Package ‘Planesmuestra’

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Title Functions for Calculating Dodge Romig, MIL STD 105E and MIL STD 414 Acceptance Sampling Plan
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Description Calculates an acceptance sampling plan, (sample size and acceptance number) based in MIL STD 105E, Dodge Romig and MIL STD 414 tables and procedures. The arguments for each function are related to lot size, inspection level and quality level. The specific plan operating curve (OC), is calculated by the binomial distribution.
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Planesmuestra-package  Acceptance sampling plan according the Dodge Romig, MIL STD105E and MIL STD414 plans.

Description

Use a funcion for each plan and a special one for graphic an OC curve. The plan functions are based in the Dodge Romig, MIL STD 105E and MIL STD 414. However, the OC curve is calculated using the binomial trials, after calculating acceptance sampling plan.

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Author(s)

Erick Marroquin
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Data: Dodge Romig table of Nonconforming fraction levels for AOQL and LPTD plans

Description

Contains the different maximum non conforming fractions of AQL and LTPD plan, according Dodge Romig plans. A data frame with six maximum levels of the nonconforming fraction for each AOQL and LPTD plan.
Usage
data("ap_DR")

Format
A data frame with 6 observations on the following 2 plans.

AOQL  a numeric vector containing the nonconforming fraction level for AOQL plan
LPTD  a numeric vector containing the nonconforming fraction level for LPTD plan

Source

Examples
data(ap_DR)

---

code_letter  | Data: Inspection level and the code letter for a MIL STD 105E acceptance sampling plan.

Description
Contains the unique code letter for a specific size lot, interpolated through the f_milstd105E function, and specific normal or special inspection level.

Usage
data("code_letter")

Format
A data frame with 0 observations on the following 2 variables.

S.1  a character vector with the code letters, for the S.1 special inspection level
S.2  a character vector with the code letters, for the S.2 special inspection level
S.3  a character vector with the code letters, for the S.3 special inspection level
S.4  a character vector with the code letters, for the S.4 special inspection level
I   a character vector with the code letters, for the I normal inspection level
II  a character vector with the code letters, for the II normal inspection level
III a character vector with the code letters, for the III normal inspection level
Source


Examples

data(code_letter)

code_letter.milstd414  Data: Inspection level and the code letter for a MIL STD 414 acceptance sampling plan and normal inspection.

Description

Contains the unique code letter for a specific size lot, interpolated through the f_milstd105E function, and specific normal or special inspection level.

Usage

data("code_letter.milstd414")

Format

A data frame with 0 observations on the following 2 variables.

I  a character vector with the code letters, for the I inspection level

II  a character vector with the code letters, for the II inspection level

III  a character vector with the code letters, for the III inspection level

IV  a character vector with the code letters, for the IV inspection level

V  a character vector with the code letters, for the V inspection level

Source


Examples

data(code_letter.milstd414)
Description

Given an AOQL, LPTD, sample size and acceptance number, return the plot the OC curve and producer and consumer risk. The calculation uses the binomial trials. Applies for attribute plans.

Usage

\[ f_{\text{C0.NCA.NCL}}(\text{NCA}, \text{NCL}, n, c) \]

Arguments

- \text{NCA} \quad \text{Specific AOQL value}
- \text{NCL} \quad \text{Specific LPTD value}
- \text{n} \quad \text{sample size}
- \text{c} \quad \text{acceptance number}

Details

Function stops if any value is missing

Value

- \text{NCA} \quad \text{Specific AOQL value}
- \text{NCL} \quad \text{Specific LPTD value}
- \text{n} \quad \text{sample size}
- \text{c} \quad \text{acceptance number}
- \text{beta} \quad \text{consumer risk}
- \text{alpha} \quad \text{producer risk}

Author(s)

Erick Marroquin

References


See Also

\[ \text{f_dodge.romig.simple, f_milstd414, f_milstd105e, f_C0.plan, f_DR.C0} \]
Examples

f_CO.NCA.NCL(NCA=0.02,NCL=0.1,n=69,c=3)

Description

Plot the OC Curve for a specific Dodge Romig acceptance sampling plan results.

Usage

f_CO.plan(plan)

Arguments

plan  A vector with acceptance number c, the sample size n, and the fraction of the non conforming items p.

Value

c  An integer number grater than zero, for the acceptance number.
n  An integer number grater than the acceptance number for the sample size.
p  Fraction average of the nonconforming items.
beta  Acceptance probability.

Author(s)

Erick Marroquin

References


See Also

f_dodge.romig.simple, f_milstd414, f_milstd105e, f_DR.CO

Examples

r1<-f_dodge.romig.simple(N=2500,"AOQL", p=0.01)
f_CO.plan(r1$plan)
**f_dodge.romig.simple**  
*Calculate the acceptance sampling for Dodge Romig method*

**Description**
Starting with a known lot N, and a specific AOQL or LPTD plan, and an average of proportion of defectives or nonconforming items, the plan is calculated, giving the sample size, the acceptance number and the rejection number. The function is for simple acceptance sample plans only.

**Usage**

```r
f_dodge.romig.simple(N, plan, p)
```

**Arguments**

- **N**
  - Is the lot size, an integer number, must be greater than 2
- **plan**
  - A character string for specify the AOQL or LPTD plan
- **p**
  - Fraction average of the nonconforming items

**Author(s)**
Erick Marroquin

**References**

**See Also**

- `f_DR.CO`
- `f_milstdTQT`
- `f_milstdQP5e`

**Examples**

```r
f_dodge.romig.simple(N=5000, plan="AOQL", p=0.017)
```
Plot the OC Curve for a specific acceptance sampling plan

Description
Plot the OC Curve for a specific acceptance plan. Needs the acceptance number $c$, the sample size $n$, and the fraction of the non conforming items $p$. The calculation uses the binomial trials. Applies for attribute plans.

Usage
$f_{DR.CO}(c,n,p)$

Arguments
- $c$: An integer number greater than zero, for the acceptance number.
- $n$: An integer number greater than the acceptance number for the sample size.
- $p$: Fraction average of the nonconforming items.

Value
- $c$: An integer number greater than zero, for the acceptance number.
- $n$: An integer number greater than the acceptance number for the sample size.
- $p$: Fraction average of the nonconforming items.
- $\beta$: Acceptance probability.

Author(s)
Erick Marroquin

References

See Also
$f_{dodge.romig.simple}, f_{milstd414}, f_{milstd105e}, f_{CO.plan}$

Examples
```
# n = 125 items, c=2, p = 0.01
f_DR.CO(2,125,0.1)
```
Calculate the acceptance sampling for MIL STD 105E / ANSI ASQ C Z 1.4 / ISO 2589 plan

Description

Given lot size, a type of inspection (Normal, Reduced, Tightened), type of sampling (Simple, double or multiple), and the AQL, show the calculated acceptance plan based in the MIL STD 105e tables. The function is for simple acceptance sample plans only.

Usage

f_milstd105e(N, L, NCA, type)

Arguments

N  Is the lot size, an integer number, must be greater than 2
L  A character string for inspection level (S-1, S-2, S-3, S-4, I, II, III)
NCA A numeric value for the AQL
type A character string with the type of inspection, - n - normal, - r - reduced, in other case is tightened

Author(s)

Erick Marroquin

References


See Also

f_dr.co f_dodge.romig.simple f_milstd414

Examples

## L = 12000, a AQL = 1, level III, tightened inspection
f_milstd105e(N=11000, L="II", type="n", NCA=15)
**f_milstd414**

*Calculate the acceptance sampling for MIL STD 414 / ANSI ASQ C Z 1.9 / ISO 3951 plan*

**Description**

Given lot size, an inspection level, a type of inspection and the NCA, show the calculated acceptance plan based in the MIL STD 414 tables.

**Usage**

```
f_milstd414(N,L,NCA,type)
```

**Arguments**

- **N**
  - Is the lot size, an integer number, must be greater than 2
- **L**
  - A character string for inspection level (I,II,III,IV,V)
- **NCA**
  - A numeric value for the NCA
- **type**
  - Type of inspection, - n - normal, - t - tightened

**Details**

The master table of MIL STD 414 for plans based in variables, contains the values for both type of inspection.

**Author(s)**

Erick Marroquin

**References**


**See Also**

*f_dr_co*, *f_dodge_romig_simple*, *f_milstd105e*, *f_milstd414_test*

**Examples**

```r
## L = 1200, NCA = 1, level III, tightened inspection
##
f_milstd414(N=1200,NCA=1,L="III",type="t")
```
f_milstd414.test

Accept or reject a variable sample considering a shift factor

Description

Accept or reject a variable sample considering a shift factor, the data comes from an specific variable plan.

Usage

f_milstd414.test(x,k,S,Limite,L)

Arguments

x Vector or data frame containing the taken sample values, the function evaluates only the first column or variable
k A vector of length one, equal shift factor
S Know standard deviation, if value not exists, function gives the sample standard deviation
Limite A character vector of length one, "S" for upper control limit and "I" for lower control limit
L A vector of length one, equal to a specific Control Limit value

Author(s)

Erick Marroquin

References


See Also

f_milstd414

Examples

x<-c(4.7,5.1,4.9,4.9,4.8,4.8,4.9,4.9,4.8,4.8,4.7,4.7,4.9,4.9,4.8,4.9,4.6,4.8,4.9,5.1,4.8,5.5,4.7,5.5,4.8)
f_milstd414.test(as.data.frame(x),k=1.98,Limite="S", L=5.1)
f_milstd414.test(as.data.frame(x),k=1.98,Limite="I", L=4.7)
k_plans.milstd414  Data: Extract the sample size and k value for MIL STD 414 variable acceptance sampling plans and normal type.

Description

Data for indexing sample size and k value, given the code letter, AQL value and inspection type code.

Usage

data("k_plans.milstd414")

Format

A data frame with 432 observations on the following 5 variables.

code_letter  a factor for code letters, levels are B, C, D, E, F, G, H, J, K, L, M, N, P, Q
sample   a numeric vector for sample size
k    a numeric vector containing the k value
NCA  a factor containing the different AQL levels
T    a character vector for normal inspection

Source


Examples

data(k_plans.milstd414)

lot_size  Data: Lot size levels for MIL STD 105 E acceptance sampling plans

Description

Interpolate the table lot size level starting from a real lot size

Usage

data("lot_size")
Format

A data frame with 15 minimum levels for size lot.

\( N \)  A numeric vector containing the minimum level. For lots greater than \( 1 \times 10^{10} \), the function fixes the lot size as the last one of the "lot_size" data frame.

Source


Examples

data(lot_size)

---

**lot_size.milstd414**  
*Data: Lot size levels for MIL STD 414 variable acceptance sampling plans*

Description

Interpolate the table lot size level starting from a real lot size.

Usage

data("lot_size.milstd414")

Format

A data frame with 17 minimum levels for size lot.

\( N \)  A numeric vector containing the minimum level. For lots greater than 550001, the function fixes the lot size as the last one of the "lot_size" data frame.

Source


Examples

data(lot_size.milstd414)
Data: Lot size for Dodge Romig acceptance sampling plan

Description

Shows the results for a given lot size, AOQL or LPTD plan and a fraction of non conforming items. The results are: the acceptance number - n -, the rejection number - c -, and the corresponding AOQL - LPTD percentage.

Usage

data("lot_size_DR")

Format

A data frame with 222 observations on the following 6 variables.

N  a numeric vector with the interpolated lot plan  a factor with two levels, the AOQL and the LPTD plan.
 p  a character vector with six levels, for each AOQL and the LPTD plan.
n  a numeric vector for the sample size for a specific acceptance plan.
c  a numeric vector for the acceptance number for a specific acceptance plan.
LPTD_AOQL  a numeric vector for the LPTD or AOQL index.

Source


Examples

data(lot_size_DR)
## maybe str(lot_size_DR) ; plot(lot_size_DR) ...

Data: Extract the sample size and the acceptance number for MIL STD 105E acceptance sampling plans.

Description

Data for indexing sample size and acceptance number, given the code letter, AQL value and inspection type code.
Usage

data(milstd105eplans)

Format

A data frame with 1274 entries on the following 5 variables.

code_letter  a factor for code letters, levels are A, B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, S
n       a numeric vector for sample size
T        a factor for type of inspection, among tightened, reduced or normal, "t", "r", "n" respectively
NCA     a factor containing the different AQL levels, 26 in total
c       a numeric vector for acceptance number

Source


Examples

data(milstd105eplans)

NCA_values

Data: AQL levels for MIL STD 105E acceptance sampling plans.

Description

Contains the AQL level values for sample size and acceptance number. The row order is the same as the code letter, previously determined.

Usage

data("NCA_values")

Format

NCA_values  a numeric vector containing 26 AQL levels

Source


Examples

data(NCA_values)
## NCA values is the same for AQL values
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