

Econ 312: Problem Set #1

Due: Thursday, February 12, 2009

Question.1 The following table gives the joint probability distribution between employment status and college graduation among those either employed or looking for work (unemployed) in working age U.S population, based on the 1990 U.S census.

Joint Distribution of Employment Status and College Graduation in the U.S Population Aged 25-64, 1990

	Unemployed (Y=0)	Employed (Y=1)	Total
Non-College grads(X=0)	0.045	0.709	0.754
College grads(X=1)	0.005	0.241	0.246
Total	0.050	0.950	1.000

- Compute $E(Y)$.
- The unemployment rate is the fraction of the labor force that is unemployed. Show that the unemployment rate is given by $1 - E(Y)$.
- Calculate $E(Y|X = 1)$ and $E(Y|X = 0)$
- Calculate the unemployment rate for (i) college graduate and (ii) non-college graduates.
- A randomly selected member of this population reports being unemployed. What is the probability that this work is a college graduate? A non-college graduate?
- Are education achievement and employment status independent? Explain.
- (optional) Calculate the covariance and correlation between X and Y .

Q.2 In a given population of two-earner male/female couples, male earnings have a mean of \$40,000 per year and a standard deviation of \$12,000. Female earnings have a mean of \$45,000 per year and a standard deviation of \$18,000. the correlation between male and female earnings for a couple is 0.80. Let C denote the combined earnings for a randomly selected couple.

- What is the mean of C ?
- What is the covariance between male and female earnings?
- What is the standard deviation of C ?
- Convert the answers to (a)-(c) from \$(dollar) to €(euros).
(Euro (in dollars) 1.2826 2:26 p.m EST 02/05/09)