Package ‘Mcomp’

June 19, 2018

Version 2.8
Title Data from the M-Competitions
Description The 1001 time series from the M-competition (Makridakis et al. 1982) <DOI:10.1002/for.398010202> and the 3003 time series from the IJF-M3 competition (Makridakis and Hibon, 2000) <DOI:10.1016/S0169-2070(00)00057-1>.
Depends R (>= 2.10), forecast (>= 8.0)
Imports ggplot2
LazyData yes
LazyLoad yes
ByteCompile TRUE
License GPL-3

URL http://pkg.robjhyndman.com/Mcomp/,
https://github.com/robjhyndman/Mcomp

BugReports https://github.com/robjhyndman/Mcomp/issues
RoxygenNote 6.0.1.9000

NeedsCompilation no

Author Rob Hyndman [aut, cre, cph] (<https://orcid.org/0000-0002-2140-5352>),
Muhammad Akram [ctb],
Christoph Bergmeir [ctb] (<https://orcid.org/0000-0002-3665-9021>),
Mitchell O’Hara-Wild [ctb]

Maintainer Rob Hyndman <Rob.Hyndman@monash.edu>
Repository CRAN

Date/Publication 2018-06-19 04:57:55 UTC

R topics documented:

  Mcomp-package ................................................................. 2
  M1 ................................................................. 2
  M3 ................................................................. 4
Data from the M-competitions

Description

The 1001 time series from the M-competition (Makridakis et al. 1982), and the 3003 time series and forecasts from the IJF-M3 competition (Makridakis and Hibon, 2000).

Author(s)

Rob J Hyndman. <Rob.Hyndman@monash.edu>, with assistance from Muhammad Akram and Christoph Bergmeir.

Source

http://forecasters.org/resources/time-series-data/m3-competition/.

References


M1  M-Competition data

Description

The time series from the M1 forecasting competition.

Usage

M1
Format

M1 is a list of 1001 series of class mcomp. Each series within M1 is of class mdata with the following structure:

- **sn**: Name of the series
- **st**: Series number and period. For example "Y1" denotes first yearly series, "Q20" denotes 20th quarterly series and so on.
- **n**: The number of observations in the time series
- **h**: The number of required forecasts
- **period**: Interval of the time series. Possible values are "YEARLY", "QUARTERLY", "MONTHLY" & "OTHER".
- **type**: The type of series. Possible values are "DEMOGR", "INDUST", "MACRO1", "MACRO2", "MICRO1", "MICRO2" & "MICRO3".
- **description**: A short description of the time series
- **x**: A time series of length n (the historical data)
- **xx**: A time series of length h (the future data)

Author(s)

Muhammad Akram and Rob Hyndman

Source

http://forecasters.org/resources/time-series-data/m-competition/

References


See Also

M3, subset.Mcomp, plot.Mdata

Examples

```R
M1
plot(M1$YAF2)
subset(M1,"monthly")
```
Description

The time series from the M3 forecasting competition.

Usage

M3

Format

M3 is a list of 3003 series of class mcomp. Each series within M3 is of class mdata with the following structure:

- **sn**: Name of the series
- **st**: Series number and period. For example "Y1" denotes first yearly series, "Q20" denotes 20th quarterly series and so on.
- **n**: The number of observations in the time series
- **h**: The number of required forecasts
- **period**: Interval of the time series. Possible values are "YEARLY", "QUARTERLY", "MONTHLY" & "OTHER".
- **type**: The type of series. Possible values for M3 are "DEMOGRAPHIC", "FINANCE", "INDUSTRY", "MACRO", "MICRO", "OTHER".
- **description**: A short description of the time series
- **x**: A time series of length n (the historical data)
- **xx**: A time series of length h (the future data)

Author(s)

Muhammad Akram and Rob Hyndman

Source

http://forecasters.org/resources/time-series-data/m3-competition/.

References


See Also

subset.Mcomp, plot.Mdata
M3Forecast

Examples

```r
M3
plot(M3[[32]])
subset(M3, "monthly")
```

---

**Description**

The forecasts from all the original participating methods in the M3 forecasting competition.

**Usage**

```r
M3Forecast
```

**Format**

M3Forecast is a list of data.frames. Each list element is the result of one forecasting method. The data.frame then has the following structure: Each row is the forecast of one series. Rows are named accordingly. In total there are 18 columns, i.e., 18 forecasts. If fewer forecasts than 18 exist, the row is filled up with NA values.

**Author(s)**

Christoph Bergmeir and Rob Hyndman

**Source**

http://forecasters.org/resources/time-series-data/m3-competition/.

**References**


**Examples**

```r
M3Forecast["NAIVE2"]
```

```
## Not run:
# calculate errors using the accuracy function
# from the forecast package

errors <- lapply(M3Forecast, function(f) {
  res <- NULL
  for(x in 1:length(M3)) {
```
curr_f <- unlist(f[x,])
if(any(is.na(curr_f))) {
  curr_res <- accuracy(curr_f, M3[[x]]$xx)
} else {
  curr_res <- accuracy(M3[[x]]$xx, M3[[x]]$xx)
  curr_res <- rep(NA, length(curr_res))
}
res <- rbind(res, curr_res)
rownames(res) <- NULL
res
}

ind_yearly <- which(unlist(lapply(M3, function(x) {x$period == "YEARLY"})))
ind_quarterly <- which(unlist(lapply(M3, function(x) {x$period == "QUARTERLY"})))
ind_monthly <- which(unlist(lapply(M3, function(x) {x$period == "MONTHLY"})))
ind_other <- which(unlist(lapply(M3, function(x) {x$period == "OTHER"})))

yearly_errors <- t(as.data.frame(lapply(errors, function(x) {colMeans(x[ind_yearly,]]))))
quarterly_errors <- t(as.data.frame(lapply(errors, function(x) {colMeans(x[ind_quarterly,]]))))
monthly_errors <- t(as.data.frame(lapply(errors, function(x) {colMeans(x[ind_monthly,]]))))
other_errors <- t(as.data.frame(lapply(errors, function(x) {colMeans(x[ind_other,]]))))

yearly_errors
quarterly_errors
monthly_errors
other_errors

## End(Not run)

---

**plot.Mdata**

*Plotting M Competition data*

**Description**

Functions to plot a time series from the M competition data sets, showing both the training and test sections of the series.

**Usage**

```r
## S3 method for class 'Mdata'
plot(x, xlim = c(tsp(x$x)[1], tsp(x$xx)[2]),
  ylim = range(x$x, x$xx), main = x$sn, xlab, ylab = "", ...) 

## S3 method for class 'Mdata'
autoplot(object, ...)
```
Arguments

- `x`, object: A series of M-competition data
- `xlim`: Limits on x-axis
- `ylim`: Limits on y-axis
- `main`: Main title
- `xlab`: Label on x-axis
- `ylab`: Label on y-axis
- `...`: Other plotting arguments passed to `plot`. Ignored for `autoplot`.

Value

`autoplot.Mcomp` returns a ggplot2 object, while `plot.Mcomp` returns nothing. Both functions produce a time series plot of the selected series.

Author(s)

Rob Hyndman

See Also

`M1, M3`

Examples

```r
library(ggplot2)
plot(M1[[1]])
autoplot(M1$YAF3)
autoplot(M3[['N0647']])
```

Description

`subset.Mcomp` returns a subset of the time series data from the M Competitions. Subsets can be for specific periods, or specific types of data or both.

Usage

```r
## S3 method for class 'Mcomp'
subset(x, cond1, cond2, ...)
```
Arguments

- **x**: M-competition data or a subset of M-competition data.
- **cond1**: Type or period of the data. Type is a character variable and period could be character or numeric.
- **cond2**: Optional second condition specifying type or period of the data, depending on **cond1**. If **cond1** denotes type then **cond2** would denote period, but if **cond1** denotes period then **cond2** would denote type.
- **...**: Other arguments.

Details

Possible values for **cond1** and **cond2** denoting period are 1, 4, 12, "yearly", "quarterly", "monthly" and "other".

If **cond1** or **cond2** equals 111, then the 111 series used in the extended comparisons in the 1982 M-competition are selected.

Possible values for **cond1** and **cond2** denoting type are "macro", "micro", "industry", "finance", "demographic", "allother", "macro1", "macro2", "micro1", "micro2", "micro3". These correspond to the descriptions used in the competitions. See the references for details.

Partial matching used for both conditions.

Value

An object of class `mcomp` consisting of the selected series.

Author(s)

Muhammad Akram and Rob Hyndman

References


See Also

*M1*

Examples

```r
M3.quarterly <- subset(M3,4)
M1.yearly.industry <- subset(M1,1,"industry")
```
Index

*Topic **datasets**
  M1. 2
  M3. 4
  M3Forecast. 5

*Topic **data**
  subset.Mcomp. 7

*Topic **hplot**
  plot.Mdata. 6

*Topic **package**
  Mcomp-package. 2
  autoplot.Mdata (plot.Mdata). 6

M1. 2, 7, 8
M3. 3, 4, 7
M3Forecast. 5
Mcomp (Mcomp-package). 2
Mcomp-package. 2

plot.Mdata. 3, 4, 6

subset.Mcomp. 3, 4, 7