Using bordered Floer theory, we construct an invariant \( \widehat{HF}^{\text{orb}}(Y_{\text{orb}}) \) for 3-orbifolds \( Y_{\text{orb}} \) with singular set a knot that generalizes the hat flavor \( \widehat{HF}(Y) \) of Heegaard Floer homology for closed 3-manifolds \( Y \). We show that for a large class of 3-orbifolds \( \widehat{HF}^{\text{orb}} \) behaves like \( \widehat{HF} \) in that \( \widehat{HF}^{\text{orb}} \), together with a relative \( \mathbb{Z}_2 \)-grading, categorifies the order of \( H_1^{\text{orb}} \). When \( Y_{\text{orb}} \) arises as Dehn surgery on an integer-framed knot in \( S^3 \), we use the \( \{-1,0,1\} \)-valued knot invariant \( \varepsilon \) to determine the relationship between \( \widehat{HF}^{\text{orb}}(Y_{\text{orb}}) \) and \( \widehat{HF}(Y) \) of the 3-manifold \( Y \) underlying \( Y_{\text{orb}} \). (Received August 22, 2018)