

THE USE OF MAPPING TOOLBOX IN ECONOMY

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Abstract

The article deals with the use of mapping toolbox in economy. There are various methods of evaluation of economic strength of the states of the world. The results of analyses and evaluations serve as a support of decision making. The results are suitable to visualise by the so called choropleths maps.

1 Choropleths Map – IDI Index

The MATLAB program enables it by means of mapping toolbox. The use is very simple, when the input is the file with values to be visualised, such as economy efficiency and other data. The borders of countries must be available and they are at disposal and updated by specialized companies.

As case study of using choropleths map is presented following example. Many synthetic indicators have been created by highly regarded organisations including the World Bank (WB), the World Economic Forum (WEF), the United Nation (UN), the International Institute for Management Development (IMD), and the International Telecommunication Union (ITU). These indicators have been used by organisations including government agencies, aid agencies and research institutions to assess the competitiveness of a nation or nations in the context of knowledge based economy.

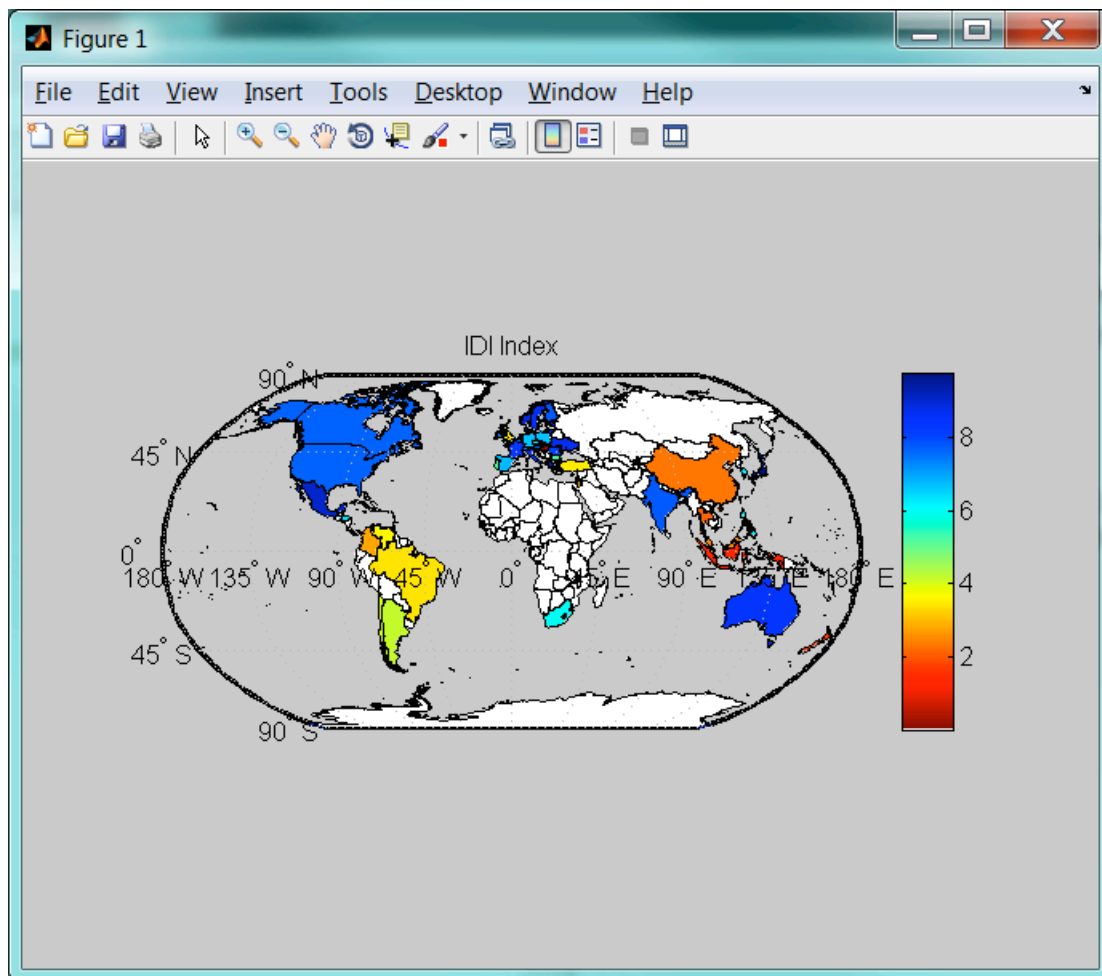


Figure 1: The choropleths map – IDI index

The presented Figure 1 shows a scaled thematic world map where one-step ahead forecast of ICT Development Index (IDI) of International Telecommunication Union for the sampled 51 economies are presented. Choropleth map provides here a quick glimpse of how the IDI index scores are distributed across the globe. See Program1 that draw the choropleths map.

```

worldmap('World')
S = shaperead('cntry02', 'UseGeoCoords', true);
for idx = 1:length(S); plotm(S(idx).Lat, S(idx).Lon); end
geoshow(S)
for idx = 1:length(S); S(idx).CNTRY_NAME; end
A=xlsread('WE.xlsx');
for idx = 1:length(S)
S(idx).Pred=A(idx);
end
for idx = 1:length(S)
    if isempty(S(idx).Pred)
        S(idx).Pred = 0;
    end
end
maxdensity = max([S.Pred]);
barva= flipud(jet(numel(S)));
barva(1,:)=1;
%densityColors = makesymbolspec('Polygon', {'Pred', [0 maxdensity]},
'FaceColor', lines});
densityColors = makesymbolspec('Polygon', {'Pred', ...
[0 maxdensity]}, 'FaceColor', barva});
geoshow(S, 'DisplayType', 'polygon', ...
'SymbolSpec', densityColors)
title({'IDI Index'})
caxis([0 maxdensity])
colormap(barva)
colorbar

```

Program 1: The draw of choropleths map

2 Choropleths Map – Questionnaire Search

Another case study represents the choropleths maps of the states of the globe were the answers Yes (red colour) or No (yellow colour) where evaluated. See Figure 2.

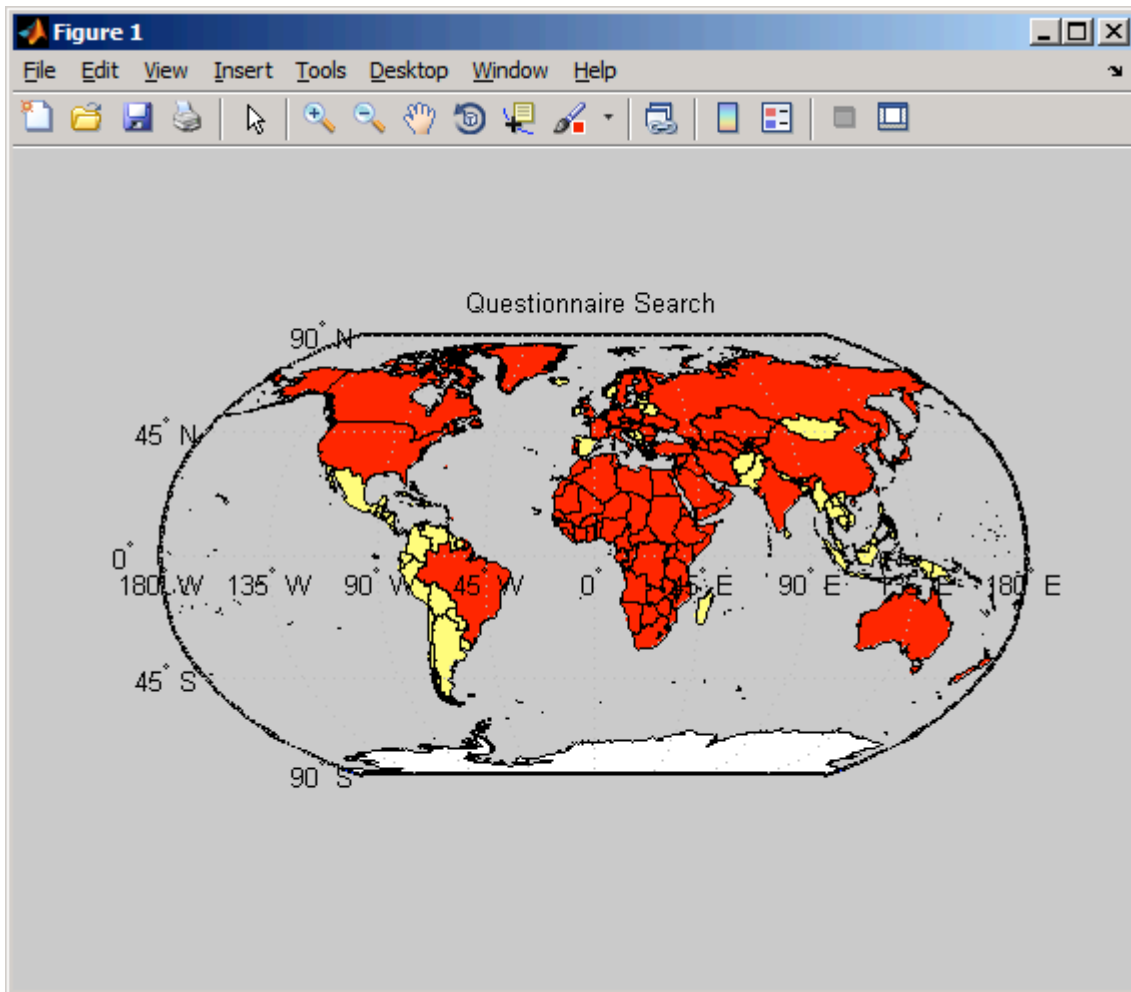


Figure 2: The choropleths map – Questionnaire search

Choropleth map also usually provides a quick glimpse on questionnaire search across the globe, country or territories.

3 About Mapping Toolbox

Mapping Toolbox provides tools and utilities for analysing geographic data and creating map displays. You can import vector and raster data from shapefile, GeoTIFF, SDTS DEM, or other file formats, as well as Web-based data from Web Map Service (WMS) servers. Many of them are available on the web for free. Then, with several simple commands such as shaperead or geoshow you can plot whole map, add other information, visualize your results and much more.

Mapping Toolbox provides:

- Vector and raster data import and export from standard formats and specific data products
- Data retrieval from Web Map Service (WMS) servers for customized geographic data sets and related metadata
- 2D and 3D map display, customization, and interaction
- Digital terrain and elevation model analysis functions, including profile, gradient, line-of-sight, and viewshed calculations

- Geometric geodesy, including distance and area calculations, 3D coordinate transformations, and more than 65 map projections
- Utilities for converting units, adjusting spatial resolution, wrapping longitudes, and managing spatially referenced images and raster data

With function-level access to all key features in the toolbox and the high-level MATLAB language, you can develop innovative algorithms and automate your workflow for repetitive tasks.

4 Results

The choropleths map provides a quick glimpse across the globe, country or territories. Mapping Toolbox provides tools and utilities for analysing geographic data and creating map displays.

References

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[2] THE MATHWORKS. *MATLAB – Mapping Toolbox – User’s Guide*, The MathWorks, Inc., 2012.

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