BONUS PLANS AND THE CAPABILITY INDEX

WHY SHOULD I TWEAK MY BONUS PLAN?

You already know that a bonus plan (variable pay) is a strategic part of a complete compensation system. A bonus plan that is set only from external, centralized specifications doesn't capture the benefit of cultivating a unique enterprise at each location. Targeted performance goals, tailored for each operation, add value to the entire organization and develops each property as a destination spot.
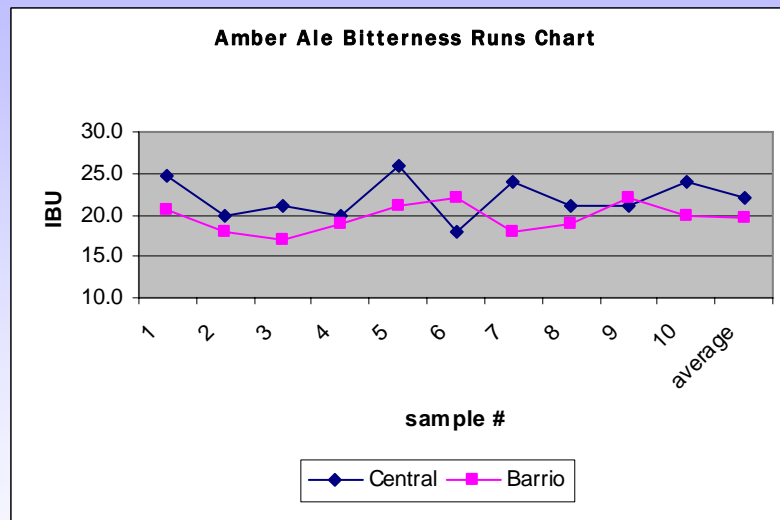
Let's look at two locations, **Barrio** and **Central**, each making **BetterBrewed Amber Ale** from a common recipe with calculated IBU of 22.   Both made 10 batches in a month.

	1	2	3	4	5	6	7	8	9	10	average
Central	24.8	20	21	20	26	18	24	21	21	24	22.0
Barrio	20.7	18	17	19	21	22	18	19	22	20	19.7

Bitterness measurements, Amber Ale

With a spec range of ±1 IBU from the target of 22, the Central brewer makes payout, but the Barrio brewer misses it. Now, ±1 is too tight a spec, but you get the picture: if we look at just the average, Central is doing better than Barrio.

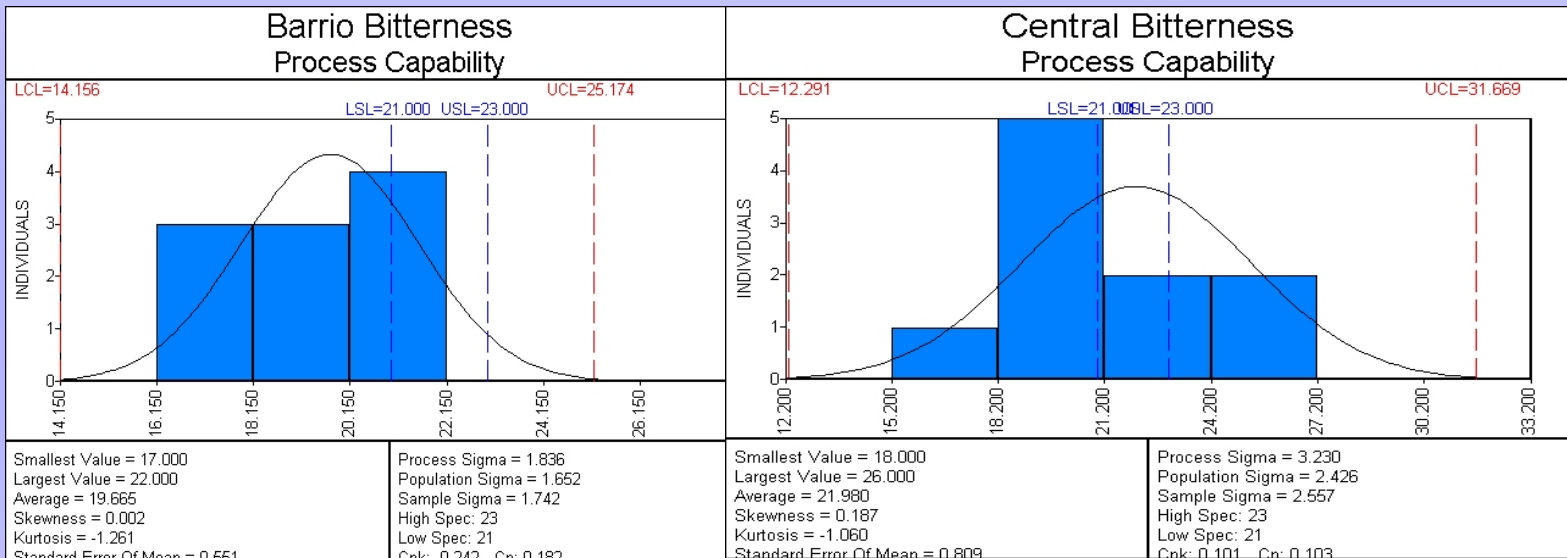Once charted, Barrio is indeed running a little lower than the 22 target.

But, the Central process seems choppier. The swing between batches is often bigger.

Let's pursue the swing on the next page. . .

The swing or spread between data points is collectively known as variance. There are many ways to calculate variance. To keep it simple, variance is a measure of how different a value is from the mean (aka average.) The Barrio and Central Amber Ale IBU data, below, now includes the standard deviation (which is a common way to calculate variance.)

	1	2	3	4	5	6	7	8	9	10	average	standard deviation
Central	24.8	20	21	20	26	18	24	21	21	24	22.0	2.43
Barrio	20.7	18	17	19	21	22	18	19	22	20	19.7	1.65

This illustrates the concepts of accuracy and precision. Central is accurate, Barrio precise. Who should be rewarded for what? What does the market prefer? Which process is better able to respond to changes in a predictable fashion? To empower individuals and improve the processes they control, both these concepts are important. Advances in Statistical Process Control have created a single value that tracks both accuracy and precision; the **Capability Index (CpK.)** Here's how Central and Barrio look in a CpK chart:

Barrio Cpk = -0.242, Central CpK=0.101, so accuracy is weighted more heavily than precision in the CpK calculation. Spec Limits (LSL, USL in blue) are entered in manually. Give serious thought to these Limits, tie them to the market. Another important set of limits are given in red: Upper and Lower Control Limits (LCL, UCL.) These limits are calculated from the 10 data points and represent 3 standard deviations from the average (aka 6 Sigma.)

Bonus plan goals should be tailored to each of these locations. Barrio can address a systematic error that produces low IBU values. It should do so in a way that protects it's consistency. Central can focus on consistency, but not in a way that will skew it from hitting target. Both brewers can negotiate a more reasonable spec limit. The lab can barely guarantee it can hit those targets. A good rule of thumb is Cpk=1.00 is adequate, 1.33 is sustainable in today's marketplace.

Software used here is from Quality America (www.qualityamerica.com) and is fully compatible as an Add-In to EXCEL. Once the data are in a spreadsheet, it's no harder to make a Cpk Chart than it is any other graph. Many other software options are available. We're happy to integrate our work into any electronic machination you choose. Contact us for a FREE TRIAL.