Public Abstract
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This problem is a basic example of a class of problems that seek to quantify the amount of structure or order in large sets of information. The specific setting examined herein is the hyperbolic half-plane, and the measure of structure investigated is distance.

The Erdos Distance Problem asks for the number of distinct distances determined by a large finite set of points in a two-dimensional plane. This is a difficult question to tackle in general, as there may be several pairs of points whose points are a given distance from one another. There is an expanding body of work over the past sixty years that explores this problem in various settings. The hyperbolic half-plane is a common example of a space with a non-standard notion of distance. The aim of this research is to see how well the hyperbolic distance behaves when compared with the standard Euclidean distance. The study revealed that the hyperbolic half-plane does indeed behave similarly to the Euclidean plane, as far as state-of-the-art methods are concerned. The analogues of each of the classical techniques investigated worked in the hyperbolic half-plane after appropriate observations and modifications were made. This work serves to show connections between the classical notion of distance and the hyperbolic notion, as well as to extend our understanding of structure and order in the hyperbolic half-plane.