Let $\mathbb{D}$ be the unit disc in $\mathbb{C}$ and $\lambda$ be a radially symmetric nonvanishing continuous function on $\mathbb{D}$. The weighted Bergman space $A^2(\mathbb{D}, \lambda)$ is the space of holomorphic functions that are square integrable with respect to the weight $\lambda(z)dA(z)$ and the weighted Bergman projection $B_\lambda$ is the orthogonal projection operator from $L^2(\mathbb{D}, \lambda)$ onto $A^2(\mathbb{D}, \lambda)$. In this talk, we discuss the relation between regularity ($L^p$ and Sobolev) of the weighted Bergman projection $B_\lambda$ and analytic properties of the weight function $\lambda$ on $\mathbb{D}$. We present examples where regularity of $B_\lambda$ changes significantly as $\lambda$ changes. (Received September 09, 2011)