

Using graphs to make data-based decisions in the Defenders game.

Defenders Graphs:

- Create a one-page report that provides a rationale for the best overall strategy to win Level 2 of the Defenders game. Include one to three graphs; you are welcome to use any of the available data (you do not need to play the game to make any graphs).
 - What information provided the best information in determining a winning strategy?
 - What additional information would be helpful in ensuring that you have a “best” strategy?
 - Do you believe the best score for this game is determined by luck or by understanding the patterns within the game?

Defenders Graphs:

In this game, a unique row of data is provided for every change in round, position, turret, upgrade, medicine and enemy.

Round	Position	TurretType	Upgrade	Medicine	Enemy	Shot	Destroyed
1	1	PillShooter	1Fast	Med R	red	16	14
1	1	PillShooter	1Fast	Med R	blue	3	3
1	2	PillShooter	1Fast	Med B	red	4	4
1	2	PillShooter	1Fast	Med B	blue	3	3

For example in Level 1, if you put a turret in the first location and do not make any changes during a round, there will be two rows of data. The first row represents the Red Enemy and the second row represents the Blue Enemy.

Defenders Graphs:

- What variables should be in the graph?
 - What should be on the X-axis? The Y-axis?
 - How can we use color or faceting to see more information?
- What conclusions can be drawn from the graph?
 - What patterns are clear in particular graphs?
 - What patterns are missing or not very clear?
 - Would choosing a different graph feature better enable people to see a pattern?
 - Do the title, legend, and labels help the reader better identify and understand the patterns?

Defenders Graphs:

- Should we create a graph with a few data points or a graph based upon a large sample size?
- How many samples are needed before we feel we have “evidence”?
- What is the challenge of only using data from playing the game one time?
- Are there challenges with possible confounding variables if we use all the data in the data base?
- Using only the data with our Group ID may be the best option as it has a larger sample size and also likely eliminates the impact of unknown variables.