A numerical semigroup $S$ is a subset of the nonnegative integers $\mathbb{N}_0$ which contains 0, is closed under addition, and has finite complement in $\mathbb{N}_0$. We call the cardinality of $\mathbb{N}_0 \setminus S$ the genus of $S$, or $g(S)$, and we call the largest element of $\mathbb{N}_0 \setminus S$ the Frobenius number of $S$, or $F(S)$. Let $N(g)$ be the number of numerical semigroups with genus $g$ and $C(F)$ be the number of numerical semigroups with Frobenius number $F$. It is known that as $g$ increases, $N(g)$ eventually grows at a rate of $\varphi^g$. Asymptotics for $C(F)$ have not previously been computed. Here we show that as $F$ increases, $C(F)$ grows at a rate of $\sqrt{2}^F$. We also find asymptotics for the proportion of maximal embedding dimension numerical semigroups and the typical number of effective generators of a numerical semigroup as $g$ increases. Finally, we compute a recurrence for $N(g)$ which shows that $N(g) - N(g - 1) \leq N(g + 1)$ for all $g$, not just for $g$ large. (Received September 15, 2011)