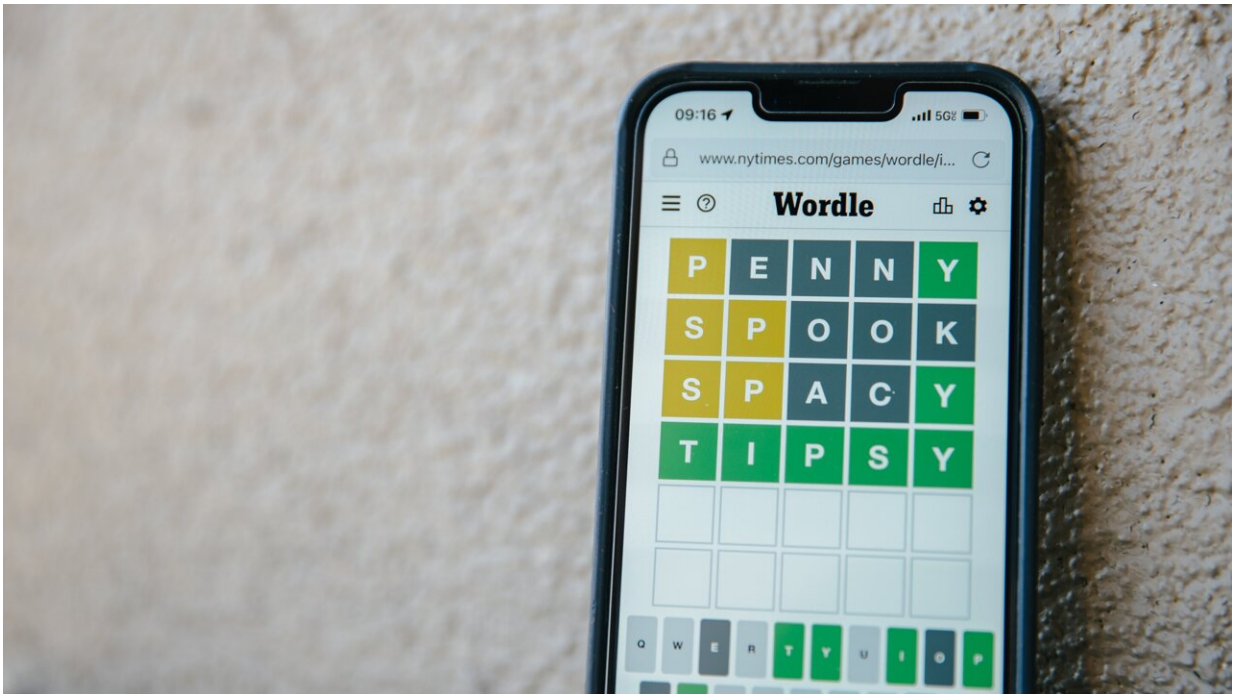


# Many Wordle users cheat to win, says mathematics expert

September 25 2023, by Peter Grad

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It seems there's a five-letter word describing what many players of the wildly popular Wordle puzzle do daily as they struggle to find a target word within six tries.

According to one mathematics expert, that word is "cheat."

James P. Dilger, who by day is professor emeritus at Stony Brook University in New York specializing in the mechanisms of anesthetic action, and by night is a Wordle junkie, says the numbers behind published Wordle success rates don't quite add up.

Wordle was developed by a [software engineer](#) to pass the time during the early days of COVID restrictions. Players must determine a target five-letter word in six or fewer attempts. With each guess, the player is provided with three bits of information: correct letters in the correct position are displayed in green, correct letters placed in incorrect spots are displayed in yellow, and incorrect letters are displayed in black.

In the beginning, Wordle was played mainly among family and friends of the developer, Josh Wardle. Wordle's popularity soared, reaching 3 million users after The New York Times purchased the game in January 2022. Today, some 2 million play Wordle daily. It is recreated in 50 languages globally.

Dilger's suspicions arose while studying the game's statistics published daily by The Times.

"I noticed one day an awful lot of people answered with one guess and thought, 'that's strange,'" Dilger said. "And then I paid attention to it and it was happening day after day. Well, I'm a science nerd and wanted to know what's going on."

Dilger imported statistics covering four months of user guesses into an Excel spreadsheet. [His report](#), "Wordle: A Microcosm of Life. Luck, Skill, Cheating, Loyalty, and Influence!" appeared in the preprint server *arXiv* Sept. 6.

The game has a data bank containing 2,315 words, good for five years of play. (There actually are more than 12,000 five-letter words in the

English language, but The Times weeded out the most obscure ones.)

Dilger calculated that the odds of randomly guessing the day's word at 0.043%, totaling 860 players. Yet, Times statistics show that the number of players making correct first guesses in each game never dipped below 4,000.

"Do I mean to tell you that never, not once, was the share percent of the first guess less than 0.2%? Yup!" Dilger asserted.

He went further. His numbers are based on the 2,315-word master list compiled by The Times, but 800 of those words have already been used. Most players are not likely to know that detail, but if they did, and they excluded words already played, their odds of guessing the correct word would rise sightly. Yet, according to Dilger, their odds would still be a low 0.066%.

"Yet, it happens consistently every day," Dilger said. "Some days it's as high as 0.5%," which would be 10,000 players.

He also noted how unlikely it would be that a user would correctly guess such poor first-choice candidates as "nanny" and "igloo." Players gain maximum advantage when they surmise words with non-repeating characters and as many vowels as possible. "Nanny" repeats one letter three times and uses only two vowels. "Igloo" not only is a relatively rare word, but contains only two vowels, repeating one of them.

"What shall we call these people?" He asked. "'Cheaters' comes to mind, so that's what I call 'em."

Dilger did not offer any explanation for such nefarious behavior, other than to say that many players "became frustrated at some point in the game and then felt joy or relief after having surpassed the hurdle with a

cheat."

"We are baffled as to how first-word cheaters actually have fun playing," Dinger said, "but that does not diminish our enjoyment of the [game](#)."

He might have quoted former wrestler, actor, philosopher and governor of Minnesota Jesse Ventura, who once suggested, "Winners never cheat, and cheaters never win." Except maybe in Wordle.

**More information:** James P. Dilger, Wordle: A Microcosm of Life. Luck, Skill, Cheating, Loyalty, and Influence!, *arXiv* (2023). [DOI: 10.48550/arxiv.2309.02110](https://doi.org/10.48550/arxiv.2309.02110)

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