Random homeomorphisms of an interval

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We investigate homeomorphisms of a compact interval, applied randomly. We consider this system as a skew product with the two-sided Bernoulli shift in the base. If on the open interval there is a metric in which almost all maps are contractions, then (with mild additional assumptions) there exists a global pullback attractor, which is a graph of a function from the base to the fiber. It is also a forward attractor. However, the value of this function depends only on the past, so when we take the one-sided shift in the base, it disappears. We illustrate those phenomena on an example, where there are two piecewise linear homeomorphisms, one moving points to the right and the other one to the left.