# Chapter 11: Outline Solutions

11.1 One possible approach would be to review the last ten days or so, and then use the most recent high for your forecast, combined with an assessment of the variation over the review period. You could combine that with documented evidence about past temperature levels in the area and published forecasts, available in the local media or online. Compare the performance of your judgmental forecasts with the published numbers.

11.2 The one-step-ahead RMSE for the Washington DC data was 2.79 (see *Temperature\_work.xlsx*), so an approximate 80% prediction interval would be your forecast ± 1.28\*2.79 (using the appropriate percentage point of the normal distribution).

11.3 [Individual project] Measure relative performance using MAE, RMSE, but not MAPE.

11.4 Some readers will beat the random walk, just by chance, but don’t invest too heavily using your new-found expertise.

11.5 Rather than the Yes/No used in Table 11.3, consider a continuous scale on say (-1, +1) and then compute weighted scores.

11.6 [Group project] The weighting of attributes should recognize that there are different market segments.

11.7 Women’s sports would be expected to move towards equality numerically; some sports only involve one gender or the other. The success or failure of various teams to qualify for the Olympic finals would also influence the final proportions, but such information would only be known in the months leading up to the Games.

 A disaggregated solution would make more sense, in that you can check on which teams qualify for their respective finals.

11.8 (A) President Eisenhower in June 1956. Check the signs next time you drive on an Interstate.

 (B) The charge took place on July 5, 1863. [OK, so you Googled it!] You would aim to identify the war (Civil War, 1860-64), then the battle (Gettysburg) and finally the time of year (summer).

11.9 The results might be summarized in the usual ways:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Midpoint | Frequency | F\*x | d=x-mean | F\*d\*d |  |
| 88 | 2 | 176 | -98.75 | 19503 |  |
| 113 | 8 | 904 | -73.75 | 43513 |  |
| 138 | 6 | 828 | -48.75 | 14259 |  |
| 163 | 2 | 326 | -23.75 | 1128 |  |
| 188 | 1 | 188 | 1.25 | 2 |  |
| 213 | 6 | 1278 | 26.25 | 4134 | median |
| 238 | 9 | 2142 | 51.25 | 23639 | modal class |
| 263 | 4 | 1052 | 76.25 | 23256 |  |
| 288 | 2 | 576 | 101.25 | 20503 |  |
| Sum | 40 | 7470 |  | 149938 |  |
| Mean |  | 186.75 |  |  |  |
| SD |  |  |  | 61.22 |  |
|  |  |  |  |  |  |

 The distribution appears to be bimodal -why do the economists have such different views?

 Consider longer term trends projected via an econometric model.

11.10 The summary results are:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Round 1 | Round 2 | Round 3 | Round 4 |  |
| Alfred | 1.8 | 2.2 | 2.1 | 2.1 |  |
| Betty | 2.5 | 2.5 | 2.5 | 2.5 |  |
| Charles | 2.7 | 3 | 2.9 | 3 |  |
| Doug | 2.9 | 2.9 | 2.9 | 2.9 |  |
| Elaine | 3.2 | 3.3 | 3.2 | 3.2 |  |
| Freda | 3.7 | 3.5 | \* | \* |  |
| George | 4.2 | \* | 3.4 | \* |  |
| **Mean** | 3.00 | 2.90 | 2.83 | 2.74 |  |
| **SD** | 0.79 | 0.49 | 0.47 | 0.44 |  |
|  |  |  |  |  |  |
| **Correlations**: calculated from complete records only |
|  |  | *Round 1* | *Round 2* | *Round 3* | *Round 4* |
|  | Round 1 | 1 |  |  |  |
|  | Round 2 | 0.947 | 1 |  |  |
|  | Round 3 | 0.978 | 0.992 | 1 |  |
|  | Round 4 | 0.958 | 0.992 | 0.995 | 1 |

The SD shows little change after round 2 and the correlations are very high, indicating a lack of further changes in views.

11.11 [Group Project]

**Minicase 11.1**

Build upon the ideas in Example 11.9.