

# Designing Quantitative Data Representations to Support People's Understanding of the Risk of COVID-19<sup>1</sup>

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## ALISE RESEARCH TAXONOMY TOPICS

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## AUTHOR KEYWORDS

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## ABSTRACT

Since the COVID-19 outbreak, various forms of data representations (e.g., graphs, tables, and charts) have served to illustrate the diverse risks from the virus. These risks include daily cases, hospitalizations, and deaths and involve numerous and sometimes complex quantified attributes (e.g., numbers, time series, and indices) in their representation. Complicating the matter, even in cases in which people analyze identical data, they often interpret it differently (Ryan & Evers, 2020) due to varied competence in interpreting quantitative data as well as different applications of quantitative ideas in real-world contexts (Hallett, 2003; Wiest et al., 2007).

This project aims to support people's informed- and evidence-based decisions about the severity of COVID-19 and their behavioral choices by assisting their productive assessment and interpretations of quantitative structures in data representations. In such an effort, this research team has developed interactive applets (available at [www.covidtaser.com](http://www.covidtaser.com)) with three data representations: Risk Comparison, Projection, and Log scaled Graphs of COVID-19. These representations are based on empirical research designed to investigate and promote people's

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understandings of: a) chances of facing the risks from the virus in comparison to those from daily activities (e.g., driving), b) impacts of preventive measures (e.g., social distancing), and c) interpreting linear and log scaled graphs. The project representations are designed in a way that better facilitates people's quantitative reasonings based on the cognitive models of mathematical thinking found in the project and models from prior research. The project results contribute to the literature in STEM education and promoting data literate society.

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