

Is every programmed report a part of your CSR? Stay a step ahead with Lean SAP and digitalization

Sowmya Singuluri
sowmya.singuluri@novartis.com

- In pharma world our goal is to bring the medicine to patients in the earliest possible time.
- As statistical programmers, we strive hard to plan activities and deliver the analysis reports before planned timelines.
- Statistical analysis plan is the vital document which is translated to dataset specifications and TFL shells .
- Lean SAP leads to lean TFLs focused on addressing key clinical trial questions.
- Very Important question to all study teams- are all the planned and programmed reports a part of your CSRs?

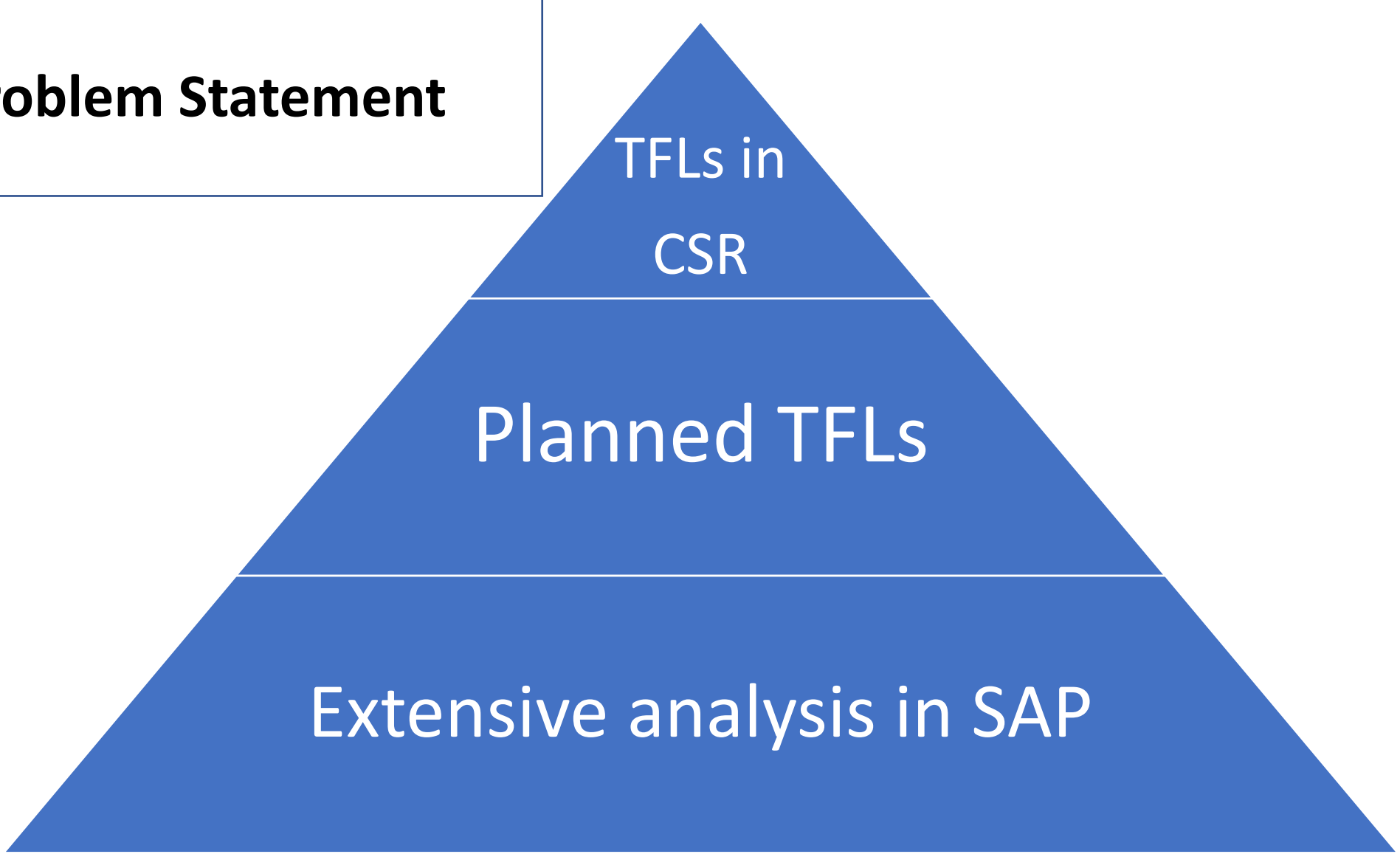
Case Study

- Parallel Study
 - Two arms
- Two Periods - Part 1 and Part 2
- To compare the efficacy and safety profile of study drug vs Comparator.
- Interim data analysis planned after all subjects
 - completes part 1.

Exploring Data with R shiny Apps

- R comes with built-in support for many standard graphs and provides advanced tools that improve the quality and aesthetics of your graphs.
- R shiny is data driven web apps development framework based in R allows the users to develop apps based on their study exploration objectives.
- This is one of the many graphs that is generated using R shiny app for one of our study PK data exploration.

Problem Statement



Mitigation plan

- Lean SAP to focus extensively on key study objectives.
- Is exploratory analysis required for analyzing the primary objective of the trial? If the team suggests to do some exploratory analysis based on which they would like to decide on few data points – initiate the discussion of using R shiny apps to explore the data instead of programming huge number of reports.
- Analysis which are good to have can be analyzed post data base lock and can be included in CSR on need basis.
- Sub-group analysis to be performed on parameters- Most appropriate when those parameters are the stratification factors in trial.
- Listings are required to support some critical analysis but not for all the planned analysis.
- Are there repeated analysis for outputs on multiple analysis sets?

1

- Team planned for extensive analysis of data with different sets of part 1 and part 2 reports for interim and final analysis.
- Initial version of SAP and TFLs were very extensive.

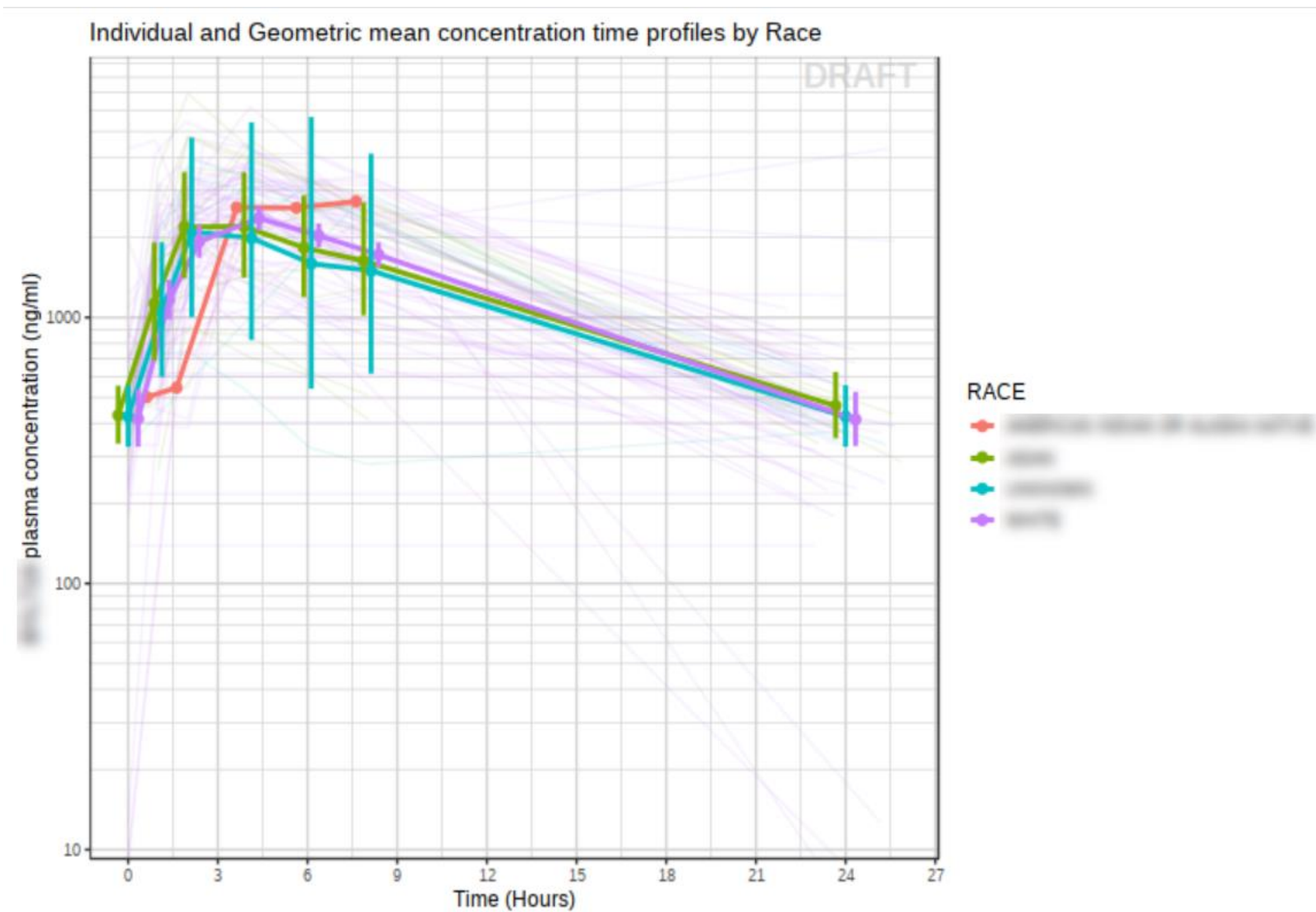
2

- Multiple discussions with the stakeholders on how to optimize the reports within clinical , safety , medical writing, regulatory, programming and statistics team.
- Brainstormed on how much value part 2 data is adding for Interim submission.

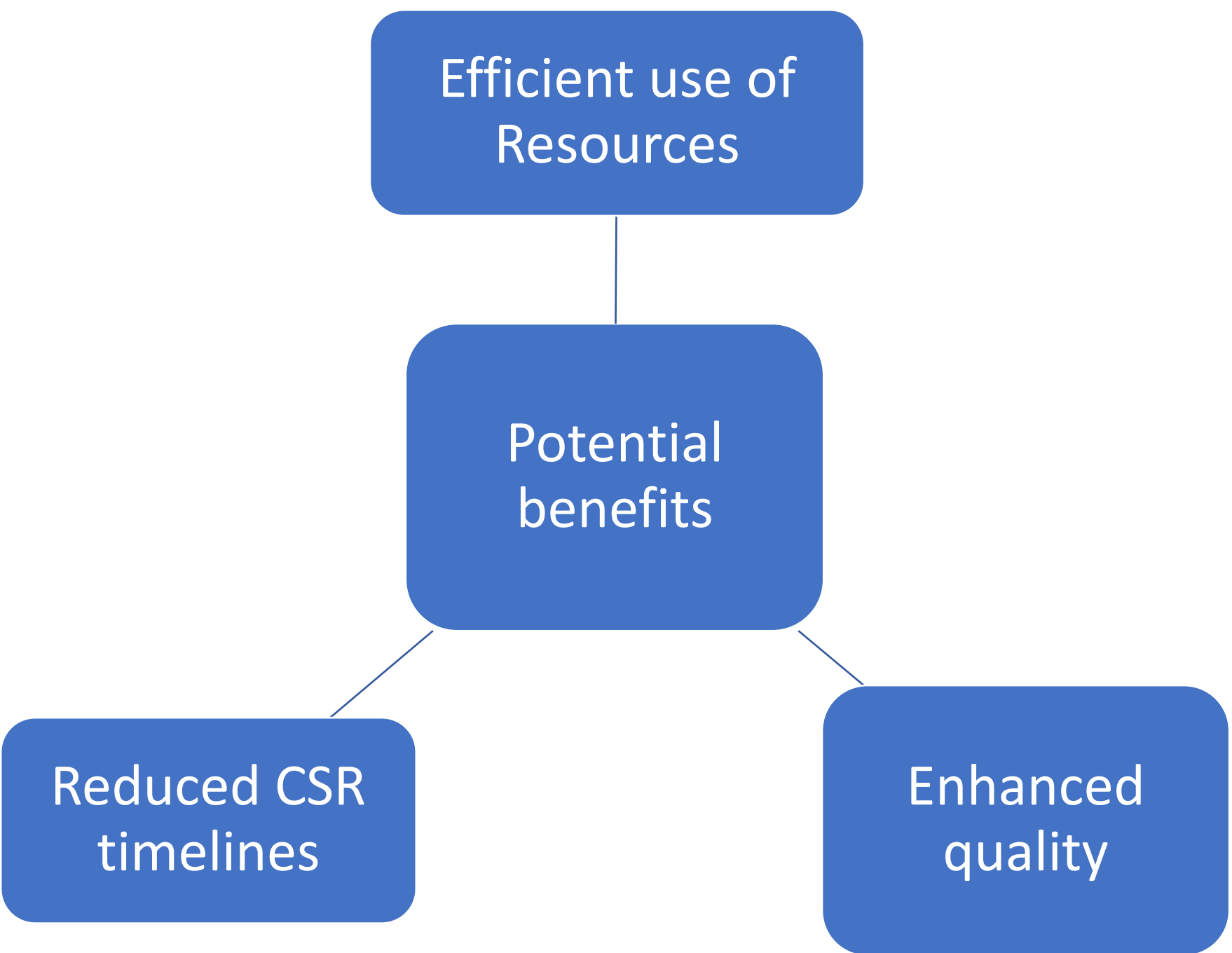
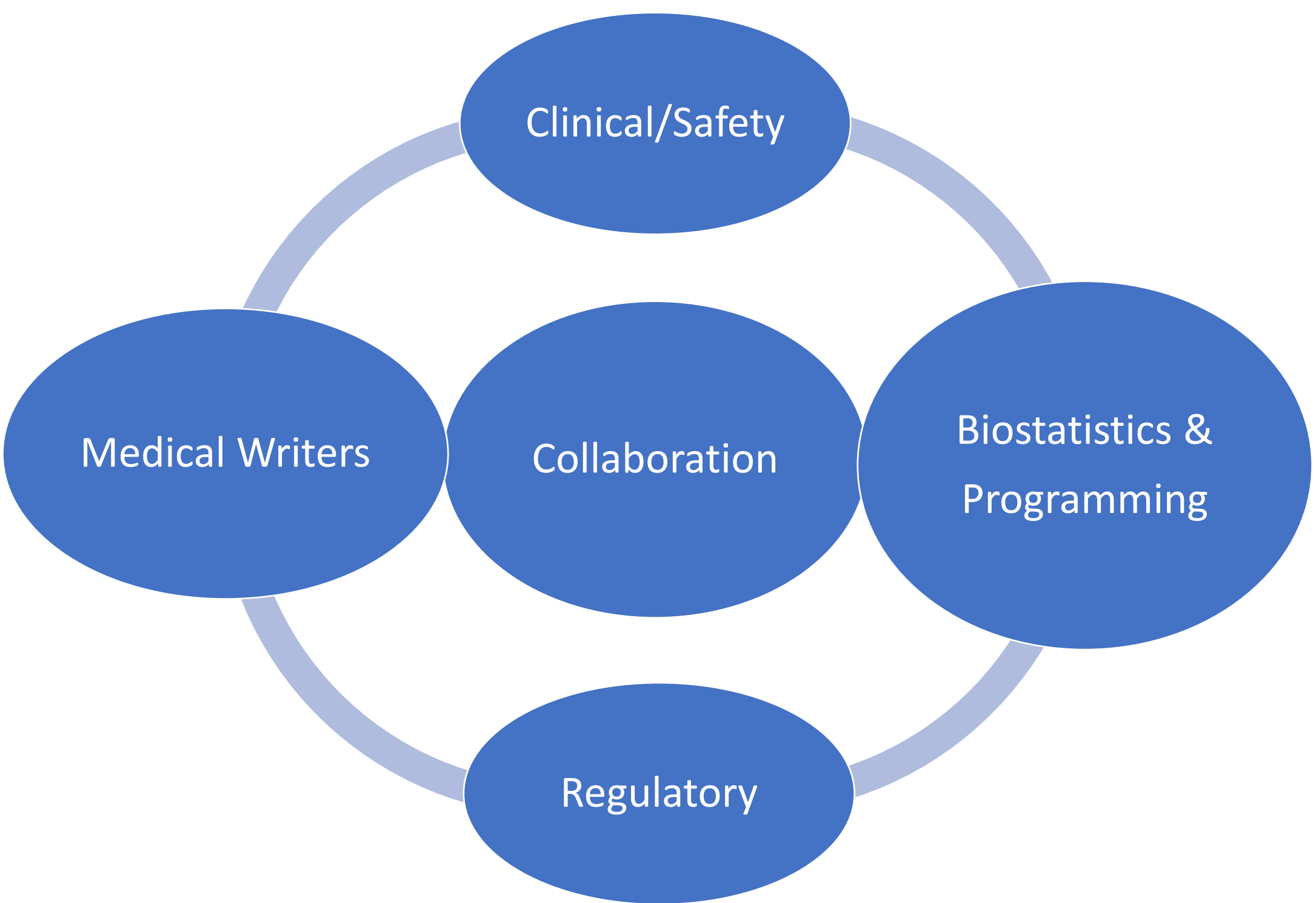
3

- Came to a consensus that only part 1 data to be submitted for Interim submission and decided to submit part 2 data if requested by health authorities .
- The number of TFLs were reduced to half post this discussion.

- This is one of the examples of report created from shiny app to explore the effect of various subgroups on data.
- Instead, if defining subgroups in SAP and deciding which sub-groups would be of interest after looking at the reports study team relied on shiny apps to do the data exploration and decide on what sub-groups really add value to the data.



datapipeline			
Grouping variable (max selection = 3)			
group			
Subpopulation variable			
Y			
Subpopulation level			
Y			
Selection			
Include variables:			
AGEGR3 SEX CURDIS CYTOCAT BMBCAT STRVAL1			
Including all patients			
Demographics			
AGEGR3	130 (21.0%)	16 (12.6%)	114 (23.2%)
SEX	489 (79.0%)	111 (87.4%)	378 (76.8%)
Current Disease Status	407 (65.8%)	86 (67.7%)	321 (65.2%)
CYTOCAT	212 (34.2%)	41 (32.3%)	171 (34.8%)
BM Blast Category at Randomization	15 (2.4%)	13 (10.2%)	2 (0.4%)
Stratification Value 1	4 (0.6%)	0	4 (0.8%)
	600 (96.9%)	114 (89.8%)	486 (98.8%)
	124 (20.0%)	40 (31.5%)	84 (17.1%)
	13 (2.1%)	5 (3.9%)	8 (1.6%)
	73 (11.8%)	11 (8.7%)	62 (12.6%)
	144 (23.3%)	24 (18.9%)	120 (24.4%)
	265 (42.8%)	47 (37.0%)	218 (44.3%)
	217 (35.1%)	48 (37.8%)	169 (34.3%)
	272 (43.9%)	66 (52.0%)	206 (41.9%)
	130 (21.0%)	13 (10.2%)	117 (23.8%)
	229 (37.0%)	58 (45.7%)	171 (34.8%)
	165 (26.7%)	21 (16.5%)	144 (29.3%)
	225 (36.3%)	48 (37.8%)	177 (36.0%)



- Number of studies with 20% - 30% reduction in outputs : 3
- Number of studies with > 30% reduction in outputs : 4