

$N, k \setminus n$	$n = 25$	$n = 100$	$n = 1,000$	$n = 10,000$	$n = 100,000$
$N = 10,$ $k = 8$	$\sigma_{min}^2 = 0.00850$ $\sigma^2 = 0.00945$ $\sigma = 0.09724$ $bias = 0.03133$	$\sigma_{min}^2 = 0.01150$ $\sigma^2 = 0.01245$ $\sigma = 0.11158$ $bias = 0.01788$	$\sigma_{min}^2 = 0.01240$ $\sigma^2 = 0.01315$ $\sigma = 0.11468$ $bias = 0.01500$	$\sigma_{min}^2 = 0.01249$ $\sigma^2 = 0.01312$ $\sigma = 0.11453$ $bias = 0.01214$	$\sigma_{min}^2 = 0.01250$ $\sigma^2 = 0.01305$ $\sigma = 0.11422$ $bias = 0.01307$
$N = 10,$ $k = 20$	$\sigma_{min}^2 = 0.00100$ $\sigma^2 = 0.00116$ $\sigma = 0.03412$ $bias = 0.02342$	$\sigma_{min}^2 = 0.00400$ $\sigma^2 = 0.00423$ $\sigma = 0.06502$ $bias = 0.00980$	$\sigma_{min}^2 = 0.00490$ $\sigma^2 = 0.00498$ $\sigma = 0.07056$ $bias = 0.00676$	$\sigma_{min}^2 = 0.00499$ $\sigma^2 = 0.00505$ $\sigma = 0.07106$ $bias = 0.00494$	$\sigma_{min}^2 = 0.00500$ $\sigma^2 = 0.00512$ $\sigma = 0.07159$ $bias = 0.00440$
$N = 20,$ $k = 8$	$\sigma_{min}^2 = 0.00425$ $\sigma^2 = 0.00452$ $\sigma = 0.06723$ $bias = 0.02612$	$\sigma_{min}^2 = 0.00575$ $\sigma^2 = 0.00604$ $\sigma = 0.07773$ $bias = 0.01165$	$\sigma_{min}^2 = 0.00620$ $\sigma^2 = 0.00636$ $\sigma = 0.07973$ $bias = 0.00590$	$\sigma_{min}^2 = 0.00624$ $\sigma^2 = 0.00634$ $\sigma = 0.07961$ $bias = 0.00556$	$\sigma_{min}^2 = 0.00625$ $\sigma^2 = 0.00644$ $\sigma = 0.08027$ $bias = 0.00533$
$N = 20,$ $k = 20$	$\sigma_{min}^2 = 0.00050$ $\sigma^2 = 0.00058$ $\sigma = 0.02405$ $bias = 0.02203$	$\sigma_{min}^2 = 0.00200$ $\sigma^2 = 0.00207$ $\sigma = 0.04552$ $bias = 0.00778$	$\sigma_{min}^2 = 0.00245$ $\sigma^2 = 0.00245$ $\sigma = 0.04952$ $bias = 0.00229$	$\sigma_{min}^2 = 0.00249$ $\sigma^2 = 0.00247$ $\sigma = 0.04966$ $bias = 0.00243$	$\sigma_{min}^2 = 0.00250$ $\sigma^2 = 0.00250$ $\sigma = 0.05000$ $bias = 0.00250$
$N = 40,$ $k = 8$	$\sigma_{min}^2 = 0.00212$ $\sigma^2 = 0.00226$ $\sigma = 0.04753$ $bias = 0.02262$	$\sigma_{min}^2 = 0.00287$ $\sigma^2 = 0.00293$ $\sigma = 0.05410$ $bias = 0.00833$	$\sigma_{min}^2 = 0.00310$ $\sigma^2 = 0.00315$ $\sigma = 0.05613$ $bias = 0.00372$	$\sigma_{min}^2 = 0.00312$ $\sigma^2 = 0.00319$ $\sigma = 0.05646$ $bias = 0.00408$	$\sigma_{min}^2 = 0.00312$ $\sigma^2 = 0.00317$ $\sigma = 0.05632$ $bias = 0.00290$
$N = 40,$ $k = 20$	$\sigma_{min}^2 = 0.00025$ $\sigma^2 = 0.00027$ $\sigma = 0.01655$ $bias = 0.02105$	$\sigma_{min}^2 = 0.00100$ $\sigma^2 = 0.00101$ $\sigma = 0.03180$ $bias = 0.00619$	$\sigma_{min}^2 = 0.00122$ $\sigma^2 = 0.00127$ $\sigma = 0.03563$ $bias = 0.00147$	$\sigma_{min}^2 = 0.00125$ $\sigma^2 = 0.00124$ $\sigma = 0.03526$ $bias = 0.00117$	$\sigma_{min}^2 = 0.00125$ $\sigma^2 = 0.00125$ $\sigma = 0.03538$ $bias = 0.00143$

$$\hat{n} = \frac{k}{1 - \exp(\bar{L}_u)}, \text{ where } \bar{L}_u = \frac{1}{N} \sum_{i=1}^N \ln(1 - x_i)$$

$$\sigma_{min}^2 = \text{Var} \left(\frac{\hat{n}}{n} \right)_{\min} \approx \frac{1}{N} \left(\frac{1}{k} - \frac{1}{n} \right)$$