When conducting a hypothesis test, are the population parameters (mean and variance) usually known? Explain.

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Parameters are descriptive measures of an entire population. With respect to that statement, their values are usually unknown because it can be humanly impossible to measure an entire population that falls specifically under the requirements to record data. As a result, that is why most statisticians take a random sample from the population to obtain parameter estimates and further proceed using those sample estimates.

In some cases, it is feasible to obtain results of an entire population such as recording students’ BMI for the entire school. However, when conducting a hypothesis test in practice, it can become very tiresome and unfeasible to calculate the distribution of the sampling distribution. Even in the most favourable circumstances whereby the entire population of the samples are known, we may not be able to determine the exact sampling distribution of the sample statistic of interest. That can be another reason why the population parameters are unknown as the data may not be able to help determine the sample statistic of interest. Hence, this could result in respective statisticians choosing not to invest the time and effort to collecting the entire population’s data.

In conclusion, if one chooses to sample from a population other than normal population, it may result in being unable to determine the exact distribution of the sample mean. Despite that, due to the central limit theorem, the sample mean normally distributed, provided the sample size are large enough.

Thank You and Have a Nice Day! :)