial budget set by the players' is not clear. This statement should explicitly state the problem/game.

(b) The author writes 'We executed this game for N players....' How it is executed ? is not discussed in the entire paper.

(c) '... both symmetric and asymmetric games.' When the probability of winning or losing is same the authors call it symmetric and otherwise asymmetric. This is not explained anywhere or the concept used in the text of the paper. Only corollaries are reported in the text.

3. Introduction

(a) The introduction of the classical N-player game is inconsistent, as 'every trial decides a winner' is not clear. The system needs a thorough explanation like: The familiar gambler wins or loses a dollar with probabilities p and q , respectively. The probability of winning p or losing q is same or does not depend on symmetric or antisymmetric game. Let the gambler have an initial capital of z . He plays against an adversary who has an initial capital $a - z$, so that the combined capital is a . The game continues until the gambler's capital either is reduced to zero or has increased to a , that is, until one of the two players is ruined. We are interested in the probability of the gambler's ruin and the probability distribution of the duration of the game. This is the classical ruin problem ref : Feller[7]

(b) The references are not in order; as the first reference starts from [7] in the text.

4. Theoretical foundation

(a) 2.1 : No reference is provided for 'fortune and variance' used in the problem formulation. It is not clear that the variance is of what ? Is it from Win ?

(b) 2.2: The sentence 'Let $w = (x_1, x_2, \dots, x_\alpha)$ be a sequence ... trials' doesn't define either w or x and the following equation does not define the quantity XI . Is w the sequence of numbers with count to the lowest budget. What is the connect of XI ? Is it the output after the first trial or subsequent trial.

(c) The basic idea of the author is to create two groups with group $G1$ having all players with minimum budget and group $G2$ with the rest of the players and to determine the fortune and variance of any player in $G1$ or/and $G2$. The author assumes such grouping creates a binomial distribution and the proposition 1 and 2 follows from this.

(d) Symmetric implies equal probability like that of a fair coin. Symmetric means equal chance of $1/n$ if n players are involved.

(e) The corollaries and propositions do not have supporting references or discussions ?

5. Numerical investigation

(a) 'Using the respective expressions' ? Which expression specifically

has been used for numerical evaluation.

(b) The tabulated data in Tables 1 and 2 follow from the formula for the fortune and variance proposed by the author. The same has not been compared/ differentiated/ corroborated from any other reference. There is no independent way of verifying the numbers .

6. Summary

(a) The sentence 'The legitimacy as well.' is not clear because the mathematical and numerical calculations are not independent. They do not supplement each other or have any supporting theory.