Burr distribution

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In probability theory, statistics and econometrics, the **Burr Type XII distribution** or simply the **Burr distribution** is a continuous probability distribution for a non-negative random variable. It is also known as the **Singh-Maddala distribution** and is one of a number of different distributions sometimes called the "generalized log-logistic distribution". It is most commonly used to model household income (See: Household income in the U.S. and compare to magenta graph at right).

The Burr distribution has probability density function:[1][2]

$$f(x;c,k) = ck\frac{x^{c-1}}{(1+x^c)^{k+1}}$$

and cumulative distribution function:

$$F(x;c,k) = 1-(1+x^c)^{-k}\,.$$

See also

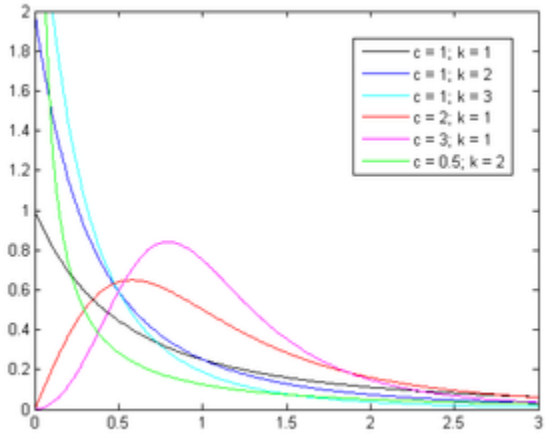
Log-logistic distribution

References

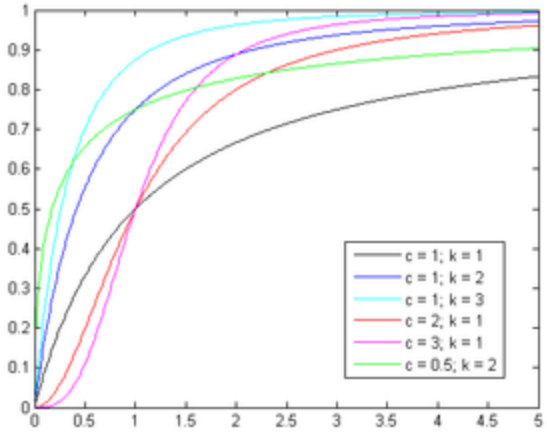
1. ^ Maddala, G.S.. 1983, 1996. *Limited-Dependent and Qualitative Variables in Econometrics*. Cambridge University Press.
2. ^ Tadikamalla, Pandu R. (1980), "A Look at the Burr and Related Distributions" (http://links.jstor.org

Burr

Probability density function



Cumulative distribution function



parameters:	$c > 0$ $k > 0$
support:	$x > 0$
pdf:	$ck\frac{x^{c-1}}{(1+x^c)^{k+1}}$
cdf:	$1-(1+x^c)^{-k}$
mean:	$k\mathrm{B}(k-1/c,\,1+1/c)$ where B() is the beta function
median:	$\left(2^{\frac{1}{k}}-1\right)^{\frac{1}{c}}$
mode:	$\left(\frac{c-1}{kc+1}\right)^{\frac{1}{c}}$

variance:	
skewness:	
ex.kurtosis:	
entropy:	
mgf:	
cf:	

/sici?sici=0306-7734%28198012%2948%3A3%3C337%3AALATBA%3E2.0.CO%3B2-Z) , *International Statistical Review* **48** (3): 337–344, doi:10.2307/1402945 (http://dx.doi.org/10.2307%2F1402945) , http://links.jstor.org/sici?sici=0306-7734%28198012%2948%3A3%3C337%3AALATBA%3E2.0.CO%3B2-Z

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