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An Explicit Distribution to Model the Proportion of Heating Degree Day and Cooling Degree Day

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Abstract

With a view to estimating the energy consumption, we derive the explicit distribution of the proportion X/(X + Y) when X and Y follow the new Bivariate Affine-Linear Exponential distribution. An application of this distribution to model the proportion of heating using the heating degree day and the cooling degree day data in the State of Alabama for Appalachian Mountain is provided. Using intensive computations based on R-program, tabulation of some quantiles associated with this particular distribution of proportion is also provided, which is quite useful in estimating the proportion of energy required to heat a building.

Keywords:

Bivariate Affine-Linear Exponential (BALE) distribution
Cooling degree day (CDD)
Heating degree day (HDD)
Proportion of random variables
Quantiles

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