

# Mesa: A Shiny-based Web Application for Drag-and-Drop Creation of Metadata-Driven Statistical Summary Tables

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## Overview

Production of statistical summary tables can be tedious and repetitive, requiring specialized programming skills. Mesa is an R/Shiny application that leverages metadata to improve the convenience and efficiency of table development. The user designs and generates statistical tables simply by making selections in a web browser interface.

## Workflow

After application launch (see **Setup**) the user selects a dataset and variables from the **Inputs Tab**. Metadata is fine-tuned on the **Variables Tab** and **Shell Tab**. Results are updated dynamically in the **Preview Tab** (fast) and **PDF Tab** (detailed).

## Highlights

- Dataset and TFL metadata are isolated from code for versatile workflow.
- Variable order and value level order are controllable without programming.
- Titles and footnotes can be curated at central location, eliminating reconciliation of programming with TFL shell.
- Table design and table creation are brought together under one application, integrating statistician and programmer roles for less redundancy and faster results.

## Input Tab

data

C:/Users/U060612/phuse/adsl.sas7bdat

configuration

C:/Users/U060612/phuse/T-03-02.conf

save configuration

Grouping Style

☐ nested ☒ sequential

saffl

☒ Y ☐ N

Data Item Roles

Available

Summarize

Group By

Filter By

anyaeft

seraeft

sex

studyid

usubjid

weight

age

agegr

asex

diagdur

trt01a

trt01aa

saffl

- Choose dataset or configuration.
- Classify, re-order variables by drag-and-drop.
- Point and click for sub-setting records.

## Variables Tab

Save

C:/Users/U060612/phuse/adsl.yaml

1 anyaeft1: [ Any TEAEs, [ 'Y', 'N' ] ]

2 seraeft1: [ Serious TEAEs, [ 'Y', 'N' ] ]

3 agegr: [ Age Categories, [ '<=18 yrs', '19 - <65 yrs', '>=65 yrs' ] ]

4 age: [ Age, year ]

5 diagdur: [ Duration of Disease, year ]

6 weight: [ Weight, lb ]

7 sex: [ Gender, [ Female: F, Male: M ] ]

8 asex: [ Gender, [ Female, Male ] ]

9 studyid: [ Study Identifier ]

10 usubjid: [ Subject Identifier ]

11 saffl: [ Safety Flag, [ 'Y', 'N' ] ]

12 trt01a: [ Treatment, [ 'Placebo', 'TRT 10 mg', 'TRT 20 mg' ] ]

13 trt01aa: [ Treatment Group, [ 'Placebo', 'TRT 10 mg', 'TRT 20 mg', 'TRT Total' ] ]

- Edit variable labels, units, code lists, and sort order.

## Shell Tab

Save

Output Identifier

T-03-02

Title

Table 3.2 Demographic - Safety Population

Footnotes

age categories: clinicaltrials.gov age categories.

Left Header 1

Company

Left Header 2

AA01

Right Header 1

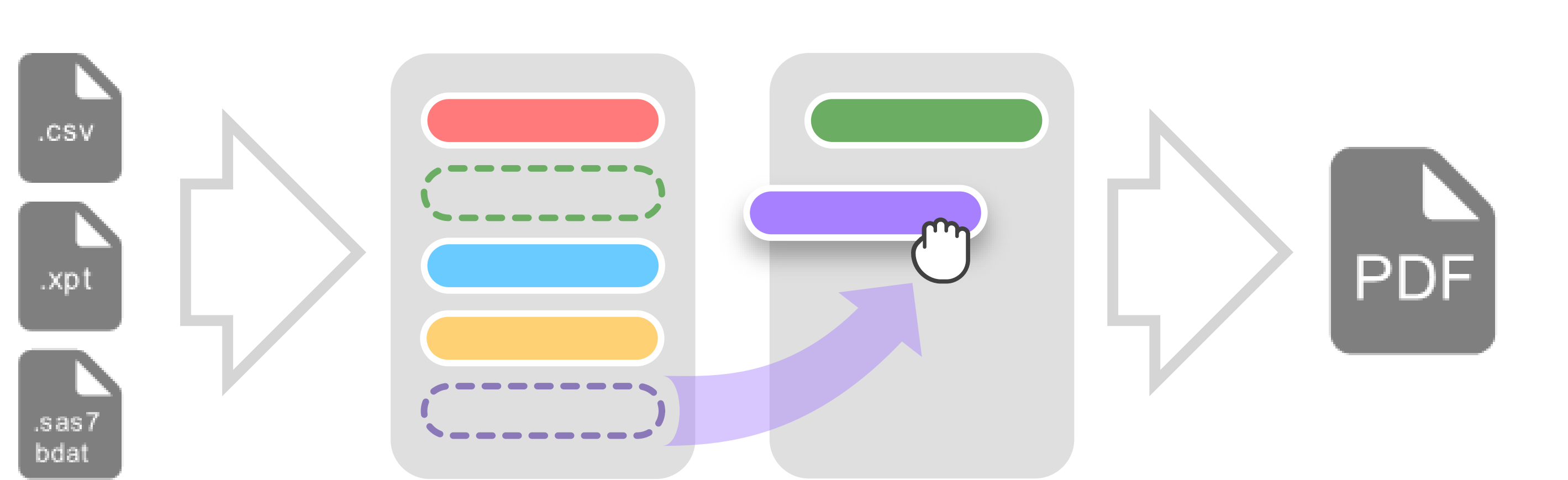
Confidential

Right Header 2

Draft

- Provide output headers, footers, titles, footnotes.

## Conceptual Diagram



## Preview Tab

|                            | Placebo<br>(N = 4) | TRT 10 mg<br>(N = 4) | TRT 20 mg<br>(N = 4) | TRT Total<br>(N = 8) | All<br>(N = 12) |
|----------------------------|--------------------|----------------------|----------------------|----------------------|-----------------|
| Age (year)                 |                    |                      |                      |                      |                 |
| n                          | 4                  | 4                    | 4                    | 8                    | 12              |
| Mean (SD)                  | 42 (27.1)          | 42.5 (15.4)          | 44.2 (21.2)          | 43.4 (17.2)          | 42.9 (19.7)     |
| Median                     | 42                 | 36.5                 | 44.5                 | 42                   | 42              |
| Min, Max                   | 18, 66             | 32, 65               | 18, 70               | 18, 70               | 18, 70          |
| Age Categories             |                    |                      |                      |                      |                 |
| <=18 yrs                   | 1 (25%)            | 0                    | 1 (25%)              | 1 (12.5%)            | 2 (16.7%)       |
| <=18 yrs                   | 1 (25%)            | 0                    | 1 (25%)              | 1 (12.5%)            | 2 (16.7%)       |
| 19 - <65 yrs               | 1 (25%)            | 4 (100%)             | 2 (50%)              | 6 (75%)              | 7 (58.3%)       |
| >=65 yrs                   | 2 (50%)            | 0                    | 1 (25%)              | 1 (12.5%)            | 3 (25%)         |
| Gender                     |                    |                      |                      |                      |                 |
| Female                     | 2 (50%)            | 3 (75%)              | 1 (25%)              | 4 (50%)              | 6 (50%)         |
| Male                       | 2 (50%)            | 1 (25%)              | 3 (75%)              | 4 (50%)              | 6 (50%)         |
| Duration of Disease (year) |                    |                      |                      |                      |                 |
| n                          | 4                  | 4                    | 4                    | 8                    | 12              |
| Mean (SD)                  | 12.1 (6.69)        | 5.45 (6.08)          | 6.1 (9.33)           | 5.78 (7.3)           | 7.89 (7.48)     |
| Median                     | 11.2               | 3.4                  | 1.9                  | 2.1                  | 5.3             |
| Min, Max                   | 5, 21              | 1, 14                | 0.6, 20              | 0.6, 20              | 0.6, 21         |

## PDF Tab

Company  
AA01

Confidential  
Draft

|                            | Placebo<br>(N = 4) | TRT 10 mg<br>(N = 4) | TRT 20 mg<br>(N = 4) | TRT Total<br>(N = 8) | All<br>(N = 12) |
|----------------------------|--------------------|----------------------|----------------------|----------------------|-----------------|
| Age (year)                 |                    |                      |                      |                      |                 |
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| Male                       | 2 (50%)            | 1 (25%)              | 3 (75%)              | 4 (50%)              | 6 (50%)         |
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| Median                     | 11.2               | 3.4                  | 1.9                  | 2.1                  | 5.3             |
| Min, Max                   | 5, 21              | 1, 14                | 0.6, 20              | 0.6, 20              | 0.6, 21         |

Age categories: clinicaltrials.gov age categories

\* Can be saved to arbitrary location.

C:/Users/U060612/phuse/T-03-02.conf

2021-08-14 at 09:24

**Setup** Install package from CRAN: <https://cran.r-project.org/package=tablet> >= 0.3.9; load using 'library(tablet)'; call function 'mesa()' to launch internet browser. LaTeX needed for PDF creation.

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