

# For which type of user queries are schematic network maps more useful than geographic network maps?

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Enabling visual exploration of complex network-constrained movements has become a challenge for the cartography and visualization domains. Direct visualization of massive data on movements and networks often suffer from over-plotting and visual clutter. In order to reduce the visual clutter, many computational methods such as aggregation, filtering, clustering, grouping and simplification and visualization approaches such as generalization, line smoothing and symbolization are used to process and/or visualize the data. In addition to these methods, our idea is to investigate the options to use schematic visual representations of movements/networks to show the important patterns and to support problem-solving.

Schematization of movements along (road) networks basically distorts the realistic geography of the movements/networks, and distortions can be based on one or more of three perspectives: space (spatial attributes), time (temporal attributes) and thematic attributes. Examples are the London tube maps (schematized based on the spatial attributes), time cartograms (schematized based on the temporal attributes), treemaps (schematized based on thematic attributes), mosaic maps (schematized based on the temporal and thematic attributes) and chorematic diagrams (schematized based on the relations among spatial and thematic attributes). The assumption here is that users (i.e. human analysts of movement data) can be supported by selecting and combining different schematic methods and visualization options based on a careful consideration of the users' needs. At the same time, geographical representations should be provided, together with flexible transitions between schematic and realistic geography. The question is: for which types of user queries are schematic network maps more useful than geographic network maps?

