UNITED NATIONS

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

STATISTICAL INSTITUTE FOR ASIA AND THE PACIFIC (SIAP)

Self-Paced Course

**Principles of Data Visualization for Official Statistics
and SDG Indicators**

I. About the Course

This self-paced course introduces data visualization as a tool to produce high-quality graphics for monitoring official statistics and the Sustainable Development Goals (SDGs) indicators.

The course provides an opportunity for participants to explore and comprehend the techniques of data visualization for data exploration as well as for data presentation. Participants will discover, evaluate and apply the rules of data visualization on devoted cases studies. The course also proposes strategies for visualizing in multi-dimensions as well as presenting the practical methods for representing statistical indicators on maps, within dashboards or for reports with infographics.

The course is not based, nor does it focus, on any software. While some popular software will be introduced in the course, such as Excel, Google sheets, QGIS or R, participants will be free to use their favourite software for their needs.

The e-learning has been developed as an interactive training composed a multitude of different pedagogical activities regrouped in 6 modules. Each module is composed of several mandatory (marked with a *), and optional activities following a logical structure. Activities include interactive lessons, tools, exercises, practitioners interviews, optional tutorials, articles and quizzes.

II. Target Audience

The course is designed for personnel working in the field of statistics, whose main responsibilities include data collection, exploration, analysis or dissemination of SDG indicators and related statistics. The course is also open to any personnel in charge of the design of data based dashboards and platforms, including people working in the IT or in the communication sector.

Policy and decision makers, who are looking to understand the methodological details behind data-based graphics and willing to interpret them accurately for evidence-based decision-making are also in the target audience.

Participants are expected to have some experience in producing data-based graphics using any type of software.

III.   Learning Objectives

At the end of the course, participants should be able to:

- Identify data visualization objectives and limits
- Comprehend data visualization as a visual language
- Classify the different types of graphics that can be used to represent SDG indicators
- Visualize SDG data in infographics and reports
- Apply data visualization rules to explore SDG statistics or to produce SDG-related graphics
- Compare statistical summaries tables with their data visualizations counterparts
- Elaborate strategies for visualizing multidimensional statistics used to produce SDG indicators
- Decipher statistical maps
- Construct choropleth and proportional symbols maps with QGIS and R
- Use alternative to maps for SDG indicators comparisons over space

IV.   Course Design and Content

The course is divided in 6 modules with several activities. Each module requires approximately two hours of focused work. Motivated participants can expect to spend more time to replicate the analysis proposed optionally in each module using the notebooks, code and data provided. Slides and references used for each activity are available for download on the SIAP's Learning Management System (LMS) in the form of pdf or html documents. In the last module, we also propose optional activities based on popular data visualization software and on free online tools.

Module	Coverage
1 - "What is Data Visualization?"	- Data visualization objectives and limits - Features and goals of popular graphics - Types of graphics to represent SDG indicators - Design of a graphic based on a data set
2 - "Data Visualization rules to apply to SDG indicators"	- Badly designed data visualization - Data visualization rules - Misleading graphics - Visualizing SDG data in infographics and reports
3 - "Choosing the right data visualization for the right SDG indicator"	- Choice of a data visualization - Visual perception - Statistical tables *vs* data visualization - Processes leading to an efficient data visualization
4 -"Comparing many or complex indicators"	- Visualization in many dimensions - Applied data visualization rules with Excel, Google Sheets and R - New types of graphics - Strategies for visualizing in multi-dimension
5 - "Maps"	- Importance of maps for SDG indicators comparisons - Limitations of statistical maps - Alternatives to maps for representing SDG indicators - Statistical indicators on maps with QGIS and R
6 - "Interactive and dynamic data visualization"	- Principles of dynamic data visualization - Tools and platforms for creating interactive data visualizations - Interactivity with R and Shiny - Features of dynamic visualization

V. Certificates

A certificate of completion is available for participants:
- who have completed **all** the mandatory activities (marked with a **∗**) and
- who have a grade equal or greater than **70%** in the final exam, and
- who have completed the **feedback** evaluation form.

The certificate will be available directly on the SIAP's LMS for successful participants.