Advertising Analysis

We want to check whether the average sales for Ad2 is 30,000 units.

Hypothesis:

Population mean = 30, 000

n = 15

Step 1: Null and alternative hypothesis as follows:

Ho is our null hypothesis which is "The average sale is 30,000 units"

Ho: $\mu s = 30{,}000$

Ha is our alternative hypothesis if Ho is concluded to be untrue.

Ha: $\mu s \neq 30{,}000$

Let's find the mean, median to have a good understanding about our dataset.

```
#Summary Statistics (Mean, Median)
summary(adanalysis$adtype2)
```

```
Min.   :31960  1st Qu.:34765  Median :40120  Mean   :41933  3rd Qu.:48705  Max.   :56950
```

Mean and Median is very close to each other, this shows that the data is normal distribution.

Step 2: The significance level = 0.05 (p-value)

Step 3: We are going to use two-tail test, because there is an indication "the average sales for Ad2 is 30,000 units" in the question.

```
#One Sample t-test - two-tail
t.test(adanalysis, mu=30000)
```

```
One Sample t-test
data:  adanalysis
t = 5.3831, df = 14, p-value = 9.651e-05
alternative hypothesis: true mean is not equal to 30000
95 percent confidence interval:
37178.73 46687.94          #As you see that 30,000 is not between 37178.73 and 46687.94
sample estimates:
mean of x
 41933.33
```

Step 4: Findings and Conclusion

Since p-value of 9.651e-05 is much lower than 0.05 confidence interval, therefore we reject the null hypothesis that $\mu = 30{,}000$.

Another point is that the mean 30,000 is not between the confidence intervals which are 37178.73 and 46687.94. This also proves that we reject the null hypothesis.

We proved that Ad2 has an significant effect on Apple 11 Pro sales. Apple can stop paying for Ad1 and invest more on Ad2 to increase sales.