

# Package ‘ustfd’

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**Title** API Client for US Treasury Fiscal Data

**Version** 0.4.4

**Description** Make requests from the US Treasury Fiscal Data API endpoints.

**License** MIT + file LICENSE

**Encoding** UTF-8

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**URL** <https://github.com/groditi/ustfd>

**BugReports** <https://github.com/groditi/ustfd/issues>

**Imports** dplyr, glue (>= 1.3.1), httr, lubridate (>= 1.9.2), purrr (>= 1.0.0), readr, rlang (>= 1.0.0), tibble, stringr, snakecase (>= 0.11.0)

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endpoint_exists	<i>Tests if an endpoint is known</i>
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### Description

See [ustfd\\_tables\(\)](#) for known endpoints.

### Usage

```
endpoint_exists(endpoint)
```

### Arguments

endpoint	character vector
----------	------------------

### Value

logical matching input size

### See Also

Other `ustfd_user`: [ustfd\\_all\\_pages\(\)](#), [ustfd\\_datasets\(\)](#), [ustfd\\_query\(\)](#), [ustfd\\_simple\(\)](#), [ustfd\\_table\\_columns\(\)](#), [ustfd\\_tables\(\)](#)

### Examples

```
library(ustfd)
endpoint_exists('v2/accounting/od/debt_to_penny')
```

## Description

Fiscal Data API allows for the filtering of results on the server side, leading to a smaller payload. The combinations of fields and operators supported are not currently defined, so it is suggested you test the desired combinations before relying on them.

## Syntax

A filter should be a named list of key-value pairs where the name corresponds to the field that should be filtered and the value is a character vector or a list where the name of an item corresponds to the operator and the value corresponds to the operand. One field may have more than one filter.

## Operators

- >, < Greater-than and lesser-than
- >=, <= Greater-/lesser-than or equal-to
- = Equal to
- in Subset-of

## Examples

```
## Not run:
#records with a record_date no older than 10 days ago
list(record_date = c('>=' = lubridate::today()-10))

#records with a record_date between two dates
list(
  record_date = c('>=' = '2022-01-01'),
  record_date = c('<=' = '2022-12-31')
)

#records with a specific record_date
list(record_date = c('= ' = lubridate::today()-2))

#records where record_date is any of a set of specific dates
list(
  record_date = list('in' = c('2022-06-13', '2022-06-15', '2022-06-17'))
)

## End(Not run)
```

ustfd\_all\_pages

*Retrieve multiple pages of Fiscal Data API in a single call***Description**

ustfd\_all\_pages() is similar to ustfd\_simple() with the difference that, for requests that generate multiple pages of results, it will request all pages and merge them into a single result.

While care has been taken to optimize ustfd\_all\_pages(), for requests spanning more than 10 pages you should consider breaking up the call further if memory use is a concern, especially if you are writing the results to disk or a database with atomic transactions.

**Usage**

```
ustfd_all_pages(
  endpoint,
  filter = NULL,
  fields = NULL,
  sort = NULL,
  page_size = 10000L,
  slowly = FALSE,
  pause = 0.25,
  quiet = TRUE,
  user_agent = "http://github.com/groditi/ustfd"
)
```

**Arguments**

endpoint	required string representing an API endpoint
filter	optional list used to subset the data. See <a href="#">filter-syntax</a> for more information.
fields	optional character vector of the fields to be retrieved
sort	optional string or character vector. Ordering defaults to ascending, to specify descending order precede the field name with '-'
page_size	optional integer for pagination
slowly	pause between http requests when set to TRUE
pause	length, in seconds, to pause
quiet	when set to FALSE updates will be output via a message
user_agent	string, optional

**Value**

a list containing the following items

- meta - the metadata returned by the API
- data - the payload returned by the API in table form. See [ustfd\\_response\\_payload\(\)](#)

## See Also

Other `ustfd_user`: [endpoint\\_exists\(\)](#), [ustfd\\_datasets\(\)](#), [ustfd\\_query\(\)](#), [ustfd\\_simple\(\)](#), [ustfd\\_table\\_columns\(\)](#), [ustfd\\_tables\(\)](#)

## Examples

```
## Not run:
library(ustfd)

exchange_rates <- ustfd_all_pages(
  'v1/accounting/od/rates_of_exchange',
  fields = c(
    'country_currency_desc', 'exchange_rate', 'record_date', 'effective_date'
  ),
  filter = list(
    record_date = c('>=' = '2020-01-01'),
    country_currency_desc = list('in' = c('Canada-Dollar', 'Mexico-Peso'))
  )
)

## End(Not run)
```

---

`ustfd_datasets`

*Return a table of supported and known datasets*

---

## Description

`ustfd_datasets` provides details about 34 known datasets for Fiscal Data. A data frame with 34 rows and the following 7 columns:

- `dataset` - ID of the source dataset (natural key)
- `name` - name of the source dataset
- `summary_text` - description of the data set and the data it covers
- `earliest_date` - the date of the earliest record available for this table
- `data_start_year` - first year in the data set
- `update_frequency` - "Daily", "Monthly", "Quarterly", "Semi-Annually", "Annually", "As Needed", "Daily (Discontinued)", "Monthly (Discontinued)"
- `notes_and_known_limitations` - notes about

## Usage

```
ustfd_datasets()
```

## Value

tibble

**Source**

<https://fiscaldata.treasury.gov/api-documentation/#list-of-endpoints>

**See Also**

Other `ustfd_user`: [endpoint\\_exists\(\)](#), [ustfd\\_all\\_pages\(\)](#), [ustfd\\_query\(\)](#), [ustfd\\_simple\(\)](#), [ustfd\\_table\\_columns\(\)](#), [ustfd\\_tables\(\)](#)

**Examples**

```
library(ustfd)
ustfd_datasets()
```

---

`ustfd_json_response`    *Process JSON Response of a Successful API Query*

---

**Description**

`ustfd_json_response()` will process the response to a successful request from Fiscal Data API and translate a JSON object into a R data structure.

**Usage**

```
ustfd_json_response(response, ...)
```

**Arguments**

<code>response</code>	an <code>httr</code> response returned by <a href="#">ustfd_request()</a>
<code>...</code>	additional arguments passed to <code>httr::content</code>

**Value**

a list

**See Also**

Other `ustfd_low_level`: [ustfd\\_request\(\)](#), [ustfd\\_response\\_meta\\_object\(\)](#), [ustfd\\_response\\_payload\(\)](#), [ustfd\\_url\(\)](#)

## Examples

```
## Not run:
library(ustfd)
query <- ustfd_query('v1/accounting/dts/dts_table_2', sort =c('-record_date'))
response <- ustfd_request(query)
payload_table <- ustfd_response_payload(response)
payload_meta <- ustfd_response_meta_object(response)

## End(Not run)
```

---

ustfd\_query

*Form a Query*

---

## Description

`ustfd_query()` will verify the endpoint is valid and return a list suitable for passing to `ustfd_url()` and `ustfd_request()`.

## Usage

```
ustfd_query(
  endpoint,
  filter = NULL,
  fields = NULL,
  sort = NULL,
  page_size = NULL,
  page_number = NULL
)
```

## Arguments

<code>endpoint</code>	required string representing an API endpoint
<code>filter</code>	optional list used to subset the data. See <a href="#">filter-syntax</a> for more information.
<code>fields</code>	optional character vector of the fields to be retrieved
<code>sort</code>	optional string or character vector. Ordering defaults to ascending, to specify descending order precede the field name with '-'
<code>page_size</code>	optional integer for pagination
<code>page_number</code>	optional integer for pagination

## Value

a list

## See Also

Other `ustfd_user`: [endpoint\\_exists\(\)](#), [ustfd\\_all\\_pages\(\)](#), [ustfd\\_datasets\(\)](#), [ustfd\\_simple\(\)](#), [ustfd\\_table\\_columns\(\)](#), [ustfd\\_tables\(\)](#)

**Examples**

```

library(ustfd)
ustfd_query(
  'v2/accounting/od/utf_qtr_yields',
  filter = list(record_date = c('>=' = lubridate::today()-10))
)
ustfd_query(
  'v2/accounting/od/utf_qtr_yields',
  filter = list(record_date = list('in' = c('2020-03-15', '2020-03-16', '2020-03-17'))))
)
ustfd_query(
  'v2/accounting/od/utf_qtr_yields',
  filter = list(record_date = c('= ' = '2020-03-15'))
)

```

---

ustfd\_request

*Retrieve Data From the U.S. Bureau Of the Fiscal Service API*


---

**Description**

ustfd\_request() will execute queries against the Fiscal Data API. Queries can generated using [ustfd\\_query\(\)](#).

**Usage**

```

ustfd_request(
  query,
  user_agent = "http://github.com/groditi/ustfd",
  process_response = ustfd_json_response,
  ...
)

```

**Arguments**

query	list generated by one of the query generating functions
user_agent	string, optional
process_response	function, optional. processes the http response object. Defaults to <a href="#">ustfd_json_response()</a> which will return the JSON payload parsed into a list
...	further arguments will be passed to process_response when called

**Value**

a http response object



**See Also**

Other `ustfd_low_level`: [ustfd\\_json\\_response\(\)](#), [ustfd\\_response\\_meta\\_object\(\)](#), [ustfd\\_response\\_payload\(\)](#), [ustfd\\_url\(\)](#)

**Examples**

```
## Not run:
library(ustfd)
query <- ustfd_query('v1/accounting/dts/dts_table_2', sort =c('-record_date'))
response <- ustfd_request(query)
payload_table <- ustfd_response_payload(response)
payload_meta <- ustfd_response_meta_object(response)

## End(Not run)
```

---

`ustfd_response_meta_object`

*Extract Metadata From Parsed API Response*

---

**Description**

`ustfd_response_meta_object()` will return the meta object included in a successful API response. The meta object is a list with the following items:

- `count` - the number of records in the response
- `labels` - a named list of labels for each field
- `dataTypes` - a named list describing the data type for each field
- `dataFormats` - a named list describing the data format for each field
- `total-count` - the total number of records matching the query
- `total-pages` - the total number of pages of records matching the query

**Usage**

```
ustfd_response_meta_object(response)
```

**Arguments**

`response` a parsed response returned by [ustfd\\_json\\_response\(\)](#)

**Value**

a list

**See Also**

Other `ustfd_low_level`: [ustfd\\_json\\_response\(\)](#), [ustfd\\_request\(\)](#), [ustfd\\_response\\_payload\(\)](#), [ustfd\\_url\(\)](#)

## Examples

```
## Not run:
library(ustfd)
query <- ustfd_query('v1/accounting/dts/dts_table_2', sort =c('-record_date'))
response <- ustfd_request(query)
payload_table <- ustfd_response_payload(response)
payload_meta <- ustfd_response_meta_object(response)

## End(Not run)
```

---

ustfd\_response\_payload

*Extract Payload as Table From Parsed API Response*

---

## Description

ustfd\_response\_payload() will return the results of the query in tabular format in the form of a tibble with one column for each field returned and one row for every record returned in the same order they were returned.

## Usage

```
ustfd_response_payload(response)
```

## Arguments

response            a parsed response returned by [ustfd\\_json\\_response\(\)](#)

## Value

a tibble

## See Also

Other `ustfd_low_level`: [ustfd\\_json\\_response\(\)](#), [ustfd\\_request\(\)](#), [ustfd\\_response\\_meta\\_object\(\)](#), [ustfd\\_url\(\)](#)

## Examples

```
## Not run:
library(ustfd)
query <- ustfd_query('v1/accounting/dts/dts_table_2', sort =c('-record_date'))
response <- ustfd_request(query)
payload_table <- ustfd_response_payload(response)
payload_meta <- ustfd_response_meta_object(response)

## End(Not run)
```

---

`ustfd_simple`*Retrieve Fiscal Data API in a single call*

---

## Description

`ustfd_simple()` aggregates the workflow for retrieving data from the API into a single call.

## Usage

```
ustfd_simple(  
  endpoint,  
  filter = NULL,  
  fields = NULL,  
  sort = NULL,  
  page_size = NULL,  
  page_number = NULL,  
  user_agent = "http://github.com/groditi/ustfd"  
)
```

## Arguments

<code>endpoint</code>	required string representing an API endpoint
<code>filter</code>	optional list used to subset the data. See <a href="#">filter-syntax</a> for more information.
<code>fields</code>	optional character vector of the fields to be retrieved
<code>sort</code>	optional string or character vector. Ordering defaults to ascending, to specify descending order precede the field name with '-'
<code>page_size</code>	optional integer for pagination
<code>page_number</code>	optional integer for pagination
<code>user_agent</code>	optional string

## Value

a list containing the following items

- `meta` - the metadata returned by the API
- `data` - the payload returned by the API in table form. See [ustfd\\_response\\_payload\(\)](#)

## See Also

Other `ustfd_user`: [endpoint\\_exists\(\)](#), [ustfd\\_all\\_pages\(\)](#), [ustfd\\_datasets\(\)](#), [ustfd\\_query\(\)](#), [ustfd\\_table\\_columns\(\)](#), [ustfd\\_tables\(\)](#)

## Examples

```
## Not run:
library(ustfd)

exchange_rates <- ustfd_simple(
  'v1/accounting/od/rates_of_exchange',
  fields = c(
    'country_currency_desc', 'exchange_rate', 'record_date', 'effective_date'
  ),
  filter = list(
    record_date = c('>=' = '2020-01-01'),
    country_currency_desc = list('in' = c('Canada-Dollar', 'Mexico-Peso'))
  )
)

## End(Not run)
```

---

ustfd_tables	<i>Return a table of supported and known tables including the API endpoints for the specified dataset(s). See <a href="#">ustfd_datasets()</a> for known datasets.</i>
--------------	--

---

## Description

ustfd\_tables provides details about 85 known endpoints for Fiscal Data. A data frame with 85 rows and the following 9 columns:

- dataset - ID of the source dataset
- endpoint - the table's API endpoint (natural key)
- table\_name - Name of the table within the data set
- table\_description - a description for the data in the endpoint
- row\_definition - a description of what each row in the table describes
- path\_name - API path name
- date\_column - the name of the table column that holds the record's date
- earliest\_date - the date of the earliest record available for this table
- update\_frequency - "Daily", "Monthly", "Quarterly", "Semi-Annually", "Annually", "As Needed", "Daily (Discontinued)", "Monthly (Discontinued)"

## Usage

```
ustfd_tables(datasets = NULL)
```

## Arguments

**datasets** one or more strings representing a valid dataset ID. If present, only endpoints belonging to matching datasets will be returned

**Value**

tibble

**Source**

<https://fiscaldata.treasury.gov/api-documentation/#list-of-endpoints>

**See Also**

Other ustfd\_user: [endpoint\\_exists\(\)](#), [ustfd\\_all\\_pages\(\)](#), [ustfd\\_datasets\(\)](#), [ustfd\\_query\(\)](#), [ustfd\\_simple\(\)](#), [ustfd\\_table\\_columns\(\)](#)

**Examples**

```
library(ustfd)
ustfd_tables(ustfd_datasets()[2])$endpoint
```

---

ustfd\_table\_columns     *Return a table of known fields for known endpoints*

---

**Description**

ustfd\_table\_columns returns the column dictionaries for the specified endpoint(s). See [ustfd\\_tables\(\)](#) for known endpoints.

**Usage**

```
ustfd_table_columns(endpoints = NULL)
```

**Arguments**

endpoints     one or more strings representing a valid endpoint

**Details**

The format of a dictionary is a tibble with one row for every table column and the following columns:

- endpoint - the ID of the table this column belongs to
- colum\_name - the field name recognizable to the API interface
- data\_type - one of: "DATE", "STRING", "CURRENCY", "NUMBER", "PERCENTAGE", "YEAR", "QUARTER", "MONTH", "DAY"
- pretty\_name - a descriptive label
- definition - definition of the column's value
- is\_required - logical value

**Value**

tibble

**Source**

<https://fiscaldata.treasury.gov/api-documentation/#fields-by-endpoint>

**See Also**

Other `ustfd_user`: [endpoint\\_exists\(\)](#), [ustfd\\_all\\_pages\(\)](#), [ustfd\\_datasets\(\)](#), [ustfd\\_query\(\)](#), [ustfd\\_simple\(\)](#), [ustfd\\_tables\(\)](#)

**Examples**

```
library(ustfd)
ustfd_table_columns(ustfd_tables(ustfd_datasets())$dataset[2])$endpoint)
```

---

ustfd\_url

*Generate URL To Access US Treasury Fiscal Data API*

---

**Description**

`ustfd_url()` will generate a URL suitable for querying the Fiscal Data API.

**Usage**

```
ustfd_url(query)
```

**Arguments**

query            required list

**Value**

a httr url object

**See Also**

Other `ustfd_low_level`: [ustfd\\_json\\_response\(\)](#), [ustfd\\_request\(\)](#), [ustfd\\_response\\_meta\\_object\(\)](#), [ustfd\\_response\\_payload\(\)](#)

**Examples**

```
library(ustfd)
ustfd_url(ustfd_query('/v1/accounting/dts/dts_table_4'))
```

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