Defects Per Unit u Chart

Like the count of defects c Chart described in the previous section, the u Chart describes the number of defects per unit. It is assumed that the number of units observed is the same for all samples. We will use the file labeled Defects.LAZ as our example. In this set of data, 28 observations of defects for 1000 units each are recorded. The assumption is that defects are distributed as a Poisson distribution with the mean given as

 $\frac{\Sigma c}{u = \frac{\Sigma c}{\sum n}}$ where c is the count of defects and n is the number of units observed.

and

$$UCL = \overline{u} + \operatorname{sigma} / ------ \\ \sqrt{n} \qquad \text{and } LCL = \overline{u} - \operatorname{sigma} / ------ \\ \sqrt{n} \qquad \sqrt{n}$$

The specification form and results for the computation following the click of the Compute button are shown below:

🍯 Defects per Unit U Ch	art 🗧 🗖 🗙
Directions: Click on the varia the number inspected in eac size. Click on the sigma butt optional check boxes and er button to obtain the results.	able that represents the count of defects. Enter th subgroup (lot). Note - all groups are of equal ton to change the default and click on any of the nter specifications desired. Click the Compute
Selection Variables: Defects	Number inspected per group: 1000 No. of Sigman Units for UCL and LCL: 3 Sigmas (default) 2 Sigmas 1 Sigma X Sigmas where X =
Measurement Variable: Defects	Options: Print × BAR Plot on Printer
Reset Cancel	[Compute] Return

Figure 1 Specification Dialog for an SPC Defects per Unit (U) Chart

1	12.00	0.01
2	15.00	0.01
3	8.00	0.01
4	10.00	0.01
5	4.00	0.00
6	7.00	0.01
7	16.00	0.02
8	9.00	0.01
9	14.00	0.01
10	10.00	0.01
11	5.00	0.01
12	6.00	0.01
13	17.00	0.02
14	12.00	0.01
15	22.00	0.02
16	8.00	0.01
17	10.00	0.01
18	5.00	0.01
19	13.00	0.01
20	11.00	0.01
21	20.00	0.02
22	18.00	0.02
23	24.00	0.02
24	15.00	0.01
25	9.00	0.01
26	12.00	0.01
27	7.00	0.01
28	13.00	0.01
29	9.00	0.01
30	6.00	0.01
Total No	nconformities	= 347.00
No. of s	ampies = 30	0.010
Dei. / u	nıt mean =	0.012 and variance = 0.003

Sample No Defects Defects Per Unit



Figure 2 An SPC U Chart