General formula for the order statistics of n independent, continuous random variables that each have a common density $f_X(x)$.

The joint density of the order statistics $X_{(1)}, \ldots, X_{(n)}$ is

$$f_{X_{(1)}, \ldots, X_{(n)}}(x_1, \ldots, x_n) = n! f(x_1) f(x_2) \cdots f(x_n) \quad \text{for } x_1 < x_2 < \cdots < x_n$$
$$= 0 \text{ otherwise}$$

General formula for the density of just $X_{(j)}$, i.e. of the jth order statistic, it is

$$f_{X_{(j)}}(x_j) = \underbrace{\binom{n}{j-1, 1, n-j}}_{\dfrac{n!}{(j-1)! \, 1! \, (n-j)!}} f_X(x_j) \left(F_X(x_j)\right)^{j-1} \left(1 - F_X(x_j)\right)^{n-j}$$