Wordle is a popular guessing game. The prediction of the number of wordle players and the influence of word attributes on the outcome of the game have profound implications for the future development of the game.

For problem 1, First, we established LSTM module to predict the number of reported results on March 1, 2023. And based on variance analysis to get its 95% confidence interval, which is (20387.143, 21523.4). Then, through data analysis, the index of percentage distribution of report results was determined to be the number of attempts with the highest proportion and its percentage. Based on correlation analysis, eight attributes to influence the percentage of report number including the sum of letter frequency, number of similar words, number of high-frequency letters and so on were explored. It was found that the number of similar words had a small correlation, while other attributes were almost irrelevant.

For problem 2, based on MSVM multi-classification support vector machine, we set up PSO particle swarm optimization algorithm for optimization. For the word with repeated letter number of 3, we set a correction factor separately to make the prediction result more accurate and tested it. Finally, the reported result distribution of the word "EERIE" was [0, 1, 5, 19, 34, 26, 16].

For problem 3, we established a difficulty coefficient evaluation model of the entropy weight method with multiple inputs and single outputs. According to the results in Problems 1 and 2, we took the number of repeated letters (0.97) and the number of similar words (0.03) as inputs to calculate the difficulty coefficient of words in the data set. Finally, the three-layer word difficulty pyramid model of wordle game is obtained by the method of hierarchical statistics, and the word EERIE(100) is known as the hard model through calculation.

For problem 4, we find some interesting features of the data set, among which, "Number of reported results" and "Number in hard mode" have a strong linear relationship, and Pearson correlation coefficient is 0.9211. And the report distribution is mostly normal.

Finally, we provide a letter from the Puzzle Editor of the New York Times summarizing the scope and results of the model and providing constructive suggestions for wordle games.