

Package ‘fpp3’

September 18, 2024

Title Data for “Forecasting: Principles and Practice” (3rd Edition)

Version 1.0.1

Description All data sets required for the examples and exercises in the book “Forecasting: principles and practice” by Rob J Hyndman and George Athanasopoulos <<https://0Texts.com/fpp3/>>. All packages required to run the examples are also loaded. Additional data sets not used in the book are also included.

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URL <https://pkg.robjhyndman.com/fpp3/>,
<https://github.com/robjhyndman/fpp3>, <https://0Texts.com/fpp3/>

BugReports <https://github.com/robjhyndman/fpp3/issues>

Depends R (>= 4.1.0)

Imports cli (>= 1.0.0), crayon (>= 1.3.4), dplyr (>= 0.7.4), fable (>= 0.3.0), fabletools (>= 0.3.0), feasts (>= 0.1.7), ggplot2 (>= 3.1.1), lubridate (>= 1.7.4), purrr (>= 0.2.4), rstudioapi (>= 0.7), tibble (>= 1.4.2), tidyr (>= 0.8.3), tsibble (>= 0.9.3), tsibbledata (>= 0.2.0)

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aus_accommodation	<i>Australian accommodation data</i>
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Description

aus_accommodation contains quarterly data on Australian tourist accommodation from short-term non-residential accommodation with 15 or more rooms, 1998 Q1 - 2016 Q2. The data set also contains the Australian Consumer Price Index (CPI) for the same period. Takings are in millions of Australian dollars, Occupancy is a percentage of rooms occupied, CPI is an index with value 100 in 2012 Q1.

Format

Time series of class 'tsibble'

Source

Australian Bureau of Statistics, Cat No 8635.0, Table 10, and Cat No 6401.0, Table 1.

Examples

aus_accommodation

aus_airpassengers *Air Transport Passengers Australia*

Description

Total annual air passengers (in millions) including domestic and international aircraft passengers of air carriers registered in Australia. 1970-2016.

Format

Annual time series of class 'tsibble'.

Source

World Bank.

Examples

aus_airpassengers

aus_arrivals *International Arrivals to Australia*

Description

Quarterly international arrivals to Australia from Japan, New Zealand, UK and the US. 1981Q1 - 2012Q3.

Format

Quarterly time series of class 'tsibble'.

Source

Tourism Research Australia.

Examples

aus_arrivals

aus_births	<i>Australian births data</i>
------------	-------------------------------

Description

Number of births in Australia.

Format

Time series of class 'tsibble'

Details

aus_births contains monthly data with one measured variable:

Births: Number of births

from January 1975 to December 2021 for the 6 states and 2 territories of Australia, indexed by:

Month: Year-month.

Each series is uniquely identified using the key:

State: The state or territory.

Source

Australian Bureau of Statistics. <https://www.abs.gov.au/statistics/people/population/births-australia/2022>

Examples

aus_births

aus_fertility	<i>Australian fertility rates</i>
---------------	-----------------------------------

Description

aus_fertility contains annual data on one measured variable:

Rate: Fertility rate (per thousand women)

Format

Time series of class 'tsibble'

Details

Each series is uniquely identified using two keys:

Region: Australia, states and territories
Age: Age of the woman

based on calendar year of registration data. It covers the period from 1975–2022.

Source

Australian Bureau of Statistics. <https://www.abs.gov.au/statistics/people/population/births-australia/2022>

Examples

aus_fertility

aus_inbound	<i>Monthly short term (<1 year) visitor arrivals to Australia</i>
-------------	----------------------------------------------------------------------

Description

aus_inbound contains monthly data with one measured variable:

Count: Number of individuals arriving in Australia

Format

Time series of class ‘tsibble’

Details

Each series is uniquely identified using two keys:

County: Country of stay/residence
Purpose: Purpose of travel

covering the period from Jan 2005–Feb 2020.

Source

Tourism Research Australia

Examples

aus_inbound

aus_migration	<i>Australian migration data</i>
---------------	----------------------------------

Description

Net Overseas Migration (NOM) to Australia.

Format

Time series of class ‘tsibble’

Details

aus_migration contains quarterly data with one measured variable:

NOM: The net gain or loss of population through immigration to Australia and emigration from Australia

from 1981 Q2 to 2023 Q3 for the 6 states and 2 territories of Australia, indexed by:

Quarter: Year-quarter.

NOM is based on an international traveller’s duration of stay being in or out of Australia for 12 months or more, over a 16 month period.

Each series is uniquely identified using the key:

State: The state or territory.

Source

Australian Bureau of Statistics. <https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/dec-2023>. Cat No. 310102.

Examples

aus_migration

aus_mortality *Australian mortality data*

Description

Weekly death counts and mortality rates in Australia.

Format

Time series of class 'tsibble'

Details

aus_mortality contains weekly data with two measured variables:

Deaths: Death count
Mortality: Mortality rate

from 2015 week 01 to 2023 week 12 for five different age groups plus the total, categorised by sex.
Each series is uniquely identified using three keys:

Sex: Sex of the individual: Male, Female, or Both
Age: Age group of the individual

The mortality rate is defined as the number of deaths per thousand people in Australia in each week.

Source

<https://mortality.org/Data/STMF> (Downloaded on 29 May 2024)

Examples

aus_mortality

aus_outbound	<i>Monthly short term (<1 year) resident departures in Australia</i>
--------------	-------------------------------------------------------------------------

Description

aus_outbound contains monthly data with one measured variable:

Count: Number of individuals departing Australia

Format

Time series of class 'tsibble'

Details

Each series is uniquely identified using two keys:

County: Destination
Purpose: Purpose of travel

covering the period from Jan 2005–Jun 2017.

Source

Tourism Research Australia

Examples

aus_outbound

aus_tobacco	<i>Australian cigarette and tobacco expenditure</i>
-------------	-----------------------------------------------------

Description

The total household expenditure for cigarette and tobacco consumption (CTC) in Australia.

Format

Time series of class 'tsibble'

Details

aus_tobacco contains quarterly data with one measured variable:

Expenditure: The total expenditure

from 1985 Q3 to 2023 Q4 for the 6 states and 2 territories of Australia, indexed by:

Quarter: Year-quarter.

The prices are represented as a chain volume measure (a representation of constant prices) in billions of dollars.

Each series is uniquely identified using the key:

State: The state or territory.

Source

Australian Bureau of Statistics. <https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-national-income-expenditure-and-product/mar-2024>

Examples

```
aus_tobacco |> autoplot(Expenditure) + scale_y_log10()
```

aus_vehicle_sales	<i>Australian vehicle sales</i>
-------------------	---------------------------------

Description

The number of new motor vehicles sold in Australia.

Format

Time series of class 'tsibble'

Details

aus_vehicle_sales contains monthly data with one measured variable:

Count: The number of vehicles sold

from January 1994 to December 2017 in Australia, indexed by:

Month: Year-month.

Each series is uniquely identified using the key:

Type: The type of the vehicle sold (Passenger, SUV, Other).

Source

Australian Bureau of Statistics. <https://www.abs.gov.au/statistics/industry/tourism-and-transport/sales-new-motor-vehicles/dec-2017>. Cat No. 931401.

Examples

aus_vehicle_sales

bank_calls

Call volume for a large North American commercial bank

Description

Five-minute call volume handled on weekdays between 7:00am and 9:05pm, beginning 3 March and 24 October 2003 (164 days).

Format

Time series of class 'tsibble' at 5 minute intervals.

Source

Jonathan Weinberg

References

Weinberg, Brown & Stroud (2007) "Bayesian forecasting of an inhomogeneous Poisson process with applications to call center data" *Journal of the American Statistical Association*, 102:480, 1185-1198.

Examples

bank_calls

boston_marathon	<i>Boston marathon winning times since 1897</i>
-----------------	-------------------------------------------------

Description

Winning times for events at the Boston Marathon. 1897-2019.

Format

Annual time series of class 'tsibble'.

Source

Boston Athletic Association. <https://www.baa.org/races/boston-marathon/results/champions>

Examples

boston_marathon

canadian_gas	<i>Monthly Canadian gas production</i>
--------------	----------------------------------------

Description

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

Format

Monthly time series of class 'tsibble'.

Source

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

References

<http://www.exponentialsMOOTHING.net>

Examples

canadian_gas

fpp3_conflicts	<i>Conflicts between fpp3 packages and other packages</i>
----------------	-----------------------------------------------------------

Description

This function lists all the conflicts between packages in the fpp3 collection and other packages that you have loaded.

Usage

```
fpp3_conflicts()
```

Details

Some conflicts are deliberately ignored: `intersect`, `union`, `setequal`, and `setdiff` from `dplyr`; and `intersect`, `union`, `setdiff`, and `as.difftime` from `lubridate`. These functions make the base equivalents generic, so shouldn't negatively affect any existing code.

Value

A list object of class `fpp3_conflicts`.

Examples

```
fpp3_conflicts()
```

fpp3_packages	<i>List all packages loaded by fpp3</i>
---------------	-----------------------------------------

Description

List all packages loaded by fpp3

Usage

```
fpp3_packages(include_self = FALSE)
```

Arguments

`include_self` Include fpp3 in the list?

Value

A character vector of package names.

Examples

```
fpp3_packages()
```

guinea_rice	<i>Rice production (Guinea)</i>
-------------	---------------------------------

Description

Total annual rice production (million metric tons) for Guinea. 1970-2011.

Format

Annual time series of class 'tsibble'.

Source

World Bank.

Examples

```
guinea_rice
```

insurance	<i>Insurance quotations and advertising expenditure</i>
-----------	---------------------------------------------------------

Description

Monthly quotations and monthly television advertising expenditure for a US insurance company. January 2002 to April 2005

Format

Monthly time series of class 'tsibble'.

Source

Kindly provided by Dave Reilly, Automatic Forecasting Systems.

Examples

```
insurance |>  
  ggplot(aes(x=TVadverts, y=Quotes)) + geom_point()
```

melb_walkers	<i>Average daily total pedestrian count in Melbourne</i>
--------------	----------------------------------------------------------

Description

Daily average total pedestrian count (across different sensors) from 2019-01-01 to 2024-05-29.

Format

Time series of class 'tsibble'

Source

Melbourne Open Data Portal. <https://data.melbourne.vic.gov.au>

Examples

```
melb_walkers |> autoplot(Count)
```

nsw_offences	<i>Monthly offences in NSW</i>
--------------	--------------------------------

Description

nsw_offences contains monthly data with one measured variable:

Count: Number of offences reported

Format

Time series of class 'tsibble'

Details

Each series is uniquely identified using one key:

Type: Offence type

covering the period from Apr 1995–Dec 2023.

Source

NSW Bureau of Crime Statistics and Research. <https://bocsar.nsw.gov.au/>

Examples

nsw_offences

ny_childcare	<i>New York childcare data</i>
--------------	--------------------------------

Description

The number of employees (in thousands) in child day care services in New York City over the period the period from January 1990 to April 2024.

Format

Time series of class ‘tsibble’

Details

ny_childcare contains monthly data with two columns:

Month: Year-month
Count: Number of employees.

Source

U.S. Bureau of Labor Statistics and Federal Reserve Bank of St. Louis, All Employees: Education and Health Services: Child Care Services in New York City, NY retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/SMU36935616562440001>, 30 May 2024.

Examples

ny_childcare

otexts_views	<i>OTexts page views</i>
--------------	--------------------------

Description

Daily page views on the OTexts website <https://OTexts.com/> as recorded by Google analytics.

Format

Time series of class ‘tsibble’

Details

otexts_views contains daily data with two columns:

Date:	Date for which the page views are recorded
Pageviews:	Page views on the OTexts website

Examples

```
otexts_views
```

prices	<i>Price series for various commodities</i>
--------	---------------------------------------------

Description

Annual prices for eggs, chicken, copper, nails, oil and wheat. Eggs, chicken, nails, oil and copper in \$US; wheat in British pounds. All prices adjusted for inflation.

Format

Annual time series of class ‘tsibble’.

Source

Makridakis, Wheelwright and Hyndman (1998) **Forecasting: methods and applications**, John Wiley & Sons: New York. Chapter 9.

Examples

```
prices |> autoplot(wheat)
```

souvenirs	<i>Sales for a souvenir shop</i>
-----------	----------------------------------

Description

Monthly sales for a souvenir shop on the wharf at a beach resort town in Queensland, Australia.

Format

Monthly time series of class 'tsibble'.

Source

Makridakis, Wheelwright and Hyndman (1998) **Forecasting: methods and applications**, John Wiley & Sons: New York. Exercise 5.8.

Examples

```
souvenirs |> autoplot(Sales)
```

us_change	<i>Percentage changes in economic variables in the USA.</i>
-----------	-------------------------------------------------------------

Description

us_change contains percentage changes in quarterly personal consumption expenditure, personal disposable income, production, savings and the unemployment rate for the US, 1970 to 2016. Original \$ values were in chained 2012 US dollars.

Format

Time series of class 'tsibble'

Source

Federal Reserve Bank of St Louis.

Examples

```
us_change
```

us_employment	<i>US monthly employment data</i>
---------------	-----------------------------------

Description

us_employment contains monthly US employment data from January 1939 to June 2019. Each 'Series_ID' represents different sectors of the economy.

Format

Time series of class 'tsibble'

Source

U.S. Bureau of Labor Statistics

Examples

us_employment

us_gasoline	<i>US finished motor gasoline product supplied.</i>
-------------	-----------------------------------------------------

Description

Weekly data beginning Week 6, 1991, and ending Week 3, 2017. Units are "million barrels per day".

Format

Time series object of class 'tsibble'.

Source

US Energy Information Administration.

Examples

us_gasoline

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