

Package ‘countytimezones’

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Type Package

Title Convert from UTC to Local Time for United States Counties

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Description Inputs date-times in Coordinated Universal Time (UTC) and converts to a local date-time and local date for US counties, based on each county's Federal Information Processing Standard (FIPS) code. This work was supported in part by grants from the National Institute of Environmental Health Sciences (R00ES022631) and the National Science Foundation (1331399).

URL <https://github.com/geanders/countytimezones>

BugReports <https://github.com/geanders/countytimezones/issues>

License GPL-2

LazyData TRUE

Imports dplyr (>= 0.4.3), lubridate (>= 1.5.6)

RoxygenNote 5.0.1

Depends R (>= 2.10)

Suggests choroplethr (>= 3.5.2), choroplethrMaps (>= 1.0), ggplot2 (>= 2.1.0), knitr (>= 1.14.0), purrr (>= 0.2.2), rmarkdown (>= 1.1.0)

VignetteBuilder knitr

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add_local_time	<i>Add local time to dataset</i>
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Description

This function inputs a dataframe of observations for US counties that includes a column with date-time expressed in Coordinated Universal Time (UTC), as well as a single value or vector of FIPS code(s) for the county associated with each observation. It will return the original dataframe with columns added for local date-time, local date, and, if specified, local time zone.

Usage

```
add_local_time(df, fips, datetime_colname, include_tz = TRUE)
```

Arguments

df	A dataframe of observations that includes a column with a date-time object in Coordinated Universal Time (UTC) (see the documentation for the calc_local_time function to see requirements for the format of this UTC date-time column)
fips	A character vector giving the 5-digit FIPS code of the county associated with each observation. This can be either a string of length 1, if all observations come from the same county, or a vector as long as the date_time vector, if different observations come from different counties.
datetime_colname	A character string giving the column name for the column that gives date-time in UTC in the input dataframe.
include_tz	A TRUE / FALSE value specifying whether to include a column with the local time zone (local_tz) in the final output.

Value

This function returns the dataframe input to the function, with columns added with local date-time, local date, and, if specified, local time zone.

Examples

```
ex_df <- data.frame(datetime = c("1999-01-01 08:00", "1999-01-01 09:00",
                                "1999-01-01 10:00"),
                   fips = c("36061", "17031", "06037"))
add_local_time(df = ex_df, fips = ex_df$fips,
              datetime_colname = "datetime")

ex_df <- data.frame(datetime = c("1999-01-01 08:00", "1999-01-01 09:00",
                                "1999-01-01 10:00"))
add_local_time(df = ex_df, fips = "36061", datetime_colname = "datetime")
```

calc_local_time	<i>Calculate local time from UTC for US counties</i>
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Description

This function inputs date-time values in Coordinated Universal Time (UTC; also known as Zulu Time), along with a vector with county Federal Information Processing Standard (FIPS) codes, and calculates the local date-time as well as the local date based on the UTC date-time.

Usage

```
calc_local_time(date_time, fips, include_tz = TRUE)
```

Arguments

date_time	The vector of the date-time of each observation in Coordinated Universal Time (UTC). This vector can either have a POSIXct class or be a character string, with date-time given as four-digit year, two-digit month, two-digit day, two-digit hour, and two-digit minutes (with hours based on a 24-hour system). Examples of acceptable formats include, for the example of 1:00 PM Jan. 2 1999, "199901021300", "1999-01-02 13:00", and "1999/01/02 13:00".
fips	A character vector giving the 5-digit FIPS code of the county associated with each observation. This can be either a string of length 1, if all observations come from the same county, or a vector as long as the date_time vector, if different observations come from different counties.
include_tz	A TRUE / FALSE value specifying whether to include a column with the local time zone (local_tz) in the final output.

Details

This function inputs date-time values in Coordinated Universal Time (UTC; also known as Zulu Time), as well as a single value or vector of FIPS code(s) for the county associated with each observation. It returns a dataframe with columns for local date-time, local date, and, if specified, local time zone.

Value

This function returns a dataframe with columns for local date-time, local date, and, if specified, local time zone.

Note

The local time is given as a character string, rather than a POSIXct object, so that it can have different time zones for different counties within the same dataframe (i.e., if there are two counties in the dataframe that are in different time zones).

Examples

```
calc_local_time(date_time = "1999-01-01 08:00", fips = "36061")

ex_datetime <- c("1999-01-01 08:00", "1999-01-01 09:00",
                "1999-01-01 10:00")
calc_local_time(date_time = ex_datetime, fips = "36061")

ex_datetime <- c("1999-01-01 08:00", "1999-01-01 09:00",
                "1999-01-01 10:00")
ex_fips <- c("36061", "17031", "06037")
calc_local_time(date_time = ex_datetime, fips = ex_fips)
```

calc_single_datetime *Convert UTC to local time for a single observation*

Description

This function calculated the local date-time for an observation based on a date-time in Coordinated Universal Time (UTC). The function provides a wrapper for the with_tz function from the lubridate package. It converts output from the with_tz function to a character vector so other functions in this package can be applied without error to with a dataframe with observations from multiple time zones to local time.

Usage

```
calc_single_datetime(datetime, tz)
```

Arguments

datetime	A POSIXct object of length one expressed in Coordinated Universal Time (UTC)
tz	A character string giving the local time zone based on the Olson/IANA time zone names

Value

A character string giving the date-time in the local time zone

Examples

```
utc_time <- as.POSIXct("1999-09-15 14:30:00", tz = "UTC")
local_time <- calc_single_datetime(utc_time, tz = "US/Eastern")
```

county_tzs	<i>County time zone designations</i>
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Description

A dataframe containing the Olson/IANA time zone designation of each US county, based on the county's Federal Information Processing Standard (FIPS) code. This dataset was put together based on county FIPS codes as of the 2010 US Census, using text from the two websites listed in "Sources" to set the time zone designation for each county.

Usage

```
county_tzs
```

Format

A dataframe with 3,143 rows and 4 variables:

fips A numeric vector giving the county's four- or five-digit Federal Information Processing Standard (FIPS) code

tz A character vector with the county's Olson/IANA time zone designation

county A character vector giving the county's name

state A character vector giving the county's state

Details

Some counties cover more than one time zone designation. For example, parts of Coconino, Navajo, and Apache Counties in Arizona follow Daylight Savings Time, while other parts of the county do not. We tried to designate county-level time zones based on the time zone used in the majority of the county, based on population. When aggregating from multiple monitors in a county, the time zone should be left in UTC until data is aggregated, then the final value can be converted to local time, rather than converting to local time before aggregating across a county.

Source

<http://www.statoids.com/tus.html>

<http://efele.net/maps/tz/us/>

See Also

[OlsonNames](#)

`floyd`*Date-times for Hurricane Floyd*

Description

A dataframe that gives the date-time, in Coordinated Universal Time (UTC), for when Hurricane Floyd was closest to each county in the Eastern United States.

Usage`floyd`**Format**

: A dataframe with 2,396 rows and 2 variables:

fips A numeric vector giving the county's four- or five-digit Federal Information Processing Standard (FIPS) code

closest_time_utc The date and time, in UTC, when Hurricane Floyd was closest to the county (based on a storm track interpolated to 15 minute observations)

Source

<https://github.com/geanders/hurricaneexposure/tree/master/data>

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