

PRESENTING LAB REPORTS

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Introduction

As patients take on a significant role in monitoring their own health, understanding and interpreting health information, such as lab results, becomes paramount. However, lab results are suited to health care providers. Therefore, our research looked to explore how different representations of lab results impacted accuracy and understanding.

Additionally, our study examined participant data to determine how graphical visualizations of lab results could be implemented and improved to add value and meaning for the consumer.



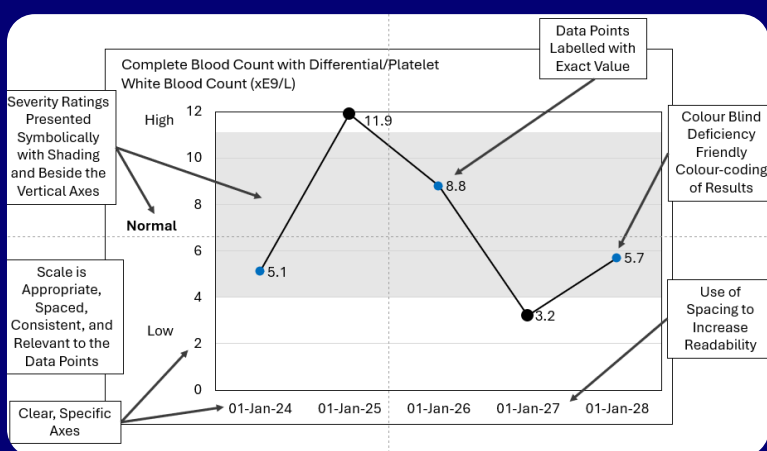
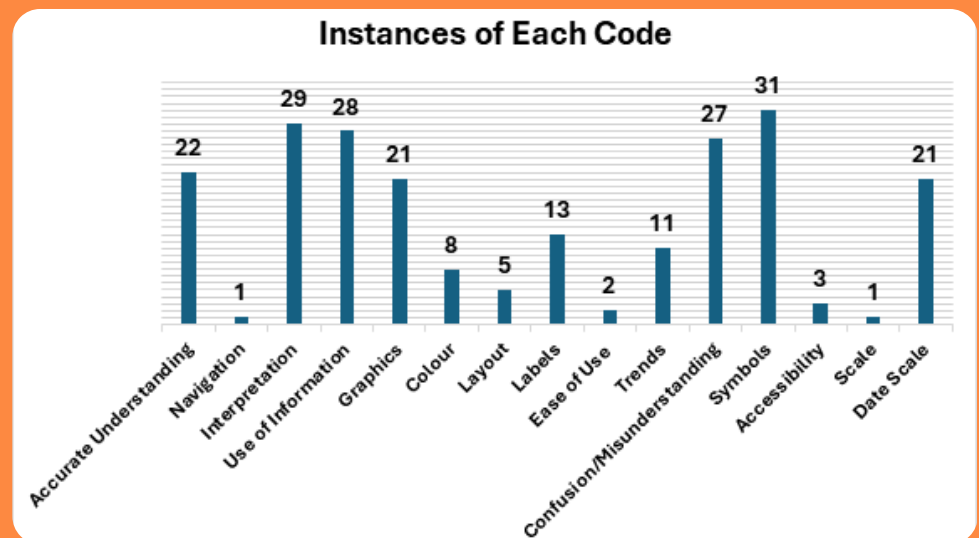
| Code | Description/Criteria |
|----------------------------|---|
| Accurate Understanding | - Is the participant able to understand the graph? Is the participant able to read the graph? |
| Navigation | - Is the participant able to find the desired information from the graph? - Did the participant have problems finding the desired information? |
| Interpretation | - Is the participant able to accurately interpret the information within the graph? |
| Use of Information | - Is the participant able to use the information from the graph to make actionable conclusions? |
| Graphics | - Participant provides feedback in regards to the graph |
| Colour | - Participant mentions the use of colour within the graph |
| Layout | - Participant mentions the layout of the graph and/or graph elements |
| Labels | - Participant mentions the labels (Ex. Axes, legend, etc.) of the graph |
| Ease of Use | - Participant mentions the overall ease of use of the graph |
| Trends | - Is the participant able to use the graph to identify trends? |
| Confusion/Misunderstanding | - Participant expresses that they are confused by the graph. |
| Symbols | - Is the participant able to identify the meaning of the symbol? - Participant comments on the use of a symbol on the graph. |
| Accessibility | - The participant mentions an accessibility feature when talking about the graph. |
| Scale | - Participant mentions the scale of the graph. |
| Date Scale | - Participant mentions the date scale used on the graph. |

Methods

Our study utilized portions of an interview where participants were shown lab results in the form of Trends + Contextual Information. Afterward, participants were asked to comment on whether they liked or disliked the results format and how it could be improved. The transcripts were analyzed using a coding scheme loosely based on Kurshniruk and Patel (2004). Instances of each code were counted.

Results

Overall, 24 participants completed the entirety of this study. The majority of participants were between 25-65 years old. The coding category with the highest number of instances was symbols. Coding categories with improvement feedback were explored. They included date scales, colours, and symbols.



Discussion

- (1) scale should be consistent throughout the report
- (2) scale should not be placed directly on the axes
- (3) scale should be appropriate for the given data points
- (4) the first scale value should correspond to the given data points
- (5) adequate spacing should be implemented
- (6) all variables, axes, and data points should be labelled
- (7) abnormal results should be colour-coded based on their severity
- (8) preattentive attributes should be considered when designing visualizations
- (9) utilization of purposeful and recognizable symbols
- (10) reduce the amount of text on visualizations through visual cues and symbols

Conclusion

We identified advantages and disadvantages to varying aspects of graphical visualizations. Hence, identifying areas for improvement. Primary areas for improvement are graph attributes (i.e., scale, axes, spacing), the use of colour and severity ratings, and visual cues (i.e., symbols). This study offers preliminary recommendations to health information system developers and designers that could improve the interpretability and value of visualizations displayed in online laboratory result portals.

Source: Kushniruk, A. W., & Patel, V. L. (2004). Cognitive and usability engineering methods for the evaluation of clinical information systems. *Journal of Biomedical Informatics*, 37(1), 56-76. <https://doi.org/10.1016/j.jbi.2004.01.003>

