Let p_k denote the probability that a person is born on the k-th day of the year, where $1 \leq k \leq n$. Then the probability p_{nu} that among m people at least two have the same birthday using the distribution $(p_1, p_2, \ldots, p_n)$ of birthdays is given by

$$p_{nu} = 1 - m! e_m(p_1, p_2, \ldots, p_n),$$

where e_m denotes the m-th elementary symmetric function,

$$e_m(x_1, \ldots, x_n) = \sum_{1 \leq j_1 < j_2 < \cdots < j_m \leq n} x_{j_1} x_{j_2} \cdots x_{j_m}.$$