

**Impact of level of detail in realistic 3D geographic visualizations on memory: An empirical study using eye tracking with a focus on aging population**

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With the unprecedented developments in hardware & software technology, the accessibility of realistic three-dimensional (3D) visualizations has dramatically increased. While more and more people use realistic 3D visualizations, a debate on whether this is a good idea from a human factors perspective has also emerged (Shepherd, 2008). However, it appears that the usefulness of 3D depends on the task and the user (e.g., Huk, 2006). To identify *who* might benefit from using 3D geovisualizations *for what* and *when*; we propose a set of controlled lab experiments based on the three basic parameters of the experimental design process: i) the theme (stimuli), ii) the context (tasks) and iii) the audience (participants) of the visualization.

In particular, we are interested in using eye movements to identify the information processing strategies of the participants when they work with 3D visualizations in given scenarios. More specifically, we want to understand how various 3D geographic visualizations with differentiations in their design affect different user groups' memory retention. To operationalize our research, we vary the levels of detail in our visualizations, provide fundamental geographic tasks that require local and/or global visual information processing, and measure memory retention/recall success at different points in time. A specific focus will be on aging and whether different visualization designs might help with the memory retention/recall differently with healthy memory decline.

**References**

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