User Guide

This program simulates voter waiting times. It takes two text files a input. The first file is a configuration file that contains information pertaining to the structure of the election day. The first line contains seven numbers all separated by a space. The first number is a random number used randomized waiting times representing the unpredictability of actual waiting times on an election day, the second is number of hours in the election day, the third is the average voting time which used to estimate the minimum number of stations to be used, the fourth and fifth number are the minimum and maximum number of voters per precinct to be used for a simulation, the sixth number is the amount of time which is considered to be too long to wait to vote, the seventh and final number on the first line is the number of simulations to be performed with this data.

The second line contains however many numbers as there are hours in the election day plus one more number. Each number represents the percent of voters expected at each hour of the election process, the first number being the number of voters expected to be waiting at the door at the time the polling station opens.

The third line is empty.

The fourth line contains a zero followed by the percent of voters expected at the time of opening. The subsequent lines contain the actual hour (6 for six o’clock, 7 for seven o’clock and so on) and the percent of voters expected at that hour for however many hours there are in the election day. The format for the fourth and following lines are a space followed by the hour(or zero for the opening time), which is followed by another space which is followed by the percent of expected voters. An example of this is “(space)12(space)11.2”. The line followed by the final hour is an empty line. This is all that is required for the first file.

The second file contain information about each precinct. Each precinct’s information is on one line containing eleven entries.These entries are respectively precinct number(in a 3 digit format containing leading zeroes), precinct name(in an 8 character format using leading X’s), voter turnout, number of registered voters, number of expected voters, number of expected voters per hour, number of stations, percent of voters per hour, and\_\_\_\_\_\_\_\_\_\_\_\_. These entries are separated by a space. An example of input would be,

“001 XX0100 20.2 10101 0 235 8 10.1 0 0 0”

The output of this program will give the mean wait time as well as the standard deviation of wait times for randomized wait times for however many iterations you choose run for a precinct. The program also calculates a minimum and maximum number of voting stations to used for a precinct depend on the number of expected voters. The program will also run a simulation on each precinct starting at the minimum number of voting machines to the maximum. This output could be used to decide the optimal amount of voting machines to be used in each precinct perhaps considering data from past elections and as well as trying to account for special circumstances that could affect an election turnout