Statistics > Applications

Variance Decomposition and Replication In Scrabble: When You Can Blame Your Tiles?

Andrew C. Thomas

(Submitted on 13 Jul 2011 (v1), last revised 1 Nov 2011 (this version, v3))

In the game of Scrabble, letter tiles are drawn uniformly at random from a bag. The variability of possible draws as the game progresses is a source of variation that makes it more likely for an inferior player to win a head-to-head match against a superior player, and more difficult to determine the true ability of a player in a tournament or contest. I propose a new format for drawing tiles in a two-player game that allows for the same tile pattern (though not the same board) to be replicated over multiple matches, so that a player's result can be better compared against others, yet is indistinguishable from the bag-based draw within a game. A large number of simulations conducted with Scrabble software shows that the variance from the tile order in this scheme accounts for as much variance as the different patterns of letters on the board as the game progresses. I use these simulations as well as the experimental design to show how much various tiles are able to affect player scores depending on their placement in the tile seeding.

Comments: 16 pages, 7 figures
Subjects: **Applications (stat.AP)**
Cite as: **arXiv:1107.2456 [stat.AP]**
(or **arXiv:1107.2456v3 [stat.AP]** for this version)

Submission history

From: Andrew C. Thomas [view email]
[v1] Wed, 13 Jul 2011 03:12:03 GMT (46kb,D)
[v2] Wed, 19 Oct 2011 17:18:49 GMT (169kb,D)
[v3] Tue, 1 Nov 2011 15:53:08 GMT (169kb,D)

Which authors of this paper are endorsers?