Clear by design – A practical guide to making better maps and figures

Tartu, Tuesday 16 June 2026

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Topic(s) and focus

Data visualization is a skill through which a large part of research is communicated, not only within the scientific community but also to people outside the field, including decision-makers and other high-level audiences. Throughout history, clear visual communication of scientific results has played an important role in shaping positive change in society, and this is just as true today. When the visuals that not only support, but in many cases carry our message, fail, the work itself risks failing to have the impact it deserves.

The GIS field, more than many others, is centered around visual communication, with maps as its main medium. Being able to produce clear, well-designed, or even memorable visualizations is therefore a very valuable skill in this field. It increases the chances that your message is understood and acted upon; and, quite simply, that people stay engaged and take your work seriously.

This workshop focuses on helping participants develop their data visualization skills through hands-on learning and short, follow-along tutorials. In the workshop, real-life examples are broken down into specific design principles – the use of color, typography, layout, data density, a clear visual focus, and visually or topically supporting elements. Using these principles, the focus is on demonstrating specific design skills, tips and tricks applicable in GIS, design, and programming software. The workshop emphasizes transferable approaches that participants can adapt to their own technical environments. The workshop covers a set of skills and easy-to-apply tips for improving visualizations, with an emphasis on creating clear, memorable maps and figures that translate complex geospatial data into a professional and readable format.

Objective(s)

The objective of this workshop is to equip participants with practical design skills that improve the clarity and effectiveness of their maps, scientific figures and other visual materials in the future.

Planned outcome(s)

The goal of this workshop is to give participants a solid understanding of the basic principles of good data visualization and, based on these principles, to teach a set of practical skills and easy-to-apply tips. As the main outcome of the workshop, participants should be familiar with these principles and skills, and feel more comfortable applying them in their own work and in their preferred software, thus resulting in their maps and figures improving over time.

Participants will become more aware of how visualization choices affect us and how their work is understood, both in their own figures and in the work of others. They should be able to look at a visualization (e.g. map, figure, presentation) more critically, judge whether it objectively works for its intended audience, and take necessary steps to improve it when it does not.

The workshop is intended for a broad audience – not only for people who already have a strong interest in data visualization, but also for those who do not want to spend a lot of time on design and are simply looking for clear guidance and a few reliable ways to improve their figures. As an outcome, participants with different levels of experience and interest should all come away with something useful they can apply to their visualizations right away, since visual communication of scientific results is part of most researchers' work.

In addition, the workshop will introduce simple ways for participants to start developing a more consistent personal visual style. This should make it easier for participants to start to produce clear and coherent figures without having to rethink everything from scratch each time.

Workshop format

The workshop is planned as a half-day session (approximately 3.5 hours). It combines focused teaching segments with practical demonstrations and hands-on activities. The workshop is structured as a step-by-step progression, starting with visuals that fail to communicate and unpacking the design choices that cause this – such as inappropriate use of colour, excessive data density, and other problems with readability. The workshop then moves toward practical techniques for creating clearer, more effective, and more memorable maps and figures through harmonized colour use, good layout principles, typography, personal style and easy, quick-to-implement tips and tricks to add that final touch.

The workshop includes live demonstrations and short tutorials on specific tasks, (e.g. creating clear and beautiful study area maps with inset maps). Participants will be able to follow along during these sections. Examples and demonstrations will draw on a mix of tools commonly used in geospatial work, such as QGIS/ArcGIS, Adobe Illustrator and free alternatives (e.g. Affinity), presentation software, and Python/R workflows.

The workshop emphasizes active learning. Throughout the session, participants will practice identifying and improving visualization issues in real examples. Part of the second half of the workshop is dedicated to a hands-on exercise in which we redesign one figure from start to finish, applying the discussed principles to identify and fix common design issues in scientific visuals.

Target audience

This workshop is intended for anyone whose work involves communicating scientific results and who aims to do so more effectively, along with those interested in (geo)spatial visualization. No prerequisite skills are needed.