

Eliminating the yearly trend in weight scaling

By

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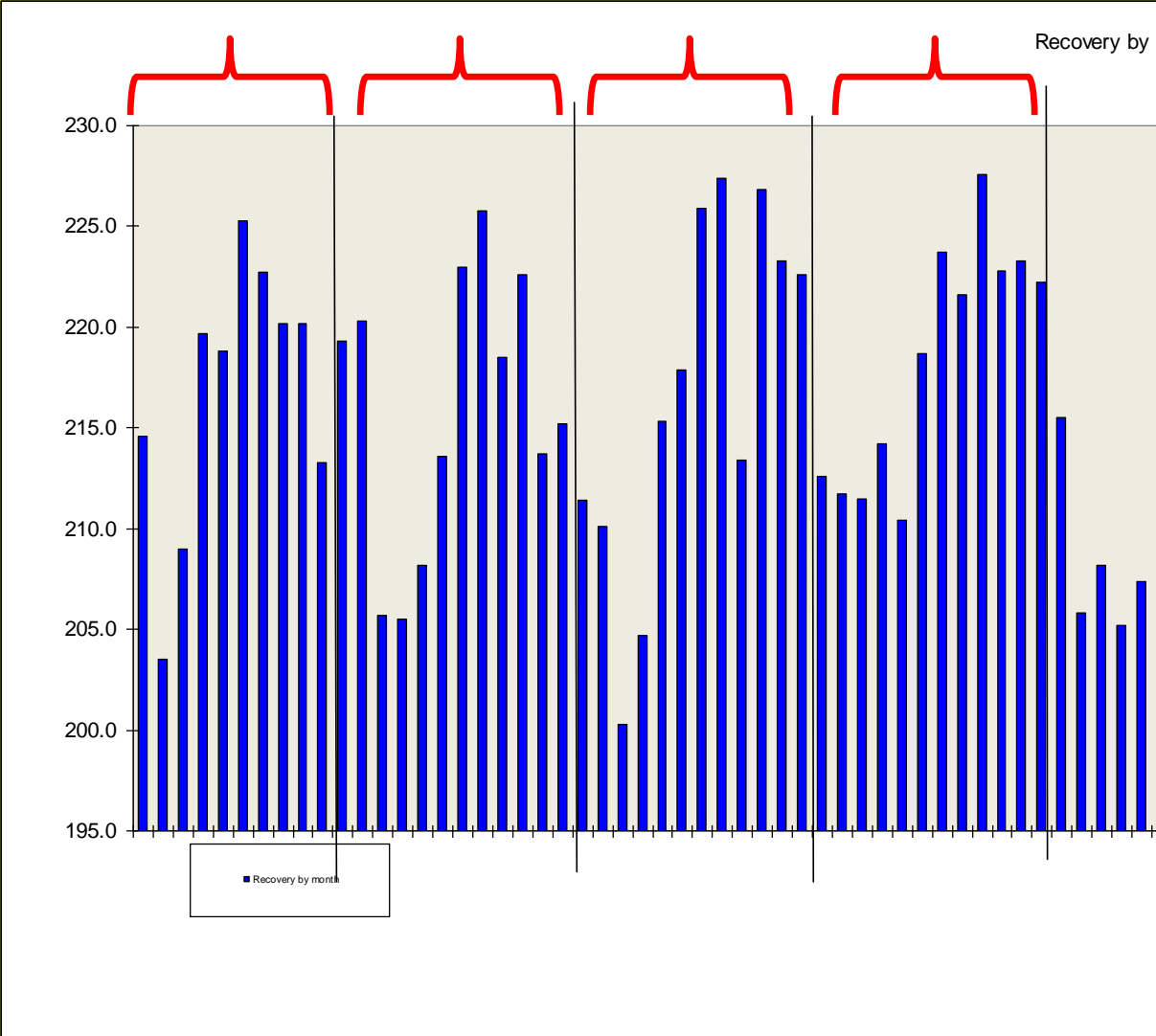
The wet/dry trend during the year is a fairly predictable weight ratio pattern.

Several attempts, mostly centering around load volumes, have been tried, with varying results.

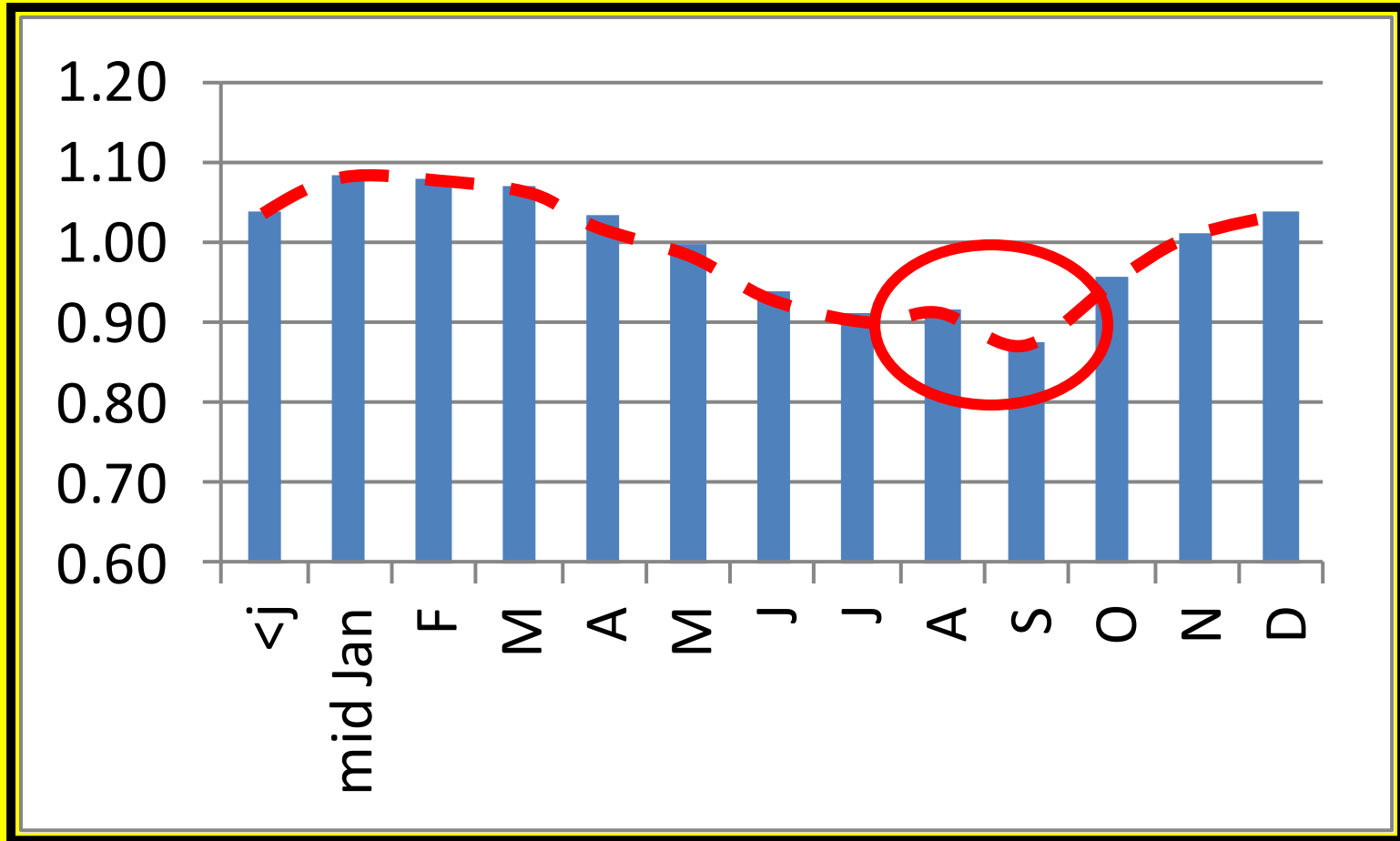
A few years of data will tell you the yearly trend of volume/weight.

Just plot the monthly averages as percents of the yearly average.

The yearly trend is not exactly consistent.



Here is an averaged example.



*The estimate of truck volume is not
the weight – the reverse is true.*

The weight is just an estimate ,
of volume and you can change
that estimate any way you like.

SCALE is the only measurement.

Just because you have a weight does not mean you have to use it directly.

Instead, use it to form something more useful to estimate volume.

- Governments, of course, can make you do silly things, but sometimes private groups can be independently sensible.
- Perhaps they can eventually influence the things under the control of others.

There may be emotional problems.

- If necessary, call the adjusted weight a “Moist Weight (Mw)” or some other term.

You should still have scales and record the actual weight, but weight will no longer be the estimate in the ratio.

The ratio is now **(Vol/Mw)**.

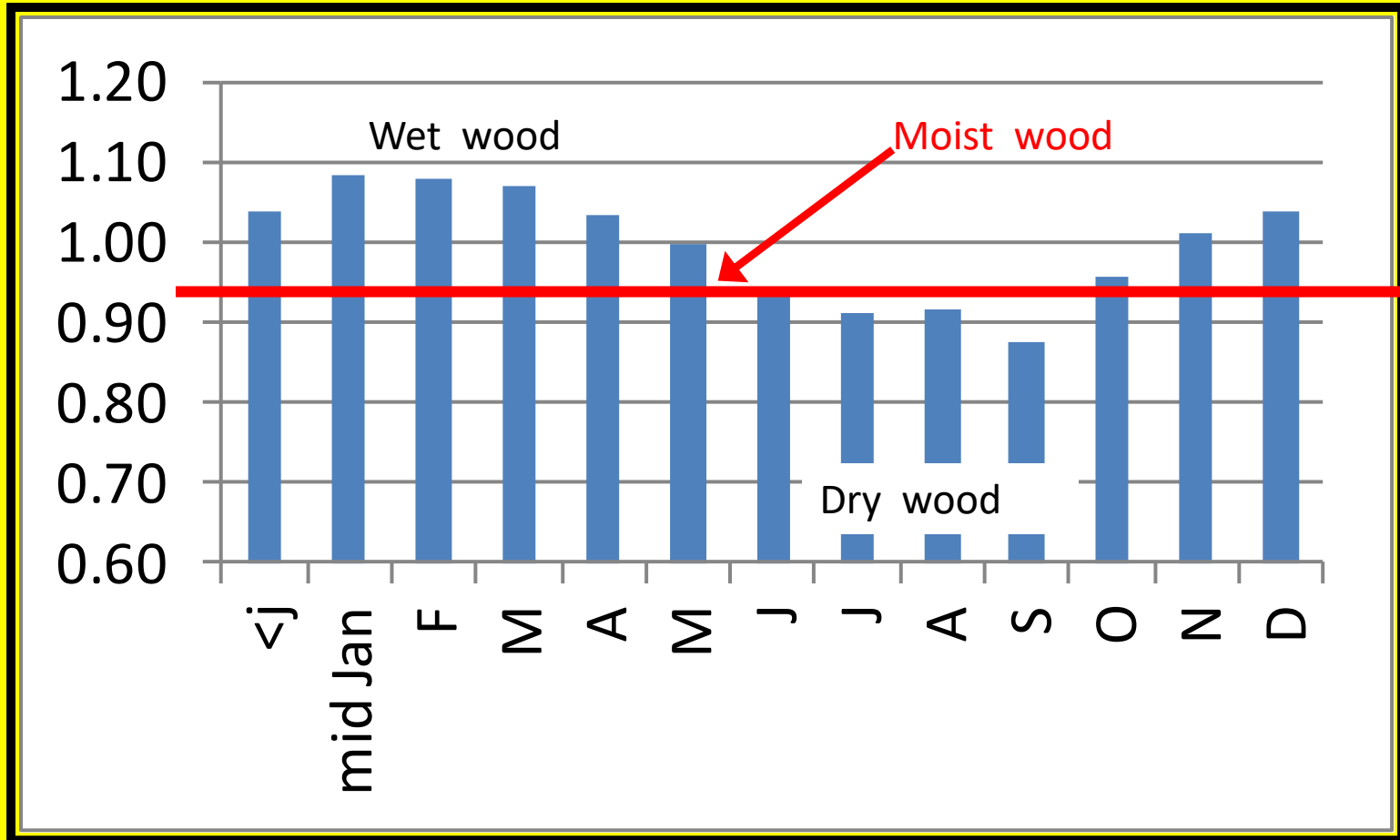
$$(\text{Sum } \cancel{\mathbf{Mw}} \text{ in strata}) * (\mathbf{Vol}/\cancel{\mathbf{Mw}}) = \mathbf{Vol} \text{ in Strata.}$$

The scaler continues to measure BF,
the weighing process compares that
scale measurement to the
“Moist Weight”.

Truck scale / (moist weight)

Is now “detrended” over the year.

Moist weight is a consistent ratio

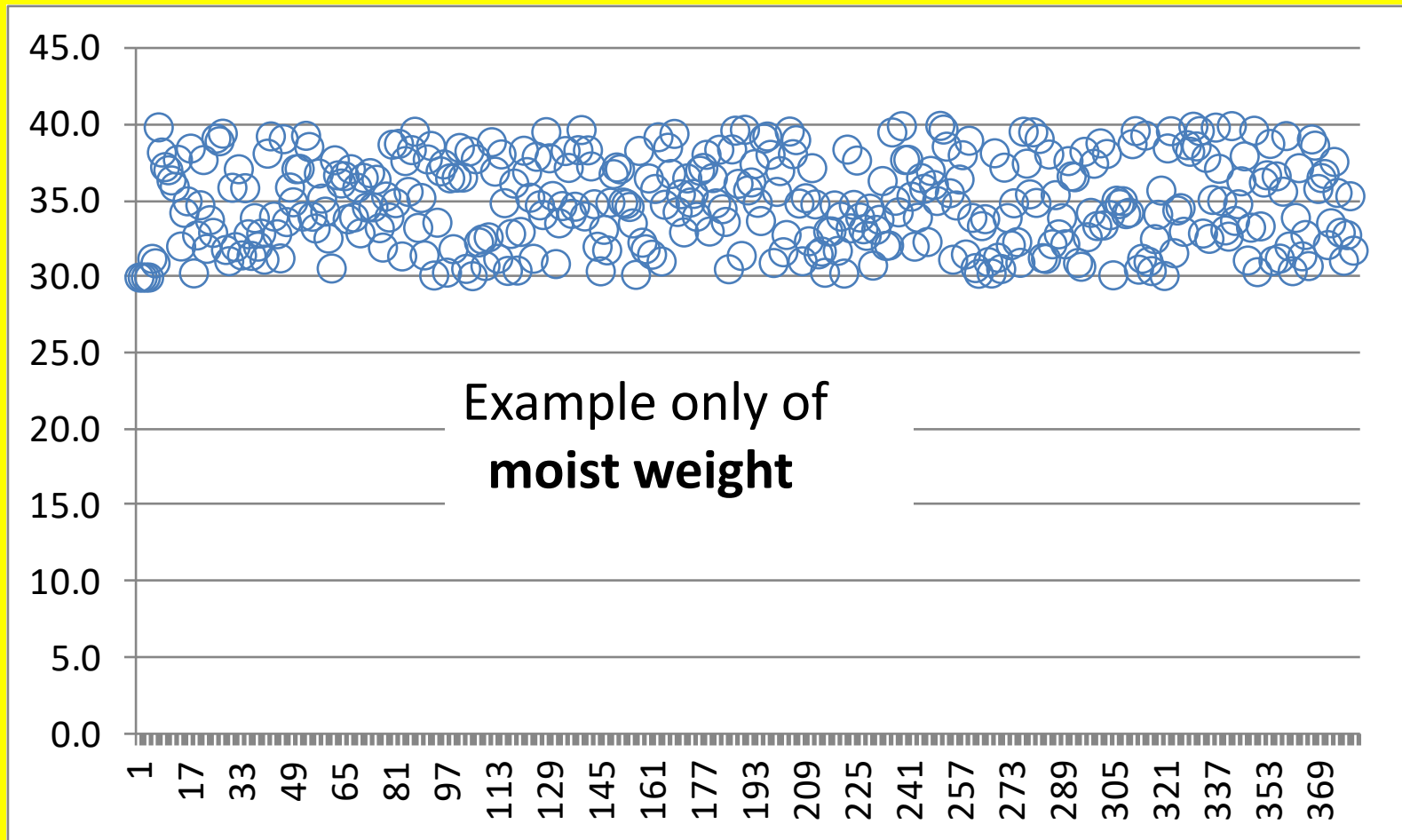


Using the “Julian Date” will smooth out the adjustments by day, so it does not make sudden changes.

Date of Delivery	Julien day	J. year
6/15/2016	16167	16000
This day =	167	

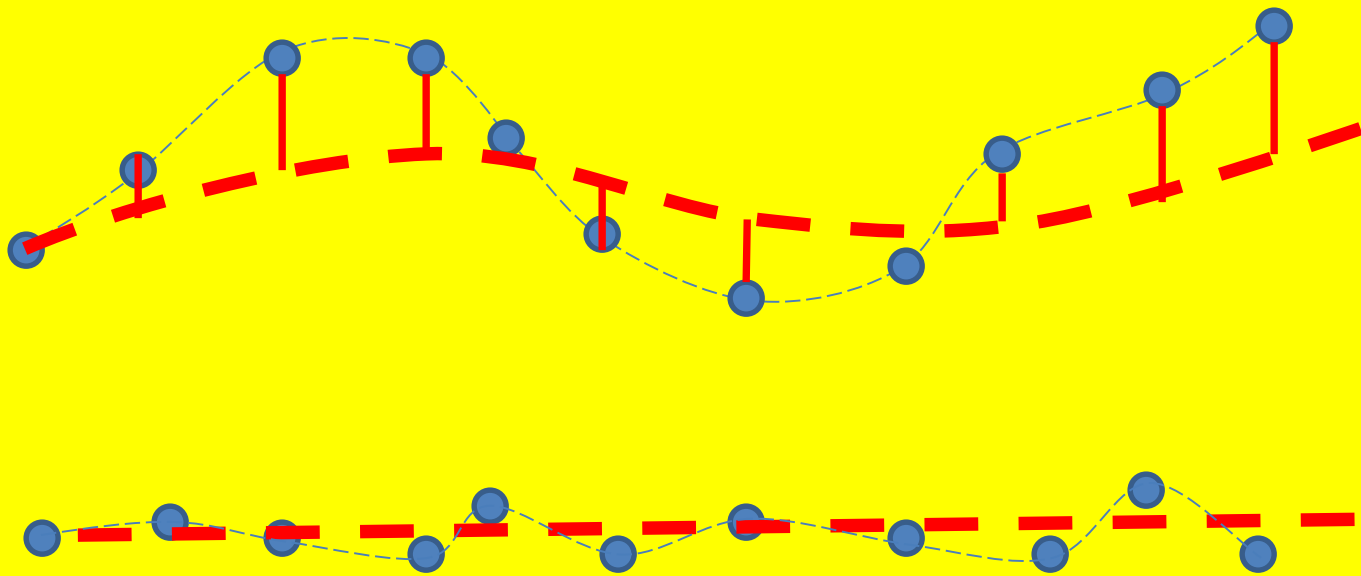
day's rate		kg		Tonnes
1.03931	*	45,600	= →	44.1
Truck Ratio		adjusted		
0.93000	→	0.97	↗	adjusted
		average		weight

The yearly trend is now gone



This has less variability (as measured by CV of the ratio), and eliminates several problems with rolling averages and yearly trend.

If you use a “rolling average”, it lags the trend, so you have to reduce the lag in some way (**level the data**).



I personally have little time for
rolling averages ...

but the stability makes people feel
better (even when it is not to
their advantage).

You are still left with variability on shorter time scales, and I think the solution to that is the “**previous load expansion**” in Matt’s book.

Thank You