The commuting probability $d(G)$ of a finite $G$ (introduced by Erdős and Turán in 1968), is defined to be the probability that two randomly chosen elements of $G$ commute. Erdős and Turán show that $d(G) = k(G)/|G|$, where $k(G)$ is number of conjugacy classes of $G$. In 1973, W. H. Gustafson proved that $d(G) \leq 5/8$ for any non-abelian group $G$. Since then, there are numerous results concerning the structure of finite groups using various bounds on the commuting probability. In this talk, I will discuss a $p$-local version of the commuting probability. Specifically, for a prime $p$, we define $d_p(G)$ to be the ratio $k_p(G)/|P|$, where $k_p(G)$ is the number of conjugacy classes of $p$-elements of $G$ and $P$ is a Sylow $p$-subgroup of $G$. Using the invariant $d_p(G)$, we obtain some new criteria for the existence of normal $p$-complements in finite groups. (Received August 30, 2019)