

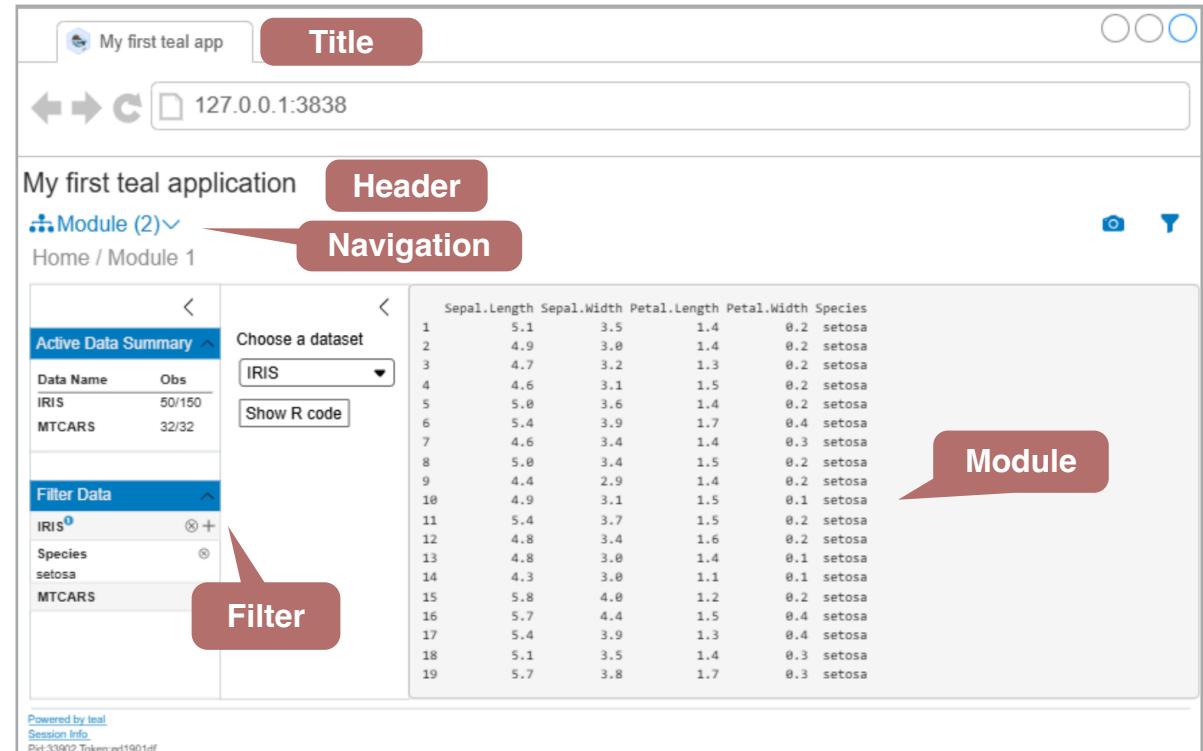
teal::CHEAT SHEET

Build a teal app

```
library(teal)

app <- init(
  data = teal_data(
    IRIS = iris,
    MTCARS = mtcars
  ),
  modules = modules(
    example_module("Module 1"),
    example_module("Module 2")
  ),
  filter = teal_slices(
    teal_slice(
      dataname = "IRIS",
      varname = "Species",
      selected = "setosa"
    )
  )
)
shinyApp(app$ui, app$server)
```

Initialize
Data
Module
Filter (optional)
Run app



Workflow

Initialize the app

In a new R script, load the necessary libraries (teal, general and/or clinical), create the app object.

Data (mandatory)

Add data as a **teal_data** object. You can have more than one dataset.

Module (mandatory)

Add modules based on your needs. Arguments depends on each module. You can also create your own (see “custom module”).

Filter (optional)

Filter is a common option to include in your app, which is a **teal_slices** object.

Run app and deploy

Run the app to see how it looks! When you are satisfied, deploy it to a server (internal / public).

Data

Data can be independent data.frames (e.g. **iris**), CDISC data for clinical reporting (**cdisc_data()**) and other analysis-specific objects.

Data needs to be a **teal_data** object to pass into **init()**.

```
# create teal_data object
data <- teal_data(iris = iris)

# cdisc data
data_cdisc <- cdisc_data(
  ADSL = teal.data::rADSL,
  ADTTE = teal.data::rADTTE
)

# check data names, check join_keys
names(data_cdisc)
join_keys(data_cdisc)
```

Data as shiny module

When working with dynamic, frequently updated data, it is recommended to use **teal_data_module()**.

Modules

Teal modules are shiny modules that specify analysis to be done. Typically modules are **tables** and **graphs** combined with **statistical analysis**.

teal.modules.general and **teal.modules.clinical** are packages with ready-to-use modules. Check out some examples:

teal.modules.general

General modules for exploration

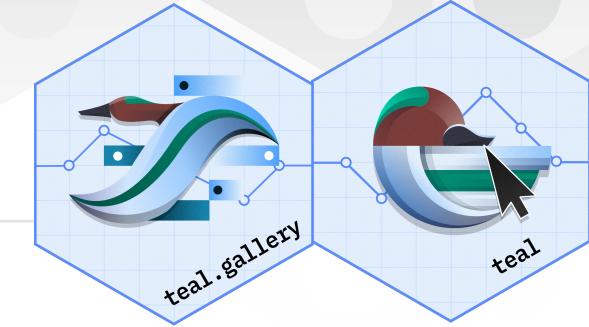
- [tm_g_scatterplot](#)
- [tm_variable_browser](#)

teal.modules.clinical

These modules are for CDISC data and clinical trial reporting

- Kaplan Meier plot: [tm_g_km](#)
- Cox regression: [tm_t_coxreg](#)
- Patient timeline: [tm_g_pp_patient_timeline](#)

See next page for more information on modules.



What is teal

teal is a shiny-based interactive exploration framework for analyzing data.

Get started

insightengineering.github.io/teal

Explore the teal gallery

insightengineering.github.io/teal.gallery

Ready-to-use Modules

insightengineering.github.io/teal.modules.general

insightengineering.github.io/teal.modules.clinical

Get teal

```
# install from CRAN
install.packages('teal')
```

Filtering

Filter is an optional component to pass into **init()**.

It is a **teal_slices** object, and you can have **multiple filters** together.

```
app <- init(
  data = ...,
  modules = ...,
  filter = teal_slices(
    teal_slice(...),
    teal_slice(...)
  )
)
```

You can set **fixed**, **anchored** and **custom filters** to your module. Read more on [teal.slice vignette: Specify single filter](#).

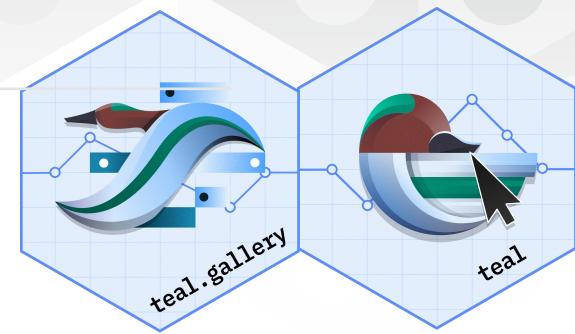
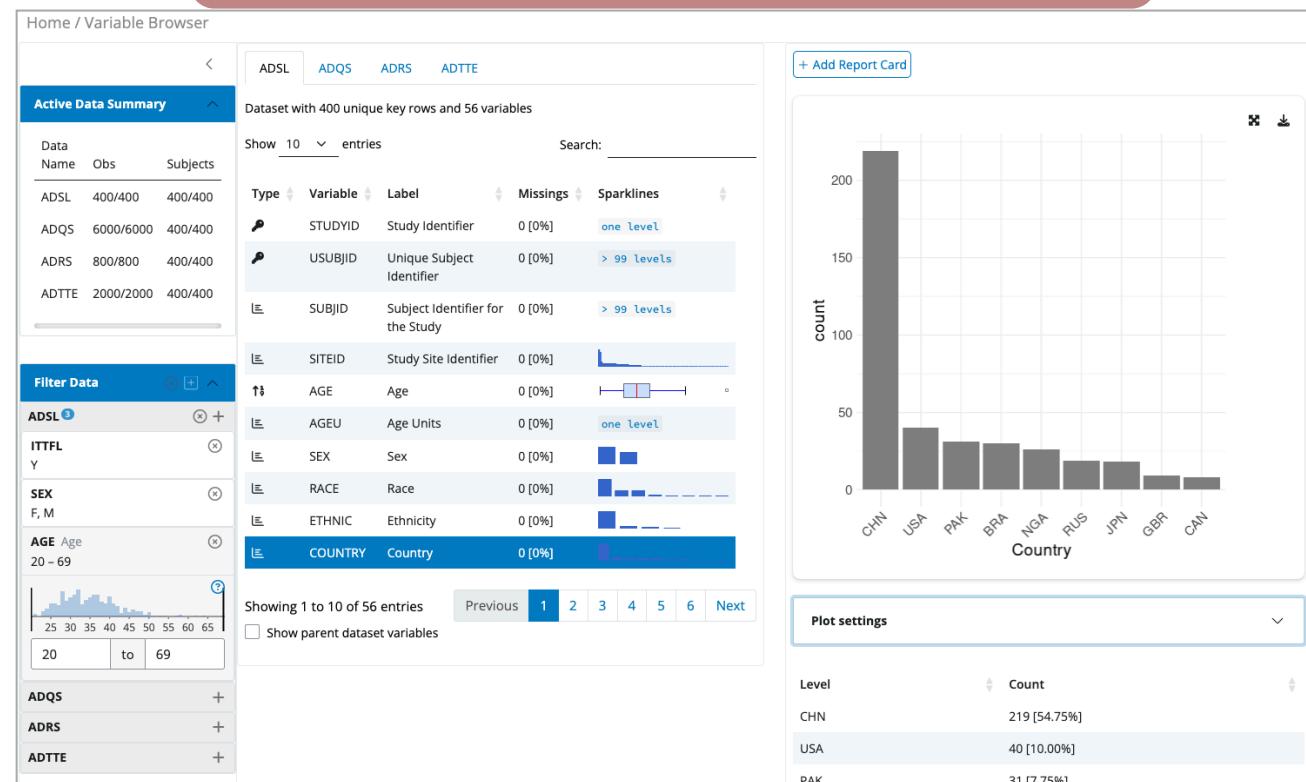
```
teal_slice(
  dataname = 'IRIS',
  varname = 'Species',
  id = 'filter1',
  selected = 'setosa',
  fixed = TRUE
)
```

teal.modules.general

teal.modules.general (tmg) provides general functionality for exploration.

Description	Module name
Data table viewer	tm_data_table
File viewer	tm_file_viewer
Front page	tm_front_page
Missing data analysis	tm_missing_data
Outlier analysis	tm_outlier
Variable browser	tm_variable_browser
Cross-table	tm_t_crosstable
Univariate and bivariate plots	tm_g_bivariate
Distribution analysis	tm_g_distribution
Response plot	tm_g_response
Scatterplot	tm_g_scatterplot
Scatterplot matrix	tm_g_scatterplotmatrix
Principal component analysis	tm_a_pca
Scatterplot and regression	tm_a_regression

Example: teal.modules.general: **tm_variable_browser**



teal gallery

Explore apps deployed on shinyapps.io.
insightengineering.github.io/teal.gallery

teal is part of the **pharmaverse** NEST project. Learn more about [pharmaverse](#).

Build Custom Modules

Can't find what you need? [Build your own modules!](#)

Please refer to teal GitHub repository and the [technical blueprint](#) for more information.

<https://github.com/insightengineering/teal>

teal.modules.clinical

teal.modules.clinical (tmc) are modules that are designed for clinical trial data.
All the tmc modules require **at least ADSL**, usually with **another dataset**.

tm: teal module **t:** table **g:** graph **a:** analysis **pp:** patient profile
() indicates variation (e.g tm_t_abnormality_by_worst_grade).

Description	Module name	Additional data	Description	Module name	Additional data
Abnormality Summary Table	tm_t_abnormality, (by_worst_grade)	ADLB	Mixed Model Repeated Measurement	tm_a_mmrm	ADQS
ANCOVA Summary	tm_t_ancova	ADQS	Simple Bar Chart and Table of Counts	tm_g_barchart_simple	ADAE
Binary Outcome Table	tm_t_binary_outcome	ADRS	Confidence interval plot	tm_g_ci	ADLB
Cox Regression Model	tm_t_coxreg	ADTTE	Foreset response plot	tm_g_forest_rsp	ADRS
Events by term, grade, summary	tm_t_events, (by_grade), (summary)	ADAE	Forest survival plot	tm_g_forest_tte	ADTTE
Event Rates adjusted for Patient-Years	tm_t_events_patyear	ADAETTE	Individual patient plots	tm_g_ipp	ADLB
Exposure Table for Risk Management Plan	tm_t_exposure	ADEX	Kaplan-Meier plot	tm_g_km	ADTTE
Regression Counts Summary	tm_t_glm_counts	ADTTE	Line plot	tm_g_lineplot	ADLB
Logistic regression	tm_t_logistic	ADRS	Adverse events table and plot	tm_g_pp_adverse_events	ADAE
Multiple Events by Term	tm_t_mult_events	ADCM	Timeline plot	tm_g_pp_patient_timeline	ADAE, ADCM
Shift by arm (by worst analysis indicator level)	tm_t_shift_by_arm, (by_worst)	ADEG	Therapy table and plot	tm_g_pp_therapy	ADCM
Grade Summary Table	tm_t_shift_by_grade	ADLB	Vitals plot	tm_g_pp_vitals	ADVS
Generalized Estimating Equations analysis	tm_a_gee	ADQS	Basic info	tm_t_pp_basic_info	-
			Laboratory table	tm_t_pp_laboratory	ADLB
			Medical history	tm_t_pp_medical_history	ADMH
			Prior medication	tm_t_pp_prior_medication	ADCM
			Adverse Events Table by Standardized MedDRA Query	tm_t_smq	ADAE
			Summary of variables	tm_t_summary	-
			Summarise variables by Row Groups	tm_t_summary_by	ADLB
			Time-To-Event table	tm_t_tte	ADTTE