

BREAKDOWN TIMES

5. Describing the Breakdown Times

SPSS produces the following tables of descriptive statistics for the breakdown times of the seven experimental groups:

	STATISTICS	Voltage Level (kV)			
		26	28	30	32
CENTER	MEAN	1303.003	356.220	75.782	41.163
	MEDIAN	1579.520	110.290	43.400	13.950
	5% TRIM MEAN		332.664	72.944	33.771
	95% CI FOR MEAN	(0, 4242.8)	(0, 881.4)	(27.4, 124.1)	(8.0, 74.3)
SPREAD	STANDARD DEV.	1183.440	422.928	71.906	59.753
	STD ERROR	683.258	189.132	21.680	15.428
	VARIANCE	1400523	178868.2	5170.449	3570.372
	IQR		658.265	123.660	82.060
	MINIMUM	5.790	68.850	7.740	0.270
	MAXIMUM	2323.700	1067.600	194.900	215.100
	RANGE	2317.910	998.750	187.160	214.830
SHAPE	SKEWNESS	-0.994	1.688	0.726	2.014
	ST. ERROR SKEW	1.225	0.913	0.661	0.580
	KURTOSIS		2.564	-1.417	4.447
	ST. ERROR KURT		2.000	1.279	1.121
COUNT		3	5	11	15

	STATISTICS	Voltage Level (kV)		
		34	36	38
CENTER	MEAN	14.359	4.606	0.916
	MEDIAN	6.500	2.580	0.735
	5% TRIM MEAN	11.894	3.682	0.881
	95% CI FOR MEAN	(5.25, 23.46)	(0.93, 8.28)	(0.31, 1.53)
SPREAD	STANDARD DEV.	18.880	6.630	0.722
	STD ERROR	4.332	1.712	0.255
	VARIANCE	356.472	43.961	0.521
	IQR	28.97	3.000	0.923
	MINIMUM	0.190	0.350	0.090
	MAXIMUM	72.890	25.500	2.380
	RANGE	72.700	25.150	2.290
SHAPE	SKEWNESS	1.968	2.707	1.240
	ST. ERROR SKEW	0.524	0.580	0.752
	KURTOSIS	4.0851	7.534	1.709
	ST. ERROR KURT	1.0143	1.121	1.481
COUNT		19	15	8

As we expected, breakdown times tend to decrease as the voltage increases. However, the breakdown times decrease exponentially. Mean time until breakdown was longest for the 26 kV group 1 (1303.003), and shortest for the 38 kV group (0.916). Median time until

breakdown follows the same pattern. The longest breakdown time was for a batch from the 26 kV group (2323.70).

The variability in each group changes as the voltage level increases. The standard deviation decreases as the voltage level increases, it is very large for low voltages and relatively small for high voltages.