

$$\hat{P} \pm z_{1-\frac{\alpha}{2}} \sqrt{\frac{\hat{P}(1-\hat{P})}{M}}$$

This formula is implemented in the S function `merror` for “margin of error.”

```
merror <- function(phat,m,alpha) # (1-alpha)*100% merror for a proportion
{
  z <- qnorm(1-alpha/2)
  merror <- z * sqrt(phat*(1-phat)/m) # m is (Monte Carlo) sample size
  merror
}
```

Table 1: Monte Carlo Sample Size Required to Estimate Power with a Specified 99% Margin of Error

Margin of Error	Power Being Estimated					
	0.70	0.75	0.80	0.85	0.90	0.99
0.10	140	125	107	85	60	7
0.05	558	498	425	339	239	27
0.01	13,934	12,441	10,616	8,460	5,972	657
0.005	55,734	49,762	42,464	33,838	23,886	2,628
0.001	1,393,329	1,244,044	1,061,584	845,950	59,7141	65,686