Package: tflmetaR (via r-universe)

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Title Manage Annotation Metadata in Statistical Outputs

Version 0.1.5

Description Provides functions to retrieve headers, titles, and footnotes from structured metadata sources (e.g., Excel or CSV files) for annotating tables, listings, and figures in clinical study reports (CSRs) or other formal deliverables. It supports separation of metadata from analysis code in clinical reporting workflows.

License Apache License (>= 2.0)

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Contents

`change_colname` *Standardize column names in the metadata file*

Description

Reads an Excel metadata file, standardizes its column names to the expected field names using a JSON mapping configuration, and writes the result to a new Excel file.

Usage

```
change_colname(input_xlsx, output_xlsx, config_path, sheet = NULL)
```

Arguments

`input_xlsx`	Path to the input Excel file.
`output_xlsx`	Path to the output Excel file to create.
`config_path`	Path to a JSON configuration file containing the column name mapping.
`sheet`	Sheet index or name passed to `readxl::read_excel`. If `NULL` (default), the first worksheet in the Excel file is used.

Details

The JSON configuration file must contain an `aliases` field, which is a named list mapping each canonical field name to a character vector of acceptable input column name variants. For example:

```
{
  "aliases": {
    "TTL1": ["Title 1", "Title_1"],
    "PGMNAME": ["Program Name", "program_name"]
  }
}
```

Before matching, input column names and aliases are normalized by converting to lowercase, trimming whitespace, and replacing underscores with spaces. Columns that do not match any alias are preserved unchanged. If multiple input columns map to the same canonical field name, output names are made unique via `base::make.unique()`.

Value

Invisibly returns the path to the output Excel file.

See Also

`read_tfile()` to read the standardized metadata file.

Examples

```
input_file <- tempfile(fileext = ".xlsx")
output_file <- tempfile(fileext = ".xlsx")
config_file <- tempfile(fileext = ".json")

example_df <- data.frame(
  "Title_1" = "Summary of demographics",
  "Program Name" = "t_dm",
  check.names = FALSE
)

writexl::write_xlsx(example_df, input_file)

cfg <- paste0(
  "{",
  '  "aliases": {',
  '    "TTL1": ["Title 1"],',
  '    "PGMNAME": ["Program Name"]',
  "  }",
  "}"
)

writeLines(cfg, config_file)

change_colname(
  input_xlsx = input_file,
  output_xlsx = output_file,
  config_path = config_file
)

readxl::read_excel(output_file)
```

get_bookm *Get bookmark text for a table, listing, or figure*

Description

Returns bookmark text from metadata for a specified output. The function first identifies the matching row in df using pname or tnumber. If a non-missing BOOKM value is available, that value is returned. Otherwise, the function falls back to get_title() and combines the returned title components into a single bookmark string.

Usage

```
get_bookm(
  df,
  tnumber = NULL,
  pname = NULL,
  oid = NULL,
  abbrev_file = NULL,
  max_length = 180
)
```

Arguments

df	A data frame containing metadata.
tnumber	An optional character string specifying the TFL number stored in TTL1, such as "Table 14.1.1".
pname	An optional character string specifying the program name stored in PGMNAME. Exactly one of tnumber or pname must be supplied.
oid	An optional character string specifying the object identifier.
abbrev_file	Optional path to an Excel file containing abbreviation mappings. The file should contain three columns corresponding to scope, phrase, and abbreviation. If NULL, no abbreviation table is applied.
max_length	Maximum allowed bookmark length. Default is 180.

Details

The bookmark text is sanitized by removing characters that are not suitable for bookmark use. If the result exceeds max_length, the function attempts to shorten it using abbreviation mappings from abbrev_file. If the bookmark is still too long, it is truncated at a word boundary up to max_length characters.

Value

A character string containing sanitized bookmark text.

See Also

`read_tfile()` to read metadata from Excel or CSV;

`get_title()`, `get_footnote()`, `get_source()`, `get_pop()`, `get_byline()`, `get_pgmname()`, `get_ulheader()`, and `get_urheader()` for retrieving individual annotation fields;

`change_colname()` to standardize column names in the metadata file.

Examples

```
# Example 1: return BOOKM when it is present
df1 <- data.frame(
  TTL1 = "Figure 1.1",
  PGMNAME = "f_km.R",
  BOOKM = "KM_PLOT"
)

get_bookm(df1, pname = "f_km.R")
get_bookm(df1, tnumber = "Figure 1.1")

# Example 2: fall back to title text when BOOKM is missing
df2 <- data.frame(
  TTL1 = "Adverse Events",
  TTL2 = "Safety Population",
  PGMNAME = "t_ae",
  BOOKM = NA
)

get_bookm(df2, pname = "t_ae")

# Example 3: invalid characters are removed
df3 <- data.frame(
  TTL1 = "Listing 3. Laboratory Results",
  PGMNAME = "l_lab",
  BOOKM = "Lab: ALT/AST * Overview?"
)

get_bookm(df3, pname = "l_lab")
```

---

get_byline *Get Byline Metadata*

Description

Retrieves byline fields (BYLINE1, BYLINE2, etc.) from metadata for a specified program name or TFL number.

Usage

```
get_byline(df, tnumber = NULL, pname = NULL, oid = NULL)
```

Arguments

df	A data frame containing TFL metadata.
tnumber	An optional character string specifying the TFL number stored in TTL1, such as "Table 14.1.1".
pname	An optional character string specifying the program name stored in PGMNAME. Exactly one of tnumber or pname must be supplied.
oid	An optional character string specifying the object ID stored in OID. Use this when multiple rows match the program name.

Value

A data frame of the non-missing byline fields.

See Also

read_tfile() to read metadata from Excel or CSV;

get_title(), get_footnote(), get_source(), get_pop(), get_pgmname(), get_ulheader(), get_urheader(), and get_bookm() for retrieving individual annotation fields;

change_colname() to standardize column names in the metadata file.

Examples

```
meta <- data.frame(
  PGMNAME = c("t_dm", "t_ae"),
  TTL1 = c("Table 14.1.1", "Table 14.3.1"),
  SOURCE = c("ADSL", "ADAE"),
  BYLINE1 = c("Treatment Group", "System Organ Class"),
  BYLINE2 = c("N (%)", "Preferred Term"),
  FOOT1 = c("ITT Population", "Safety Population")
)

get_byline(meta, pname = "t_dm")
get_byline(meta, tnumber = "Table 14.3.1")
```

---

get_footnote *Get Footnote Metadata*

Description

Retrieves footnote-related fields (columns beginning with "FOOT", such as FOOT1 and FOOT2) from a TFL metadata frame for a specified program name or TFL number.

Usage

```
get_footnote(
  df,
  tnumber = NULL,
  pname = NULL,
  oid = NULL,
  add_footr_tstamp = TRUE
)
```

Arguments

df	A data frame containing TFL metadata.
tnumber	An optional character string specifying the TFL number stored in TTL1, such as "Table 14.1.1".
pname	An optional character string specifying the program name stored in PGMNAME. Exactly one of tnumber or pname must be supplied.
oid	An optional character string specifying the object ID stored in OID. Use this when multiple rows match the program name.
add_footr_tstamp	Logical. If TRUE, append timestamp and source information as the last footnote line. Defaults to TRUE.

Value

A data frame of the non-missing footnote-related metadata fields.

See Also

read_tfile() to read metadata from Excel or CSV;

get_title(), get_source(), get_pop(), get_byline(), get_pgmname(), get_ulheader(), get_urheader(), and get_bookm() for retrieving individual annotation fields;

tflmetaR() for a single-call alternative.

Examples

```
meta <- data.frame(
  PGMNAME = c("t_dm", "t_ae"),
  TTL1 = c("Table 14.1.1", "Table 14.3.1"),
  TTL2 = c("Subject Disposition", "Adverse Events"),
  SOURCE = c("ADSL", "ADAE"),
  FOOT1 = c(
    "All Randomized Subjects",
    "Safety Population"
  ),
  FOOT2 = c(
    "Reference: Listing 11.3",
    "Adverse events coded using MedDRA"
  )
```

```
)

get_footnote(meta, pname = "t_dm", add_footr_tstamp = FALSE)
get_footnote(meta, tnumber = "Table 14.3.1", add_footr_tstamp = FALSE)
```

`get_pgmname` *Get Program Name Metadata*

Description

Retrieves the program name field (`PGMNAME`) from metadata for a specified program name or TFL number.

Usage

```
get_pgmname(df, tnumber = NULL, pname = NULL, oid = NULL)
```

Arguments

`df`	A data frame containing TFL metadata.
`tnumber`	An optional character string specifying the TFL number stored in `TTL1`, such as `"Table 14.1.1"`.
`pname`	An optional character string specifying the program name stored in `PGMNAME`. Exactly one of `tnumber` or `pname` must be supplied.
`oid`	An optional character string specifying the object ID stored in `OID`. Use this when multiple rows match the program name.

Value

A data frame of the non-missing program name field.

See Also

`read_tfile()` to read metadata from Excel or CSV;

`get_title()`, `get_footnote()`, `get_source()`, `get_pop()`, `get_byline()`, `get_ulheader()`, `get_urheader()`, and `get_bookm()` for retrieving individual annotation fields;

`change_colname()` to standardize column names in the metadata file.

Examples

```
meta <- data.frame(
  PGMNAME = c("t_dm", "t_ae"),
  TTL1 = c("Table 14.1.1", "Table 14.3.1"),
  SOURCE = c("ADSL", "ADAE"),
  FOOT1 = c("ITT Population", "Safety Population")
)
```

```
get_pgmname(meta, pname = "t_dm")
get_pgmname(meta, tnumber = "Table 14.3.1")
```

`get_pop` *Get Population Metadata*

Description

Retrieves the population field `POPULATION` from a TFL metadata data frame for a specified program name or TFL number.

Usage

```
get_pop(df, tnumber = NULL, pname = NULL, oid = NULL)
```

Arguments

`df`	A data frame containing TFL metadata.
`tnumber`	An optional character string specifying the TFL number stored in `TTL1`, such as `"Table 14.1.1"`.
`pname`	An optional character string specifying the program name stored in `PGMNAME`. Exactly one of `tnumber` or `pname` must be supplied.
`oid`	An optional character string specifying the object ID stored in `OID`. Use this when multiple rows match the program name.

Value

A data frame of the non-missing population field.

See Also

`read_tfile()` to read metadata from Excel or CSV;

`get_title()`, `get_footnote()`, `get_source()`, `get_byline()`, `get_pgmname()`, `get_ulheader()`, `get_urheader()`, and `get_bookm()` for retrieving individual annotation fields;

`change_colname()` to standardize column names in the metadata file.

Examples

```
meta <- data.frame(
  PGMNAME = c("t_dm", "t_ae"),
  TTL1 = c("Table 14.1.1", "Table 14.3.1"),
  SOURCE = c("ADSL", "ADAE"),
  POPULATION = c("ITT Population", "Safety Population"),
  FOOT1 = c(
    "Reference: Listing 11.3",
```

```
    "Adverse events coded using MedDRA"
  )
)

get_pop(meta, pname = "t_dm")
get_pop(meta, tnumber = "Table 14.3.1")
```

`get_source` *Get Source Metadata*

Description

Retrieves source-related fields (for example, `SOURCE`) from metadata for a specified program name or TFL number.

Usage

```
get_source(df, tnumber = NULL, pname = NULL, oid = NULL)
```

Arguments

`df`	A data frame containing TFL metadata.
`tnumber`	An optional character string specifying the TFL number stored in `TTL1`, such as `"Table 14.1.1"`.
`pname`	An optional character string specifying the program name stored in `PGMNAME`. Exactly one of `tnumber` or `pname` must be supplied.
`oid`	An optional character string specifying the object ID stored in `OID`. Use this when multiple rows match the program name.

Value

A data frame of the non-missing source fields.

See Also

`read_tfile()` to read metadata from Excel or CSV;

`get_title()`, `get_footnote()`, `get_pop()`, `get_byline()`, `get_pgmname()`, `get_ulheader()`, `get_urheader()`, and `get_bookm()` for retrieving individual annotation fields;

`tflmetaR()` for a single-call alternative.

Examples

```
meta <- data.frame(
  PGMNAME = c("t_dm", "t_ae"),
  TTL1 = c("Table 14.1.1", "Table 14.3.1"),
  SOURCE = c("ADSL", "ADAE"),
  FOOT1 = c("ITT Population", "Safety Population")
)

get_source(meta, pname = "t_dm")
get_source(meta, tnumber = "Table 14.3.1")
```

---

get_title *Get Title Metadata*

Description

Retrieves title-related fields (columns beginning with "TTL", such as TTL1, TTL2, and POPULATION if available) from a TFL metadata data frame for a specified program name or table number.

Usage

```
get_title(df, tnumber = NULL, pname = NULL, oid = NULL)
```

Arguments

df	A data frame containing TFL metadata.
tnumber	An optional character string specifying the TFL number stored in TTL1, such as "Table 14.1.1".
pname	An optional character string specifying the program name stored in PGMNAME. Exactly one of tnumber or pname must be supplied.
oid	An optional character string specifying the object ID stored in OID. Use this when multiple rows match the program name.

Value

A data frame of the non-missing title-related metadata fields

See Also

read_tfile() to read metadata from Excel or CSV;

get_footnote(), get_source(), get_pop(), get_byline(), get_pgmname(), get_ulheader(), get_urheader(), and get_bookm() for retrieving individual annotation fields;

tflmetaR() for a single-call alternative.

Examples

```
meta <- data.frame(
  PGMNAME = c("t_dm", "t_ae"),
  TTL1 = c("Table 14.1.1", "Table 14.3.1"),
  TTL2 = c("Subject Disposition", "Adverse Events"),
  SOURCE = c("ADSL", "ADAE"),
  FOOT1 = c(
    "All Randomized Subjects",
    "Safety Population"
  ),
  FOOT2 = c(
    "Reference: Listing 11.3",
    "Adverse events coded using MedDRA"
  )
)

get_title(meta, pname = "t_dm")
get_title(meta, tnumber = "Table 14.3.1")
```

---

get_ulheader *Get Upper-Left Header Text*

Description

Retrieves upper-left header fields (columns beginning with "UL", such as UL1 and UL2) from metadata.

Usage

```
get_ulheader(df)
```

Arguments

df	A data frame containing metadata.

Value

A data frame of the non-missing Upper-Left header metadata fields.

See Also

read_tfile() to read metadata from Excel or CSV;

get_title(), get_footnote(), get_source(), get_pop(), get_byline(), get_pgmname(), get_urheader(), and get_bookm() for retrieving individual annotation fields;

change_colname() to standardize column names in the metadata file.

Examples

```
meta <- data.frame(
  UL1 = "Drug X",
  UL2 = "Study 001",
  UR1 = "CONFIDENTIAL",
  UR2 = "VERSION: FINAL"
)

get_ulheader(meta)
```

`get_urheader` *Get Upper-Right Header Text*

Description

Retrieves upper-right header fields (columns beginning with `"UR"`, such as `UR1` and `UR2`) from metadata.

Usage

```
get_urheader(df)
```

Arguments

`df`	A data frame containing metadata.

Value

A data frame of the non-missing upper-right header metadata fields.

See Also

`read_tfile()` to read metadata from Excel or CSV;

`get_title()`, `get_footnote()`, `get_source()`, `get_pop()`, `get_byline()`, `get_pgmname()`, `get_ulheader()`, and `get_bookm()` for retrieving individual annotation fields;

`change_colname()` to standardize column names in the metadata file.

Examples

```
meta <- data.frame(
  UL1 = "Drug X",
  UL2 = "Study 001",
  UR1 = "CONFIDENTIAL",
  UR2 = "VERSION: FINAL"
)

get_urheader(meta)
```

`read_tfile` *Read metadata from an Excel or CSV file*

Description

Reads metadata from an Excel (`.xlsx`, `.xls`) or CSV (`.csv`) file, standardizes column names to uppercase, and optionally validates that required metadata columns are present.

Usage

```
read_tfile(filename, sheetname = NULL, validate = TRUE, ...)
```

Arguments

`filename`	A character string specifying the path to the metadata file. Supported formats are `.xlsx`, `.xls`, and `.csv`.
`sheetname`	For Excel files, the name or index of the worksheet to read. Ignored for CSV files. If `NULL` (default), the first worksheet is used.
`validate`	Logical. If `TRUE` (default), the function checks that required metadata columns are present.
`...`	Additional arguments passed to `readxl::read_excel` for Excel files. Ignored for CSV files.

Details

Column names in the returned data frame are converted to uppercase.

If `validate = TRUE`, the input metadata must contain the following required columns:

PGMNAME Program name associated with the output.

TTL1 Primary title text.

FOOT1 Primary footnote text.

SOURCE Source description for the output.

If any required column is missing, the function stops with an error.

Value

A data frame containing the imported metadata, with column names converted to uppercase.

See Also

`get_title()`, `get_footnote()`, `get_source()`, `get_pop()`, `get_byline()`, `get_pgmname()`, `get_ulheader()`, `get_urheader()`, and `get_bookm()` for retrieving individual annotation fields;

`tflmetaR()` for a single-call alternative.

`change_colname()` to standardize column names in the metadata file.

Examples

```
# Example 1: read a CSV metadata file
csv_file <- tempfile(fileext = ".csv")
write.csv(
  data.frame(
    pgmname = "t_dm",
    ttl1 = "Table 1. Demographics",
    foot1 = "Source: ADSL",
    foot2 = "*: Baseline record",
    source = "ADSL"
  ),
  csv_file,
  row.names = FALSE
)

read_tfile(csv_file)

# Example 2: read an Excel metadata file
xlsx_file <- tempfile(fileext = ".xlsx")
writexl::write_xlsx(
  data.frame(
    pgmname = "t_ae",
    ttl1 = "Table 2. Adverse Events",
    foot1 = "Source: ADAE",
    source = "ADAE"
  ),
  xlsx_file
)

read_tfile(xlsx_file)
```

`tflmetaR` *Single-call interface for retrieving annotation metadata*

Description

Reads annotation metadata from an Excel (`.xls`, `.xlsx`) or CSV (`.csv`) file and returns the requested metadata based on `annotation`.

Usage

```
tflmetaR(
  filename,
  sheetname = NULL,
  by_column = "PGMNAME",
  by_value,
  oid = NULL,
  annotation = NULL,
```

```
  add_footr_tstamp = TRUE
)
```

Arguments

filename	Path to the metadata file. Supported formats are .xls, .xlsx, and .csv.
sheetname	For Excel files, the worksheet name or index to read. Ignored for CSV files. If NULL (default), the first worksheet is used.
by_column	Name of the column used to identify the desired row. Matching is case-insensitive. Defaults to "PGMNAME" (program name).
by_value	Value of by_column used to identify the desired row. For example, by_column = "PGMNAME" and by_value = "t_dm.R" retrieves the row where PGMNAME == "t_dm.R".
oid	Optional object identifier for additional row filtering.
annotation	Type of annotation metadata to return: • NULL (default): return the full filtered row. • "TITLE": return title-related metadata (fields beginning with "TTL", such as TTL1, TTL2, and POPULATION if available). • "FOOTR": return footnote metadata (fields beginning with "FOOT"). If add_footr_tstamp = TRUE, a timestamp line may be appended. • "SOURCE": return metadata fields beginning with "SOURCE". • "BYLINE": return metadata fields beginning with "BYLINE". • "POPULATION": return the POPULATION field. • Any other string: return the matching field(s) by name.
add_footr_tstamp	Logical. If TRUE (default), appends a timestamp line to footnote output when annotation = "FOOTR".

Details

tflmetaR() provides a concise single-call interface for retrieving annotation metadata. The metadata file is filtered to a single row by matching by_value against by_column (default: "PGMNAME"). When multiple rows share the same by_column value, oid can be used for additional filtering. The returned metadata is then reduced to the columns specified by annotation.

For scripts that annotate multiple fields, the helper-function workflow is recommended to avoid repeated file I/O: read the metadata file once with read_tfile(), then retrieve individual annotations with get_title(), get_footnote(), and related helpers.

Value

A data frame containing the selected metadata.

See Also

`read_tfile()` to read metadata from Excel or CSV;

`get_title()`, `get_footnote()`, `get_source()`, `get_pop()`, `get_byline()`, `get_pgmname()`, `get_ulheader()`, `get_urheader()`, and `get_bookm()` for retrieving individual annotation fields;

`change_colname()` to standardize column names in the metadata file.

Examples

```
# Create a small example metadata file
csv_file <- tempfile(fileext = ".csv")
write.csv(
  data.frame(
    PGMNAME = "t_dm",
    TTL1 = "Table 14.1.1",
    TTL2 = "Subject Disposition",
    FOOT1 = "All Randomized Subjects",
    SOURCE = "ADSL"
  ),
  csv_file,
  row.names = FALSE
)

# Return title-related columns
tflmetaR(
  filename = csv_file,
  by_value = "t_dm",
  annotation = "TITLE"
)

# Return footnote-related columns
tflmetaR(
  filename = csv_file,
  by_value = "t_dm",
  annotation = "FOOTR",
  add_footr_tstamp = FALSE
)

# Return a specific column
tflmetaR(
  filename = csv_file,
  by_value = "t_dm",
  annotation = "SOURCE"
)

# Return the full selected row
tflmetaR(
  filename = csv_file,
  by_value = "t_dm"
)
```

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