**Business Problem**

The new scheme is expensive for the company but they are looking for sales increases which more than compensate.Hence they would like early evidence of effectiveness of the scheme.

**Ho (**null hypothesis**):**

Sales (sum assured of the policies sold) using the **new scheme** <= Sales (sum assured of the policies sold) using the **old scheme**

**Ha (**alternative hypothesis**):**

Sales (sum assured of the policies sold) using the **new scheme** > Sales (sum assured of the policies sold) using the **old scheme**

**Conclusion**

**Data is normally distributed**

# Check for normality for sum assured based on the old scheme

# Null hypothesis is true (data is normally distributed)

shapiro.test(insurance$Old.Scheme)

Shapiro-Wilk normality test

data: insurance$Old.Scheme

W = 0.98851, p-value = 0.9814

# Check for normality for sum assured based on the new scheme

# Null hypothesis is true (data is normally distributed)

shapiro.test(insurance$New.Scheme)

Shapiro-Wilk normality test

data: insurance$New.Scheme

W = 0.96876, p-value = 0.5057

**Do not reject Ho at a level of significance at 5%:** Sales using the **new scheme** is not effective.

# We use a paired t-test we can identify if the new scheme is more effective than an old scheme. Here we use a Paired t-test as we have the sum assured sales for the same employee across two schemes

t.test(insurance$New.Scheme, insurance$Old.Scheme, alternative = "greater", paired = TRUE, conf.level = 0.95)

Paired t-test

data: insurance$New.Scheme and insurance$Old.Scheme

t = 1.5559, df = 29, p-value = 0.06529

alternative hypothesis: true difference in means is greater than 0

95 percent confidence interval:

-0.3681762 Inf

sample estimates:

mean of the differences

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**Reject Ho at a level of significance at 10%:** Sales using the **new scheme** is effective

t.test(insurance$New.Scheme, insurance$Old.Scheme, alternative = "greater", paired = TRUE, conf.level = 0.90)

Paired t-test

data: insurance$New.Scheme and insurance$Old.Scheme

t = 1.5559, df = 29, p-value = 0.06529

alternative hypothesis: true difference in means is greater than 0

90 percent confidence interval:

0.6285198 Inf

sample estimates:

mean of the differences

4

Hence at **5%** level of significance there is **not enough statistical evidence** that sales using the new scheme is more than that of the old scheme.

However at **10%** level of significance there **is statistical evidence** that sales using the new scheme is more than that of the old scheme.