Econometrics Assignment Solution (Nitin Gautam - HES207035)

Q.1 Comment on the distribution of MPCE in the state.

Sol.

Chart, histogram

Description automatically generated

Summary statistics of MPCE in the state

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. |
| 751.8 | 1312.4 | 1409.8 | 1942.5 | 2197.5 | 6742.5 |

Skewness of MPCE distribution = 2.271841 (right skewed or positive skewed)

Kurtosis of MPCE distribution = 8.986607

Comments :

1. MPCE distribution of state is right skewed, with large number of household concentrated at lower level of MPCE.
2. Few households (outliers) have very large MPCE.

Q.2 Examine the standard of living in each district (you can use the MPCE as a proxy of the standard of living).

Chart, box and whisker chart

Description automatically generated

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Row Labels** | **Count of mpce** | **Min. of mpce** | **Max. of mpce** | **Average of mpce2** | **StdDev of mpce** |
| 1 | 30 | 1005.96 | 5624.51 | 3067.352333 | 1168.574346 |
| 2 | 91 | 751.76 | 6742.51 | 2057.702198 | 1341.545505 |
| 3 | 84 | 913.44 | 2197.53 | 1415.882024 | 313.2894838 |
| **Grand Total** | **205** | **751.76** | **6742.51** | **1942.466146** | **1155.096972** |

Notes:

1. Row labels indicates district name.
2. Count of mpce indicates count of household.
3. Pivot table is extracted from excel (not R), while figure of box plot from R.

Comments:

1. Box plot for district 1 is comparatively long. Therefore, households in district 1 have different level of mpce.
2. Box plot for district 2 is comparatively long. Therefore, households in district 2 have different level of mpce.
3. Box plot for district 3 is comparatively short. Therefore, households in district 3 have similar level of mpce.
4. District 1 has household with higher level of median mpce comparing District 2 & 3 (which have comparable median mpce level) but households in all three district have different distribution of mpce.

Q.3 It is generally believed that more wealthy individuals tend to spend more on consumables. Do you agree? (you can use land ownership for wealth and MPCE for consumable)

Sol.

Note:

1. 3 data points were deleted during analysis as null value in land\_own attribute.

Both the attributes – land ownership and MPCE are continuous variables, correlation coefficient between them is 0.1429927 (which is low degree of correlation).

Hence, contrary to belief held, more wealthy individuals tend not to spend more on consumables.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Coefficients | Estimate | Std. Error | t value | Pr(>|t|) |
| (Intercept) | 1816.1084 | 93.2350 | 19.479 | <2e-16 \*\*\* |
| reg\_data$land\_own | 0.4094 | 0.2004 | 2.043 | 0.0423 \* |
| --- | | | | |
| Significant codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1 | | | | |
| --- | | | | |
| Residual standard error: 1132 on 200 degrees of freedom | | | | |
| Multiple R-squared: 0.02045, Adjusted R-squared: 0.01555 | | | | |
| F-statistic: 4.175 on 1 and 200 DF, p-value: 0.04234 | | | | |

p-value = 0.04234 (i.e. p-value < 0.05) hence land ownership and MPCE are correlated. But not significantly correlated.

Q.4 Does land ownership vary by the gender of the household?

Sol.

Chart, box and whisker chart

Description automatically generated

From the box plot, it can be interpretated that there is a difference in distribution of land ownership by sex but not significant. Box plot has same median for sex but difference in distribution of land ownership.

Q.5 Are social group and MPCE related?

Sol.

Chart, box and whisker chart

Description automatically generated

From the box plot, it can be interpretated, that MPCE varies across social group. Hence, social group and mpce are related.

Social\_group is categorical variable and mpce is a continuous variable, correlation between mpce and social\_group requires ANOVA analysis and other techniques (but box plot is sufficient to answer question).