



Introduction to Statistics

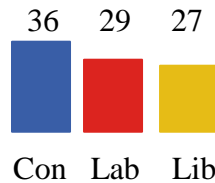
Exercises 11

Exercise 1. In an election there are only two candidates A and B, and whichever gets more than half the vote wins. 15 voters are selected and of these, only 5 support candidate A. Does this provide evidence that A will lose the elections? Carry out the test at a 5% significance level.

Exercise 2. In the previous example, suppose that the proportion of the sampled voters who support A is the same, that is $\hat{p} = 5/15$, but that the sample size, $N=50$, is bigger. Is the result the same as earlier? Why?

Exercise 3. The following headline about the UK elections comes from the Daily Telegraph of 1st May 2010.

Conservatives rise 3 points in comparison to last week.



Suppose that these results come from a simple of 100 people. The best result of the Liberals (Lib) was to obtain 25.4% of the votes in the 1983 elections. Is there any evidence that they will obtain a higher proportion this time? Carry out the test at a 5% level.

Exercise 4. In the February 2015 CIS barometer, the following table was reported

Pregunta 15

En un día laborable normal, ¿cuántas comidas realiza Ud. habitualmente, incluyendo desayuno, comida y cena, y cualquier otro momento en que Ud. toma algo de comer?

1 comida	0,3
2 comidas	5,4
3 comidas	50,4
4 comidas	26,1
5 comidas	16,5
6 comidas	1,0
7 comidas	0,2
N.S.	0,1
N.C.	0,1
(N)	(2.476)
Media (comidas)	3,57
Desviación típica	0,88
(N)	(2.472)

Is there any evidence that the true average number of meals consumed per day in Spain is above 3.5? Carry out the test at a 5% significance level.

Exercise 5. The following article appeared in the Sun on 5th April 2012.

David Cameron's rating at new low



Results ... of YouGov poll for The Sun
Published: 05th April 2012

PUBLIC confidence in David Cameron's premiership has hit an all-time low, a YouGov poll for The Sun reveals today.

Only 30 per cent said he would "make the best PM" — the lowest figure since he entered No 10. His rating has dived EIGHT points in a fortnight, after rows over donors, fuel, pasties and the Budget.

But Labour leader Ed Miliband has failed to take advantage. Only 19 per cent said he would make the best PM, up just one point in the last two weeks. Only five per cent thought Nick Clegg would be the best PM, down one point.

Forty-six per cent said they "don't know" who would make the best PM — the highest figure since May 2010.

Labour is on 42 per cent — 10 points ahead of the Tories. The Lib Dems are on 9 per cent, just one point ahead of the UK Independence Party.

The data are based on a YouGov poll of 1783 UK adults.

Is there any evidence that the true percentage of people who think that Ed Milliband would make the best PM is below 20%? Carry out the test at a 5% significance level and explain your conclusions.