The Strength Reduction Factor (SRF) that permits estimation of inelastic strength demand from elastic strength demand is evaluated for EBF systems. In recent 20 years, various studies were performed on SRF mostly on SDOF system. While in a SDOF system that the SRF depends on the structural dynamic characteristics (i.e. structural period, displacement ductility ratio, damping and hysteretic behavior) and on input ground motion, in a MDOF system on the other hand, in addition to aforementioned parameters, it depends on the number and amount of plastic deformation and also distribution of degrees of freedom (DOFs) through the height of the structure being simultaneously in inelastic status. These effects are studied and assessed in this paper and a three-dimensional curve is presented on the basis of statistical study on 134 analyses of EBF systems which describes the relationship between those parameters. A comparison of the result with those from other investigators and codes are the last part of the paper.