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Sarah Fletcher, Christopher S. Hardin and Francis Edward Su* (su@math.hmc.edu),
Department of Mathematics, Harvey Mudd College, 301 Platt Blvd., Claremont, CA 91711. *The
agreement number of tree societies.*

We consider a (k, m) -agreeable tree society, which is a tree together with a collection of subtrees that have the following intersection property: among every m subtrees there are k subtrees that contain a common point. This is a generalization of a model of Berg et.al., who considered a (k, m) -agreeable linear society, motivated by a voting analogy and a connection to Helly's theorem. The *agreement number* of a society is the size of the largest mutual intersection. In this paper, we show that the bound for the agreement number of linear societies also holds for tree societies; in particular, the agreement number is at least $(k - 1)/(m - 1)$ times the number of sets in the collection. We also establish a class of examples in which the bound can be improved using a new reduction technique. (Received September 21, 2009)