# Testing – 6.3 $t$-tests

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*Practice quiz*

The estimation results for some specification for the Boeing dataset (`airline.dat`) are summarized in Table 1.

| Parameter number | Description | Coeff. estimate | Robust Asympt. std. error | $t$-stat | $p$-value |
|---|---|---|---|---|---|
| 1 | One stop–same airline dummy | -1.17 | 0.278 | -4.19 | 0.00 |
| 2 | One stop–multiple airlines dummy | -1.45 | 0.292 | -4.98 | 0.00 |
| 3 | **Elapsed time (hours) (non stop)** | -0.341 | 0.0854 | -3.99 | 0.00 |
| 4 | **Elapsed time (hours) (one stop–same airline)** | -0.291 | 0.0822 | -3.54 | 0.00 |
| 5 | **Elapsed time (hours) (one stop–multiple airlines)** | -0.310 | 0.0802 | -3.87 | 0.00 |
| 6 | Round trip fare ($100) | -1.78 | 0.151 | -11.84 | 0.00 |
| 7 | Leg room (inches), if male | 0.108 | 0.0232 | 4.65 | 0.00 |
| 8 | Leg room (inches), if female | 0.132 | 0.0221 | 5.99 | 0.00 |
| 9 | Being early (hours) | -0.151 | 0.0188 | -8.02 | 0.00 |
| 10 | Being late (hours) | -0.0960 | 0.0167 | -5.73 | 0.00 |
| 11 | More than 2 air trips per year (one stop–same airline) | -0.307 | 0.141 | -2.18 | 0.03 |
| 12 | More than 2 air trips per year (one stop–multiple airlines) | -0.0910 | 0.157 | -0.58 | 0.56 |
| 13 | Male dummy (one stop–same airline) | 0.199 | 0.126 | 1.59 | 0.11 |
| 14 | Male dummy (one stop–multiple airlines) | 0.293 | 0.132 | 2.21 | 0.03 |
| 15 | Round trip fare / income ($100/$1000) | -24.0 | 8.09 | -2.97 | 0.00 |

**Summary statistics**

Number of observations = 2544

$$
\begin{aligned}
\mathcal{L}(0) &= -2794.870 \\
\mathcal{L}(c) &= -2203.160 \\
\mathcal{L}(\widehat{\beta}) &= -1641.932 \\
-2[\mathcal{L}(0) - \mathcal{L}(\widehat{\beta})] &= 2305.875 \\
\rho^2 &= 0.413 \\
\bar{\rho}^2 &= 0.407
\end{aligned}
$$

Table 1: Estimation results

Moreover, we also provide the file `v634_Boeing_M0.html` associated with this specification.

1. Test the null hypothesis that the true value of the coefficient of the variable "being early" is zero?

2. Test the null hypothesis that the coefficients of the variables "elapsed time" for alternatives "non stop" and "one stop–same airline" are equal.

3. Test the null hypothesis that the coefficients of the variables "elapsed time" for alternatives "non stop" and "one stop–multiple airlines" are equal.

4. Test the null hypothesis that the coefficients of the variables "elapsed time" for alternatives "one-stop–same airline" and "one stop–multiple airlines" are equal.