Exercises Tutorial 1

ec1030, Stats

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1. A certain airline claims that less than 1% of its scheduled flights out of Dublin airport depart late. From a random sample of 200 flights, 1.5% were found to depart late.
   (a) What is the population?
   (b) What is the sample?
   (c) Is 1.5% a parameter or a statistic? Why?
2. Determine if descriptive or inferential statistics should be used to obtain the following information:
   (a) A graph that shows the number of broken pint glasses in Dublin pubs,
   (b) An estimate of the percentage of employees who arrive to work late,
   (c) An indication of the relationship between a politician's number of votes and campaign funds.
3. State whether each of the following variables is categorical or numerical. If categorical, give the level of measurement. If numerical, is it discrete or continuous?
   (a) Number of photos on a student's Facebook site.
   (b) Actual cost of a student's textbooks for a given term.
   (c) The month of a student's birthday.
   (d) A TD's tax compliance status.
4. Academic staff at a university were asked a series of questions in a survey. State the type of data for each question.

(a) Indicate your level of satisfaction with your teaching load (1=very satisfied, 5=very dissatisfied).

(b) How many papers did you have published in refereed journals during the last year.

(c) Did you attend the last faculty meeting?

(d) Do you think that the teaching evaluation process needs to be revised?

5. The conference expenses of academics for a particular university are given in Table 1.

Item	%
travel	41
lodging	25
meals	12
conference fees	18
other	4

Table 1: Conference expenditure.

(a) Construct a pie chart.

(b) Construct a bar chart.

6. A criminologist has researched different types of crime in a certain city. The results are given in Table 2. Construct a Pareto diagram.

Type	Frequency
robbery	10
vandalism	70
drugs dealing	15
theft	90
arson	8
murder	4
money laundering	3

Table 2: Crime frequencies.

7. On what type of Internet activity do people spend most time? The responses from a random sample of 700 Internet users were: internet banking, 40; online shopping, 60; getting news, 150; sending or reading email, 200; buying or making a reservation for travel, 75; checking sports scores, 50; searching for an answer to a question, 125. Describe the data graphically.

8. Construct a time-series plot for the data on weekend or night mobile phone usage (in minutes) in Table 3.

Month	Weekend or night
January	575
February	603
March	469
April	500
May	586
June	540

Table 3: Weekend or night mobile phone usage.

9. Consider the frequency distribution of grades for a particular course, given in Table 4

Class	Frequency
fail	8
III	10
II.2	13
II.1	12
I	6

Table 4: Frequencies of grades.

   (a) Construct a relative frequency distribution.

   (b) Construct a cumulative frequency distribution.

   (c) Construct a cumulative relative frequency distribution.

10. Three subcontractors, A, B, and C, supplied 58, 70, and 72 parts, respectively, to a plant during the last week. Of these parts, 4 parts supplied

by A were defective, 60 parts supplied by B were good, and from those supplied by C only 6 were defective.

(a) Set up a cross table for the data.

(b) Draw a bar chart.

11. Table 5 lists the number of monthly visitors to a certain night club during 2007.

Month	Number	Month	Number
January	5,400	July	5,600
February	5,372	August	5,520
March	5,265	September	5,280
April	5,250	October	5,400
May	5,289	November	5,448
June	5,350	December	5,500

Table 5: Night club visiting numbers.

(a) Graph the data with a time-series plot using a vertical scale from 5,000 to 5,700.

(b) Graph the data with a time-series plot using a vertical scale from 4,000 to 7,000.

(c) Comment on the difference between these two plots.

12. Describe graphically the time (in hours) that 20 students spent on statistics homework during one particular week: 6.5, 5.8, 4.5, 6.2, 4.8, 7.3, 4.6, 3.9, 4.4, 5.5, 5.2, 6.7, 3.0, 2.4, 5.0, 3.6, 2.9, 4.0, 2.8, 3.6.