U Chart Control Charts

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SPC Trending Primer/ Two Day Training

http://www.efcog.org/wg/esh_es/Statistical_Process_Control/index.htm

U Charts

- **The U chart is a specialized chart**

- **Most common use is occupational injury cases per 200,000 hours worked**

- **Counting events or defects per area of opportunity**

http://www.efcog.org/wg/esh_es/Statistical_Process_Control/docs/uchart.pdf

Excel Data

- **Open file U_chart.xls**

- **This is the OSHA recordable cases per 200,000 hours for the entire Department of Energy**

- **It is real data.**

Data Structure

- **Note that we track the number of cases and the hours separately.**

- **Don't just record the rates, record both numbers**

Calculate the Baseline Average

- **Calculate the baseline averages by summing up the numerators, and summing up the denominators, and then divide.**

- **Apply this as a horizontal line on the chart.**

Calculate the Standard Deviation

- **For this chart, we use a variation on the Poisson standard deviation**

- **That is equal to the square root of the average divided by the number of trials**

- **= sqrt (ubar / n)**

The UCL and LCL Vary!

- **Note that the UCL and LCL lines "sawtooth".**

- **The more trials, the closer to the average, the less, the farther away.**

- **Physical Example:**
  - 3 heads in 10 coin flips is "okay"
  - 30 in 100 is not
  - Note both are 30% heads, but differing number of coin flips (n)

Warning!

- **Just because the data are rates or ratios does not imply it is a u chart**

- **There must be individual and independent events**

- **Inappropriate for u charts:**
  - Number of days away from work DAYS per 200,000 hours