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Water	Total daily volume gallons
Max	Max reading in 15 minutes as % of total
Min	Min reading in 15 mins as % of total
MMR	Min as % of maximum

## MMR Analysis Exercise

The purpose of this exercise is to apply the technique to data from a particular site, examine one or two of the issues and assess its usefulness and practicality as a worthwhile technique.

This is a 9 room finisher site. The data shows approximately the last 3 months of finishing batches. There may be some differences in stocking rate and minor differences in timing (i.e. when the buildings were stocked).

The data is from a winter period when room temperatures were reasonably well according to the target temperatures (i.e. no hot weather).

For each room I have shown the WMMR chart and the total daily figures (to which the MMR percentages refer). (Note : Date labels are shown at 14 day intervals.)

It's assumed that the decline in total water towards the end of the charts is due to progressive de-stocking (i.e. selecting out finished pigs).

### General Points

#### Maximum

Max = (Maximum in any 15 minute period) / (Total daily consumption)

On the whole it appears that the higher the total consumption, the lower the Max%. Rooms with a higher total consumption have a lower maximum, and vice versa.

As soon as total daily use in a building starts to decline (due to de-stocking) the maximum (as percentage) progressively increases.

Interpretation : Once they can drink when they want to, the pigs do so drinking becomes confined to narrower periods of time. Earlier on, some pigs are unable to drink when they want to and must therefore time shift - increasing the drinking time, because there is not enough drinking capacity or availability.

This suggests competition for water - such as low delivery rate, or insufficient drinkers.

#### MMR

On the whole, MMRs are low, indicating that pigs are reasonably synchronised and sufficiently satisfied with water availability that they do not have to drink completely out of hours.

However, R2 and R3 in particular have atypical results. This suggests leakage is a particular problem in these rooms.

#### Noise

Max - in particular - is a noisy signal.

Some noise is clearly due to data issues, and there may be some case for pre-filtering of data. However, pre-filtering is a risky business as it may filter out genuine but exceptional readings.

### Conclusions

The general results suggest that the MMR technique may be a useful indicator for trends and differences, though the data is fuzzy. Data integrity is a key issue.

In this example, it would appear that the "natural" (unlimited) Max is 3 to 4% of total intake.