**Indian Statistical Institute**

**BSDS: 2024-26**

**First Year: Semester – II**

**Economics-II**

**Practical Exercise 7**

27 March 2025

1. Size distributions of PCE (per capita total consumer expenditure on all items per 30 days) are shown below for rural India. Apply the graphical test of lognormality to examine whether the underlying true distributions of PCE are approximately two-parameter lognormal.

# **Table 1: Per Thousand Distributions of Persons Over Classes of PCE:**

# **All India rural**

|  |  |
| --- | --- |
| **PCE (Rs.)** | **Number of people (per thousand)** |
| 000 – 065 | 19 |
| 065 – 080 | 31 |
| 080 – 095 | 46 |
| 095 – 110 | 89 |
| 110 – 125 | 94 |
| 125 – 140 | 101 |
| 140 – 160 | 122 |
| 160 – 180 | 96 |
| 180 – 215 | 123 |
| 215 – 280 | 139 |
| 280 – 385 | 94 |
| 385 – . | 46 |

Answer:

1. Graphical Test for Lognormality is based on

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Income Class** | **Relative Frequency**  **()** | **Cum. Rel. frequency**  **()** | **Log Upper boundary** | **Normit** |
| 000 – 065 | 0.019 | 0.019 | 4.1744 | -2.075 |
| 065 – 080 | 0.031 | 0.050 | 4.3820 | -1.645 |
| 080 – 095 | 0.046 | 0.096 | 4.5539 | -1.305 |
| 095 – 110 | 0.089 | 0.185 | 4.7005 | -0.896 |
| 110 – 125 | 0.094 | 0.279 | 4.8283 | -0.586 |
| 125 – 140 | 0.101 | 0.380 | 4.9416 | -0.305 |
| 140 – 160 | 0.122 | 0.502 | 5.0752 | 0.005 |
| 160 – 180 | 0.096 | 0.598 | 5.1930 | 0.248 |
| 180 – 215 | 0.123 | 0.721 | 5.3706 | 0.586 |
| 215 – 280 | 0.139 | 0.860 | 5.6348 | 1.080 |
| 280 – 385 | 0.094 | 0.954 | 5.9532 | 1.685 |
| 385 – . | 0.046 | 1 |  |  |

A graph with a line

AI-generated content may be incorrect.

The graph of against Lnx is approximately linear. Hence the data comes from a lognormal distribution.