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## 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
$\pi$	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 $\pi$
$M^*$	value of $M$ for which $\pi$ takes on its maximum
$\pi^*$	maximum value of $\pi$ with respect to $M$
$\Lambda$	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 $\pi^*$
$\pi_{N,n}$	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(. . .)	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  $q = 0, 1, \dots, p$ ;  $p = 0, 1, 2, \dots$ , where  $0! = 1$  by definition. For other values of  $p, q \in \mathbb{Z}$  it is defined  $\binom{p}{q} = 0$ .