

***A Day or 5 Minutes?
Making Data Work for You with R Shiny***

ADVANTAGES

WHAT IS R?
WHY NOT MOVE
FASTER TO R?

WHY
R SHINY

OUTPUT
CREATION FLOW

DATASETS/
OUTPUTS

PRESENTERS



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Open Source

Extensive
Statistical
Support

Rich
Package
Ecosystem

WHAT IS R?
WHY NOT MOVE FASTER TO R?
WHY DO CROs SECURE
THEMSELVES BY CREATING R
DEPARTMENT?

R is an **open-source** programming language widely used for data **visualization**, **statistical computing**, and generating high-quality tables and figures.

Interactivity

**Data Handling
and Reactivity**

**Integration
with R**

**Data
Visualization**

WHAT IS R SHINY? WHY DO WE USE IT?

Shiny is an opensource R **package** that provides an elegant and powerful web framework for building web applications using R. Shiny helps you turn your analyses into interactive web applications.



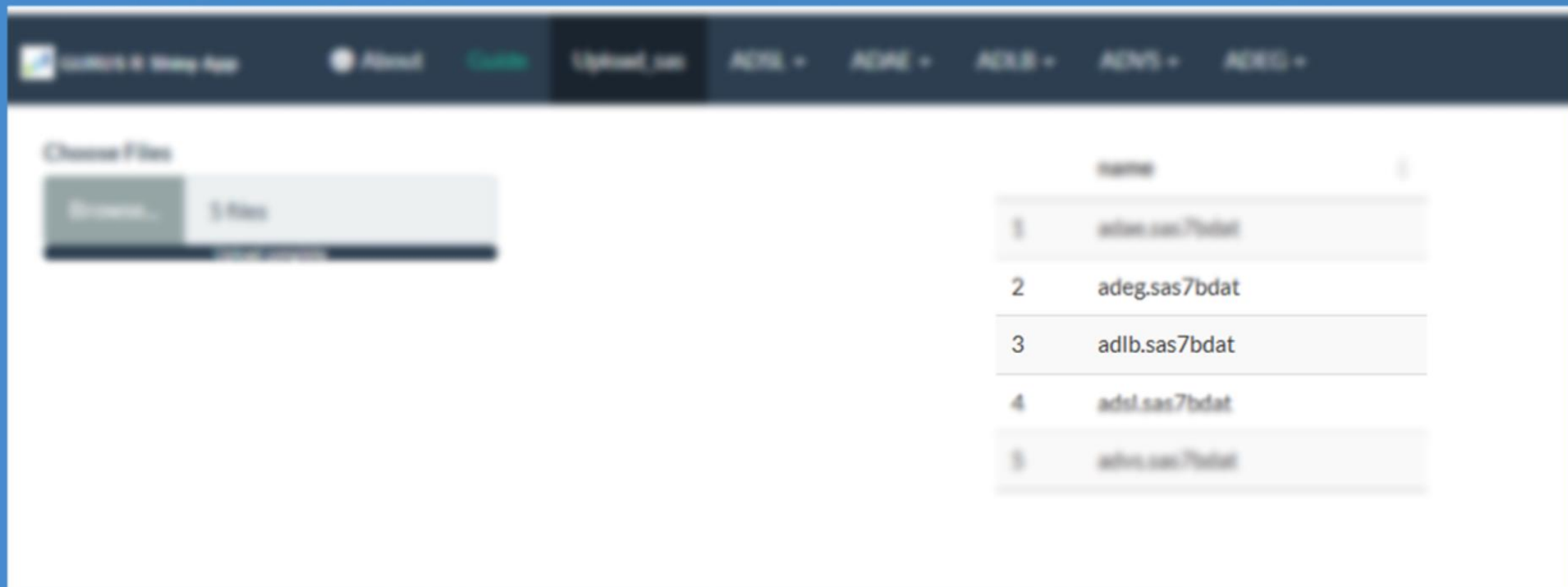
Data
Upload

Input value
Generation

Input Selection
by User

Output
Generation

Data Upload



The screenshot displays a web application interface for data upload. At the top, a dark navigation bar contains several tabs: 'Uploads', 'ADTL', 'ADPE', 'ADLB', 'ADNS', and 'ADRG'. The 'Uploads' tab is currently selected. Below the navigation bar, on the left, is a 'Choose Files' section with a 'Choose...' button and a file list area showing '3 files'. On the right, a table lists the uploaded files with a 'name' column and an index column.

	name
1	adtl.sas7bdat
2	adpe.sas7bdat
3	adlb.sas7bdat
4	adns.sas7bdat
5	adrg.sas7bdat

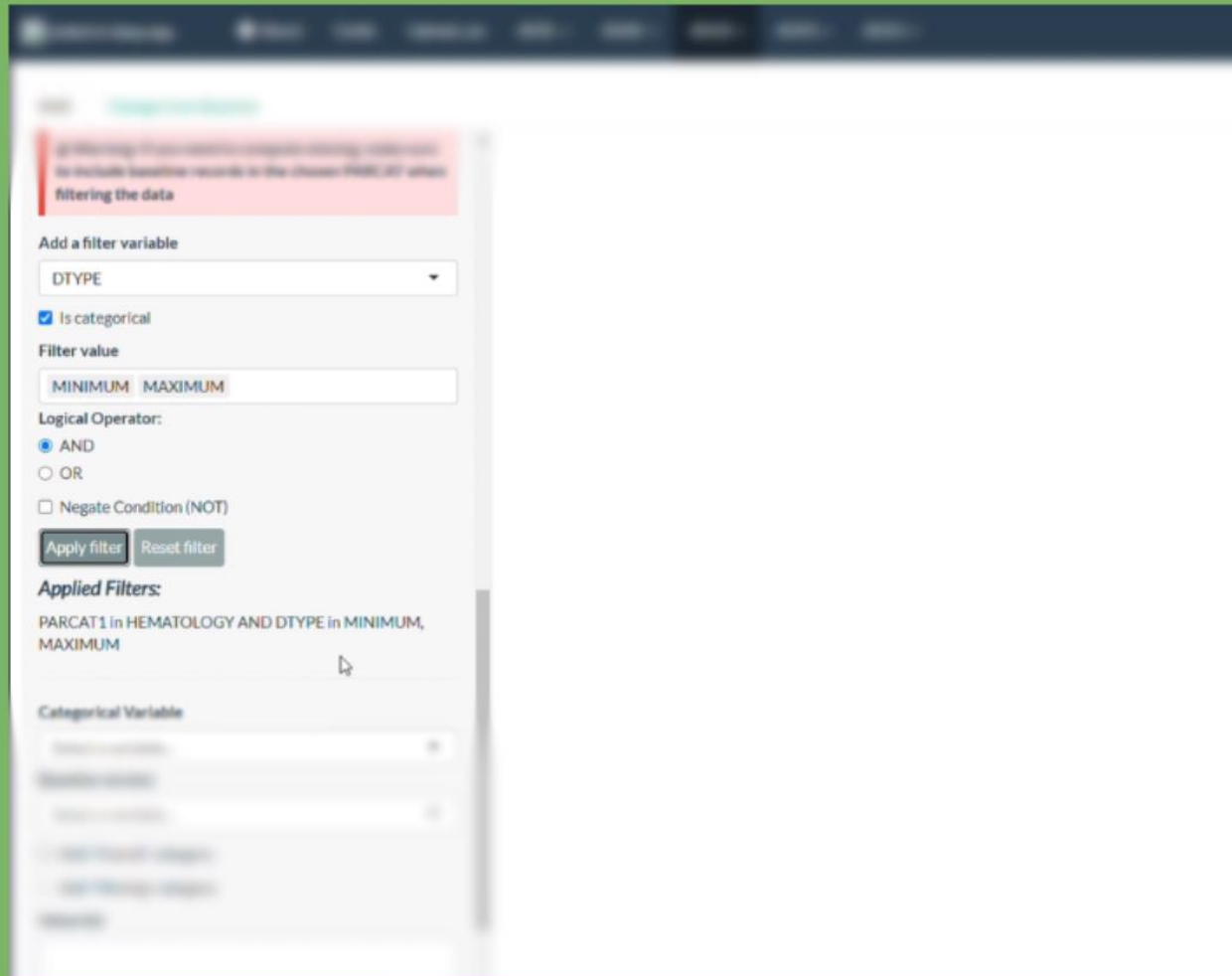
Input value Generation

The screenshot shows a software interface for input value generation. On the left is a sidebar with various filters and settings. The main panel on the right is currently empty.

Filters and Settings:

- ☒ Denominator for percentages is different from N
- Filter for denominator for percentages: PARCAT1
- ☒ Is categorical
- Filter value: [Empty text box]
- Filter value dropdown menu (visible options):
 - HEMATOLOGY
 - CHEMISTRY
 - COAGULATION
 - URINALYSIS
 - COLLAGEN BIOMARKERS
 - VIRUS SEROLOGY
 - FSH
- Grouping variable: [Empty text box]

Input Selection by User



The screenshot shows a web application interface for filtering data. At the top, there is a dark blue navigation bar with several icons. Below it, a red banner contains the text: "Be Warning! When selecting categorical variables, be include baseline records in the dataset FIRST, NOT when filtering the data".

The main filter panel is titled "Add a filter variable" and contains the following elements:

- A dropdown menu with "DTYPE" selected.
- A checked checkbox labeled "Is categorical".
- A "Filter value" section with a text input field containing "MINIMUM" and "MAXIMUM".
- A "Logical Operator:" section with three options: "AND" (selected with a radio button), "OR" (unselected), and "Negate Condition (NOT)" (unselected).
- Two buttons: "Apply filter" and "Reset filter".

Below the filter panel, the "Applied Filters:" section displays the text: "PARCAT1 in HEMATOLOGY AND DTYPE in MINIMUM, MAXIMUM".

At the bottom, there is a "Categorical Variable" section with a list of variables and checkboxes.

Output Generation

The screenshot shows a web application for clinical trial data analysis. The top navigation bar includes links for Home, Guide, Upload_sas, ADSL, ADAE, ADLB, ADVS, and ADEG. The main content area displays a table of results for the parameter 'Basophils, Blood (10^9/L)'. The table is filtered by DTYPES 'MINIMUM' and 'MAXIMUM'. The table has columns for PARAM, DTYPES, TRT01PN, TRT01P, ACATa, Low, Normal, High, and Overall. The data is organized by treatment groups: Treatment B (N = 37, m = 5), Treatment C (N = 38, m = 5), and Placebo (N = 37, m = 5). The table also includes an overall summary for the entire dataset (N = 150, m = 5).

PARAM	DTYPES	TRT01PN	TRT01P	ACATa	Low	Normal	High	Overall
Basophils, Blood (10^9/L)	MINIMUM	2	Treatment B (N = 37, m = 5)	Low	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
				Normal	0 (0.00)	2 (40.00)	0 (0.00)	2 (40.00)
				High	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
				Overall	0 (0.00)	2 (40.00)	0 (0.00)	2 (40.00)
		3	Treatment C (N = 38, m = 5)	Low	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
				Normal	0 (0.00)	1 (20.00)	0 (0.00)	1 (20.00)
		4	Placebo (N = 37, m = 5)	Low	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
				Normal	0 (0.00)	2 (40.00)	0 (0.00)	2 (40.00)
		99	Overall (N = 150, m = 5)	Low	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
				Normal	0 (0.00)	5 (100.00)	0 (0.00)	5 (100.00)
	MAXIMUM	2	Treatment B (N = 37, m = 5)	Low	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
				Normal	0 (0.00)	2 (40.00)	0 (0.00)	2 (40.00)
				High	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

Datasets/Outputs



ADSL

ADAE

ADLB/ADVS/
ADEG/Other
Analysis Datasets

Listing

Filter the data
Variable

AGE

☐ Categorical

Select range:

40

 to

75

☐ Include NA values

Logical Operator

☒ AND ☐ OR

☐ Negate (NOT)

Apply Filter

Reset Filter

Applied Filters:
RANFL in Y AND COHORT in B OR EOSSTT in DISCONTINUED AND AGE in range [40 , 75]

Replace Missing ?

STUDYID

Replacing String

Replace

Column to Modify

RFICDY

Prefix

(

Suffix

)

Update

Show

25

 entries
Search:

	TRT01P	SUBJID	RFICDY (RFICDY)
1	Treatment B	001-210	2023-01-20 (-32)
2	Treatment B	002-206	2023-01-19 (-49)
3	Treatment B	002-208	2023-03-29 (-21)
4	Placebo	008-107	2023-01-27 (-56)
5	Treatment B	016-109	2022-12-02 (-59)
6	Treatment B	031-114	2023-02-07 (-58)
7	Treatment A	031-212	2023-03-24 (-54)
8	Treatment A	040-110	2022-11-15 (-59)
9	Treatment B	040-121	2023-01-19 (-57)
10	Placebo	040-133	2023-03-06 (-58)
11	Treatment C	040-136	2023-03-08 (-58)
12	Treatment C	040-137	2023-03-08 (-58)
13	Treatment B	043-107	2022-10-03 (-42)
14	Treatment C	043-112	2023-03-16 (-49)
15	Treatment B	045-113	2023-03-13 (-51)
16	Treatment B	046-106	2023-01-05 (-50)
17	Placebo	046-109	2023-02-27 (-60)
18	Treatment A	046-111	2023-03-09 (-60)
19	Treatment A	046-202	2023-02-21 (-28)
20	Treatment B	048-104	2022-10-12 (-54)

Demographic Table

Analysis Set

ENRLFL

Number of subjects: 706

Variable(s)

ETHNIC

AGE

Group by

TRT01A

Round to

2

☐ Include Missing Values

Generate

☒ Add a Codelist

Upload (xlsx)

Browse...

CODELIST.xlsx

Upload complete

Small N Calculations

Add Filter

Reset Filter

Variable

Value(s)

Apply Filter to

Filter by

Variable(s)

v1

v2

v3

v4

v5

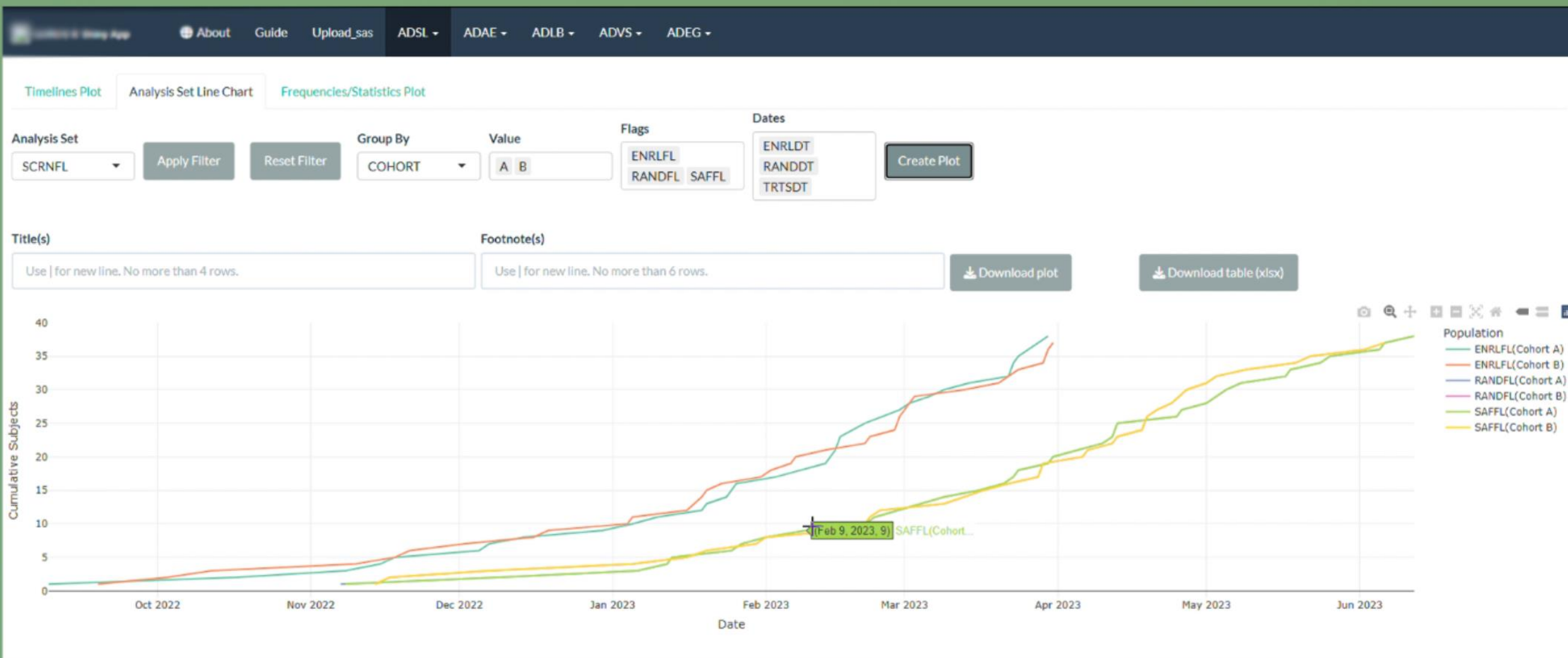
v6

v7

Download (xlsx)

	Characteristics	Treatment A (N = 38)	Treatment B (N = 37)	Treatment C (N = 38)
1	Ethnic, n(%)			
2	HISPANIC OR LATINO	13 (34.21)	14 (37.84)	20 (52.63)
3	NOT HISPANIC OR LATINO	25 (65.79)	23 (62.16)	18 (47.37)
4	UNKNOWN	0 (0.00)	0 (0.00)	0 (0.00)
5	Age			
6	n	38	37	38
7	Mean (SD)	55.13 (10.888)	56.59 (12.575)	56.00 (10.382)
8	Median	55.00	61.00	57.50
9	Min, Max	28, 72	27, 74	29, 73

Enrollment Over Time Figure



SOC/PT Table

SOC/PT

SOC/PT by Max xx

AE Overview

Analysis set

SAFFL

Adverse Event

AEDECOD

SOC

AESOC

Grouping variable and ADSL variable for big N

Grouping variable

TRTA

BIGN variable

TRT01A

Round to

2

Add Filter

Reset

Select variable

STUDYID

Select value(s)

GURUS-1234

Done!

Variable(s)

v1 v2 v3 v4 v5 v6 v7 v8

Download format

sas7bdat

Download

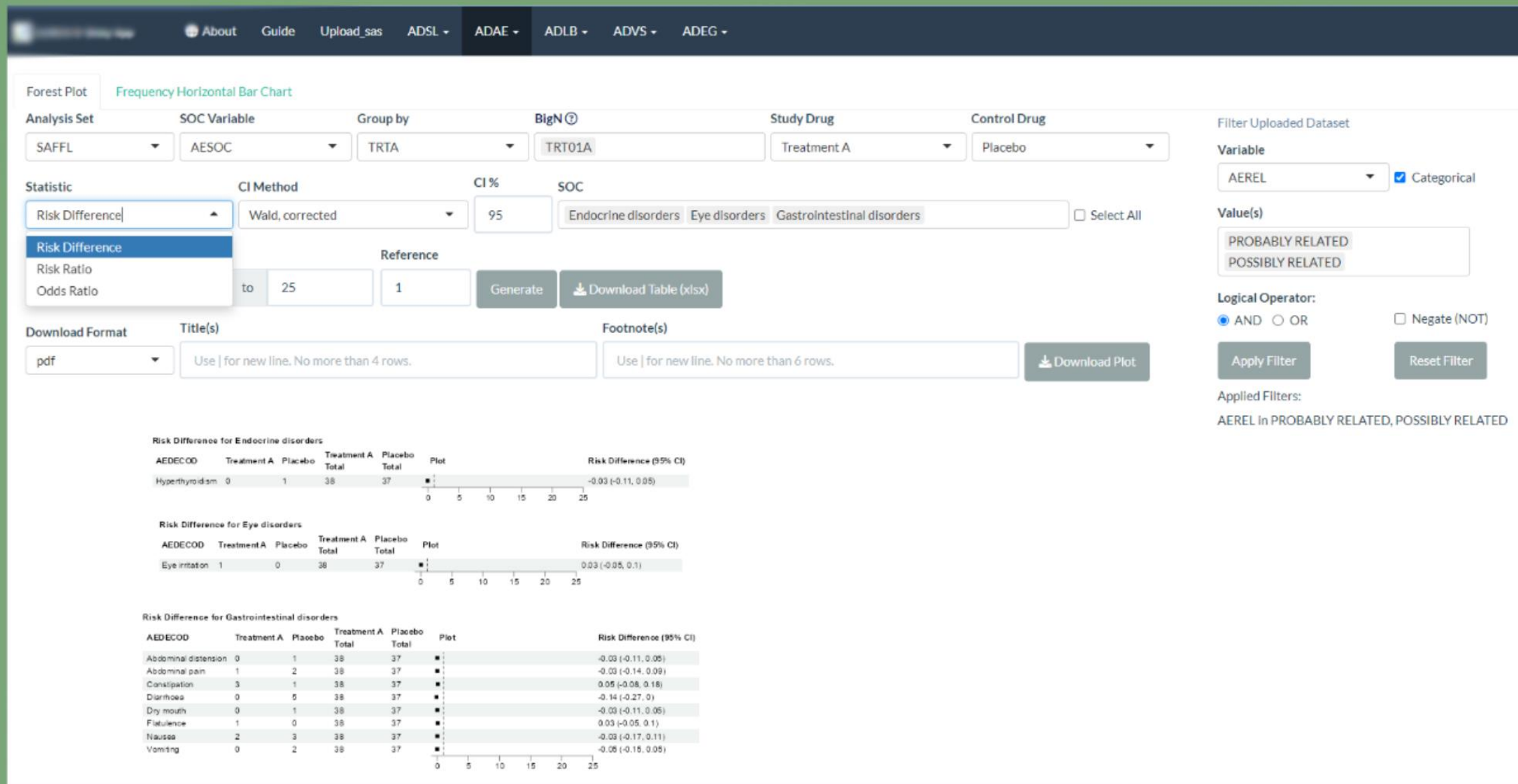
Show 257 entries

MedDRA Primary System Organ Class/Preferred Term	Statistic	Treatment A (N=38)	Treatment B (N=37)	Treatment C (N=3)
Hypothyroidism	n (%), Events	0 (0.0), 0	0 (0.0), 0	0 (0.0), 0
Thyroid mass	n (%), Events	0 (0.0), 0	0 (0.0), 0	0 (0.0), 0
+ Eye disorders	n (%), Events	1 (2.63), 1	1 (2.70), 1	2 (5.26), 2
+ Gastrointestinal disorders	n (%), Events	14 (36.84), 19	15 (40.54), 43	13 (34.21), 27
Abdominal discomfort	n (%), Events	0 (0.0), 0	0 (0.0), 0	0 (0.0), 0
Abdominal distension	n (%), Events	2 (5.26), 2	2 (5.41), 2	0 (0.0), 0
Abdominal pain	n (%), Events	2 (5.26), 2	2 (5.41), 3	1 (2.63), 1
Abdominal pain upper	n (%), Events	0 (0.0), 0	1 (2.70), 5	2 (5.26), 2
Barrett's oesophagus	n (%), Events	0 (0.0), 0	0 (0.0), 0	0 (0.0), 0
Constipation	n (%), Events	3 (7.89), 3	3 (8.11), 3	2 (5.26), 4

Showing 1 to 257 of 257 entries

Previous 1 Next

Forest Plot



Shift Table

Shift Change from Baseline

Warning: If you need to compute missing, make sure to include baseline records in the chosen PARCAT when filtering the data, they will be removed from final output

Variable

PARCAT1

☒ Categorical

Filter value

HEMATOLOGY

Logical Operator

☒ AND ☐ OR ☐ Negate (NOT)

Apply Filter

Reset Filter

Applied Filters:

ABLFL in Y OR AVISIT in Day 60, Day 90, Day 120 AND PARCAT1 in HEMATOLOGY

Categorical/Variable

ANRIND

Baseline Version

BNRIND

☒ 'Overall' category

☒ 'Missing' category

Value list

Low, Normal, High, Missing, Overall

ANRIND

1

2 High

3 Low

4 Normal

Show 100 entries

Search:

PARAM	AVISIT	TRT01P	ACATs	Low	Normal	High	Missing	Overall
Basophils, Blood [10 ⁹ /L]	Day 60	Treatment A (N = 36)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Normal	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Missing	0 (0.0)	0 (0.0)	0 (0.0)	36 (100.0)	36 (100.0)
			Overall	0 (0.0)	0 (0.0)	0 (0.0)	36 (100.0)	36 (100.0)
		Treatment B (N = 37)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Normal	0 (0.0)	1 (2.7)	0 (0.0)	0 (0.0)	1 (2.7)
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Missing	0 (0.0)	2 (5.4)	0 (0.0)	34 (91.9)	36 (97.3)
			Overall	0 (0.0)	3 (8.1)	0 (0.0)	34 (91.9)	37 (100.0)
		Treatment C (N = 36)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Normal	0 (0.0)	1 (2.6)	0 (0.0)	0 (0.0)	1 (2.6)
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Missing	0 (0.0)	0 (0.0)	0 (0.0)	37 (100.0)	37 (100.0)
			Overall	0 (0.0)	1 (2.6)	0 (0.0)	37 (100.0)	37 (100.0)
		Placebo (N = 37)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Normal	0 (0.0)	2 (5.4)	0 (0.0)	0 (0.0)	2 (5.4)
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
			Missing	0 (0.0)	0 (0.0)	0 (0.0)	35 (94.7)	35 (94.7)
			Overall	0 (0.0)	2 (5.4)	0 (0.0)	35 (94.7)	37 (100.0)

Warning: If you need to compute missing, make sure to include baseline records in the chosen PARCAT when filtering the data, they will be removed from final output

Variable

DTYPE

☒ Categorical

Filter value

MINIMUM MAXIMUM

Logical Operator

☒ AND ☐ OR ☐ Negate (NOT)

Apply Filter

Reset Filter

Applied Filters:

PARCAT1 in HEMATOLOGY AND DTYPE in MINIMUM, MAXIMUM

Show 100 entries		Search:						
PARAM	DTYPE	TRT01P	ACATs	Low	Normal	High	Overall	
Basophils, Blood [10 ⁹ /L]	MINIMUM	Treatment B (N = 37, n = 5)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Normal	0 (0.0)	2 (40.0)	0 (0.0)	2 (40.0)	
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Overall	0 (0.0)	2 (40.0)	0 (0.0)	2 (40.0)	
		Treatment C (N = 36, n = 5)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Normal	0 (0.0)	1 (20.0)	0 (0.0)	1 (20.0)	
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Overall	0 (0.0)	1 (20.0)	0 (0.0)	1 (20.0)	
		Placebo (N = 37, n = 5)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Normal	0 (0.0)	2 (40.0)	0 (0.0)	2 (40.0)	
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Overall	0 (0.0)	2 (40.0)	0 (0.0)	2 (40.0)	
		Overall (N = 150, n = 5)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Normal	0 (0.0)	5 (100.0)	0 (0.0)	5 (100.0)	
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Overall	0 (0.0)	5 (100.0)	0 (0.0)	5 (100.0)	
	MAXIMUM	Treatment B (N = 37, n = 5)	Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Normal	0 (0.0)	2 (40.0)	0 (0.0)	2 (40.0)	
			High	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
			Overall	0 (0.0)	2 (40.0)	0 (0.0)	2 (40.0)	

Change from Baseline Table

Shift

Change from Baseline

Analysis Set

Group by

BigN ?

SAFFL

TRT01P

TRT01P

Filter Uploaded ADLB dataset.

Variable

AVISIT

☒ Categorical?

Value(s)

Day 60

Day 90

Day 120

Logical Operator:

☒ AND ☐ OR

☐ Negate (NOT)

Apply Filter

Reset Filter

Applied Filters:
PARCAT1 in HEMATOLOGY AND AVISIT in Day 60, Day 90, Day 120
Note: If numeric versions of the variables are present, select them also (before their character equivalents) for sorting.

Group by ?

PARAM

AVISITN

AVISIT

Generate

Variable(s)

v1

v2

v3

v4

v5

v6

v7

v8

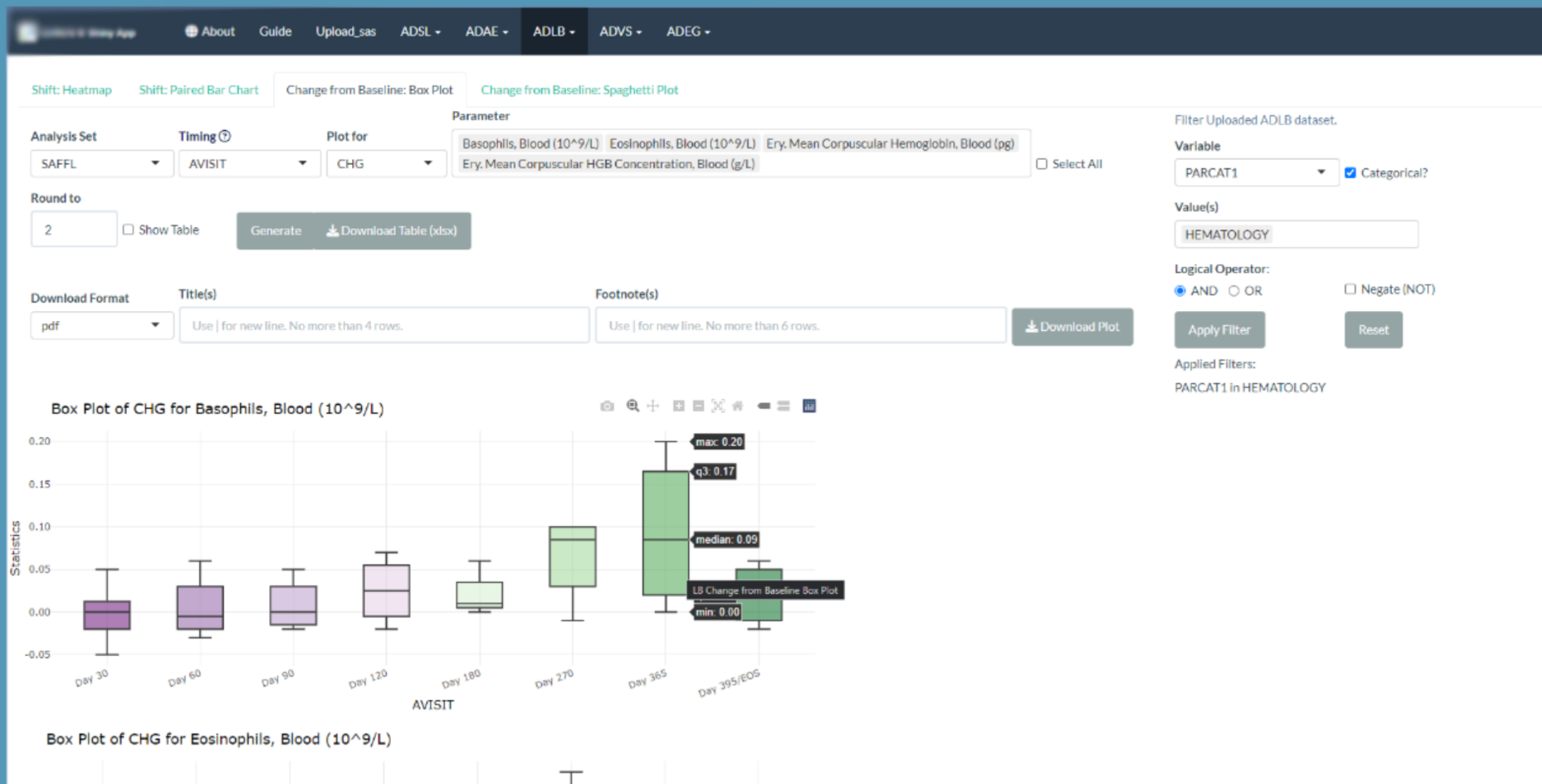
v9

Download (xlsx)

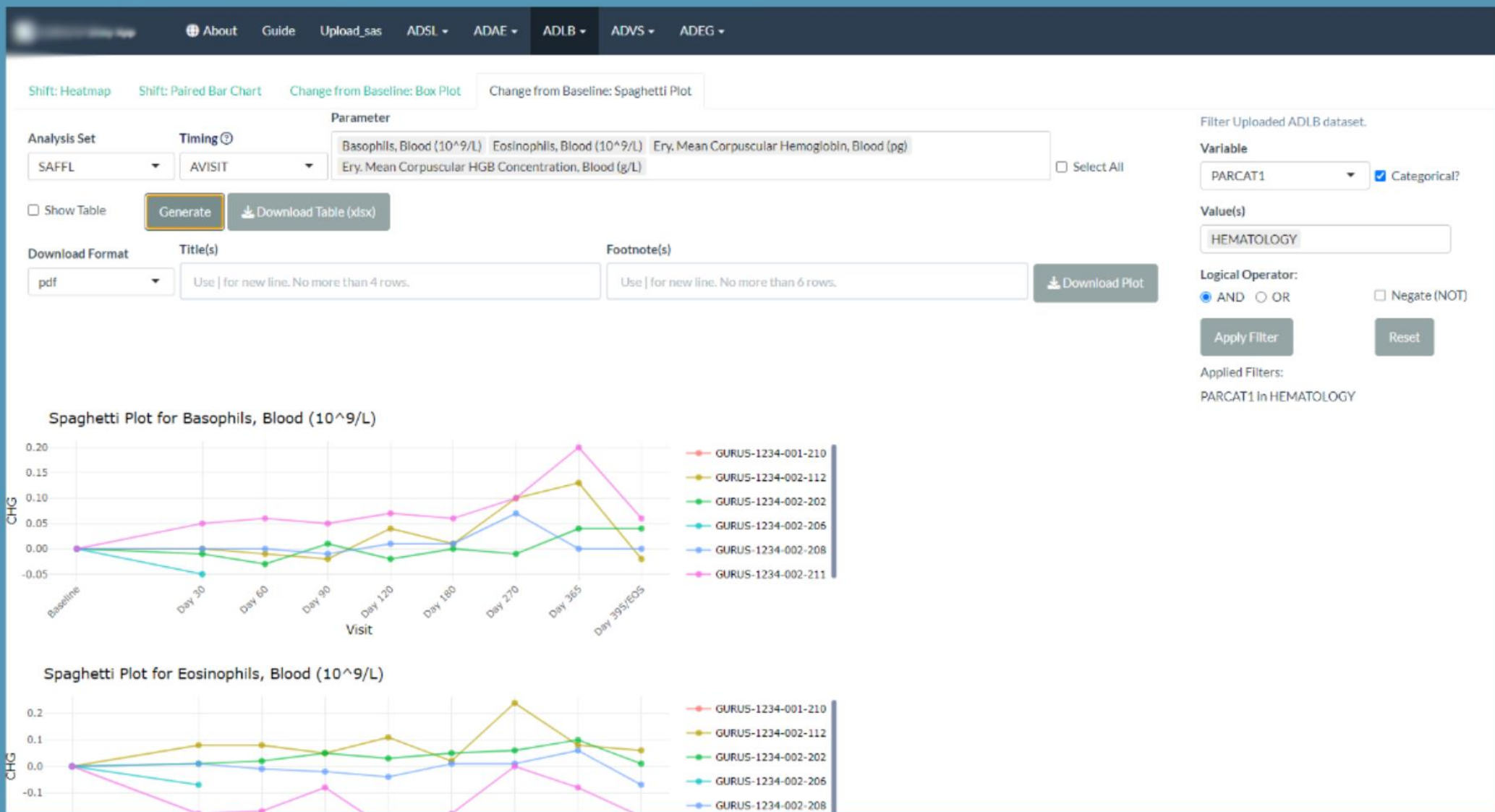
Show 25 entries

PARAM	AVISITN	AVISIT	Statistics	Treatment A (N=38)	Treatment B (N=37)	Treatment C (N=38)	Placebo (N=37)
Basophils, Blood (10^9/L)	3	Day 60	n	0	1	1	2
Basophils, Blood (10^9/L)	3	Day 60	Mean (SD)	0.0 (0.00)	0.020 (NA)	0.030 (NA)	0.035 (0.0354)
Basophils, Blood (10^9/L)	3	Day 60	Median	0.0	0.020	0.030	0.035
Basophils, Blood (10^9/L)	3	Day 60	Min, Max	0,0	0.02, 0.02	0.03, 0.03	0.01, 0.06
Basophils, Blood (10^9/L)	3	Day 60 Change from Baseline	n	0	1	1	2
Basophils, Blood (10^9/L)	3	Day 60 Change from Baseline	Mean (SD)	0.0 (0.00)	0.000 (NA)	-0.010 (NA)	0.015 (0.0636)
Basophils, Blood (10^9/L)	3	Day 60 Change from Baseline	Median	0.0	0.000	-0.010	0.015
Basophils, Blood (10^9/L)	3	Day 60 Change from Baseline	Min, Max	0,0	0,0	-0.01, -0.01	-0.03, 0.06
Basophils, Blood (10^9/L)	4	Day 90	n	0	1	1	2
Basophils, Blood (10^9/L)	4	Day 90	Mean (SD)	0.0 (0.00)	0.010 (NA)	0.020 (NA)	0.050 (0.0000)
Basophils, Blood (10^9/L)	4	Day 90	Median	0.0	0.010	0.020	0.050
Basophils, Blood (10^9/L)	4	Day 90	Min, Max	0,0	0.01, 0.01	0.02, 0.02	0.05, 0.05
Basophils, Blood (10^9/L)	4	Day 90 Change from Baseline	n	0	1	1	2
Basophils, Blood (10^9/L)	4	Day 90 Change from Baseline	Mean (SD)	0.0 (0.00)	-0.010 (NA)	-0.020 (NA)	0.030 (0.0283)
Basophils, Blood (10^9/L)	4	Day 90 Change from Baseline	Median	0.0	-0.010	-0.020	0.030
Basophils, Blood (10^9/L)	4	Day 90 Change from Baseline	Min, Max	0,0	-0.01, -0.01	-0.02, -0.02	0.01, 0.05

Boxplot



Spaghetti Plot





SAVE TIME



**SAVE
RESOURCES**



**TESTED IN
PRACTICE**

Advantages

THANK YOU