Package ‘cstime’

May 15, 2023

**Title**  Date and Time Functions for Public Health Purposes

**Version**  2023.5.3

**Description**  Provides easy and consistent time conversion for public health purposes. The time conversion functions provided here are between date, ISO week, ISO yearweek, ISO year, calendar month/year, season, season week.

**License**  MIT + file LICENSE

**URL**  https://www.csids.no/cstime/, https://github.com/csids/cstime

**BugReports**  https://github.com/csids/cstime/issues

**Encoding**  UTF-8

**LazyData**  true

**LazyDataCompression**  xz

**RoxygenNote**  7.2.3

**Depends**  R (>= 3.5.0)

**Imports**  data.table, magrittr

**Suggests**  rmarkdown, ggplot2, knitr, testthat (>= 3.0.0), readxl, glue, lubridate

**Config/testthat/edition**  3

**VignetteBuilder**  knitr

**NeedsCompilation**  no

**Author**  Chi Zhang [aut, cre] (<https://orcid.org/0000-0003-0501-5909>), Richard Aubrey White [aut] (<https://orcid.org/0000-0002-6747-1726>)

**Maintainer**  Chi Zhang <andreachizhang@yahoo.com>

**Repository**  CRAN

**Date/Publication**  2023-05-15 14:30:02 UTC
R topics documented:

dates_by_isoyearweek .................................................. 2
date_to_calmonth_c .................................................... 3
date_to_calmonth_n .................................................... 4
date_to_calyearmonth_c ............................................... 5
date_to_calyear_c ...................................................... 5
date_to_calyear_n ...................................................... 6
date_to_isoweek_c ...................................................... 7
date_to_isoweek_n ...................................................... 8
date_to_isoyearweek_c ............................................... 8
date_to_isoyear_c ...................................................... 9
date_to_isoyear_n ...................................................... 10
date_to_seasonweek_n ................................................ 11
date_to_season_c ....................................................... 11
isoweek_to_seasonweek_n ........................................... 12
isoyearweek_to_isoweek_c .......................................... 12
isoyearweek_to_isoweek_n .......................................... 13
isoyearweek_to_isoyear_c .......................................... 14
isoyearweek_to_isoyear_n .......................................... 14
isoyearweek_to_last_date .......................................... 15
isoyearweek_to_seasonweek_n ...................................... 16
isoyearweek_to_season_c ............................................ 16
isoyear_to_last_date .................................................. 17
isoyear_to_last_isoweek_n .......................................... 18
isoyear_to_last_isoyearweek_c .................................... 18
keep_sundays .......................................................... 19
keep_sundays_and_latest_date ..................................... 20
keep_sundays_and_latest_date_internal ............................ 20
nor_workdays_by_date ................................................. 21
nor_workdays_by_isoyearweek ...................................... 21
now_c ................................................................. 22
seasonweek_to_isoweek_c .......................................... 22
seasonweek_to_isoweek_n .......................................... 23

Index 24

dates_by_isoyearweek  Dates of different days within isoyearweeks

Description

Dates of different days within isoyearweeks

Usage

dates_by_isoyearweek
**Format**

- **isoyear** Isoyear.
- **isoyearweek** Isoweek-isoyear.
- **mon** Date of Monday.
- **tue** Date of Tuesday.
- **wed** Date of Wednesday.
- **thu** Date of Thursday.
- **fri** Date of Friday.
- **sat** Date of Saturday.
- **sun** Date of Sunday.
- **weekdays** List of dates from Mon-Fri
- **weekend** List of dates from Sat-Sun
- **days** List of dates from Mon-Sun

**Examples**

```r
# Constructing a vector of dates without removing the Date class
do.call("c", dates_by_isoyearweek[isoyearweek %in% c("2021-01", "2021-02")]$weekdays)
```

---

**Description**

Date -> calmonth (character)

**Usage**

```r
date_to_calmonth_c(x = lubridate::today())
```

## Default S3 method:
date_to_calmonth_c(x)

## S3 method for class 'character'
date_to_calmonth_c(x = lubridate::today())

## S3 method for class 'Date'
date_to_calmonth_c(x = lubridate::today())

**Arguments**

- `x` a Date object or string, in the form of 'yyyy-mm-dd'
Value

calmonth ("XX")

Examples

date_to_calmonth_n("2021-08-11")
date_to_calmonth_n(lubridate::today())

date_to_calmonth_n   Date -> calmonth (numeric)

Description

Date -> calmonth (numeric)

Usage

date_to_calmonth_n(x = lubridate::today())

## Default S3 method:
date_to_calmonth_n(x)

## S3 method for class 'character'
date_to_calmonth_n(x = lubridate::today())

## S3 method for class 'Date'
date_to_calmonth_n(x = lubridate::today())

Arguments

x a Date object or string, in the form of 'yyyy-mm-dd'

Value

calmonth

Examples

date_to_calmonth_n("2021-08-11")
date_to_calmonth_n(lubridate::today())
### date_to_calyearmonth_c

**Date -> calyearmonth (character)**

#### Description

Date -> calyearmonth (character)

#### Usage

```r
date_to_calyearmonth_c(x = lubridate::today())
```

```r
## Default S3 method:
date_to_calyearmonth_c(x)
```

```r
## S3 method for class 'character'
date_to_calyearmonth_c(x = lubridate::today())
```

```r
## S3 method for class 'Date'
date_to_calyearmonth_c(x = lubridate::today())
```

#### Arguments

- `x`  
  a Date object or string, in the form of 'yyyy-mm-dd'

#### Value

calyearmonth ("YYYY-MXX")

#### Examples

```r
date_to_calyearmonth_c("2021-08-11")
date_to_calyearmonth_c(lubridate::today())
```

### date_to_calyear_c

**Date -> calyear (character)**

#### Description

Date -> calyear (character)
Usage

date_to_calyear_c(x = lubridate::today())

## Default S3 method:
date_to_calyear_c(x)

## S3 method for class 'character'
date_to_calyear_c(x = lubridate::today())

## S3 method for class 'Date'
date_to_calyear_c(x = lubridate::today())

Arguments

x a Date object or string, in the form of 'yyyy-mm-dd'

Value

ISO year in character

Examples

date_to_calyear_c("2021-08-11")
date_to_calyear_c(lubridate::today())

date_to_calyear_n
  Date -> calyear (numeric)

Description

Date -> calyear (numeric)

Usage

date_to_calyear_n(x = lubridate::today())

## Default S3 method:
date_to_calyear_n(x)

## S3 method for class 'character'
date_to_calyear_n(x = lubridate::today())

## S3 method for class 'Date'
date_to_calyear_n(x = lubridate::today())

Arguments

x a Date object or string, in the form of 'yyyy-mm-dd'
**date_to_isoweek_c**

**Value**
ISO week in character

**Examples**

```r
date_to_isoweek_c("2021-08-11")
date_to_isoweek_c(lubridate::today())
```

**Description**
ISO week (character) from Date object

**Usage**

```r
date_to_isoweek_c(x = lubridate::today())
```  
## Default S3 method:  
date_to_isoweek_c(x)

## S3 method for class 'character'  
date_to_isoweek_c(x = lubridate::today())

## S3 method for class 'Date'  
date_to_isoweek_c(x = lubridate::today())

**Arguments**

- **x**  
  a Date object or string, in the form of 'yyyy-mm-dd'

**Value**
ISO week in character

**Examples**

```r
date_to_isoweek_c("2021-08-11")
date_to_isoweek_c(lubridate::today())
```
**date_to_isoweek_n**

ISO week (numeric) from Date object

**Description**

ISO week (numeric) from Date object

**Usage**

```r
date_to_isoweek_n(x = lubridate::today())
```

```r
## Default S3 method:
date_to_isoweek_n(x)
```

```r
## S3 method for class 'character'
date_to_isoweek_n(x = lubridate::today())
```

```r
## S3 method for class 'Date'
date_to_isoweek_n(x = lubridate::today())
```

**Arguments**

- `x` a Date object or string, in the form of 'yyyy-mm-dd'

**Value**

ISO week in numeric

**Examples**

```r
date_to_isoweek_n("2021-08-11")
date_to_isoweek_n(lubridate::today())
```

---

**date_to_isoyearweek_c**

ISO year and week (character) from Date object

**Description**

ISO year and week (character) from Date object
**Usage**

date_to_isoyearweek_c(x = lubridate::today())

## Default S3 method:
date_to_isoyearweek_c(x)

## S3 method for class 'character'
date_to_isoyearweek_c(x = lubridate::today())

## S3 method for class 'Date'
date_to_isoyearweek_c(x = lubridate::today())

**Arguments**

x  
a Date object or string, in the form of 'yyyy-mm-dd'

**Value**

ISO year and week in character

**Examples**

date_to_isoyearweek_c("2021-08-11")
date_to_isoyearweek_c(lubridate::today())

date_to_isoyear_c

ISO year (character) from Date object

**Description**

ISO year (character) from Date object

**Usage**

date_to_isoyear_c(x = lubridate::today())

## Default S3 method:
date_to_isoyear_c(x)

## S3 method for class 'character'
date_to_isoyear_c(x = lubridate::today())

## S3 method for class 'Date'
date_to_isoyear_c(x = lubridate::today())

**Arguments**

x  
a Date object or string, in the form of 'yyyy-mm-dd'
**date_to_isoyear_n**

**Value**

ISO year in character

**Examples**

```r
date_to_isoyear_c("2021-08-11")
date_to_isoyear_c(lubridate::today())
```

---

**date_to_isoyear_n**  
ISO year (numeric) from Date object

**Description**

ISO year (numeric) from Date object

**Usage**

```r
date_to_isoyear_n(x = lubridate::today())
```

```r
## Default S3 method:
date_to_isoyear_n(x)

## S3 method for class 'character'
date_to_isoyear_n(x = lubridate::today())

## S3 method for class 'Date'
date_to_isoyear_n(x = lubridate::today())
```

**Arguments**

- `x`  
a Date object or string, in the form of `"yyyy-mm-dd"`

**Value**

ISO year in numeric

**Examples**

```r
date_to_isoyear_n("2021-08-11")
date_to_isoyear_n(lubridate::today())
```
**date_to_seasonweek_n**  
*Date to season week.*

### Description
Date to season week.

### Usage
```
date_to_seasonweek_n(x)
```

### Arguments
- `x` date

### Value
Season week in numeric

### Examples
```
date_to_seasonweek_n(c("2021-01-01", "2021-12-01"))
```

---

**date_to_season_c**  
*Date to season.*

### Description
Date to season.

### Usage
```
date_to_season_c(x)
```

### Arguments
- `x` date

### Value
Season, e.g. 2020/2021

### Examples
```
date_to_season_c(c("2021-01-01", "2021-12-01"))
```
isoweek_to_seasonweek_n

ISO week to season week (numeric). Season week 1 is natural week 30.

Description
ISO week to season week (numeric). Season week 1 is natural week 30.

Usage

isoweek_to_seasonweek_n(x)

## Default S3 method:
isoweek_to_seasonweek_n(x)

## S3 method for class 'character'
isoweek_to_seasonweek_n(x)

## S3 method for class 'numeric'
isoweek_to_seasonweek_n(x)

Arguments

x ISO week in a year (numeric), between 1 and 53. ISO week 53 is season week 23.5

Value
Season week in numeric

Examples

isoweek_to_seasonweek_n(31)

isoyearweek_to_isoweek_c

ISO yearweek to week (character)

Description
This function breaks the string connected with '-' into year/week
isoyearweek_to_isoweek_c

Usage

isoyearweek_to_isoweek_c(x)

## Default S3 method:
isoyearweek_to_isoweek_c(x)

## S3 method for class 'character'
isoyearweek_to_isoweek_c(x)

Arguments

x Year-week, e.g. "2020-19" for 19th week in 2020

Value

ISO week in character

Examples

isoyearweek_to_isoweek_c('2020-19')

isoyearweek_to_isoweek_n

ISO yearweek to week (numeric)

Description

This function breaks the string connected with '-' into year/week

Usage

isoyearweek_to_isoweek_n(x)

## Default S3 method:
isoyearweek_to_isoweek_n(x)

## S3 method for class 'character'
isoyearweek_to_isoweek_n(x)

Arguments

x Year-week, e.g. "2020-19" for 19th week in 2020

Value

ISO week in numeric
Examples

```r
isoyearweek_to_isoweek_n('2020-19')
```

---

**isoyearweek_to_isoyear_c**

*ISO yearweek to year (character)*

---

**Description**

This function breaks the string connected with `-' into year/week

**Usage**

```r
isoyearweek_to_isoyear_c(x)
```

```
## Default S3 method:
isoyearweek_to_isoyear_c(x)
## S3 method for class 'character'
isoyearweek_to_isoyear_c(x)
```

**Arguments**

- `x` Year-week, e.g. "2020-19" for 19th week in 2020

**Value**

ISO year in character

**Examples**

```r
isoyearweek_to_isoyear_c('2020-10')
```

---

**isoyearweek_to_isoyear_n**

*ISO yearweek to year (numeric)*

---

**Description**

This function breaks the string connected with `-' into year/week
Usage

isoyearweek_to_isoyear_n(x)

## Default S3 method:
isoyearweek_to_isoyear_n(x)

## S3 method for class 'character'
isoyearweek_to_isoyear_n(x)

Arguments

x Year-week, e.g. "2020-19" for 19th week in 2020

Value

ISO year in numeric

Examples

isoyearweek_to_isoyear_n('2020-10')

Description

Returns the Sunday in the isoyearweek

Usage

isoyearweek_to_last_date(x)

## Default S3 method:
isoyearweek_to_last_date(x)

## S3 method for class 'character'
isoyearweek_to_last_date(x)

Arguments

x ISO yearweek, e.g. "2020-19" for 19th week in 2020

Value

Date of Sunday of that isoyearweek
Examples

```r
isoyearweek_to_last_date(c("2019-19", "2020-01"))
```

---

### isoyearweek_to_seasonweek_n

ISO yearweek to season week (numeric). Season week 1 is natural week 30.

**Description**

ISO yearweek to season week (numeric). Season week 1 is natural week 30.

**Usage**

```r
isoyearweek_to_seasonweek_n(x)
```

**Arguments**

- `x` ISO yearweek

**Value**

Season week in numeric

**Examples**

```r
isoyearweek_to_seasonweek_n(c("2021-01"))
```

---

### isoyearweek_to_season_c

ISO yearweek to season.

**Description**

ISO yearweek to season.

**Usage**

```r
isoyearweek_to_season_c(x)
```

```r
## Default S3 method:
isoyearweek_to_season_c(x)
## S3 method for class 'character'
isoyearweek_to_season_c(x)
```

**Examples**

```r
isoyearweek_to_season_c(c("2021-01"))
```
isoyear_to_last_date

Arguments
x isoyearweek, connected with `-`

Value
Season, e.g. 2020/2021

Examples
isoyearweek_to_season_c(c("2021-01", "2021-50"))

isooyear_to_last_date  Last Sunday in ISO year

Description
Returns the last Sunday in the isoyear

Usage
isooyear_to_last_date(x)

## Default S3 method:
isooyear_to_last_date(x)

## S3 method for class 'character'
isooyear_to_last_date(x)

## S3 method for class 'numeric'
isooyear_to_last_date(x)

Arguments
x ISO year, e.g. 2020

Value
Date of the Sunday, for the last week in the isoyear

Examples
isooyear_to_last_date(c(2019, 2019, 2020, 2021))
### isoyear_to_last_isoweek_n

Last ISO week (numeric) in ISO year

**Description**

Returns the last week in the isoyear

**Usage**

```r
isoyear_to_last_isoweek_n(x)
```

```r
## Default S3 method:
isoyear_to_last_isoweek_n(x)
```

```r
## S3 method for class 'character'
isoyear_to_last_isoweek_n(x)
```

```r
## S3 method for class 'numeric'
isoyear_to_last_isoweek_n(x)
```

**Arguments**

- `x` ISO year, e.g. 2020

**Value**

ISO week in numeric

**Examples**

```r
isoyear_to_last_isoweek_n(c(2019, 2019, 2020, 2021))
```

### isoyear_to_last_isoyearweek_c

Last ISO yearweek (character) in ISO year

**Description**

Returns the last isoyearweek in the isoyear
Usage

```r
isoyear_to_last_isoyearweek_c(x)
```

## Default S3 method:
isoyear_to_last_isoyearweek_c(x)

## S3 method for class 'character'
isoyear_to_last_isoyearweek_c(x)

## S3 method for class 'numeric'
isoyear_to_last_isoyearweek_c(x)

Arguments

- `x` ISO year, e.g. 2020

Value

ISO year-week in character, of the last ISO year

Examples

```r
isoyear_to_last_isoyearweek_c(c(2019, 2019, 2020, 2021))
```

Description

keep_sundays

Usage

```r
keep_sundays(dates, format = "Uke isoweek_c-1/isoweek_c", keep_delete = TRUE)
```

Arguments

- `dates` dates (later)
- `format` format (later)
- `keep_delete` keep_delete (later)

Value

Label: delete or not
keep_sundays_and_latest_date

Description

keep_sundays_and_latest_date

Usage

keep_sundays_and_latest_date(
  dates,
  format = "Uke isoweek_c-1/isoweek_c",
  keep_delete = TRUE
)

Arguments

dates dates (later)
format format (later)
keep_delete keep_delete (later)

Value

Date with level: delete or not

keep_sundays_and_latest_date_internal

Description

keep_sundays_and_latest_date_internal

Usage

keep_sundays_and_latest_date_internal(
  dates,
  format = "Uke isoweek_c-1/isoweek_c",
  keep_delete = TRUE,
  keep_latest_date = TRUE
)
nor_workdays_by_date

Arguments

dates dates (later)
format format (later)
keep_delete keep_delet (later)
keep_latest_date keep_latest_date (later)

nor_workdays_by_date  Norwegian workdays and holidays by date

Description

Norwegian workdays and holidays by date

Usage

nor_workdays_by_date

Format

date Date.
day_of_week Integer. 1 = Monday, 7 = Sunday
mon_to_fri Integer. 1 between Monday and Friday, 0 between Saturday and Sunday
sat_to_sun Integer. 1 between Saturday and Sunday, 0 between Monday and Friday
public_holiday Integer. 1 if public holiday (helligdag), 0 if not public holiday
freeday Integer. 1 if public holiday (helligdag) or sat_to_sun==1, 0 otherwise
workday Integer. 1 if freeday==0, 0 if freeday==1

nor_workdays_by_isoyearweek

Description

Norwegian workdays and holidays by isoyearweek

Usage

nor_workdays_by_isoyearweek
**Format**

- **isoyearweek**  YYYY-WW
- **public_holiday**  The proportion of the days within the isoyearweek that are public holidays
- **freeday**  The proportion of the days within the isoyearweek that are either public holidays or Saturday/Sunday
- **workday**  1 minus freeday

---

**now_c**  
*Current time as character*

---

**Description**

Current time as character

**Usage**

```r
now_c(format = "%Y-%m-%d %H:%M:%S")
```

**Arguments**

- **format** Defaults to "%Y-%m-%d %H:%M:%S"

---

**seasonweek_to_isoweek_c**  
*Season week to ISO week (character). Season week 1 is ISO week 30.*

---

**Description**

Season week to ISO week (character). Season week 1 is ISO week 30.

**Usage**

```r
seasonweek_to_isoweek_c(x)
```

```r
## Default S3 method:
seasonweek_to_isoweek_c(x)
```

```r
## S3 method for class 'numeric'
seasonweek_to_isoweek_c(x)
```

**Arguments**

- **x**  Season week in a year (numeric), between 1 and 52
seasonweek_to_isoweek_n

Value
ISO week in character

Examples
seasonweek_to_isoweek_c(31)

seasonweek_to_isoweek_n
Season week to ISO week (numeric). Season week 1 is ISO week 30.

Description
Season week to ISO week (numeric). Season week 1 is ISO week 30.

Usage
seasonweek_to_isoweek_n(x)

## Default S3 method:
seasonweek_to_isoweek_n(x)

## S3 method for class 'numeric'
seasonweek_to_isoweek_n(x)

Arguments
x Season week in a year, between 1 and 52

Value
ISO week in numeric

Examples
seasonweek_to_isoweek_n(31)
Index

* datasets
  dates_by_isoyearweek, 2
  nor_workdays_by_date, 21
  nor_workdays_by_isoyearweek, 21
  date_to_calmonth_c, 3
  date_to_calmonth_n, 4
  date_to_calyear_c, 5
  date_to_calyear_n, 6
  date_to_calyearmonth_c, 5
  date_to_isoweek_c, 7
  date_to_isoweek_n, 8
  date_to_isoyear_c, 9
  date_to_isoyear_n, 10
  date_to_isoyearweek_c, 8
  date_to_season_c, 11
  date_to_seasonweek_n, 11
  dates_by_isoyearweek, 2
  isoweek_to_seasonweek_n, 12
  isoyear_to_last_date, 17
  isoyear_to_last_isoweek_n, 18
  isoyear_to_last_isoyearweek_c, 18
  isoyearweek_to_isoweek_c, 12
  isoyearweek_to_isoweek_n, 13
  isoyearweek_to_isoyear_c, 14
  isoyearweek_to_isoyear_n, 14
  isoyearweek_to_last_date, 15
  isoyearweek_to_season_c, 16
  isoyearweek_to_seasonweek_n, 16
  keep_sundays, 19
  keep_sundays_and_latest_date, 20
  keep_sundays_and_latest_date_internal, 20
  nor_workdays_by_date, 21
  nor_workdays_by_isoyearweek, 21
  now_c, 22
  seasonweek_to_isoweek_c, 22