Package: expsmooth (via r-universe)

November 22, 2026

Title Data Sets from ``Forecasting with Exponential Smoothing"

Description Data sets from the book ``Forecasting with exponential smoothing: the state space approach" by Hyndman, Koehler, Ord and Snyder (Springer, 2008) <doi:10.1007/978-3-540-71918-2>.

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Depends R (>= 3.5.0), forecast

Suggests ggplot2, knitr, patchwork, rmarkdown

LazyData yes

License GPL-3

URL https://pkg.robjhyndman.com/expsmooth/, https://github.com/robjhyndman/expsmooth

BugReports https://github.com/robjhyndman/expsmooth/issues

Encoding UTF-8

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NeedsCompilation no

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`ausgdp` *Quarterly Australian GDP*

Description

Quarterly Australian GDP per capita, 1971:3 - 1998:1.

Usage

```
ausgdp
```

Format

Quarterly time series of length 107.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(ausgdp,
  main = "Australian GDP per capita",
  ylab = "dollars", xlab = "Year"
)
```

---

bonds *Monthly US government bond yields*

Description

Monthly US government 10-year bond yields (percent pa) from Jan 1994 to May 2004.

Usage

```
bonds
```

Format

Monthly time series of length 125.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(bonds,
  main = "US 10-year bonds yield",
  ylab = "Percentage per annum", xlab = "Year"
)
```

cangas *Monthly Canadian gas production*

Description

Monthly Canadian gas production, billions of cubic metres, January 1960 - February 2005.

Usage

```
cangas
```

Format

Monthly time series of length 542.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(cangas,
  main = "Monthly Canadian gas production",
  ylab = "billion cubic metres", xlab = "Year"
)
```

carparts *Monthly sales car parts*

Description

Monthly sales of car parts. 2674 series. Jan 1998 - Mar 2002.

Usage

```
carparts
```

Format

Monthly multiple time series with 51 observations on 2674 series. Some series contain missing values.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(carparts[, 2001:2005], facets = TRUE,
  main = "Monthly car part sales",
  ylab = "Sales", xlab = "Year"
)
```

---

dji *Monthly Dow Jones Index*

Description

Monthly Dow Jones Index: Open, High, Low, Close. Jan 1990 - Mar 2007.

Usage

```
dji
```

Format

Monthly multiple time series with 207 observations on 4 variables: `Open`, `High`, `Low` and `Close`.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(dji, main = "Dow Jones Index", ylab = "", xlab = "Year")
```

djiclose *Monthly Dow Jones Index: closing*

Description

Closing values of the Dow Jones Index on the first day of each month, October 1928 - Dec 2007.

Usage

```
djiclose
```

Format

Monthly multiple time series with 951 observations on 2 variables:

`close` Closing value of the index.

`pcreturn` Percentage return. The first value is missing.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(djiclose, facets = TRUE,
  main = "Dow Jones Index",
  ylab = "", xlab = "Year"
)
```

enplanements *Monthly US domestic enplanements*

Description

Domestic revenue enplanements (millions), January 1979 - June 2002. Source: US Department of Transportation, Bureau of Transportation Statistics, Air Carrier Traffic Statistics Monthly.

Usage

```
enplanements
```

Format

Monthly time series of length 282.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(enplanements,
  main = "US domestic enplanements",
  ylab = "millions", xlab = "Year"
)
```

---

fmsales *Weekly FM sales*

Description

Sales of a product for 62 weeks starting in early 2003.

Usage

```
fmsales
```

Format

Time series of length 62, indexed by week (frequency 1).

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(fmsales, ylab = "FM sales (thousands)", xlab = "Week")
```

freight *Annual US new freight cars*

Description

Annual US new freight cars, 1947-1993. Freight cars, new (excl. rebuilt), new orders, equip. mfrers. Series N0193 from the M3 competition.

Usage

```
freight
```

Format

Annual time series of length 47.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(freight,
  main = "New freight cars shipped in USA",
  ylab = "", xlab = "Year"
)
```

frexport *Quarterly French exports*

Description

Quarterly exports of a French company (in thousands of francs), taken from Makridakis et al. (1998, p.162).

Usage

```
frexport
```

Format

Quarterly time series of length 24, indexed by year 1-6.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(frexport,
  main = "Quarterly exports",
  ylab = "thousands of francs", xlab = "Year"
)
```

---

gasprice *US gasoline prices*

Description

Monthly US retail gasoline price (the average price per gallon, in dollars) and the spot price of a barrel of West Texas Intermediate (WTI) oil in dollars as traded at Cushing, Oklahoma. Jan 1991 - Nov 2006. These series were obtained from the US Energy Information Administration website https://www.eia.gov.

Usage

```
gasprice
```

Format

Monthly multiple time series with 191 observations on 2 variables:

`GasPrice` Average retail price of gasoline (dollars per gallon).

`SpotPrice` Spot price of WTI oil (dollars per barrel).

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(gasprice, facets = TRUE,
  main = "Gasoline and oil prices",
  ylab = "US dollars", xlab = "Year"
)
```

`hospital` *Monthly patient count*

Description

Monthly patient count for products that are related to medical problems. There are 767 time series that had a mean count of at least 10 and no zeros.

Usage

```
hospital
```

Format

Monthly multiple time series with 84 observations on 767 series, January 2000 - December 2006.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(hospital[, 1:5], facets = TRUE,
  main = "Monthly patient count",
  ylab = "Patients", xlab = "Year"
)
```

jewelry *Weekly jewelry sales*

Description

Weekly sales of 314 costume jewelry items over the period week 5, 1998 to week 24, 2000.

Usage

```
jewelry
```

Format

Weekly multiple time series (frequency 52) with 124 observations on 314 series.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(jewelry[, 1:5], facets = TRUE,
  main = "Weekly sales of costume jewelry items",
  ylab = "Sales", xlab = "Year"
)
```

mcopper *Monthly copper prices*

Description

Monthly copper prices. Copper, grade A, electrolytic wire bars/cathodes, LME, cash (pounds/ton). Source: UNCTAD (https://unctadstat.unctad.org/EN/).

Usage

```
mcopper
```

Format

Monthly time series of length 564.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(mcopper,
  main = "Monthly copper price",
  ylab = "pounds per ton", xlab = "Year"
)
```

---

msales *Monthly product sales*

Description

Monthly sales for a product with shortage indicators.

Usage

```
msales
```

Format

Monthly multiple time series with 36 observations on 2 variables, indexed by year 1-3:

`Sales` Monthly sales.

`stockouts` Indicator equal to 1 when there was a stock shortage, and 0 otherwise.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
stock <- factor(msales[, "stockouts"],
  labels = c("Excess stock", "Stock shortage")
)
autoplot(msales[, "Sales"],
  main = "Monthly sales of a product",
  ylab = "Sales", xlab = "Year"
) +
  ggplot2::geom_point(ggplot2::aes(shape = stock)) +
  ggplot2::labs(shape = NULL)
```

`partx` *Monthly sales of an automobile part*

Description

Monthly sales of an automobile part.

Usage

```
partx
```

Format

Monthly time series of length 51, indexed by year 1-5.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(partx,
  main = "Monthly sales of an automobile part",
  ylab = "Sales", xlab = "Year"
)
```

ukcars *Quarterly UK passenger car production*

Description

Quarterly UK passenger car production (thousands of cars), 1977:1 - 2005:1.

Usage

```
ukcars
```

Format

Quarterly time series of length 113.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(ukcars,
  main = "UK passenger vehicle production",
  ylab = "Thousands of cars", xlab = "Year"
)
```

unemp.cci *Unemployment and the CCI*

Description

100 monthly observations on the consumer confidence index and seasonally adjusted civilian unemployment in the US, covering the period June 1997 – September 2005.

Usage

```
unemp.cci
```

Format

Monthly multiple time series with 100 observations on 3 variables:

`unemp` Seasonally adjusted civilian unemployment.

`cci` Consumer confidence index.

`sep11` A "terrorism" indicator variable taking value 1 from September 2001, and 0 before.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(unemp.cci[, c("unemp", "cci")], facets = TRUE,
  main = "Unemployment and the CCI",
  ylab = "", xlab = "Year"
)
```

---

usgdp *Quarterly US GDP*

Description

Quarterly US GDP, 1947:1 - 2006:1.

Usage

```
usgdp
```

Format

Quarterly time series of length 237.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(usgdp, main = "Quarterly US GDP", ylab = "US dollars", xlab = "Year")
```

usnetelec *Annual US net electricity generation*

Description

Annual US net electricity generation (billion kWh) for 1949-2003.

Usage

```
usnetelec
```

Format

Annual time series of length 55.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(usnetelec,
  main = "Annual US net electricity generation",
  ylab = "billion kWh", xlab = "Year"
)
```

utility *Hourly utility demand*

Description

Hourly utility demand, mid western USA from 1 Jan 2003.

Usage

```
utility
```

Format

Hourly time series (frequency 24) of length 3024, covering 126 days.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(utility, main = "Hourly utility demand", ylab = "MW", xlab = "Day")
```

---

vehicles *Hourly vehicle counts*

Description

Hourly vehicle counts on Monash Freeway, outside Melbourne in Victoria, Australia, beginning August 1995.

Usage

```
vehicles
```

Format

Hourly time series (frequency 24) of length 1689, indexed by day.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(vehicles,
  main = "Hourly vehicle count",
  ylab = "Number of vehicles", xlab = "Day"
)
```

visitors *Monthly Australian overseas visitors*

Description

Monthly Australian short-term overseas visitors (thousands of people), May 1985 - April 2005.

Usage

```
visitors
```

Format

Monthly time series of length 240.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(visitors,
  main = "Overseas visitors to Australia",
  ylab = "Thousands of people", xlab = "Year"
)
```

xrates *Monthly exchange rates*

Description

Monthly foreign exchange rates: US dollar and UK pound against the Australian dollar, January 2000 - May 2006.

Usage

```
xrates
```

Format

Monthly multiple time series with 77 observations on 2 variables:

`audusd` USD/AUD exchange rate.

`audukp` UKP/AUD exchange rate.

Source

Hyndman, R.J., Koehler, A.B., Ord, J.K., and Snyder, R.D. (2008) *Forecasting with exponential smoothing: the state space approach*, Springer. doi:10.1007/9783540719182.

References

https://robjhyndman.com/expsmooth/

Examples

```
autoplot(xrates, facets = TRUE,
  main = "Foreign exchange rates",
  ylab = "", xlab = "Year"
)
```

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