

M. Singh

Scenario:

Marine scientists say 10% of world's reef systems have been destroyed.

→ pollution, global warming, outright destruction, ocean acidification etc. may take out 70% of the reefs in 40 yrs

→ 1 lab sampled sea fans at 19 locations along Yucatan Peninsula.

→ Found 54/104 sea fans infected with a disease in the sample collected at depth of 40ft at Las Redes Reef in Akumal, Mexico.

We care about the health of coral reef communities throughout the Caribbean. What can this study tell us about the prevalence of disease among sea fans?

This is one sample only

$$\text{Sample proportion } \hat{p} = \frac{54}{104} = 51.9\%$$

Due to sampling variability another sample of 104 sea fans taken at same time might not give the same p-hat

How can we find the actual population proportion?

What can we even say about P with all the sampling variability?

**Imagine how sample proportions might vary from sample to sample

Central Limit Theorem assures us that our model for sampling distributions is approximately normal given certain assumptions are satisfied.

Is $p = 51.9\%$? No! $\hat{p} = 51.9\%$ This is just one estimate



