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A CHARACTERIZATION OF THE MULTIVARIATE NORMAL DISTRIBUTION BY USING THE HAZARD GRADIENT

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Abstract. We give a general result to characterize a multivariate distribution from a relationship between the left truncated mean function and the hazard gradient function. This result allows us to obtain new characterizations of multivariate distributions. In particular, we show that, for the multivariate normal distribution, the simple relationship, obtained in standardized form by McGill (1992, *Communications in Statistics. Theory Methods*, **21**(11), 3053–3060), actually characterizes the multivariate normal distribution.

Key words and phrases: Hazard gradient function, failure rate, mean residual life, left truncated mean function, multivariate normal.

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