

Quality Improvement—Improved with R

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What might the attendee be able to do after being in your session?

In this workshop, attendees will learn how to use R¹ to create, analysis, share, and publish the results of quality improvement (QI) projects based on tools² published by the Institute for Healthcare Improvement and publishing recommendations from the Journal Of Graduate Medical Education.³

Description of the Problem or Gap

Many clinical informaticians participate in QI projects as either project leads or in supporting roles—helping other clinicians collect data from EHRs or implement projects within an EHR. There are many tools and guidelines for QI projects, but the tools are not well integrated into a single, comprehensive workflow of a QI project.

Methods: What did you do to address the problem or gap?

I have created a QI template in R that uses existing R packages, QI tools, and publishing recommendations. This is a plug and play format that allows clinicians to directly create, analyze, and beautifully display their project and results with only a beginner's knowledge of R, R Markdown,⁴ Github, and spreadsheets.

Results: What was the outcome(s) of what you did to address the problem or gap?

During the workshop, attendees will modify cause and effect diagrams within R, customize tables and graphs for a Failure Modes and Effects Analysis (FMEA) and a Pareto Chart (Figure 1), learn how to make scatter plots (Figure 2) and histograms (Figure 3) with ggplot2, create runcharts that can update as data is collected with a click of button, use the automated bibliographic capabilities of R, create a Github Page for their demo QI project.

Discussion of Results

At the end of the workshop participants will have the knowledge and materials to create a QI project write-up and analysis all within a single R Markdown file. They will learn how to customize the project to suit many QI project proposals. This simplification of the QI project proposal will allow attendees to more quickly prepare QI project proposals and analyze their results. More advanced knowledge of those topics will allow users to create highly customized presentations of their work.

Conclusion

A standardized tool to create QI projects will eliminate duplicated efforts in project workflows and allow results to be more quickly disseminated within an institution, posted online, or published in a journal.

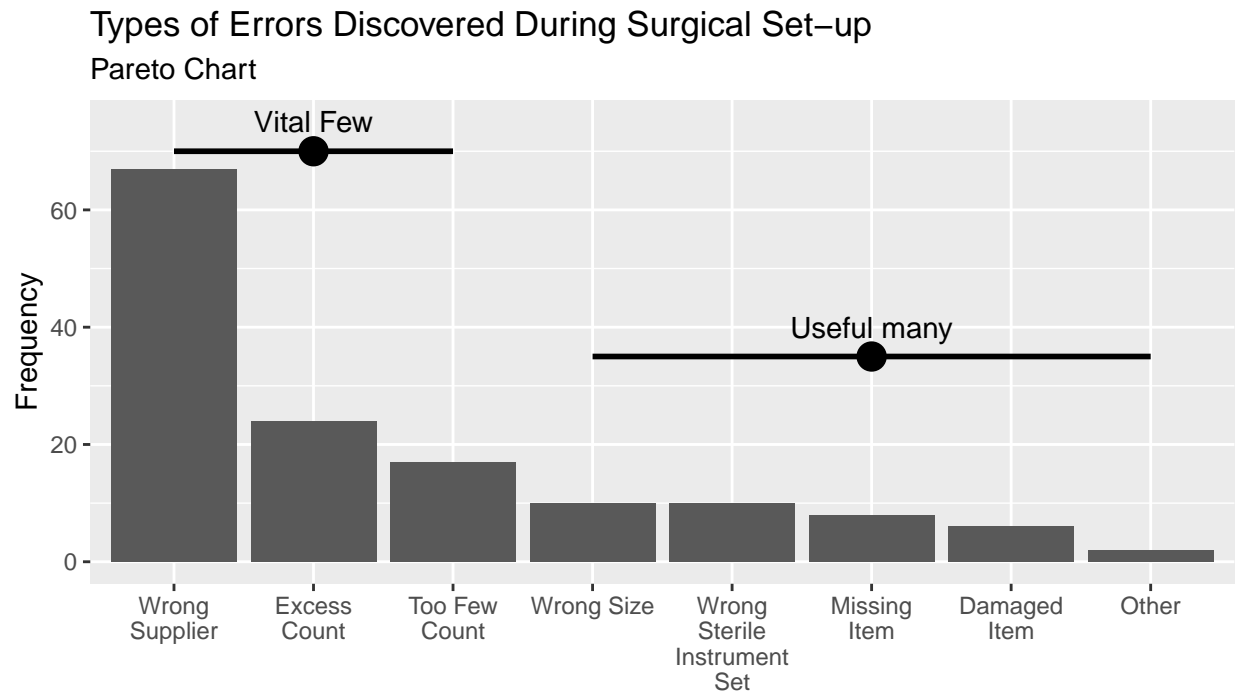


Figure 1: Example from IHI QI Essentials Toolkit: Pareto

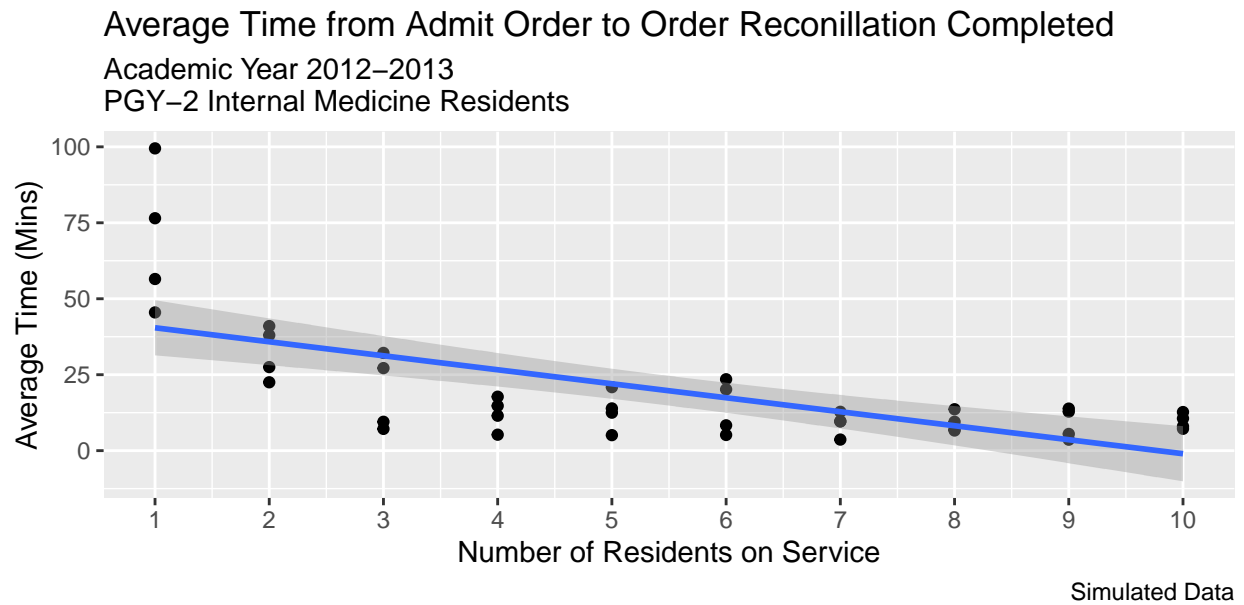


Figure 2: Example Scatter plot with ggplot2

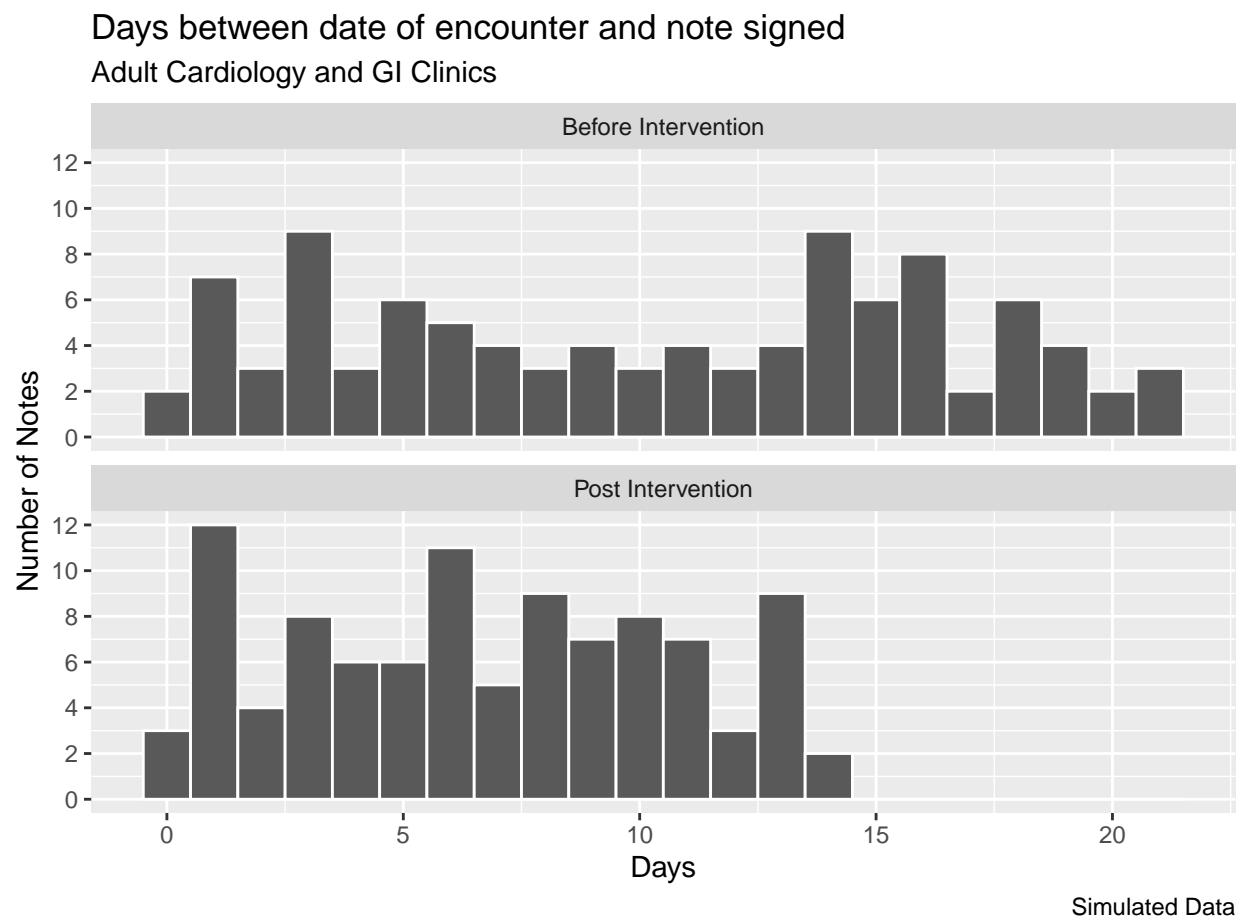


Figure 3: Example histogram created in ggplot2

Attendee's Take-away Tool

Attendee's will be able to access the QI tools through a publicly available GitHub repository, which they will be able to download and modify for their own purposes. They will also receive a curated selection of tools used during the workshop for further reading.

Use of Knowledge Acquired at Previous AMIA Events

No.

References

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