1. A fisherman breeds red tilapias in a pond in Sungai Terengganu. He claims that the mean weight of the red tilapias exceeds 1.2 kg. Assume that the weight of the population of red tilapias is approximated normal. A random sample of 5 red tilapias was taken from his pond, and their weights were 1.1, 1.2, 1.3, 1.2 and 1.4 kg, respectively. Test at α = 0.05 whether the fisherman's claim is reasonable.

2. For 80 randomly selected men, 30 regularly bicycled to campus; while for 100 randomly selected women, 20 regularly bicycled to campus. Test $H_0: p_1 = p_2$ vs. $H_1: p_1 > p_2$ at 0.05 level of significance.

3. The PlantGrowth dataset are results from an experiment on the growth of plants with different treatments. A researcher wants to know if the average weights of the plants in the three experimental circumstances vary significantly. Perform a test to find out the answer for him.

4. Based on the `Salaries` dataset in the `car` package, build a simple linear model for the salaries of professors against the years of service, i.e `salary` as the dependent variable and `yrs.service` as the independent variable. Then build a multiple linear regression with an additional independent variable of `yrs.since.phd` and a dummy variable model with both `yrs.service` and `rank` as independent variables. Write down the equation for the 3 models and compare them.