Let $A$ be an $n \times n$ real expanding matrix and $0 \in \mathcal{D} \subset \mathbb{R}^n$ be a finite subset. The family of maps $\{f_d(x) = A^{-1}(x+d)\}_{d \in \mathcal{D}}$ is called a self-affine iterated function system (IFS). The self-affine set $K = K(A, \mathcal{D})$ is the unique compact set determined by $(A, \mathcal{D})$ satisfying $K = \bigcup_{d \in \mathcal{D}} f_d(K)$. In this paper, we show that $\mathcal{H}_{w}^s(K) > 0$, the pseudo Hausdorff measure of $K$, is equivalent to that the IFS satisfies the open set condition (OSC), where the pseudo Hausdorff measure $\mathcal{H}_{w}^s(K)$ was introduced by He and Lau in Math. Nachr 281: 1142-1158, 2008, and $s := n \log_{|\det A|} \# \mathcal{D}$ is called the pseudo similarity dimension of $K$. This extends the well-known result for the self-similar case that the OSC is equivalent to that $K$ has positive Hausdorff measure. Furthermore, we relate the exact value of pseudo Hausdorff measure $\mathcal{H}_{w}^s(K)$ to a notion of upper $s$-density with respect to the pseudo norm $w(x)$ associated with $A$ for the measure $\mu = \lim_{M \to \infty} \sum_{d_0, \ldots, d_{M-1} \in \mathcal{D}} \delta_{d_0 + Ad_1 + \cdots + A^{M-1}d_{M-1}}$ in the case that $\# \mathcal{D} \leq |\det A|$. (Received August 22, 2018)