1135-55-1924 **Benjamin Schweinhart*** (schweinhart.2@osu.edu), 231 West 18th Avenue, Mathematics Tower, Columbus, OH 43210. *Persistent Homology and Fractal Dimension.*

We define a notion of a fractal dimension for a subset X of $\mathbb{R}^d$ – $\dim_{\mathrm{PH}_i}(X)$ – in terms of the persistent homology of finite point samples of X. This differs from our previous definition of a persistent homology dimension, which was based on the persistent homology of X itself and bounds $\dim_{\mathrm{PH}_i}(X)$ from below. We exhibit hypotheses on i, d, and X under which $\dim_{\mathrm{PH}_i}(X) = \dim_{\mathrm{box}}(X)$, the box-counting dimension of X. (Received September 25, 2017)