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CT11: Elevating Clinical Data Presentation: Unlocking the Power of rtables in R

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Agenda

**Overview of
rtables**

**Transforming
Simple Summary
Tables into
Nested Layouts**

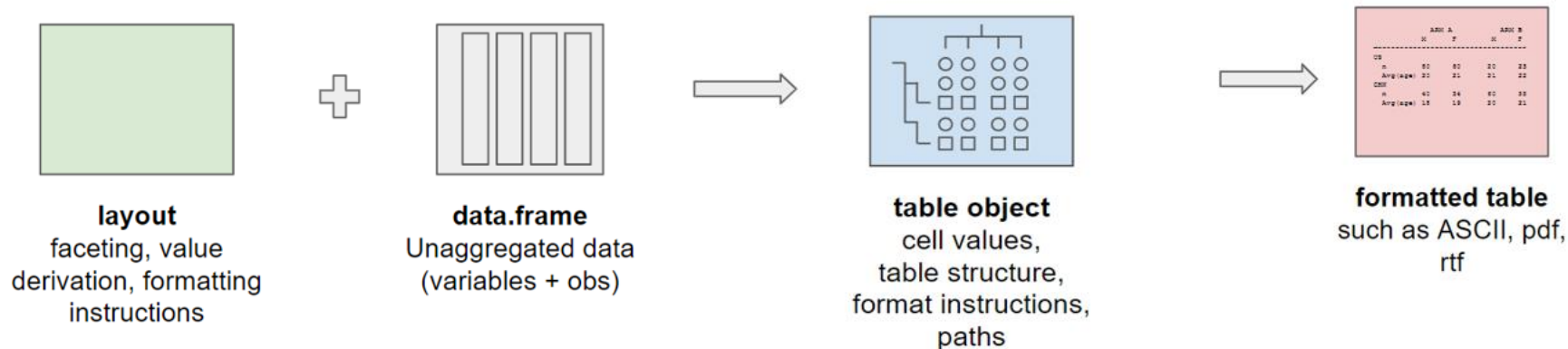
**Shift Tables for
Safety Data**

**Highlighting Key
Results with
style**

**Key Features
Recap**

Overview of rtables

Why rtables stands out



- ❖ **Input:** Layout and data.frame defines structure and contents of the table
- ❖ **Transformation:** These inputs create table object
- ❖ **Output:** The table object is rendered into a formatted table ideal for publication and regulatory use

Transforming Simple Summary Tables into Nested Layouts

Simple Summary table

R code for Simple Summary

```
# Getting started with rtables
library(rtables)

# Assume df has variables: ARM,
# GENDER, AGE
lyt <- basic_table() %>%
  split_cols_by("ARM") %>%
  split_rows_by("GENDER") %>%
  analyze("AGE", afun = mean)

tbl <- build_table(lyt, df)
tbl
```

Sample Table Preview

		Treatment	Placebo
Male	mean	49.40	49.50
Female	mean	51.65	44.22

- ❖ **Table tree** structure
- ❖ Generates table with **minimal code**
- ❖ **Intuitive** and easy to understand.

Transforming Simple Summary Tables into Nested Layouts

Nested layout

R code for Nesting + Categorical & Continuous Summaries

```
# Custom function for multiple statistics
multi_stats <- function(x) {
  in_rows(
    "Mean (SD)" = sprintf("%.2f (%.3f)", mean(x),
    sd(x)),
    "Median [IQR]" = sprintf("%.2f [%.1f-%.1f]",
    median(x), quantile(x, 0.25), quantile(x, 0.75)) )}
```

```
# Assume df has variables: ARM, SITE, GENDER, AGE
lyt2 <- basic_table() %>%
  split_cols_by("ARM") %>%
  add_colcounts() %>%
  split_rows_by("SITE") %>%
  summarize_row_groups(format="xx") %>%
  split_rows_by("GENDER") %>%
  summarize_row_groups() %>%
  analyze("AGE", afun = multi_stats)
tbl2 <- build_table(lyt2, data2)
print(tbl2)
```

Sample Table Preview

	Treatment (N=114)	Placebo (N=86)
Site 1	60	40
Male	34 (29.8%)	16 (18.6%)
Mean (SD)	49.44 (7.427)	53.27 (5.820)
Median [IQR]	46.50 [43.9-53.3]	55.40 [49.7-57.6]
Female	26 (22.8%)	24 (27.9%)
Mean (SD)	51.59 (12.517)	42.77 (8.417)
Median [IQR]	50.40 [40.5-61.1]	41.80 [36.2-51.4]
Site 2	54	46
Male	18 (15.8%)	24 (27.9%)
Mean (SD)	49.33 (9.048)	46.98 (8.505)
Median [IQR]	47.40 [46.3-50.8]	47.00 [40.7-51.7]
Female	36 (31.6%)	22 (25.6%)
Mean (SD)	51.69 (11.844)	45.79 (5.681)
Median [IQR]	51.65 [43.5-57.7]	45.80 [40.6-49.1]

- ❖ Multi-level layouts
- ❖ Custom defined functions
- ❖ Column counts, row frequency and percentage

Shift Tables for Safety Data

Complex Tables Layout

R code for Simple Summary

```
# --- Analysis function: counts for POST categories by BASE --
shift_afun <- function(x, .spl, .var, ...) {
  # x = POST values for a given BASE category
  counts <- table(factor(x, levels = c("Low", "Normal", "High")))
  # add total row
  total <- sum(counts)
  # Convert to named list for rtables
  c(as.list(counts), Total = total)}
# Convert to factors with correct order' and define header
lab$BASE_header <- "Baseline"
lab$BASE <- factor(lab$BASE, levels = c("Low", "Normal", "High"))
lab$POST <- factor(lab$POST, levels = c("Low", "Normal", "High"))
# --- Layout for shift table ---
# Assume lab df has variables: PARAM, BASE, POST, AVISIT
lyt <- basic_table() %>%
  split_cols_by("BASE_header") %>%
  split_cols_by("BASE") %>%
  add_overall_col("Total") %>% #  Adds Total column
  split_rows_by("PARAM" ,
    label_pos = "topleft",
    child_labels = "visible",
    split_label = "Laboratory Test "
  ) %>%
  split_rows_by("AVISIT", split_label = "Visit") %>%
  analyze("POST", afun = shift_afun)
```

Sample Table Preview

Laboratory Test	Low	Normal	High	Total
ALT				
Day 2				
Low	0	1	0	1
Normal	1	2	2	5
High	2	1	1	4
Total	3	4	3	10
Day 4				
Low	0	2	0	2
Normal	2	1	1	4
High	0	4	0	4
Total	2	7	1	10
EOS				
Low	1	0	0	1
Normal	0	5	2	7
High	0	1	1	2
Total	1	6	3	10

- ❖ Baseline-as-columns with a clean total
- ❖ Stable shift counts row-wise
- ❖ Readable blocks by parameter and visit

Highlighting Key Results with Style

Conditional Formatting

R code for Simple Summary

```
multi_stats <- function(x) {
  mean_val <- mean(x)
  median_val <- median(x)
  q1 <- quantile(x, 0.25)
  q3 <- quantile(x, 0.75)

  mean_sd <- if (mean_val > 50) {
    paste0("<i>", "<span style='color:red;'>", sprintf("%.1f", mean_val), "</i>",
           "</span>", " \u2191", " (",
           "<span style='color:green;'>", sprintf("%.1f", sd(x)), "</span>", ")")
  } else {
    sprintf("%.1f (%.1f)", mean_val, sd(x))
  }

  med_iqr <- if (median_val > 50) {
    paste0("<b>", sprintf("%.1f", median_val), "**", "</b>",
           "[", sprintf("%.1f", q1), "-", sprintf("%.1f", q3), "]")
  } else {
    sprintf("%.1f [%.1f-%.1f]", median_val,
            q1, q3)
  }

  in_rows(
    "Mean (SD)" = mean_sd,
    "Median [IQR]" = med_iqr,
    .formats = "xx"
  )
}

# Unescape HTML tags in cell content
html_output_clean <- gsub("&lt;", "<", html_output)
html_output_clean <- gsub("&gt;", ">", html_output_clean)
```

Sample Table Preview

	Treatment (N=114)	Placebo (N=86)
Site 1	60	40
Male	34 (29.8%)	16 (18.6%)
Mean (SD)	49.4 (7.4)	53.3 ↑ (5.8)
Median [IQR]	46.5 [43.9–53.3]	55.4** [49.7–57.6]
Female	26 (22.8%)	24 (27.9%)
Mean (SD)	51.6 ↑ (12.5)	42.8 (8.4)
Median [IQR]	50.4** [40.5–61.1]	41.8 [36.2–51.4]
Site 2	54	46
Male	18 (15.8%)	24 (27.9%)
Mean (SD)	49.3 (9.0)	47.0 (8.5)
Median [IQR]	47.4 [46.3–50.8]	47.0 [40.7–51.7]
Female	36 (31.6%)	22 (25.6%)
Mean (SD)	51.7 ↑ (11.8)	45.8 (5.7)
Median [IQR]	51.7** [43.5–57.7]	45.8 [40.6–49.1]

- ❖ Clinical relevance directly inside cells
- ❖ Single Custom function for key results highlight
- ❖ helpful in scientific publications



Key Features Recap

Summary

- ✓ Minimal code, maximum flexibility
- ✓ Table tree for intuitive design
- ✓ Supports both categorical & continuous data
- ✓ Easy to define custom functions
- ✓ Use of conditional formatting to highlight key results

With rtables, your tables speak the language of clarity, precision, and reproducibility.



Thank you

If you have more
questions, please contact:

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