T-test

Code

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task 1: Load built-in sleep data set

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```
sleep
```

extra <dbl>	group <fctr>	ID <fctr>
0.7	1	1
-1.6	1	2
-0.2	1	3
-1.2	1	4
-0.1	1	5
3.4	1	6
3.7	1	7
0.8	1	8
0.0	1	9
2.0	1	10

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task 2:Making a wide version of the sleep data; below we'll see how to work with data in both long and wide formats

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```
sleep_wide <- data.frame(
    ID=1:10,
    group1=sleep$extra[1:10],
    group2=sleep$extra[11:20]
)
sleep_wide
```

ID <int>	group1 <dbl>	group2 <dbl>
1	0.7	1.9
2	-1.6	0.8
3	-0.2	1.1
4	-1.2	0.1
5	-0.1	-0.1

ID <int>	group1 <dbl>	group2 <dbl>
6	3.4	4.4
7	3.7	5.5
8	0.8	1.6
9	0.0	4.6
10	2.0	3.4

1-10 of 10 rows

Compare two samples using T-test

task 1:Welch t-test

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```
t.test(extra ~ group, sleep)
```

```
    Welch Two Sample t-test

data:  extra by group
t = -1.8608, df = 17.776, p-value = 0.07939
alternative hypothesis: true difference in means between group 1 and group 2 is not equal to
0
95 percent confidence interval:
 -3.3654832  0.2054832
sample estimates:
mean in group 1 mean in group 2
           0.75            2.33
```

task 2: Student t-test

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```
t.test(extra ~ group, sleep, var.equal=TRUE)
```

```
    Two Sample t-test

data:  extra by group
t = -1.8608, df = 18, p-value = 0.07919
alternative hypothesis: true difference in means between group 1 and group 2 is not equal to
0
95 percent confidence interval:
 -3.363874  0.203874
sample estimates:
mean in group 1 mean in group 2
           0.75            2.33
```

Q1:What is the p-value of the t-test?

0.s- The p value of t-test is 0.07919

Q2:If significance level (∝) equals 0.05, do you accept alternative hypothesis (or reject null hypothesis)

Ans- If the p-value is less than or equal to 0.05, you reject the null hypothesis and accept the alternative hypothesis, indicating statistical significance. If the p-value is greater than 0.05, you do not reject the null hypothesis, meaning there isn’t enough evidence to support the alternative hypothesis.