Package 'BLSloadR'

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Type Package

Title Download Time Series Data from the U.S. Bureau of Labor Statistics

Version 0.2

Description These functions provide a convenient interface for downloading data from the U.S. Bureau of Labor Statistics <https://www.bls.gov>. The functions in this package utilize flat files produced by the Bureau of Labor Statistics, which contain full series history. These files include employment, unemployment, wages, prices, industry and occupational data at a national, state, and sub-state level, depending on the series. Individual functions are included for those programs which have data available at the state level. The core functions provide direct access to the Current Employment Statistics (CES) <https://www.bls.gov/ces/>, Local Area Unemployment Statistics (LAUS) <https://www.bls.gov/lau/>, Occupational Employment and Wage Statistics (OEWS) <https://www.bls.gov/oes/> and Alternative Measures of Labor Underutilization (SALT) <https://www.bls.gov/lau/stalt.htm> data produced by the Bureau of Labor Statistics.

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Contents

`bls_overview` *Display BLS Dataset Overview*

Description

Fetches and displays the overview text file for a BLS dataset. This provides a convenient reference within the R environment without needing to manually find and review the text file on the BLS website.

Usage

```
bls_overview(
  series_id,
  display_method = "viewer",
  base_url = "https://download.bls.gov/pub/time.series"
)
```

Arguments

series_id	Character string. The BLS series identifier (e.g., "ln", "cu", "ap")
display_method	Character string. How to display the overview: "viewer" (default), "console", or "popup"
base_url	Character string. Base URL for BLS data (default uses official BLS site)

Value

Invisibly returns the text content. Function is called to use the viewer, console, or as a popup, depending on the 'display_method' argument.

Examples

```
# Display labor force statistics overview
bls_overview("ln")

# Display consumer price index overview
bls_overview("cu")

# Display in console instead of viewer
bls_overview("ln", display_method = "console")
```

---

create_bls_object *Create a BLS data object with diagnostics*

Description

This is a helper function to create a list with the additional class 'bls_data_collection' containing data downloaded form the U.S. Bureau of Labor Statistics as well as diagnostic details about the download. It is used invisibly in the package to bundle information about file downloads.

Usage

```
create_bls_object(
  data,
  downloads,
  data_type = "BLS",
  processing_steps = character(0)
)
```

Arguments

data	The processed data (data.table/data.frame)
downloads	List of download results from fread_bls()
data_type	Character string describing the type of BLS data (e.g., "CES", "JOLTS", "CPS")
processing_steps	Character vector describing processing steps applied

Value

A bls_data_collection object

`display_in_console` *Display text content in console.*

Description

Helper function used to display content from 'bls_overview' in the console..

Usage

```
display_in_console(content, series_id)
```

Arguments

`content`	Character. Text content to display
`series_id`	Two-letter series ID for a BLS time series to render in the display.

Value

No object returned, called to render content in console only..

`display_in_popup` *Display text content in popup window.*

Description

Helper function used to display content from 'bls_overview' in a popup window.

Usage

```
display_in_popup(content, series_id)
```

Arguments

`content`	Character. Text content to display
`series_id`	Two-letter series ID for a BLS time series to render in the display.

Value

No object returned, called to render content in popup.

display_in_viewer *Display text content in Viewer window.*

Description

Helper function used to display content from 'bls_overview' in the HTML viewer.

Usage

```
display_in_viewer(content, series_id)
```

Arguments

content	Character. Text content to display
series_id	Two-letter series ID for a BLS time series to render in the display.

Value

No object returned, called to render content in HTML viewer.

download_bls_files *Helper function for downloading and tracking BLS files*

Description

This function is used to pass multiple URLs at the Bureau of Labor Statistics into 'fread_bls()'

Usage

```
download_bls_files(urls, suppress_warnings = TRUE)
```

Arguments

urls	Named character vector of URLs to download
suppress_warnings	Logical. If TRUE, suppress individual download warnings

Value

Named list of bls_data objects

fread_bls *Download BLS Time Series Data*

Description

This function downloads a tab-delimited BLS flat file, incorporating diagnostic information about the file and returning an object with the bls_data class that can be used in the BLSloadR package.

Usage

```
fread_bls(url, verbose = FALSE)
```

Arguments

url	Character string. URL to the BLS flat file
verbose	Logical. If TRUE, prints additional messages during file read and processing. If FALSE (default), suppresses these messages.

Value

A named list with two elements:

data A data.table with the results of passing the url contents to 'data.table::fread()' as a tab-delimited text file.

diagnostics A named list of diagnostics run when reading the file including column names, empty columns, cleaning applied to the file, the url, the column names and original and final dimensions of the data.

Examples

```
data <- fread_bls("https://download.bls.gov/pub/time.series/ec/ec.series")
```

get_bls_data *Extract data from BLS data object*

Description

This is a helper function to extract the data element of a 'bls_data_collection' object.

Usage

```
get_bls_data(bls_obj)
```

Arguments

bls_obj	A bls_data_collection object or raw data

Value

The data component of a 'bls_data_collection' object as a data frame.

`get_bls_diagnostics` *Get download diagnostics from BLS data object*

Description

This is a helper function to extract the download diagnostics element of a 'bls_data_collection' object.

Usage

```
get_bls_diagnostics(bls_obj)
```

Arguments

`bls_obj`	A bls_data_collection object

Value

List of download diagnostics from a bls_data_collection object.

`get_bls_summary` *Get summary information from BLS data object*

Description

This is a helper function to extract the summary element of a 'bls_data_collection' object. This containes the number of files downloaded, the number of files with potential warnings, and the total number of warnings.

Usage

```
get_bls_summary(bls_obj)
```

Arguments

`bls_obj`	A bls_data_collection object

Value

List of summary information

get_ces *Download Current Employment Statistics (CES) Data*

Description

This function downloads Current Employment Statistics data from the Bureau of Labor Statistics. The data includes national, regional, state, and substate employment statistics. By default, all available areas, data types, and periods are included.

Usage

```
get_ces(
  transform = TRUE,
  monthly_only = TRUE,
  simplify_table = TRUE,
  suppress_warnings = TRUE,
  return_diagnostics = FALSE
)
```

Arguments

transform	Logical. If TRUE (default), converts employment values from thousands to actual counts by multiplying by 1000 for specific data types (codes 1, 6, 26) and removes ", In Thousands" from data type labels.
monthly_only	Logical. If TRUE (default), filters out annual data (period M13).
simplify_table	Logical. If TRUE (default), removes excess columns and creates a date column from Year and Period in the original data.
suppress_warnings	Logical. If TRUE (default), suppress individual download warnings and diagnostic messages for cleaner output during batch processing. If FALSE, returns the data and prints warnings and messages to the console.
return_diagnostics	Logical. If FALSE (default), returns only the data. If TRUE, returns the full bls_data_collection object with diagnostics.

Value

By default, returns a data.table with CES data. If return_diagnostics = TRUE, returns a bls_data_collection object containing data and comprehensive diagnostics.

Examples

```
# Download CES data (streamlined approach)
ces_data <- get_ces()

# Download with full diagnostics if needed
ces_result <- get_ces(return_diagnostics = TRUE)
```

```
ces_data <- get_bls_data(ces_result)

# Check for download issues
if (has_bls_issues(ces_result)) {
  print_bls_warnings(ces_result)
}
```

`get_jolts` *Download Job Openings and Labor Turnover Survey (JOLTS) Data*

Description

This function downloads Job Openings and Labor Turnover data from the U.S. Bureau of Labor Statistics. JOLTS data provides insights into job market dynamics including job openings, hires, separations, quits, and layoffs. Data is available at national, regional, and state levels with various industry and size class breakdowns.

Usage

```
get_jolts(
  monthly_only = TRUE,
  remove_regions = TRUE,
  remove_national = TRUE,
  suppress_warnings = TRUE,
  return_diagnostics = FALSE
)
```

Arguments

`monthly_only`	Logical. If TRUE (default), excludes annual data (period M13) and includes only monthly observations.
`remove_regions`	Logical. If TRUE (default), excludes regional aggregates (Midwest, Northeast, South, West) identified by state codes MW, NE, SO, WE.
`remove_national`	Logical. If TRUE (default), excludes national-level data (state code 00). Set to FALSE to include national data with industry and size class breakdowns.
`suppress_warnings`	Logical. If TRUE (default), suppress individual download warnings and diagnostic messages for cleaner output during batch processing. If FALSE, returns the data and prints warnings and messages to the console.
`return_diagnostics`	Logical. If TRUE, returns a bls_data_collection object with full diagnostics. If FALSE (default), returns just the data table.

Details

The function performs several data transformations:

- Converts rate values to proportions (divides by 100) except for Unemployed to Job Opening ratio.
- Converts level values to actual counts (multiplies by 1000)
- Creates a proper date column from year and period
- Adds readable month names

Value

By default, returns a data.table with JOLTS data. If return_diagnostics = TRUE, returns a bls_data_collection object containing JOLTS data with the following key columns:

series_id BLS series identifier

year Year of observation

period Time period (M01-M12 for months)

value JOLTS statistic value (transformed based on data type)

date Date of observation

state_text State name

dataelement_text Type of JOLTS measure (job openings, hires, separations, etc.)

area_text Geographic area description

sizeclass_text Establishment size class

industry_text Industry classification

ratelevel_code Whether the value is a "Level" (count) or "Rate" (percentage)

periodname Month name

Examples

```
# Download state-level JOLTS data (default - returns data directly)
jolts_data <- get_jolts()

# Include national data with industry breakdowns
jolts_national <- get_jolts(remove_national = FALSE)

# Get full diagnostic object if needed
jolts_with_diagnostics <- get_jolts(return_diagnostics = TRUE)
print_bls_warnings(jolts_with_diagnostics)

# View job openings by state for latest period
job_openings <- jolts_data[dataelement_text == "Job openings" &
                           date == max(date)]
```

get_laus *Download Local Area Unemployment Statistics (LAUS) Data*

Description

This function downloads Local Area Unemployment Statistics data from the U.S. Bureau of Labor Statistics. Due to the large size of some LAUS datasets (county and city files are >300MB), users must specify which geographic level to download. The function provides access to both seasonally adjusted and unadjusted data at various geographic levels. Additional datasets provide comprehensive non-seasonally-adjusted data for all areas broken out in 5-year increments

Usage

```
get_laus(
  geography = "state_adjusted",
  monthly_only = TRUE,
  transform = TRUE,
  suppress_warnings = TRUE,
  return_diagnostics = FALSE
)
```

Arguments

`geography` Character string specifying the geographic level and adjustment type. Default is "state_adjusted". Valid options are:

- "state_current_adjusted" - Current seasonally adjusted state data
- "state_unadjusted" - All historical unadjusted state data
- "state_adjusted" - All historical seasonally adjusted state data (default)
- "region_unadjusted" - Unadjusted regional and division data
- "region_adjusted" - Seasonally adjusted regional and division data
- "metro" - Metropolitan statistical area data
- "division" - Division-level data
- "micro" - Micropolitan statistical area data
- "combined" - Combined statistical area data
- "county" - County-level data (large file >300MB)
- "city" - City and town data (large file >300MB)
- "1990-1994" - Comprehensive unadjusted data for 1990-1994
- "1995-1999" - Comprehensive unadjusted data for 1995-1999
- "2000-2004" - Comprehensive unadjusted data for 2000-2004
- "2005-2009" - Comprehensive unadjusted data for 2005-2009
- "2010-2014" - Comprehensive unadjusted data for 2010-2014
- "2015-2019" - Comprehensive unadjusted data for 2015-2019
- "2020-2024" - Comprehensive unadjusted data for 2020-2024
- "2025-2029" - Comprehensive unadjusted data for 2025-2029

- "ST" - Any state two-character USPS abbreviation, plus DC and PR

`monthly_only` Logical. If TRUE (default), excludes annual data (period M13) and creates a date column from year and period.

`transform` Logical. If TRUE (default), converts rate and ratio measures from percentages to proportions by dividing by 100. Unemployment rates will be expressed as decimals (e.g., 0.05 for 5% unemployment) rather than as whole numbers (e.g. 5).

`suppress_warnings` Logical. If TRUE (default), suppress individual download warnings and diagnostic messages for cleaner output during batch processing. If FALSE, returns the data and prints warnings and messages to the console.

`return_diagnostics` Logical. If TRUE, returns a bls_data_collection object with full diagnostics. If FALSE (default), returns just the data table.

Details

The function joins data from multiple BLS files:

- Main data file (varies by geography selection)
- Series definitions (la.series)
- Area codes and names (la.area)
- Measure definitions (la.measure)

Value

By default, returns a data.table with LAUS data. If return_diagnostics = TRUE, returns a bls_data_collection object containing LAUS data with the following key columns:

series_id BLS series identifier

year Year of observation

period Time period (M01-M12 for months, M13 for annual)

value Employment statistic value (transformed if transform = TRUE)

date Date of observation (if monthly_only = TRUE)

area_text Geographic area name

area_type_code Code indicating area type

measure_text Type of measure (unemployment rate, labor force, employment, etc.)

seasonal Seasonal adjustment status

Examples

```
# Download state-level seasonally adjusted data (default operation)
laus_states <- get_laus()

# View unemployment rates by state for latest period
unemployment <- laus_states[grepl("unemployment rate", measure_text) & date == max(date)]
```

```
# Download unadjusted state data
laus_states_unadjusted <- get_laus("state_unadjusted")

# Download metro area data with rates as whole number percentages (64.3 instead of 0.643)
laus_metro <- get_laus("metro", transform = FALSE)

# Get full diagnostic object if needed
laus_with_diagnostics <- get_laus(return_diagnostics = TRUE)
print_bls_warnings(laus_with_diagnostics)
```

`get_national_ces` *Get National Current Employment Statistics (CES) Data from BLS*

Description

This function downloads and processes national Current Employment Statistics (CES) data from the Bureau of Labor Statistics (BLS). It retrieves multiple related datasets and joins them together to create a comprehensive employment statistics dataset with industry classifications, data types, and time period information.

Usage

```
get_national_ces(
  monthly_only = TRUE,
  simplify_table = TRUE,
  show_warnings = FALSE,
  return_diagnostics = FALSE
)
```

Arguments

`monthly_only`	Logical. If TRUE (default), excludes annual averages (period "M13") and returns only monthly data. If FALSE, includes all periods including annual averages.
`simplify_table`	Logical. If TRUE (default), removes several metadata columns (series_title, begin_year, begin_period, end_year, end_period, naics_code, publishing_status, display_level, selectable, sort_sequence) and adds a formatted date column. If FALSE, returns the full dataset with all available columns.
`show_warnings`	Logical. If TRUE, displays download warnings and diagnostics. If FALSE (default), suppresses warning output.
`return_diagnostics`	Logical. If TRUE, returns a bls_data_collection object with full diagnostics. If FALSE (default), returns just the data table.

Details

The function downloads the following BLS CES datasets:

- ce.data.0.AllCESSeries - Main employment data
- ce.series - Series metadata
- ce.industry - Industry classifications
- ce.datatype - Data type definitions
- ce.period - Time period definitions
- ce.supersector - Supersector classifications

These datasets are joined together to provide context and labels for the employment statistics. The function uses the ‘fread_bls()‘ helper function to download and read the BLS data files with robust error handling and diagnostic reporting.

Value

By default, returns a data.table with CES data. If return_diagnostics = TRUE, returns a bls_data_collection object containing data and comprehensive diagnostics.

Note

This function requires the following packages: dplyr, data.table, httr, and lubridate (for date formatting when simplify_table=TRUE). The ‘fread_bls()‘ and ‘create_bls_object()‘ helper functions must be available in your environment.

See Also

Please visit the Bureau of Labor Statistics at https://www.bls.gov/ces/ for more information about CES data

Examples

```
# Get monthly CES data with simplified table structure
ces_monthly <- get_national_ces()

# Get all data including annual averages with full metadata
ces_full <- get_national_ces(monthly_only = FALSE, simplify_table = FALSE)

# Get monthly data but keep all metadata columns
ces_detailed <- get_national_ces(monthly_only = TRUE, simplify_table = FALSE)

# Access the data component
ces_data <- get_bls_data(ces_monthly)

# Get full diagnostic object if needed
data_with_diagnostics <- get_national_ces(return_diagnostics = TRUE)
print_bls_warnings(data_with_diagnostics)
```

get_oews *Download Occupational Employment and Wage Statistics (OEWS) Data*

Description

This function downloads and joins together occupational employment and wage data from the Bureau of Labor Statistics OEWS program. The data includes employment and wage estimates by occupation and geographic area. Note that OEWS is a large data set (over 6 million rows), so it will require longer to download.

Usage

```
get_oews(
  simplify_table = TRUE,
  suppress_warnings = TRUE,
  return_diagnostics = FALSE
)
```

Arguments

simplify_table	Logical. If TRUE (default), remove columns from the result that are internal BLS references or can be derived from other elements in the table.
suppress_warnings	Logical. If TRUE (default), suppress individual download warnings and diagnostic messages for cleaner output during batch processing. If FALSE, returns the data and prints warnings and messages to the console.
return_diagnostics	Logical. If TRUE, returns a bls_data_collection object with full diagnostics. If FALSE (default), returns just the data table.

Value

By default, returns a data.table with OEWS data. If return_diagnostics = TRUE, returns a bls_data_collection object containing data and comprehensive diagnostics. The columns in the returned data frame when ‘simplify_table = TRUE‘ are listed below. Unless otherwise specified, all data is returned as a character string to preserve the value of leading and trailing zeroes.

- series_id - The unique OEWS series identifier.
- year - The year to which the estimate refers. Because OEWS is not time series data, this is always the most recent year.
- value - Numeric. The value of the given data type, for the given area, in the given industry and occupation.
- seasonal - Whether or not the data is seasonally adjusted.
- areatype_code - Code representing the type of area (National ("N"), Statewide ("S"), or Local ("M")).

- industry_code - NAICS code of the industry.
- occupation_code - SOC code of the occupation. Description given by occupation_name.
- datatype_code - Lookup code for the data type of a given row. Description given by datatype_name.
- state_code - Two-digit FIPS code for the state.
- area_code - The unique OEWS code for a substate area. Description given by area_name.
- series_title - Descriptive title of the full series ID.
- occupation_name - The text description of the occupation.
- occupation_description - More detailed description of the tasks associated with the occupation.
- area_name - The text description of the area.
- datatype_name - The text description of the type of data represented by 'value'.

Examples

```
# Download current OEWS data
oews_data <- get_oews()

# View available occupations
unique(oews_data$occupation_name)

# Filter for specific occupation
software_devs <- oews_data[grepl("Software", occupation_name)]

# Get full diagnostic object if needed
oews_with_diagnostics <- get_oews(return_diagnostics = TRUE)
print_bls_warnings(oews_with_diagnostics)
```

---

get_salt *Download State Alternative Labor Market Measures (SALT) Data*

Description

This function downloads detailed alternative unemployment measures data from BLS, including U-1 through U-6 measures. The data provides a more comprehensive view of labor market conditions beyond the standard unemployment rate (U-3).

Usage

```
get_salt(
  only_states = TRUE,
  geometry = FALSE,
  suppress_warnings = TRUE,
  return_diagnostics = FALSE
)
```

Arguments

only_states	Logical. If TRUE (default), includes only state-level data. If FALSE, includes sub-state areas like New York City where available.
geometry	Logical. If TRUE, uses tigris::states() to download shapefiles for the states to include in the data. If FALSE (default), only returns data table.
suppress_warnings	Logical. If TRUE (default), suppress individual download warnings and diagnostic messages for cleaner output during batch processing. If FALSE, returns the data and prints warnings and messages to the console.
return_diagnostics	Logical. If TRUE, returns a bls_data_collection object with full diagnostics. If FALSE (default), returns just the data table.

Value

By default, returns a data.table with Alternative Measures of Labor Underutilization data. If return_diagnostics = TRUE, returns a bls_data_collection object containing data and comprehensive diagnostics. The function also adds derived measures and quartile comparisons across states.

Examples

```
# Download state-level SALT data
salt_data <- get_salt()

# View top 10 highest U-6 rates by state in current data
latest <- salt_data |>
  dplyr::filter(date == max(date)) |>
  dplyr::select(state, u6) |>
  dplyr::arrange(-u6)
head(latest)

# Include sub-state areas
salt_all <- get_salt(only_states = FALSE)

# Download SALT with geometry included
get_salt(geometry = TRUE)

# Get full diagnostic object if needed
data_with_diagnostics <- get_salt(return_diagnostics = TRUE)
print_bls_warnings(data_with_diagnostics)
```

---

has_bls_issues *Check if BLS data object has potential issues with import.*

Description

Check if BLS data object has potential issues with import.

Usage

```
has_bls_issues(bls_obj)
```

Arguments

bls_obj	A BLS data object

Value

Logical indicating if there were any import issues detected.

---

load_bls_dataset *Generic BLS Dataset Download*

Description

This function generalizes a method to download all BLS data for a given time series database. These files are accessed from https://download.bls.gov/pub/time.series/ and several datasets are available. A summary of an identified database can be generated using the ‘bls_overiew()‘ function. When multiple potential data files exist (common in large data sets), the function will prompt for an input of which file to use.

Usage

```
load_bls_dataset(
  database_code,
  return_full = FALSE,
  simplify_table = TRUE,
  suppress_warnings = FALSE
)
```

Arguments

database_code	This is the two digit character identifier for the desired database. Some Valid options are: • "ce" - National Current Employment Statistics Data • "sm" - State and Metro area Current Employment Statistics Data • "mp" - Major Sector Total Factor Productivity • "ci" - Employment Cost Index • "eb" - Employee Benefits Survey
return_full	This argument defaults to FALSE. If set to TRUE it will return a list of the elements of data retrieved from the BLS separating the data, series, and mapping values downloaded.

simplify_table This parameter defaults to TRUE. When TRUE it will remove all columns from the date with "_code" in the column name, as well as a series of internal identifiers which provide general information about the series but which are not needed for performing time series analysis. This parameter also converts the column "value" to numeric and generates a date column from the year and period columns in the data.

suppress_warnings
Logical. If TRUE, suppress individual download warnings during processing.

Value

This function will return either a bls_data_collection object (if return_full is FALSE or not provided) or a named list of the returned data including the bls_data_collection object.

Examples

```
## Not run:
# Download Employer Cost Index Data
cost_index <- load_bls_dataset("ci")

# Download separated data, series, and mapping columns
benefits <- load_bls_dataset("eb", return_full = TRUE)

# Download data without removing excess columns and value conversions
productivity <- load_bls_dataset("mp", simplify_table = FALSE)

# Check for download issues
if (has_bls_issues(cost_index)) {
  print_bls_warnings(cost_index, detailed = TRUE)
}

## End(Not run)
```

---

print_bls_warnings *Print warnings for BLS data object*

Description

Print warnings for BLS data object

Usage

```
print_bls_warnings(bls_obj, detailed = FALSE, silent = FALSE)
```

Arguments

bls_obj	A bls_data_collection object
detailed	Logical. If TRUE, shows detailed diagnostics for each file
silent	Logical. If TRUE, suppress console output

Value

Character vector of warnings (invisibly)

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