Data Works: An Interactive Data Visualization Application Built with Shiny

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The use of data and interactive data applications to inform decision making is becoming ubiquitous in many domains. However, there are few examples in the literature of how to ensure that these complex and cognitively demanding applications are usable and effective[1][2]. **Shiny**, a recently released package for the proglangR programming language, provides a flexible, easy-to-use open-source tool for developers and analysts wishing to create interactive web-based data applications.

Data Works presents a case study of the development and iterative user testing of a data visualization application built with **Shiny** for a **Challenge.gov** competition sponsored National Endowment for the Arts (NEA). Data Works provides the general public as well as domain-experts access to a large multi-year data set from a nationally representative survey of public arts participation, the Survey of Public Participation in the Arts. The application was recently selected by NEA as the challenge winner and will be displayed on the NEA's main website.

This work explores the relevance of usability principles to data applications and potential pitfalls developers and analysts may face. In addition, we provide novel use cases for integrating predictive modelling and geospatial information via the **googleVis** package. Furthermore, we provide recommendations for interface design aesthetics and mobile application experiences. Finally, Results from user testing and eye tracking suggest that interpretation context and responsive feedback may be critical features to ensure effective use.

References

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