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# Introduction:

This study is carried out to assess the performance of the US program Supplementary Nutrition Assistance Program (SNAP). The program allocates Federal and State funds to help low-income women and children up to age five who are at nutritional risk. Funds are used to provide supplemental foods, baby formula, health care, and nutrition education.

## Dataset:

The dataset used was taken by website <https://www.kaggle.com/jpmiller/publicassistance>

This program is designed to provide food assistance to low income families. The data covered the years 1969 to 2019. It includes the following variables:

Fiscal Year

Average Participation (in Thousands)

Average Benefit Per Person (Dollars)

Total Benefits (Million Dollars)

All other Costs (Million Dollars)

Total Costs (Million Dollars)

The dataset can benefit greatly from additional content. Economics, additional demographics, administrative costs and more.

## Research Questions:

The research question for this study is “is the average benefit per person is significantly different from 60$ or not for SNAP?”

Here, we want to analyses does SNAP offers true benefit to the participants or not.

## Formulation of Null and Alternative Hypotheses

**Null hypothesis**

H0: µ=60

Average benefit per person is 60$

**Alternative Hypothesis:**

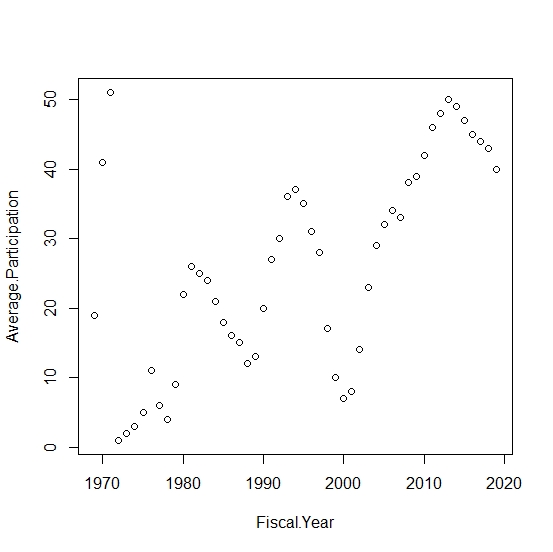
Average benefit per person is not 60$.

H1: µ≠60

# Visualization:

Different visualization was used in this study to assess the true picture of data.

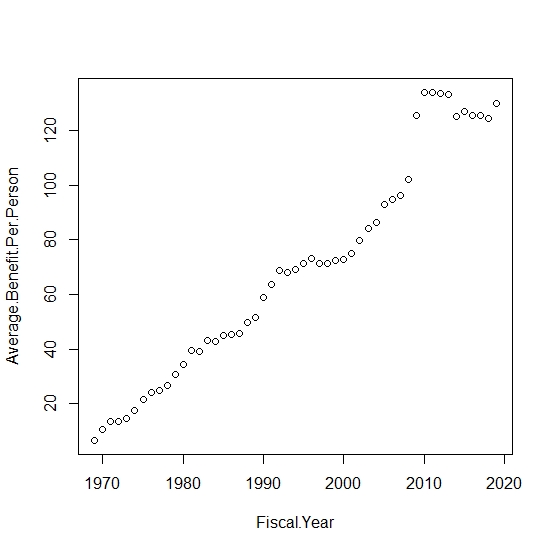
A Fiscal Year plot vs Average Participation (in Thousands) was visualized as



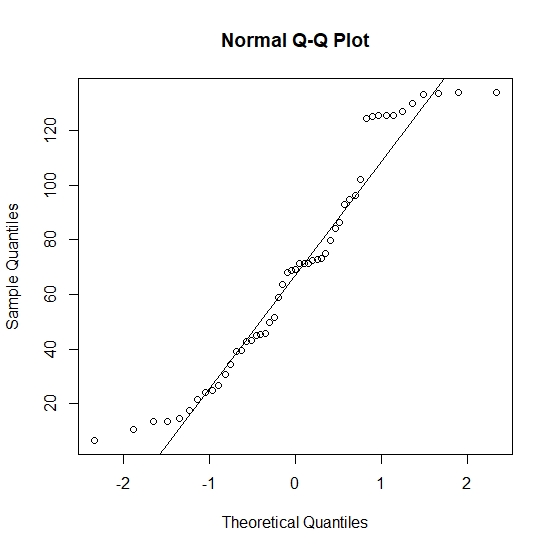
Average participation rate in 1970 was least. Some outliers can be seen in 1970-1973. As the years increases from 1970 average participation rate also increases. The most participation was seen in year 2013.

Another plot that was generated, “Fiscal Year VS Average Benefit Per Person”.

Here, an increasing pattern can be seen. With passage of time, the amount of average benefit person is increasing. So, SNAP was benefiting more in recent years.



The Normal Q-Q plot was examined to verify the assumptions normality of data. Here, the pattern shows normal trend. So, on applying Z-test as our analysis scheme, we are not violating the assumption of normality.



# Analysis:

We have used one sample z-test as our dataset was > 30.

We used this test to address our research question that is average participation is different from 60 or not?

We have used Z-test with unknown variance. We have used sample variance.

The steps of testing are given as

## Formulation of Null and Alternative Hypotheses

**Null hypothesis**

H0: µ=60

Average benefit per person is 60$

**Alternative Hypothesis:**

Average benefit per person is not 60$.

H1: µ≠60

## Significance level

ɑ=0.05

## Test Statistic

## Critical Region:

We reject H0 when P(|Z|>|Zobs|) <α.

## Calculations:

We calculated Z-statistic and p-value using R.

And p-value=0.1010

# Conclusion:

As, the p-value is greater than alpha, so we fail to reject H0 and conclude that average benefit per person is not significantly different from 60$. So, we can conclude that on average a person received 60$ benefit.