



Introduction to Statistics

Exercises 4

PROBLEM 1. 100 students stated the paper they read most and the political party they voted for. Calculate a joint frequency table and the marginal distributions. Does there appear to be any relation between the two variables?

(ABC, PP) = 12	(ABC, PSOE) = 4	(ABC, Other) = 6
(La Razón, PP) = 9	(La Razón, PSOE) = 5	(La Razón, Other) = 9
(El Mundo, PP) = 14	(El Mundo, PSOE) = 8	(El Mundo, Other) = 5
(El País, PP) = 7	(El País, PSOE) = 16	(El País, Other) = 5

PROBLEM 2. A group of workers were classified according to age and level of income:

	Level of Income (€)				
Age	400	500	600	700	800
25	6	8	4	2	2
30	8	8	6	6	4
35	4	6	8	8	6
40	2	2	8	8	10
45	6	6	8	6	6
50	8	6	6	4	4

- Find the joint relative frequency distribution.
- Calculate the marginal distributions.
- Obtain the marginal means and variances.

PROBLEM 3. With the previous data, obtain the distributions of income given for the following age groups:

Age = 25
Age = 30
Age = 35

Age = 40
Age = 45
Age = 50

PROBLEM 4. Obtain the means of the conditional distributions in the previous problem.

PROBLEM 5. The following data are a summary of the votes emitted by the postgraduate students in the first round of rectoral elections of 2011:

	Luciano Parejo	Francisco Marcellán	Daniel Peña
Getafe	76	6	51
Leganés	14	40	34
Colmenarejo	9	0	0

Referring to this sample, mark which of the following is correct:

- a) Less than 40% of the postgraduates voted for Luciano Parejo as rector.
- b) Less than a third voted for Daniel Peña.
- c) Less than 10% preferred Paco Marcellán.
- d) None of the above.

PROBLEM 6. Following on from the previous question, which of the following is correct?

- a) 60% of the voters in favor of Daniel Peña come from Getafe.
- b) Less than 10% of the postgraduates in Colmenarejo voted for Luciano Parejo.
- c) Approximately 45% of the postgraduate voters for Paco Marcellán came from Leganés.
- d) None of the above.

PROBLEM 7. The February 2013 CIS barometer gave the following results from a survey of 2470 people in response to the question "*How would you rate your economic situation at the moment?*". The data are broken down into different age groups.

Response \ Age	18-24	25-34	35-44	45-54	55-64	65 y +
Very good	1	3	8	3	6	8
Good	28	101	112	105	76	107
Average	102	222	275	201	173	276
Bad	58	76	84	81	57	94
Very bad	20	60	43	38	28	15
Don't know \ No reply	2	3	0	2	1	1
Total:	211	465	522	430	341	501

- a) How many people responded "*Very bad*"?
- b) How many 18 to 24 year olds responded "*Very bad*"?
- c) Calculate the conditional distribution of the variable "Age range" given that the answer to the question was "*Very bad*".

PROBLEM 8. The following table gives the replies to the question:

Do you think that England will be better or worse off if Scotland gains independence?

classified according to the country and sex of the respondents and taken from a survey in *The Sunday Telegraph*:

	Scotland		England	
	Men	Women	Men	Women
Better	46	35	442	340
Worse	138	127	208	198
Don't know	56	99	200	347

Which of the following is the correct response?

- a) More than 50% of the English respondents think that England will be better off.
- b) More than 50% of Scots in the sample think that England will be better off.
- c) More than 50% of the people in the sample do not think that England will be better off.
- d) More than half the people sampled are men.

PROBLEM 9. Following on from the previous question, mark the correct response:

- a) Approximately 23.49% of the men in the sample don't know.
- b) Approximately 11.45% of the men in the sample don't know.
- c) Approximately 36.47% of the men in the sample don't know.
- d) None of the above.