**Course Name: Descriptive Statistics**

**Assignment Report**

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**Q1. By using Extended Grouped Frequency Distribution Table**

Represent the following data of the ages of 62 people who live in a certain neighborhood by an appropriate frequency distribution. Construct its corresponding extended frequency distribution table: 2, 5, 6, 12, 14, 15, 15, 16, 18, 19, 20, 22, 23, 25, 27, 28, 30, 32, 33, 35, 36, 36, 37, 38, 39, 40, 40, 41, 42, 43, 43, 44, 44, 45, 45, 46, 47, 47, 48, 49, 50, 51, 56, 57, 58, 59, 59, 60, 62, 63, 65, 65, 67, 69, 71, 75, 78, 80, 82, 84, 90, 96

**Step 1:**  Find Total Number (N)

N = 62

**Step 2:** Find the number of class interval K

K = 1 + 3.322 \* log10(N)

K = 1 + 3.322 \* log10(62)

K = 1 + 3.322 \* 1.79

K = 1 + 5.11

K = 6.11

K = 6

**Step 3:** Find the length of class width C

**C = (Maximum value – Minimum Value) / K**

Max value = 96

Min value = 2

C = (96 – 2) / 6

C = 94/6

C = 15.66

C = 16

**Step 4:** Find start number and end number of group 1

Once the minimum value is 2, let start from 1 then 1 + 16 = 17

Now first group (a-b) will be from a=1 to b=17

**Step 5:** Find midpoint, fi, and cfi

**mi = (b + a) / 2**

First mi will be (17 + 1)/2 = 18/2 = 9

**fi =** Total counts of numbers in specific interval

**cfi =** Cumulative frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **i** | **a-b** | **mi** | **fi** | **cfi** |
| 1 | 1 - 17 | 9 | 8 | 8 |
| 2 | 17 - 33 | 25 | 11 | 19 |
| 3 | 33 - 49 | 41 | 21 | 40 |
| 4 | 49 - 65 | 57 | 12 | 52 |
| 5 | 65 - 81 | 73 | 6 | 58 |
| 6 | 81 - 97 | 89 | 4 | 62 |
| ­ |  |  | **62** |  |

**Q2. By using Extended Grouped Frequency Distribution**

Octane levels for various gasoline blends are given below: 87.9 84.2 86.9 87.7 91.7 88.8 95.3 93.5 94.3 88.1 90.2 91.4 91.3 93.9 Represent these data by an appropriate extended frequency distribution table. Explain why you made a such choice.

N = 14

K = 1 + 3.322 \* log10(14)

K = 1 + 3.322 \* 1.14

K = 1 + 3.80

K = 4.80

**K = 5** but we let use  **K = 6**

C = (95.3 - 84.2) / 5

C = 2.22

C = 2

Lest (a) start from 84 then b will be (a + c) = 84 + 2 = 86

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **i** | **a-b** | **mi** | **fi** | **cfi** |
| 1 | 84-86 | 85 | 1 | 1 |
| 2 | 86-88 | 87 | 3 | 4 |
| 3 | 88-90 | 89 | 2 | 6 |
| 4 | 90-92 | 91 | 4 | 10 |
| 5 | 92-94 | 93 | 2 | 12 |
| 6 | 94-96 | 96 | 2 | 14 |
|  |  |  | 14 |  |

The reason why we choose Extended group frequency is that Since the octane values are in decimals, making a distinct table would be long and messy. Using an extended grouped frequency distribution helps us organize the data into clear intervals, making it easier to read and analyze

**Q3. By using Frequency Distribution**

The following are data on the number of students per classroom in AUCA, Faculty of Education. Represent them by an appropriate frequency distribution table 14 11 10 8 12 13 11 10 16 11 11 9 9 7 14 12 9 10 11 6 13 8 11 11 9 8 13 16 10 11 9 8 12 11 10

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **xi** | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 |
| **fi** | 1 | 1 | 4 | 5 | 5 | 9 | 3 | 3 | 2 | 2 |