

8. Measurements for the heights and weights of adults are used in designing products. One data set for a randomly selected group of 40 adult American males has a sample standard deviation of 26.3 pounds. Test the claim that this sample is different from a population standard deviation for all American males of 28.7 pounds. Does this sample suggest that the known standard deviation might be too high? Explain.

√Claim	$H_0: \sigma = 28.7$	<u>Sample Data</u>
√Data	$H_1: \sigma \neq 28.7$ ← claim	n = 40
√ α		s = 26.3
√TS	$\sigma = 0.05$ (our choice)	
√P-Value		
√Con		

Test Statistic

$$\chi^2 = \frac{(n-1)s^2}{\sigma^2} \quad \chi^2 = \frac{(39)(26.3)^2}{(28.7)^2} \quad \chi^2 \approx \boxed{32.75}$$

P-Value $\approx \boxed{0.501}$

Fail to Reject H_0

There is NOT sufficient evidence to support the claim that this sample is different from population standard deviation for all American males of 28.7 pounds.

No, this data does not suggest a significance difference in the population standard deviation. We failed to support the claim of a difference.