

PACKAGE ID - 000713IBMPC00 SAMPSIZE/TIDSIZE

KWIC TITLE - Computes Sample Sizes Based on the
Hypergeometric Distribution

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LIMITATION CODE -UNL **AUDIENCE CODE** - UNL

COMPLETION DATE - 09/13/1993 **PUBLICATION DATE** - 09/01/1993

DESCRIPTION - SAMPSIZE computes the number of items required in a random sample without replacement from a population of known size in order to achieve 95% confidence that no more than 1% of the population possesses a given property (typically, some sort of defect). TIDSIZE performs the same computations for a 5% defect rate. The programs may be used to compute sample sizes necessary for performance testing of nuclear materials accounting and tamper-indicating device systems as specified in DOE office of Safeguards and Security Detection Element Evaluation Approaches.

PACKAGE CONTENTS - Software Abstract; Media Directory; Executable Instructions; Sample SAMPSIZE Output; Sample TIDSIZE Output; Program Description; Media Includes Source Code, Executable Module;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 3.5 Diskette

METHOD OF SOLUTION - Sample sizes are computed based on the hypergeometric probability distribution. The program computes sample sizes by computing probabilities for sample sizes known to be too large and then iteratively reducing the sample size until the resulting probability is as close as possible to 95%

COMPUTER - IBM PC

OPERATING SYSTEMS - MS-DOS or PC-DOS version 3.1 or later.

PROGRAMMING LANGUAGES - Microsoft C, version 7.0

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - SAMPSIZE and TIDSIZE provide a very easy-to-use method for rapidly computing sample sizes based on the hypergeometric distribution without the necessity of using approximations (such as the binomial distribution).

OTHER PROG/OPER SYS INFO - If printed output is desired, it is directed to device PRN. If a serial printer is used, the DOS MODE command should be used to redirect printed output to the appropriate serial port.

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OTHER PROG/OPER SYS INFO - (CONT)

HARDWARE REQS - IBM PC or compatible running MS- or PC-DOS version 3.1 or later; at least 256K bytes RAM required.

TIME REQUIREMENTS - Time required for program execution depends upon the population size for which the sample size is being computed. On a 66-MHz 80486-based PC, computations for a population of 1000 required 0.06 seconds, and for 10,000, 32.74 seconds. Slower machines would require proportionately more time; an 8-MHz 80286-based machine without a math co-processor required 11.87 seconds for the computations for a population of 1000.

REFERENCES - Informal documentation.

ABSTRACT STATUS - Submitted May 1994. Released screened September 30, 1994.

SUBJECT CLASS CODE - DPO

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
S CODES
SAMPLING
NUCLEAR MATERIALS MANAGEMENT
SAFEGUARDS
STATISTICS
EXPERIMENT PLANNING

EDB SUBJECT CATEGORIES -

990200 055001

SPONSOR - DOE/ER

PACKAGE TYPE - SCREENED