Nonparametric Life Test Sampling Plans

by

Richard E. Barlow*
Operations Research Center
University of California, Berkeley

and

Shanti S. Gupta**
Department of Statistics
Division of Mathematical Sciences
Purdue University

Mimeograph Series No. 29

July 1964

*The research of this author was supported by the Office of Naval Research Contract Nonr-3656(18) with the University of California. Reproduction in whole or in part is permitted for any purpose of the United States Government.

**The work of this author was supported by Army, Navy, and Air Force Contract Nonr-225(53) at Stanford University and also by Contract AF 33 (657)11737 with the Aerospace Research Laboratory at Purdue University.

NONPARAMETRIC LIFE TEST SAMPLING PLANS

1. Introduction

Sampling plans for truncated life tests based on several parametric families of distribution functions have been proposed by Sobel and Tischendorf (1959), Gupta and Groll (1961) and Gupta (1962a). Thus, we have the problem of which family to choose; i.e., exponential, normal, lognormal, gamma, etc. In many cases it is assumed that certain nuisance parameters are known. Unless considerable prior information is available, the choice will necessarily be somewhat arbitrary. We can circumvent this problem by considering a class of distributions restricted only by certain intuitive considerations. If the items in question wear out with age, then it is reasonable to assume that the failure rate function is nondecreasing. For other items such as solid state electronic devices, it seems reasonable to assume that the failure rate function is nonincreasing. By using sharp bounds on such distributions, we can obtain sampling plans which, although more conservative than the parametric plans, offer greater protection since they are valid for a much larger family of distributions.

It has been suggested by Zelen and Dannemiller (1959) that sampling plans should be written in terms of percentiles. Such plans were presented by Gupta and Groll (1961) and Gupta (1962a) for the gamma, normal and log-normal distributions. We present plans based on percentiles under the increasing (decreasing) failure rate assumption as well as plans based on the mean life. A partial discussion of these plans was also presented by Gupta (1962b).

$$(2.1)\qquad 1 - F(t) \geq \begin{cases} \exp[-t/\lambda_r^{1/r}] & , t \leq \mu_r^{1/r} \\ 0 & , t > \mu_r^{1/r} \end{cases} \qquad (r \geq 1)$$

$$(2.2)\qquad 1 - F(t) \leq \begin{cases} 1 & , t \leq \mu_r^{1/r} \\ \exp[-wt] & , t > \mu_r^{1/r} \end{cases} \qquad (r > 0)$$

where w uniquely satisfies

$$\mu_r = r\int_0^t x^{r-1} e^{-wx} dx$$

and

$$\lambda_r = \mu_r/\Gamma(r+1) \ .$$

If F is DFR, with r^{th} moment μ_r, then

$$(2.3)\qquad 1 - F(t) \leq \begin{cases} \exp[-t/\lambda_r^{1/r}] & , t \leq r\lambda_r^{1/r} \\ \dfrac{r^r e^{-r}\mu_r}{\Gamma(r+1)t^r} & , t \geq r\lambda_r^{1/r} \end{cases}$$

From these bounds we can obtain the following bound on the q^{th} quantile ζ_q in terms of μ_1 assuming F is IFR. If $q \leq 1 - e^{-1}$, then

$$
f(t^-) \leq \begin{cases} (te)^{-1} & , \quad t \leq (\lambda_r)^{1/r} \\ \lambda_r^{-1/r} e^{-t/\lambda_r^{1/r}} & , \quad \lambda_r^{1/r} \leq t \leq (r+1)\lambda_r^{1/r} \\ \lambda_r \left(\frac{r+1}{t}\right)^{r+1} e^{-(r+1)} & , \quad t \geq (r+1)\lambda_r^{1/r} \end{cases}
$$

Finally, we mention that maximum likelihood estimates of IFR (DFR) distributions have been obtained by Grenander (1956) and Marshall and Proschan (1964).

end of time t and only if $t_{(c+1)} > t$. Hence,

$$L(p) = P\{\text{Acceptance}\} = P\{t_{(c+1)} > t\}$$

(3.1) $$= \frac{n!}{(c-1)!(n-c)!}\int_t^\infty F^c(t;\theta)[1 - F(t;\theta]^{n-c-1}dF(t;\theta)$$

$$= \sum_{i=0}^{c} \binom{n}{i} p^i(1-p)^{n-i}$$

where $p = F(t;\theta)$.

If p is a decreasing function of θ which is true, for instance, if the density $f(t;\theta)$ is TP_2(Totally positive of order 2) in t and θ , then $F(t;\theta) \leq F(t;\theta_0) \Longleftrightarrow \theta \geq \theta_0$. If $p_0 = F(t;\theta_0)$, then it is clear from the theory of confidence intervals that the smallest n to satisfy

(3.2) $$\sum_{i=0}^{c} \binom{n}{i} p_0^i (1-p_0)^{n-i} \leqq 1 - P^*$$

is such that in adopting the above sampling plans with the associated decision rule, we can assert with probability P^* that $\theta \geqq \theta_0$ provided $t_{(c+1)} > t$.

It should be noted that the above discussion assumes a knowledge of $F(t;\theta)$. Now, we consider the case where $F(t;\theta)$ is not explicitly assumed; it is only assumed that we have bounds on $F(t;\theta)$.

Suppose that $p = F(t;\theta) \geq b(t;\theta)$ for $t \geq 0$ where $b(t;\theta)$ is a known function. Suppose further that $b(t;\theta)$ is decreasing in θ . Since $L(p)$ is a decreasing function of p , we have

Example 2. (Unimodal density)

If the density f is unimodal with unknown mode and first moment θ and if $F(0-;\theta) = 0$, then from Barlow and Marshall (1963), we have

$$F(t;\theta) \geq b(t;0) = \begin{cases} 0 & , \quad 0 \leq t \leq \theta \\ 2 - \frac{2\theta}{t} & , \quad \theta \leq t \leq \frac{3\theta}{2} \\ 1 - \frac{\theta}{2t} & , \quad t \geq \frac{3\theta}{2} \end{cases}$$

Clearly, $b(t;\theta)$ is decreasing in θ and the bound is a slight improvement over Example 1.

Example 3. (PF_2 density).

If $\log f(t;\theta)$ is concave where $f(t;\theta) > 0$, then f is called a PF_2(Pólya Frequency of Order 2) density. Most of the commonly used densities have this property. If f has mean θ , then

$$F(t;\theta) \geq b(t;\theta) = \begin{cases} 0 & , \quad t \leq \theta \\ 1 - \sup\limits_{m \geq t} (1 - e^{-bt})/(1 - e^{-bm}) & , \quad t \geq \theta , \end{cases}$$

where b is determined by $\theta = \int_0^m xbe^{-bx}dx/(1 - e^{-bm})$.

The above bound is tabulated in a paper by Barlow and Marshall (1963). A sampling plan based on this bound would afford less protection than the IFR sampling plans since f PF_2 implies that F is IFR but not conversely.

Hence, using (3.8) to solve for w and then using (3.7) with $b(t;\mu_1^0) = b(t/\mu_1^0;1) = 1 - e^{-wt}$, sampling plans to insure a specified mean life have been computed and are given in Table 1. This table also gives the actual confidence level attained.

Case (ii) $\theta = \zeta_q$, the q^{th} percentile.

In this case

$$(3.9) \qquad b(t;\zeta_q) = \begin{cases} 0 & , \quad t < \zeta_q \\ 1 - (1-q)^{t/\zeta_q} & , \quad t \geq \zeta_q \end{cases} ,$$

which is again decreasing in ζ_q and clearly depends only on q and the ratio t/ζ_q. Hence, to insure a specified quantile life ζ_q^0, we substitute from (3.9) the value of $b(t;\zeta_q^0)$ in the general equation (3.4) and solve for the smallest n. Table II at the end of this paper gives minimum sample sizes for the life testing situation where $t > \zeta_q^0$.

DFR Distributions

Case (i) $\theta = \mu_r$.

In this case, letting $\lambda_r = \mu_r/\Gamma(r+1)$, we have

$$(3.10) \qquad b(t;\mu_r) = \begin{cases} 1 - e^{-t/\lambda_r^{1/r}} & , \quad t \leq r\lambda_r^{1/r} \\ 1 - r^r\lambda_r(et)^{-r} & , \quad t \geq r\lambda_r^{1/r} \end{cases} ,$$

and one can construct sampling plans for the cases where $t \leq r\,(\lambda_r^0)^{1/r}$ and $t \geq r(\lambda_r^0)^{1/r}$. For the special case $r = 1$, and $t < \mu_1^0$, it is inequality

$$(3.13) \qquad L(B(t;\theta)) \geq L(B(t;\theta_1)) \geq 1 - \alpha$$

which will be satisfied if $B(t;\theta)$ is decreasing in θ. One may use the inequality (3.13) to determine c such that for fixed θ_1, θ_0 and P^*, the sampling plan and the acceptance rule will insure that the producer's risk will not exceed α. Alternatively for fixed n, t, θ_0, c and P^*, one may want to know the minimum value θ_1 of θ such that for all $\theta > \theta_1$, the probability of acceptance $\geq 1 - \alpha$.

Now we describe the evaluation of the OC function for the IFR and DFR distributions.

IFR Distributions

Case (i) $\theta = \mu_r$

$$(3.14) \qquad B(t;\mu_r) = \begin{cases} 1 - e^{-t/(\lambda_r)^{1/r}} & , \quad t \leq \mu_r^{1/r} \\ 1 & , \quad t > \mu_r^{1/r} \end{cases}$$

Thus, for $\mu_r > \mu_r^1 \geq t^r$, we have

$$(3.15) \qquad L(F(t;\mu_r)) \geq L(B(t;\mu_r)) \geq L(B(t;\mu_r^1))$$

which gives a lower bound on the OC function. This bound is graphed below.

function L since there is no nontrivial upper bound on F. However, there exists a nontrivial upper bound on the L function both for $\mu_r^0 < t$ and $\mu_r^0 \geq t$. This lower bound is obtained by using (3.10) in place of F in the L function.

Case (ii) $\Theta = \zeta_q$

Using the upper bound

$$(3.17) \qquad B(t;\zeta_q) = \begin{cases} q & , \quad t \leq \zeta_q \\ 1 - (1-q)^{t/\zeta_q} & , \quad t \geq \zeta_q \end{cases},$$

one can construct a lower bound on L for all t.

<u>Description of the Tables and Some Illustrative Examples</u>

<u>Table I.</u> This table gives the sample sizes necessary to establish that the true unknown mean μ of an IFR distribution is at least μ^0 at a nominal confidence level P^*. The actual level attained is also tabulated.

<u>Illustration 1</u>. Suppose an experimenter wants to choose the sample size corresponding to $c = 2$, $P^* = .75$, $\lambda = t/\mu^0 = 1.6$, then this required n from Table 1 is equal to 5. For this sampling plan the actual probability level is equal to .7523.

<u>Table II.</u> This table gives the sample sizes necessary to establish that the true unknown q^{th} quantitile of an IFR distribution is at least ζ_q^0 at a nominal confidence level P^*. The actual level attained is also tabulated.

<u>Illustration 2</u>. Assuming an IFR distribution and given $c = 2$,

Table III. This table gives the sample sizes necessary to establish that the true unknown q^{th} quantile of a DFR distribution is at least ζ_q^0 at a nominal confidence level P^*. Here $\lambda = t/\zeta_q^0 \leq 1$. Also, the actual confidence attained is tabulated.

Approximations for Sample Sizes

The sample sizes necessary to establish a quantile for the IFR and DFR distributions can be approximated as follows. If $1 - (1 - q)^\lambda$ is small, then

$$(3.18) \qquad n \doteq \left[\frac{y_{c+1,P^*}}{1 - (1 - q)^\lambda} \right] + 1$$

where y_{c+1,P^*} is the P^* percentage point at a standardized gamma variable with shape parameter $r = c + 1$ or one-half times the P^* percentage point of a χ^2 with $(2c + 2)$ degrees of freedom. This approximation was discussed by Gupta (1962a) where tables of y_{c+1,P^*} are also given.

If $p = 1 - q$ is close to .5, then another approximation for n is

$$(3.19) \qquad n \simeq \left[\frac{(2c + 1 + pz_{P^*}^2)\left(1 + \sqrt{1 - (2c + 1)^2/(2c + 1 + pz_{P^*})^2}\right)}{2(1 - p)} \right] + 1$$

where z_{P^*} is the P^* percentage point of the $N(0, 1)$ random variable. For example, if $q = .1$, $\lambda = 1$, $c = 1$, $P^* = .75$, then $y_{c+1,P^*} = 2.6926$ and from (3.18), $n \simeq 27$. The exact answer from Table II is 27. As an example of the second approximation, let $\lambda = 1$, $p = 1 - q = .5$,

BIBLIOGRAPHY

[1] Sobel, M. and J. A. Tischendorf, (1959). "Acceptance sampling with new life test objectives," Proc. of fifth national symposium on reliability and quality control, Philadelphia, Pennsylvania.

[2] Gupta, S. S., and P. A. Groll, (1961). "Gamma distribution in acceptance sampling based on life tests," J. Amer. Statist. Assoc., 56, 942-970.

[3] Gupta, S. S. (1962a). "Life test sampling plans for the normal and lognormal distributions," Technometrics, 4 , 151-175.

[4] Gupta, S. S. (1962b). "Nonparametric life testing sampling plans," Ann. Math. Statist. (Abstract). p. 303 .

[5] Zelen, M., and M. C. Dannemiller (1961). "The robustness of life testing procedures derived from the exponential distribution," Technometrics, pp. 29-49.

[6] Barlow, R. E., A. W. Marshall, and F. Proschan (1963). "Properties of distributions with monotone hazard rate," Annals of Math. Stat., 34, 375-389.

[7] Barlow, R. E., and A. W. Marshall (1964). "Bounds for distributions with monotone hazard rate," Annals of Math. Stat., (to appear).

[8] Barlow, R. E., and A. W. Marshall (1964). "Bounds on densities and hazard rates," Operations Research Center Technical Report ORC 64-9(RR), University of California, Berkeley.

[9] Grenander, U. (1956). "On the theory of mortality measurement," Skandinavisk Aktuarietidskrift, pp. 135-146.

Table I. Sampling Plans for the Mean of IFR Distributions

P* = .75

λ	c = 0	1	2	3	4	5	6	7	8	9	10
1.1	8 .78775	15 .86996	22 .77091	28 .75209	35 .76278	41 .75329	48 .76458	54 .75769	60 .75218	67 .76473	73 .76056
1.2	4 .77815	8 .77081	12 .77863	16 .78959	19 .75950	23 .77566	26 .75327	30 .77035	33 .75220	37 .76905	40 .75363
1.3	3 .80787	6 .80074	9 .80893	11 .75535	14 .77655	17 .79506	19 .75977	22 .78030	24 .75016	27 .77105	30 .78952
1.4	2 .76089	5 .82596	7 .79110	9 .76729	12 .82574	14 .81144	16 .78976	18 .78808	20 .77895	22 .77107	24 .76419
1.5	2 .82595	4 .80044	6 .79620	8 .79859	10 .80359	12 .80971	14 .81627	16 .82294	17 .75736	19 .76932	21 .78037
1.6	2 .87182	4 .86573	5 .75225	7 .78673	9 .81446	11 .83741	12 .76930	14 .79861	16 .82315	17 .76595	19 .79370
1.7	2 .90463	3 .77280	5 .82507	7 .86225	8 .78960	10 .83420	11 .76989	13 .81591	14 .75777	16 .80328	18 .83950
1.8	2 .92841	3 .92353	5 .87709	6 .80182	8 .86045	9 .79995	11 .85519	12 .80402	14 .85486	15 .81030	16 .76134
1.9	1 .76724	3 .86269	4 .76702	6 .85688	7 .79133	9 .86397	10 .81468	11 .75956	13 .83525	14 .79026	16 .85318
2.0	1 .79681	3 .89292	4 .81428	6 .89716	7 .84644	8 .78986	10 .87344	11 .83173	12 .78603	14 .86321	15 .82745
2.2	1 .84374	3 .93438	4 .88223	5 .82356	6 .76169	8 .88404	9 .84550	10 .80369	11 .75959	13 .86759	14 .83641
2.4	1 .87860	2 .77193	4 .92523	5 .88524	6 .84133	7 .79503	9 .91436	10 .88833	11 .85973	12 .82903	13 .79666
2.6	1 .90489	2 .81882	4 .95236	5 .92555	6 .89522	7 .86230	8 .82753	9 .79158	10 .75498	12 .90132	13 .88042
2.8	1 .92497	2 .85558	3 .79139	5 .95169	6 .93109	7 .90822	8 .88355	9 .85746	10 .83031	11 .80241	12 .77403
3.0	1 .94048	2 .88450	3 .83186	4 .78234	6 .95475	7 .93911	8 .92195	9 .90350	10 .88399	11 .86360	12 .84250
3.5	1 .96598	2 .93313	3 .90139	4 .87073	5 .84111	6 .81250	7 .78486	8 .75816	10 .95658	11 .94811	12 .93910
4.0	1 .98017	2 .96074	3 .94169	4 .92302	5 .90472	6 .88678	7 .86920	8 .85196	9 .83507	10 .81851	11 .80228
4.5	1 .98829	2 .97672	3 .96528	4 .95398	5 .94280	6 .93176	7 .92085	8 .91007	9 .89941	10 .88888	11 .87847

Table I. Sampling Plans for the Mean of IFR Distributions

P* = .95

λ	c = 0	1	2	3	4	5	6	7	8	9	10
1.1	16 .95495	25 .95002	34 .95329	42 .95278	50 .95406	57 .95096	65 .95409	72 .95270	79 .95186	86 .95147	93 .95141
1.2	8 .95078	14 .96195	18 .95300	23 .95944	27 .95637	31 .95464	35 .95385	39 .95372	43 .95405	47 .95472	51 .95563
1.3	6 .96309	10 .96591	13 .95877	16 .95502	19 .95334	22 .95298	25 .95344	28 .95445	31 .95579	34 .95735	37 .95903
1.4	5 .97204	8 .96940	10 .95264	13 .96105	15 .95021	18 .96053	20 .95289	23 .96286	25 .95717	27 .95163	30 .96179
1.5	4 .96971	6 .95054	9 .96791	11 .96179	13 .95739	15 .95430	17 .95218	19 .95081	21 .95001	24 .96752	26 .96701
1.6	3 .95411	6 .97524	8 .97156	10 .97040	12 .97064	14 .97165	15 .95133	17 .95528	19 .95905	21 .96260	23 .96589
1.7	3 .97055	5 .96576	7 .96736	9 .97080	11 .97459	12 .95507	14 .96272	16 .96905	17 .95193	19 .96048	21 .96741
1.8	3 .98084	5 .97986	6 .95236	8 .96371	10 .97251	11 .95301	13 .96518	15 .97404	16 .96004	18 .97018	19 .95651
1.9	3 .98739	4 .95837	6 .97078	8 .97987	9 .96329	11 .97553	12 .96054	14 .97360	15 .96025	17 .97311	18 .96127
2.0	2 .95871	4 .97156	6 .98204	7 .96480	9 .97907	10 .96505	12 .97907	13 .96771	14 .95299	16 .97108	17 .95927
2.2	2 .97558	4 .98653	5 .97023	7 .98598	8 .97541	9 .96113	11 .98118	12 .97182	13 .95997	15 .97964	16 .97165
2.4	2 .98526	3 .95936	5 .98521	6 .97307	7 .95708	9 .98350	10 .97510	11 .96457	12 .95184	14 .97950	15 .97227
2.6	2 .99095	3 .97458	4 .95236	6 .98620	7 .97755	8 .96659	9 .95336	11 .98439	12 .97832	13 .97099	14 .96238
2.8	2 .99437	3 .98396	4 .96951	5 .95169	7 .98826	8 .98225	9 .97485	10 .96604	11 .95586	13 .98694	14 .98279
3.0	2 .99646	3 .98979	4 .98039	5 .96861	6 .95475	8 .99059	9 .98650	10 .98156	11 .97576	12 .96908	13 .96155
3.5	1 .96598	3 .99661	4 .99337	5 .98920	6 .98416	7 .97832	8 .97174	9 .96448	10 .95658	12 .99313	13 .99129
4.0	1 .98017	2 .96074	4 .99770	5 .99622	6 .99441	7 .99227	8 .98983	9 .98710	10 .98409	11 .98080	12 .97726
4.5	1 .98829	2 .97672	3 .96528	4 .95398	6 .99801	7 .99723	8 .99634	9 .99533	10 .99420	11 .99297	12 .99163

Table II. Sampling Plans for the Quantiles of IFR Distributions

$P^* = .75 \quad c = 0$

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	14 .77123	7 .79028	4 .75990	3 .78400	2 .75000	2 .84000	2 .91000	1 .80000	1 .90000
1.1	12 .75111	6 .77071	4 .79182	3 .81469	2 .78236	2 .86679	2 .92926	1 .82973	1 .92057
1.2	11 .75111	6 .79944	4 .81902	3 .84102	2 .81054	2 .88910	1 .76420	1 .85504	1 .93690
1.3	11 .77835	5 .76553	3 .75118	3 .86361	2 .83506	2 .90767	1 .79095	1 .87569	1 .94988
1.4	10 .77123	5 .79028	3 .77643	2 .76077	2 .85641	2 .92313	1 .81466	1 .89494	1 .96019
1.5	9 .75886	5 .81243	3 .79912	2 .78400	2 .87500	2 .93600	1 .83568	1 .91056	1 .96838
1.6	9 .78067	4 .76024	3 .81950	2 .80490	2 .89118	1 .76917	1 .85432	1 .92385	1 .97488
1.7	8 .76138	4 .78071	3 .83782	2 .82392	2 .90527	1 .78938	1 .87085	1 .93517	1 .98005
1.8	8 78067	4 .79944	3 .85428	2 .84102	2 .91753	1 .80782	1 .88550	1 .94481	1 .98415
1.9	7 .75372	4 .81656	3 .86906	2 .85646	2 .92821	1 .82465	1 .89849	1 .95302	1 .98741
2.0	7 .77123	4 .83223	2 .75990	2 .87040	1 .75000	1 .84000	1 .91000	1 .96000	1 .99000
2.2	6 .75111	3 .77071	2 .79182	2 .89345	1 .78236	1 .86679	1 .92926	1 .97101	1 .99369
2.4	6 .78067	3 .79944	2 .81950	2 .91388	1 .81054	1 .88910	1 .94434	1 .97899	1 .99602
2.6	6 .80672	3 .82457	2 .84350	2 .92979	1 .83506	1 .90767	1 .95630	1 .98477	1 .99749
2.8	5 .77123	3 .84655	2 .86431	1 .76077	1 .85461	1 .92313	1 .96565	1 .98896	1 .99842
3.0	5 .79411	3 .86578	2 .88235	1 .78400	1 .87500	1 .93600	1 .97300	1 .99200	1 .99900
3.5	4 .77123	2 .79028	2 .91765	1 .83269	1 .91161	1 .95952	1 .98521	1 .99642	1 .99968
4.0	4 .81470	2 .83223	1 .75990	1 .87040	1 .93570	1 .97400	1 .99190	1 .99840	1 .99990
4.5	3 .75886	2 .86578	1 .79912	1 .89961	1 .95581	1 .98391	1 .99556	1 .99928	1 .99997
5.0	3 .79411	2 .89263	1 .83193	1 .92224	1 .96875	1 .98976	1 .99757	1 .99968	1 .99999

Table II. Sampling Plans for the Quantiles of IFR Distributions

$P^* = .75 \qquad c = 2$

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	39 .76217	19 .76311	13 .79752	9 .76821	7 .77344	6 .82080	5 .83692	4 .81920	4 .94770
1.1	35 .75271	18 .78481	12 .80152	9 .82021	7 .82463	6 .86563	5 .87893	4 .86302	3 .78013
1.2	33 .76816	16 .76258	11 .79636	8 .79376	6 .76854	5 .79059	4 .76200	4 .89697	3 .82240
1.3	30 .75731	15 .76874	10 .78143	8 .83525	6 .81222	5 .83177	4 .80514	4 .92296	3 .85705
1.4	28 .75880	14 .76843	9 .75495	7 .79090	6 .84864	5 .86568	4 .84129	4 .94268	3 .88526
1.5	26 .75400	13 .76160	9 .79422	7 .82711	5 .75929	5 .89331	4 .87131	3 .75496	3 .90810
1.6	25 .76786	13 .79806	8 .75304	6 .75843	5 .79522	4 .77018	4 .89605	3 .78851	3 .92652
1.7	23 .75223	12 .78297	8 .78776	6 .79258	5 .82647	4 .80268	4 .91632	3 .81786	3 .94133
1.8	22 .75845	11 .76039	8 .81831	6 .82256	5 .85347	4 .83109	4 .93283	3 .84340	3 .95320
1.9	21 .76146	11 .79116	7 .76045	6 .84871	5 .87666	4 .85581	4 .94622	3 .86556	3 .96271
2.0	20 .76135	11 .75946	7 .78951	6 .87141	5 .89648	4 .87720	3 .75357	3 .88474	3 .97030
2.2	18 .75168	10 .81247	7 .83878	5 .80226	4 .79154	4 .91150	3 .80244	3 .91552	3 .98119
2.4	17 .76702	9 .79476	6 .78470	5 .84545	4 .83516	4 .93666	3 .84230	3 .93828	3 .98810
2.6	16 .77573	8 .76271	6 .82683	5 .88007	4 .87045	4 .95493	3 .87454	3 .95500	3 .99248
2.8	15 .77839	8 .80407	6 .86161	4 .75631	4 .89870	3 .78666	3 .90045	3 .96725	3 .99525
3.0	14 .77156	7 .75328	5 .77560	4 .79416	4 .92114	3 .82003	3 .92117	3 .97619	3 .99700
3.5	12 .76682	7 .83651	5 .85372	4 .86716	3 .75758	3 .88342	3 .95629	3 .98931	3 .99905
4.0	11 .78785	6 .80727	4 .75487	4 .91579	3 .82397	3 .92515	3 .97590	3 .99521	3 .99970
4.5	10 .79381	6 .86400	4 .81784	4 .94732	3 .87319	3 .95221	3 .98675	3 .99786	3 .99991
5.0	9 .78568	5 .79843	4 .86610	3 .78493	3 .90915	3 .96959	3 .99273	3 .99904	3 .99997

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .75 c = 4

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	62 .75526	31 .77127	20 .76249	15 .78272	12 .80615	10 .83376	8 .80590	7 .85197	6 .88574
1.1	57 .76142	28 .76053	19 .78955	14 .79191	11 .79577	9 .80202	8 .86291	7 .89909	6 .92369
1.2	52 .75507	26 .76533	17 .76037	13 .78990	10 .76885	9 .85563	7 .78530	6 .78827	6 .94964
1.3	48 .75243	24 .75962	16 .76752	12 .77638	10 .82333	8 .79883	7 .83605	6 .83967	5 .77330
1.4	45 .75737	23 .77958	15 .76625	12 .82651	9 .77585	8 .84509	7 .87624	6 .87564	5 .81618
1.5	42 .75472	21 .75589	14 .75641	11 .79914	9 .82223	7 .75019	7 .90750	6 .90588	5 .85158
1.6	40 .76455	20 .76323	14 .80257	10 .75599	9 .86041	7 .79512	6 .78659	6 .92923	5 .88056
1.7	38 .76928	19 .76522	13 .78221	10 .79910	8 .79153	7 .83322	6 .82428	6 .94709	5 .90414
1.8	36 .76919	18 .76195	12 .75151	10 .83589	8 .82852	7 .86515	6 .85611	5 .75288	5 .92323
1.9	34 .76411	17 .75325	12 .79073	9 .77597	8 .85988	7 .89163	6 .88274	5 .78614	5 .93862
2.0	32 .75396	17 .79064	12 .82491	9 .81096	7 .75641	6 .75278	6 .90485	5 .81537	5 .95099
2.2	30 .77329	15 .75356	11 .81500	8 .75813	7 .82034	6 .81519	6 .93801	5 .86321	5 .96885
2.4	27 .75320	14 .75716	10 .78924	8 .81758	7 .86960	6 .86366	5 .75123	5 .89926	5 .98025
2.6	25 .75021	14 .81361	10 .84103	8 .86444	7 .90664	6 .90049	5 .79977	5 .92614	5 .98750
2.8	24 .77208	13 .80303	9 .79582	7 .77843	6 .79145	6 .92802	5 .83965	5 .94602	5 .99210
3.0	22 .75179	12 .78212	9 .83987	7 .82338	6 .83348	6 .94832	5 .87210	5 .96064	5 .99501
3.5	20 .78671	11 .81192	8 .82886	7 .90331	6 .90781	5 .81335	5 .92821	5 .98224	5 .99842
4.0	18 .79650	10 .81726	7 .77668	6 .82329	6 .95051	5 .87839	5 .96015	5 .99203	5 .99950
4.5	16 .78365	9 .79950	7 .85045	6 .88497	5 .79772	5 .92163	5 .97801	5 .99643	5 .99984
5.0	15 .80412	8 .75283	7 .90224	6 .92653	5 .85322	5 .94984	5 .98791	5 .99840	5 .99995

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .90 c = 0

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	22 .90152	11 .91410	7 .91765	5 .92224	4 .93750	3 .93600	2 .91000	2 .96000	1 .90000
1.1	20 .90152	10 .91410	6 .90502	5 .93977	4 .95263	3 .95138	2 .92926	2 .97101	1 .92057
1.2	19 .90948	9 .91018	6 .92332	4 .91386	3 .91753	3 .96307	2 .94440	2 .97899	1 .93690
1.3	17 .90256	8 .90179	5 .90157	4 .92979	3 .93301	2 .90767	2 .95630	2 .98477	1 .94988
1.4	16 .90559	8 .91785	5 .91765	4 .94277	3 .94559	2 .92313	2 .96565	2 .98896	1 .96019
1.5	15 .90658	7 .90396	5 .93110	4 .95334	3 .95581	2 .93600	2 .97300	1 .91056	1 .96838
1.6	14 .90559	7 .91785	5 .94235	3 .91388	3 .96410	2 .94672	2 .97878	1 .92385	1 .97488
1.7	13 .90256	7 .92973	4 .91156	3 .92611	2 .90527	2 .95564	2 .98332	1 .93517	1 .98005
1.8	13 .91503	6 91018	4 .92332	3 .93661	2 .91753	2 .96307	2 .98689	1 .94481	1 .98415
1.9	12 .90948	6 .92144	4 .93351	3 .94562	2 .92821	2 .96925	2 .98969	1 .95302	1 .98741
2.0	11 .90152	6 .93128	4 .94235	3 .95334	2 .93750	2 .97440	1 .91000	1 .96000	1 .99000
2.2	10 .90152	5 .91410	3 .90502	3 .96566	2 .95263	2 .98226	1 .92926	1 .97101	1 .99369
2.4	10 .92023	5 .93128	3 .92332	2 .91388	2 .96410	2 .98770	1 .94440	1 .97899	1 .99602
2.6	9 .91503	4 .90179	3 .93809	2 .92979	2 .97280	1 .90767	1 .95630	1 .98477	1 .99749
2.8	8 .90559	4 .91785	3 .95002	2 .94277	2 .97938	1 .92313	1 .96565	1 .98896	1 .99842
3.0	8 .92023	4 .93128	3 .95965	2 .95334	2 .98438	1 .93600	1 .97300	1 .99200	1 .99900
3.5	7 .92433	3 .90396	2 .91765	2 .97201	1 .91161	1 .95952	1 .98521	1 .99642	1 .99968
4.0	6 .92023	3 .93218	2 .94235	2 .98320	1 .93750	1 .97440	1 .99190	1 .99840	1 .99990
4.5	5 .90658	3 .95083	2 .95965	2 .98992	1 .95581	1 .98381	1 .99556	1 .99928	1 .99997
5.0	5 .92821	3 .96482	2 .97175	1 .92224	1 .96875	1 .98976	1 .99757	1 .99680	1 .99999

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .90 c = 2

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	52 .90337	25 .90177	16 .90064	12 .91656	9 .91016	7 .90374	6 .92953	5 .94208	4 .94770
1.1	47 .90048	23 .90470	15 .90979	11 .91610	9 .93891	7 .93379	6 .95334	5 .96239	4 .96603
1.2	44 .90748	21 .90156	14 .91394	10 .90931	8 .92461	6 .90017	5 .91089	5 .97578	4 .97808
1.3	40 .90115	20 .91160	13 .91366	10 .93415	8 .94629	6 .92642	5 .93489	4 .92296	4 .98592
1.4	38 .90877	19 .91815	12 .90892	9 .92041	7 .92272	6 .94614	5 .95272	4 .94268	4 .99099
1.5	35 .90323	17 .90116	12 .93075	9 .94020	7 .94199	6 .96081	5 .96585	4 .95753	3 .90810
1.6	33 .90460	16 .90100	11 .92106	8 .91916	6 .90324	5 .91566	5 .97545	4 .96864	3 .92652
1.7	31 .90316	16 .92517	10 .90551	8 .93691	6 .92318	5 .93360	4 .91632	4 .97691	3 .94133
1.8	30 .91129	15 .91762	10 .92431	7 .90497	6 .93925	5 .94791	4 .93283	4 .98304	3 .95320
1.9	28 .90519	14 .91074	9 .90224	7 .92278	6 .95213	5 .95927	4 .94622	4 .98757	3 .96271
2.0	27 .90990	13 .90029	9 .91961	7 .93745	6 .96240	5 .96824	4 .95704	4 .99090	3 .97030
2.2	24 .90008	12 .90292	8 .90553	6 .90785	5 .92674	4 .91150	4 .97273	3 .91552	3 .98119
2.4	23 .91490	12 .93104	8 .93298	6 .93459	5 .94985	4 .93666	4 .98280	3 .93828	3 .98810
2.6	21 .90962	11 .92613	7 .90794	6 .95395	5 .96550	4 .95493	4 .98920	3 .95500	3 .99248
2.8	20 .91719	10 .91572	7 .93121	5 .90751	5 .97641	4 .96807	3 .90045	3 .96725	3 .99525
3.0	18 .90250	10 .93636	7 .94892	5 .92905	4 .92114	4 .97747	3 .92117	3 .97619	3 .99700
3.5	16 .91236	8 .90387	6 .93939	5 .96413	4 .95847	4 .99069	3 .95629	3 .98931	3 .99905
4.0	14 .90868	8 .94398	5 .90665	4 .91579	4 .97847	3 .92515	3 .97590	3 .99521	3 .99970
4.5	13 .92089	7 .92374	5 .94140	4 .94732	4 .98896	3 .95221	3 .98675	3 .99786	3 .99991
5.0	12 .92621	6 .90535	5 .96369	4 .96737	3 .90915	3 .96959	3 .99257	3 .99904	3 .99997

Table II. Sampling Plans for the Quantiles of IFR Distributions

$P^* = .90 \qquad c = 4$

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	78 .90061	38 .90143	25 .90953	18 .90583	14 .91022	11 .90065	9 .90119	8 .94372	7 .97431
1.1	72 .90643	35 .90500	23 .91099	17 .91818	13 .91234	11 .93754	9 .93756	8 .96704	6 .92369
1.2	66 .90524	32 .90107	21 .90481	16 .92454	12 .90700	10 .92376	8 .90490	7 .93232	6 .94964
1.3	61 .90462	30 .90584	20 .91554	15 .92601	12 .93737	10 .94975	8 .93503	7 .95521	6 .96708
1.4	57 .90630	28 .90563	19 .92192	14 .92281	11 .92426	9 .92666	8 .95619	7 .97068	6 .97864
1.5	53 .90335	26 .90040	18 .92470	13 .91438	10 .90081	9 .94871	7 .90750	6 .90588	6 .98622
1.6	50 .90505	25 .90995	17 .92420	13 .93809	10 .92692	8 .91101	7 .93147	6 .92923	6 .99115
1.7	47 .90324	24 .91652	16 .92036	12 .92437	10 .94668	8 .93345	7 .94960	6 .94709	5 .90414
1.8	45 .90835	23 .92057	15 .91270	11 .90220	9 .91614	8 .95061	7 .96318	6 .96063	5 .92323
1.9	42 .90012	21 .90055	14 .90032	11 .92432	9 .93573	8 .96360	7 .97325	6 .97082	5 .93862
2.0	40 .90005	21 .92215	14 .92184	11 .94185	9 .95107	7 .91337	6 .90485	6 .97845	5 .95099
2.2	37 .90580	19 .91514	13 .92374	10 .93162	8 .92610	7 .94543	6 .93801	6 .98834	5 .96885
2.4	34 .90448	18 .92508	12 .91885	9 .90899	8 .95288	7 .96616	6 .96008	6 .99374	5 .98025
2.6	32 .91108	16 .90178	11 .90595	9 .93847	7 .90664	6 .90049	6 .97453	5 .92614	5 .98750
2.8	30 .91307	15 .90090	11 .93449	8 .90055	7 .93392	6 .92802	6 .98386	5 .94602	5 .99210
3.0	28 .91071	15 .92895	10 .91310	8 .92785	7 .95369	6 .94832	6 .98983	5 .96064	5 .99501
3.5	24 .90449	13 .92195	9 .91636	7 .90331	6 .90781	6 .97796	5 .92821	5 .98224	5 .99842
4.0	22 .92007	12 .93419	9 .95838	7 .94915	6 .95051	6 .99082	5 .96015	5 .99203	5 .99950
4.5	19 .90007	11 .93631	8 .94291	7 .97404	6 .97399	5 .92163	5 .97801	5 .99643	5 .99984
5.0	18 .91871	10 .92908	7 .90224	6 .92653	6 .98653	5 .94984	5 .98791	5 .99840	5 .99995

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .95 c = 0

q / λ	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	29 .95290	14 .95602	9 .95965	6 .95334	5 .96875	4 .97440	3 .97300	2 .96000	2 .99000
1.1	26 .95087	13 .95887	8 .95666	6 .96566	4 .95263	3 .95138	3 .98119	2 .97101	2 .99369
1.2	24 .95190	12 .95977	7 .95002	5 .95334	4 .96401	3 .96307	3 .98689	2 .97899	2 .99602
1.3	22 .95087	11 .95887	7 .96106	5 .96386	4 .97280	3 .97194	2 .95630	2 .98477	2 .99749
1.4	21 .95484	10 .95602	6 .95002	5 .97201	4 .97938	3 .97869	2 .96565	2 .98896	1 .96019
1.5	19 .95035	9 .95083	6 .95965	4 .95334	3 .95581	3 .98381	2 .97300	2 .99200	1 .96838
1.6	18 .95190	9 .95977	6 .96742	4 .96197	3 .96410	3 .98770	2 .97878	2 .99420	1 .97488
1.7	17 .95240	8 .95191	5 .95177	4 .96900	3 .97084	2 .95564	2 .98332	2 .99580	1 .98005
1.8	16 .95190	8 .95977	5 .95965	4 .97473	3 .97632	2 .96307	2 .98689	2 .99695	1 .98515
1.9	15 .95035	8 .96635	5 .96624	4 .97940	3 .98076	2 .96925	2 .98969	1 .95302	1 .98742
2.0	15 .95761	7 .95602	5 .97175	3 .95334	3 .98437	2 .97440	2 .99190	1 .96000	1 .99000
2.2	13 .95087	7 .96782	4 .95666	3 .96566	2 .95263	2 .98226	2 .99300	1 .97101	1 .99369
2.4	12 .95190	6 .95977	4 .96742	3 .97473	2 .96410	2 .98770	2 .99691	1 .97899	1 .99602
2.6	11 .95087	6 .96922	4 .97551	3 .98140	2 .97280	2 .99147	1 .95630	1 .98477	1 .99749
2.8	11 .96104	5 .95602	3 .95002	3 .98631	2 .97938	2 .99409	1 .96565	1 .98896	1 .99842
3.0	10 .95761	5 .96482	3 .95965	2 .95334	2 .98438	2 .99591	1 .97300	1 .99200	1 .99900
3.5	9 .96381	4 .95602	3 .97637	2 .97201	2 .99219	1 .95952	1 .98521	1 .99642	1 .99968
4.0	8 .96566	4 .97185	3 .98616	2 .98320	2 .99609	1 .97440	1 .99190	1 .99840	1 .99990
4.5	7 .96381	3 .95083	2 .95965	2 .98992	1 .95581	1 .98381	1 .99556	1 .99928	1 .99997
5.0	6 .95761	3 .96482	2 .97175	2 .99395	1 .96875	1 .98976	1 .99757	1 .99968	1 .99999

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .95 c = 2

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	61 .95088	30 .95582	19 .95378	14 .96021	11 .96729	8 .95019	7 .97120	6 .98304	5 .99144
1.1	56 .95273	27 .95277	18 .96147	13 .96292	10 .96519	8 .96861	6 .95334	5 .96239	4 .96603
1.2	51 .95086	25 .95425	16 .95352	12 .96270	9 .95890	7 .95491	6 .96940	5 .97578	4 .97808
1.3	47 .95008	23 .95266	15 .95576	11 .95950	9 .97261	7 .96956	6 .98010	5 .98451	4 .98592
1.4	44 .95158	22 .95844	14 .95561	10 .95256	8 .96203	7 .97960	5 .95272	5 .99015	4 .99099
1.5	41 .95081	20 .95175	13 .95304	10 .96605	8 .97333	6 .96081	5 .96585	4 .95753	4 .99425
1.6	39 .95375	19 .95399	13 .96570	9 .95532	7 .95669	6 .97163	5 .97545	4 .96864	4 .99634
1.7	37 .95514	18 .95467	12 .96065	9 .96680	7 .96783	6 .97956	5 .98241	4 .97691	4 .99767
1.8	35 .95512	17 .95384	11 .95245	8 .95098	7 .97620	6 .98533	5 .98745	4 .98304	3 .95320
1.9	33 .95369	16 .95142	11 .96334	8 .96206	6 .95213	5 .95927	5 .99107	4 .98757	3 .96271
2.0	31 .95072	16 .96199	10 .95200	8 .97074	6 .96240	5 .96824	4 .95704	4 .99090	3 .97030
2.2	29 .95642	14 .95192	10 .96996	7 .95934	6 .97700	5 .98083	4 .97273	4 .99515	3 .98119
2.4	26 .95062	13 .95326	9 .96430	7 .97383	6 .98607	5 .98853	4 .98280	4 .99742	3 .98810
2.6	25 .95897	12 .95146	8 .95286	6 .95395	5 .96550	4 .95493	4 .98920	3 .95500	3 .99248
2.8	23 .95628	12 .96611	8 .96710	6 .96780	5 .97641	4 .96807	4 .99324	3 .96725	3 .99525
3.0	21 .95045	11 .96105	8 .97719	6 .97762	5 .98395	4 .97747	4 .99578	3 .97619	3 .99700
3.5	19 .95006	10 .97119	7 .96738	5 .98224	4 .97847	4 .99620	3 .97590	3 .99521	3 .99970
4.0	15 .95006	8 .97119	6 .96738	5 .98224	4 .97847	3 .99620	3 .97590	3 .99521	3 .99970
4.5	15 .96026	8 .96800	6 .98277	5 .99135	4 .98896	3 .95221	3 .98675	3 .99786	3 .99991
5.0	14 .96587	7 .95791	5 .96369	4 .96737	4 .99438	3 .96959	3 .99273	3 .99904	3 .99997

Table II. Sampling Plans for the Quantiles of IFR Distributions

$P^* = .95 \quad c = 4$

q / λ	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	89 .95030	44 .95599	28 .95257	21 .96304	16 .96159	13 .96792	10 .95265	9 .98042	7 .97431
1.1	82 .95343	40 .95466	26 .95642	19 .95889	15 .96580	12 .96694	10 .97329	8 .96704	7 .98626
1.2	75 .95218	37 .95582	24 .95620	18 .96469	14 .96667	11 .96157	9 .96131	8 .98104	7 .99275
1.3	69 .95056	34 .95319	22 .95186	16 .95070	13 .96443	11 .97678	9 .97642	7 .95521	6 .96708
1.4	65 .95398	32 .95563	21 .95765	15 .95011	12 .95847	10 .96737	8 .95619	7 .97068	6 .97864
1.5	60 .95018	30 .95519	20 .96106	15 .96683	12 .97284	10 .97909	8 .97079	7 .98099	6 .98622
1.6	57 .95331	28 .95284	19 .96253	14 .96289	11 .96349	9 .96451	8 .98071	7 .98777	6 .99115
1.7	54 .95450	27 .95830	18 .96226	13 .95571	11 .97505	9 .97567	8 .98737	7 .99218	6 .99434
1.8	51 .95386	25 .95123	17 .96021	13 .96861	10 .96143	8 .95061	7 .96318	6 .96063	6 .99639
1.9	48 .95134	24 .95373	16 .95611	12 .95851	10 .97232	8 .96360	7 .97325	6 .97082	6 .99770
2.0	46 .95319	23 .95485	16 .96781	12 .96962	9 .95107	8 .97333	7 .98067	6 .97845	5 .95099
2.2	42 .95311	21 .95324	14 .95286	11 .96631	9 .97213	8 .98591	7 .99002	6 .98834	5 .96885
2.4	39 .95544	20 .96129	13 .95192	10 .95728	8 .95288	7 .96616	6 .96009	6 .99374	5 .98025
2.6	36 .95416	18 .95113	13 .97025	10 .97378	8 .97041	7 .97928	6 .97453	6 .99666	5 .98750
2.8	34 .95757	17 .95336	12 .96502	9 .95898	8 .98166	7 .98744	6 .98386	6 .99823	5 .99210
3.0	32 .95859	16 .95290	11 .95496	9 .97299	7 .95369	7 .99246	6 .98983	5 .96064	5 .99501
3.5	27 .95086	14 .95159	10 .96156	8 .96894	7 .98159	6 .97796	6 .99685	5 .98224	5 .99842
4.0	24 .95211	13 .96232	9 .95838	8 .98721	6 .95051	6 .99082	5 .96015	5 .99203	5 .99950
4.5	22 .95769	12 .96617	9 .98005	7 .97404	6 .97399	6 .99623	5 .97801	5 .99643	5 .99984
5.0	20 .95731	11 .96479	8 .96846	7 .98704	6 .98653	6 .99847	5 .98791	5 .99840	5 .99995

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .99 c = 0

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	44 .99030	21 .99078	13 .99031	10 .99395	7 .99219	6 .99590	5 .99190	3 .99200	2 .99000
1.1	40 .99030	19 .99057	12 .99098	9 .99364	7 .99519	5 .99352	4 .99500	3 .99506	2 .99369
1.2	37 .99070	18 .99193	11 .99098	8 .99258	6 .99320	5 .99590	4 .99691	3 .99695	2 .99602
1.3	34 .99050	16 .99036	10 .99031	7 .99042	6 .99551	4 .99147	3 .99086	3 .99812	2 .99749
1.4	32 .99109	15 .99078	10 .99322	7 .99330	5 .99219	4 .99409	3 .99363	3 .99884	2 .99842
1.5	30 .99127	14 .99078	9 .99189	7 .99532	5 .99448	4 .99590	3 .99556	2 .99200	2 .99900
1.6	28 .99109	13 .99036	9 .99412	6 .99258	5 .99609	4 .99716	3 .99691	2 .99420	2 .99937
1.7	26 .99050	13 .99278	8 .99218	6 .99454	4 .99103	3 .99066	3 .99785	2 .99580	2 .99960
1.8	25 .99127	12 .99193	8 .99412	6 .99598	4 .99320	3 .99290	3 .99850	2 .99695	2 .99975
1.9	24 .99181	11 .99057	7 .99129	5 .99219	4 .99485	3 .99461	3 .99895	2 .99779	2 .99984
2.0	22 .99030	11 .99262	7 .99322	5 .99395	4 .99609	3 .99590	2 .99190	2 .99840	1 .99000
2.2	20 .99030	10 .99262	6 .99098	5 .99637	4 .99776	3 .99764	2 .99500	2 .99916	1 .99369
2.4	19 .99181	9 .99193	6 .99412	4 .99258	3 .99320	3 .99864	2 .99691	2 .99956	1 .99602
2.6	17 .99050	8 .99036	5 .99031	4 .99507	3 .99551	2 .99147	2 .99809	2 .99977	1 .99749
2.8	16 .99109	8 .99325	5 .99322	4 .99672	3 .99704	2 .99409	2 .99882	2 .99988	1 .99842
3.0	15 .99127	7 .99078	5 .99525	4 .99782	3 .99805	2 .99590	2 .99927	1 .99200	1 .99900
3.5	13 .99172	6 .99078	4 .99322	3 .99532	2 .99219	2 .99836	2 .99978	1 .99642	1 .99968
4.0	11 .99030	6 .99528	4 .99668	3 .99782	2 .99609	2 .99934	1 .99190	1 .99840	1 .99990
4.5	10 .99127	5 .99340	4 .99189	4 .99899	2 .99805	2 .99974	1 .99556	1 .99928	1 .99997
5.0	9 .99128	5 .99622	3 .99525	2 .99395	2 .99902	2 .99990	1 .99757	1 .99968	1 .99999

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .99 c = 2

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	81 .99017	39 .99052	25 .99104	18 .99177	14 .99353	11 .99408	9 .99571	7 .99533	5 .99144
1.1	74 .99041	36 .99131	23 .99151	17 .99353	13 .99416	10 .99351	8 .99408	6 .99058	5 .99557
1.2	68 .99049	33 .99115	21 .99099	15 .99098	12 .99409	9 .99177	7 .99010	6 .99482	5 .99772
1.3	63 .99064	31 .99203	20 .99259	14 .99128	11 .99332	9 .99535	7 .99427	6 .99717	5 .99883
1.4	59 .99110	28 .99013	18 .99041	13 .99086	10 .99156	8 .99259	7 .99671	5 .99015	4 .99099
1.5	55 .99094	27 .99201	17 .99090	13 .99436	10 .99482	8 .99549	6 .99174	5 .99377	4 .99425
1.6	51 .99015	25 .99110	16 .99087	12 .99330	9 .99224	7 .99101	6 .99472	5 .99607	4 .99634
1.7	48 .99007	24 .99213	15 .99030	11 .99138	9 .99496	7 .99408	6 .99664	5 .99753	4 .99767
1.8	46 .99093	22 .99007	15 .99345	11 .99422	8 .99106	7 .99611	6 .99787	5 .99846	4 .99852
1.9	44 .99145	21 .99040	14 .99242	10 .99157	8 .99384	7 .99746	5 .99107	5 .99903	4 .99906
2.0	41 .99014	20 .99038	13 .99070	10 .99411	8 .99577	6 .99252	5 .99366	4 .99090	4 .99941
2.2	38 .99122	19 .99273	12 .99113	9 .99292	7 .99312	6 .99623	5 .99683	4 .99515	4 .99976
2.4	35 .99135	17 .99096	11 .99050	9 .99626	7 .99636	6 .99811	5 .99842	4 .99742	4 .99991
2.6	32 .99059	16 .99183	11 .99457	8 .99420	6 .99163	5 .99318	5 .99922	4 .99864	3 .99248
2.8	30 .99104	15 .99208	10 .99308	8 .99668	6 .99500	5 .99597	4 .99324	4 .99928	3 .99525
3.0	28 .99088	14 .99175	9 .99012	7 .99335	6 .99703	5 .99762	4 .99578	4 .99962	3 .99700
3.5	24 .99045	12 .99084	8 .99109	6 .99117	5 .99398	4 .99069	4 .99871	4 .99992	3 .99905
4.0	21 .99001	11 .99286	8 .99661	6 .99660	5 .99778	4 .99620	4 .99961	3 .99521	3 .99970
4.5	19 .99077	10 .99334	7 .99523	5 .99135	5 .99919	4 .99846	4 .99988	3 .99786	3 .99991
5.0	18 .99337	9 .99255	6 .99102	5 .99583	4 .99438	4 .99938	3 .99273	3 .99904	3 .99997

Table II. Sampling Plans for the Quantiles of IFR Distributions

P* = .99 c = 4

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
1.0	113 .99059	55 .9913[illegible]	35 .99088	23 .99033	19 .99039	1[illegible] .990[illegible]5	12 .990[illegible]1	10 .99[illegible]	8 .99[illegible]8
1.1	103 .99063	50 .99106	32 .99084	23 .99077	18 .99269	14 .991[illegible]2	12 .99[illegible]75	9 .99018	8 .99[illegible]
1.2	94 .99016	46 .99104	30 .99207	22 .99324	17 .99387	13 .99124	11 .99466	9 .99[illegible]1[illegible]	[illegible] .9927[illegible]
1.3	87 .99022	43 .99169	28 .99241	20 .99152	16 .99433	13 .993[illegible]	10 .9[illegible]199	9 .997[illegible]	[illegible] .99[illegible]22
1.4	81 .99029	40 .991[illegible]4	26 .99197	19 .99256	1[illegible] .99420	12 .99438	10 .99[illegible]72	8 .99[illegible]98	7 .99804
1.5	76 .99056	37 .99055	24 .99063	18 .99298	14 .99345	11 .99189	9 .991[illegible]9	8 .99667	7 .99899
1.6	71 .99014	35 .99095	23 .99187	17 .99289	13 .99183	11 .99330	9 .99306	8 .99817	6 .9911[illegible]
1.7	67 .99020	33 .99079	22 .99239	16 .99224	13 .99511	10 .99168	9 .99712	7 .99218	6 .99434
1.8	64 .99095	31 .99002	21 .99289	15 .99091	12 .99289	10 .99482	8 .99179	7 .99[illegible]03	6 [illegible]9[illegible]39
1.9	61 .99127	30 .99142	20 .99283	15 99421	12 .99554	10 .99680	8 .99469	7 .99[illegible]8[illegible]	6 .997[illegible]0
2.0	58 .99120	29 .99240	19 .99240	14 .99241	11 .99244	9 .99252	8 .99659	7 .99802	6 .998[illegible]
2.2	53 .99131	26 .99077	17 .99008	13 .99267	10 .99016	9 .99669	7 .99002	7 .99922	[illegible] .999[illegible]1
2.4	48 .99008	24 .990[illegible]0	16 .99127	12 .99179	10 .99520	8 .99268	7 .99492	6 .9937[illegible]	6 .999[illegible]
2.6	54 .99102	25 .99291	13 .99151	12 .99[illegible]86	9 .99145	8 .99625	7 .99744	6 .99666	6 .99992
2.8	42 .99113	21 .99110	14 .99087	11 .99418	9 .99537	8 .99810	7 .99872	6 .9982[illegible]	5 .99210
3.0	39 .9904[illegible]	20 .99206	14 .99489	10 .99053	9 .99752	7 .992[illegible]6	7 .99937	6 .99906	5 .99[illegible]01
[illegible]	34 .99106	18 .99404	12 .99292	9 .99090	8 .99681	7 .99795	6 .9968[illegible]	6 .99981	5 .998[illegible]2
4.0	30 .99099	16 .99384	11 .99403	9 .99708	7 .99294	6 .99082	6 .99904	[illegible] .99203	5 .99[illegible]0
4.[illegible]	27 .99124	14 .99126	10 .99348	8 .99490	7 .99736	6 .9962[illegible]	6 .99971	5 .99[illegible]	5 .99[illegible]8[illegible]
.0	2[illegible] .992[illegible]	13 .99222	9 .99072	8 .99802	7 .99903	6 .998[illegible]	6 .99991	5 .99840	5 .9999[illegible]

Table III. Sampling Plans for the Quantiles of DFR Distributions

$P^* = .75 \quad c = 0$

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	1316 .75005	622 .75042	389 .75029	272 .75079	200 .75000	152 .75161	116 .75256	87 .75345	61 .75453
.02	658 .75007	311 .75041	195 .75119	136 .75079	100 .75000	76 .75161	58 .75257	44 .75739	31 .76012
.03	439 .75033	208 .75152	130 .75119	91 .75206	67 .75173	51 .75388	39 .75553	29 .75345	21 .76558
.04	329 .75007	156 .75152	98 .75295	68 .75079	50 .75000	38 .75161	29 .75256	22 .75739	16 .77091
.05	264 .75112	125 .75208	78 .75118	55 .75458	40 .75000	31 .75835	24 .76420	18 .76508	13 .77613
.06	220 .75111	104 .75153	65 .75118	46 .75583	34 .75684	26 .76055	20 .76420	15 .76508	11 .78123
.07	188 .75007	89 .75097	56 .75295	39 .75206	29 .75612	22 .76134	17 .76134	13 .76883	9 .76558
.08	165 .75111	78 .75153	49 .75295	34 .75079	25 .75000	19 .75161	15 .76420	11 .75739	8 .77091
.09	147 .75190	70 .75483	44 .75645	31 .75954	23 .76184	17 .75388	13 .75553	10 .76508	7 .76558
.10	132 .75111	63 .75483	39 .75118	28 .76077	21 .76674	16 .76917	12 .76420	9 .76508	7 .80047
.15	88 .75111	42 .75483	26 .75118	19 .76680	14 .76674	11 .77951	8 .76420	6 .76508	5 .82217
.20	66 .75111	32 .76024	20 .75990	14 .76077	11 .78236	8 .76917	6 .76420	5 .80000	4 .84151
.25	53 .75242	25 .75208	16 .75990	11 .75458	9 .78978	7 .79881	5 .77798	4 .80000	3 .82217
.30	44 .75111	21 .75483	13 .75118	10 .78400	7 .76674	6 .80782	4 .76420	3 .76508	3 .87411
.35	38 .75372	18 .75483	12 .77643	8 .76077	6 .76674	5 .79881	4 .81466	3 .81546	2 .80047
.40	33 .75111	16 .76024	10 .75900	7 .76077	5 .75000	4 .76917	3 .76420	3 .85504	2 .84151
.45	30 .75886	14 .75483	9 .76414	7 .79993	5 .78978	4 .80782	3 .80316	2 .76508	2 .87411
.50	27 .75886	13 .76553	8 .75990	6 .78400	5 .82322	4 .81000	3 .83568	2 .80000	2 .90000
.60	22 .75111	11 .77071	7 .77643	5 .78400	4 .81054	3 .80782	2 .76420	2 .85504	2 .93690
.70	19 .75372	9 .75483	6 .77643	4 .76077	3 .76674	3 .85401	2 .81466	2 .89494	1 .80047
.80	17 .76138	8 .76024	5 .75990	4 .80498	3 .81054	2 .76917	2 .85432	2 .92385	1 .84151
.90	15 .75886	7 .75483	5 .79912	4 .84102	3 .84611	2 .80782	2 .88550	1 .76508	1 .87411

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .75 c = 2

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	3723 .75015	1758 .75005	1101 .75046	769 .75043	567 .75043	429 .75020	327 .75069	245 .75100	172 .75257
.02	1862 .75107	880 .75037	551 .75047	385 .75042	284 .75042	215 .75019	164 .75068	123 .75098	87 .75599
.03	1242 .75035	587 .75037	368 .75101	257 .75041	190 .75148	144 .75158	110 .75249	83 .75580	58 .75246
.04	932 .75050	441 .75105	276 .75046	193 .75041	143 .75251	108 .75017	83 .75427	62 .75090	44 .75583
.05	746 .75065	353 .75105	221 .75045	155 .75195	115 .75459	87 .75293	67 .75784	50 .75328	36 .76587
.06	622 .75081	294 .75037	185 .75261	129 .75039	96 .75458	73 .75566	56 .75780	42 .75563	30 .76238
.07	533 .75050	252 .75003	159 .75369	111 .75194	82 .75142	63 .75836	48 .75596	36 .75312	26 .76557
.08	467 .75113	221 .75105	139 .75260	97 .75037	72 .75245	55 .75560	42 .75410	32 .76023	23 .76869
.09	415 .75081	197 .75240	124 .75422	87 .75499	64 .75138	49 .75556	38 .76296	29 .76946	20 .75149
.10	374 .75145	177 .75104	111 .75043	78 .75190	58 .75450	44 .75277	34 .75757	26 .76471	19 .78115
.15	250 .75225	119 .75440	75 .75577	53 .75946	39 .75435	30 .75935	23 .75712	18 .77542	13 .77966
.20	188 .75304	89 .75100	56 .75033	40 .75935	30 .76439	23 .76570	18 .77394	14 .78545	10 .77757
.25	150 .75063	72 .75602	45 .75026	32 .75540	24 .75904	19 .77822	15 .78965	11 .76141	8 .75814
.30	126 .75460	60 .75431	38 .75555	27 .75903	20 .75353	16 .77770	12 .75467	10 .80367	7 .77148
.35	108 .75381	52 .75926	33 .76075	23 .75115	18 .77821	14 .78338	11 .78778	9 .82148	6 .75019
.40	95 .75617	45 .75085	29 .76063	21 .77335	16 .78256	12 .76327	10 .80229	8 .81971	6 .82341
.45	84 .75219	41 .76407	26 .76311	19 .78020	14 .76753	11 .77554	9 .80105	7 .79778	5 .75731
.50	76 .75456	37 .76402	24 .77570	17 .77280	13 .78160	10 .77463	8 .78375	7 .85067	5 .81480
.60	64 .75924	31 .76388	20 .77035	14 .75728	11 .78042	9 .80885	7 .79639	6 .84636	5 .89523
.70	55 .75921	27 .77016	17 .75960	13 .79890	10 .80629	8 .81782	6 .77599	5 .80357	4 .81993
.80	48 .75603	23 .75024	15 .75193	11 .77042	9 .81336	7 .80424	6 .83515	5 .86725	4 .87924
.90	43 .75912	21 .76334	14 .78391	10 .77561	8 .80324	6 .76361	5 .78259	4 .76345	4 .92011

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .75 c = 4

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	5958 .75007	2814 .75007	1762 .75037	1231 .75045	908 .75067	687 .75026	524 .75124	392 .75028	275 .75139
.02	2980 .75011	1408 .75004	882 .75038	617 .75106	455 .75066	345 .75136	263 .75123	197 .75025	139 .75411
.03	1988 .75038	940 .75058	589 .75081	412 .75105	304 .75065	231 .75246	176 .75120	132 .75020	93 .75122
.04	1491 .75011	705 .75004	442 .75036	310 .75228	229 .75232	174 .75354	133 .75407	100 .75402	71 .75935
.05	1194 .75062	565 .75086	354 .75036	248 .75104	184 .75397	139 .75018	107 .75546	80 .75003	57 .75643
.06	995 .75036	471 .75058	296 .75208	207 .75102	153 .75060	117 .75567	89 .75105	68 .76147	48 .75894
.07	853 .75024	404 .75058	254 .75208	178 .75225	132 .75392	100 .75121	77 .75533	58 .75368	41 .75038
.08	747 .75061	354 .75112	222 .75034	156 .75223	116 .75536	88 .75338	68 .75954	51 .75353	37 .76912
.09	664 .75035	315 .75138	198 .75206	139 .75283	103 .75303	79 .75879	60 .75079	46 .76102	33 .76613
.10	598 .75061	284 .75219	178 .75032	125 .75096	93 .75383	71 .75546	55 .76217	42 .76833	30 .76841
.15	400 .75189	190 .75217	120 .75457	84 .75083	63 .75774	48 .75505	37 .75433	29 .77628	21 .77903
.20	300 .75060	143 .75213	90 .75017	64 .75679	48 .76151	37 .76530	29 .77440	22 .76544	16 .76247
.25	241 .75250	115 .75343	73 .75650	52 .76260	39 .76515	30 .76459	23 .75206	18 .76325	14 .80841
.30	201 .75185	96 .75203	61 .75423	43 .75013	33 .76866	25 .75284	20 .77178	16 .79641	12 .80385
.35	173 .75375	83 .75599	53 .76044	38 .76795	28 .75171	22 .76270	18 .79642	14 .79364	11 .83196
.40	151 .75055	73 .75725	47 .76650	33 .75558	25 .75931	20 .78236	16 .79463	12 .75357	10 .83691
.45	135 .75371	65 .75584	42 .76630	30 .76717	23 .77846	18 .78111	14 .76576	11 .75904	9 .82005
.50	122 .75559	59 .75973	38 .76608	27 .76075	21 .78149	16 .75862	13 .77705	11 .83105	8 .77545
.60	102 .75554	49 .75150	32 .76555	23 .76564	18 .78722	14 .77643	11 .75712	9 .77236	7 .75394
.70	88 .75800	43 .76450	28 .77312	20 .76437	16 .79978	12 .75079	10 .77829	8 .75993	7 .85278
.80	77 .75542	38 .76681	25 .78042	18 .77466	14 .78259	11 .76790	9 .77051	8 .84722	6 .75639
.90	69 .75911	34 .76650	22 .76340	16 .76122	13 .80198	10 .76259	9 .84728	7 .78705	6 .83151

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .90 c = 0

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	2186 .90005	1032 .90003	646 .90015	451 .90013	333 .90056	252 .90065	192 .90090	144 .90148	101 .90228
.02	1093 .90006	516 .90002	323 .90016	226 .90063	167 .90125	126 .90064	96 .90090	72 .90149	50 .90000
.03	729 .90017	344 .90002	216 .90087	151 .90114	111 .90056	84 .90065	64 .90090	48 .90149	34 .90450
.04	547 .90027	258 .90003	162 .90086	113 .90063	84 .90260	63 .90064	48 .90090	36 .90149	26 .90880
.05	438 .90048	207 .90069	130 .90157	91 .90214	67 .90193	51 .90334	39 .90442	29 .90306	21 .91087
.06	365 .90048	172 .90003	108 .90086	76 .90264	56 .90260	42 .90064	32 .90090	24 .90149	17 .90450
.07	313 .90059	148 .90091	93 .90192	65 .90214	48 .90260	36 .90064	28 .90556	21 .90613	15 .91087
.08	274 .90069	129 .90003	81 .90086	57 .90264	42 .90260	32 .90422	24 .90090	18 .90149	13 .90880
.09	243 .90016	115 .90069	72 .90086	51 .90412	37 .90056	28 .90064	22 .90781	16 .90149	12 .91682
.10	219 .90048	104 .90179	65 .90157	46 .90461	34 .90527	26 .90767	20 .91000	15 .91056	11 .92057
.15	146 .90048	69 .90069	44 .90502	31 .90702	23 .90849	17 .90334	13 .90442	10 .91056	7 .91087
.20	110 .90152	52 .90179	33 .90502	23 .90461	17 .90527	13 .90767	10 .91000	8 .92385	6 .93690
.25	88 .90152	42 .90396	26 .90157	19 .91165	14 .91161	11 .91952	8 .91000	6 .91056	5 .94377
.30	73 .90048	35 .90396	22 .90502	16 .91388	12 .91753	9 .91575	7 .92021	5 .91056	4 .93690
.35	63 .90204	30 .90396	19 .90670	13 .90214	10 .91161	8 .92313	6 .92021	5 .94019	3 .91087
.40	55 .90152	26 .90179	17 .91156	12 .91388	9 .91753	7 .92313	5 .91000	4 .92385	3 .93690
.45	49 .90204	23 .90069	15 .90996	11 .92023	8 .91753	6 .91575	5 .93339	4 .94481	3 .95533
.50	44 .90152	21 .90396	13 .90157	10 .92224	7 .91161	6 .93600	4 .91000	3 .91056	2 .90000
.60	37 .90358	18 .91018	11 .90502	8 .91388	6 .91753	5 .93600	4 .94440	3 .94481	2 93690
.70	32 .90559	15 .90396	10 .91765	7 .91816	5 .91161	4 .92313	3 .92021	3 .96595	2 .96019
.80	28 .90559	13 .90179	9 .92332	6 .91388	5 .93750	4 .94672	3 .94440	2 .92385	2 .97488
.90	25 .90658	12 .91018	8 .92332	6 .93061	4 .91753	3 .91575	3 .96125	2 .94481	2 .98413

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .90   c = 2

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	5053 .90002	2387 .90014	1494 .90020	1043 .90004	769 .90007	582 .90009	444 .90077	332 .90034	233 .90135
.02	2527 .90004	1194 .90013	748 .90045	522 .90003	385 .90007	292 .90072	223 .90160	167 .90143	117 .90133
.03	1685 .90004	797 .90044	499 .90044	349 .90073	257 .90007	195 .90072	149 .90159	112 .90251	79 .90441
.04	1264 .90004	598 .90044	375 .90093	262 .90073	193 .90007	147 .90196	112 .90158	84 .90140	59 .90127
.05	1012 .90025	479 .90075	300 .90068	210 .90108	155 .90101	118 .90257	90 .90238	68 .90463	48 .90584
.06	843 .90003	399 .90044	250 .90044	175 .90073	129 .90006	98 .90069	75 .90155	57 .90566	40 .90427
.07	723 .90018	342 .90028	215 .90141	150 .90037	111 .90100	84 .90005	65 .90477	49 .90563	35 .91015
.08	633 .90032	300 .90105	188 .90092	132 .90212	97 .90004	74 .90192	57 .90474	43 .90059	30 .90101
.09	563 .90047	267 .90135	167 .90043	117 .90072	87 .90287	66 .90253	51 .90630	38 .90233	27 .90404
.10	507 .90061	240 .90074	151 .90189	106 .90280	78 .90098	60 .90556	46 .90628	35 .90965	25 .91277
.15	338 .90025	161 .90226	101 .90188	71 .90277	53 .90557	40 .90241	31 .90610	24 .91432	17 .91218
.20	254 .90061	121 .90225	76 .90186	54 .90611	40 .90549	31 .91118	24 .9136	18 .90894	13 .91136
.25	204 .90169	97 .90224	61 .90183	43 .90266	32 .90308	25 .91102	19 .90555	15 .91819	11 .92375
.30	170 .90133	81 .90222	51 .90179	36 .90259	27 .90526	21 .91081	16 .90518	13 .92649	9 .90898
.35	146 .90168	70 .90445	44 .90296	31 .90251	23 .90044	18 .90766	14 .90864	11 .91691	8 .91462
.40	128 .90204	61 .90219	39 .90645	28 .91230	21 .91371	16 .91028	13 .92571	10 .92515	7 .90556
.45	114 .90239	55 .90661	35 .90870	25 .91220	19 .91765	14 .90091	11 .90361	9 .92432	7 .94112
.50	103 .90345	49 .90214	31 .90159	22 .90218	17 .91334	13 .90960	10 .90294	8 .91413	6 .91589
.60	86 .90344	41 .90209	26 .90145	19 .91183	14 .90402	11 .90876	9 .92354	7 .92121	6 .96177
.70	74 .90413	36 .90934	23 .91062	16 .90156	13 .92795	10 .92402	8 .92852	6 .90870	5 .94244
.80	65 .90481	31 .90195	20 .90588	15 .92310	11 .91169	9 .92794	7 .92041	6 .94701	5 .96905
.90	58 .90549	28 .90633	18 .90799	13 .91079	10 .91521	8 .92197	7 .95176	5 .91174	4 .92011

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .90 c = 4

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	7590 .90005	3585 .90011	2244 .90018	1567 .90005	1156 .90031	875 .90032	666 .90004	499 .90030	350 .90110
.02	3796 .90007	1794 .90022	1123 .90018	785 .90034	579 .90030	439 .90084	334 .90004	251 .90121	176 .90107
.03	2531 .90002	1197 .90035	750 .90059	524 .90034	387 .90070	293 .90031	224 .90140	168 .90118	118 .90103
.04	1899 .90007	898 .90022	563 .90058	394 .90092	291 .90109	221 .90186	168 .90001	127 .90297	89 .90097
.05	1520 .90019	719 .90035	451 .90078	315 .90004	233 .90068	177 .90133	135 .90067	102 .90293	72 .90348
.06	1267 .90019	600 .90073	376 .90058	263 .90033	195 .90185	148 .90184	113 .90133	85 .90107	60 .90079
.07	1086 .90007	514 .90022	323 .90118	226 .90090	167 .90066	127 .90130	97 .90062	73 .90009	52 .90328
.08	951 .90031	450 .90022	283 .90138	198 .90090	147 .90261	112 .90385	86 .90530	65 .90632	46 .90569
.09	845 .90000	401 .90111	252 .90178	176 .90031	131 .90299	99 .90021	76 .90123	58 .90625	41 .90428
.10	761 .90018	361 .90098	227 .90178	159 .90146	118 .90258	90 .90380	69 .90388	52 .90262	37 .90284
.15	508 .90019	241 .90033	152 .90175	107 .90285	79 .90052	61 .90615	47 .90689	36 .91081	26 .91407
.20	382 .90078	182 .90222	115 .90372	81 .90420	60 .90235	46 .90440	36 .90791	27 .90134	20 .91272
.25	306 .90078	146 .90220	92 .90167	65 .90268	49 .90788	37 .90050	29 .90598	22 .90037	17 .92744
.30	255 .90017	122 .90218	77 .90161	55 .90678	41 .90580	32 .91254	25 .91482	19 .90815	14 .90870
.35	219 .90047	105 .90278	67 .90649	47 .90242	36 .91288	28 .91673	22 .92002	17 .91916	13 .93338
.40	192 .90076	92 .90212	59 .90737	42 .90923	31 .90140	24 .90175	19 .90704	15 .91384	11 .90295
.45	171 .90105	82 .90209	52 .90138	37 .90208	28 .90495	22 .91114	17 .90273	14 .92753	11 .94611
.50	154 .90074	74 .90205	47 .90128	34 .90887	26 .91548	20 .91054	16 .91750	13 .93287	10 .93963
.60	129 .90192	62 .90196	40 .90698	29 .91373	22 .91472	17 .90915	14 .92658	11 .92241	9 .95014
.70	111 .90249	54 .90678	35 .91235	25 .91061	19 .91025	15 .91231	12 .91256	10 .93247	8 .94415
.80	97 .90067	47 .90173	31 .91389	22 .90730	17 .91278	14 .93185	11 .92143	9 .92799	7 .91538
.90	87 [illegible]	42 [illegible]	27 [illegible]	20 [illegible]	15 [illegible]	12 [illegible]	10 [illegible]	8 [illegible]	7 [illegible]

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .95   c = 0

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	2844 .95003	1343 .95006	840 .95002	587 .95014	433 .95028	327 .95003	249 .95011	187 .95069	131 .95102
.02	1422 .95004	672 .95016	420 .95002	294 .95039	217 .95062	164 .95048	125 .95071	94 .95148	66 .95214
.03	948 .95004	448 .94016	280 .95002	196 .95039	145 .95096	109 .95003	82 .95048	63 .95225	44 .95214
.04	711 .95004	336 .95017	210 .95002	147 .95039	109 .95130	82 .95048	63 .95188	47 .95148	33 .95214
.05	596 .95009	269 .95028	168 .95002	118 .95090	87 .95096	66 .95138	50 .95070	38 .95301	27 .95533
.06	474 .95004	224 .95017	140 .95002	98 .95039	73 .95197	55 .95138	42 .95188	32 .95450	22 .95214
.07	407 .95030	192 .95017	120 .95002	84 .95039	62 .95062	47 .95093	36 .95188	27 .95225	19 .95323
.08	356 .95025	168 .95017	105 .95002	74 .95140	55 .95263	41 .95048	32 .95414	24 .95450	17 .95633
.09	316 .95004	150 .95083	94 .95108	66 .95189	49 .95296	37 .95270	28 .95188	21 .95225	15 .95533
.10	285 .95035	135 .95083	84 .95002	59 .95090	44 .95263	33 .95138	25 .95070	19 .95301	14 .96019
.15	190 .95035	90 .95083	56 .95002	40 .95334	29 .95096	22 .95138	17 .95358	13 .95665	9 .95533
.20	143 .95087	68 .95191	42 .95002	30 .95334	22 .95263	17 .95564	13 .95630	10 .96000	7 .96019
.25	114 .95035	54 .95083	34 .95177	24 .95334	18 .95581	14 .95952	10 .95070	8 .96000	6 .96838
.30	95 .95035	45 .95083	28 .95002	20 .95334	15 .95581	11 .95138	9 .96125	7 .96595	5 .96838
.35	82 .95139	39 .95245	24 .95002	17 .95214	13 .95731	10 .95952	8 .96565	6 .96595	4 .96019
.40	72 .95190	34 .95191	21 .95002	15 .95334	11 .95263	9 .96307	7 .96565	5 .96000	4 .97488
.45	64 .95190	30 .95083	19 .95262	14 .95997	10 .95581	8 .96307	6 .96125	5 .97325	3 .95533
.50	57 .95035	27 .95083	17 .95177	12 .95334	9 .95581	7 .95952	5 .95070	4 .96000	3 .96838
.60	48 .95190	23 .95401	14 .95002	10 .95334	8 .96410	6 .96307	5 .97300	4 .97899	3 .98415
.70	41 .95139	20 .95602	12 .95002	9 .95997	7 .96651	5 .95952	4 .96565	3 .96595	2 .96019
.80	36 .95190	17 .95191	11 .95666	8 .96197	6 .96410	5 .97440	4 .97878	3 .97899	2 .97488
.90	32 .95190	15 .95083	10 .95965	7 .95997	5 .95581	4 .96307	3 .96125	3 .98703	2 .98415

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .95 c = 2

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	5977 .95001	2823 .95005	1767 .95011	1234 .95010	910 .95018	680 .95030	524 .95003	393 .95048	275 .95048
.02	2989 .95002	1412 .95005	884 .95012	618 .95028	456 .95043	345 .95030	263 .95047	197 .95048	138 .95047
.03	1993 .95003	942 .95013	590 .95024	412 .95010	304 .95018	321 .95096	176 .95090	132 .95101	93 .95210
.04	1495 .95002	707 .95021	443 .95037	310 .95065	229 .95093	173 .95030	132 .95046	99 .95046	70 .95208
.05	1197 .95018	566 .95029	355 .95063	248 .95047	183 .95043	139 .9509	106 .95089	80 .95217	55 .9[illegible]12
.06	997 .95002	472 .95037	296 .95063	207 .95065	153 .95092	116 .95095	89 .95217	67 .95272	47 .95203
.07	855 .95010	405 .95053	254 .95076	178 .95120	131 .95042	100 .95192	76 .95087	57 .95042	41 .95514
.08	748 .95002	354 .95021	222 .95037	156 .95138	115 .95092	87 .95028	67 .95215	50 .95040	36 .95511
.09	665 .95002	315 .95037	198 .95101	138 .95009	102 .95016	78 .95191	60 .95339	45 .95266	32 .95430
.10	599 .95017	284 .95069	178 .95062	125 .95137	92 .95041	70 .95092	54 .95296	41 .95483	29 .95502
.15	500 .95037	190 .95109	119 .95062	84 .95226	62 .95162	47 .95087	36 .95075	28 .95729	20 .95841
.20	300 .95017	143 .95149	90 .95188	63 .95134	47 .95280	36 .95400	28 .95676	21 .95448	15 .95431
.25	241 .95093	114 .95028	72 .95123	51 .95310	38 .95393	29 .95391	22 .95046	17 .95421	13 .96718
.30	201 .95093	96 .95226	60 .95057	43 .95479	32 .95503	24 .95059	19 .95645	15 .95368	11 .96671
.35	172 .95036	82 .95107	52 .95245	37 .95475	27 .95014	21 .95368	16 .95003	13 .96338	9 .95229
.40	151 .95093	72 .95146	46 .95426	32 .95118	24 .95252	19 .95942	15 .96321	11 .9530	8 .95135
.45	134 .95035	64 .95105	41 .95424	29 .95466	22 .95183	17 .95927	13 .95574	10 .95528	8 .97284
.50	121 .95092	58 .95222	37 .95421	26 .95287	20 .95910	15 .95319	12 .95924	9 .95197	7 .9[illegible]385
.60	101 .95092	49 .95449	31 .95415	22 .95448	17 .96095	13 .95874	10 .95474	8 .96111	6 .96177
.70	87 .95166	42 .95371	27 .95642	19 .95432	15 .96456	11 .95224	9 .96144	7 .95982	6 .98319
.80	76 .95090	37 .95443	24 .95858	17 .95747	13 .96042	10 .95777	8 .96062	7 .98003	5 .96905
.90	68 .95202	33 .95439	21 .95389	15 .95394	12 .96584	9 .95718	7 .96176	6 .96980	5 .98363

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .95 c = 4

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	8691 .95003	4104 .95000	2569 .95007	1794 .95002	1323 .95009	1001 .95001	763 .95027	571 .95013	400 .95033
.02	4346 .95001	2054 .95013	1286 .95019	898 .95001	663 .95030	502 .95029	383 .95063	287 .95062	201 .95031
.03	2898 .95001	1370 .95013	858 .95018	600 .95033	443 .95051	335 .95000	256 .95063	192 .95060	135 .95100
.04	2174 .95001	1028 .95013	644 .95018	450 .95001	333 .95072	252 .95028	193 .95135	145 .95157	102 .95166
.05	1740 .95007	823 .95020	516 .95040	361 .95048	267 .95093	202 .95027	155 .95170	116 .95057	82 .95162
.06	1450 .95001	686 .95013	430 .95018	301 .95032	223 .95114	169 .95083	129 .95059	97 .95055	69 .95294
.07	1244 .95021	589 .95047	369 .95029	258 .95000	191 .95050	145 .95054	111 .95095	84 .95246	59 .95082
.08	1088 .95001	515 .95013	323 .95017	226 .95000	168 .95155	127 .95024	98 .95273	74 .95337	52 .95145
.09	968 .95020	458 .95013	288 .95083	202 .95125	149 .95049	114 .95245	87 .95164	66 .95333	47 .95474
.10	871 .95007	413 .95054	259 .95039	182 .95124	135 .95195	102 .95022	79 .95339	59 .95041	42 .95129
.15	582 .95040	276 .95054	174 .95146	122 .95122	91 .95292	69 .95153	53 .95146	40 .95013	29 .95415
.20	437 .95039	208 .95121	131 .95145	92 .95118	69 .95386	52 .95000	41 .95645	31 .95453	23 .96253
.25	350 .95039	167 .95154	105 .95088	74 .95113	55 .95069	43 .95652	33 .95452	25 .95171	19 .96446
.30	292 .95039	139 .95051	88 .95139	62 .95017	47 .95564	36 .95507	28 .95591	22 .96205	16 .96080
.35	251 .95087	120 .95185	76 .95242	54 .95402	40 .95150	31 .95355	24 .95208	19 .95949	14 .95963
.40	220 .95103	105 .95116	67 .95343	47 .95092	36 .95728	28 .95956	22 .96146	17 .96086	13 .96894
.45	196 .95134	94 .95248	60 .95441	42 .95082	32 .95522	25 .95812	20 .96392	15 .95356	12 .97223
.50	176 .95037	85 .95311	54 .95334	38 .95072	29 .95505	23 .96134	18 .96059	14 .95928	11 .97102
.60	147 .95036	71 .95241	45 .95111	32 .95048	25 .96020	19 .95330	15 .95287	12 .95727	9 .95014
.70	127 .95195	61 .95169	39 .95204	28 .95326	21 .95002	17 .95999	14 .96930	11 .96682	9 .98061
.80	111 .95098	54 .95361	35 .95696	25 .95586	19 .95556	15 .95668	12 .95662	10 .96810	8 .97418
.90	99 .95128	48 .95223	31 .95381	23 .96215	17 .95294	14 .96485	11 .95811	9 .96189	7 .95283

Table III. Sampling Plans for the Quantiles of DFR Distributions

$P^* = .99 \quad c = 0$

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	4372 .99001	2064 .99001	1292 .99003	902 .99003	665 .99004	503 .99004	383 .99006	287 .99014	201 .99023
.02	2186 .99001	1032 .99000	646 .99003	451 .99002	333 .99011	252 .99013	192 .99018	144 .99030	100 .99000
.03	1457 .99000	688 .99000	431 .99007	301 .99008	222 .99011	168 .99013	128 .99018	96 .99030	67 .99023
.04	1093 .99001	516 .99001	323 .99003	226 .99013	167 .99025	126 .99013	96 .99018	72 .99030	50 .99000
.05	875 .99004	413 .99003	259 .99014	181 .99018	133 .99004	101 .99022	77 .99030	58 .99060	40 .99000
.06	729 .99003	344 .99001	216 .99017	151 .99023	111 .99011	84 .99013	64 .99018	48 .99030	34 .99088
.07	625 .99004	295 .99003	185 .99014	129 .99008	95 .99004	72 .99013	55 .99030	41 .99014	29 .99067
.08	547 .99005	258 .99001	162 .99017	113 .99013	84 .99051	63 .99013	48 .99018	36 .99030	26 .99168
.09	486 .99003	230 .99014	144 .99017	101 .99038	74 .99011	56 .99013	43 .99053	32 .99030	23 .99149
.10	438 .99010	207 .99014	130 .99031	91 .99042	67 .99038	51 .99066	39 .99086	29 .99060	21 .99206
.15	292 .99010	138 .99014	87 .99048	61 .99067	45 .99071	34 .99066	26 .99086	20 .99200	14 .99206
.20	219 .99010	104 .99036	65 .99031	46 .99090	34 .99103	26 .99147	20 .99190	15 .99200	11 .99369
.25	175 .99004	83 .99025	52 .99031	37 .99113	27 .99071	21 .99186	16 .99190	12 .99200	9 .99438
.30	146 .99010	69 .99014	44 .99098	31 .99135	23 .99163	17 .99066	13 .99086	10 .99200	7 .99206
.35	125 .99004	59 .99003	37 .99014	26 .99042	19 .99004	15 .99186	11 .99030	9 .99372	6 .99206
.40	110 .99030	52 .99036	33 .99098	23 .99090	17 .99103	13 .99147	10 .99190	8 .99420	5 .99000
.45	98 .99040	46 .99014	29 .99048	21 .99199	15 .99071	12 .99290	9 .99237	7 .99372	5 .99438
.50	88 .99030	42 .99078	26 .99031	19 .99219	14 .99219	11 .99352	8 .99190	6 .99200	4 .99000
.60	73 .99010	35 .99078	22 .99098	16 .99258	12 .99320	9 .99290	7 .99363	5 .99200	4 .99602
.70	63 .99040	30 .99078	19 .99129	13 .99042	10 .99219	8 .99409	6 .99363	5 .99642	3 .99206
.80	55 .99030	26 .99036	17 .99218	12 .99258	9 .99320	7 .99409	5 .991900	4 .99420	3 .99602
.90	49 .99040	23 .99014	15 .99189	11 .99364	8 .99320	6 .99290	5 .99556	4 .99695	3 .99800

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .99 c = 2

q / λ	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	7980 .99000	3768 .99000	2358 .99001	1647 .99002	1214 .99002	919 .99004	700 .99006	524 .99009	367 .99017
.02	3991 .99001	1885 .99002	1180 .99004	824 .99002	608 .99007	460 .99004	351 .99017	263 .99021	184 .99017
.03	2661 .99002	1257 .99002	787 .99004	550 .99006	406 .99012	307 .99004	234 .99008	176 .99034	123 .99016
.04	1996 .99002	943 .99002	591 .99009	413 .99010	305 .99018	231 .99019	176 .99017	132 .99021	93 .99051
.05	1597 .99001	755 .99005	473 .99009	331 .99018	244 .99012	185 .99019	141 .99017	106 .99033	75 .99085
.06	1331 .99001	629 .99002	394 .99003	276 .99018	204 .99028	154 .99004	118 .99035	89 .99069	62 .99015
.07	1141 .99002	540 .99010	338 .99006	237 .99026	175 .99028	133 .99046	101 .99016	76 .99033	54 .99100
.08	999 .99005	472 .99002	296 .99009	207 .99010	153 .99018	116 .99018	89 .99053	67 .99069	47 .99049
.09	888 .99004	420 .99007	263 .99003	184 .99006	136 .99012	103 .99004	79 .99035	60 .99103	42 .99065
.10	799 .99001	378 .99005	237 .99009	166 .99018	123 .99039	93 .99018	71 .99016	54 .99091	38 .99081
.15	533 .99001	253 .99022	159 .99036	111 .99017	82 .99011	63 .99086	48 .99060	36 .99028	26 .99156
.20	400 .99001	190 .99022	119 .99009	84 .99056	62 .99037	47 .99016	36 .99012	28 .99194	20 .99223
.25	321 .99018	152 .99014	96 .99049	67 .99016	50 .99062	38 .99049	29 .99008	22 .99019	16 .99139
.30	267 .99001	127 .99022	80 .99036	56 .99016	42 .99087	32 .99081	25 .99178	19 .99184	14 .99337
.35	229 .99001	109 .99022	69 .99062	49 .99127	36 .99060	28 .99173	21 .99000	16 .99004	12 .99261
.40	201 .99018	96 .99056	60 .99007	43 .99126	32 .99133	24 .99006	19 .99169	15 .99358	11 .99429
.45	179 .99026	85 .99022	54 .99074	38 .99071	28 .99003	22 .99168	17 .99165	13 .99161	10 .99469
.50	161 .99018	77 .99055	49 .99112	34 .99011	26 .99176	20 .99195	16 .99370	12 .99253	9 .99403
.60	134 .99001	64 .99021	41 .99111	29 .99122	22 .99216	17 .99245	13 .99146	10 .99128	8 .99526
.70	115 .99001	55 .99020	35 .99058	25 .99119	19 .99211	15 .99341	12 .99463	9 .99304	7 .99538
.80	101 .99017	49 .99118	31 .99108	22 .99116	17 .99289	13 .99228	10 .99112	8 .99278	6 .99278
.90	90 .99025	43 .99019	28 .99179	20 .99214	15 .99199	12 .99372	9 .99091	7 .99026	6 .99695

Table III. Sampling Plans for the Quantiles of DFR Distributions

P* = .99 c = 4

λ \ q	.1	.2	.3	.4	.5	.6	.7	.8	.9
.01	11017 .99000	5203 .99001	3256 .99001	2274 .99001	1677 .99004	1269 .99003	966 .99001	724 .99011	506 .99000
.02	5510 .99001	2603 .99002	1629 .99001	1138 .99010	840 .99009	636 .99010	484 .99001	363 .99010	255 .99031
.03	3674 .99002	1736 .99002	1087 .99004	760 .99008	561 .**o13	425 .99016	324 .99017	243 .99021	171 .99046
.04	2756 .99001	1303 .99005	816 .99006	570 .99009	421 .99008	319 .99009	243 .99001	183 .99032	129 .99060
.05	2205 .99001	1043 .99007	653 .99004	457 .99011	337 .99004	256 .99022	195 .99009	147 .99042	103 .99014
.06	1838 .99001	869 .99002	545 .99011	381 .99008	282 .99027	214 .99034	163 .99017	123 .99052	87 .99088
.07	1576 .99003	745 .99001	467 .99003	327 .99011	242 .99027	183 .99003	140 .99016	106 .99072	75 .99101
.08	1379 .99001	653 .99011	409 .99006	286 .99001	212 .99027	161 .99033	123 .99032	93 .99072	66 .99115
.09	1226 .99001	580 .99002	364 .99011	255 .99018	189 .99041	143 .99015	110 .99064	83 .99081	59 .99127
.10	1104 .99004	523 .99014	328 .99016	230 .99028	170 .99027	129 .99021	99 .99048	75 .99091	53 .99083
.15	737 .99008	349 .99007	219 .99003	154 .99028	114 .99026	87 .99049	67 .99083	51 .99135	36 .99072
.20	553 .99004	263 .99029	165 .99015	116 .99027	86 .99024	66 .99077	51 .99117	39 .99176	28 .99197
.25	443 .99008	211 .99036	133 .99050	93 .99009	70 .99112	53 .99044	41 .99074	31 .99016	23 .99243
.30	370 .99018	176 .99029	111 .99038	78 .99025	58 .99020	45 .99127	35 .99177	27 .99247	19 .99013
.35	317 .99008	151 .99021	95 .99001	67 .99006	50 .99017	39 .99150	30 .99098	23 .99095	17 .99200
.40	278 .99018	133 .99058	84 .99060	59 .99022	44 .99014	34 .99060	27 .99230	21 .99306	15 .99103
.45	247 .99007	118 .99028	75 .99070	53 .99070	40 .99143	31 .99194	24 .99154	19 .99331	14 .99325
.50	223 .99025	107 .99071	68 .99103	48 .99085	36 .99098	28 .99162	22 .99213	17 .99191	13 .99402
.60	186 .99018	89 .99027	57 .99101	40 .99013	31 .99249	24 .99250	19 .99316	15 .99395	11 .99222
.70	160 .99032	77 .99069	49 .99076	35 .99107	27 .99277	21 .99284	16 .99011	13 .99282	10 .99371
.80	140 .99017	68 .99110	43 .99050	31 .99132	24 .99303	19 .99397	15 .99381	12 .99456	9 .99282
.90	125 .99038	60 .99023	39 .99157	28 .99185	21 .99099	17 .99340	13 .99015	11 .99477	9 .99745