Generating Power Curves for z-Tests

The student of statistics learns that "power" of a statistical test involves the sensitivity of the test for accepting the null hypothesis when, in fact, one should. It is obtained as 1.0 - beta where beta is the probability of making a Type II error (accepting the null hypothesis due to random sampling variability when one should have rejected.) This power is a function of the alpha rate accepted by the researcher (probability of a Type I error) as well as the difference between the null and alternative hypothesized statistic and the standard deviation of the statistic (which is, itself, a function of sample size.)

This procedure plots the power curves for various levels of Type I error given the standard deviation of the statistic. Shown below is the specification form for the plot and the results obtained.

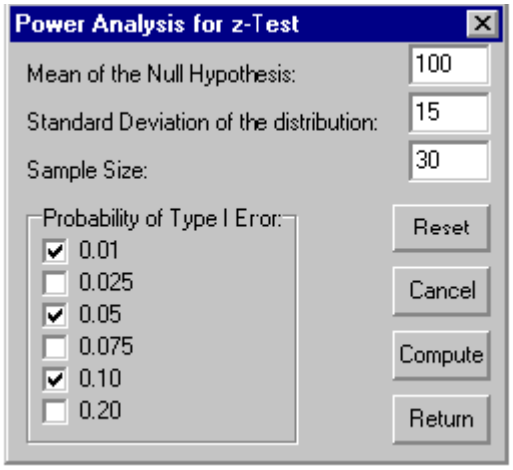

Figure 1 Power Curves Dialog

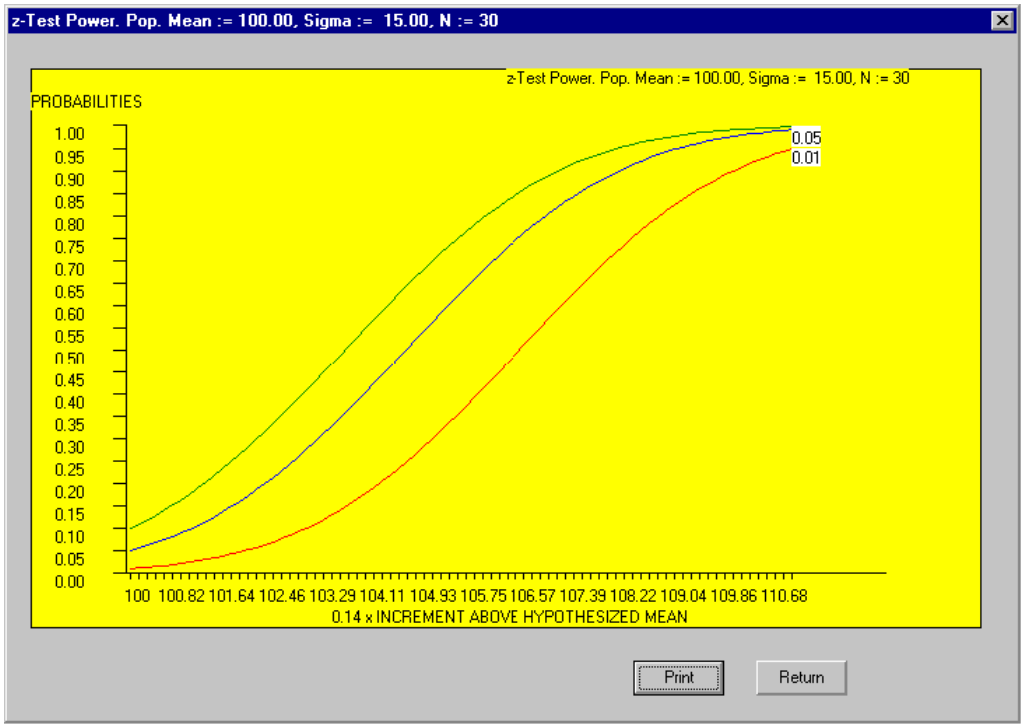

Figure 2 Power Curves for Three Levels of Alpha

Power of the z-test for Alternate Hypotheses

Alpha Levels:	0.01	0.05	0.10
X := 100.00	0.010	0.050	0.100
X := 100.14	0.011	0.055	0.109
X := 100.27	0.013	0.061	0.119
X := 100.41	0.015	0.068	0.129
X := 100.55	0.017	0.074	0.140
X := 100.68	0.019	0.082	0.151
X := 100.82	0.021	0.089	0.163
X := 100.96	0.024	0.098	0.176
X := 101.10	0.027	0.107	0.189
X := 101.23	0.030	0.116	0.203
X := 101.37	0.034	0.126	0.217
X := 101.51	0.038	0.137	0.232
X := 101.64	0.042	0.148	0.248
X := 101.78	0.047	0.160	0.264
X := 101.92	0.052	0.172	0.280
X := 102.05	0.058	0.185	0.298
X := 102.19	0.063	0.199	0.315
X := 102.33	0.070	0.213	0.333
X := 102.46	0.077	0.228	0.351
X etc.			