Package 'qccrs'

July 22, 2025

Type Package

Title Quality Control Charts under Repetitive Sampling

Version 0.1.0

Author Muhammad Yaseen [aut, cre],
Muhammad Aslam [aut, ctb],
Sami Ullah [aut, ctb],
Muhammad Azam [aut, ctb],
Chi-Hyuck Jun [aut, ctb],
Muhammad Kashif [aut, ctb]

Maintainer Muhammad Yaseen <myaseen208@gmail.com>

Description Functions to calculate Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k, k1 and k2 for quality control charts under repetitive sampling as given in Aslam et al. (2014) (<DOI:10.7232/iems.2014.13.1.101>).

Depends R (>= 3.1)

Imports dplyr, magrittr, purrr, stats, tibble

License GPL-2

URL https://github.com/myaseen208/qccrs,
https://myaseen208.github.io/qccrs/

Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

Note Department of Mathematics and Statistics, University of Agriculture Faisalabad, Faisalabad-Pakistan.

Suggests testthat

NeedsCompilation no

Repository CRAN

Date/Publication 2018-12-03 19:50:03 UTC

Contents

`npcrs1` *NP Control Charts under Repetitive Sampling with single positive integer.*

Description

Calculates Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k for NP control charts under repetitive sampling as given in Aslam et al.(2014)

Usage

```
## Default S3 method:
npcrs1(.n, .p0, .f, .ssize = NULL, .k = NULL,
  .kr = NULL)
```

Arguments

`.n`	Sample Size
`.p0`	probability that process is in control
`.f`	Size of the Shift
`.ssize`	Number of samples with replacement at each iteration
`.k`	Positive Constant
`.kr`	Random Positive Constant

Value

ARL0, ARL1 and K

Author(s)

1. Muhammad Yaseen (<myaseen208@gmail.com>)
2. Muhammad Aslam (<aslam_ravian@hotmail.com>)
3. Sami Ullah (<samiullahuos@gmail.com>)
4. Muhammad Azam (<mazam@uvas.edu.pk>)
5. Chi-Hyuck Jun (<chjun@postech.ac.kr>)
6. Muhammad Kashif (<mkashif@uaf.edu.pk>)

References

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **13**(1):101-106.

Examples

```
library(magrittr)
npcrs1(
  .n     = 60
, .p0    = 0.10
, .f     = 0.10
, .k     = 2.6432
)


npcrs1(
  .n     = 60
, .p0    = 0.10
, .f     = 0.10
, .ssize = 1000
, .kr    = 4
)
```

`npcrs2` *Attributes Control Charts under Repetitive Sampling with two positive integers*

Description

Calculates Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k1 and k2 for attributes control charts under repetitive sampling as given in Aslam et al.(2014)

Usage

```
npcrs2(.n, .p0, .f, .ssize = NULL, .k1 = NULL, .k2 = NULL,
  .k1r = NULL, .k2r = NULL)

## Default S3 method:
npcrs2(.n, .p0, .f, .ssize = NULL, .k1 = NULL,
  .k2 = NULL, .k1r = NULL, .k2r = NULL)
```

Arguments

`.n`	Sample Size
`.p0`	probability that process is in control
`.f`	Size of the Shift

.ssize	Number of samples with replacement at each iteration
.k1	Fixed positive constant
.k2	Fixed positive constant
.k1r	Random postive constant
.k2r	Random postive constant

Value

ASN, ARL, K1 and K2

Author(s)

1. Muhammad Yaseen (<myaseen208@gmail.com>)
2. Muhammad Aslam (<aslam_ravian@hotmail.com>)
3. Sami Ullah (<samiullahuos@gmail.com>)
4. Muhammad Azam (<mazam@uvas.edu.pk>)
5. Chi-Hyuck Jun (<chjun@postech.ac.kr>)
6. Muhammad Kashif (<mkashif@uaf.edu.pk>)

References

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **13**(1):101-106.

Examples

```
library(magrittr)
 npcrs2(
  .n     = 40
, .p0    = 0.10
, .f     = 0.1
, .ssize = 1000
, .k1r   = 4
, .k2r   = .95
   )


npcrs2(
  .n     = 40
, .p0    = 0.10
, .f     = 0.1
, .k1    = 3.13
, .k2    = .731
   )
```

qccrs *Quality Control Charts under Repetitive Sampling*

Description

The qccrs package provides functionalities to calculate Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k, k1 and k2 for quality control charts under repetitive sampling as given in Aslam et al. (2014).

Author(s)

1. Muhammad Yaseen (<myaseen208@gmail.com>)
2. Muhammad Aslam (<aslam_ravian@hotmail.com>)
3. Sami Ullah (<samiullahuos@gmail.com>)
4. Muhammad Azam (<mazam@uvas.edu.pk>)
5. Chi-Hyuck Jun (<chjun@postech.ac.kr>)
6. Muhammad Kashif (<mkashif@uaf.edu.pk>)

References

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **1**(13):101-106.

xrs *Xbar Control Charts Under Repetitive Sampling*

Description

Calculates the Average Sample Number and Average Run Length as given in Aslam et al. (2014)

Usage

```
xrs(.c, .n, .k1, .k2)

## Default S3 method:
xrs(.c, .n, .k1, .k2)
```

Arguments

.c	Size of the Shift
.n	Sample Size
.k1	Positive Integer
.k2	Positive Integer

Value

Average Sample Number (ASN) and Average Run Length (ARL1) for xbar control charts under repetitive sampling

Author(s)

1. Muhammad Yaseen (<myaseen208@gmail.com>)
2. Muhammad Aslam (<aslam_ravian@hotmail.com>)
3. Sami Ullah (<samiullahuos@gmail.com>)
4. Muhammad Azam (<mazam@uvas.edu.pk>)
5. Chi-Hyuck Jun (<chjun@postech.ac.kr>)
6. Muhammad Kashif (<mkashif@uaf.edu.pk>)

References

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **1**(13):101-106.

Examples

```
library(magrittr)
library(purrr)

c(0.0, 0.1, 0.20, 0.3, 0.4, 0.5, 1.0, 1.5, 2, 3) %>%
purrr::map(
function(x)
    xrs(
        .c     = x
      , .n     = 10
      , .k1    = 2.9301
      , .k2    = 0.9825))
```

Index