

Regression

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$$\text{Turnout}_{it} = \beta_0 + \beta_1 \text{Youth Unemployment Rate}_{it} + \epsilon_{it}$$

where i represents each of the 17 regions plus two Autonomous cities of Spain and t represents each of the years we have data for $t = 2004, 2008, 2011, 2015$

```
summary(Reg1)
```

```
##
## Call:
## lm(formula = Turnout ~ Unempl_rate_less25, data = Spain_data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.16960 -0.03690  0.01063  0.04226  0.09288
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.7992339   0.0171272   46.665 < 2e-16 ***
## Unempl_rate_less25 -0.0022214  0.0004454  -4.988 3.92e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.05698 on 74 degrees of freedom
## Multiple R-squared:  0.2516, Adjusted R-squared:  0.2415
## F-statistic: 24.88 on 1 and 74 DF,  p-value: 3.916e-06
```

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Table 1: Basic Regression

| | <i>Dependent variable:</i> |
|-------------------------|------------------------------------|
| | Voter Turnout in General Elections |
| Youth Unemployment | -0.002*** (0.0004) |
| Constant | 0.799*** (0.017) |
| Observations | 76 |
| R ² | 0.252 |
| Adjusted R ² | 0.241 |
| Residual Std. Error | 0.057 (df = 74) |
| F Statistic | 24.877*** (df = 1; 74) |
| Note: | *p<0.1; **p<0.05; ***p<0.01 |

$$Turnout_{it} = \beta_0 + \beta_1 Youth\ Unemployment\ Rate_{it} + \delta_i + \epsilon_{it}$$

```
Reg2 <- lm(Turnout ~ Unempl_rate_less25 + Region, data = Spain_data)
```

```
summary(Reg2)
```

```
##
## Call:
## lm(formula = Turnout ~ Unempl_rate_less25 + Region, data = Spain_data)
##
## Residuals:
```

| | Min | 1Q | Median | 3Q | Max |
|--|-----------|-----------|-----------|----------|----------|
| | -0.070112 | -0.008874 | -0.000297 | 0.008067 | 0.057838 |

```
##
## Coefficients:
```

| | Estimate | Std. Error | t value | Pr(> t) |
|----------------------------|-----------|------------|---------|--------------|
| (Intercept) | 0.770601 | 0.013073 | 58.945 | < 2e-16 *** |
| Unempl_rate_less25 | -0.001099 | 0.000187 | -5.879 | 2.39e-07 *** |
| RegionAragon | 0.011345 | 0.014922 | 0.760 | 0.450292 |
| RegionAsturias | -0.021044 | 0.014765 | -1.425 | 0.159627 |
| RegionBalears | -0.075798 | 0.014822 | -5.114 | 3.98e-06 *** |
| RegionCanarias | -0.071002 | 0.014701 | -4.830 | 1.10e-05 *** |
| RegionCantabria | 0.025146 | 0.014866 | 1.692 | 0.096287 . |
| RegionCastilla_La_Mancha | 0.051866 | 0.014745 | 3.518 | 0.000872 *** |
| RegionCastilla_y_Leon | 0.031933 | 0.014800 | 2.158 | 0.035262 * |
| RegionCatalunya | -0.025340 | 0.014830 | -1.709 | 0.093046 . |
| RegionCeuta | -0.115844 | 0.014845 | -7.804 | 1.63e-10 *** |
| RegionComunitat_Valenciana | 0.041221 | 0.014737 | 2.797 | 0.007055 ** |
| RegionExtremadura | 0.036837 | 0.014701 | 2.506 | 0.015154 * |
| RegionGalicia | -0.019814 | 0.014826 | -1.336 | 0.186822 |
| RegionLa_Rioja | 0.040443 | 0.014875 | 2.719 | 0.008708 ** |
| RegionMadrid | 0.042142 | 0.014869 | 2.834 | 0.006377 ** |
| RegionMelilla | -0.149735 | 0.014800 | -10.117 | 2.99e-14 *** |
| RegionMurcia | 0.030969 | 0.014760 | 2.098 | 0.040414 * |
| RegionNavarra | -0.008258 | 0.015049 | -0.549 | 0.585357 |
| RegionPais_Vasco | -0.038778 | 0.014889 | -2.604 | 0.011763 * |

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.02079 on 56 degrees of freedom
## Multiple R-squared:  0.9246, Adjusted R-squared:  0.8991
## F-statistic: 36.16 on 19 and 56 DF,  p-value: < 2.2e-16

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```

```
Reg3 <- lm(Turnout ~ Unempl_rate_less25 + eight + eleven + fifteen, data = Spain_data)
```

```
summary(Reg3)
```

```
##
## Call:
## lm(formula = Turnout ~ Unempl_rate_less25 + eight + eleven +
##      fifteen, data = Spain_data)
##
```

Table 2:

| | <i>Dependent variable:</i> | |
|----------------------------|----------------------------|-----------------------|
| | Turnout | |
| | (1) | (2) |
| Unempl_rate_less25 | −0.002*** (0.0004) | −0.001*** (0.0002) |
| RegionAragon | | 0.011 (0.015) |
| RegionAsturias | | −0.021 (0.015) |
| RegionBalears | | −0.076*** (0.015) |
| RegionCanarias | | −0.071*** (0.015) |
| RegionCantabria | | 0.025* (0.015) |
| RegionCastilla_La_Mancha | | 0.052*** (0.015) |
| RegionCastilla_y_Leon | | 0.032** (0.015) |
| RegionCatalunya | | −0.025* (0.015) |
| RegionCeuta | | −0.116*** (0.015) |
| RegionComunitat_Valenciana | | 0.041*** (0.015) |
| RegionExtremadura | | 0.037** (0.015) |
| RegionGalicia | | −0.020 (0.015) |
| RegionLa_Rioja | | 0.040*** (0.015) |
| RegionMadrid | | 0.042*** (0.015) |
| RegionMelilla | | −0.150*** (0.015) |
| RegionMurcia | | 0.031** (0.015) |
| RegionNavarra | | −0.008 (0.015) |

```

## Residuals:
##      Min        1Q      Median        3Q      Max
## -0.132415 -0.036335  0.007654  0.037552  0.090087
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.8437398  0.0199905  42.207 < 2e-16 ***
## Unempl_rate_less25 -0.0047546  0.0007289  -6.523 8.69e-09 ***
## eight          0.0029997  0.0169314   0.177 0.859881
## eleven         0.0757919  0.0242326   3.128 0.002555 **
## fifteen        0.1033705  0.0260240   3.972 0.000169 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.05181 on 71 degrees of freedom
## Multiple R-squared:  0.4063, Adjusted R-squared:  0.3729
## F-statistic: 12.15 on 4 and 71 DF,  p-value: 1.411e-07

```

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| Table 3: | | |
|-------------------------|----------------------------|------------------------|
| | <i>Dependent variable:</i> | |
| | Turnout | |
| | (1) | (2) |
| Unempl_rate_less25 | -0.002*** (0.0004) | -0.005*** (0.001) |
| eight | | 0.003 (0.017) |
| eleven | | 0.076*** (0.024) |
| fifteen | | 0.103*** (0.026) |
| Constant | 0.799*** (0.017) | 0.844*** (0.020) |
| Observations | 76 | 76 |
| R ² | 0.252 | 0.406 |
| Adjusted R ² | 0.241 | 0.373 |
| Residual Std. Error | 0.057 (df = 74) | 0.052 (df = 71) |
| F Statistic | 24.877*** (df = 1; 74) | 12.148*** (df = 4; 71) |

Note: *p<0.1; **p<0.05; ***p<0.01

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Table 4:

| | <i>Dependent variable:</i> | | |
|----------------------------|----------------------------|-----------------------|----------------------|
| | | Turnout | |
| | (1) | (2) | (3) |
| Unempl_rate_less25 | −0.002*** (0.0004) | −0.001*** (0.0002) | −0.005*** (0.001) |
| RegionAragon | | 0.011 (0.015) | |
| RegionAsturias | | −0.021 (0.015) | |
| RegionBalears | | −0.076*** (0.015) | |
| RegionCanarias | | −0.071*** (0.015) | |
| RegionCantabria | | 0.025* (0.015) | |
| RegionCastilla_La_Mancha | | 0.052*** (0.015) | |
| RegionCastilla_y_Leon | | 0.032** (0.015) | |
| RegionCatalunya | | −0.025* (0.015) | |
| RegionCeuta | | −0.116*** (0.015) | |
| RegionComunitat_Valenciana | | 0.041*** (0.015) | |
| RegionExtremadura | | 0.037** (0.015) | |
| RegionGalicia | | −0.020 (0.015) | |
| RegionLa_Rioja | | 0.040*** (0.015) | |
| RegionMadrid | | 0.042*** (0.015) | |
| RegionMelilla | | −0.150*** (0.015) | |
| RegionMurcia | | 0.031** (0.015) | |
| RegionNavarra | | −0.008 (0.015) | |