1151-20-67 **Casey Donoven*** (`cdonoven@binghamton.edu`) and **Luise-Charlotte Kappe** (`menger@math.binghamton.edu`). *Finite coverings of semigroups.* Preliminary report.

For a group, G, the covering number of G with respect to subgroups, $\sigma_g(G)$, is the minimum number of proper subgroups of G whose union is G. Covering numbers of groups have been well-studied, and it is known whether there exists a group G such that $\sigma_g(G) = n$ for each $n \leq 129$. (For example, no group has covering number 2, 7, or 11.) Recently, we have explored covering numbers of semigroups S with respect to semigroups, denoted $\sigma_s(S)$. This analagous problem produces quite different results. Specifically, for a finite semigroup S that is neither a group nor monogenic, we have $\sigma_s(S) = 2$. Our main result gives a complete description of $\sigma_s(S)$ when S is a finite semigroup (modulo groups). We also have partial results for some infinite cases such as when S is a monoid or a group. Lastly, we will present theorems describing covering inverse semigroups with inverse subsemigroups and covering monoids with submonoids. (Received August 07, 2019)