I shall present some results in global harmonic analysis that concern properties of eigenfunctions on compact Riemannian manifolds. Using local arguments we can show that $L^p$ norms of eigenfunctions over the entire manifold are saturated if and only if there are small balls (if $p$ is large) or small tubular neighborhoods of geodesics (if $p$ is small) on which the eigenfunctions have very large $L^p$ mass. Neither can occur on manifolds of nonpositive curvature, or, more generally, on manifolds without conjugate points.