Question : In one state, 52% of the voters are Republicans, and 48% are Democrats. In a second state, 47% of the voters are Republicans, and 53% are Democrats. Suppose a simple random sample of 100 voters are surveyed from each state.

What is the probability that the survey will show a greater percentage of Republican voters in the second state than in the first state?

Answer : **Mean of the difference in sample proportion of Republicans of state1 and state2 = 52% - 47% = 5% = 0.05**

**Standard deviation of the difference between state1 and state2 = sqrt((0.52\*0.48)/100 + (0.47\*0.53)/100) = 0.0706**

**To find that percentage of republicans in state2 to be more than that of state1 is equivalent of finding the probability that state1 - state2 is less than 0.**

**Referring** [**http://www.z-table.com/**](http://www.z-table.com/) **, Zscore = (0 - 0.05)/0.0706 = -0.7082 and the corresponding percentage probability is 0.24**