Statistical Auditing and the AOQL-method

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Basic Notation and Terminology

Symbols

N	population size
n	sample size
M	number of incorrect items in the population
K	number of incorrect items in the sample
p	fraction of incorrect items in the sample before inspection
p_a	fraction of incorrect items in the sample after inspection
π	expected fraction of incorrect items in the sample after inspection
k_0	number of incorrect items allowed in the sample
P_l	predefined level not to be exceeded by π
M^*	value of M for which π takes on its maximum
π^*	maximum value of π with respect to M
Λ	hypergeometric distribution function with $K = k_0$
$\{M_{N,n}\}$	triangular array with values of M^*
$M_{N,n}$	element of $\{M_{N,n}\}$
$\{\pi_{N,n}\}$	triangular array with values of π^*
$\pi_{N,n}$	element of $\{\pi_{N,n}\}$
n_l	the largest value of n for which $n \leq M^*$
Y	total book amount
X	total audited amount
D	total error amount
t_i	the taint of an item or monetary unit
y_i	the book value of an item
x_i	the audited value of an item
d_i	error amount of an item or the taint of a monetary unit
Z_i	error amount of an item or the taint of a monetary unit given $Z_i > 0$

General symbols

$\equiv$	equals, by definition
$\square$	end of proof
min	minimum, minimize
max	maximum, maximize
e	exponential
!	factorial

Sets

$\in, \notin$	belongs to, does not belong to
$\cup, \cap$	union, intersection
$\subset$	is a subset of
$\emptyset$	empty set

Statistical symbols

$\sim$	is distributed as
P	probability
E	expectation
Var	variance
$\mathcal{H}(n, M, N)$	Hypergeometric distribution with parameters n,M, and N
$B(a, b)$	beta distribution with parameters a and b
$F(r, s)$	F distribution with r and s degrees of freedom
Dir$(\ldots)$	Dirichlet distribution
$\chi^2(r)$	chi-square distribution with r degrees of freedom

Terminology

For any $x \in \mathbb{R}^n$,

$$x_{(1)} \geq \cdots \geq x_{(n)}$$

denotes the elements of x in decreasing order.

$\binom{p}{q} = \frac{p!}{q!\,(p-q)!}$ for $q = 0, 1, \ldots, p$; $p = 0, 1, 2, \ldots$, where $0! = 1$ by definition. For other values of $p, q \in \mathbb{Z}$ it is defined $\binom{p}{q} = 0$.