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J. W. Moon* (jwmoon@ualberta.ca), Mathematics Department, University of Alberta, Edmonton, Alberta T6G 2G1, Canada, and **Laura L.M. Yang**. *On the Number of Proper Nodes in Rooted Trees*. Preliminary report.

Let T be a rooted tree with n nodes that have been assigned the labels $1, 2, \dots, n$. We say that node v of T is a proper node if no descendant of v is assigned a label smaller than the label of v . Our main object is to investigate the mean $\mu(n)$ and variance $\sigma^2(n)$ of the number of proper nodes of T over all labellings of all n -node trees T in certain families F of rooted trees. In particular, we show that if F is a simply generated family of (weighted) ordered trees whose generating function $y = y(x)$ satisfies a relation of the form $y = x\Phi(y)$, where Φ is a power series that satisfies some mild conditions, then $\mu(n) = An + B + O(1/n)$ and $\sigma^2(n) = Cn + O(1)$, where A, B , and C are constants that depend on F . Explicit expressions are obtained for A, B , and C when F is a binomial family whose generating function satisfies a relation of the form $y = x(1 + sy)^m$. (Received September 07, 2007)