

Working with Different Object Types and Themes

Ronald G. Thomas

zztab2fig v0.2.0 introduced S3 method dispatch for `t2f()`, enabling direct conversion of statistical objects to publication-quality tables. This vignette demonstrates how different R object types are handled and how themes affect table appearance.

```
library(zztab2fig)
```

Object Types

Data Frames

Data frames are the most common input type. The `t2f.data.frame()` method handles standard data frame objects with full formatting support.

```
df <- data.frame(
  Variable = c("Age", "Weight", "Height"),
  Mean = c(45.2, 72.5, 168.3),
  SD = c(12.1, 15.8, 9.2),
  N = c(150, 148, 150)
)

t2f(df, filename = "descriptive_stats", sub_dir = output_dir,
    caption = "Descriptive Statistics")
```

Table 1: Descriptive Statistics

Variable	Mean	SD	N
Age	45.2	12.1	150
Weight	72.5	15.8	148
Height	168.3	9.2	150

Data frames from dplyr pipelines work seamlessly:

```
library(dplyr)

summary_table <- mtcars |>
  group_by(cyl) |>
  summarise(
    N = n(),
    `Mean MPG` = round(mean(mpg), 1),
    `SD MPG` = round(sd(mpg), 1),
```

```

  `Mean HP` = round(mean(hp), 0),
  .groups = "drop"
)

t2f(summary_table,
  filename = "cylinder_summary",
  caption = "Vehicle Statistics by Cylinder Count",
  sub_dir = output_dir)

```

Table 1: Vehicle Statistics by Cylinder Count

cyl	N	Mean_MPG	SD_MPG	Mean_HP
4	11	26.7	4.5	83
6	7	19.7	1.5	122
8	14	15.1	2.6	209

Matrices

Matrices are converted to data frames with optional row names as the first column via the `t2f.matrix()` method.

```

cor_mat <- cor(mtcars[, c("mpg", "cyl", "disp", "hp", "wt")])
cor_mat <- round(cor_mat, 2)

t2f(cor_mat,
  filename = "correlation_matrix",
  caption = "Correlation Matrix of Vehicle Characteristics",
  rownames = TRUE,
  sub_dir = output_dir)

```

Table 1: Correlation Matrix of Vehicle Characteristics

	rowname	mpg	cyl	disp	hp	wt
mpg	mpg	1.00	-0.85	-0.85	-0.78	-0.87
cyl	cyl	-0.85	1.00	0.90	0.83	0.78
disp	disp	-0.85	0.90	1.00	0.79	0.89
hp	hp	-0.78	0.83	0.79	1.00	0.66
wt	wt	-0.87	0.78	0.89	0.66	1.00

Contingency Tables

Base R `table` objects are supported directly via the `t2f.table()` method.

```

gear_cyl_table <- table(mtcars$gear, mtcars$cyl)

t2f(gear_cyl_table,
  filename = "gear_cylinder_crosstab",
  caption = "Cross-tabulation of Gears and Cylinders",
  sub_dir = output_dir)

```

Table 1: Cross-tabulation of Gears and Cylinders

rowname		X4	X6	X8
3	3	1	2	12
4	4	8	4	0
5	5	2	1	2

Linear Models

The `t2f.lm()` method extracts coefficient tables from linear model objects. Control which statistics appear using the `include` parameter.

```
model <- lm(mpg ~ cyl + hp + wt, data = mtcars)
```

```
t2f(model,
     filename = "regression_table",
     caption = "Multiple Regression: MPG Predictors",
     include = c("estimate", "std.error", "p.value"),
     digits = 3,
     sub_dir = output_dir)
```

Table 1: Multiple Regression: MPG Predictors

Term	Estimate	Std._Error	p_value
(Intercept)	38.752	1.787	<0.001
cyl	-0.942	0.551	0.098
hp	-0.018	0.012	0.140
wt	-3.167	0.741	<0.001

Add confidence intervals (code only - full statistics):

```
t2f(model,
     filename = "regression_with_ci",
     include = c("estimate", "std.error", "conf.int", "p.value"),
     conf.level = 0.95,
     sub_dir = output_dir)
```

Generalized Linear Models

The `t2f.glm()` method supports logistic, Poisson, and other GLM families. Use `exponentiate = TRUE` to display odds ratios or rate ratios.

```
logit_model <- glm(am ~ mpg + hp + wt,
                  data = mtcars,
                  family = binomial)
```

```
t2f(logit_model,
     filename = "logistic_odds_ratios",
     caption = "Logistic Regression: Odds Ratios",
     exponentiate = TRUE,
     include = c("estimate", "conf.int", "p.value"),
     sub_dir = output_dir)
```



```
sub_dir = output_dir)
```

Table 1: Two-way ANOVA: MPG by Cylinder and Gear

Source	Df	Sum_Sq	Mean_Sq	F_value	Pr_>F_
factor(cyl)	2	824.785	412.392	38.001	<0.001
factor(gear)	2	8.252	4.126	0.380	0.687
Residuals	27	293.011	10.852	NA	

Hypothesis Tests

The `t2f.htest()` method handles output from t-tests, chi-square tests, and other hypothesis testing functions.

```
ttest <- t.test(mpg ~ am, data = mtcars)

t2f(ttest,
    filename = "ttest_result",
    caption = "Two-sample t-test: MPG by Transmission",
    sub_dir = output_dir)
```

Table 1: Two-sample t-test: MPG by Transmission

Statistic	Value	df	p_value	CI.Lower	CI.Upper	mean_in_group_0	mean_in_group_1
t	-3.767	18.332	0.001	-11.28	-3.21	17.147	24.39

Regression Model Comparisons

The `t2f_regression()` function creates side-by-side model comparison tables with significance stars.

```
m1 <- lm(mpg ~ wt, data = mtcars)
m2 <- lm(mpg ~ wt + hp, data = mtcars)
m3 <- lm(mpg ~ wt + hp + cyl, data = mtcars)

t2f_regression(
  `(1)` = m1,
  `(2)` = m2,
  `(3)` = m3,
  stars = TRUE,
  digits = 3,
  filename = "model_progression",
  sub_dir = output_dir
)
```

Term	X_1_	X_2_	X_3_
(Intercept)	37.285* (1.878)	37.227* (1.599)	38.752* (1.787)
wt	-5.344* (0.559)	-3.878* (0.633)	-3.167* (0.741)
hp		-0.032* (0.009)	-0.018 (0.012)
cyl			-0.942 (0.551)
N	32	32	32
R-squared	0.753	0.827	0.843
Adj. R-squared	0.745	0.815	0.826

Theme Demonstrations

Each built-in theme provides distinct styling appropriate for different publication contexts. Below are side-by-side comparisons using the same data.

```
demo_data <- mtcars[1:6, c("mpg", "cyl", "hp", "wt")]
```

Default Theme

The default styling uses blue row shading with booktabs rules.

```
t2f(demo_data,
    filename = "theme_default",
    caption = "Default Theme",
    sub_dir = output_dir)
```

Table 1: Default Theme

	mpg	cyl	hp	wt
Mazda RX4	21.0	6	110	2.620
Mazda RX4 Wag	21.0	6	110	2.875
Datsun 710	22.8	4	93	2.320
Hornet 4 Drive	21.4	6	110	3.215
Hornet Sportabout	18.7	8	175	3.440
Valiant	18.1	6	105	3.460

NEJM Theme

The New England Journal of Medicine theme provides clean, professional medical journal styling with light yellow shading and sans-serif fonts.

```
t2f(demo_data,
    filename = "theme_nejm",
    caption = "NEJM Theme",
    theme = "nejm",
    sub_dir = output_dir)
```

Table 1: NEJM Theme

	mpg	cyl	hp	wt
Mazda RX4	21.0	6	110	2.620
Mazda RX4 Wag	21.0	6	110	2.875
Datsun 710	22.8	4	93	2.320
Hornet 4 Drive	21.4	6	110	3.215
Hornet Sportabout	18.7	8	175	3.440
Valiant	18.1	6	105	3.460

NEJM theme characteristics:

- Light yellow alternating row colors
- Sans-serif font (Helvetica)
- Booktabs horizontal rules
- Compact column spacing (4pt)
- Footnotesize font

APA Theme

The American Psychological Association theme follows APA 7th edition table guidelines.

```
t2f(demo_data,
    filename = "theme_apa",
    caption = "APA Theme",
    theme = "apa",
    sub_dir = output_dir)
```

Table 1: APA Theme

	mpg	cyl	hp	wt
Mazda RX4	21.0	6	110	2.620
Mazda RX4 Wag	21.0	6	110	2.875
Datsun 710	22.8	4	93	2.320
Hornet 4 Drive	21.4	6	110	3.215
Hornet Sportabout	18.7	8	175	3.440
Valiant	18.1	6	105	3.460

APA theme characteristics:

- No row shading
- Times Roman font
- Letter paper with 1-inch margins
- Booktabs rules

Nature Theme

The Nature journal theme uses Helvetica with subtle gray shading.

```
t2f(demo_data,
    filename = "theme_nature",
    caption = "Nature Theme",
    theme = "nature",
    sub_dir = output_dir)
```

Table 1: Nature Theme

	mpg	cyl	hp	wt
Mazda RX4	21.0	6	110	2.620
Mazda RX4 Wag	21.0	6	110	2.875
Datsun 710	22.8	4	93	2.320
Hornet 4 Drive	21.4	6	110	3.215
Hornet Sportabout	18.7	8	175	3.440
Valiant	18.1	6	105	3.460

Nature theme characteristics:

- Light gray row shading (gray!8)
- Sans-serif font (Helvetica)
- Small font size
- 15mm margins

Minimal Theme

The minimal theme provides clean, unobtrusive styling suitable for general use.

```
t2f(demo_data,
    filename = "theme_minimal",
    caption = "Minimal Theme",
    theme = "minimal",
    sub_dir = output_dir)
```

Table 1: Minimal Theme

	mpg	cyl	hp	wt
Mazda RX4	21.0	6	110	2.620
Mazda RX4 Wag	21.0	6	110	2.875
Datsun 710	22.8	4	93	2.320
Hornet 4 Drive	21.4	6	110	3.215
Hornet Sportabout	18.7	8	175	3.440
Valiant	18.1	6	105	3.460

Custom Themes

Create custom themes for specific requirements using `t2f_theme()`.

```
presentation_theme <- t2f_theme(
  name = "presentation",
  scolor = "blue!15",
  header_bold = TRUE,
  font_size = "large",
  striped = TRUE,
  extra_packages = list(
```



```

    geometry(margin = "10mm"),
    "\\renewcommand{\\arraystretch}{1.3}"
  )
)

t2f(demo_data,
    filename = "theme_presentation",
    caption = "Custom Presentation Theme",
    theme = presentation_theme,
    sub_dir = output_dir)

```

Table 1: Custom Presentation Theme

	mpg	cyl	hp	wt
Mazda RX4	21.0	6	110	2.620
Mazda RX4 Wag	21.0	6	110	2.875
Datsun 710	22.8	4	93	2.320
Hornet 4 Drive	21.4	6	110	3.215
Hornet Sportabout	18.7	8	175	3.440
Valiant	18.1	6	105	3.460

Global Theme Setting

Set a theme globally for consistent styling across multiple tables in an analysis.

```

t2f_theme_set("nejm")

t2f(mtcars[1:5, 1:4], filename = "table1", sub_dir = "output")
t2f(iris[1:5, ], filename = "table2", sub_dir = "output")

model <- lm(mpg ~ wt + hp, data = mtcars)
t2f(model, filename = "table3", sub_dir = "output")

t2f(mtcars[1:5, 1:4],
    filename = "table4_apa",
    theme = "apa",
    sub_dir = "output")

t2f_theme_set(NULL)

```

Summary

Object Type Support

Object Class	Method	Key Parameters
<code>data.frame</code>	<code>t2f.data.frame()</code>	Standard t2f parameters
<code>matrix</code>	<code>t2f.matrix()</code>	<code>rownames</code>
<code>table</code>	<code>t2f.table()</code>	Standard t2f parameters
<code>lm</code>	<code>t2f.lm()</code>	<code>digits</code> , <code>include</code> , <code>conf.level</code>
<code>glm</code>	<code>t2f.glm()</code>	<code>digits</code> , <code>include</code> , <code>exponentiate</code> , <code>conf.level</code>
<code>aov</code>	<code>t2f.aov()</code>	<code>digits</code>
<code>anova</code>	<code>t2f.anova()</code>	<code>digits</code>
<code>htest</code>	<code>t2f.htest()</code>	<code>digits</code>

Theme Comparison

Theme	Row Shading	Font	Use Case
Default	blue!10	Serif	General purpose
NEJM	yellow!8	Helvetica	Medical journals
APA	None	Times	Psychology/social sciences
Nature	gray!8	Helvetica	Scientific journals
Minimal	gray!5	Serif	Clean, simple tables

Theme Functions

Function	Purpose
<code>t2f_theme()</code>	Create custom theme
<code>t2f_theme_set()</code>	Set global theme
<code>t2f_theme_get()</code>	Get current global theme
<code>t2f_theme_nejm()</code>	NEJM preset
<code>t2f_theme_apa()</code>	APA preset
<code>t2f_theme_nature()</code>	Nature preset
<code>t2f_theme_minimal()</code>	Minimal preset
<code>t2f_list_themes()</code>	List available themes