INSEAD

The Business School
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Quantitative Methods

Exercises Set 4

Statistics

Data Description (frequency distribution, mean, median, mode, variance, standard deviation)

1. **The BNP Banks of Fontainebleau and Avon are making an investigation about the length of services they provide to their customers. They have categorized their services according to service length. Its two branches have just conducted a study which provides the data in Table 1.**

   a) Find the mode for the Fontainebleau branch and the mode for the Avon branch

   b) What is the median for each branch?

2. **Sky Kind provided the following incomplete fuel consumption data for its delivery fleet (Table 2).**

   a) Complete the missing values

   b) Make a rough histogram of this data

3. **Table 3 shows the Life Expectancy (in years) in 25 Low Income Countries.**

   Construct an absolute and relative frequency distribution.

Table 1: Demand for BNP services

Type of service	Duration (in minutes)	Number of demands on Fontainebleau Branch	Number of demands on Avon Branch
1	0-10	66	33
2	10-20	59	47
3	20-30	27	32
4	30-40	23	25
5	40-50	11	23
6	50 or more	8	10

Table 2: Fuel consumption data

Miles per gallon	Number of Vans	Relative Frequency	Cumulative Frequency
6.0 – under 8.0	-	-	-
8.0 – under 10.0	23	-	29
10.0 – under 12.0	-	0.34	-
12.0 – under 14.0	17	0.17	-
14.0 – under 16.0	-	-	92
16.0 – under 18.0	-		-
Totals	100	1.00	

Table 3: Life Expectancy (in years)

	Country	Life Expectancy
1.	Laos	43
2.	Bhutan	44
3.	Sudan	47
4.	Bangladesh	43
5.	Uganda	47
6.	Chad	43
7.	Ethiopia	41
8.	Mozambique	47
9.	Nepal	44
10.	Somalie	44
11.	Togo	47
12.	Lesotho	47
13.	Mali	44
14.	Afghanistan	41
15.	Burundi	43
16.	Upper Volta	43
17.	Malawi	47
18.	Rwanda	47
19.	Benin	47
20.	Zaire	47
21.	Niger	43
22.	Guinea	44
23.	Central African Republic	44
24.	Madagascar	47
25.	Mauritania	43

Probability

1. **One fair dice (such that the numbers 1,2,3,4,5,6 are equally likely) is rolled.**

   a) What is the probability that the number on the top of the dice exceeds 4?

   b) What is the expected value (i.e., the mean) of the number on the top of the dice?

   c) What is the variance of the number on the top of the dice?

   d) What is the standard deviation of the number on the top of the dice?