

Emotional maps: visualization of participatory mapping data based on user-testing

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Abstract:

Participatory mapping is a way of obtaining spatial information where the public is involved, and new and potentially interesting information is acquired. Some information about public space is very difficult or impossible to obtain except through participatory mapping tools. Emotional maps provide a platform for expression and participation in decision-making regarding public space. However, vital questions need to be addressed to fully exploit their potential: How should cartographers express feelings about space on the emotional map so it can be understood easily by map users? What factors influence the user's understanding of the depicted information? Is it the role of the basemap, the spatial distribution of the phenomenon, and the user's previous experience with map making?

The goal of this paper is to answer the questions raised about visualizing citizens' feelings using a map. The factors we have focused on are - the method of thematic cartography used, the basemap, the spatial distribution of the phenomenon and clustering. A literature review identified the most used methods of visualizing the results of participatory mapping.

Three were specifically identified as the most used – point symbols, fishnet choropleth and a heat map. These three methods were further analysed in detail and hypotheses were made about their optimal use so that the most important information (i.e., the greatest concentration of the phenomenon) for practice could be read from the map. We performed user testing of the selected visualization methods. The test contained 10 tasks of various types, concretely, some required participants to draw a specific location of the highest concentration of a phenomenon on the map (see Figure 1), others required them to choose from the offered options. The maps for the test were prepared using real emotional map data.

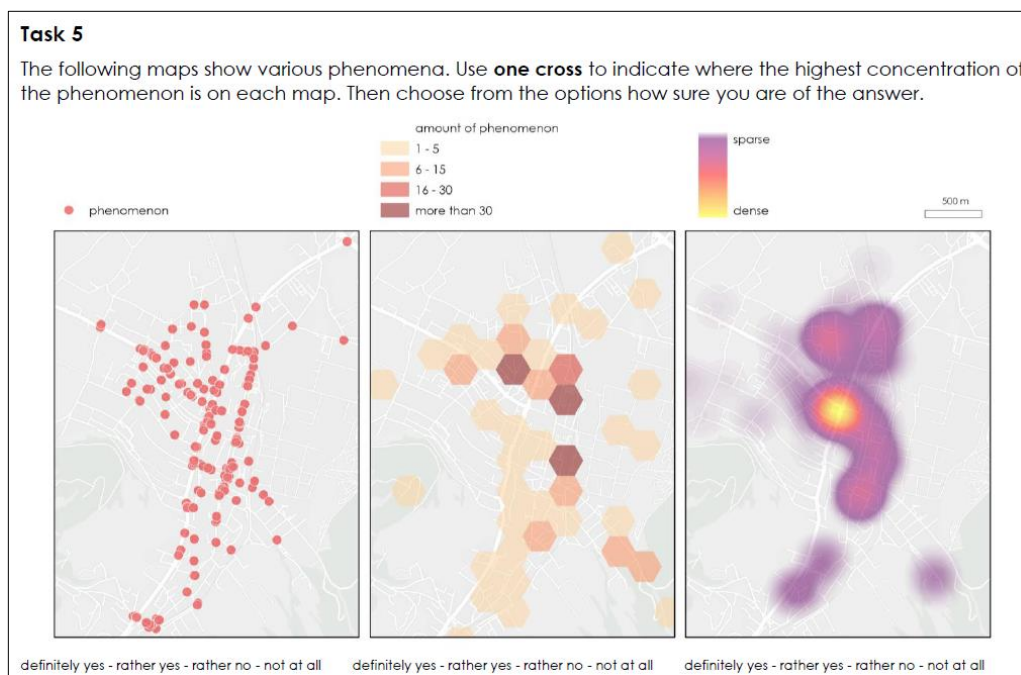


Figure 1 - One of the test tasks translated into English.

A total of 124 undergraduate geography students participated in the study (41 females and 82 males; 47 % of the participants had created a map in the past). The following hypotheses were tested:

- The location of extreme values is best recognized from the heat map.
- With a large number of records and the point representation, extreme values are not well localizable.
- A distinct base map detracts from the readability of the data from the fishnet choropleth map and heat map and does not significantly affect the readability of the map with point symbols.
- Extreme values are compared best on the fishnet choropleth map, followed by the heat map, and worst on the map with point representation.

This paper presents an evaluation of the hypotheses and provides recommendations on how best to proceed when visualizing the results of participatory mapping using an emotional map.

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