

Defining accrual time and accrual intensity with rpact

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```
# Load the package `rpact`  
library(rpact)  
packageVersion("rpact")
```

```
## [1] '2.0.1'
```

Case 1

End of accrual, absolute accrual intensity and `maxNumberOfSubjects` are given, `followUpTime` shall be calculated.

Example: vector based definition

```
accrualTime <- getAccrualTime(accrualTime = c(0, 6, 30),  
                             accrualIntensity = c(22, 33), maxNumberOfSubjects = 924)  
accrualTime
```

```
## Accrual time and intensity:
```

```
## 0 - < 6: 22
```

```
## 6 - <=30: 33
```

```
##
```

```
## Formula:
```

```
## maxNumberOfSubjects = 924 = 6 * 22 + 24 * 33
```

```
##
```

```
## Case (#1):
```

```
## End of accrual, absolute accrual intensity and 'maxNumberOfSubjects' are given, 'followUpTime' is
```

```
## Example: getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(22, 33), maxNumberOfSubjects = 924)
```

```
##
```

```
## (*) Can be calculated directly.
```

```
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
```

```
##
```

```
## Details:
```

```
##
```

```
## User defined parameters:
```

```
## Accrual time : 0.00, 6.00, 30.00
```

```
## Accrual intensity : 22.0, 33.0
```

```
## Maximum number of subjects : 924.0
```

```
##
```

```
## Default parameters: not available
```

```
##
```

```
## Generated parameters:
```

```
## End of accrual is user defined : TRUE
```

```
## Follow-up time must be user defined : FALSE
```

```
## Max number of subjects is user defined : TRUE
```

```
## Max number of subjects can be calculated : TRUE
```

```
## Absolute accrual intensity is enabled : TRUE
```

```
## Remaining time : 24.00
```

Example: list based definition

```

accrualTime <- getAccrualTime(list(
  "0 - <6" = 22,
  "6 - <=30" = 33),
  maxNumberOfSubjects = 924)
accrualTime

## Accrual time and intensity:
##   0 - < 6: 22
##   6 - <=30: 33
##
## Formula:
##   maxNumberOfSubjects = 924 = 6 * 22 + 24 * 33
##
## Case (#1):
##   End of accrual, absolute accrual intensity and 'maxNumberOfSubjects' are given, 'followUpTime'**:
##   Example: getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(22, 33), maxNumberOfSubjec
##
##   (*) Can be calculated directly.
##   (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##   Accrual time           : 0.00, 6.00, 30.00
##   Accrual intensity      : 22.0, 33.0
##   Maximum number of subjects : 924.0
##
## Default parameters: not available
##
## Generated parameters:
##   End of accrual is user defined      : TRUE
##   Follow-up time must be user defined  : FALSE
##   Max number of subjects is user defined : TRUE
##   Max number of subjects can be calculated : TRUE
##   Absolute accrual intensity is enabled : TRUE
##   Remaining time                     : 24.00

```

Example: how to use accrual time object

```

getSampleSizeSurvival(accrualTime = accrualTime, pi1 = 0.4, pi2 = 0.2)

## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Accrual duration longer than maximal study duration (time to
## maximal number of events); followUpTime = -18.265

## Design plan parameters and output for survival data:
##
## Design parameters:

```

```

## Significance level           : 0.0250
## Type II error rate         : 0.2
## Test                        : one-sided
##
## User defined parameters:
## pi (1)                     : 0.400
## Maximum number of subjects : 924.0
## Accrual time                : 6.00, 30.00
## Accrual intensity           : 22.0, 33.0
##
## Default parameters:
## Type of computation        : Schoenfeld
## Theta H0                   : 1
## Planned allocation ratio    : 1
## Event time                  : 12
## Drop-out rate (1)          : 0.000
## Drop-out rate (2)          : 0.000
## Drop-out time               : 12
##
## Sample size and output:
## Direction upper            : TRUE
## Median (1)                 : 16.3
## Median (2)                 : 37.3
## Lambda (1)                 : 0.0426
## Lambda (2)                 : 0.0186
## Hazard ratio                : 2.289
## Number of events            : 45.8
## Total accrual time         : 30.00
## Follow up time              : -18.27
## Calculate follow up time    : TRUE
## Number of subjects fixed    : 924.0
## Number of subjects fixed (1) : 462.0
## Number of subjects fixed (2) : 462.0
## Analysis times              : 11.73
## Study duration              : 11.73
## Critical values (effect scale) : 1.785
## Local one-sided significance levels : 0.0250
##
## Legend:
## (i): values of treatment arm i

```

Case 2

End of accrual, relative accrual intensity and `maxNumberOfSubjects` are given, *absolute accrual intensity* and `followUpTime` shall be calculated.

Example: vector based definition

```

accrualTime <- getAccrualTime(accrualTime = c(0, 6, 30),
  accrualIntensity = c(0.22, 0.33), maxNumberOfSubjects = 1000)
accrualTime

```

```
## Accrual time and intensity:
```

```

##      0 - < 6: 23.80952
##      6 - <=30: 35.71429
##
## Formula:
##      maxNumberOfSubjects = 1000 = 6 * 23.8095 * c + 24 * 35.7143 * c , where 'c' is a constant factor
##
## Case (#2):
##      End of accrual, relative accrual intensity and 'maxNumberOfSubjects' are given, absolute accrual intensity is
##      Example: getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(0.22, 0.33), maxNumberOfSubjects = 1000)
##
##      (*) Can be calculated directly.
##      (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##      Accrual time                               : 0.00, 6.00, 30.00
##      Accrual intensity (relative)                : 0.22, 0.33
##      Maximum number of subjects                  : 1000.0
##
## Default parameters: not available
##
## Generated parameters:
##      End of accrual is user defined              : TRUE
##      Follow-up time must be user defined         : FALSE
##      Max number of subjects is user defined      : TRUE
##      Max number of subjects can be calculated   : TRUE
##      Absolute accrual intensity is enabled       : FALSE
##      Accrual intensity                           : 23.8, 35.7
##      Remaining time                              : 24.00

```

Example: list based definition

```

accrualTime <- getAccrualTime(list(
  "0 - <6" = 0.22,
  "6 - <=30" = 0.33),
  maxNumberOfSubjects = 1000)
accrualTime

```

```

## Accrual time and intensity:
##      0 - < 6: 23.80952
##      6 - <=30: 35.71429
##
## Formula:
##      maxNumberOfSubjects = 1000 = 6 * 23.8095 * c + 24 * 35.7143 * c , where 'c' is a constant factor
##
## Case (#2):
##      End of accrual, relative accrual intensity and 'maxNumberOfSubjects' are given, absolute accrual intensity is
##      Example: getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(0.22, 0.33), maxNumberOfSubjects = 1000)
##
##      (*) Can be calculated directly.
##      (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:

```

```
##
## User defined parameters:
##   Accrual time                : 0.00, 6.00, 30.00
##   Accrual intensity (relative) : 0.22, 0.33
##   Maximum number of subjects   : 1000.0
##
## Default parameters: not available
##
## Generated parameters:
##   End of accrual is user defined      : TRUE
##   Follow-up time must be user defined : FALSE
##   Max number of subjects is user defined : TRUE
##   Max number of subjects can be calculated : TRUE
##   Absolute accrual intensity is enabled : FALSE
##   Accrual intensity                  : 23.8, 35.7
##   Remaining time                      : 24.00
```

Example: how to use accrual time object

```
getSampleSizeSurvival(accrualTime = accrualTime, pi1 = 0.4, pi2 = 0.2)
```

```
## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored
```

```
## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored
```

```
## Warning: Accrual duration longer than maximal study duration (time to
## maximal number of events); followUpTime = -18.696
```

```
## Design plan parameters and output for survival data:
##
## Design parameters:
##   Significance level            : 0.0250
##   Type II error rate           : 0.2
##   Test                          : one-sided
##
## User defined parameters:
##   pi (1)                       : 0.400
##   Maximum number of subjects    : 1000.0
##   Accrual time                  : 6.00, 30.00
##
## Default parameters:
##   Type of computation           : Schoenfeld
##   Theta H0                     : 1
##   Planned allocation ratio      : 1
##   Event time                   : 12
##   Drop-out rate (1)            : 0.000
##   Drop-out rate (2)           : 0.000
##   Drop-out time                 : 12
##
## Sample size and output:
##   Direction upper               : TRUE
##   Median (1)                   : 16.3
##   Median (2)                   : 37.3
```

```
## Lambda (1) : 0.0426
## Lambda (2) : 0.0186
## Hazard ratio : 2.289
## Number of events : 45.8
## Total accrual time : 30.00
## Accrual intensity : 23.8, 35.7
## Follow up time : -18.70
## Calculate follow up time : TRUE
## Number of subjects fixed : 1000.0
## Number of subjects fixed (1) : 500.0
## Number of subjects fixed (2) : 500.0
## Analysis times : 11.30
## Study duration : 11.30
## Critical values (effect scale) : 1.785
## Local one-sided significance levels : 0.0250
##
## Legend:
## (i): values of treatment arm i
```

Case 3

End of accrual and absolute accrual intensity are given, `maxNumberOfSubjects` and `followUpTime` shall be calculated.

Example: vector based definition

```
accrualTime <- getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(22, 33))
```

Example: list based definition

```
accrualTime <- getAccrualTime(list(
  "0 - <6" = 22,
  "6 - <=30" = 33))
accrualTime
```

```
## Accrual time and intensity:
```

```
## 0 - < 6 : 22
```

```
## 6 - <=30 : 33
```

```
## 30 - <=[?]: NA
```

```
##
```

```
## Formula:
```

```
## maxNumberOfSubjects = 924 = 6 * 22 + 24 * 33
```

```
##
```

```
## Case (#3):
```

```
## End of accrual and absolute accrual intensity are given, 'maxNumberOfSubjects'* and 'followUpTime'.
```

```
## Example: getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(22, 33))
```

```
##
```

```
## (*) Can be calculated directly.
```

```
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
```

```
##
```

```
## Details:
```

```
##
```

```
## User defined parameters:
```

```

## Accrual time : 0.00, 6.00, 30.00
## Accrual intensity : 22.0, 33.0
##
## Default parameters: not available
##
## Generated parameters:
## End of accrual is user defined : TRUE
## Follow-up time must be user defined : FALSE
## Max number of subjects is user defined : FALSE
## Max number of subjects can be calculated : TRUE
## Absolute accrual intensity is enabled : TRUE
## Maximum number of subjects : 924.0
## Remaining time : 24.00

```

Example: how to use accrual time object

```
getSampleSizeSurvival(accrualTime = accrualTime, pi1 = 0.4, pi2 = 0.2)
```

```

## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Accrual duration longer than maximal study duration (time to
## maximal number of events); followUpTime = -18.265

## Design plan parameters and output for survival data:
##
## Design parameters:
## Significance level : 0.0250
## Type II error rate : 0.2
## Test : one-sided
##
## User defined parameters:
## pi (1) : 0.400
## Accrual time : 6.00, 30.00
## Accrual intensity : 22.0, 33.0
##
## Default parameters:
## Type of computation : Schoenfeld
## Theta H0 : 1
## Planned allocation ratio : 1
## Event time : 12
## Drop-out rate (1) : 0.000
## Drop-out rate (2) : 0.000
## Drop-out time : 12
##
## Sample size and output:
## Direction upper : TRUE
## Median (1) : 16.3
## Median (2) : 37.3
## Lambda (1) : 0.0426
## Lambda (2) : 0.0186
## Hazard ratio : 2.289

```

```

## Maximum number of subjects          : 924.0
## Number of events                    : 45.8
## Total accrual time                  : 30.00
## Follow up time                      : -18.27
## Calculate follow up time            : TRUE
## Number of subjects fixed            : 924.0
## Number of subjects fixed (1)        : 462.0
## Number of subjects fixed (2)        : 462.0
## Analysis times                      : 11.73
## Study duration                      : 11.73
## Critical values (effect scale)       : 1.785
## Local one-sided significance levels  : 0.0250
##
## Legend:
## (i): values of treatment arm i

```

Case 4

End of accrual, relative accrual intensity and followUpTime are given, absolute accrual intensity and maxNumberOfSubjects shall be calculated.

Example: vector based definition

```

accrualTime <- getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(0.22, 0.33))
accrualTime

```

```

## Accrual time and intensity:
## 0 - < 6 : 0.22
## 6 - <=30 : 0.33
## 30 - <=[?]: NA
##
## Formula:
## maxNumberOfSubjects = 6 * 0.22 * c + 24 * 0.33 * c , where 'c' is a constant factor
##
## Case (#4):
## End of accrual, relative accrual intensity and 'followUpTime' are given, absolute accrual intensity
## Example: getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(0.22, 0.33))
##
## (*) Can be calculated directly.
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
## Accrual time          : 0.00, 6.00, 30.00
## Accrual intensity     : 0.22, 0.33
##
## Default parameters: not available
##
## Generated parameters:
## End of accrual is user defined          : TRUE
## Follow-up time must be user defined     : FALSE
## Max number of subjects is user defined  : FALSE

```



```
## Max number of subjects can be calculated : FALSE
## Absolute accrual intensity is enabled : FALSE
```

Example: list based definition

```
accrualTime <- getAccrualTime(list(
  "0 - <6" = 0.22,
  "6 - <=30" = 0.33))
accrualTime
```

```
## Accrual time and intensity:
```

```
## 0 - < 6 : 0.22
```

```
## 6 - <=30 : 0.33
```

```
## 30 - <=[?]: NA
```

```
##
```

```
## Formula:
```

```
## maxNumberOfSubjects = 6 * 0.22 * c + 24 * 0.33 * c , where 'c' is a constant factor
```

```
##
```

```
## Case (#4):
```

```
## End of accrual, relative accrual intensity and 'followUpTime' are given, absolute accrual intensity.
```

```
## Example: getAccrualTime(accrualTime = c(0, 6, 30), accrualIntensity = c(0.22, 0.33))
```

```
##
```

```
## (*) Can be calculated directly.
```

```
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
```

```
##
```

```
## Details:
```

```
##
```

```
## User defined parameters:
```

```
## Accrual time : 0.00, 6.00, 30.00
```

```
## Accrual intensity : 0.22, 0.33
```

```
##
```

```
## Default parameters: not available
```

```
##
```

```
## Generated parameters:
```

```
## End of accrual is user defined : TRUE
```

```
## Follow-up time must be user defined : FALSE
```

```
## Max number of subjects is user defined : FALSE
```

```
## Max number of subjects can be calculated : FALSE
```

```
## Absolute accrual intensity is enabled : FALSE
```

Example: how to use accrual time object

```
getSampleSizeSurvival(accrualTime = accrualTime, pi1 = 0.4, pi2 = 0.2, followUpTime = 6)
```

```
## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
```

```
## will be ignored
```

```
## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
```

```
## will be ignored
```

```
## Design plan parameters and output for survival data:
```

```
##
```

```
## Design parameters:
```

```
## Significance level : 0.0250
```

```

## Type II error rate           : 0.2
## Test                         : one-sided
##
## User defined parameters:
## pi (1)                       : 0.400
## Accrual time                 : 6.00, 30.00
## Accrual intensity            : 0.22, 0.33
##
## Default parameters:
## Type of computation          : Schoenfeld
## Theta H0                     : 1
## Planned allocation ratio      : 1
## Event time                   : 12
## Follow up time               : 6.00
## Drop-out rate (1)            : 0.000
## Drop-out rate (2)            : 0.000
## Drop-out time                : 12
##
## Sample size and output:
## Direction upper               : TRUE
## Median (1)                   : 16.3
## Median (2)                   : 37.3
## Lambda (1)                   : 0.0426
## Lambda (2)                   : 0.0186
## Hazard ratio                 : 2.289
## Number of events             : 45.8
## Total accrual time           : 30.00
## Calculate follow up time     : FALSE
## Number of subjects fixed     : 107.3
## Number of subjects fixed (1) : 53.7
## Number of subjects fixed (2) : 53.7
## Analysis times               : 36.00
## Study duration               : 36.00
## Critical values (effect scale) : 1.785
## Local one-sided significance levels : 0.0250
##
## Legend:
## (i): values of treatment arm i

```

Case 5

maxNumberOfSubjects and absolute accrual intensity are given, absolute accrual intensity, end of accrual and followUpTime shall be calculated

Example: vector based definition

```

accrualTime <- getAccrualTime(accrualTime = c(0, 6),
  accrualIntensity = c(22, 33), maxNumberOfSubjects = 1000)
accrualTime

```

```

## Accrual time and intensity:
## 0.00000 - < 6.00000: 22
## 6.00000 - <=32.30303: 33

```

```

##
## Formula:
##   maxNumberOfSubjects = 1000 = 6 * 22 + 26.303 * 33
##
## Case (#5):
##   'maxNumberOfSubjects' and absolute accrual intensity are given, end of accrual* and 'followUpTime'.
##   Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(22, 33), maxNumberOfSubjects =
##
##   (*) Can be calculated directly.
##   (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##   Accrual time                : 0.00, 6.00, 32.30
##   Accrual intensity           : 22.0, 33.0
##   Maximum number of subjects  : 1000.0
##
## Default parameters: not available
##
## Generated parameters:
##   End of accrual is user defined      : FALSE
##   Follow-up time must be user defined : FALSE
##   Max number of subjects is user defined : TRUE
##   Max number of subjects can be calculated : TRUE
##   Absolute accrual intensity is enabled : TRUE
##   Remaining time                    : 26.30

```

Example: list based definition

```

accrualTime <- getAccrualTime(list(
  "0 - <6" = 22,
  "6"      = 33),
  maxNumberOfSubjects = 1000)
accrualTime

```

```

## Accrual time and intensity:
##   0.00000 - < 6.00000: 22
##   6.00000 - <=32.30303: 33
##
## Formula:
##   maxNumberOfSubjects = 1000 = 6 * 22 + 26.303 * 33
##
## Case (#5):
##   'maxNumberOfSubjects' and absolute accrual intensity are given, end of accrual* and 'followUpTime'.
##   Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(22, 33), maxNumberOfSubjects =
##
##   (*) Can be calculated directly.
##   (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##   Accrual time                : 0.00, 6.00, 32.30

```

```

## Accrual intensity : 22.0, 33.0
## Maximum number of subjects : 1000.0
##
## Default parameters: not available
##
## Generated parameters:
## End of accrual is user defined : FALSE
## Follow-up time must be user defined : FALSE
## Max number of subjects is user defined : TRUE
## Max number of subjects can be calculated : TRUE
## Absolute accrual intensity is enabled : TRUE
## Remaining time : 26.30

```

Example: how to use accrual time object

```
getSampleSizeSurvival(accrualTime = accrualTime, pi1 = 0.4, pi2 = 0.2)
```

```

## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Accrual duration longer than maximal study duration (time to
## maximal number of events); followUpTime = -20.568

## Design plan parameters and output for survival data:
##
## Design parameters:
## Significance level : 0.0250
## Type II error rate : 0.2
## Test : one-sided
##
## User defined parameters:
## pi (1) : 0.400
## Maximum number of subjects : 1000.0
## Accrual time : 6.00, 32.30
## Accrual intensity : 22.0, 33.0
##
## Default parameters:
## Type of computation : Schoenfeld
## Theta H0 : 1
## Planned allocation ratio : 1
## Event time : 12
## Drop-out rate (1) : 0.000
## Drop-out rate (2) : 0.000
## Drop-out time : 12
##
## Sample size and output:
## Direction upper : TRUE
## Median (1) : 16.3
## Median (2) : 37.3
## Lambda (1) : 0.0426
## Lambda (2) : 0.0186
## Hazard ratio : 2.289

```

```

## Number of events : 45.8
## Total accrual time : 32.30
## Follow up time : -20.57
## Calculate follow up time : TRUE
## Number of subjects fixed : 1000.0
## Number of subjects fixed (1) : 500.0
## Number of subjects fixed (2) : 500.0
## Analysis times : 11.73
## Study duration : 11.73
## Critical values (effect scale) : 1.785
## Local one-sided significance levels : 0.0250
##
## Legend:
## (i): values of treatment arm i

```

Case 6 (not possible)

maxNumberOfSubjects and relative accrual intensity are given, absolute accrual intensity[x], end of accrual and followUpTime shall be calculated

Example: vector based definition

```

accrualTime <- getAccrualTime(accrualTime = c(0, 6),
  accrualIntensity = c(0.22, 0.33), maxNumberOfSubjects = 1000)
accrualTime

```

```

## Accrual time and intensity:
## 0.000 - < 6.000: 0.22
## 6.000 - <=3032.303: 0.33
##
## Formula:
## maxNumberOfSubjects = 1000 = 6 * 0.22 * c + 3026.303 * 0.33 * c , where 'c' is a constant factor
##
## Case (#6):
## 'maxNumberOfSubjects' and relative accrual intensity are given, absolute accrual intensity[x], end
## Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(0.22, 0.33), maxNumberOfSubjects
##
## [x] Cannot be calculated.
## (*) Can be calculated directly.
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
## Accrual time : 0.00, 6.00, 3032.30
## Accrual intensity : 0.22, 0.33
## Maximum number of subjects : 1000.0
##
## Default parameters: not available
##
## Generated parameters:
## End of accrual is user defined : FALSE
## Follow-up time must be user defined : FALSE

```

```
## Max number of subjects is user defined      : TRUE
## Max number of subjects can be calculated   : TRUE
## Absolute accrual intensity is enabled      : FALSE
## Remaining time                             : 3026.30
```

Example: list based definition

```
accrualTime <- getAccrualTime(list(
  "0 - <6" = 0.22,
  "6"      = 0.33),
  maxNumberOfSubjects = 1000)
accrualTime
```

```
## Accrual time and intensity:
##   0.000 - < 6.000: 0.22
##   6.000 - <=3032.303: 0.33
##
## Formula:
##   maxNumberOfSubjects = 1000 = 6 * 0.22 * c + 3026.303 * 0.33 * c , where 'c' is a constant factor
##
## Case (#6):
##   'maxNumberOfSubjects' and relative accrual intensity are given, absolute accrual intensity[x], end
##   Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(0.22, 0.33), maxNumberOfSubjec
##
##   [x] Cannot be calculated.
##   (*) Can be calculated directly.
##   (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##   Accrual time                : 0.00, 6.00, 3032.30
##   Accrual intensity           : 0.22, 0.33
##   Maximum number of subjects  : 1000.0
##
## Default parameters: not available
##
## Generated parameters:
##   End of accrual is user defined      : FALSE
##   Follow-up time must be user defined : FALSE
##   Max number of subjects is user defined : TRUE
##   Max number of subjects can be calculated : TRUE
##   Absolute accrual intensity is enabled : FALSE
##   Remaining time                     : 3026.30
```

Example: how to use accrual time object

Case 6 is not allowed and therefore an error will be shown:

```
tryCatch({
  getSampleSizeSurvival(accrualTime = accrualTime, pi1 = 0.4, pi2 = 0.2)
}, error = function(e) {
  print(e$message)
})
```

```
## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored
## [1] "Illegal argument: the calculation of 'followUpTime' for given 'maxNumberOfSubjects' and relative
```

Case 7

followUpTime and absolute accrual intensity are given,
end of accrual and maxNumberOfSubjects shall be calculated

Example: vector based definition

```
accrualTime <- getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(22, 33))
accrualTime
```

```
## Accrual time and intensity:
## 0 - <=6 : 22
## 6 - <=[?]: 33
##
## Formula:
## maxNumberOfSubjects = 6 * 22 + (x - 6) * 33, where 'x' is the unknown last accrual time
##
## Case (#7):
## 'followUpTime' and absolute accrual intensity are given, end of accrual** and 'maxNumberOfSubjects
## Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(22, 33))
##
## (*) Can be calculated directly.
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
## Accrual time : 0.00, 6.00
## Accrual intensity : 22.0, 33.0
##
## Default parameters: not available
##
## Generated parameters:
## End of accrual is user defined : FALSE
## Follow-up time must be user defined : TRUE
## Max number of subjects is user defined : FALSE
## Max number of subjects can be calculated : FALSE
## Absolute accrual intensity is enabled : TRUE
```

Example: list based definition

```
accrualTime <- getAccrualTime(list(
  "0 - <6" = 22,
  "6" = 33))
accrualTime
```

```
## Accrual time and intensity:
## 0 - <=6 : 22
## 6 - <=[?]: 33
```

```
##
## Formula:
##   maxNumberOfSubjects = 6 * 22 + (x - 6) * 33, where 'x' is the unknown last accrual time
##
## Case (#7):
##   'followUpTime' and absolute accrual intensity are given, end of accrual** and 'maxNumberOfSubjects'
##   Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(22, 33))
##
##   (*) Can be calculated directly.
##   (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##   Accrual time                : 0.00, 6.00
##   Accrual intensity           : 22.0, 33.0
##
## Default parameters: not available
##
## Generated parameters:
##   End of accrual is user defined      : FALSE
##   Follow-up time must be user defined : TRUE
##   Max number of subjects is user defined : FALSE
##   Max number of subjects can be calculated : FALSE
##   Absolute accrual intensity is enabled : TRUE
```

Example: how to use accrual time object

```
getSampleSizeSurvival(accrualTime = accrualTime,
  pi1 = 0.4, pi2 = 0.2, followUpTime = 6)
```

```
## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
## will be ignored

## Warning: Unused argument in getAccrualTime(...): 'maxNumberOfSubjects' =
## 186.080777135104 will be ignored

## Warning: User defined 'followUpTime' (6) ignored because follow-up time is
## 30.8678

## Design plan parameters and output for survival data:
##
## Design parameters:
##   Significance level          : 0.0250
##   Type II error rate         : 0.2
##   Test                       : one-sided
##
## User defined parameters:
##   pi (1)                    : 0.400
##   Accrual time              : 6.00
##   Accrual intensity         : 22.0, 33.0
##
```



```

## Default parameters:
##   Type of computation           : Schoenfeld
##   Theta H0                      : 1
##   Planned allocation ratio      : 1
##   Event time                    : 12
##   Drop-out rate (1)            : 0.000
##   Drop-out rate (2)            : 0.000
##   Drop-out time                 : 12
##
## Sample size and output:
##   Direction upper               : TRUE
##   Median (1)                   : 16.3
##   Median (2)                   : 37.3
##   Lambda (1)                   : 0.0426
##   Lambda (2)                   : 0.0186
##   Hazard ratio                  : 2.289
##   Maximum number of subjects   : 186.1
##   Number of events              : 45.8
##   Follow up time                : 30.87
##   Calculate follow up time     : TRUE
##   Number of subjects fixed     : 186.1
##   Number of subjects fixed (1) : 93.0
##   Number of subjects fixed (2) : 93.0
##   Analysis times                : 36.87
##   Study duration                : 36.87
##   Critical values (effect scale) : 1.785
##   Local one-sided significance levels : 0.0250
##
## Legend:
##   (i): values of treatment arm i

```

Case 8 (not possible)

followUpTime and relative accrual intensity are given,
absolute accrual intensity[x], end of accrual and `maxNumberOfSubjects` shall be calculated

Example: vector based definition

```
accrualTime <- getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(0.22, 0.33))
accrualTime
```

```

## Accrual time and intensity:
##   0 - <=6 : 0.22
##   6 - <=[?]: 0.33
##
## Formula:
##   maxNumberOfSubjects = 6 * 0.22 * c + (x - 6) * 0.33, where 'x' is the unknown last accrual time and
##
## Case (#8):
##   'followUpTime' and relative accrual intensity are given, absolute accrual intensity[x], end of acc
##   Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(0.22, 0.33))
##
##   [x] Cannot be calculated.

```

```
## (*) Can be calculated directly.
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##   Accrual time                : 0.00, 6.00
##   Accrual intensity           : 0.22, 0.33
##
## Default parameters: not available
##
## Generated parameters:
##   End of accrual is user defined      : FALSE
##   Follow-up time must be user defined : TRUE
##   Max number of subjects is user defined : FALSE
##   Max number of subjects can be calculated : FALSE
##   Absolute accrual intensity is enabled : FALSE
```

Example: list based definition

```
accrualTime <- getAccrualTime(list(
  "0 - <6" = 0.22,
  "6"      = 0.33))
accrualTime
```

```
## Accrual time and intensity:
##   0 - <=6 : 0.22
##   6 - <=[?]: 0.33
##
## Formula:
##   maxNumberOfSubjects = 6 * 0.22 * c + (x - 6) * 0.33, where 'x' is the unknown last accrual time and
##
## Case (#8):
##   'followUpTime' and relative accrual intensity are given, absolute accrual intensity[x], end of acc
##   Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(0.22, 0.33))
##
##   [x] Cannot be calculated.
##   (*) Can be calculated directly.
##   (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
##   Accrual time                : 0.00, 6.00
##   Accrual intensity           : 0.22, 0.33
##
## Default parameters: not available
##
## Generated parameters:
##   End of accrual is user defined      : FALSE
##   Follow-up time must be user defined : TRUE
##   Max number of subjects is user defined : FALSE
##   Max number of subjects can be calculated : FALSE
##   Absolute accrual intensity is enabled : FALSE
```

Example: how to use accrual time object

Case 8 is not allowed and therefore an error will be shown:

```
tryCatch({
  getSampleSizeSurvival(accrualTime = accrualTime, pi1 = 0.4, pi2 = 0.2, followUpTime = 6)
}, error = function(e) {
  print(e$message)
})
```

```
## Warning: Unused argument in getAccrualTime(...): 'accrualIntensity' = 0.1
```

```
## will be ignored
```

```
## [1] "Illegal argument: the calculation of 'maxNumberOfSubjects' for given 'followUpTime' and relative
```

How to show accrual time details

You can use a sample size or power object as argument for function `getAccrualTime`:

```
sampleSize <- getSampleSizeSurvival(accrualTime = c(0, 6), accrualIntensity = c(22, 53),
  lambda2 = 0.05, hazardRatio = 0.8, followUpTime = 6)
sampleSize
```

```
## Design plan parameters and output for survival data:
```

```
##
```

```
## Design parameters:
```

```
## Significance level : 0.0250
```

```
## Type II error rate : 0.2
```

```
## Test : one-sided
```

```
##
```

```
## User defined parameters:
```

```
## Lambda (2) : 0.050
```

```
## Hazard ratio : 0.800
```

```
## Event time : 12
```

```
## Accrual time : 6.00, 26.26
```

```
## Accrual intensity : 22.0, 53.0
```

```
## Follow up time : 6.00
```

```
##
```

```
## Default parameters:
```

```
## Type of computation : Schoenfeld
```

```
## Theta H0 : 1
```

```
## Planned allocation ratio : 1
```

```
## Piecewise survival times : 0.00
```

```
## Drop-out rate (1) : 0.000
```

```
## Drop-out rate (2) : 0.000
```

```
## Drop-out time : 12
```

```
##
```

```
## Sample size and output:
```

```
## Direction upper : FALSE
```

```
## pi (1) : 0.381
```

```
## pi (2) : 0.451
```

```
## Median (1) : 17.3
```

```
## Median (2) : 13.9
```

```
## Lambda (1) : 0.040
```

```
## Maximum number of subjects : 1205.9
```

```
## Number of events : 630.5
```

```

## Total accrual time                : 26.26
## Calculate follow up time          : TRUE
## Number of subjects fixed          : 1205.9
## Number of subjects fixed (1)      : 602.9
## Number of subjects fixed (2)      : 602.9
## Analysis times                    : 32.26
## Study duration                    : 32.26
## Critical values (effect scale)     : 0.855
## Local one-sided significance levels : 0.0250
##
## Legend:
## (i): values of treatment arm i

```

```

accrualTime <- getAccrualTime(sampleSize)
accrualTime

```

```

## Accrual time and intensity:
## 0.00000 - < 6.00000: 22
## 6.00000 - <=26.26162: 53
##
## Formula:
## maxNumberOfSubjects = 1205.866 = 6 * 22 + 20.2616 * 53
##
## Case (#5):
## 'maxNumberOfSubjects' and absolute accrual intensity are given, end of accrual* and 'followUpTime':
## Example: getAccrualTime(accrualTime = c(0, 6), accrualIntensity = c(22, 33), maxNumberOfSubjects =
##
## (*) Can be calculated directly.
## (**) Cannot be calculated directly but with 'getSampleSizeSurvival' or 'getPowerSurvival'.
##
## Details:
##
## User defined parameters:
## Accrual time                : 0.00, 6.00, 26.26
## Accrual intensity           : 22.0, 53.0
## Maximum number of subjects  : 1205.9
##
## Default parameters: not available
##
## Generated parameters:
## End of accrual is user defined      : FALSE
## Follow-up time must be user defined : FALSE
## Max number of subjects is user defined : TRUE
## Max number of subjects can be calculated : TRUE
## Absolute accrual intensity is enabled : TRUE
## Remaining time                  : 20.26

```

System: rpact 2.0.1, R version 3.5.2 (2018-12-20), platform: x86_64-w64-mingw32

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