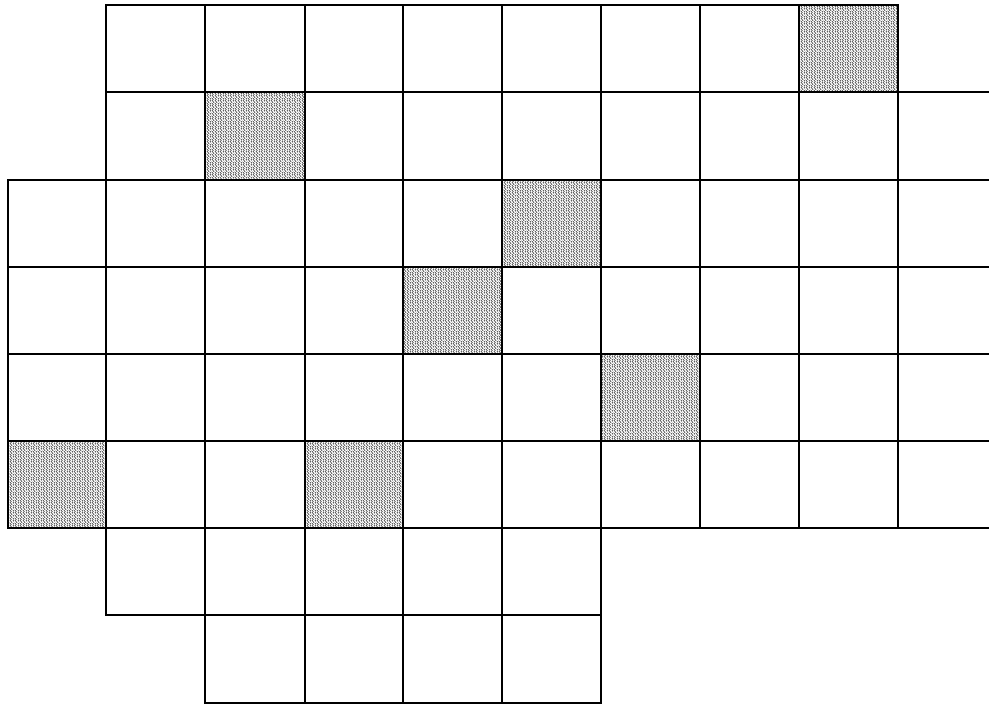
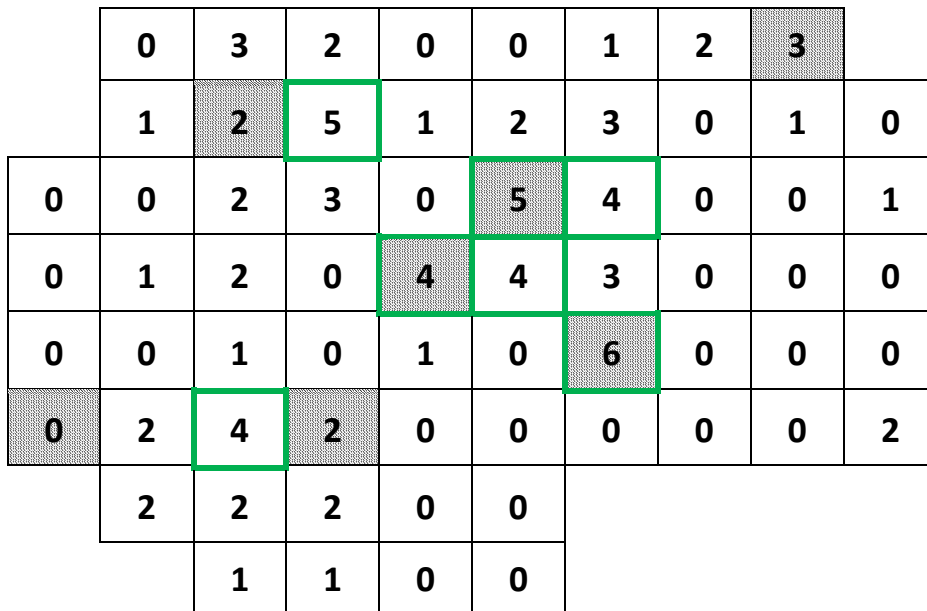


Real-time Crime Forecasting Challenge: Example Calculation of Prediction Accuracy Index (PAI) and Prediction Efficiency Index (PEI)

In this example submission, seven cells are forecasted as hot spots.



The forecast submission then is overlaid with the actual call-for-service-counts:



The variables needed for the PAI and PEI calculations are:

- n = is the number of calls-for-service forecasted
- N = the total number of calls-for-service
- a = the forecasted area
- A = the total area
- n^* - the maximum obtainable number of calls-for-service for the amount of area forecasted (a).

In this scenario, the variables for the calculations are:

- $a = 7$
- $A = 66$
- $n = 22$ (3+2+5+4+6+0+2)
- $N = 81$
- $n^* = 32$ (5+5+4+4+4+6+4) [cells outline in bold/green]

Using these variables, the Prediction Accuracy Index (PAI) and Prediction Efficiency Index (PEI) calculations and scores are:

$$PAI = \frac{\frac{n}{N}}{\frac{a}{A}} = \frac{\frac{22}{81}}{\frac{7}{66}} = 2.5608$$

$$PEI^* = \frac{PAI}{PAI^*} = \frac{\frac{\frac{n}{N}}{\frac{a}{A}}}{\frac{n^*}{N}} = \frac{\frac{2.5608}{\frac{7}{66}}}{\frac{32}{81}} = \frac{2.5608}{3.7249} = 0.6875$$