

# Fostering Statistical Literacy in Greece

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**Abstract.** The Hellenic Statistical Authority (ELSTAT), the National Statistical Institute of Greece, as the guarantor of the quality of official statistics in Greece, has been pursuing, since 2016, an ambitious strategy aiming to foster Statistical Literacy, focusing on strengthening ties with citizens in their dual capacity both as providers of data and ultimately as users of statistics, and thus, operate as crucial enablers of a smoothly functioning virtuous circle of official statistics.

Objectives include the development of an understanding of basic methodologies and tools used in official statistics, along with the awareness of its institutional foundations and core principles. This critically contributes to the value of official statistics being spread and effectively communicated, making, at the same time, a convincing case for fact-based decision making in the daily lives of the main stakeholders.

This article motivates the approach followed in developing a specific strategy on statistical literacy, outlines its philosophy and main objectives and browses through the array of initiatives and actions undertaken over the last five years. In addition, it explores the responsiveness of citizens to these initiatives and the extent to which these initiatives lead to an increased engagement of key targeted stakeholders.

Keywords: Statistical literacy, statistical consciousness, official statistics

## 1. Introduction

Official statistics are a public good, which has become even more valuable in the data revolution and “post-truth” era. Developing Statistical Literacy aiming to promote the relevance of official statistics and their applications in the everyday life/professional activities of citizens needs to be a strategic choice and priority of National Statistical Institutes (NSIs).

In particular, the objective of Hellenic Statistical Authority’s (ELSTAT) strategy in fostering Statistical Literacy is the establishment of a long-standing relationship with the members of the educational community of all levels, as well as with significant institutional stakeholders, such as journalists and public communication specialists, civil servants and decision makers in the political sphere. ELSTAT’s strategy aims at strengthening the ties with citizens in their dual capacity first as providers of primary data and ultimately as users of

the final statistical product, and thus, operate as crucial enablers of a smoothly functioning, uninterrupted “virtuous circle of official statistics” (VCOS). Through this relationship the principles that rule official statistics are made visible and known, while the importance and relevance of official statistics become clear and justifiable. At the same time, this relationship serves as the basis for creating durable trust bonds between official statistics and stakeholders that can constantly feed the interaction of the NSIs with citizens in all possible roles they can have in the official statistics production chain (respondents to surveys, users, public administrators, policy makers, employees in the field of official statistics, etc) and thus sustain the VCOS, i.e., the continuous virtuous feedback loop between producers of official statistics on the one hand, and citizens on the other, the latter assuming both the role of the respondent and the role of the user: to the extent that citizens in their capacity as respondents are ready to entrust their true data to producers of official statistics (and that fact becomes a collective belief), the latter can produce statistical information that will be compiled according to the highest quality standards and desired properties. By the same token, citizens, now assuming the role of a user, will

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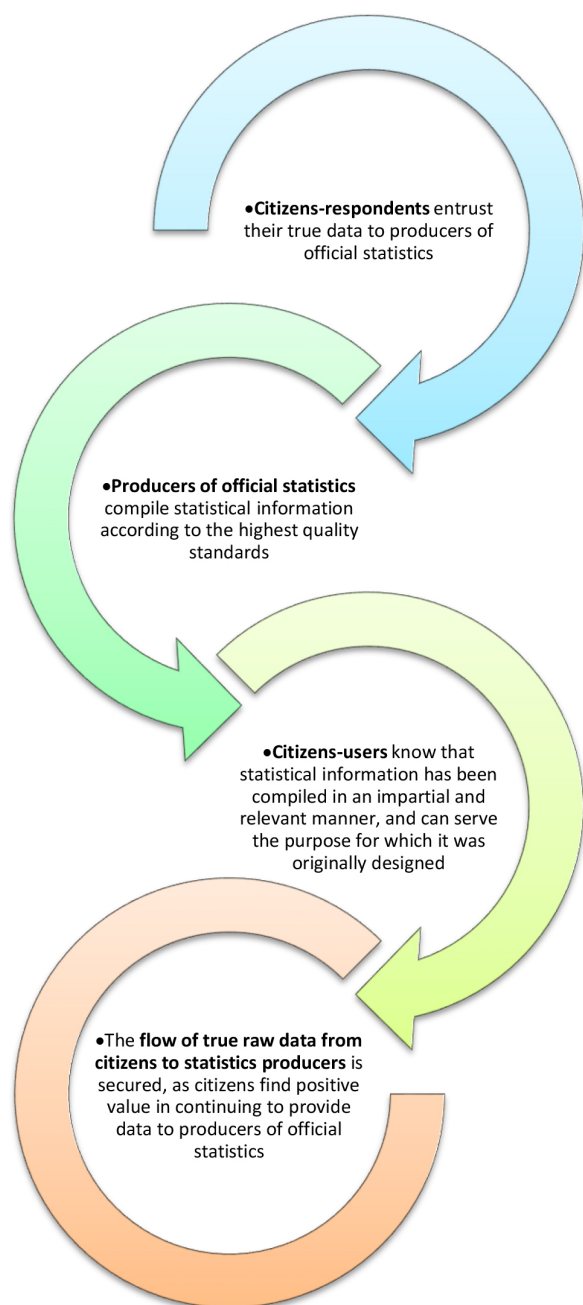


Fig. 1. Virtuous circle of official statistics (VCOS).

know that the above statistical information has been compiled in an impartial, objective and relevant manner, and therefore it can serve the purpose for which it was originally designed. This, in turn, would secure the flow of true raw data from citizens to statistics producers, as citizens would find positive value in continuing to do so (Fig. 1).

Directing efforts in developing statistical conscious-

ness of both users (use of data) and respondents (supply of data) is crucial for the unhindered reproduction of the VCOS and therefore lies at the core of ELSTAT's strategy. Today's student communities comprise tomorrow's power users, decision makers and leaders in businesses in the public sector and in politics, as well as communication experts and opinion leaders. So, it has been considered as absolutely necessary to initially approach the school and university community in a comprehensive and inclusive manner. Citizens/professionals related to the use/demand of statistics (journalists, decision makers in politics, civil servants) or to the supply of primary/administrative data for the production of official statistics (such as high-ranking civil servants) that had not been exposed to the subject during their student years, turned out to be the natural target in the sequel of the process. This ensures that ELSTAT's strategy on statistical literacy covers the entire age spectrum both in a static manner (current-data related-professional roles of the targeted citizens) but also in a dynamic manner (current but also anticipated roles) as it is the case for students. During the last five years, ELSTAT has acknowledged the mutually beneficial results that the process of fostering Statistical Literacy in Greece may bring and has invested considerable resources and efforts in designing and implementing actions for the achievement of this objective.

This paper is organized as follows:

Section 1 provides a motivation for the approach followed in the development of a specific strategy on statistical literacy in Greece, outlines its philosophy and main objectives and features a roadmap to the rest of the paper.

Section 2 elaborates on the specific interventions that took place in the sphere of formal education, including various forms of interaction with students and teachers of all grades, student competitions, key partnerships with institutional stakeholders and communication campaigns.

Sections 3–5 discuss interventions involving journalists, decision makers in the political sphere and civil servants respectively, along similar dimensions to those of Section 2.

Section 6 provides a brief overall assessment of the progress made so far and concludes.

## 2. First pillar: Students of all educational levels

### 2.1. Objective

*Why promoting Statistical Literacy in Greece?* Taking as a starting point the fact that official statistics is a

public good, ELSTAT spares neither effort nor resources in order to promote Statistical Literacy in Greece. The ultimate objective is to foster a solid understanding of the basic methodology and tools used in modern official statistics along with developing a firm awareness of the institutional foundations and core principles of official statistics for the future generations of Greek citizens.

*ELSTAT envisages having a dominant presence in all phases of the VCOS.* The main intervention apparatus of ELSTAT would be to strengthen the Institution's presence in all phases of the trust-chain typically called VCOS: By educating and informing the young/future users of statistics, ELSTAT manages to build confidence and trust of the public in its ability to properly handle and technically manage individual data with a view to producing meaningful and relevant statistics out of it, while fully adhering to the best practices and core principles governing the production and dissemination of official statistics.

*What is the aim of building trust?* Trust would, in turn, increase participation of respondents in the future, be it members of households, entrepreneurs or professionals, to the statistical surveys of ELSTAT, and help form favorable public opinion that would pave the way for easier access to administrative individual data for statistical purposes. This would contribute to a higher value statistical product that would, in turn, make it an easier case to educate the future generations of Greek citizens about the usefulness of official statistics.

*ELSTAT's strategic plan involves a mentoring philosophy with a view to bolstering long-standing relationships with future users.* ELSTAT's long-term strategy involves establishing mentoring relationships with students with the aim to inspire future scientists and professionals that could ideally be employed in the field of official statistics. Raising awareness on the pitfalls of distorted facts, unfounded claims and fake news while at the same time increasing exposure to sound statistical practices is achieved through educating students on proper reading, analyzing and interpreting official statistics as well as on understanding techniques of tracing the authenticity of data sources.

Establishing long-term relationships with students through coaching practices contributes to building and maintaining a broad and in-depth field of interaction while it also reinforces long-standing "trust bonds" of ELSTAT with future users and decision makers.

At the same time, the continuous monitoring of the effectiveness and appeal that coaching activities have on students throughout time, helps ELSTAT to regularly assess and recalibrate its communication strategy vis-à-vis users' needs.

*A wide range of topics is covered by the strategy "Fostering Statistical Literacy in Greece".* Typical areas of focus of actions undertaken in the framework of the strategy "Fostering Statistical Literacy in Greece" include, *inter alia*, applications of statistics in every-day life and the importance of flagship surveys such as the Population and Housing Census for the life of Greek citizens. Moreover, specialized topics and specifically the scientific tools used in the development, production, dissemination and communication of official statistics and the emerging expansion and streamlining in the day-to-day production of official statistics of alternative data sources, such as big data and data produced by smart devices and sensors, the perspectives they offer and the challenges they entail, are also covered. In parallel, institutional topics and topics related to the United Nations Fundamental Principles of Official Statistics, the European Statistics Code of Practice and the protection of personal data are part of the strategy.

## 2.2. Overview of actions undertaken

*The first round of actions has been successfully completed.* ELSTAT has completed successfully a first round of various actions under the main objective of "Fostering Statistical Literacy in Greece". The strategy includes actions that have been set up to be continuous, as well as one-off actions. Typical examples of actions of both categories include the establishment of an official administrative framework of cooperation, the engagement and interaction with students and teachers of all levels of education, the active involvement of ELSTAT in the educational process, the promotion of the overall project, the organization of competitions and the granting of relevant educational material.

*During the Corona Virus Disease 2019 (Covid-19) pandemic, ELSTAT exhibited swift adaptation and accordingly modified, to the largest possible extent, the actions of its "Fostering Statistical Literacy in Greece" strategy,* in order not to lose momentum and to maintain the established relationship with all the stakeholders of the educational process. In practice, ELSTAT benefited from the forced – by the confinement measures – changes in the everyday time schedules of students and the resulting increased flexibility creating a window of opportunity for further engagement with official statistics.

*What is the content of the strategy "Fostering Statistical Literacy in Greece"?* All the above individual actions can be classified into the following groups:

1. Establishing the framework of cooperation with the Ministry of Education

2. Organizing educational visits and presentations addressed to students
3. Establishing the role of ELSTAT as key partner in the educational process
4. Communicating and promoting the strategy “*Fostering Statistical Literacy in Greece*”
5. Launching competitions
6. Granting educational material

### 2.3. An overview of the completed actions

#### 2.3.1. Establishing the framework of Cooperation with the Ministry of Education

*ELSTAT signed a Memorandum of Cooperation with the Ministry of Education.* In March 2018 a Memorandum of Cooperation on fostering Statistical Literacy was signed, at the highest level, between ELSTAT and the Ministry of Education, Research and Religious Affairs. The Memorandum provides, *inter alia*, for the introduction of a Statistical Literacy program in the formal curriculum of secondary education.

*ELSTAT establishes partnerships in order to communicate its actions more effectively.* Furthermore, ELSTAT can benefit from the existing administrative mechanism of the Ministry when it needs to properly and comprehensively communicate statistical initiatives and actions such as competitions, school visits to its premises, etc.

*A dedicated course in official statistics is going to be introduced in secondary education.* ELSTAT aims to ultimately introduce a dedicated course in official statistics as a core subject in secondary education curricula. To this end, ELSTAT is currently preparing a high-school textbook dealing with the most important notions and tools of official statistics, including important institutional matters.

#### 2.3.2. Organizing educational visits and presentations addressed to students

*The President of ELSTAT visits schools all over Greece and discusses with students and professors on official statistics.* Invitations and visits of the President of ELSTAT to schools and academic institutions were established. During the visits of the period 2018–2019, the students and professors of several schools had the opportunity to meet and discuss with the President of ELSTAT on official statistics, among which the students and professors of the Experimental High School of Heraklion in Crete, a gold medal winning school in the First Greek Nationwide Statistics Competition organized by ELSTAT in 2017 and the fourth ranked school

in the Fourth Greek Nationwide Statistics Competition in 2020.

The President,<sup>1</sup> but also other officials, of ELSTAT were invited on several occasions by Universities, Professional and Scientific societies to deliver lectures related to the current and future uses of scientific tools stemming from various disciplines in modern official statistics and the importance of official statistics for decision making in everyday life.

*ELSTAT regularly welcomes students from schools at its premises.* The educational visits of students at ELSTAT’s premises in Athens and in Thessaloniki are established with a continuously updated content especially geared to different levels of educational attainment. During these visits, young people are informed by the instructors of ELSTAT about the development, production, dissemination and proper communication processes of official statistics. They also become familiar, following a hands-on learning experience, with navigating through the websites of ELSTAT and Eurostat in order to find the information they could be looking for.

In quite a few of these visits at ELSTAT’s headquarters in Athens and in others at ELSTAT’s premises in Thessaloniki, the President of ELSTAT welcomes the students and gives them a brief introduction to the mission and tasks of ELSTAT.

During the period 2016–2019 a sharp increase was recorded in the number of schools, universities, students and professors having attended these educational visits (Fig. 2).

Due to the confinement measures in the Covid-19 pandemic period, these visits were temporarily halted in March 2020. In 2021, selected educational visits of schools of Thessaloniki and Athens took place via videoconferences.

*ELSTAT trains and certifies its instructors and continuously fine-tunes the content of the presented material in order to meet the sharp increase in demand for educational visits.* In parallel, the subjects covered in the educational visits at ELSTAT’s premises are expanded and enriched with topics related to the current trends in official statistics. An internal mechanism of training, continuous evaluation and certification of new instructors selected amongst the young and competent

<sup>1</sup>Examples include an invitation by the Greek Mathematical Society in Crete and the keynote speech (2019) in the graduation ceremony of the Mathematics Department of the Aristotle University of Thessaloniki (featuring a recently EMOS-awarded postgraduate program).

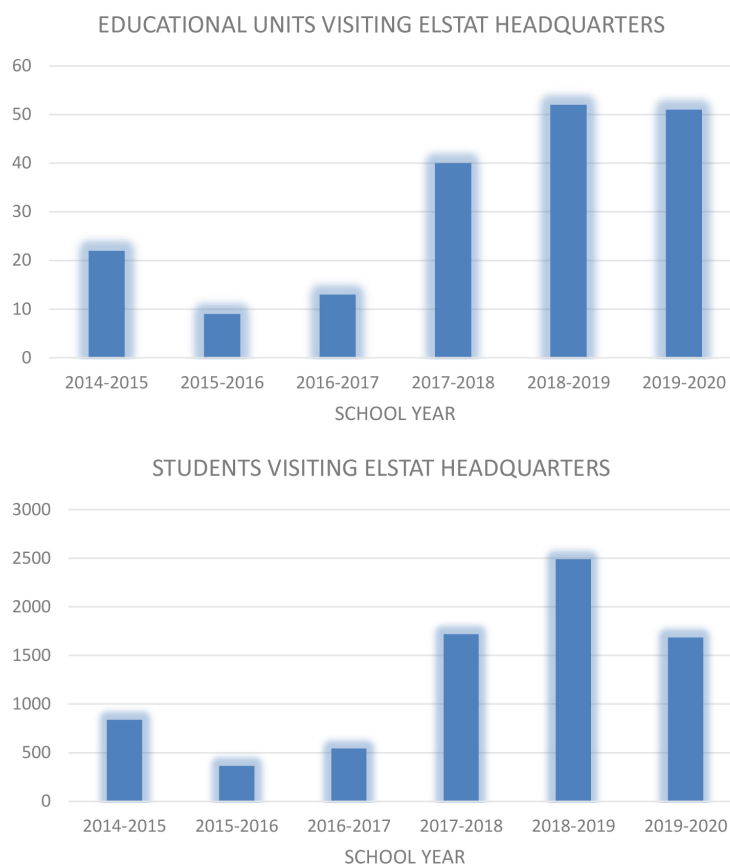


Fig. 2. Educational units and students, visiting ELSTAT Headquarters.

staff of ELSTAT that will henceforth participate in the pool of instructors responsible for the educational visits, is an on-going process with the aim to respond to the growing demand for educational visits.

In parallel, visits of ELSTAT instructors to schools in remote regions have been organized and the first visits of this kind took place in schools of Rodopi and Rethymno regions.

*ELSTAT engages extensively with students in the framework of the 83rd and the 84th Thessaloniki International Fair:* Educational presentations to High School students took place in the framework of the participation of ELSTAT in the 83rd and the 84th Thessaloniki International Fair (September 2018, September 2019). It is worth noting the impressive presence of schools and students, despite the fact that these events took place during the summer break in both years.

*ELSTAT reconstructs an area in its headquarters for the exhibition of cartographic material.* This cartographic material corresponds to the previous Population Censuses conducted by ELSTAT and will constitute a valuable educational tool to be used during educational

visits of either specialized audiences (such as students of topography and cartography) or more general audiences.

### 2.3.3. *Establishing the role of ELSTAT as key partner in the educational process*

*ELSTAT participates in vocational mentoring and traineeship programs.* Traineeships at ELSTAT's premises for students from Universities from all over Greece and Schools of Artistic Studies and Technical Applications have been initiated since 2017 and are continued each academic year since then.

Traineeships of students from the Vocational Institute for Graphic Design have been inaugurated at ELSTAT's premises.

In 2018, the participation of ELSTAT in the summer program on vocational guidance started. This program is addressed to students of the first and second grade of the High School of the Athens College.

*A Greek University Masters program was awarded for the first time with the EMOS label.* The integration process of Greece into the network of postgraduate pro-

grams in the field of official statistics at European level has been successfully completed, with the award of the prestigious “European Masters in Official Statistics” (EMOS) label for the period 2019–2023 to the “Masters program in Mathematics with a specialization in Statistics and Modeling” of the Mathematics Department of the Aristotle University of Thessaloniki. ELSTAT was decisively involved in the pre-certification procedure, providing detailed advice and guidance as regards the modifications in the academic curriculum of the aforementioned program required by the EMOS board. During the academic years 2019–2020, 2020–2021 the President of ELSTAT and official experts of ELSTAT gave lectures on the domain of official statistics to the students attending this program. Official statistics constitute two distinct individual courses of the program, in which ELSTAT fully determines their scientific content as well as the evaluation of students. The students of the academic year 2019–2020 had the opportunity in December 2019 to visit ELSTAT headquarters in Athens and to be guided in the different organizational units of ELSTAT where short presentations took place. The highest ranking students of the program, after having successfully completed their first year, initiated their masters theses and at the same time are currently hosted and work as trainees at ELSTAT’s premises in Thessaloniki. The subject and the scientific analysis for some of the theses are jointly directed by the Aristotle University of Thessaloniki and ELSTAT.

*ELSTAT establishes cooperation and synergies with Academia.*

- In March 2021, a Memorandum<sup>2</sup> of Cooperation was signed between ELSTAT and the Athens University of Economics and Business, with subject matter the development of a series of research and educational initiatives in areas of common interest. Moreover, the Athens University of Economics and Business has initiated the process of adapting one of its postgraduate programs on the basis of the requirements of EMOS label under the guidance and advice of ELSTAT.
- The cooperation of ELSTAT by virtue of a Memorandum<sup>3</sup> of Cooperation with the department of Electrical and Electronic Engineering of the Aristotle University of Thessaloniki has been estab-

lished, aiming to jointly develop sampling methodologies for “smart statistics”, benefiting from data produced by sensors and individual “smart” devices.

#### 2.3.4. *Communicating and promoting the project “Fostering Statistical Literacy in Greece”*

*“Fostering Statistical Literacy in Greece” was promoted in the framework of the 83rd and 84th Thessaloniki International Fair<sup>4</sup> in 2018 and in 2019.* The project “Fostering Statistical Literacy in Greece” was the main subject of the 83rd and of the 84th Thessaloniki International Fair in 2018 and in 2019. Hundreds of students from schools in the region of Thessaloniki received invitations to visit the ELSTAT stand and attended specially targeted lectures on the mission and actions of ELSTAT.

*A video<sup>5</sup> with subject “Fostering Statistical Literacy in Greece” was created.* In autumn 2020, a video with subject “Fostering Statistical Literacy in Greece” was created and released by ELSTAT. This video presents in a visual and comprehensive manner the array of the relevant actions undertaken by ELSTAT since 2016.

*ELSTAT offers an intuitive digital portal<sup>6</sup> for users to gain easy access to its actions and initiatives on Statistical Literacy.* A dedicated webpage on Statistical Literacy was created which is the main channel for informing stakeholders. This webpage is regularly enriched with new educational material and has been translated in English.

*The electronic platform<sup>7</sup> “Census at School – Census@School” is implemented.* This platform provides educational material and instructions on the process and the practical conduction of a statistical census survey at the level of the school unit. In this way, students are involved in the collection and analysis of statistical data and they identify similarities or differences at the level of the school unit.

*Educational material<sup>8</sup> from the webpage of Eurostat is now available in Greek.* The subsections “Population” and “Statistical Concepts” from the section “statistics4beginners” in the official webpage of Eurostat were translated in Greek, as well as e-publications from the program “Innovative and shareable products and tools”.

<sup>2</sup>[https://www.statistics.gr/documents/20181/306935/memorandum\\_%CE%9F%CE%A0%CE%91\\_22.03.2021.pdf/5e89cf3b-4f03-88ee-efe9-ed0e3b76073e](https://www.statistics.gr/documents/20181/306935/memorandum_%CE%9F%CE%A0%CE%91_22.03.2021.pdf/5e89cf3b-4f03-88ee-efe9-ed0e3b76073e).

<sup>3</sup>[https://www.statistics.gr/documents/20181/306935/memorandum\\_arist.pdf/4d871b4b-6afe-659a-5487-44dfa73c86d9](https://www.statistics.gr/documents/20181/306935/memorandum_arist.pdf/4d871b4b-6afe-659a-5487-44dfa73c86d9).

<sup>4</sup><https://www.statistics.gr/en/edu-tif>.

<sup>5</sup><https://youtu.be/LUHH8U1vhB8>.

<sup>6</sup><https://www.statistics.gr/en/edu>.

<sup>7</sup><https://www.statistics.gr/en/census-at-school>.

<sup>8</sup><https://www.statistics.gr/en/edu-video>.

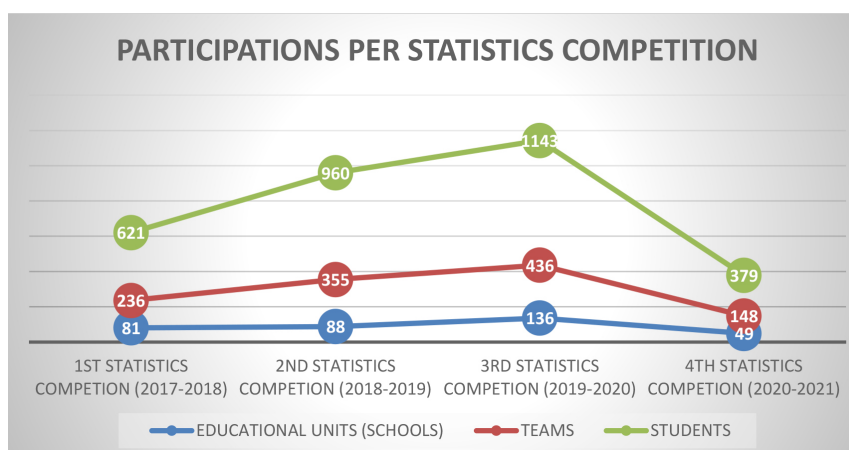


Fig. 3. Participations per Greek Nationwide Statistics Competition, in terms of educational units (schools), teams and students.

*ELSTAT issues its flyer<sup>9</sup> on Statistical Literacy.* A special flyer was issued, both in Greek and in English, presenting the actions of ELSTAT on fostering Statistical Literacy in Greece in an easily accessible manner, with rich photographic material.

*An educational web game has been created.* It will be hosted soon, online, in a dedicated place of ELSTAT's website.

### 2.3.5. Launching competitions

*A Greek Nationwide Statistics Competition runs for four consecutive years.* In 2017, the Nationwide Statistics Competition was established at national and European level. The 1<sup>st</sup> Greek Nationwide Statistics Competition brought together 236 teams from 81 schools from all over Greece, the 2<sup>nd</sup> Greek Nationwide Statistics Competition 355 teams from 88 schools and the 3<sup>rd</sup> Greek Nationwide Statistics Competition 436 teams from 136 schools respectively, recording an impressive increase from year to year. The participations for the 4<sup>th</sup> Greek Nationwide Statistics Competition were partially affected by the impact of the confinement measures to the total educational process. 148 teams from 49 schools responded to the call of this latest Competition, which is still in progress (Fig. 3).

For the two first Competitions, the award ceremony of the first 10 ranked teams (5 teams from Junior High Schools and 5 teams from High Schools) that stood out was held at ELSTAT premises in Athens, while for the third Competition, the awards were sent to the winners

due to the confinement restrictions. The process for awarding the winners of the fourth Competition is not yet completed.

*The work of ELSTAT is made known by launching other types of "special purpose" competitions.* In October 2018, a competition on the design of the logo of the 2021 Population and Housing Census was launched. Graphic design students as well as students from related disciplines were invited to participate in the competition.

### 2.3.6. Granting educational material

*What kind of material is ELSTAT providing?* The educational material prepared and created by ELSTAT, with the form of books, exercise workbooks, videos, etc. is regularly renewed and updated. In particular, four types of exercise workbooks<sup>10</sup> have been created. The first type is addressed to children attending the early primary school classes and focuses on the introduction of a first contact with statistical data. The second type is addressed to students of the last grade of the primary educational level and to the first two grades of the secondary level and aims at making them familiar with infographics and at identifying the information contained therein. This exercise workbook also includes two games with questions and answers, the content of which is based on real data from statistical surveys, as well as a presentation of the normal distribution and its applications to every-day life. The third type of exercise workbook is a continuation of the workbook of the second type. It is addressed to students of the secondary educational level and includes exercises in statistics,

<sup>9</sup><https://www.statistics.gr/documents/20181/16786229/STATISTI-KI+PAIDEIA.pdf/29d472fa-ca72-f96a-51aa-1225ee321724?t=1567515432051>.

<sup>10</sup><https://www.statistics.gr/en/edu-games>.

as well as origami craft applications. The fourth type, which is currently at the design phase, is a textbook addressed to High School students with the aim to present the basic concepts of official statistics, including the institutional foundations, in a simple and clear manner.

ELSTAT has established the practice of granting basic writing supplies and electronic equipment to selected schools, for educational purposes, when this equipment/material is about to be replaced by new equipment. In this way, the useful lifecycle of the equipment is extended in a constructive way. Educational printed material (e.g. from the Thessaloniki International Fair, Eurostat, etc.) gets forwarded to school libraries, along with infographics posters in order for them to be displayed in school rooms.

#### 2.4. Actions planned by ELSTAT for the coming period

*A second round of actions has been already planned.* After the successful completion of the first round of actions of its strategy on “Fostering Statistical Literacy in Greece”, ELSTAT is already planning and has started implementing the actions of tomorrow with the aim to broaden their resonance and audience.

##### 2.4.1. Organizing educational visits and presentations addressed to students

- Thematic one-day conferences addressed to teachers and professors are organized.

##### 2.4.2. Establishing the role of ELSTAT as key partner in the educational process

- The project “*Fostering Statistical Literacy in Greece*” is included in the configuration of the concept of the so-called “Thematic Week” of Junior High Schools and of the so called “Flexible Zone” of primary schools. These sessions are taking place for a given time duration within the school year and are meant to include topics that lie beyond the coverage of the standard school program, but still lie within the interests of students.
- The elaboration of postgraduate dissertations on official statistics topics is established. These topics would be selected after the cooperation of ELSTAT with the corresponding degree granting Universities.
- Webinars for students of primary and secondary educational levels are created.
- ELSTAT participates in the program “Filoxenia”, funded by the Hellenic Parliament Foundation. This program is granting short-term accommoda-

tion in Athens to students of remote secondary schools from all over Greece in order for them to participate in various cultural and educational activities.

#### 2.5. Evaluation of the project so far

The response to the project “*Fostering Statistical Literacy in Greece*”, and the feedback recorded by ELSTAT, so far, are very positive, encouraging and, therefore, inspiring for the intensification, expansion and enrichment of the next steps that ELSTAT is planning.

The response is positive both from the side of the participants and interacting stakeholders coming from the educational institutions (students, professors, etc.), (Figs 2 and 3) but also from the side of the management of education at the political level (Ministry of Education, Research and Religious Affairs). Both parties embraced the actions of ELSTAT with their continuously increasing participation. An important factor that contributed significantly to the positive outcomes that have been recorded so far has to do with the enthusiasm and engagement exhibited by ELSTAT’s staff.

Enthusiasm and cooperation among all involved parties is an essential ingredient for the establishment and evolution of the project that would enhance Statistical Literacy in Greece in a sustained way.

### 3. Second pillar: Journalists

#### 3.1. Objective

*Journalists as key stakeholders of official statistics.* Among all important institutional stakeholders, journalists are most well placed in order to highlight the value and relevance of official statistics. The regular/everyday feed of the public opinion with news and information, the coverage of all issues of interest for citizens, enterprises and the society at large, the interaction with policy makers, make journalists a group of professionals with institutional and essential role in the impact and formulation of the public opinion, totally and at regional/local, sectoral or other level.

*Use of official statistics by journalists.* Official statistics have always been the main subject and source for journalistic articles, analyses and broadcasts. The position of official statistics in the journalistic work is sometimes dominant and sometimes secondary/supportive. However, official statistics are not always presented by journalists in an objective neutral, non-partisan or im-



partial way. There are several instances where official statistics are either (deliberately) misinterpreted or intentionally portrayed as deviant from reality and in this sense as not completely accurate and representative.

Reasons for the misuse of official statistics by journalists typically include lacking an adequate knowledge and understanding of official statistics, notably of their compilation methods and underlying principles, actively pursuing a partisan agenda or reproducing established (personal or collective) convictions.

A typical example is the manner in which revisions of key provisional statistics are communicated, motivated by a predetermined political, economic or social stand, instead of being acknowledged as a regular (in most cases) process for the maintenance and assurance of quality standards of official statistics. Scheduled revisions of GDP statistics often suffer from such treatment by journalists.

Another example is the “a la carte” selection of the quantitative information source that best suits the journalist’s intended narrative, often coupled with a total disregard of the differences in the methodological underpinnings, standards and definitions characterizing each source. A celebrated example – often observed in many countries – of such an “a la carte” selection is the measurement of the unemployment rate. The latter can either be measured following standards based on a solid and wellknown statistical methodology used by Statistical Offices, or according to arbitrary (from a statistical standpoint) and time-varying criteria used by unemployment registry offices. Naturally, oftentimes data stemming from these sources exhibit conflicting patterns, thus offering ample grounds for misuse and controversy.

*Objective of the actions of ELSTAT.* Against this background, ELSTAT has set as an objective of primary importance the close interaction and communication with journalists in order to raise awareness on the proper use of official statistics, to highlight the hallmark quality features of official statistics and to underline the importance of their impartial compilation and communication.

### 3.2. *Actions already implemented and actions planned for the coming period*

*Thematic Press Conferences.* The main action implemented by ELSTAT aiming at fostering Statistical Literacy for journalists is the organization of workshops and Press Conferences in which widely used statistical products compiled by ELSTAT are presented and ana-

lyzed. During these events, useful information is provided on the individual features of the statistical products presented. This kind of information is essential for the proper use of statistics and covers issues such as: main sources and compilation methods, comparability with other relevant statistics, policy and frequency of revisions, etc.

The two first thematic Press Conferences already organized by ELSTAT concerned Government Finance Statistics and National Accounting (in particular, GDP accounting). During the events, official experts of ELSTAT presented the main sources and compilation methods of these statistics, their revision policy and other important features. At the same time, the most recent results of these statistical domains were presented, followed by conversation and submission of questions and comments from the audience.

The Press Conferences addressed to journalists active in the economic and financial reporting, met wide response and lively participation. The coverage and reproduction of the Press Conferences by the media after their completion was extensive.

For the coming period, ELSTAT plans to organize new Press Conferences for selected statistics, such as labor force and unemployment statistics, statistics on the conditions of living, poverty risk and social exclusion.

*Speeches of the President of ELSTAT to members of news agencies and professional unions of journalists.* Aiming at highlighting the entire range of ELSTAT’s work and the importance of the impartial reproduction of this work by journalists, ELSTAT, at the higher hierarchical level through its President, delivers speeches to members of news agencies and professional unions of journalists.

By the present time, two such speeches of the President of ELSTAT have taken place addressed to the members of the biggest news agency of Athens. The speeches highlighted the framework of operation of ELSTAT with emphasis to the Authority’s professional independence, presented the key official statistics and their basic features and underlined the importance of their objective use by journalists as an evidence-based source.

For the coming period, a new speech of the President of ELSTAT is planned addressed to the members of the biggest professional union of journalists in Athens.

*Interviews to newspapers on selected sectoral statistics presented for the first time.* ELSTAT develops its cooperation with journalists who cover specialized thematic areas (e.g. book, health, education, etc). This cooperation aims to inform the public opinion on the

plethora of available official statistics on specific domains and in parallel to showcase the common principles, the modern infrastructure and scientific potential that underline the entire array of ELSTAT's statistical products, notably the most novel ones developed during the COVID-19 pandemic.

#### 4. Third pillar: Decision makers in the political sphere

##### 4.1. Objective

*The nature of the operations of politicians.* The nature of the operations of politicians, in particular, of parliamentarians and members of the Government attracts the interest of the media as regards their public statements on various issues and subsequently to the formulation and influence of the public opinion on these issues.

Official statistics, covering a wide range of the economy and of social activities, among which the most important economic figures, such as GDP, unemployment rate, Government Finance figures, etc., are the focal point of politicians' analyses and public statements.

*Use of official statistics by politicians.* However, the communication of official statistics by politicians during the performance of their duties, in particular, as incorporated in their public statements, is typically not limited to technical or scientific statements, but it often-times takes the form of vague statements that invoke official statistics only selectively, opportunistically, self-servingly and only to the extent that they corroborate the intended argument in the public debate. Not surprisingly, there are cases where this communication may go as far as challenging the credibility and accuracy of official statistics, if the latter contradicts the supported argument.

*Strengthening the statistical consciousness of political decision makers.* Given the important role of politicians in democracies as leaders, legislators, decision makers, institutional users and stakeholders of official statistics, but also taking into account the potential erosion inflicted in the credibility of official statistics by the selective and self-serving use of official statistics by politicians in the public debate, ELSTAT is planning for the period 2021–2025 an array of actions aiming to foster and strengthen the statistical consciousness and literacy of politicians. The targeting is two-fold: first, provision of information on the compilation methods of official statistics and their features and secondly, foster

awareness on the importance of the desired institutional underpinnings of a sound national statistical system and the coordinating role of ELSTAT.

In parallel, the planned actions of ELSTAT could be beneficial for the public perception of official statistics and their relevance through promoting their proper and systematic use by politicians. The advantages of this use can be multifaceted, ranging from the design and implementation of adequate policy measures for society and economy on the basis of reliable and factual data to the identification of needs for new statistics or the improvement of existing statistics, for example through the access to new data sources or through the increase of resources (human, financial, etc.) that are available for the compilation of official statistics.

It is important for the planned actions to encompass not only politicians (parliamentarians, Government members, elected members of local administration, etc.) but also the wider circle of advisors and other executives who support politicians in their work.

##### 4.2. Actions planned for the coming period

*The creation and publication of newsletters* that will be addressed to decision makers at the political level and their advisors. These newsletters will focus on the latest developments and results in flagship statistical fields and surveys while providing at the same time summary information on the primary data sources used and the methodology applied, revisions practices, practical applications, coherence and comparability issues with other relevant statistics or data, as well as potentials of using administrative data for their production.

Moreover, the newsletters will include summary information as regards the principles of operation of ELSTAT and the European Statistics Code of Practice, by putting emphasis on the principles of professional independence, the mandate of collecting data and impartiality (mainly the provision of equal access to the users of official statistics).

Based on the newsletters, politicians and their associates will be informed in a concise and comprehensive manner on the most important and widely used official statistics and their features. These newsletters could serve as reference points for the reproduction of official statistics by politicians during the performance of their duties and in their public statements, as well as a guide for the proper appraisal of official statistics.

*The organization of workshops* addressed to politicians and their advisors, during which important fields of official statistics will be presented and views will be

exchanged upon them on topical issues related to both methodological and institutional agendas. In parallel, discussions can take place around the needs for new statistical information and the potential for developing new official statistics.

## 5. Fourth pillar: Civil servants

### 5.1. Objective – Motivation

*Use of administrative data in the compilation of official statistics.* In the recent years the value of using administrative data in the compilation of official statistics has been widely acknowledged. The use of administrative data in the compilation of official statistics is constantly expanded and evolving due to both the growing range of the available administrative data and the methods that are developed for their statistical processing and exploitation.

Administrative data are mainly maintained by governmental agencies for the purpose of meeting their specific competences as stipulated in the law, and certainly not catered to meet society's needs for statistical information. Consequently, the type, features and structure of administrative data are entirely determined by the needs of the hosting agencies.

Viewed from the standpoint of a NSI, administrative data constitute a valuable source of primary information as they are characterized, in many cases, by completeness, accuracy, periodicity and in parallel, they do not impose any burden to physical persons or enterprises for their collection. However, the access of NSIs to administrative data (at an adequate for producing statistics degree), their participation in the design, definition of the type, features and structure of administrative data, even when those are explicitly stipulated in the underlying legal texts is rarely a seamless exercise in practice.

*Making civil servants aware for the importance of the cooperation with National Statistical Institutes.* A need, therefore, arises for informing and increasing the awareness of high and mid-level ranking civil servants of the importance of cooperating with the NSIs, for facilitating the production of official statistics, as well as for the significance of using administrative data in the compilation of official statistics.

Civil servants' statistical consciousness will guide them in the performance of their duties and contribute in a beneficial way in the compilation of official statistics. Statistically conscious public servants could act, in

a broader context, as effective ambassadors of official statistics in their professional and personal life, while they can communicate more effectively with the NSI for the identification or development of new administrative data that could be used in the deployment of new statistics or in the improvement of existing ones.

In Greece, in the recent period, only a few years following the kick-off of what is now a close cooperation of the Tax Collection Authority (AADE) with ELSTAT (originally intended to provide individual tax data to ELSTAT), AADE proceeded to a major restructure of one of its flagship tax return forms, filled in each year by citizens and enterprises. The restructure was the fruit of the processing of the administrative data coming from these forms by ELSTAT and of the detection of internal inconsistencies that could automatically be avoided, should a different structure and flow of the form be designed. The work of ELSTAT in this field inspired and convinced AADE about the necessity and the usefulness of the restructure, while ELSTAT could henceforth rely on more consistent primary administrative data.

ELSTAT looks forward to expanding this type of synergies with other public agencies as well.

In this framework, ELSTAT has designed and developed an array of dedicated rolling actions aiming at developing the statistical consciousness of high and mid-level ranking civil servants, with a view to creating and maintaining a mutually beneficial relationship in the medium term. These actions are planned to be fully implemented during the period 2021–2025.

### 5.2. Actions planned for the coming period

*Inclusion of a new course on official statistics in the educational program of the National School of Public Administration.* The content of the course will be jointly defined with ELSTAT.

The National School of Public Administration admits, following national examinations, graduates from various fields who, after completing their studies in the School, will be recruited in the public administration in a fast-track civil servant career. The graduates of the National School of Public Administration are usually expected to assume managerial roles in the public administration.

The aim of the course will be, on the one hand, to inform the future leaders of the civil service hierarchy on the practical applications of the use of official statistics in the performance of their duties in the narrow sense and, on the other hand, to highlight the importance of the close cooperation of ELSTAT with other public

agencies for the development and use of administrative data in the production line of official statistics.

*Creation of newsletters* that will be addressed to civil servants providing brief accounts of significant statistical fields and surveys, most recent results, summary information on the sources of primary data and the compilation methodology applied, as well as an assessment of the costs and benefits of using administrative data in their production.

The newsletters will highlight in a direct and “hands-on” manner the relevant, for each public agency, statistics and will create stimuli for the development of the use of administrative data in the compilation of official statistics, wherever this is possible.

## 6. Overall assessment of the strategy

ELSTAT is regularly assessing the results and the impact of its strategy for fostering Statistical Literacy in Greece. Up to the present moment, the four pillars of the strategy have been developed relatively asymmetrically, giving priority, in terms of number of actions and efforts/resources invested to the students of all educational units. In parallel, ELSTAT is dedicated to further develop the actions entailed in the other three pillars as well.

The main criterion for this assessment is the participation and responsiveness of stakeholders in the actions of the strategy. In this respect, ELSTAT records the continuously increasing interest and engagement of students/schools/universities and of the state in the actions undertaken, on the basis of the number of participants and of the wider response rates.

Even under the adverse circumstances in the period of the Covid-19 pandemic and given the limitations imposed by the special conditions, ELSTAT managed to adapt successfully and tailor its statistical literacy operations to the exceptional circumstances. Participation rates, although inevitably lost the sharply increasing trend of the previous years, notably maintained a rather satisfactory level.

Finally, a coherent and systematic benchmarking framework for measuring the (relative) efficiency of each action is under development, that will allow for performing meaningful comparisons among diverse and competing courses of action across time periods and geographical regions, and therefore, more efficient streamlining and prioritizing of operations and pertinent resources in the future.

This framework is built upon the four pillars of the strategy: students, journalists, decision makers in the

political sphere and civil servants, while it includes each individual action either planned or implemented. It is designed to be updated both on monthly and annual basis.

For each action, the initial target population is matched both descriptively and in quantitative terms (e.g. number of schools in a specific educational level to which actions are addressed, etc). Moreover, for each action, the resources (human, financial) attributed for its implementation are recorded.

For each combination of pillar and implemented action, an adequate quantitative metric of response is introduced and recorded (e.g. number of school visits at ELSTAT’s headquarters, number of students participating in the Greek Nationwide Statistics Competition, number of issued newsletters, etc). The scheme also incorporates, when applicable, information at regional level.

This outline offers a quick, summary and informative overview of the planned and implemented actions, the required resources and the response they acquire at detailed levels of time and regions.

In this way, the actions of the four pillars of the strategy can be compared in terms of inputs and outputs and ELSTAT can identify which actions are successful and for which actions more efforts are needed.

In conclusion, it is worth noting that ELSTAT’s model of fostering statistical literacy in Greece is not dependent on idiosyncratic characteristics that might hinder its successful operation should it be implemented in other countries. Its main building blocks are common everywhere and the main driving factors involve a concurrent targeting of both the “demand side” for official statistics (individual users and opinion makers) and the “supply side” of primary data (individual respondents and handlers of administrative data) used for the production of statistics, both considered at a static (current roles of the targeted parties) and at a dynamic (with a view to future roles of the targeted parties) level.

The ultimate goal is to reinforce and sustain the VCOS, i.e., the dynamic circular relation of trust between citizens assuming interchangeably both the role of the supplier of data and the role of the user of statistics.

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