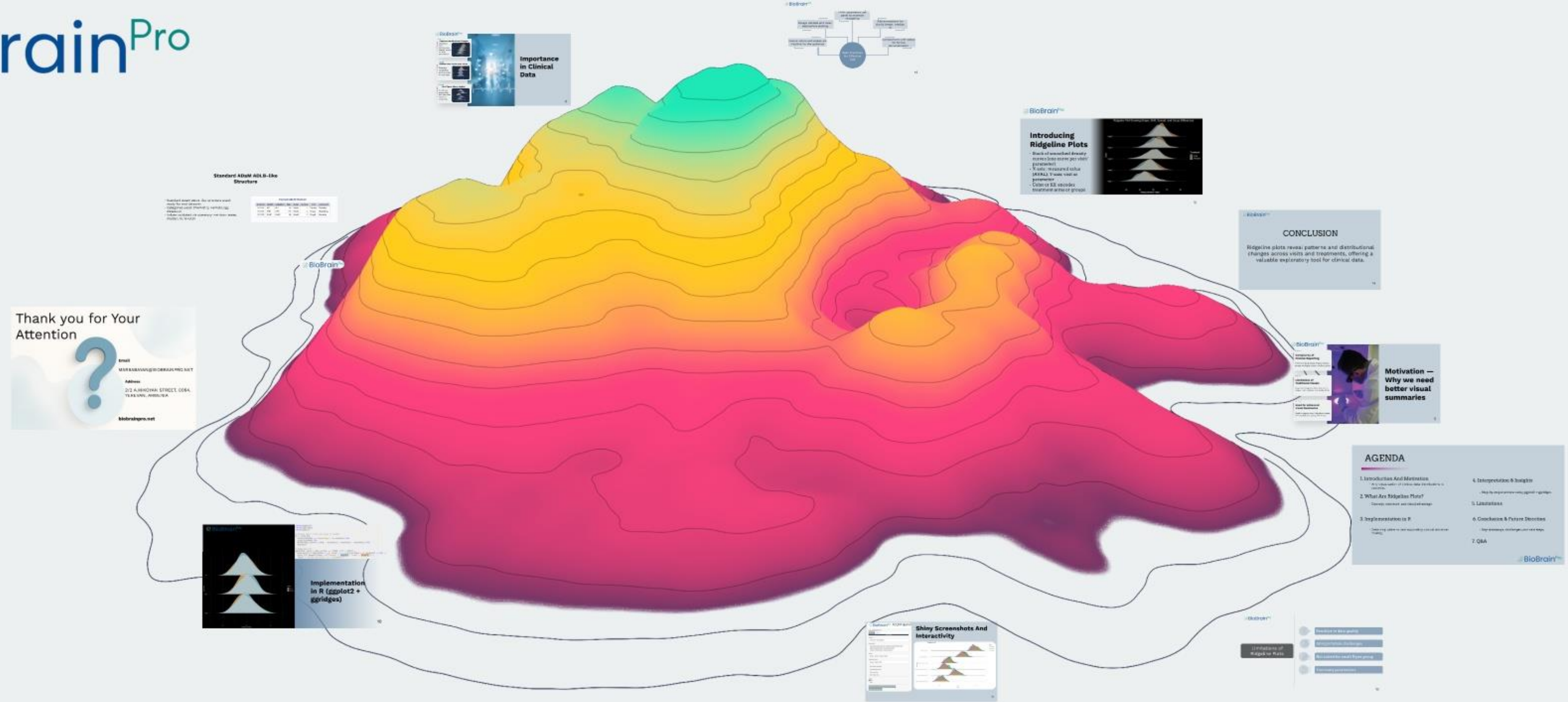




DV06

Cracking the Curve: Unlocking Clinical Insights with Ridgeline Plots

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PHUSE EU Connect 2025

AGENDA

1. Introduction And Motivation

- Why visualization of clinical data distributions is essential.

2. What Are Ridgeline Plots?

- Concept, structure, and visual advantage.

3. Implementation in R

- Detecting patterns and supporting clinical decision-making.

4. Interpretation & Insights

- Step-by-step overview using ggplot2 + ggridges.

5. Limitations

6. Conclusion & Future Direction

- Key takeaways, challenges, and next steps.

7. Q&A

Complexity of Clinical Reporting

Clinical labs: dozens of parameters across multiple visits = endless plots.

2

Limitations of Traditional Visuals

Boxplots/histograms hide distribution shape, multimodality, and subtle shifts.

3

Need for Enhanced Visual Summaries

Need a compact visual that shows shape, shift, spread, and group differences

4



Motivation — Why we need better visual summaries

Complexity of Clinical Reporting

Clinical labs: dozens of parameters
across multiple visits = endless plots.

Limitations of Traditional Visuals

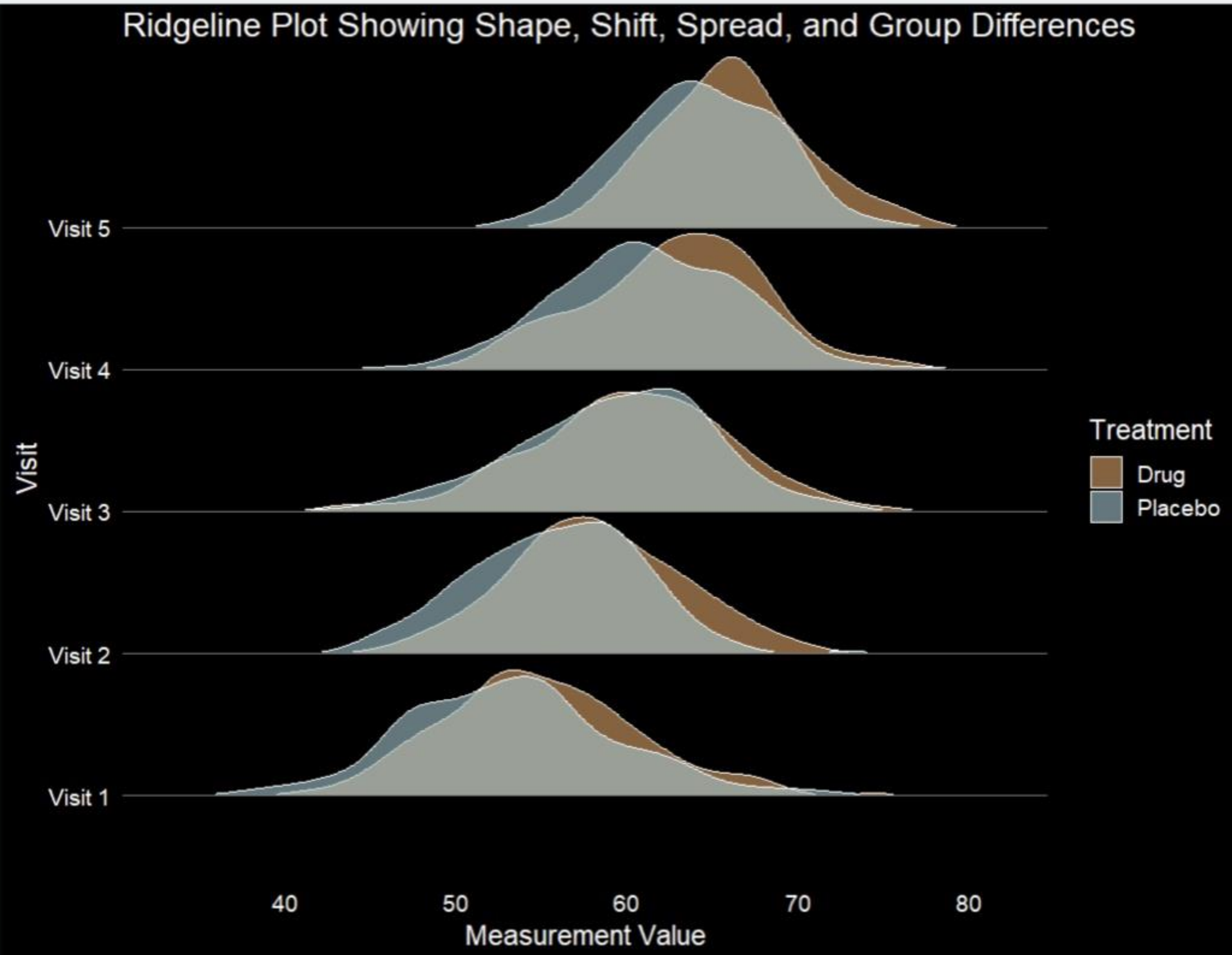
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Need for Enhanced Visual Summaries

Need a compact visual that shows shape, shift, spread, and group differences

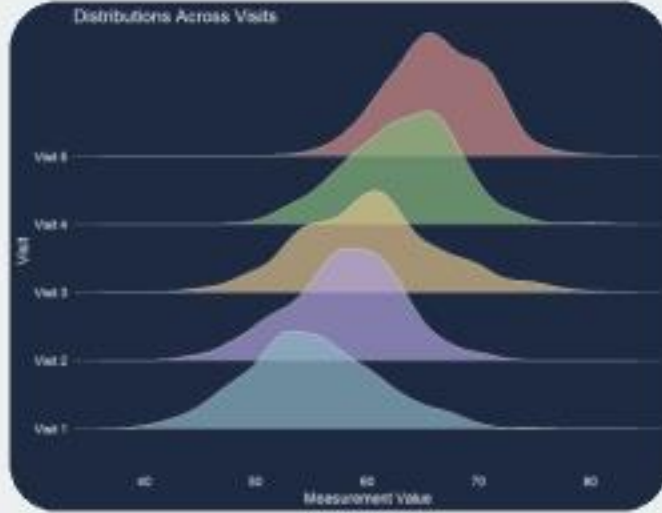
Introducing Ridgeline Plots

- Stack of smoothed density curves (one curve per visit/parameter)
- X-axis : measured value (AVAL), Y-axis: visit or parameter
- Color or fill: encodes treatment arms or groups



Captures Distributional Changes

Visualizes how distributions change across visits or parameters



7

Highlights Critical Insights Across Patients

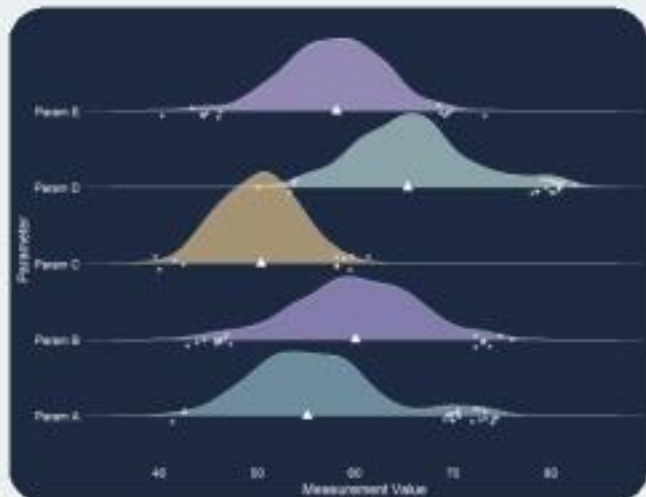
Displays variability and outliers in the data



8

One Figure, Many Insights

Combines many plots into one clear figure for reviewers



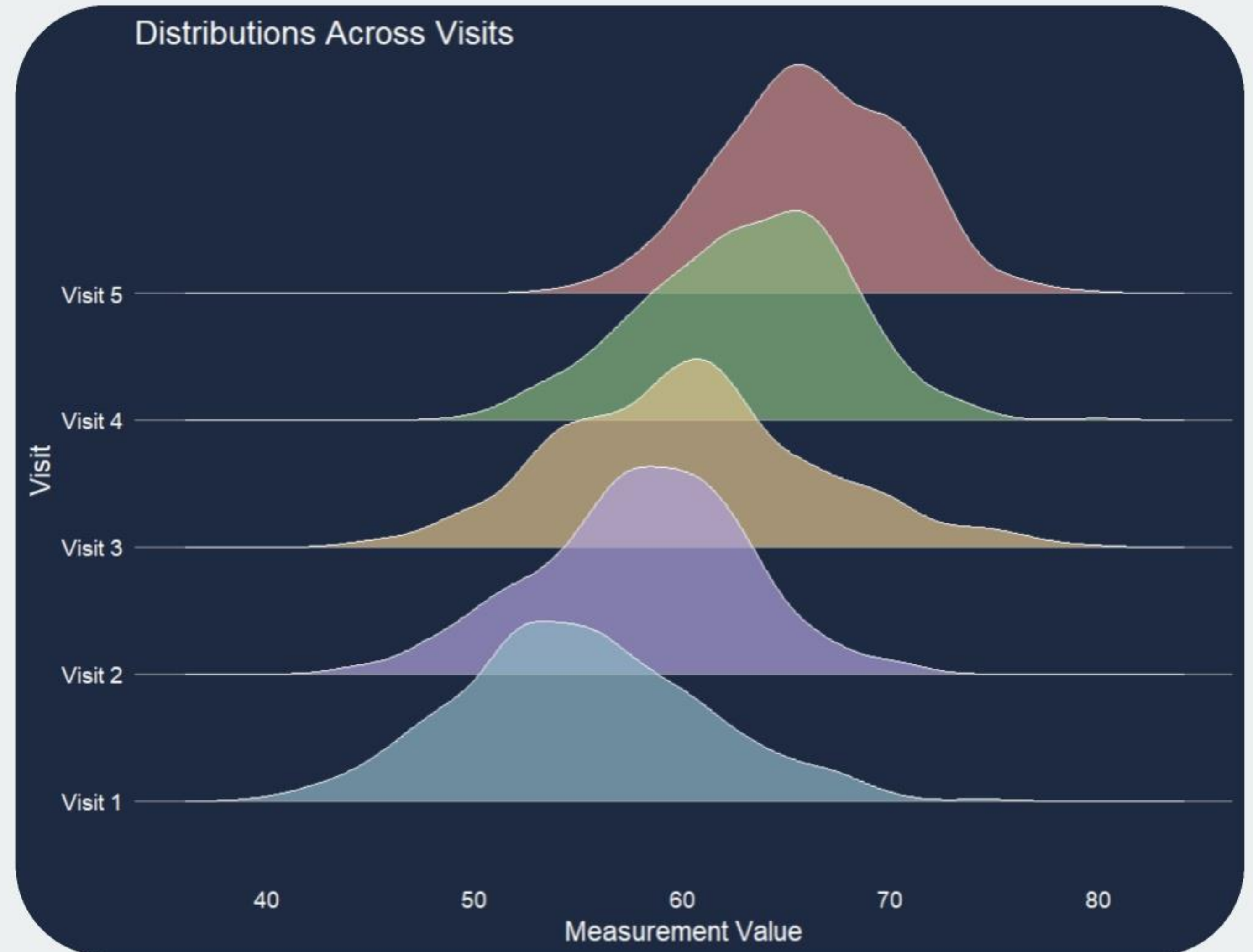
9



Importance in Clinical Data

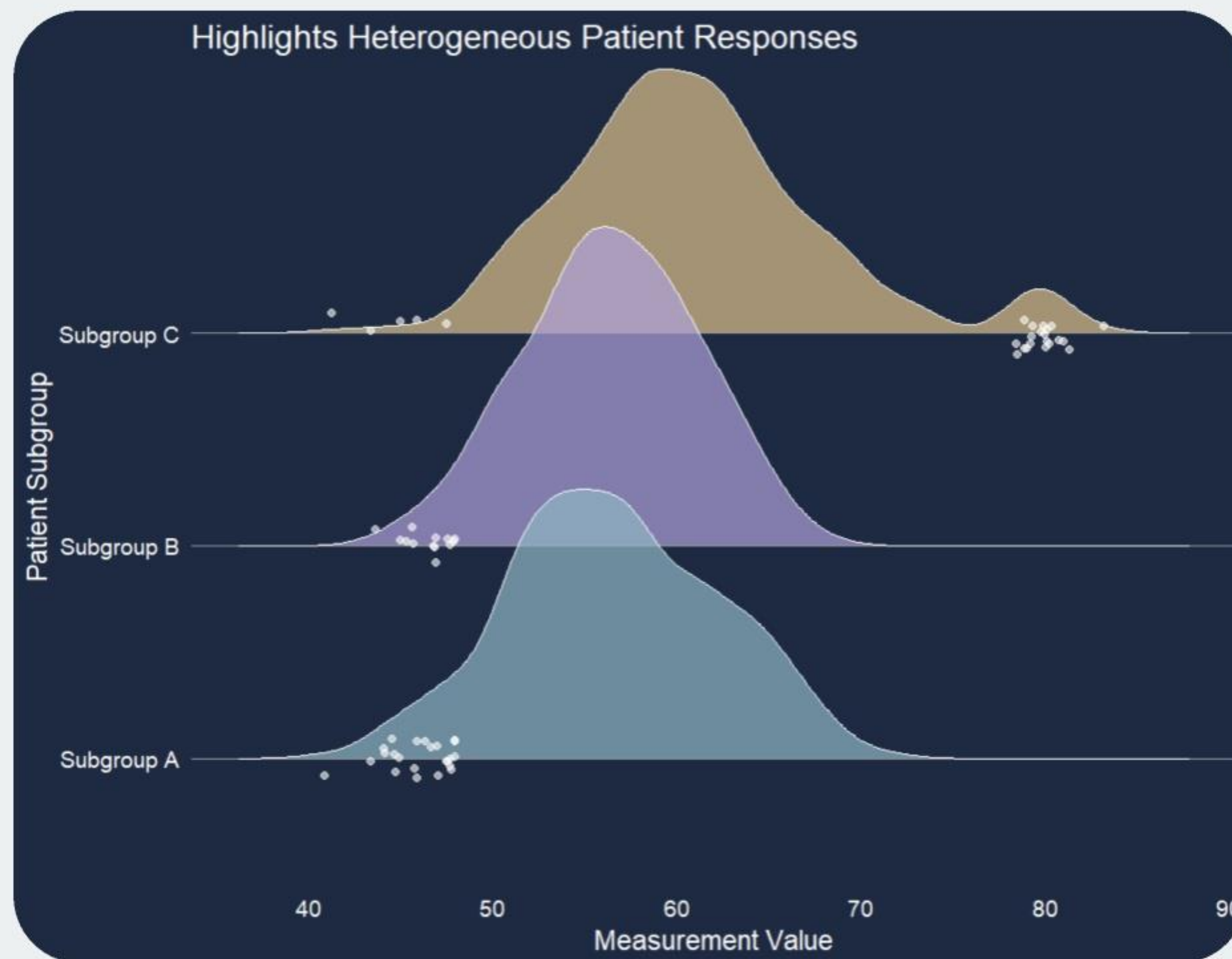
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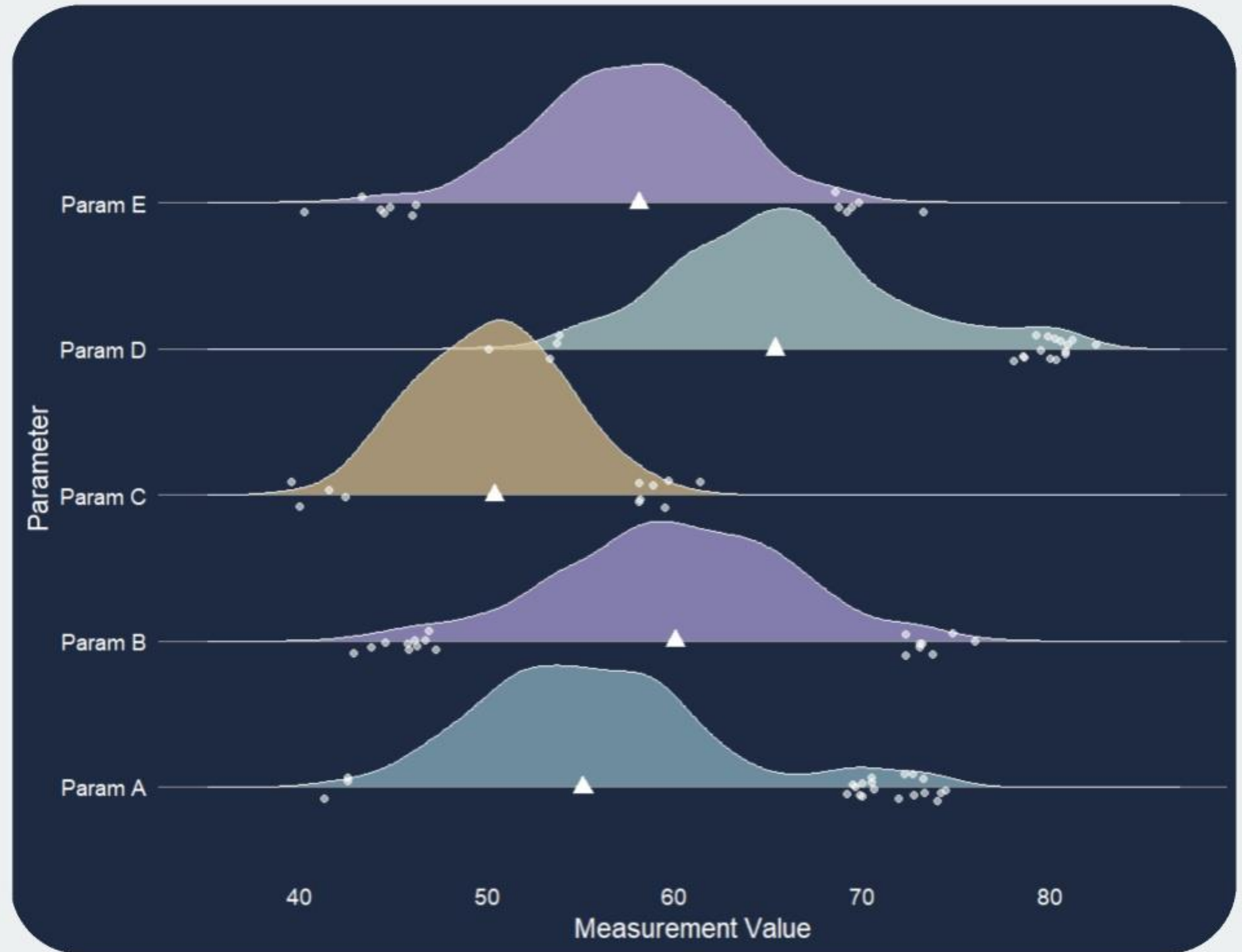
Highlights Critical Insights Across Patients

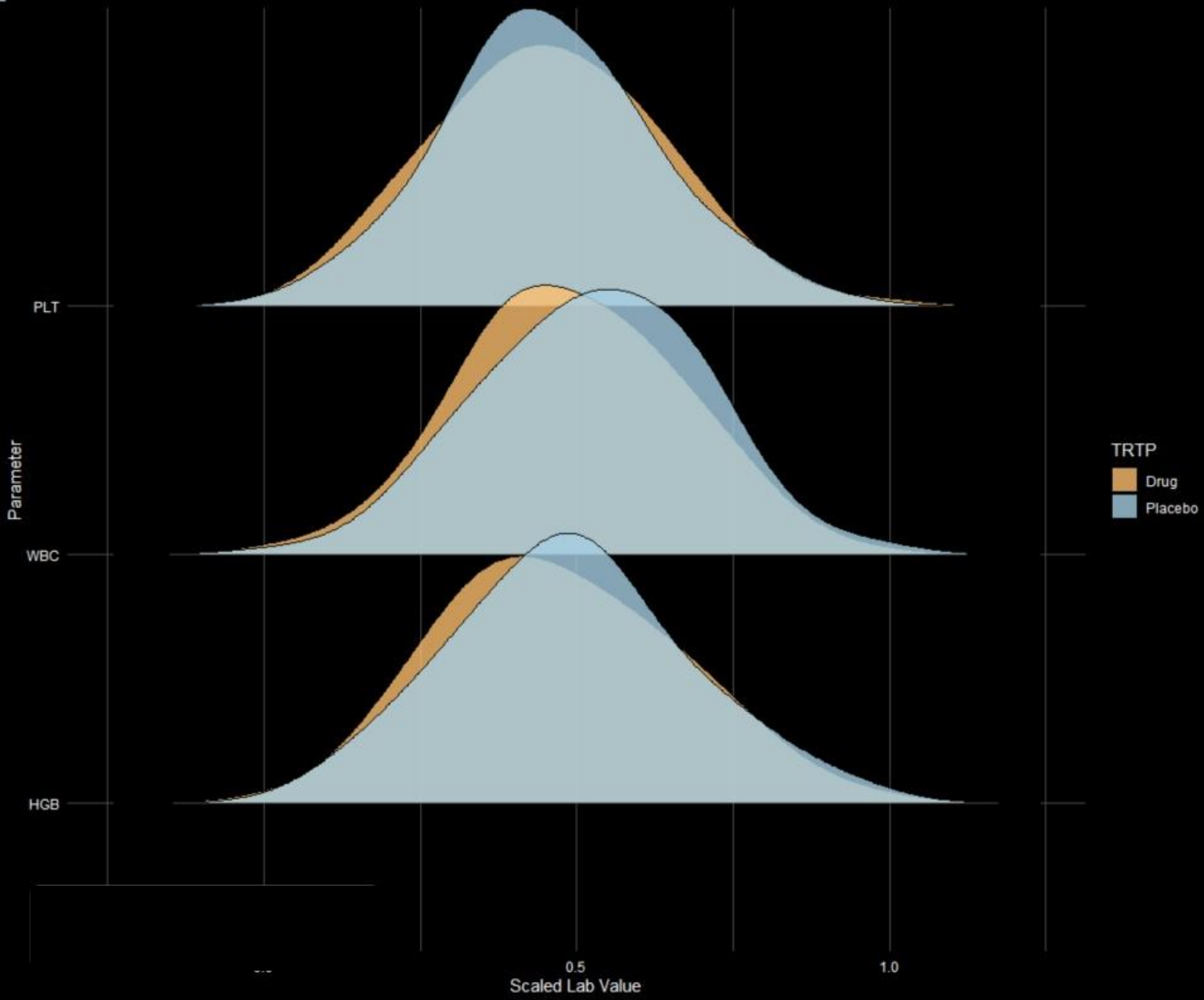
Displays
variability
and outliers
in the data



One Figure, Many Insights

Combines
many plots
into one clear
figure for
reviewers





```
library(ggplot2)
library(ggrridges)
library(dplyr)

# Prepare data: filter and scale if needed
df <- adlb %>%
  filter(CATEGORY == "Hematology", !is.na(AVAL)) %>%
  group_by(PARAM) %>%
  mutate(AVAL_scaled = (AVAL - min(AVAL)) / (max(AVAL) - min(AVAL))) %>%
  ungroup()

# Ridgeline plot
ggplot(df, aes(x = AVAL_scaled, y = PARAM, fill = TRTP)) +
  geom_density_ridges(alpha = 0.8, scale = 1.2, rel_min_height = 0, bandwidth = 0.08) +
  scale_fill_manual(values = c("Placebo" = "#A6CEE3", "Drug" = "#FDBF6F")) +
  labs(x = "Scaled Lab Value", y = "Parameter")
```

**Implementation
in R (ggplot2 +
ggrridges)**

```
library(ggplot2)
library(ggbridges)
library(dplyr)

# Prepare data: filter and scale if needed
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  labs(x = "Scaled Lab Value", y = "Parameter")
```

Upload ADLB SAS XPT File

Browse... adlb.xpt

Upload complete

Category:

CHEMISTRY HEMATOLOG

Parameter(s):

Alanine Aminotransferase (U/L) Aspartate Aminotransferase (U/L)

Alkaline Phosphatase (U/L) Creatine Kinase (U/L)

C-Reactive Protein (mg/L) Creatinine (μmol/L)

Visit(s):

Baseline Week 1 Week 2 Week 4

Treatment Arm(s):

Drug A Drug B Placeb

☐ Free scale per parameter

☐ Overlay Baseline values

☐ Show mean lines

☐ Show median lines

Theme:

☒ Light

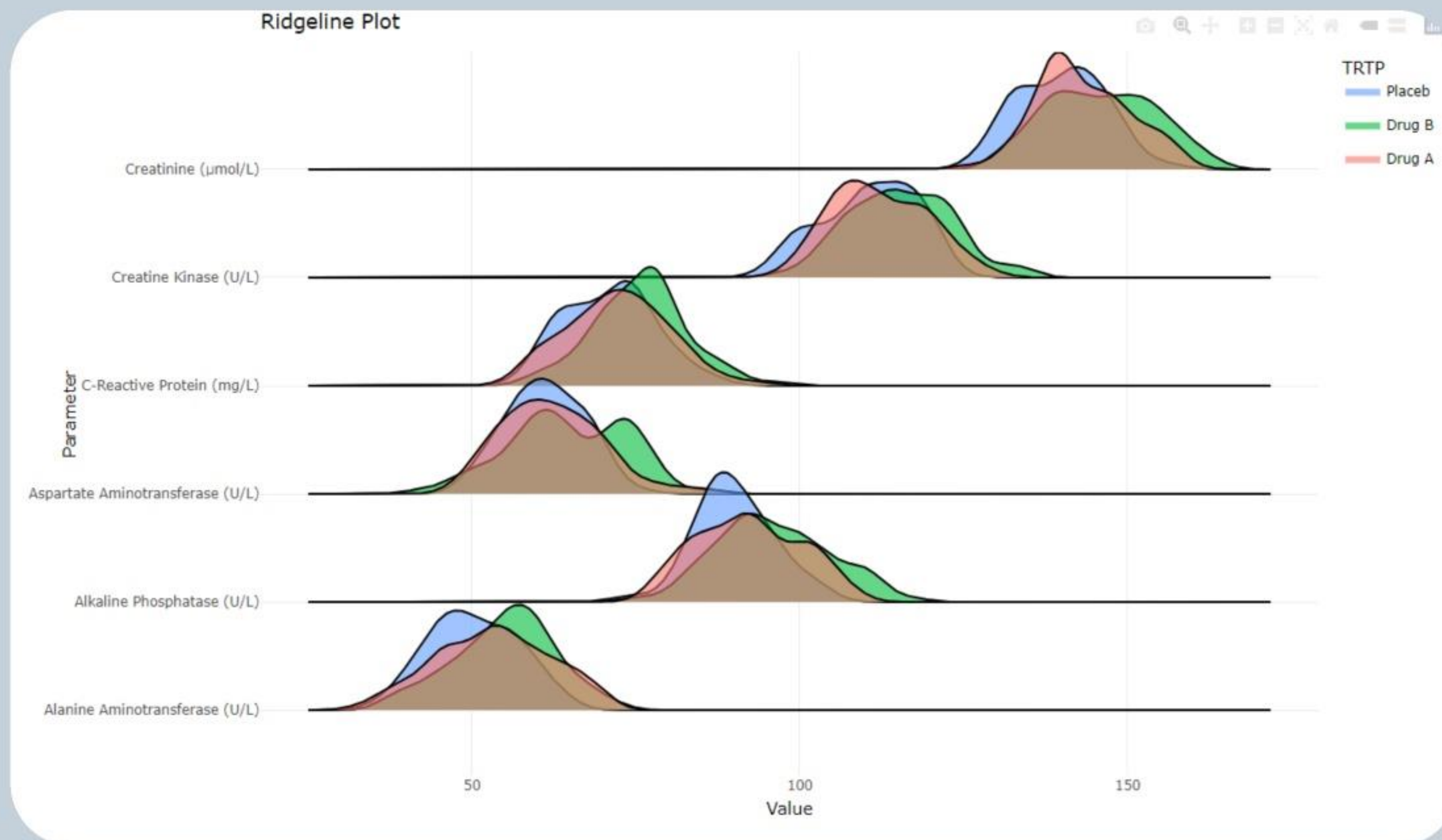
☐ Dark

Download Plot (PNG)

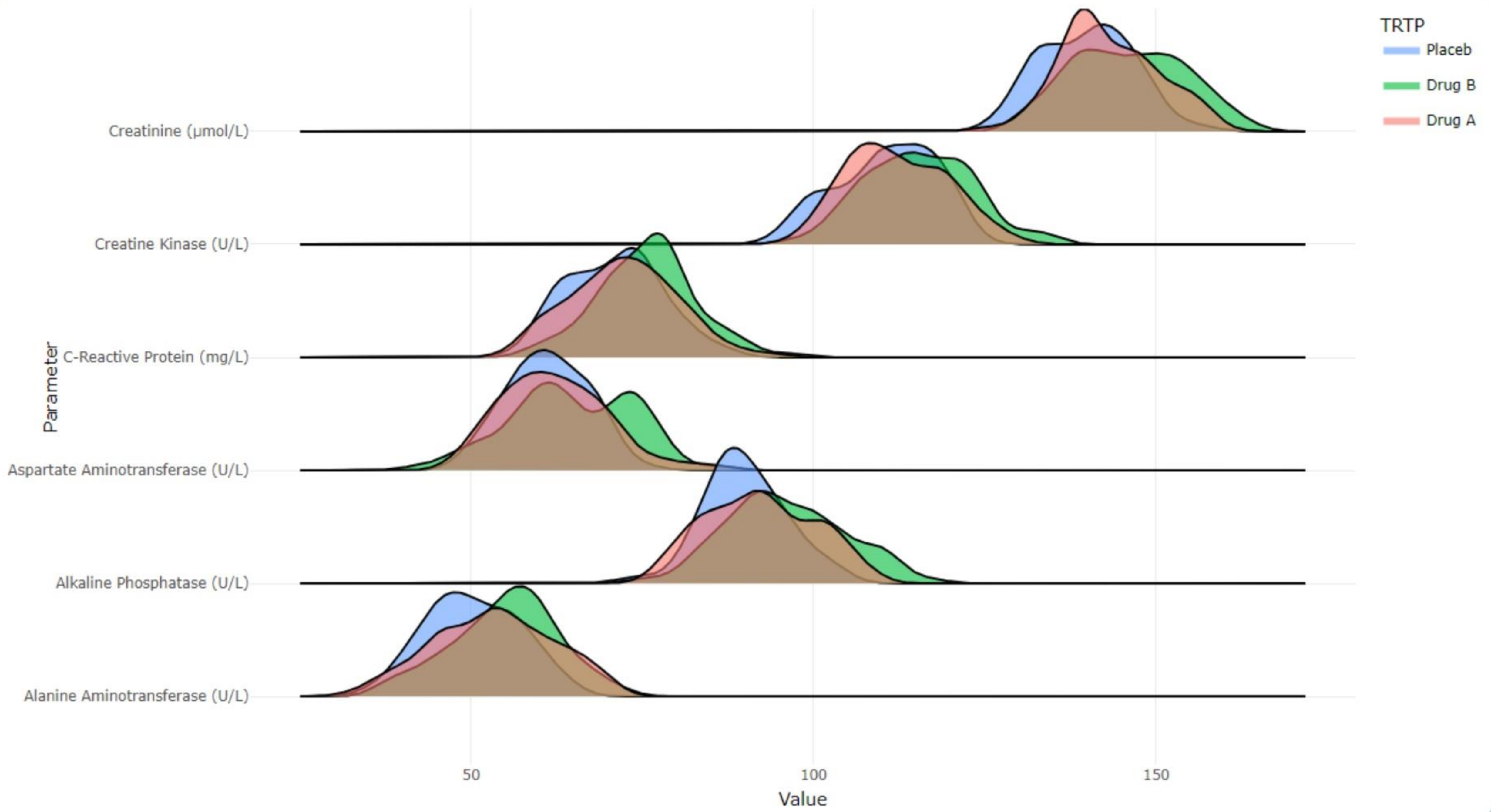
Download Plot (PDF)

Download Data (CSV)

Shiny Screenshots And Interactivity



Ridgeline Plot



Limitations of Ridgeline Plots



Sensitive to data quality



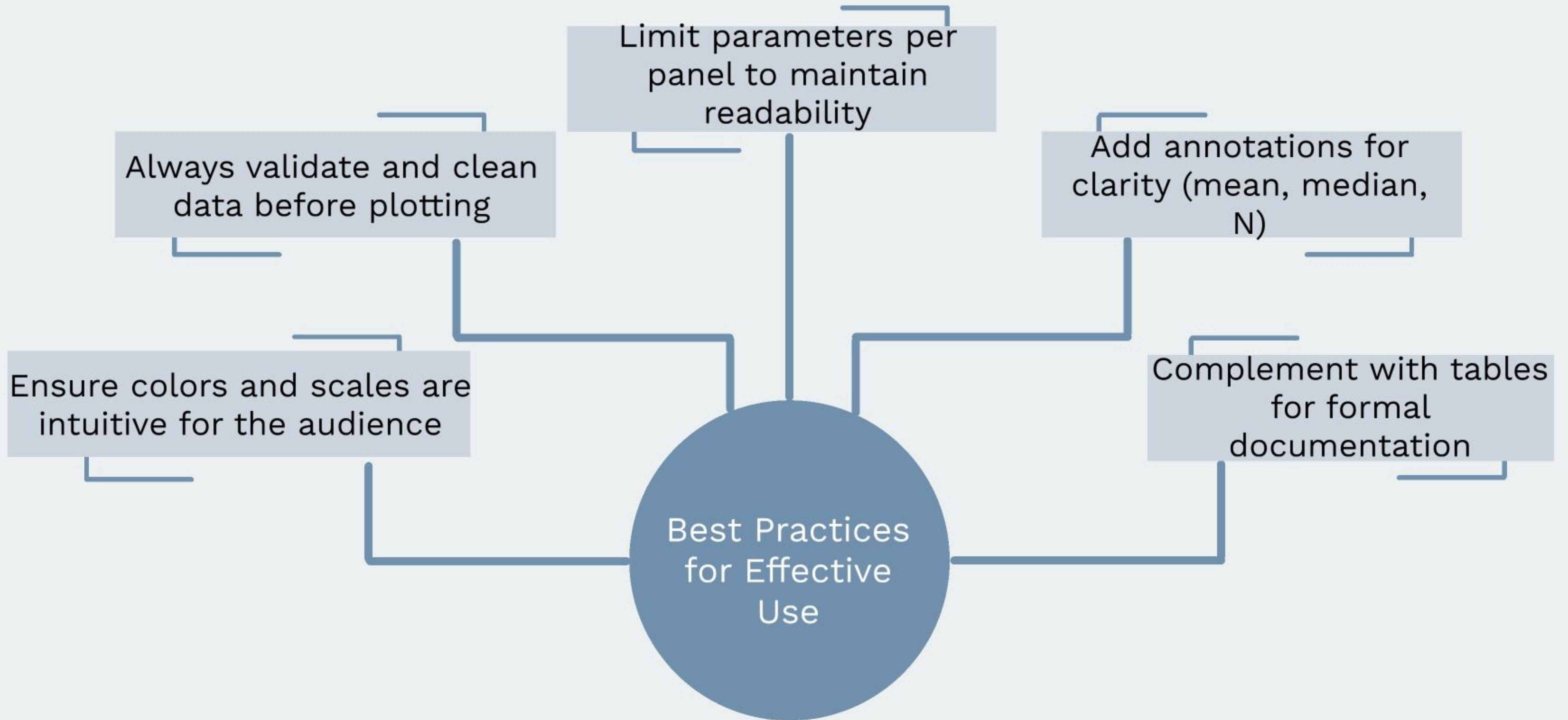
Interpretation challenges



Not suited for small N per group



Too many parameters



CONCLUSION

Ridgeline plots reveal patterns and distributional changes across visits and treatments, offering a valuable exploratory tool for clinical data.

Thank you for Your Attention



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