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Berit Nilsen Givens* (bngivens@csupomona.edu), **Amber Rosin** and **Karen Linton**. *The homomorphic image of a variant of the bicyclic semigroup.*

The bicyclic semigroup $C = C(p, q)$, defined by two generators with the relation $pq = 1$, is an oft-studied semigroup. The simplicity of its definition and its highly structured form give it several nice properties. In particular, the only homomorphic images of the bicyclic semigroup are itself and the group of integers. Here we generalize this result to a broader class of semigroups obtained as variants of the bicyclic semigroup. These semigroups are formed by taking the elements of the bicyclic semigroup under a “sandwich” operation — for a fixed element of $w \in C$, we define the sandwich operation by $x * y = xwy$. We investigate the possible homomorphic images of these variants by analyzing their possible congruence relations, ultimately showing that the homomorphic image of a particular variant is either (a) another variant, (b) the group of integers, or (c) something else which can be described in terms of another variant. In the process, we obtain a number of interesting results about congruence relations on these variants. (Received September 11, 2014)