**Goodness-of-Fit of the Distributions**

**Data: Unemployment rate by county in Florida in 2020**

Data<-c(7.7, 5.4 , 4.9, 6.1 , 5.9 , 6.6 ,8.8 ,5.2, 7.3, 8.4, 5.4

6.9 , 5.8 , 8.0 , 5.2, 5.5 , 6.7 , 6.7 , 7.6 , 5.4 , 6.8 , 4.9,

5.6 , 5.9, 7.6 , 6.5 , 8.1 ,8.1 , 7.7 , 7.1 , 5.5 , 7.4 , 5.4,

5.6 , 4.2, 8.9 , 7.3 , 5.8 , 6.0 , 4.8 , 6.0 , 6.8 , 7.0 , 6.1,

7.9 , 5.7 , 5.5 , 5.4 ,10.6 ,13.5, 7.6, 7.2 , 7.0 , 9.0 , 7.9,

5.3 , 7.8 , 5.2 , 6.8 , 7.2 , 7.9 , 5.6 , 6.2 , 4.7 , 7.6 , 4.5,

5.9 , 5.8)

Show the Probability density plot and Probability-Probability plot of the data :

For all the right skewed probability distributions :

1. Normal
2. Exponential
3. Gamma
4. Weibull
5. Lognormal
6. Gumbel
7. Gompertz
8. Extreme values
9. Lindley
10. Pareto
11. Chi-squared
12. Lomax

**Distributions**

1. AIC
2. BIC
3. **Anderson-Darling**
4. KS Test
5. Chi-square test
6. Loglikelihood

The table : All the parameters will be obtained by the maximum likelihood estimation.(MLE)

The MLE (Estimators), Information Criteria on Florida unemployment rate by county for year 2021.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Distributions | Parameters | Loglikelihood | AIC | BIC | Kolmogorov  Test | **Anderson-Darling**  test | Chi-square test |
| Normal |  |  |  |  |  |  |  |
| Exponential |  |  |  |  |  |  |  |
| Gamma |  |  |  |  |  |  |  |
| Weibull |  |  |  |  |  |  |  |
| Lognormal |  |  |  |  |  |  |  |
| Gumbel |  |  |  |  |  |  |  |
| Gompertz |  |  |  |  |  |  |  |
| Extreme Values |  |  |  |  |  |  |  |
| Chi-squared |  |  |  |  |  |  |  |
| pareto |  |  |  |  |  |  |  |
| Lomax |  |  |  |  |  |  |  |
| Lindley |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Based on the plots and the goodness which distributions is the best distribution for the data . (Please provide R code use for computation. Not more than 2 parameters)