GGvisualizer – a visualization toolkit to facilitate ggplot2 adoption in pharmacometrics
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Objectives: The purpose of this project is to create an interactive cookbook of Pharmacometric plots created with the popular R visualization library ggplot2\textsuperscript{1} to increase efficiency and empower users to leverage the powerful customizations offered by ggplot2. Though the ggplot2 package is powerful and versatile, coding each plot can become tedious and remembering customizations can be difficult.

Methods: A selection of plots relevant to pharmacometrics such as concentration-time, visual-predictive check (VPC), distribution of demographics were designed layer by layer using ggplot2 idioms to publication quality standards. Changes for each step were noted, along with the code for each step. An R package, diffr, was created to ingest each plot and produce a visualization for each step, along with highlighted code changes compared to the previous step. Each plot was collected into a gallery of for easy visual perusal, along with a tagging system to filter plots by type.

Results: The ggvisualizer presents the user a grid of publication quality plots, further organized by various tags, such as “concentration time”. Users can select a single plot to see the how the plot is created element-by-element (Figure 1), thereby allowing quick and easy lookup of relevant customizations for their particular use case. New plots can be created and added by other users using the Rmarkdown templating engine and the diffr package created for this project.

Conclusions: GGvisualizer empowers users by offering code snippets relevant for many pharmacometric scenarios. The step-by-step differences provide insight into the specifics of how each snippet of code impacts the final plot, offering the ability to extend the examples to user-specific scenarios. The creation of the diffr package further extends this concept to users interested in creating their own examples, and addresses one of the biggest pain points of ggplot2 – finding and understanding the various customizations offered.

References:

![Figure 1](image_url): An example step from a previous version of a histogram to the next iteration showing the code and differences from the previous version.