UNITED NATIONS

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

STATISTICAL INSTITUTE FOR ASIA AND THE PACIFIC (SIAP)

e-Learning Course

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

13 January – 24 February 2021

I. About the Course

This 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 and also tackle the problem of visualizing complex data.[1] The course proposes strategies for visualizing in multi-dimensions as well as presenting the practical methods for representing statistical indicators on maps or within dashboards.

The course is not based, nor does it focus, on any software. While some popular software will be introduced in the course, participants will be free to use their favourite software for their needs.

The e-course has been developed as an interactive training composed of 6 modules. Each module is composed of several mandatory pedagogical activities, following a logical structure. Activities include videos, interactive videos, chats, live lectures, webinars, document reading, exercises, homework polls and quizzes.

The course involves mandatory live lectures and webinars, scheduled once a week. The learners are expected to interact during live sessions and through chat boxes embedded in each module.

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[1] *The course does not cover advanced topics such as the visualization of networks and text.*

The course is hosted on the SIAP Learning Management System which contains a forum for general questions and interactions with the SIAP's lecturers and e-learning platform administrators.

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
- Apply data visualization rules to explore SDG statistics or to produce SDG-related graphics
- Compare statistical summaries and tables with their data visualizations counterparts
- Elaborate strategies for visualizing multidimensional statistics used to produce SDG indicators
- Construct maps and alternative graphics for SDG indicators comparisons.
- Apply dynamic data visualization principles for producing dashboards

IV.   Course Design and Content

The course is divided in 6 modules and will last for 6 weeks and will require approximately 3h of work each. The elements (slides and references) used for each activity will be available for download in pdf format. In the last module, we propose optional activities based on popular data visualization software and to free online tools that will not serve for the evaluation.

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 - Criteria for an effective visualization
3 - "Choosing the right data visualization for the right SDG indicator"	- Choice of a data visualization - Visual perception - Statistical tables with their data visualizations counterparts - Processes leading to an efficient data visualization
4 - " Comparing many or complex indicators"	- Visualization in many dimensions - Applied data visualization rules - 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
6 - " Interactive and dynamic data visualization"	- Principles of dynamic data visualization - Tools and platforms for creating interactive data visualizations - Features of dynamic visualization

V. Evaluation

The evaluation will be based on the learner's ability to apply the methods and training materials described during the course, as well as on their capacity to recall the main outcome of each module. The final grade will be based on two mandatory assessments exercises:

1) An individual data-based project to be submitted before the end of the course.
2) Four Multiple Choice Questions (MCQ)-like tests to complete at the end of each module.

The individual data-based report counts for 40% of the final grade, the weekly tests will therefore account for the remaining 60% of the final grade. Participation to the various chats and Q&A will provide bonus points.

To succeed in the course participants must have at least a final score of 70/100, and comply with the following conditions:
- Follow all of the mandatory activities
- Complete all the weekly assessments
- Return an individual data-based project in due time
- Grade at least one data-based project from peers in due time

Participants must complete the end-of-course evaluation to receive a certificate.