Project 4

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# Machine Specifications

I ran this project on the OSU’s flip server through my 2015 MacBook Pro.

# Own-choice quantity was and how it fits into the simulation.

I chose to represent my choice quantity as a storm in a binary form of 0 or 1. I find that it fits into the situation as weather factors from temperature and precipitation levels can influence such a catastrophe in real life. The way it is modeled is when the weather is cooler than the average and the precipitation levels are greater than usual. Whenever a storm happens, this impacts the number of deer and grain grown negatively.

A table showing values for temperature, precipitation, number of graindeer, height of the grain, and storm.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Temp | Precip | Deer | Grain | Storm |
| 1 | 2.777777778 | 20.32 | 1 | 1.27 | 0 |
| 2 | 5 | 20.32 | 2 | 17.8428904 | 1 |
| 3 | 6.666666667 | 33.02 | 2 | 35.220656 | 1 |
| 4 | 13.33333333 | 30.48 | 2 | 48.505872 | 1 |
| 5 | 14.44444444 | 25.4 | 1 | 44.996608 | 0 |
| 6 | 21.11111111 | 15.24 | 1 | 40.71239 | 0 |
| 7 | 22.77777778 | 15.24 | 1 | 33.094676 | 0 |
| 8 | 16.11111111 | 0 | 1 | 8.8707214 | 0 |
| 9 | 8.888888889 | 0 | 1 | 3.6990274 | 0 |
| 10 | 6.666666667 | 2.54 | 1 | 3.3937194 | 0 |
| 11 | 2.222222222 | 7.62 | 1 | 8.49376 | 0 |
| 12 | 0 | 12.7 | 1 | 15.2917398 | 1 |
| 13 | -5 | 22.86 | 1 | 16.7757856 | 1 |
| 14 | 5 | 27.94 | 1 | 11.3881154 | 1 |
| 15 | 7.777777778 | 33.02 | 1 | 24.367109 | 1 |
| 16 | 16.11111111 | 30.48 | 1 | 32.052768 | 1 |
| 17 | 22.77777778 | 22.86 | 1 | 25.928574 | 0 |
| 18 | 25.55555556 | 20.32 | 1 | 18.3089296 | 0 |
| 19 | 20.55555556 | 15.24 | 1 | 8.1489296 | 0 |
| 20 | 18.88888889 | 5.08 | 1 | 0.508 | 0 |
| 21 | 7.777777778 | 0 | 1 | 0.508 | 0 |
| 22 | 12.22222222 | 2.54 | 1 | 3.791966 | 0 |
| 23 | 7.222222222 | 2.54 | 1 | 2.30493824 | 0 |
| 24 | 3.888888889 | 10.16 | 1 | 5.58673 | 1 |
| 25 | 0.555555556 | 15.24 | 1 | 13.6546844 | 0 |
| 26 | 2.222222222 | 22.86 | 1 | 19.5396612 | 1 |
| 27 | 10 | 27.94 | 1 | 33.045146 | 1 |
| 28 | 16.11111111 | 30.48 | 1 | 34.096198 | 1 |
| 29 | 17.22222222 | 25.4 | 1 | 27.983434 | 0 |
| 30 | 16.66666667 | 17.78 | 1 | 20.465923 | 0 |
| 31 | 21.11111111 | 7.62 | 1 | 10.4527604 | 0 |
| 32 | 18.88888889 | 7.62 | 1 | 5.137912 | 0 |
| 33 | 11.11111111 | 2.54 | 1 | 1.21567448 | 0 |
| 34 | 11.66666667 | 2.54 | 1 | 2.08738978 | 0 |
| 35 | 2.222222222 | 0 | 1 | 0.508 | 0 |
| 36 | -5.555555556 | 12.7 | 1 | 5.6080406 | 0 |
| 37 | 0.555555556 | 17.78 | 1 | 3.6232592 | 1 |
| 38 | 1.666666667 | 27.94 | 1 | 13.0437128 | 1 |
| 39 | 5 | 33.02 | 1 | 25.708356 | 1 |
| 40 | 8.333333333 | 27.94 | 1 | 43.08602 | 1 |
| 41 | 15 | 27.94 | 1 | 50.330862 | 0 |
| 42 | 22.22222222 | 12.7 | 1 | 44.52493 | 0 |
| 43 | 23.88888889 | 12.7 | 1 | 36.905692 | 0 |
| 44 | 21.11111111 | 2.54 | 1 | 0.508 | 0 |
| 45 | 15 | 0 | 1 | 0.508 | 0 |
| 46 | 10 | 2.54 | 1 | 0.508 | 0 |
| 47 | -2.222222222 | 7.62 | 1 | 1.98801736 | 0 |
| 48 | -2.222222222 | 10.16 | 1 | 2.48912888 | 0 |
| 49 | 0 | 17.78 | 1 | 3.7577014 | 1 |
| 50 | 0.555555556 | 27.94 | 1 | 11.512169 | 1 |
| 51 | 2.777777778 | 30.48 | 1 | 20.026884 | 1 |
| 52 | 17.22222222 | 25.4 | 1 | 33.51784 | 1 |
| 53 | 13.88888889 | 25.4 | 1 | 27.26944 | 0 |
| 54 | 23.88888889 | 17.78 | 1 | 20.7344264 | 0 |
| 55 | 21.11111111 | 12.7 | 1 | 11.844528 | 0 |
| 56 | 21.66666667 | 0 | 1 | 5.0893726 | 0 |
| 57 | 17.77777778 | 0 | 1 | 0.508 | 0 |
| 58 | 12.22222222 | 0 | 1 | 0.508 | 0 |
| 59 | -2.777777778 | 2.54 | 1 | 0.51129438 | 0 |
| 60 | -3.333333333 | 12.7 | 1 | 1.21834656 | 1 |
| 61 | -4.444444444 | 20.32 | 1 | 2.38739426 | 1 |
| 62 | 1.666666667 | 25.4 | 1 | 2.6266394 | 1 |
| 63 | 3.888888889 | 25.4 | 1 | 15.9118808 | 1 |
| 64 | 16.11111111 | 22.86 | 1 | 32.219646 | 1 |
| 65 | 18.88888889 | 27.94 | 1 | 27.365452 | 0 |
| 66 | 18.88888889 | 12.7 | 1 | 21.0389724 | 0 |
| 67 | 18.88888889 | 15.24 | 1 | 13.4416038 | 0 |
| 68 | 20 | 5.08 | 1 | 0.508 | 0 |
| 69 | 11.66666667 | 0 | 1 | 0.508 | 0 |
| 70 | 4.444444444 | 0 | 1 | 0.508 | 0 |
| 71 | -1.111111111 | 7.62 | 1 | 6.7133216 | 0 |
| 72 | 2.777777778 | 10.16 | 1 | 8.1149952 | 0 |

\*\*\* Values are represented in Celsius and centimeters.

\*\*\* 21:18:24 up 16 days, 23:04, 66 users, load average: 0.84, 0.78, 0.78

# Create a graph with your results

Commentary

We observe the patterns in the graph above to represent the levels of grain versus various weather and environmental variables. Here we observe that grain levels, precipitation, and temperature have a direct relationship. This is observed as whenever the precipitation and temperature rise, the grain levels rise as well. However, we observe that whenever disaster variables (mainly Storm but some deer population) arise from cooler weather and greater rain levels, there is an observed decrease in the grain levels. We see this pattern arise throughout the month cycles as decreases in temperature demonstrate a trend of decreasing the levels of grain as well from the storms, which may be difficult to initially observe due to their nature of being represented through a binary 0 or 1.