**Appendix 1**

## Using small area statistics

We need to be cautious when drawing conclusions from data which has come from a small sample. This is because the data is less reliable in that it is more easily affected by chance variation which is not due to any measurable cause.

We can measure this chance variation using confidence intervals which are calculated using the size of the sample and a chosen level of confidence (usually 95%). This is illustrated in the table and chart below (data is fictional).

Although the percentage achieving 5 GCSEs for all areas is the same (50%) the confidence intervals show us that we can be more confident in the figures for Berkshire and for the local authority than we can be for the Ward level figure. For Berkshire we can be 95% confident that, allowing for chance variation, between 49% and 51% of children achieve 5 GCSEs. Within a Berkshire Electoral Ward, this range increases and we can be 95% confident that, allowing for chance variation, between 37% and 63% of children achieve 5 GCSEs.

| Area | Percentage achieving 5 GCSE | Lower confidence interval | Upper confidence interval |
|---|---|---|---|
| Berkshire | 50% | 49% | 51% |
| Berkshire Local Authority | 50% | 48% | 52% |
| Berkshire Electoral Ward | 50% | 37% | 63% |

This becomes important when comparing two areas or two time periods as illustrated below. At first glance we would say that performance in the Ward (30%) is worse than the Berkshire average (50%). However, the range in which we can be confident the Ward value falls when allowing for chance variation is between 22% and 55%. The upper range is actually higher than the Berkshire average. Therefore, we would have to interpret this as the percentage of children in the Ward achieving 5 GCSEs being no different to the Berkshire average.

| Area | Percentage achieving 5 GCSE | Lower confidence interval | Upper confidence interval |
|---|---|---|---|
| Berkshire | 50% | 49% | 51% |
| Berkshire Local Authority | 40% | 37% | 42% |
| Berkshire Electoral Ward | 30% | 22% | 55% |