```
## Warning: package 'reticulate' was built under R version 4.2.3
```

Question

Suppose that the following simple linear regression model has been fitted to the Taiwan real estate data from topic 05:

$$Y = \beta_0 + \beta_1 \ln(X_1) + e$$

where X_1 corresponds to distance to the nearest MRT. The following output was obtained from Python:

```
##                             OLS Regression Results
## ==============================================================================
## Dep. Variable:                  price   R-squared:                       0.539
## Model:                            OLS   Adj. R-squared:                  0.538
## Method:                 Least Squares   F-statistic:                     482.2
## Date:                Mon, 08 Sep 2025   Prob (F-statistic):           2.52e-71
## Time:                        16:28:40   Log-Likelihood:                -1507.3
## No. Observations:                 414   AIC:                             3019.
## Df Residuals:                     412   BIC:                             3027.
## Df Model:                           1
## Covariance Type:            nonrobust
## ==============================================================================
##                  coef    std err          t      P>|t|      [0.025      0.975]
## ------------------------------------------------------------------------------
## Intercept     95.0169      2.637     36.034      0.000      89.833     100.200
## ldist         -8.9235      0.406    -21.959      0.000      -9.722      -8.125
## ==============================================================================
## Omnibus:                      178.772   Durbin-Watson:                   2.109
## Prob(Omnibus):                  0.000   Jarque-Bera (JB):             1764.720
## Skew:                           1.566   Prob(JB):                         0.00
## Kurtosis:                      12.617   Cond. No.                         38.5
## ==============================================================================
##
## Notes:
## [1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
```

What is the null hypothesis corresponding to the t-statistic with value -21.959?

Answerlist

- $H_0: \ \beta_1 = 0$
- $H_0: \ \beta_0 = 0$
- $H_0: \ \hat{\beta}_1 = 0$
- $H_0: \ \hat{\beta}_0 = 0$

Solution

Answerlist

- This is correct.

- This corresponds to the test for the intercept in the model, not the coefficient for `ldist`.
- Hypothesis tests are for population parameters, not estimates, which are denoted with a hat symbol.
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Meta-information

exname: regression, inference, taiwan extype: schoice exsolution: 1000 exshuffle: 4