

## **Data-driven Storytelling to Support Decision Making in Crisis Settings: A Case Study**

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Data-driven storytelling helps to communicate facts, easing comprehension and decision making, particularly in crisis settings such as the current COVID-19 pandemic. Several studies have reported on general practices and guidelines to follow in order to create effective narrative visualizations. However, research regarding the benefits of implementing those practices and guidelines in software development is limited.

In this article, we present a case study that explores the benefits of including data visualization best practices in the development of a software system for the current health crisis, as well as the impact of not doing so. The system had high volatility in its requirements and short development cycles, prioritizing the delivery of functionality and real-time visualizations. This meant that narrative and visual aspects were set aside and that only some best practices were followed by the development team.

We performed a quantitative and qualitative analysis of sixteen graphs required by the system to monitor patients' isolation and circulation permits in quarantine due to the COVID-19 pandemic. Since there is plenty of criteria to measure the quality of visualizations, we were interested in comprehension and memorability as they are essential for the decision-making process.

To test comprehension, we carried out the Visual Literacy Assessment Test; to assess memorability, we conducted an experiment. In both cases, the participants scored significantly higher when it came to visualizations that implemented best practices, indicating a better understanding with these charts.

The results showed that the use of storytelling techniques in data visualization contributed to an improved decision-making process in terms of increasing information comprehension and memorability by the system stakeholders. In addition, we found that one of the reasons for not applying visualization best practices was the lack of knowledge regarding information visualization and storytelling, rather than the lack of time. In the absence of these skills, developers rely on the default settings of tools, causing stories to lose their potential or become difficult to understand.

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