UNITED NATIONS

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

STATISTICAL INSTITUTE FOR ASIA AND THE PACIFIC (SIAP)

e-Learning Course

Advanced Data Visualization for Official Statistics and SDG Indicators

3 - 28 July, 2023

I. About the Course

This course is an advanced course in data visualization, conceived as an extension to SIAP's facilitated course "Data Visualization for Official Statistics and SDG Indicators" conducted in 2021 and 2022 or, alternatively, to the self-paced course "Principles of Data Visualization for Official Statistics and SDG Indicators" available on SIAP's e-learning platform. This new course focuses on methods to produce high-quality graphics for monitoring and publishing official statistics and the Sustainable Development Goals (SDGs) indicators. It also highlights advanced topics such as network visualization, high dimension data visualization, visualizing uncertainty and address some important issues when communicating with graphics. In particular, storytelling and the construction of visual narratives for any type of audience, or inclusive data visualization, is emphasized and discussed.

The course provides an opportunity for participants to improve their techniques of data visualization for data exploration as well as for data presentation of complex, unstructured or high dimension data. The course proposes cases studies and strategies for visualizing in multi-dimensions as well as 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 used and showcased 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 4 +1 modules. Each module is composed of several mandatory pedagogical activities, following a logical structure. Activities include interactive videos, forums, interactive graphical interfaces, live lectures, webinars, exercises, polls and quizzes. A preliminary module, M0, serves as

a reminder of data visualization notions, terminology and basic concepts. These notions will be used throughout the course.[1]
The course is hosted on the SIAP's Learning Management System (LMS) which contains a forum for general questions and interactions with the SIAP's lecturers and e-learning platform administrators. Mandatory weekly webinars, in the form of presentations or Q&A sessions will be proposed using the Microsoft Teams platform. The participants are expected to interact during live sessions and through forums embedded in each module.

Communication, pedagogical resources and webinars are in English.

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.

As this course is at an advanced level**, participants must have successfully completed one of these courses** prior to registration :

- "*Data Visualization for Official Statistics and SDG Indicators*" a facilitated course conducted in 2021 and 2022

or, alternatively,

- "*Principles of Data Visualization for Official Statistics and SDG Indicators*" a self-paced course available on SIAP's LMS..

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*
- *Visually apprehend data in multiple dimensions*
- *Apply data visualization design rules and principles*
- *Elaborate strategies for visualizing statistical indicators on maps*
- *Apprehend network representation and identify the limits of their construction*
- *Discuss visual narrative concepts*
- *Apprehend data storytelling*
- *Identify and focus on inclusive data visualization*
- *Analyse the importance of visualizing graphics when uncertainty exists*

[1] The module M0 is not a substitute to the completion of data visualization mandatory courses.

IV. Course Design and Content

The course is divided in 4modules and will last for 4 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. We also propose optional activities based on popular data visualization software, links to free online tools and to bespoke interactive pedagogical exercises.

Module	Coverage
0 – 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
1 - Maps and Networks	- Statistical indicators on maps - Construction of networks - Visualizing relationships with networks - Issues in network visualization
2 – Advanced Data Visualization Methods	- Visualizing in high dimensions - Visualizing uncertainty - Visualizing uncertainty in High Dimensions - Visualizing surfaces
3 - Interactivity, Storytelling and Visual Narration	- Interactivity in data visualization - Design principles - Gestalt principles - Visual narratives - Storytelling -
4- Inclusive and Ethical Visualization	- Unused data visualizations - Inclusive visualization - Ethical 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) Multiple Choice Questions (MCQ)-like tests to complete at the end of each module.
2) An individual data-based project to be submitted before the end of the course.

To succeed in the course participants must have at least a total score of **70/100**, and comply with the following conditions:

- Complete **all** of the mandatory activities in each module.
- Complete **all** the tests at the end of each module
- Complete the individual data-based project activity in due time

Participation to the various chats and Q&A will provide bonus points.

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