



Thinking globally and acting locally to promote statistical literacy

Pedro Campos*

Welcome to another issue of the ISLP Newsletter, where we bring you news of what is being done to promote statistical literacy in various corners of the world. Most of the initiatives highlighted in this issue took place in the last few months of 2023 and play a pivotal role in fostering statistical literacy on a global scale. These initiatives, ranging from international competitions and collaborative projects to educational programs and celebratory events, contribute to the democratization of statistical knowledge. By engaging individuals of various backgrounds, ages, and regions, these endeavors bridge the gap between complex statistical concepts and everyday understanding, empowering people to make informed decisions based on data. Moreover, these initiatives foster a sense of community and collaboration among statisticians, educators, and learners globally. By acknowledging and celebrating achievements, such as the awards bestowed upon dedicated individuals or successful collaborative projects, these initiatives inspire others to actively participate in advancing statistical literacy.

I would like to start by highlighting the great recognition given to my colleagues from the ISLP Executive team during World Statistics Congress (WSC) 2023: Reija Helenius (ISI Service Award) and Saleha Habibullah (Societal Impact Award). The Best Cooperative Project Award has been awarded to the collaboration between the New York Times and the American Statistical Association with the project, “What’s Going On in This Graph?”, which shows how it is possible to create a feature which engages students in statistics through graphs about the world around them. Still with regard to the WSC 2023, and the International Poster Competition, we publish papers from Ecuador, Bolivia, Mexico, and Peru.

There is also a Census Portrait, from a Portuguese elementary school teacher providing insights into the 2021 Census in Portugal; and a paper from Tamale University in Ghana focusing on leveraging technology and ongoing research; the African Statistics Day (ASD) 2023 celebrations for empowering students in Statistical Literacy Education are also reported in this issue by Abdou Moumouni University (AMU) and the National Institute of Statistics in Niger; Maulana Faris from Indonesia discusses the use of Artificial Intelligence in the dissemination of Official Statistics; and a paper on Statistical computing literacy from Nigeria. We also inform about the Data Literacy Training Initiative, that focus on social good and promoting open learning; and provide highlights from the Coloquio Argentino de Estadística (CAE) and VIII Jornada de Educación Estadística “Martha Aliaga” (JEE) at the University of Cuyo. Reports from ISLP Country Coordinators in Sri Lanka, Cabo Verde, Egypt, Nigeria, Burundi, Pakistan, and Costa Rica are also addressed.

Through this collective effort, the initiatives showcased in the ISLP Newsletter not only enhance the accessibility of statistical knowledge but also cultivate a global network of individuals committed to promoting data literacy as an essential skill for the 21st century.

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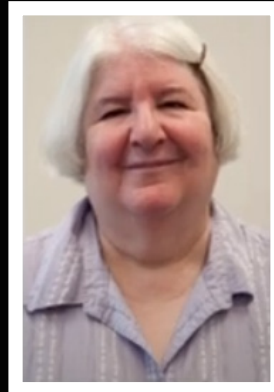
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**In memoriam:
Carol Joyce Bloomberg**



The International Statistical Literacy Project received sad news when we heard that the Project's previous Director, Dr Carol Joyce Blumberg, had passed away on the 16th of December 2023. We remember one of the ISLP's pioneers with gratitude and send our sympathies to her friends and family.

Professor emerita Carol Joyce Blumberg (USA), was very involved in statistics education (including the ASA, IASE, and WSS) over many years. Carol Joyce Blumberg, one of the Vice Presidents of IASE, took over as the chair of the International Statistical Literacy Project in 2001 and continued until 2006. She was also the chair of the Advisory Board.

iStock



ISLP news

As the year draws to a close, it is time to look back at the past year, as well as already looking towards 2024.

Past Events

The ISLP actively engaged in both the World Statistics Congress (WSC2023) in Ottawa and in the 2023 Joint Statistical Meetings (JSM) in Toronto.

WSC:

The ISLP and the UNITAR/GIST co-hosted a session “Partnering for statistically literate societies”. Please see picture below.

The ISLP also organized a session under the title “Statistics and data in the decision-making process – how can statistical offices promote the usage and application of data?” The session, organized by Ms Reija Helenius, included Dr Markus Sovala as the chair and Mr Ville Vertanen, Dr Stephen MacFeely, Mr Javier Carranza presenting in place of DRS Ola Awad-Shakhshir and Dr David Stern as speakers, as well as Dr Gaby Umbach as discussant.

The ISLP Open Meeting and Executive & Advisory Board meetings were also organized. The ISLP Open Meeting included presentations by UNITAR/GIST and Statistics Canada, which both opened new viewpoints into statistical literacy!



Photo 1. From the left: organiser and speaker Ms Vibeke Nielsen, discussant Dr Elena Proden, chair Ms Reija Helenius, speaker Dr Delia North, speaker Dr Bianca Walsh, and speaker Dr Pedro Campos.

JSM2023:

The session “Statistics, Finding its Place in a Data Science World” was organized. Wednesday 9 August, 10 a.m.-12:20 p.m. Room 1468 • Organiser: Ms Reija Helenius • Chair: Dr Marjorie Bond • Speakers: Dr Juana Sanchez, Dr Milo Schield, Dr Christos Sarakinos • Discussant: Dr Wesley Burr.

We would like to thank the speakers, chair and discussant for making the session possible.



From left to right in the photo:
Back: Dr Milo Schield, Dr Wesley Burr, Dr Christos Sarakinos.
Front: Dr Marjorie Bond, Dr Juana Sanchez.

Future Events

- ISLP will be organizing an Invited Paper Session in the IAOS-ISI conference in Mexico City, organized on the 15th to the 17th of May in 2024. The session is titled “Improving statistical literacy – best practices and challenges”.
- Another session proposal has been made for the 2024 Joint Statistical Meetings, with the title “Statistical literacy in the era of ChatGPT”.
- The project is making preparations for the first global online conference – the International Day of Statistical Literacy (IDSL)! For more information and to sign up to the organizing committee, please contact [saleha.habibullah\(at\)gmail.com](mailto:saleha.habibullah(at)gmail.com).
- Some of the ISLP Directors, Reija Helenius, Pedro Campos and Adriana D’Amelio, and the Project Coordinator, Elisa Falck, have been working towards an article which also utilizes the global Survey, sent to ISLP Country Coordinators, as a source. The article will come out early 2024 in the SJAOS journal.
- The Project has commenced an initiative to co-operate with all the NSOs in Africa. This initiative is carried out in co-operation with Dr Ben Kiregyera, the ISLP Special Envoy for Africa. The project is therefore happy to welcome a number of African NSO employees as new country coordinators in the project. Welcome, everyone!
- The ISLP is planning two webinars for the spring 2024: one in co-operation with IASE, and one for the UN Statistical Commission.
- The International Poster Competition will commence again in 2024! The competition starts on the 1st of February, 2024. More information soon available on the ISLP site.
- The Project has been actively fund-seeking all throughout the year 2023. More funds are still needed in order to maintain and expand the project’s functions. If you are able to help in fund-seeking, please contact [islp.coordination\(at\)gmail.com](mailto:islp.coordination(at)gmail.com).



ISLP Director Reija Helenius awarded with the ISI Service Award

The ISLP Director, Reija Helenius was awarded the International Statistical Institute ISI's ISI Service Award, which is awarded for a special contribution to ISI and the international statistical community. The award was given to Ms Helenius in the World Statistics Congress in Ottawa in July, 2023.

The award is given based on Helenius' work in ISI's International Statistical Literacy (ISLP) project, which aims to promote statistical literacy throughout the world. Helenius has been leading the project since 2010. The project is already active in 90 countries.

"I am really happy about this recognition. Working at the International Statistics Institute has opened up a new perspective on the importance of statistics as the basis for the development of societies. I have found it particularly important to work with young people, because they are the future users of information, providers of information and decision makers." says Helenius in Statistics Finland's article (<https://www.stat.fi/uutinen/tilastokeskuksen-reija-helenius-palkittiin-kansainvalisen-tilastoinstituutin-isin-konferenssissa>)



Saleha Habibullah awarded the Societal Impact Award

Prof. Saleha Naghmi Habibullah is working as Professor of Statistics at Kinnaird College For Women in Lahore, Pakistan and as Honorary Executive Director at the Pak Institute of Statistical Training And Research (PISTAR). As well, she is rendering honorary services as a Deputy Director of ISLP.

In the summer of the year 2023, Saleha has been awarded the **Societal Impact Award** by the **Caucus for Women in Statistics**, an international, professional statistical society for the education, employment and advancement of women in statistics. This annual award was established by CWS in the year 2021 to honour a statistician who has actively worked to advance social justice, or diversity, equity and inclusion through their research, teaching or service.

Saleha's citation for the award is: *"For her outstanding contributions in educating women, for innovative initiatives in statistical education, for a pivotal role in connecting local statisticians with international colleagues through virtual conferences, online training workshops and collaborative research studies, and for proving to be a true ambassador of her country all over the world."*

Prof. Habibullah's dedication to empowering women through education, pioneering approaches in statistical education, and fostering international collaboration among statisticians has positioned her as a prominent figure in the global statistical community. Her work serves as an inspiration and sets a high standard for the advancement of statistical education for societal benefit.

Online Meeting for Country Coordinators (OMCC-1)

Saturday, the 25th of November 2023, the ISLP Project had its very first Online Meeting for Country Coordinators (OMCC-1). The meeting, held via Zoom, offered a platform for the ISLP community to meet and interact online in real time.

This meeting was possible thanks to the efforts of Dr. Saleha Naghmi Habibullah, an ISLP Deputy Director, who facilitated and hosted the event. Thank you, Saleha, and thank you to all the participants! The ISLP is hoping to offer more OMCC events in the future.

[A recording of the event can be viewed here.](#)



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The Ecuadorian experience in the ISLP Poster Competition

Gabriela Castro*

Ecuador, entre los mejores del mundo





data-lat.org

Ministerio del Ambiente, Agua y Transición Ecológica



PARASITE IN MANGROVE FINCHES OF THE GALAPAGOS ISLANDS

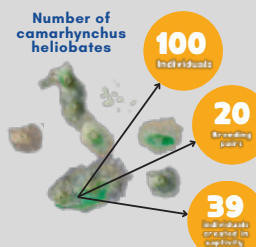



The Galapagos Islands are an archipelago located in the Pacific Ocean, in the coast of Ecuador and they are considered as one of the Wonders of the World because of their native and endemic flora and fauna. In this natural environment, despite being very small, there is a special and important group of birds that have been a model to describe the ecological and evolutionary processes, continuing with the studies of Charles Darwin, and currently raise enormous scientific interest worldwide.

THE MANGROVE FINCH (Camarhynchus heliobates)

According to Galapagos Conservation Action, 2022, the mangrove finch is a **critically endangered endemic species**, regarded as one of the rarest birds in the Galapagos Islands, which are distributed throughout 30 ha of mangrove forests on Isabela Island (the graph shows the number of mangrove finches in Isabela Island).

Number of camarhynchus heliobates



ARRIVAL OF PHILORNIS DOWNSI TO GALAPAGOS

The fly *Philornis Downsi* was introduced in the Galapagos Islands in the 1960s, as a result of maritime and air traffic. It exists in 11 of the 13 large islands in the archipelago and is mainly concentrated in humid regions and rainy areas. (Garrido, 2018)

WHY IS IT A PARASITE FOR FINCHES?

The larvae of this species require bird nestlings for feeding and being able to survive, in other words, they are parasitic.

Philornis Downsi and its effects on finches until 2018

Approximately 85% of Darwin's finch nests have been infected by *Philornis Downsi*, whose larvae kill over half of all pinch nestlings within a year. Such is the mortality rate produced by this type of fly that it is estimated that the species could become extinct in less than 100 years. (Garrido, 2018)

Analysis (Figure 1)

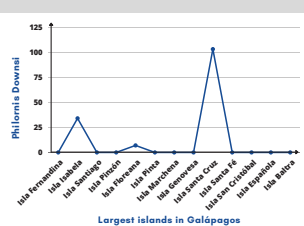


Figure 1 shows the data from the source "Charles Darwin Foundation consulted in 2022", evidencing that the largest number of *Philornis Downsi* flies are located in Santa Cruz Island and Isabela Island. Considering that the finch habitat is established in the mangrove, Isla Isabela has been chosen as the research site, with 38 distributions of registered flies.

Visual representation of a camarhynchus heliobates nestling being affected by three parasitic larvae of Philornis Downsi.

(By students, 2023)

Analysis (Figure 2)

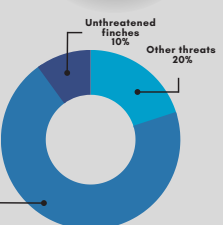


Figure 2 is the interpretation of the information gathered from the sources "Rodriguez, 2018 and Lewis, 2019". It should be pointed out that out of the approximately 100 individuals of mangrove finch inhabiting Isabela Island, 70% are threatened by *Philornis Downsi*, 20% are exposed to other threats, whereas only 10% of that species is free from any threat.

CONCLUSIONS

Philornis downsi has dramatically affected the mangrove finch population. Figure 3 shows a solution for controlling the parasite, which allowed for determining how much parasitic load is present in uncontrolled nests of this species. Therefore, *philornis downsi* flies do have an influence in the number of mangrove finch individuals, which is evidenced by 70% of the total number of mangrove finches being threatened by the parasite.

RECOMMENDATIONS

With this poster we seek to promote research on the issues faced by endemic species in the Galapagos Islands with regard to introduced species.

- More up-to-date research on the mangrove finch is recommended in order to gain in-depth knowledge of the dangers of the *Philornis Downsi* parasite.
- Truthful information should be gathered from reliable sources.
- Accurate statistical data should be used with the aim of achieving a better statistical representation.

Analysis (Figure 3)

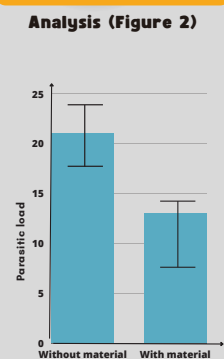


Figure 3 refers to a research on the use of dispensers with 3 types of materials (cotton, coconut fiber and feathers), these were sprayed with the "cyromazine" insecticide, and the materials were used by finches for building nests. According to the Galapagos National Park Directorate, this self-fumigation contributes to the protection of finches in the short term.

Figure 3 shows the effectiveness of the method in reducing the concentration of *philornis downsi* in finch nests; the parasitic load of nests without material has a median of 21, which exceeds the value of nests with material, where the median is 13, thereby allowing for an increase in finch reproduction.

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At the Ecuadorian Statistical Society (SEE), we are eager to share the rewarding experience we had during the International Statistical Literacy Project- ISLP poster competition. Beyond our achievements, we wish to underscore the path that led us to them, hoping to inspire other countries to embark on a similar journey.

Between November 2022 and April 2023, 254 Ecuadorian students from schools enthusiastically participated in the competition. Supported by SEE, this event saw collaboration with the Datalat Foundation and the Ministry of Environment, Water, and Ecological Transition. The diversity of participants is noteworthy, with 125 males

WHAT TYPE OF WASTE DO YOU PRODUCE THE MOST?



Motivation

The motivation for this project is to learn students' habits while sorting out waste into 4 basic categories. This is done for the purpose of raising awareness of the impact of waste in the environment.

Goal

Determining the types of waste that are produced the most by the school's students by conducting a survey.

Hypothesis

Students produce different types of waste at different rates.

Methodology

Seventy-six students from 11 to 18 years of age took part in the survey. It was made up of two parts. The first part helped contextualize the research with two questions (Fig. 1 and Fig. 2). The second part consisted of 4 questions on the rate at which the different types of waste are produced (Fig. 3 - Fig.6).

Results

Fig.1. Do you think it's important to separate waste properly?

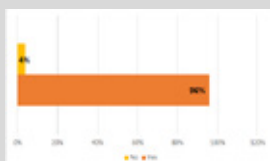


Fig.2. What do you think is the most polluting waste?



Fig.3. How often do you generate plastic waste?

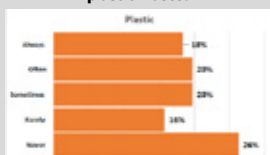


Fig.4. How often do you generate organic waste?

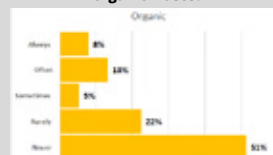


Fig.5. How often do you generate cardboard waste?

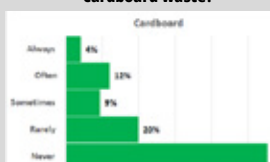


Fig.6. How often do you generate paper waste?

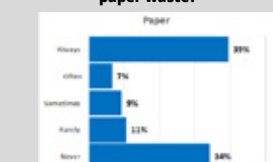
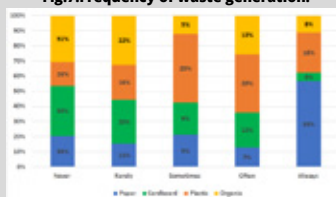


Fig.7. Frequency of waste generation.



Conclusions

After analyzing the data, it was concluded paper is type of waste that is produced more frequently, with 39% (Fig. 6); whereas cardboard is the waste produced less frequently, with 55% (Fig. 5).

Recommendations

- Create recycling contests focused on children and young people.
- Give awareness talks to help reduce and reuse waste such as plastic and cardboard.



and 129 females, reflecting our commitment to gender equity in the field of statistics.

Our efforts were acknowledged during the World Statistics Congress in Ottawa, Canada, in July 2023, where we received an honorable mention. This achievement is evidence that with effort, collaboration, and a comprehensive educational approach, fostering statistical skills in young individuals is indeed possible.

The workshops organized by SEE played a crucial role in this process. This year, under the theme "Natural Heritage and Conservation," we focused on handling environmental data, creating appealing graphics, and developing scientific posters. Additionally, these workshops promoted teamwork and the development of numerical and design skills, crucial for the comprehensive education of students.

For the creation of the posters, students conducted thorough research, employing real and reliable data. Active collaboration among them allowed for the maximization of their individual strengths, resulting in high-quality work.

The results were outstanding. Ecuador was among the top five countries in the 8th to 10th-grade category and among the top four in the high school category, competing with approximately 20,000 students from twenty-five countries. This recognition was particularly significant for students from "Fernando Ortiz Crespo" and the "Émile Jaques-Dalcroze" Educational Unit in Quito, who were our distinguished representatives.

This success not only highlights the statistical ability of Ecuadorian students, but also underscores the effectiveness of well-structured educational programs and collaboration between academia, NGOs, and government entities. In Ecuador, we believe that statistical education is fundamental for the academic and scientific advancement of future generations. This journey not only symbolizes our success but also extends an invitation to our international colleagues to join us in this effort towards a more promising and culturally enriched educational future in statistics.

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Third version of the Bolivian Statistical Poster Competition

Alvaro Chirino Gutierrez*

3RA. VERSIÓN

COMPETENCIA
BOLIVIANA DE POSTERS ESTADÍSTICOS

Organiza: ARU

CATEGORÍAS

- B** **BERNOULLI**
Estudiantes de 1ro, 2do y 3ro de secundaria
- P** **POISSON**
Estudiantes de 4to, 5to y 6to de secundaria
- G** **GAUSS**
Estudiantes de pre grado de universidad sin límite de edad

TEMÁTICA DE LA COMPETENCIA
La temática del concurso es libre pero se pedirá la presentación del tema usando recursos estadísticos.

MÁS INFORMACIÓN
Competencia Boliviana de Posters Estadísticos

INSCRÍBETE
<https://islp-boliviagithub.io/>
 2 2779067
 +591 79558665
 Fundación Aru

Crea un poster estadístico formando un grupo de 2 a 5 personas más un tutor o guía y gana premios para los primeros lugares de cada categoría. Plazo de envío del poster hasta el 5 de marzo de 2023.

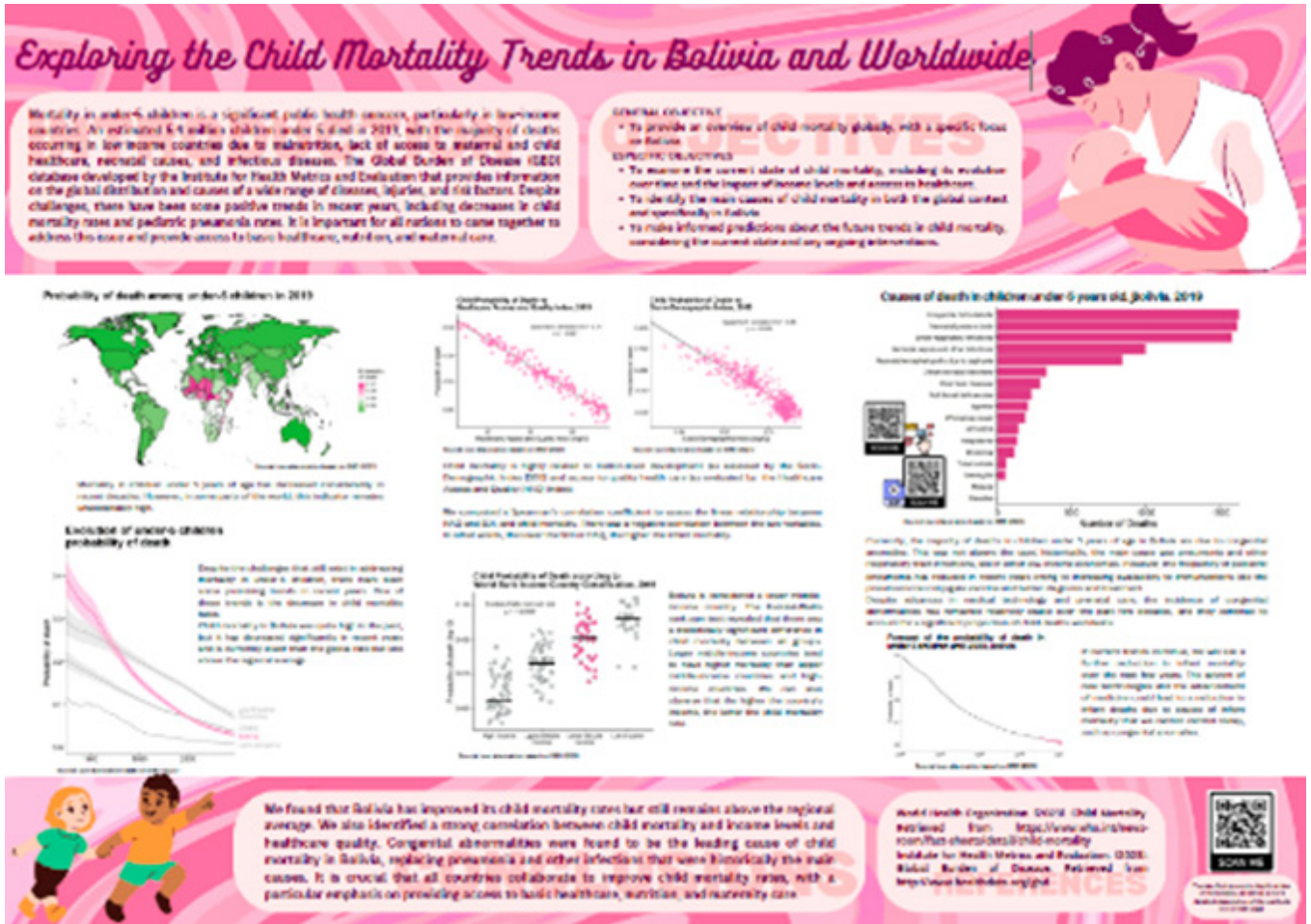
Premios:
 Tablets para los primeros lugares de cada categoría
 +
 Colección de libros de estadísticas nacionales
 +
 Material de escritorio

Con el apoyo de:

Logos of supporting organizations: UNICEF, BANCO MUNDIAL, ine, Universidad Católica Boliviana, etc.

Bolivia began its participation in the international statistical poster competition since 2018, three versions of the national competition were organized; In the 2018-2019 period, the first version was carried out, during the 2020-2021 management, the second version was carried out, finally, between 2022 and 2023 the third version was taken. For the national competition, spaces were designed on social networks (@islpBolivia), website (<https://islp-bolivia.github.io/>) and the image of the competition was created.

All versions were coordinated and organized with the support of Fundación Aru, a Bolivian Think Tank and there were sponsoring institutions that supported the national competition with the endowment of prizes, among them; the National Institute of Statistics, the World Bank, UNICEF, FAO, the Universidad Mayor de San Andrés, the Universidad Católica, the Universidad Privada de Santa Cruz and other civil society organizations. In this latest version, the prize for the first places in the categories received tablets, these were delivered by UNICEF.



The poster of the university category reached third place in the international competition and that achievement was celebrated with great joy in the organizing team, our most sincere admiration and gratitude for their participation in this version. The winning poster was **Exploring the Child Mortality Trends in Bolivia and Worldwide** and the team was made up of Daniel Linares Terrazas and Edson Loayza Siñani, along with their tutor Dr. Beatriz Luna Barron, a team calling itself "The Embryos".

We hope that this achievement will be repeated in future competitions and we invite students to discover the world of statistics and tell a story with data and figures in the next version.

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Tercera versión de la Competencia Boliviana de posters estadísticos

Alvaro Chirino Gutierrez*

3RA. VERSIÓN

Organiza: **ARU**

COMPETENCIA BOLIVIANA DE POSTERS ESTADÍSTICOS

CATEGORÍAS

- B** **BERNOULLI**
Estudiantes de 1ro, 2do y 3ro de secundaria
- P** **POISSON**
Estudiantes de 4to, 5to y 6to de secundaria
- G** **GAUSS**
Estudiantes de pre grado de universidad sin límite de edad

TEMÁTICA DE LA COMPETENCIA
La temática del concurso es libre pero se pedirá la presentación del tema usando recursos estadísticos.

MÁS INFORMACIÓN
Competencia Boliviana de Posters Estadísticos

INSCRÍBETE
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 Fundación Ara

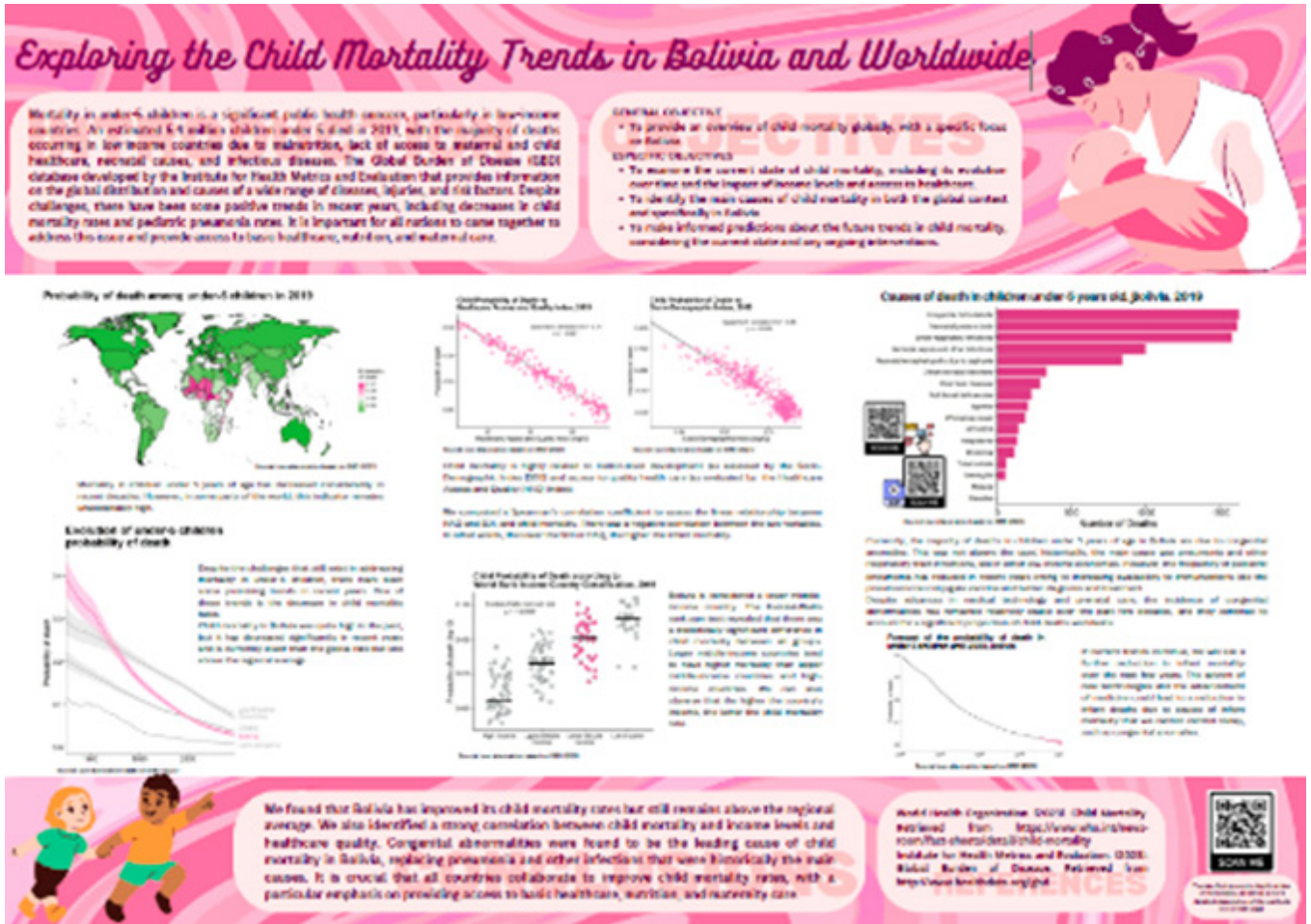
Crea un poster estadístico formando un grupo de 2 a 5 personas más un tutor o guía y gana premios para los primeros lugares de cada categoría. Plazo de envío del poster hasta el 5 de marzo de 2023.

Premios:
 Tablets para los primeros lugares de cada categoría
 +
 Colección de libros de estadísticas nacionales
 +
 Material de escritorio

Con el apoyo de:

Bolivia comenzó su participación en la competencia internacional de posters estadísticos desde la gestión 2018, se organizaron tres versiones de la competencia nacional; en el periodo 2018-2019, se llevó adelante la primera versión, durante las gestiones 2020-2021, se llevó la segunda versión, finalmente, entre 2022 y 2023 se llevó la tercera versión. Para la competencia nacional se diseñaron espacios en redes sociales (@islpBolivia), página web (<https://islp-bolivia.github.io/>) y se creó la imagen de la competencia.

Todas las versiones fueron coordinadas y organizadas con el apoyo de Fundación Aru, un Think Tank boliviano y existieron instituciones patrocinadoras que apoyaron a la competencia nacional con la dotación de premios, entre ellas; el Instituto Nacional de Estadística, el Banco Mundial, UNICEF, FAO, la Universidad Mayor de san Andrés, la Universidad Católica, la Universidad Privada de Santa Cruz y otras organizaciones de la sociedad civil. En esta última versión el premio para los primeros lugares de las categorías recibió tablets, estas fueron entregadas por UNICEF.



El poster de la categoría universitaria alcanzó el tercer lugar en la competencia internacional y ese logró se celebró con mucha alegría en el equipo organizador, nuestra más sincera admiración y agradecimiento por su participación en esta versión. El poster ganador fue **Exploring the Child Mortality Trends in Bolivia and Worldwide** y el equipo estuvo conformado por Daniel Linares Terrazas y Edson Loayza Siñani, junto a su tutora la Doctora Beatriz Luna Barron, equipo autodenominado “Los Embrones”.

Esperamos que este logró se repita en futuras competencias e invitamos a los estudiantes a descubrir el mundo de la estadística y contar una historia con datos y figuras en la próxima versión.

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Un nuevo escalón.

El concurso de carteles 2022 – 2023 en México

Hugo Hernández*

La participación mexicana en las competencias de alfabetización estadística del ISLP ha sido constante. Claramente desearíamos que fuera más amplia, pero al menos ha sido eso. Constante.

La edición 2022-2023, sin embargo, planteó nuevos retos, que pudieron enfrentarse de buena manera dada la adición de tres nuevos coordinadores nacionales a los dos que se tenían previamente.

El primer reto fue el tener una nueva categoría, la de estudiantes de universidad. Generalmente para los evaluadores no es demasiado complicado el revisar carteles de escuela media; el tema es de cultura general y los contenidos estadísticos son elementales.

Pero para nivel universitario las cosas se complican un poco, ya que los objetos de estudio son mucho más especializados e incluso fuera del área de conocimiento de quien evalúa. Ello obligó a los evaluadores a investigar un poco sobre los temas para poder emitir un mejor juicio acerca de cada cartel, lo que finalmente llevó a que todo el proceso resultara formativo no solo para los participantes, sino también para los jurados.

El segundo reto resultó ser más de índole operativo, y ocurrió no solamente en México, y se refirió a la solicitud de participación por parte de estudiantes de escuela elemental. Más allá de que puede ser decisión de los coordinadores nacionales el realizar solo a nivel nacional una competencia para alumnos de escuela primaria, dicha categoría no se tiene dentro de la fase internacional. Tras pensarlo y discutirlo entre los coordinadores nacionales de México, se decidió enviar el cartel ganador de los estudiantes de escuela elemental como una vía para alentar la alfabetización estadística entre los más jóvenes. Y tal vez en un futuro los podamos tener concursando a nivel internacional.

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Estrechando lazos.

La experiencia latinoamericana

Hugo Hernández*

Desde las primeras competencias lanzadas por el ISLP los países latinoamericanos han tenido participación constante, y generalmente no ha sido con pocos estudiantes. Y era a través del sitio WEB del ISLP como usualmente conocíamos un poco de esta participación, así como la de los países de otras regiones. Igualmente, y en particular entre los coordinadores nacionales del ISLP latinoamericanos, llegábamos a tener breves intercambios de ideas y experiencias a nivel presencial dentro de algún evento internacional. Sin embargo, y motivado esto por la cercanía cultural, social, histórica, etcétera que se tiene entre nuestras naciones, los latinoamericanos hemos ido un poco más lejos. Hace algunos años, durante el confinamiento por la contingencia sanitaria de covid 19, y aprovechando la proyección que ello dio a los medios de encuentro digital, los coordinadores nacionales conseguimos reunirnos, virtualmente, y tener una charla más amplia sobre nuestras experiencias, retos y posibles soluciones en nuestros respectivos países. Sin duda fue un intercambio no solo muy enriquecedor, sino con la calidez y la alegría que nos caracteriza.

A partir de ese encuentro se han derivado dos más, también virtuales, enfocados exclusivamente a los resultados del concurso de carteles en cada país participante. El primero fue moderado desde Colombia, el 2 de julio de 2021; el segundo fue coordinado desde México, el 3 de julio de 2023.

En estos encuentros se comparte brevemente la experiencia con el concurso por parte de los coordinadores nacionales, pero, y mucho más importante, se brinda a los estudiantes ganadores de cada país la oportunidad de presentar sus carteles y también de compartir las vivencias obtenidas de su participación. Esto ha mostrado ser muy enriquecedor de diferentes maneras: En primera instancia se da la oportunidad de incrementar el conocimiento en Estadística por medio del intercambio entre pares; en segundo lugar nos permite conocer más sobre temas socioeconómicos, culturales y de tradiciones, históricos, de biodiversidad, etcétera de los diferentes países de la región desde la perspectiva de la alfabetización estadística; como tercer punto se potencia la idea de alfabetización estadística, ya que los participantes se ven enfrentados a la lectura de los carteles de sus pares y entender los datos dentro de un contexto y analizarlos críticamente; y en cuarta instancia, desde nuestras diversas identidades latinoamericanas, estrechamos más nuestros lazos comunes desde la alfabetización estadística.

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SRI LANKA



Statistical literacy initiatives thrive in Sri Lanka

Rajitha M. Silva*

In the dynamic world of Statistics and Data Science, Sri Lanka has emerged as a shining star, thanks to the relentless efforts of the Institute of Applied Statistics, Sri Lanka (IASSL). Established by the Sri Lanka Parliament Act No. 38 of 2011, the IASSL is the successor to the former Applied Statistics Association, Sri Lanka (ASASL), founded in 1999. As a member of the Organization of Professional Associations (OPA) of Sri Lanka, IASSL has been at the forefront of promoting statistical literacy and education in the country.

9th and 10th National Statistics Olympiad: celebrating excellence

One of the most prestigious events on our calendar, the 9th National Statistics Olympiad, organized by IASSL, took place on December 18, 2022 at the University of Sri Jayewardenepura. This Olympiad had a twofold aim: to popularize statistics among students in schools and universities, and to unearth exceptional talents in this field.

The competition witnessed a fierce battle of intellect among outstanding young minds, with each participant displaying unique and remarkable skills. The top five scorers and merit passes both in the Junior and Senior categories earned the honor of representing Sri Lanka at the 13th Statistics Olympiad- 2023 organized by the C. R. Rao Advanced Institute of Mathematics, Statistics, and Computer Science (AIMSCS) on January 29, 2023.

In a remarkable display of talent and hard work, Ms. Sukhithi Chamali, a student from the University of Co-



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lombo, emerged as the First-Place winner in the Senior category of the AIMSCS Statistics Olympiad. Chamali's outstanding performance has made the entire nation proud and highlights the exceptional talent of Sri Lankan students.

What is even more exciting is that Sri Lankan students dominated the AIMSCS Statistics Olympiad competition, securing ten out of the top twenty places in the Senior category and two places in the Junior category. This impressive feat underscores the remarkable talent among Sri Lanka's youth in the field of statistics.

October 29, 2023, marked a significant milestone in the field of statistics education as the 10th National Statistics Olympiad took place. Over 250 participants from various regions of the country registered with enthusiasm and determination for this prestigious competition. The event was conducted simultaneously in five different locations, including three universities in Sri Lanka. This expansion reflects the growing interest and enthusiasm for statistical literacy in our nation.

Empowering students with workshops

In addition to the Olympiad, IASSL conducted student workshops on advanced level statistics through the Combined Mathematics Subject. These workshops have already taken place at several schools in Colombo, Gampola, Ginigathena, Anuradhapura, and Eppawala. Recognizing the barriers in the dissemination of this crucial knowledge, we are currently in discussions with the Ministry of Education to develop teacher training programs covering all provinces in Sri Lanka. This initiative will ensure that students across the country have access to high-quality statistical education.



Fostering statistical thinking among school children at SCIMATICS 23

Together with the young statisticians of the Statistics Society of the University of Sri Jayewardenepura, IASSL successfully conducted a session at the SCIMATICS 23 Science Day Exhibition hosted by Musaeus College, Colombo, with the intention of igniting statistical thinking in young minds.

Diverse educational offerings

IASSL offers a range of educational programs to cater to the diverse needs of students and professionals. These include Diploma and Higher Diploma programs in Applied Statistics, as well as short statistics and data science courses aligned with industrial requirements. Our goal is to empower individuals with the skills and knowledge necessary to excel in the data-driven world.

The Institute of Applied Statistics, Sri Lanka, continues to play a pivotal role in promoting statistical literacy and

nurturing exceptional talents in our country. The success of the National Statistics Olympiad, along with our ongoing efforts in workshops and educational programs, underscores our commitment to enhancing statistical literacy in Sri Lanka. As we move forward, we remain dedicated to advancing statistical education and ensuring that our nation's youth have the skills and knowledge to excel in this data-centric age.

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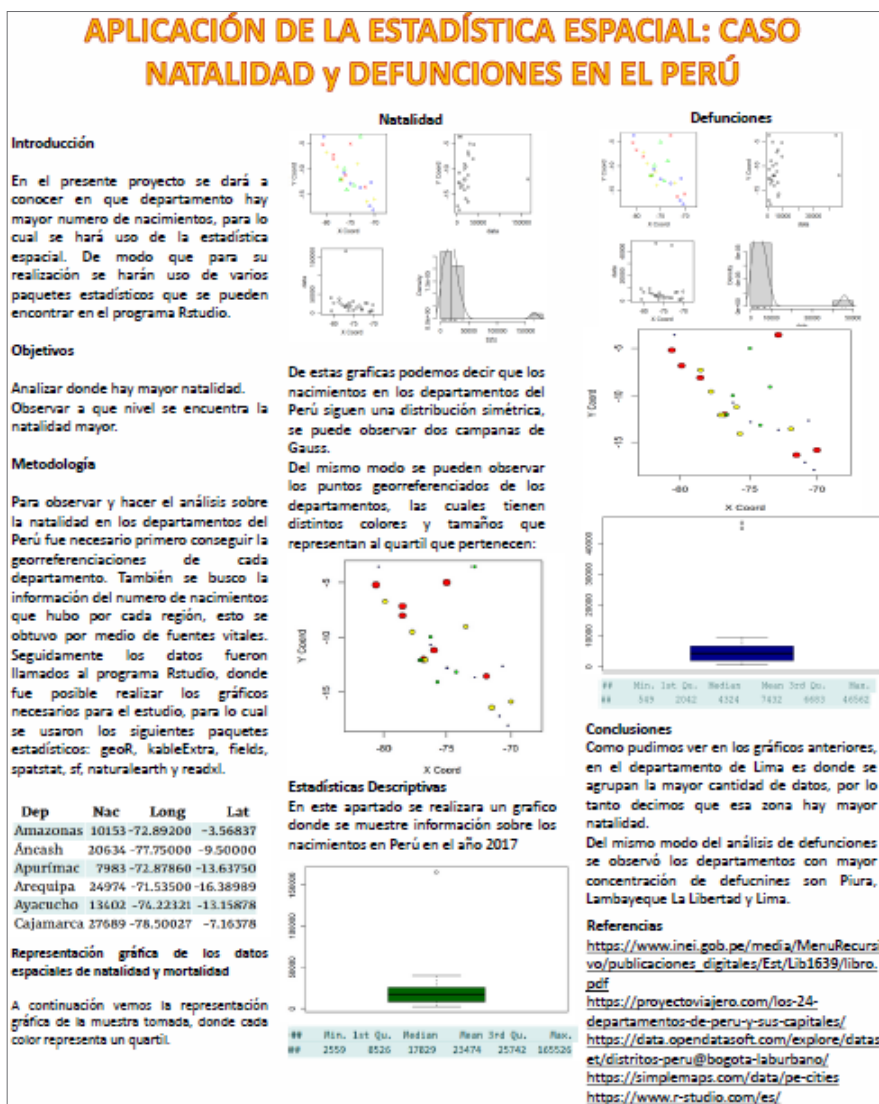


La alfabetización de la estadística a través de posters en el Perú:

Avances en la categoría de pregrado

Yheni Farfán*

Figura 1. Poster realizado por Witman Palomino



El Perú es uno de los países con mayor diversidad biológica a nivel mundial debido a que cuenta con muchas especies de flora y fauna, así como ecosistemas marítimos y continentales, una muestra de ecosistema para sustentar el potencial turístico, es la ciudadela de Machupicchu (Centro Nacional de Planeamiento Estratégico (CEPLAN), 2021). Los habitantes del Perú con gente tenaz, perseverante y creativa, son un potencial humano necesario para afrontar los desafíos históricos y así lograr un desarrollo sostenible, redistribuyendo equitativamente la riqueza, fortaleciendo la democracia, superando exclusiones y desigualdades, construyendo un estado eficiente y transparente al servicio de todos. Es así que, para desarrollar este potencial humano, se necesita formar personas capaces de enfrentar las adversidad y retos en diferentes contextos en el territorio peruano, especialmente en una sociedad del conocimiento en continuo cambio, donde la formación de los habitantes debe darse a lo largo de la vida, convirtiéndose la educación en sus niveles (primaria, secundaria y universitaria) una oportunidad de desarrollo de este potencial (MINEDU, 2023).

En este contexto, el presente año 2023 se ha estado desarrollando capacitaciones para grupos de estudiantes de pregrado, se ha comenzado con los estudiantes de pregrado de las universidades, cuyas edades oscilan entre las edades de 17 a 23 años, con el objetivo de comenzar a investigar, construyendo posters, así mismo haya una mayor participación de estudiantes peruanos en el siguiente concurso de pósters organizado por el ISLP.

En este sentido, se ha observado que los estudiantes de pre grado de las universidades han mostrado un gran interés, de cómo plasmar sus ideas en posters, aplicando sus conocimientos adquiridos en los cursos de: estadística descriptiva, estadística y probabilidades, estadística inferencial, estadística computacional, demografía, estadística espacial y otras materias, utilizando los programas estadísticos R – Studio y SPSS.

Cabe señalar que, durante las reuniones que se ha sostenido con los profesores de los cursos y estudiantes, se les sugirió comenzar con proyectos de fin de curso, el cual consistía en otorgarles a sus estudiantes un proyecto, éste debía ser la construcción de posters; el

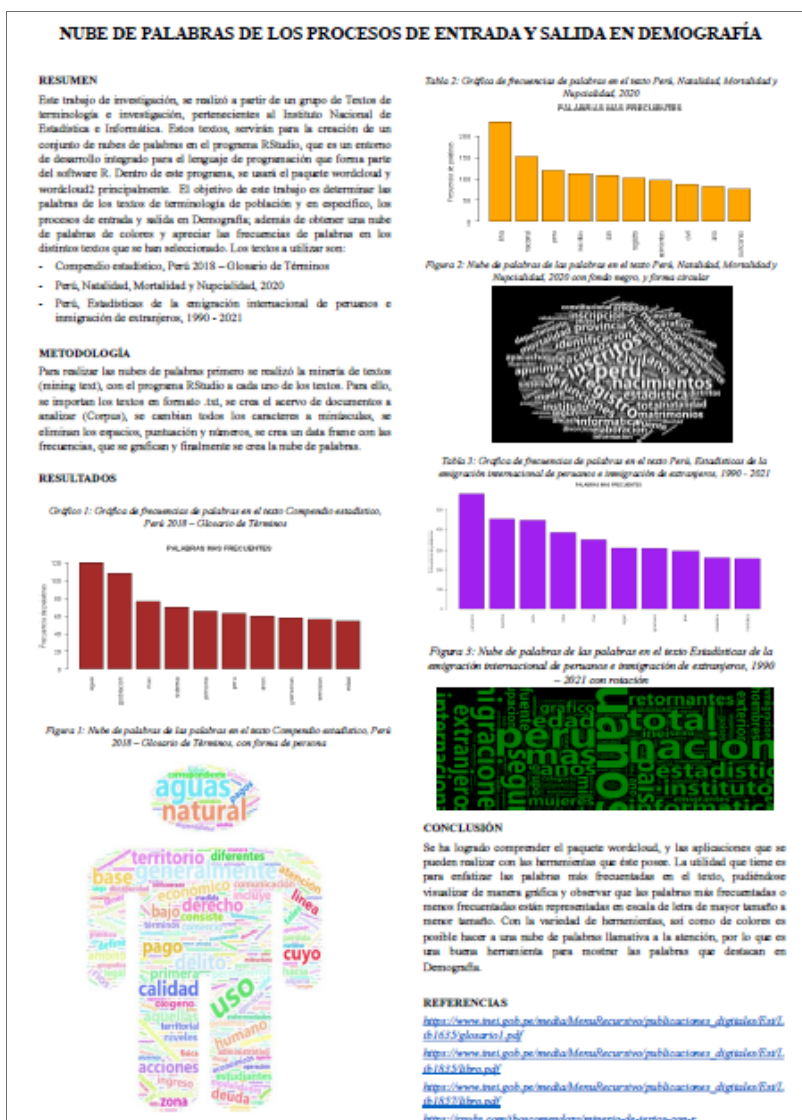


Figura 2. Poster realizado por Fátima Villarcorta

profesor del curso agrupó a los estudiantes en grupos de 2 a 5 estudiantes, así como hubo la oportunidad de que algunos de los estudiantes realicen la tarea encomendada en forma individual.

Los pósters, que se han construido y fueron seleccionados por lo profesores de los cursos son: “Aplicación de la estadística espacial: caso natalidad y defunciones en el Perú”, realizado por el estudiante del Witman Palomino, así como el poster “Nube de palabras de los procesos de entrada y salida de la Demografía”, presentado por la estudiante Fátima Villarcorta.

Es así como, los estudiantes peruanos se están preparando para el siguiente concurso de posters convocado por el ISLP próximamente, los mencionados posters en el nivel de pre grado, muestran el gran empeño que los estudiantes tienen por la investigación, así mismo, se observa la aplicación de sus conocimientos sobre estadística y de programas estadísticos.

Concluyéndose que, se está elevando la capacidad creativa que los estudiantes tienen para construir posters con temas de repercusión local, nacional o internacional, tanto en el nivel básico como durante su formación superior. Finalmente, la coordinadora del ISLP en el Perú cuenta con una página web: www.islp-peru.com.

Referencias
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USA

What's Going On in This Graph?

How the American Statistical Association and The New York Times created a feature which engages students in statistics through graphs about the world around them.

Sharon Hessney*

- The American Statistical Association sought to broaden students' exposure to graphs and how graphs use data and statistics to tell stories about what is happening in the world.
- The New York Times publishes many graphs that tell stories about a diverse set of current issues. The New York Times Learning Network wanted to expose more students to these graphs.
- Teachers of mathematics and other subjects seek free and concise teaching resources that engage students, often answering the question "Why are we learning this?"

In the summer of 2017, the objectives of these three parties – the [American Statistical Association](#), The [New York Times](#) and teachers, came together with [What's Going On in This Graph?](#), a free, weekly online feature. Each release of this feature focuses on one previously published New York Times graph and provides the opportunity for students worldwide to analyze statistics through noticing and wondering about the graph. Students can discuss the graph in class or as homework, or better yet, they have the option to respond online with live-moderation by statistics teachers and other students. To date, hundreds of thousands of students have "noticed and wondered" about the graphs. There have been more than 50,000 student responses on [The New York Times Learning Network](#) online public forum.

How did the American Statistical Association, The New York Times and teachers come together? It started with a Boston public school teacher, Sharon Hessney. She read the morning newspaper daily with her coffee and clipped out graphs that she thought her students would find intriguing and surprising. Displaying the graphs before class started, she asked "What do you notice?" and "What do you wonder?" These questions employ a teaching strategy developed by the math educator Annie Fetter. All students got involved since the questions had what we now call "a low floor" – all students can notice and wonder something about the graph, and "a high ceiling" – students can build on each other's insights to reach an understanding that probably, on their own, they would not attain individually. After a 5 to 10 minute discussion to tease out the story of the graph, the class resumed on the math topic of the day. She was pleased to hear that students were still talking about the graphs even after this very brief exposure.

When Ms. Hessney read that the American Statistical Association was requesting ideas for how to expose more students to statistics, she suggested that they approach the New York Times Learning Network, a free, online resource that provides hundreds of daily, weekly and monthly teaching resources each year to help people teach and learn with The New York Times. With a continual flow of excellent New York Times graphs and the free online Learning Network platform, this provided an avenue to deliver very high quality statistics to students worldwide.

A phone meeting was set up with the editors of the Learning Network. Ms. Hessney explained what she had been doing in her classroom for over a decade. She knew that the New York Times graphs were some of the best graphs – for their varied graph types, use of statistical and mathematics concepts and range of topics. Using the teaching strategy of noticing and wondering, teachers could use the New York Times graphs and accompanying articles for students of any level. Teachers could tease the story out of graphs with minimal preparation.

The editors suggested, "How about having a feature *What's Going On in This Graph?* This suggestion is a takeoff on the very successful Learning Network feature [What's Going On in This Picture?](#) For this feature, students explain what they think is happening in a previously published New York Times photograph. There is a day of online student responses and teachers moderating replies, followed by the Learning Network revealing the free link to the article that included the

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photo. For *What's Going On in This Graph?*, the same would be done, but there would be four questions that the students would be asked to answer:

1. What do you notice?
2. What do you wonder?
3. How does this relate to you and your community?
4. Create a catchy headline that captures the graph's main idea.

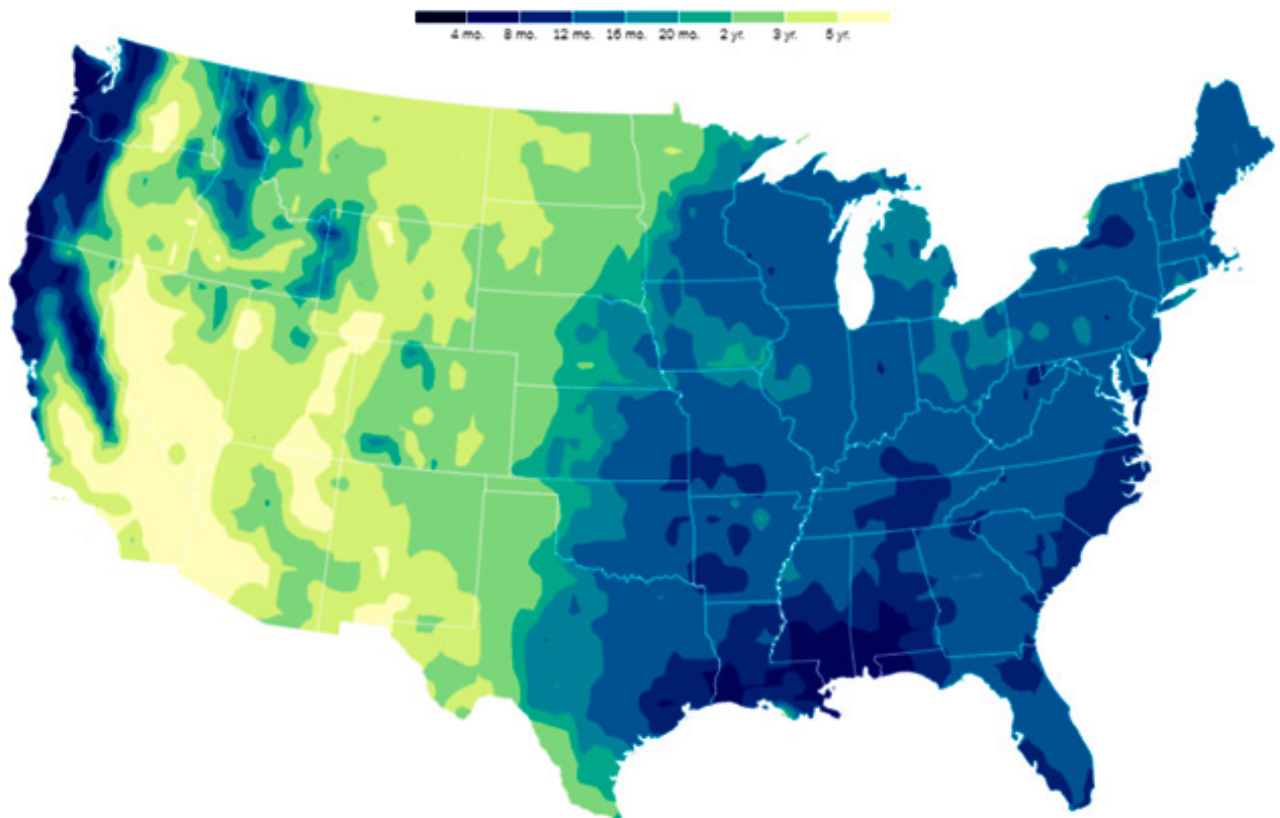
A previously published graph, with the four above questions, are released on Fridays. The feature is free to teachers and students, including all New York Times articles referred to in the feature. On the following Wednesday, for five hours, Ms. Hessney and a rotating group of more than 60 statistics teachers moderate student responses. The majority of responders are high school students, but there are respondents from middle school through college. Registrations indicate that responders come from across the United States and around the

world. Teacher replies attempt to take the individual student to the next level of understanding. Also, students reply to each other. Where else do students have an opportunity to discuss graphs, as well as current topics, with peers from around the globe?

On the day after the online discussion, the Reveal is published. Written by Ms. Hessney with the statistics professors Roxy Peck and Erica Chauvet, it includes not only the free link to the article that included the graph, but also background information on the graph's topic, "shout-outs" for the best headlines submitted online, additional questions about the graph and [Stat Nuggets](#) – definitions of statistical and mathematical terms that are used in the graph and how they relate to the graph.

To see a brief tutorial on *What's Going on in This Graph?*, go to this three-minute [video](#).

Here's the [first graph](#) released by *What's Going on in This Graph* on September 19, 2017.



By the time Hurricane Harvey left Texas, parts of Houston had been inundated by more than 50 inches of rain.

Source: The New York Times's *What's Going On in This Graph?* September 19, 2017 © The New York Times Company

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There were 550 online responses. One response, in particular, showed that we were onto achieving our objective of giving students the opportunity to have graphs that relate to the world around them. The student said, "Now I know why we read 'The Grapes of Wrath.' This book is an American classic read by many high school students. It is about farmers from the center of the United States (seen in this choropleth with yellow representing very little rainfall) who move West (blue, green and yellow) for a better life. Did the student now understand the farming challenges due to limited water Americans have as they move to places where they think there will be more opportunity? I suspect yes.

Since then, there have been more than 160 graph releases. The topics have been as varied as worldwide immigration to the cost of engagement rings. There have been 54 graph types from the basic time series graphs to bar Mekko charts. There are Stat Nuggets for more than 160 mathematics and statistics terms, enabling all teachers, including those with no statistics background, to easily use *What's Going On in This Graph?*



Files of 2023 New York Times graphs

One of the reasons why *What's Going On in This Graph?* is used by so many teachers is the graph selection. The four criteria for selecting graphs are: students see themselves in the graph, there is a surprise, students learn about the world around them, and the graph is timely. Week by week, the topic, graph type, and level of difficulty varies. If teachers find that a week's graph is not appropriate for their students, they can select a past graph from the archives that list releases by [topic](#), [graph type](#) and [Stat Nugget](#). There is no lack of graphs to notice and wonder about.

Here is what we hear from teachers about why students get engaged with *What's Going On in This Graph?*

- The graphs are about topics they are interested in.
- They get to discuss the graphs with their classmates and, if they respond online, with other teachers and peers from around the world.
- A graph is like a puzzle; students get absorbed in figuring out what story the graph is telling and what its surprise is.
- Students feel empowered when they can reason about a graph they have never seen on a topic that they know little about.

In summary, the goal is to offer a free teaching resource that requires minimal teacher preparation time, engages students, and is centered on their teaching goals on topics about the students' world. [What's Going On in This Graph?](#) meets these criteria and more. Try it out and see for yourself.

* A high school mathematics and statistics teacher, who has been the "curator" of the graphs, feature writer and morning moderator. She administers the feature by recruiting the more than 57 moderators who have a broad diversity by location and expertise. She speaks with teachers who use WGOITGraph? to find out their best practices and regularly presents at conferences, webinars and podcasts.

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CENSUS 2021: new configurations of Portugal

(Preliminary results)

Maria Emilia Moreira*

The study of a country's population is a critical research topic. It allows us to characterise the quantitative and qualitative aspects crucial for identifying the needs and problems affecting that population, and thus decide on the most appropriate policies to solve them.

Censuses are exhaustive population surveys conducted every ten years. The last one in Portugal took place in 2021. By comparing these results with those of 2011, we can monitor the quantitative and qualitative evolution of the Portuguese population over the decade that elapsed.

This analysis will be a fascinating topic for the 2022/2023 ISPL International Poster Competition. To this end, we set ourselves the following objectives:

- To identify the main characteristics of the Portuguese population in the 2021 Census and the main changes compared to 2011;
- To apply, refine, and learn new statistical analyses and data processing techniques; and
- To explore new learning situations/challenges and develop collaborative work.



Figure 1- Perspective of the approach developed to the preliminary results of the 2021 Census.

How many of us are there?

A comparative analysis of the last two censuses allowed us to conclude that the Portuguese population has been decreasing, registering a reduction of 2% compared to 2011. This is primarily due to the low birth rate. It should be noted that some municipalities have lost one-fifth of their population (Barrancos, Tabuaço [-21%]; Torre de Moncorvo, Nisa, Mesão Frio [-20%]). However,

others saw increases of around 10% (Odemira and Mafra [13%]; Palmela [10%]) (fig. 4). The increase in the male population in Odemira (+24%) stands out, which we believe is linked to immigration for agricultural work.

Regarding gender composition, women (52.4%) are more than men (47.6%), primarily due to their higher life expectancy.

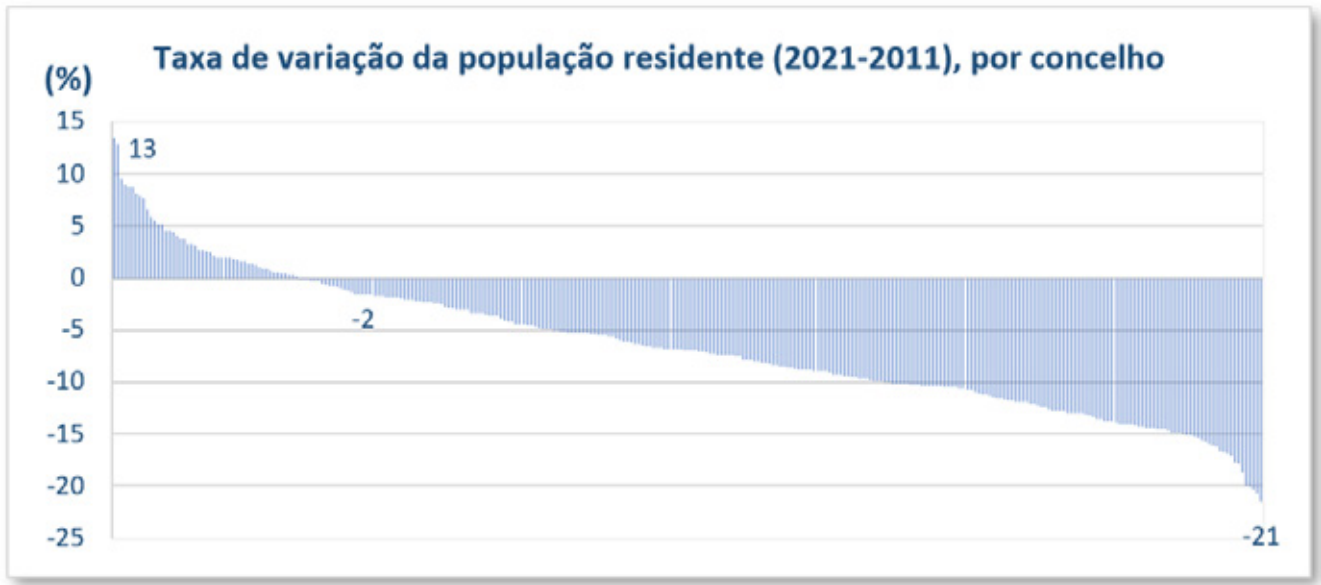


Figure 2- Change in the resident population (%) in Portugal by municipality (2021-2011).3

What are we like?

Aware that we are a country with an aging population, we tried to understand how old we are and how we have been evolving in this aspect, by analysing the distribution of the population by age group and the aging index.

We found that the elderly (>64 years) represent about one-fourth of the Portuguese population and are almost two times more numerous than the young population (0-14 years) (fig. 3).

The aging index grew from 147 in 2011 to 183 in 2021 (fig. 4), which means that there are 183 older people (> 64 years) for every 100 young people (0-14 years). More than half of the municipalities (191) have an index above 200, reaching 780 in Oleiros (fig. 5). Only three municipalities have an index of less than 100 – more young people than older adults – (Ribeira Grande, Lagoa, Santa Cruz), and Câmara de Lobos has just 100.

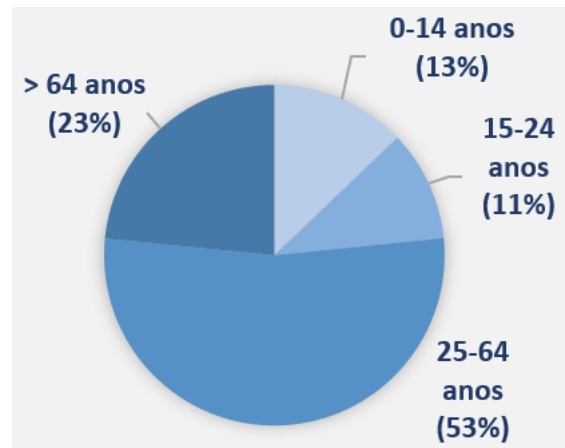


Figure 3- Distribution of the Portuguese population by age group (2021).

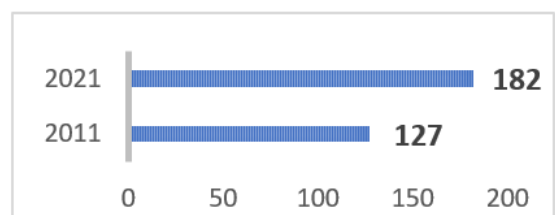


Figure 4- Aging index (No.) in Portugal.

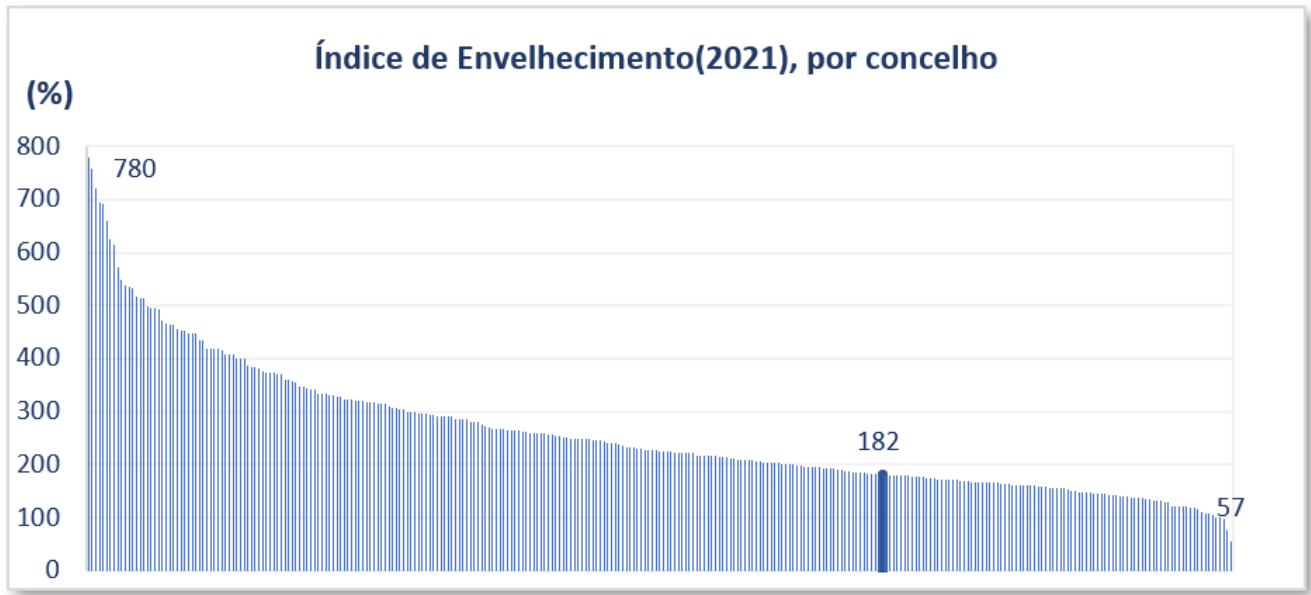


Figure 5 – Aging index, by municipality, in Portugal (2021).

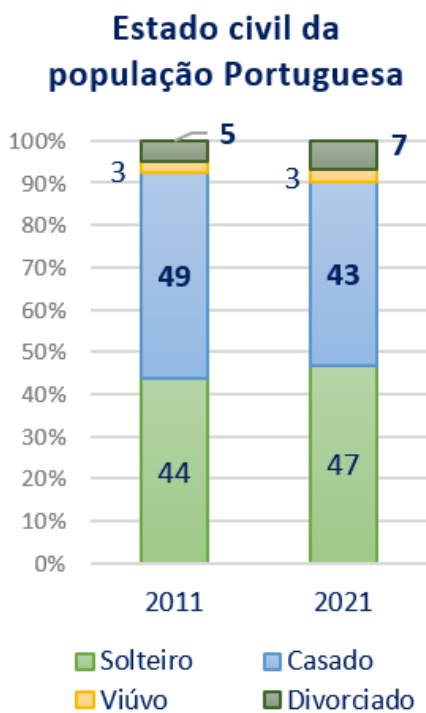


Figure 6- Marital status of the Portuguese population (2021-2011)

Family composition has also changed. We can see that we are more solitary and independent, with more single (+3 pp) and divorced people (+2 pp) compared to 2011 (fig. 6).

Education and training have evolved favourably. Compared to 2011, the Portuguese population is better qualified, with more people with secondary and higher education: +7 pp and +6 pp, respectively (fig. 7).

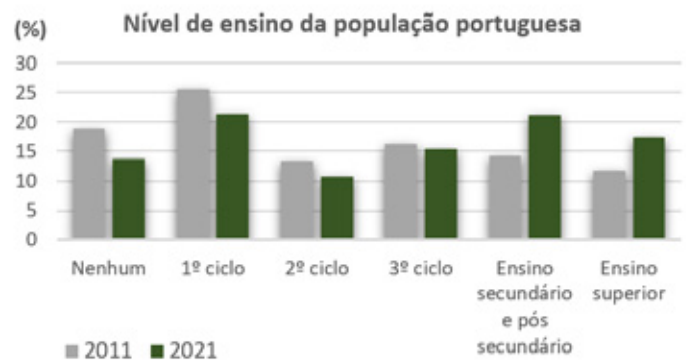


Figure 7- Level of education of the Portuguese population (2011- 2021)

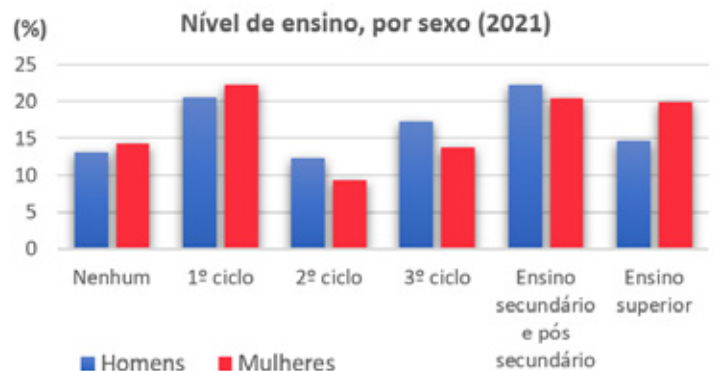


Figure 8- Figure 10- Level of education of the Portuguese population by sex (2021)

Higher education is more significant in urban areas. And women lead the way with a 5.4 pp greater share of having higher education (fig. 8).

POPULAÇÃO RESIDENTE, 2021

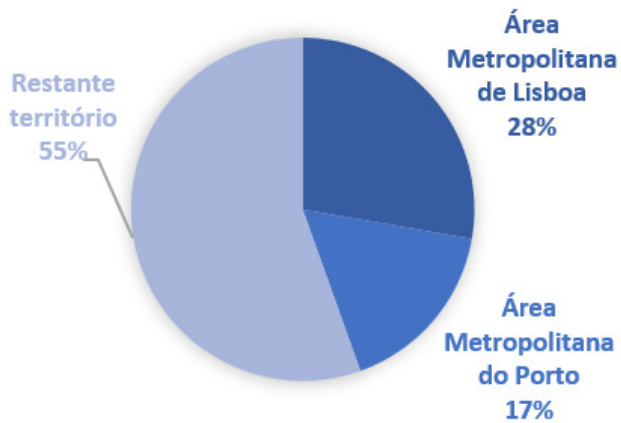


Figure 9- Bipolarisation of the population in Portugal (2021)

Where do we live?

Regarding geographical distribution, the population is essentially concentrated on the coast (fig. 9). The metropolitan areas of Lisboa (AML) and Porto (AMP) also stand out (bipolarisation) (fig. 9 and fig. 10), as almost half of the Portuguese population lives there (45%). However, AML looms 11 pp above AMP.

Cávado, Ave, Região de Coimbra and Algarve follow as the most populated NUT 2, although they are much less representative than AML and AMP, with no more than 5% (fig. 9).

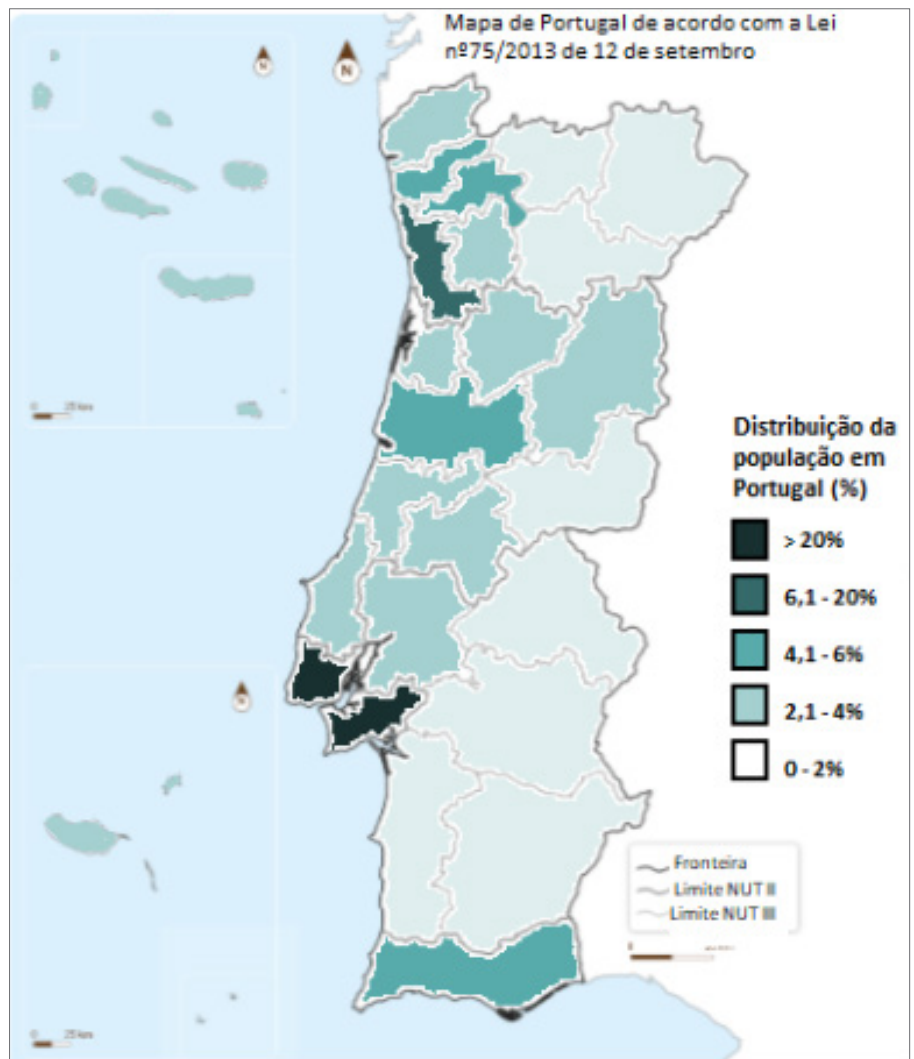


Figure 10- Distribution of the Portuguese population by NUT 2 regions (2021)

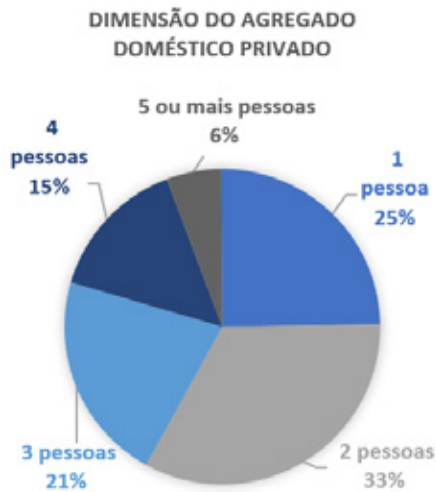


Figure 11- Household size in Portugal (2021)

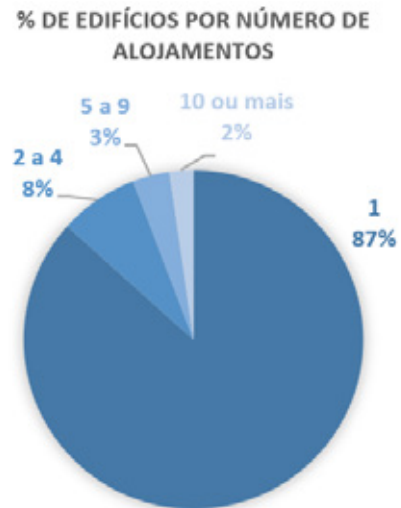


Figure 12- Type of dwellings in Portugal (2021) 1980.



Figure 13- Age of the housing stock in Portugal (2021)

How do we live?

Portuguese families are small. More than half of families (58%) have only one or two members (fig. 11). Only 21% have four or more members.

Regarding housing, the overwhelming majority of buildings (82%) are single-family dwellings, with only 2% having ten or more dwellings (fig. 12). The housing stock is considerably old. Eighty-five per cent of buildings were completed prior to 2000 and 50% prior to 1980 (fig. 13).

Conclusion

The aging of the Portuguese population is becoming more pronounced because of the high average life expectancy, but, above all, because of the low number of young people due to the low birth rate. We consider it important to promote policies that encourage births to achieve a better demographic balance and to ensure the renewal of the labour force in the medium term.

The strong imbalances in the distribution of the population in the territory reflect an unbalanced urban net-

work that does not favour territorial cohesion, resulting in losses for densely populated areas (diseconomies of scale) and low-density areas, with a loss of economic vitality and the closure of public services, which worsens the living conditions of the population.

The housing stock is relatively old, which can compromise the comfort of the dwellings, particularly regarding thermal comfort, which is extremely important in the event of heat waves or cold spells. Insufficient thermal comfort can also compromise the health of the population and be associated with higher morbidity/mortality during these climatic paroxysms.

Creators of public policies should consider these findings and others that characterise the Portuguese population, to solve the population's main needs and improve their living conditions.

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Empowering students in statistical literacy education: leveraging technology, addressing challenges, and advancing through ongoing research

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Abstract

In our increasingly data-driven world, statistical literacy is a vital skill that enables individuals to understand and critically evaluate complex information. This research investigates the essential role of technology in enhancing statistical literacy education by offering interactive learning experiences and practical skills. Various technological tools, including simulations, interactive visualizations, online resources, and statistical software, significantly improve students' understanding of statistical concepts. This study emphasises the significance of ongoing research and innovation in advancing technology-enhanced statistical literacy education. Continuous exploration and development of intuitive, user-friendly tools, coupled with comprehensive training programmes, empower educators to seamlessly integrate technology. Ethical considerations ensure responsible technological advancements while, respecting student privacy and data integrity. Prioritizing these aspects will revolutionise statistical literacy education, equipping individuals with crucial skills for navigating our complex, data-driven society.

Keywords: Statistical literacy education, data-driven world, statistical software

Introduction

Statistical literacy refers to the capacity to comprehend and critically assess statistical prevalent in our daily lives, combined with the ability to recognise the significance of statistical thinking in both public and private, professional and personal decision-making (Bencic et al., 2012) Statistical literacy assumes a paramount position in the present era of data-driven society, where comprehend-

ing, deciphering, and scrutinizing data-driven information holds utmost significance. It empowers individuals with enhanced critical thinking skills, risk assessment abilities, and data literacy, which are indispensable in navigating an increasingly intricate and data-centric society (Gal, 2002). The significance of statistical literacy cannot be emphasized enough, as it empowers us with the essential resources to skillfully navigate our world. It empowers us to decipher the information-saturated surroundings, equipping us with the methods to understand and tackle ambiguity, make projections, and extract profound understandings from data. Statistical literacy is particularly vital for adults to fully grasp societal and personal phenomena and trends, such as crime rates, population growth, disease spread, industrial production, educational attainment, and employment patterns (Gal, 2002).

Statistical literacy education holds immense importance in the contemporary educational realm, as it furnishes students with the indispensable means to comprehend and scrutinize statistical data. The idea of statistical literacy education encompasses the crucial ability to read, interpret, and evaluate statistical data in a thoughtful and discerning manner (Frey, 2018). It is absolutely imperative for students to cultivate their statistical literacy skills in order to confidently navigate and make informed choices in their daily lives. Recognising the significance of statistical literacy education, numerous researchers and educators have devised diverse methods and strategies for teaching statistical literacy (Chance, 2014).

Technology can play a significant role in enhancing students' statistical literacy by offering interactive and captivating learning experiences that augment their comprehension of statistical concepts (Oyelere, 2020).

Multimedia instruments, encompassing simulations, animations, and interactive visualizations, assist students in envisioning elusive notions and forging associations between theoretical constructs and practical implementations (Oyelere, 2020). Furthermore, technology provides access to online resources, including data sets and statistical software, which assist students in acquiring practical skills in data analysis and interpretation (Marino et al., 2023). Artificial intelligence (AI), an additional technological advancement, holds the capacity to transform the realm of statistical literacy education. By offering individualized learning encounters and instantaneous assessment to students, AI has the potential to revolutionize the way statistical literacy is taught (Bilgin, 2021).

This study delves into the multifaceted approach necessary for empowering statistical literacy education. This study explores the transformative role of technology in enabling interactive learning experiences and real-world applications of statistical concepts. Additionally, the study examined the challenges encountered, including issues of accessibility and the digital divide, as well as the crucial role of ongoing research in refining pedagogical methods. By harnessing the power of technology, addressing challenges, and continually advancing through research, educators and learners alike can cultivate a deeper understanding of statistical concepts, ensuring that statistical literacy becomes not only an essential skill but also a transformative tool for making informed decisions.

Role of technology in improving statistical literacy education

Technology holds immense potential when it comes to enriching the education of statistical literacy. The use of interactive visualisations empowers students to grasp complex statistical concepts by allowing them to manipulate data and witness the repercussions of various variables on the final outcome (Marino et al., 2023). Similarly, simulations can be employed to aid students in comprehending statistical concepts, as they enable students to simulate real-world situations and observe how different variables impact the result. Furthermore, online resources offer students supplementary learning opportunities through tutorials, quizzes, and exercises, thereby fostering the development of their statistical literacy skills. Moreover, technology facilitates communication and collaboration among students, teachers, and experts, creating an avenue for students to engage in discussions and exchange ideas with others. This, in turn, leads to a deeper understanding of statistical concepts (LinkedIn, 2023). The integration of technology into statistical learning has yielded positive outcomes in enhancing students' abilities. Therefore, it is imperative that we continue to explore innovative approaches to incorporating technology into the curriculum, with the aim of enhancing statistical literacy education (Bilgin, 2021).

Examples of technology tools that have been successfully used in statistical literacy education

Technology tools have been effectively employed in the realm of statistical literacy education to provide students with captivating and interactive educational encounters that possess the potential to enrich their comprehension of statistical principles. The education of students in the realm of data analysis and interpretation is attainable by employing statistical software applications like SAS, SPSS, and R. These software applications confer upon students the necessary practical abilities required for statistical literacy, empowering them to proficiently analyze and interpret data (Abdulrahman et al., 2020). By virtue of interactive visualisations, students can be aided in their comprehension of intricate statistical concepts, as they are afforded the opportunity to manipulate data and discern the ramifications of varying variables on the final outcome. The development of interactive visualisations necessitates the use of tools such as Tableau, D3.js, and Plotly (Abramson, 2023). The use of mobile applications can furnish students with the means to effortlessly access statistical tools and resources, ensuring that their statistical needs are met even while on the move. These mobile applications grant students access to statistical software, data sets, and interactive visualisations, thereby facilitating the cultivation of their statistical literacy skills (Halaweh, 2023).

Impact of technology on the content, pedagogy, and format of statistical literacy courses

The influence of technology on the substance, teaching methods, and presentation of statistical literacy courses has been a subject of fascination in recent times. Technology has had a significant impact on the manner in which statistical literacy courses are imparted, with novel tools and resources being created to enrich the learning journey. Statistical software packages like R, SPSS, and SAS have been utilized to enlighten students about the captivating realm of dissecting and comprehending data. This has been observed, for example, in the domain of education where these tools have been employed to nurture the analytical prowess of students, helping them master the art of unraveling and interpreting intricate data sets (LinkedIn, 2023). Interactive visualisations have been harnessed to aid students in comprehending intricate statistical concepts by empowering them to manipulate data and witness the ramifications of different variables on the final outcome (Marino et al., 2023). Online resources, encompassing data sets and statistical software, have been used to endow students with supplementary learning prospects, such as tutorials, quizzes, and exercises that foster the development of their statistical literacy skills (LinkedIn, 2023). Technology has played a pivotal role in enhancing communication and

fostering collaboration among students, educators, and experts. Consequently, it has empowered students to actively participate in discussions and share their ideas with fellow learners, ultimately leading to a deeper comprehension of statistical concepts (Abramson, 2023).

Challenges and limitations of technology in statistical literacy education

Limited access to resources

One of the primary challenges in using technology for statistical literacy education is unequal access to resources. For instance, a large number of students from impoverished neighborhoods or households may not have access to computers or the internet, which makes it difficult for them to use data analytic tools or online learning settings (Bowles, 2018).

Digital divide

The digital divide, the gap between individuals with effective access to digital and information technology, further exacerbates disparities in educational opportunities. Students without access to technology are at a disadvantage, impeding their ability to develop essential statistical literacy skills (Van Dijk, 2017).

Need for teacher training

Another challenge lies in the limited competence of educators in effectively using technology to teach statistical concepts. Many teachers are ill-equipped to incorporate digital tools into their curricula because they lack the requisite training and experience (Morrison and Lowther, 2010). This makes it more difficult for them to deliver engaging learning opportunities. Because technology is changing so quickly, teachers must engage in ongoing professional development to stay current with the newest resources and instructional techniques. Ongoing training programs, however, can require a lot of time and resources (Foulger et al., 2017).

Solutions to challenges in integrating technology into statistical literacy education

Bridging the resource gap

To tackle the challenge of limited access to resources, collaboration among government bodies, educational institutions, and private enterprises is crucial. Implementing initiatives that provide subsidised or free digital devices and internet connectivity to low-income families can bridge the resource gap. Public-private partnerships can fund programmes aimed at distributing laptops or tablets to students in need. Additionally, creating community centres equipped with computers and internet

access can serve as valuable learning hubs for students lacking these resources at home.

Addressing the digital divide

Efforts to address the digital divide should be multifaceted. Providing financial aid to families for internet subscriptions can be an immediate solution. Collaborating with telecommunication companies to offer reduced-cost internet packages for students from disadvantaged backgrounds is another viable approach. Furthermore, educational institutions can establish Wi-Fi zones in communities where internet access is limited. Mobile libraries or buses equipped with Wi-Fi can provide internet access to students in remote areas, ensuring that they have equal access to online educational resources.

Enhancing teacher training programs

To overcome the challenge of limited teacher competence in integrating technology, comprehensive and ongoing professional development programs are essential. These programmes should be tailored to educators' needs, focusing on practical applications of digital tools in the classroom. Partnerships with technology companies can facilitate specialised training workshops, offering educators hands-on experience with educational software and platforms. Mentoring programmes, in which tech-savvy educators assist their peers, can promote knowledge sharing and create a supportive learning environment.

Using user-friendly platforms

Developing intuitive and user-friendly educational platforms is crucial. Educational technology developers should prioritise creating interfaces that are accessible and easy to navigate for both teachers and students. Providing tutorials, guides, and readily available customer support can enhance teachers' confidence in using these platforms effectively. Regular feedback loops between teachers and developers can ensure continuous improvement, aligning the technology with the specific needs of the classroom environment.

Encouraging collaborative learning environments

Promoting collaborative learning environments can alleviate the burden on individual teachers. Platforms that facilitate teacher collaboration and resource sharing can provide a repository of effective teaching methods and digital resources. Educators can learn from one another, share successful strategies, and access a wealth of materials, thereby enriching the overall teaching experience.

Conclusion

This study discusses the importance of statistical literacy education in today's data-driven world and explores the

role of technology in enhancing statistical literacy education. Statistical literacy education is crucial for understanding and critically evaluating statistical information in various aspects of life. Students' grasp of statistical ideas can be greatly enhanced by technology, including interactive visualisations, simulations, online resources, statistical software, and mobile applications. These resources provide interactive learning opportunities and useful skills for analyzing and interpreting data. Nevertheless, obstacles including resource scarcity, the digital divide, and the requirement for teacher preparation impede the successful incorporation of technology in the teaching of statistical literacy. Resolving these issues is crucial to giving all students equal access to education and raising their level of statistical literacy in general.

Emphasis on the significance of ongoing research and innovation in advancing technology- enhanced statistical literacy education

Continuous exploration and advancement in technology are crucial for the progress of statistical literacy education. A focus on these areas enables addressing existing educational inequalities that hinder equal learning opportunities. Technological innovations can eliminate financial barriers and ensure that students from diverse backgrounds can access high-quality statistical education. These advancements significantly enhance student engagement and understanding. Immersive technologies such as augmented reality and ramified learning make statistical concepts accessible and enjoyable, deepening comprehension. Moreover, personalised

learning experiences, facilitated by artificial intelligence, cater to individual students' needs by, providing tailored guidance and exercises. This personalization enhances the effectiveness of statistical education by, accommodating diverse learning paces and preferences.

Ongoing research plays a pivotal role in empowering educators. The development of intuitive, user-friendly technological tools and comprehensive training programmes enables teachers to seamlessly integrate innovations into their teaching methods. This integration creates a dynamic, interactive learning environment, where technology becomes a natural part of the classroom. The study also highlights the connection between theoretical understanding and practical applications. Platforms that allow students to participate in authentic research projects, analyse genuine datasets, and collaborate with experts to bridge the gap between classroom learning and practical skills. Furthermore, a focus on data security and ethical considerations ensures responsible technological advancements in statistical education while, respecting student privacy and data integrity. Prioritizing these aspects in research not only revolutionises statistical literacy education but also equips students and educators with essential skills and knowledge vital for navigating the complexities of our data-driven society.

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Promoting DHIS2¹ based multisectoral data systems during the African Statistics Day 2023 in Niger

Ibrahim Sidi Zakari*

As part of the celebration of the African Statistics Day (ASD) 2023² on 18 November, Dr Sidi Zakari Ibrahim (ISLP³ country coordinator in Niger) and his collaborators from Abdou Moumouni University (AMU) and the National Institute of Statistics organized three meetings in Agadez, Niamey (capital city of Niger) and Tahoua.

The meetings were conducted for raising awareness about the recent deployment of two multisectoral platforms⁴ as well as for finalising the recruitment of interns (among Master and PhD students from AMU) who will contribute to strengthening subnational data value chains in Niger. This dissemination effort was made possible through a project funded by the African Population and Health Research Centre (APHRC) and implemented by AMU, since March 2022, in the Agadez and Tahoua regions. The overall goal of this project is “to strengthen data systems for planning and decision making at national and sub-national levels,” and specific objectives

include exploring “different approaches to sustainable capacity strengthening and the role of African academic institutions in building local data systems and capacity, including student internships and supervision.” More details about this project (coordinated by Dr Sidi Zakari Ibrahim) are available online.⁵

- 1 District Health Information System, version 2: <https://dhis2.org/>
- 2 <https://www.uneca.org/stories/african-statistics-day-2023#:~:text=African%20Statistics%20Day%20is%20an,of%20social%20and%20economic%20life>
- 3 International Statistical Literacy Project, <https://iase-web.org/islp/About.php>
- 4 <https://stat-agadez.org/> and <https://stat-tahoua.org/>
- 5 <https://www.prcvdi-niger.org/>



Photo 1. Intern selection at the Department of Mathematics and Computer Science, AMU



Photo 2. DHIS2 Presentation at the Agadez Regional Direction of the National Institute of Statistics with representatives of key sectorial ministries (agriculture, health, education, population, migration, etc.)



Photo 3. Presentation of the APHRC UAM project at Tahoua Regional Direction of the National Institute of Statistics with representatives of key sectorial ministries (agriculture, health, education, population, migration, etc.)

It is expected that these data, which cover the sectors of agriculture, education, population and migration (identified as priority areas by the beneficiary regions), will be validated in innovative ways including the ISLP Statistical Poster Competition that targets secondary school, high school and university (undergraduate) students. Previously, a competition was organized in 2018-2019 in Niamey⁶ and future ones should occur in other regions.

Finally, it is important to recall that the theme of the ASD 2023 is *“Modernizing data ecosystems to accelerate the implementation of the African Continental Free Trade Area (AfCFTA): the role of official statistics and Big Data in the economic transformation and sustainable development of Africa.”*⁷ This theme *“was chosen to raise awareness among decision makers, technical and financial partners, data producers and users, research-*

*ers and the public of the importance of official statistics and big data to accelerate the implementation of the Agreement Establishing the African Continental Free Trade Area and promote intracontinental trade.”*⁸ The operational phase of the AfCFTA was launched on 7 July 2019 during the 12th Extra-Ordinary African Union Summit at Niamey.

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6 https://iase-web.org/islp/Poster_Competition_2018-2019.php?p=Posters

7 <https://www.uneca.org/sites/default/files/ACS/African-Statistical-Day/2023/Media%20Release-ASD-2023-En.pdf>

8 <https://www.uneca.org/sites/default/files/ACS/African-Statistical-Day/2023/Media%20Release-ASD-2023-En.pdf>

AI for dissemination Statistics

Maulana Faris*

In recent years we have seen how the internet has changed our behavior in communicating compared to several tens or even hundreds of years ago. Whether we realize it or not, we are entering a new phase in communicating and conveying certain messages to other people. We continue to discuss how to communicate effective and efficient statistics to the public using the internet and social media to build statistical literacy in society and create a data driven society. We as the National Statistical Office (NSO) continue to be required to adapt and adjust to the unstoppable changes of the times. We haven't finished discussing to understand how we can use social media algorithms to communicate statistics, now we have to enter the era of Artificial Intelligence.

Artificial Intelligence is a challenge for the National Statistical Office to adapt to technological developments. Before we discuss the use of Artificial Intelligence, let's first understand the concept of Artificial Intelligence. According to Leave et al (1992), Intelligence comes from the Latin word "Intelligo" which means "I understand". So Intelligence can be interpreted as the ability to understand and take action. In Goldberg (1989) several experts provide a definition of AI. According to H. A Simon, artificial intelligence/AI is a lesson for computers to do things better than humans. According to Knight and Reach, AI is a part of computer science that understands efforts to create computers that are like what humans can do or even better than that.

According to Jamaaluddin and Sulistyowati (2021), AI has several dimensions, namely Acting Humanly, Thinking Humanly, Thinking Rationally, Acting Rationally. Acting Humanly means that the AI is created in such a way as to act like a human. The ability of computers to carry out thought processes like humans is manifested by a programming language that can carry out thought processes like humans. AI in the 'Think Rationally' dimension means that humans create their own intelligence into computers. AI also centers or focuses on the intelligent behavior of a device or is also known as a tool that has rationality that works differently from ordinary computers. This can be done if a computer has the ability to perceive the environment, can adapt to changes in

the existing environment so that it can carry out operations in accordance with the desired goals.

The development of Artificial Intelligence (AI) has been very fast and extraordinary in recent years. Various practical applications can be used by people in everyday life. AI has succeeded in replacing many human jobs and producing more effective and efficient output. AI has entered various sectors such as transportation, medical, legal, and even the world of statistics. Statistics Indonesia (BPS) sees AI as a big potential in making statistics production better and more efficient, especially in this case in the field of statistical dissemination and communication. AI tools such as Chat GPT can interact directly with humans in discussing ideas, making various drafts for dissemination, and many other assistances. In the context of statistical dissemination, AI can assist in conveying statistical information in a more understandable and attractive way for the public. This allows the general public to better access and understand statistics, and enables better decision making based on accurate and relevant statistical evidence.

AI is designed to help every part of our work be faster and more targeted. AI can be used from a technical or non-technical side. We can use AI tools that are available for free on the internet or for a fee, or we can create our own AI algorithms for statistical purposes, especially communication and statistical dissemination. Until now, the development of AI has become unstoppable. AI is present in all aspects of our lives from transportation, social media algorithms, film application platforms, e-commerce, to one of the areas we are focusing on this time, namely communication and statistical dissemination. AI has great potential in the world of copywriting.

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Statistical computing literacy in Nigeria

Adenomom Monday Osagie *

In this era of Information Technology (IT) and Data Science, the International Association of Statistical Computing (IASC) African Members Group had continue to facilitate free monthly webinar to drive and improve statistical computing literacy in Nigeria using Open source and paid Statistical software. One of the recent webinar was held on Friday, November 24, 2023 at 3:00pm WAT with webinar titled “bulkreadr: The Ultimate Tool for Reading Data in Bulk (<https://www.isi.web.org/webinar/iase-bulkreadr-ultimate-tool-reading-data-bulk>). The bulkreadr package was develop by a Nigerian named Ezekiel Adebayo Ogundepo (gbganalyst@gmail.com) who also facilitated the webinar. The take home from the webinar was that bulkreadr is an R package design to simplify and streamline the process of reading and to process large volumes of data (from Microsoft Excel, Google sheets workbooks as well as CSV files from a directory) in R. the video and slides can be found at (<https://vimeo.com/888119053>; <https://gbganalyst.github.io/bulkdeadr-webinar/presentation-script.html>). The webinar had above 100 registrants and above 50 attendees. The goal of the IASC African members group is to ensure that every Nigerian and African become literate in statistical computing.

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Intro

Elizabeth Richards*

My sister, at the age of four, declared her dream of becoming a doctor. We weren't convinced because she was so pre-occupied with her piggy bank, growing her pile of money, and bossing everyone around. We figured she'd find herself, eventually leading many hostile business takeovers. When she was discouraged at university, I reminded her of that determined little girl. Now she's a family and emergency room physician in our hometown, a rural area with major gaps in access to medical care.

My story hasn't been as straightforward, but in hindsight, I'm starting to see the common threads. I was a bookworm and a French-Canadian kid who learned how to speak English in an international classroom in Vancouver.

As a student at the *University of British Columbia* (UBC), I took courses in about every discipline and immersed myself in German language and culture during my foreign exchange year in Freiburg (yes, that meant practicing my "grammar" with some Weissbier at the pub). I chose a double major in International Relations and German Studies, though with my wandering spirit, I could have added a few minors from various departments. Unexpectedly during my studies, I started enjoying my mandatory economics courses thanks to professors sharing their passion for gender and globalization.

So, after working for a non-profit focused on science education, I took a leap, and started a Masters of Economics at UBC. It was tough. My peers had double majors in economics and math, and I was proving the fundamental theorem of linear algebra with my inter-disciplinary background. But aren't passion and drive the real determinants of success? By the time I wrote my Master's thesis, I had worked my way from the bottom to the top of the class. And when Statistics Canada called with a job in Ottawa, I couldn't wait.

I spent the first part of my career in data production, becoming a subject matter expert. I was recruited to join the research branch—likely because of my ability to tell stories—and became an economic spokesperson. Always learning, I published almost twenty analytical papers over a few years on topics including financial well-being for millennials, economic growth and conditions, gender pay gaps in top income groups and diversity on corporate boards. Building analytical skills across communities, I led missions on gender-based analysis in the Caribbean and taught some of Statistics Canada's flagship training.

During the pandemic, I joined a data-driven team at the Privy Council Office, supporting the Prime Minister and his Cabinet in achieving their vision. I had voluntarily signed up for a bootcamp in policy and got to see the public service at its finest, working collaboratively to safeguard the well-being of Canadians. The evidence-based policy advice I provided helped shape our country's vision on diversity and inclusion, leading to the creation of new initiatives to support diverse entrepreneurs.

Now a new mom and a new director in the research branch at Statistics Canada, I'm still learning, and I'm enjoying working with the most talented team of educators, economists, and communicators.

Thank you for including me as part of your community. I've seen first-hand what evidence-based policy can accomplish. It means better—and more equal—outcomes for all of us. Let's make headway on data literacy together.



CANADA

Statistics Canada in the World Statistics Congress 2023

Imagine you've been working for 10 years, excelling in your career with promotions along the way. Suddenly, you notice changes in systems and processes. New concepts like "dashboards," or "business analytics," and terms like "ChatGPT" and "intersectionality" are everywhere.

Today's data revolution holds the promise of better outcomes for citizens. It's more important than ever for Canadians and decision-makers to understand our country's social and economic landscape, learning to apply data in their everyday work. Yet, the COVID-19 pandemic tested Statistics Canada's training program. Due to public health restrictions implemented in early 2020, we had to stop in-classroom training, re-think, and adapt to new realities. But just as every dark cloud has a silver lining, this challenge came with great opportunities.

We spent less time teaching and more time listening, as our policy colleagues shared their difficulties in working through an evolving data ecosystem without the right training. In September 2020, we launched the Data Literacy Training Initiative (DLTI) with our first suite of FREE, online, bilingual (that means English and French for us) and accessible training products. We are dedicated to challenging the common notion that becoming more proficient in data is too technical, complicated, or intimidating to be learned in an informal setting. Our learning is framed by the data journey, built on a strong foundation of data stewardship, metadata, standards, and quality.

Transitioning from synchronous, in-class teaching to self-guided, online and hybrid learning has been a real adventure, full of successes and challenges. Online

Data Literacy Training Initiative (DLTI)



We will guide you on your data journey



learning lacks traditional social stimulation, so it needs to be engaging and fun. To enhance our work, we staffed up and hired a brilliant instructional designer and an imaginative multi-media design student. We're a small, talented team that enjoys working together, and that makes all the difference.

Starting with short online videos and guides, we responded to the great demand from stakeholders, shifting to developing online courses. Recently, we published a 40-minute course on the six dimensions of data quality and how to evaluate whether data are fit for your analytical purpose. We've also collaborated with the UK-based Apoitical.co and will soon launch our new "Data Literacy for the Public Sector" course, an 8 hour foundational course that covers everything from statistical bias to storytelling.

Our team is motivated by the social good and promoting open learning. Many people have shared that, before discovering us, they didn't know where to start on their data journey. It was too daunting—like an uphill climb through a dense forest. Scary stuff. But our strength as a team is to leverage expertise across Statistics Canada, translate it into plain language and showcase real world applications, making it fun for those who want to learn.

Think of us as a guide for your data journey, whatever your climb looks like, as a data beginner or a data scientist, and everyone in between.

We had a great time connecting with like-minded data literacy advocates at the World Statistics Congress this summer. Clearly, we have similar challenges in advancing initiatives and can learn from one another, stronger together in combating misinformation and enabling evidence-based policy.

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ACTIVITIES



Memories from
the WSC2023...





ISLP Cabo Verde obtains INE-CV commitment to engage in the ISLP Project and support statistical literacy in schools and statistical poster competitions with prizes

Júlio Delgado*

Júlio Delgado, the Country Coordinator of the International Statistical Literacy Project (ISLP- <https://iase-web.org/islp/>) in Cape Verde, held a highly productive meeting with Dr. João Cardoso, President of the National Institute of Statistics of Cape Verde (INE-CV). The meeting also included the technical team from the Office of Communication, Diffusion, and Cooperation, represented by Coordinator Dr. Carmen Cruz and technician Elisângela Silva.

During the meeting, the ISLP-CV Coordinator presented the ISLP Project and the work already carried out in Cape Verde to promote statistical literacy in the country. The parties discussed ways to enhance the promotion of literacy in Cape Verde, including conducting diagnostics to assess the population's level of statistical literacy, which is considered an important input for defining a national statistical literacy strategy. Furthermore, they explored the possibility of planning projects to develop an e-learning and knowledge-based platform, as well as literacy content, and to find ways of securing funding in collaboration with other entities.

The most significant outcome of this meeting was INE-CV's unwavering commitment to actively participate in the ISLP Project, with a specific focus on supporting statistical literacy in Cape Verdean schools through Statistical Poster Competitions (<https://iase-web.org/islp/>

[Poster Competition 2022-2023.php](#)). To achieve this goal, INE-CV pledged to sponsor prizes for national statistical literacy competitions in schools.

This strategic partnership aims to stimulate the interest and comprehension of statistics among Cape Verdean students, encouraging their participation in educational competitions that involve statistical concepts. The awards provided by INE-CV will be utilized to acknowledge and reward the efforts of students and educators in promoting statistical literacy in the country.

ISLP Cabo Verde and INE-CV are committed to continuing their collaborative efforts to strengthen statistical education and encourage citizens to develop valuable statistical skills. They also aim to promote the involvement of other entities within the national statistical system, in collaboration with the Ministry of Education.

For further information regarding the ISLP Cabo Verde Project and this collaboration with INE-CV, please contact:

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ARGENTINA

Coloquio Argentino de Estadística

Adriana D'Amelio*

Durante los primeros días (3,4,5,6) de octubre se realizó el **L Coloquio Argentino de Estadística (CAE) y VIII Jornada de Educación Estadística “Martha Aliaga” (JEE)** en nuestra facultad. En el mismo desarrollaron diversas actividades entre las que se destacan mini cursos y conferencias de especialistas en el tema. Este evento se inició en 1952 en la Provincia de Mendoza Argentina, por eso fué un honor que el quincuagésimo Coloquio se desarrolle nuevamente en la casa que lo vio nacer. “Actualmente estamos trabajando en la conformación de la Confederación Latinoamericana de las Sociedades de Estadística” expresó la Presidenta de la Sociedad Argentina de Estadística, Lila Ricci. En segunda instancia, se celebraba la VIII Jornada de Educación Estadística, dirigida a profesionales de educación de la provincia y del país.

El día **3** de octubre se desarrolló la **VIII Jornada de Educación Estadística “Martha Aliaga”**. Se inició con unas palabras de la **Mg Adriana D’Amelio**, el Decano de la Facultad de Ciencias Económicas **Cdor Arturo González Gaviola** y la Presidente de la Sociedad

Argentina de Estadística **Dra Lila Ricci**. La Conferencia inaugural estuvo a cargo del **Mg. Hugo Mael Hernández Trevethan**, (México) **“Lo que nos dejó la enseñanza en línea para el regreso a la presencialidad”** y la Conferencia de cierre a cargo de la **Dra. Soledad Estrella** (Chile) **“La resiliencia del Lesson Study: experiencias en formación docente y con formadores/as de futuros profesores de Chile”**. Además se dictó el taller : Interpretación y análisis de gráficos. ¿En qué nivel estamos?- por Lic. Carolina Batiz y Mg. Eleonora Mamaní (UNCuyo).



Durante los días **4, 5 y 6** se realizará el **L CAE** contando con conferencistas invitados, mini-cursos, presentación de comunicaciones y pósteres. A través de los seis conferencistas internacionales que participaron de la reunión, se presentaron nuevas metodologías estadísticas, técnicas de análisis de datos y enfoques innovadores que podrían mejorar la calidad de la investigación en diversas disciplinas.

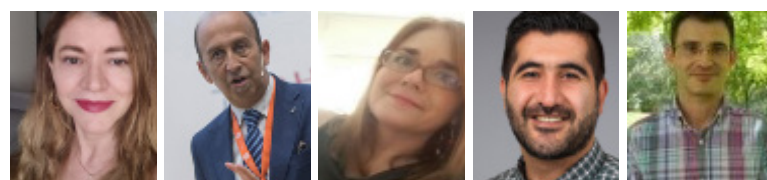
Dr. Reinaldo Arellano-Valle: “Algunas formulaciones de distribuciones multivariadas flexibles”. Dra. Denise Duarte: “Probabilistic context neighborhood model for two dimensional lattices”

Dr. Pedro Campos: “Nuevas vías en Estadísticas oficiales”

Dra. Viviana Giampaoli: “Validación de modelos para eventos raros: análisis de algunas propuestas”.

Dr. Mehdi Moradi: “Point processes on linear networks “

Dr. Tomás Goicoa: “Spatial confounding in univariate and multivariate disease mapping: different perspectives and approaches”



Entre los cursos que se dictaron están :

Visualización interactiva de resultados usando aplicaciones Shiny- Mg. Diego Marfetán Molina (Universidad Nacional de Rosario.).



Elementos de estadística computacional y aprendizaje automático usando R y Python- Mg. Mery Picco, Mg. Juliana Maldonado (Universidad Nacional de Río Cuarto).

Implementación de modelos de aprendizaje automático: El análisis de errores y atributos protegidos con InterpretM; TensorFlow Model Analysis; TensorFlow What-if y Fairlearn en Python- Dr. Darío Díaz (Dirección de Estadísticas de Misiones).

A través de los tres cursos dictados en la reunión y los dos paneles de discusión, se exploraron aplicaciones prácticas de la estadística en diversas áreas, desde la investigación científica hasta la toma de decisiones en la industria y el gobierno. Además se presentaron avances en herramientas y software estadísticos, lo que podría tener un impacto directo en la eficiencia y la precisión del análisis de datos.

La participación activa: contó con más de 180 profesionales y 61 estudiantes del país y del exterior, se presentaron ocho conferencias a cargo de profesionales del exterior, 55 comunicaciones orales y 59 pósters, además de la realización de un panel específico de estadísticas oficiales.

Estimuló la formación de colaboraciones entre estadísticos y expertos de otras disciplinas, lo que podría llevar a proyectos interdisciplinarios y enfoques más holísticos para abordar problemas complejos.

Ofreció oportunidades de educación continua para los participantes, permitiéndoles mantenerse al tanto de los desarrollos más recientes en la estadística y mejorar sus habilidades y conocimientos. La presentación de trabajos en la reunión brindó visibilidad a los investigadores y pudo haber resultado en reconocimiento por parte de la comunidad científica

y académica. Se discutió sobre mejores prácticas y estándares éticos en la investigación y enseñanza estadística, con posibles repercusiones en la calidad y la integridad de la investigación y la enseñanza en esta área. A través del concurso de pósters para estudiantes de grado y las exposiciones a nuevas ideas y enfoques pudo haber inspirado a los estudiantes a abordar nuevas líneas de investigación y explorar áreas emergentes en la estadística.

La diversidad de temas y la excelencia en las presentaciones de los reconocidos conferencistas, con destacada trayectoria en el ámbito nacional e internacional reflejan la calidad de la reunión, la Rectora de la Universidad Nacional de Cuyo, **Ctdra. Esther Sánchez** dijo "Si hay algo para celebrar es que ustedes hoy son los que están co-construyendo, igual que se hizo desde el año 1952, la estadística" .En el tercer y cuarto día se compartieron diversas presentaciones y actividades expresadas por especialistas. "Lo que representa este coloquio para nosotros en Mendoza es muy importante. Se cumplen 50 años y el primer coloquio fue acá en la provincia" comentó Adriana D'Amelio, revalorizando la importancia de la facultad como sede de tan especial evento. La reunión científica tuvo un impacto significativo en diversos aspectos, contribuyendo al avance de la disciplina y a la mejora de la calidad de la investigación en estadística.

* Head Professor, Universidad Nacional de Cuyo
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EGYPT



New Country Coordinator: Egypt

Manal Mostafa*

Hello, my name is Manal Mostafa. I work as an International Relations Coordinator. With a passion for fostering understanding and collaboration across borders, I have dedicated my career to promoting effective communication and cooperation among nations. My educational background and professional experiences have equipped me with a comprehensive understanding of international relations, diplomacy, and the importance of data-driven decision-making.

Why I would like to promote statistical literacy in my country:

Statistical literacy plays a crucial role in today's interconnected world, where data and information shape policies, strategies, and decision-making processes. As an International Relations Coordinator, I believe that promoting statistical literacy in my country is of paramount importance for several reasons.

First, statistical literacy empowers individuals to critically analyze and interpret data, enabling them to make informed decisions. In a rapidly changing global landscape, where data are abundant and often complex, statistical literacy equips citizens with the skills to navigate through vast amounts of information, identify patterns, and draw accurate conclusions.

Second, statistical literacy enhances transparency and accountability in governance. Through statistical literacy, individuals become more capable of understanding and evaluating government policies, assessing their impact, and holding authorities accountable for their decisions. This leads to a more participatory and inclusive democratic process.

Furthermore, statistical literacy is vital for evidence-based policymaking. Decision-makers heavily rely on statistical data to identify societal needs, evaluate policy effectiveness, and allocate resources efficiently.

By promoting statistical literacy, we equip policymakers with the necessary tools to utilize data effectively, resulting in more informed and targeted policy interventions that address the needs of our society.

Finally,, in an increasingly interconnected world, statistical literacy enables us to engage meaningfully in international dialogue and collaborations. As an International Relations Coordinator, I understand the importance of data-driven decision-making in fostering effective cooperation among nations. By promoting statistical literacy in my country, we can strengthen our ability to engage with international organizations, understand global trends, and contribute meaningfully to international discussions and negotiations.

In conclusion, as an International Relations Coordinator, I recognize the significance of statistical literacy in empowering individuals, enhancing governance, informing policymaking, and fostering international cooperation. By promoting statistical literacy in my country, we can create a more informed and engaged society, capable of addressing complex challenges and contributing to a prosperous and sustainable future.

Warm regards,
Manal Mostafa

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EGYPT



New Country Coordinator: Egypt

Naglaa Ahmed Al-Sayed*

Before I introduce myself, I would like to express my gratitude for this opportunity, which will have a great impact on me both personally and professionally. My name is Naglaa Ahmed Al-Sayed, and I am 44 years old. I received a Bachelor's in Media from a journalism program in 2000, and I then joined the Central Agency for Public Mobilization and Statistics in the media group of the Public Relations Department, where I still work.

I wanted to gain a better understanding of the field of statistics, statistical media in general, and population media in particular. I was nominated for continued studies by Major General Abu Bakr El Gendy, the former head of research at the Demographic Center in Cairo. I obtained two diplomas in population demography and then a Master's in population statistics from the Graduate School of Statistical Research. The title of my Master's thesis is "Towards an indicator to measure women's empowerment in Egypt" and reflects my personal interest in the importance of empowering women, as they are half of society.

Through my education and work, I have realized that the world speaks in the language of numbers, and statistics is the main source of the rules and vocabulary of this modern language. The demand for statistical data and information has increased significantly, because statistics underlies sound public policy that aims to bring about comprehensive development in all fields for the benefit of society and maximize the return from the available resources to meet societal needs. The Central Agency for Public Mobilization and Statistics is keen to strengthen partnerships with the media in order to extend a bridge of communication with policymakers, to ensure the effective use of statistical data in planning and decision-making, and to enhance the role of statistics in the media and policy-making in general. This commitment is based on citizens' right to knowledge, and we seek to

enhance the role of the Central Agency for Public Mobilization and Statistics in spreading statistical awareness among all segments of society.

At the working level, I participate through my work in CAPMAS in many programs to spread statistical awareness, whether internally or externally. I participate as a media coordinator within the work team that designed the national strategy for the development of statistical work in Egypt. I also support the work of mobilization programs to gain the support for this strategy through articles and documentary publications. I prepare a daily radio program on the Egyptian radio about the indicators and statistics issued by CAPMAS, during which I present in an accessible and attractive format, making it easier for the listener to understand and realize the meaning of those indicators and statistics. I participate in the team competing in an annual statistical competition on the Egyptian radio in Ramadan of each year, which defines the most popular months for the audience to listen to the radio. All these activities and many more are carried out by CAPMAS to spread statistical awareness, to share the country's capabilities with conviction, and to improve the standard of life for Egyptians.

My motto at work has become: *If we want to bring statistics to daily life, then statistical awareness is the best path to that goal, and if we want to spread knowledge, we must make the information accessible to the public.*

* Head of the Media Department
Central Agency for General Mobilization and Statistics
ISLP Country Coordinator for Egypt
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New Country Coordinator: Nigeria

Adenomom Monday Osagie*

Dr. Adenomom Monday Osagie is an Associate Professor of Statistics in the Department of Statistics, Nasarawa State University, Keffi, Nigeria, who specializes in Econometrics and Financial Time Series. Dr. Adenomom is an Elected member of the International Statistical Institute (ISI) and the Geographic Centre Lead for Africa in the RoSE (Researchers of Statistics Education) Network Committee.

As an ISLP country coordinator for Nigeria, I will promote statistical literacy in Nigeria for the following reasons:

- i. To build the capacity of statisticians and non-statisticians to be able to navigate from theory to practice.
- ii. To improve statistical literacy in Nigeria through statistical events inform of in person or webinars.
- iii. To serve as mentor to upcoming statisticians in Nigeria.
- iv. To create a group of statisticians and non-statisticians to influence government policies through informed and data driven decision making.
- v. To also show cases statistical literacy programme going on in Nigeria to the international world.
- vi. To bridge the gap that will reduce wrong use of statistics and statistical techniques among academics in Nigeria.
- vii. To improve the use of open-source software for statistical computing in Nigeria.

Training and education: PhD (Statistics) 2016; M.Sc. (Statistics) 2010; B.Sc. (Statistics) 2021; PGDS (Statistics) 2008; HND (statistics) 2004.

Professional services: Chair of the International Association of Statistical Computing (IASC) African Members Group (2021-); ISI Short Course and Outreach Officer (2021-2023 & 2023 2025); Regional Coordinator, Northern Nigeria LISA 2020 Network; Coordinator, Nasarawa State R User Group; Lead-Organizer of the Northern Nigeria LISA 2020 Symposium (2020); Lead-Organizer, IASC physical symposium in Nigeria (2019 and 2021); Member, Committee of Sport Statistics Research Group of International Statistical Institutes (ISI) (2019); Chartered Statistician of the Royal Statistical Society (2019-); Coordinator, NSUK-LISA Stat Lab (2018-); Founder, Foundation of Laboratory for Econometrics & Applied Statistics of Nigeria (aka Found-LEAS-in-Nigeria) (2018-); Mentor, LISA 2020 Networks (2018-)

Research interests: Econometrics; Time Series Analysis; Financial Time Series Analysis; Spatial Econometrics; Statistical Computing and Interdisciplinary Statistical Analysis.

* Dr., Associate Professor of Statistics at the Nasarawa State University, Keffi, Nigeria
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New Country Coordinator: **Burundi**

Jeanine Niyukuri*

Ms. Jeanine is a statistician with 18 years of experience in the design, processing and analysis of data from administrative sources. Throughout her career she conducted several activities relating to the production of demographic and social statistics within the National Statistical System in general and at National Statistical Office (ISTEEBU) in particular.

Since November 2022, Ms. Jeanine is the Acting Director of the Department in charge of Coordination, Dissemination and Cooperation at the National Institute of Statistics of Burundi.

Previously, she was Director of the Department of Demographic and Social Statistics for 14 years. She was responsible for the design, management and technical coordination of study programs and statistics. Her department responded to requests and needs emanating from different institutions; in her role she gave orientations and defined action priorities, as well as distributing work between study and evaluation managers or entrusting it to external resources. She participated in the validation of the results obtained from the studies, evaluation managers, and external service providers. She also conducted and supported studies and statistics with both external and internal partners, and she managed relationships with stakeholders in the field (providers/users of demographic and social data, ministerial statistical services, research institutions, etc.), particularly within the framework of partnerships.

The objective of the ISLP (International Statistical Literacy Project) is the promotion of statistical culture throughout the world and in all fields while placing particular emphasis on the teaching of basic statistical knowledge to target groups who do not yet have such skills. Ms. Jeanine is fully interested in this project, especially since in her country, statistical culture is not yet very developed for both young people and for the rest of society.

Ms. Jeanine has no doubt that through participating in discussions with the other country coordinators and project initiators, together they will learn from each other how to promote statistical culture, especially among young people who are tomorrow's future.

* Director of the Department of Coordination, Diffusion and Co-operation, Statistics Burundi (INSBU)
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New Country Coordinator: Pakistan

Faryal Shabbir*

My name is Faryal Shabbir, and I have been working as Associate Professor of Statistics in the Higher Education Department of the Government of Punjab Lahore for almost 2 decades. As a student, I found the field of statistics very interesting and statistics apply to every field of life. As a statistician, I can connect to people in every walk of life. The field of statistics also made me more analytical and practical. I always look up facts and figures. Besides teaching statistics, my interests lie in art and current affairs.

Promotion of the subject:

For the projection and promotion of statistics, I will participate in groups of active statisticians who are already working for this cause. Locally, I will organize exhibitions and seminars to inform my community about the importance of statistics at my college and at different other institutions. Furthermore, I will encourage students to study statistics and pursue more advanced statistical training. (Though many of my female students have completed their master's in science degree in statistics and are serving the community).

Other than that, I offer my services to ISLP for the promotion of the subject with all my heart and soul.

Best Regards,

Faryal Shabbir

* Associate Professor of Statistics, Higher Education Department of the Government of Punjab Lahore
ISLP Country Coordinator for Pakistan
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New Country Coordinator: **Costa Rica**

Pablo Vivas*

Hello, I am Pablo Vivas. My journey as a statistics educator began five years ago when I started teaching an introductory statistics class at Costa Rica's largest university. This role sparked a profound curiosity in me: How do students learn statistics? This question became the compass for my academic life, leading me to explore the field of statistics education.

My personal educational journey was marked by significant challenges but fueled by a relentless thirst for knowledge. Despite these hurdles, my enthusiasm for research and education never vanished. Recognizing the transformative power of education, I have dedicated myself to teaching statistics to a diverse range of learners.

Thanks to the Fulbright Scholarship, I am currently studying at one of the most iconic universities in the statistics education field: the University of Minnesota (Go gophers!), home of researchers, such as Joan Garfield, Robert delMas, and my current advisor, Andrew Zieffler, among others, whose work has significantly impacted this field. Furthermore, being part of the Fulbright community has been a pivotal experience for me, deepening my understanding of global educational disparities and reinforcing my resolve to use education as a means for societal change.

My mission to promote statistical literacy in Costa Rica is driven by my deep-rooted belief that knowledge should be accessible to all, my experiences in overcoming educational barriers, and my dedication to inclusive teaching. By fostering a deeper understanding of statistics, I

aim to empower individuals and communities in Costa Rica and other Latin American countries, helping them to navigate and make informed decisions in a world increasingly driven by data.

I want to draw attention to Costa Rica, where we have an outstanding set of statistics educators who seek to revolutionize the way statistics is taught and comprehended. We have educators who are not just focused on teaching the fundamental concepts but are deeply invested in understanding how students learn and interact with statistical information.

This enthusiasm among educators in Costa Rica is driven by a collective ambition to enhance statistical literacy, not just for academic success but as a crucial life skill. We believe in making statistical education more engaging, accessible, and relevant to the diverse needs of our students. Our vision in Costa Rica is to create an environment where statistical literacy is not confined to the classroom but extends into the community, empowering individuals to make informed decisions, foster critical thinking, and contribute to the nation's development. Through collaborative efforts, multidisciplinary research, and continuous dialogue with students and the broader community, we strive to make Costa Rica an ideal place for innovative and inclusive statistics education.

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IAOS-ISI 2024, Mexico City

Improving Decision – Making for All
May 15, 2024 – May 17, 2024

Welcome to the IAOS-ISI 2024 Conference

Mexico's National Institute of Statistics and Geography (INEGI), the International Association of Official Statistics (IAOS) and the International Statistical Institute (ISI) welcome you to the 19th IAOS Conference and the 4th ISI Regional Statistics Conference which will be held jointly as the IAOS-ISI 2024 Mexico Conference. Join us in Mexico City from the 15th to the 17th of May 2024 to discuss the future of statistics.

The Conference theme, "Improving Decision-Making for All", points to statistics' role as a valuable public good all users rely on to inform their decisions. The IAOS-ISI 2024 Mexico Conference aims to build a new social contract around data based on value and trust.

It is our pleasure to meet you in Mexico City! We are sure that the city's complex yet fascinating history and cultural mix will inspire productive discussions. This year's conference logo design is based on the Mesoamerican deity Quetzalcoatl as IAOS' letter A. After all, also known as the "Feathered Snake", Quetzalcoatl is the god of knowledge, a fitting symbol for the conference.



65th ISI World Statistics Congress 2025



World Statistics Congress 2025

Invited Paper Sessions (IPS) is Open!

The International Statistical Institute (ISI) invites the statistical community to submit proposals for sessions for the Invited Paper Sessions (IPS) programme, to be held 13-17 July 2025 in The Hague, The Netherlands.

The WSC 2025 will highlight the newest insights, developments and challenges of statistics, statistical science, and data science in all aspects of life. The congress will host key notes, talks and presentations on a wide variety of topics.

www.isi-next.org/conferences/isi-wsc2025

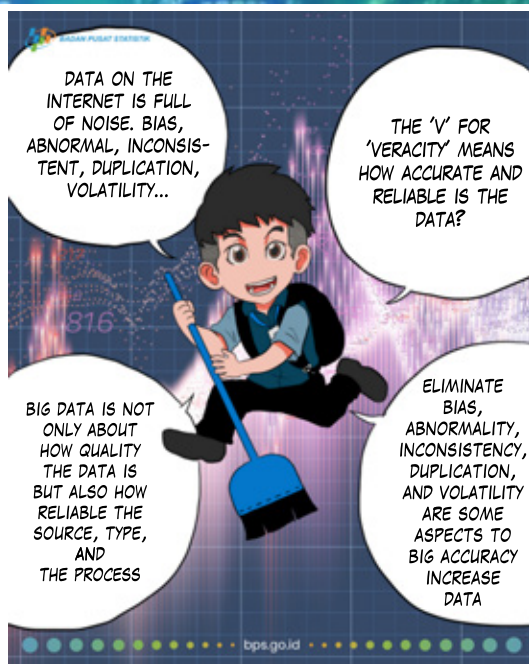
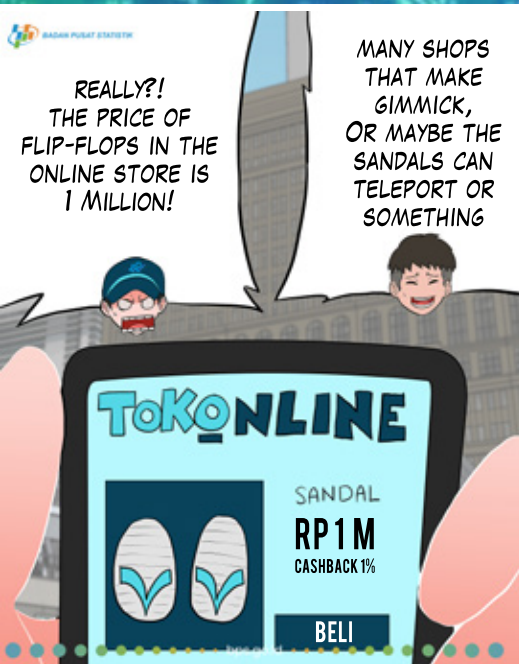
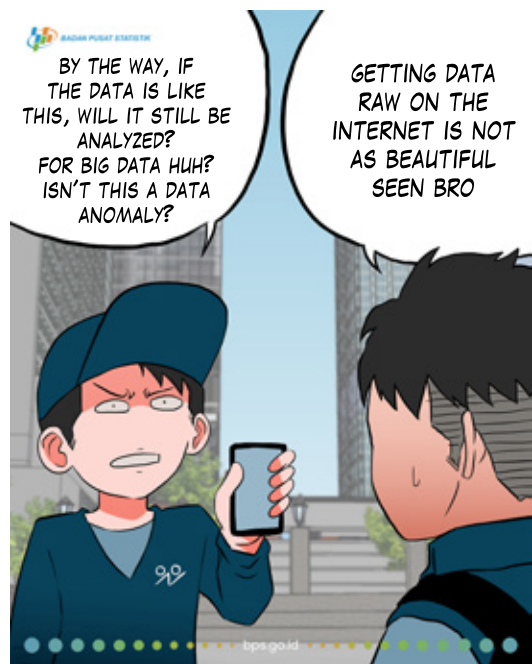
BIG DATA COMIC

3rd edition



Maulana Faris*

* Statistician, Data Scientist at BPS Indonesia
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JMP Student Subscription is available for free to ISLP students; its valid for 12 months and available for Windows or Mac. Go to www.jmp.com/student and select the "Get JMP for Free" button and follow the steps.

Season's Greetings
and Happy New Year
from the ISLP project

