Takwimu Young African Statisticians Newsletter

Members of the Takwimu Young African Statisticians Programme that participanted in the IAOS-ISI Zambia Conference 2023

Message from the Chairperson of the Takwimu Young African Statisticians Programme

SASSIRE NAPO

Dear Young African Statisticians,

I am thrilled to welcome you to the inaugural edition of our newsletter! As we embark on this exciting journey together, I want to express my heartfelt appreciation for your commitment and enthusiasm in advancing statistical knowledge and practices across our continent.

The Takwimu Young African Statisticians (YAS) Programme is designed to empower young statisticians by providing a vibrant platform for learning, collaboration, and innovation. Our mission is to cultivate a supportive community where we can share ideas, develop skills, and inspire one another to tackle the pressing statistical challenges we face in our respective fields. We embrace a diverse community of data professionals contributing to the statistical data value chain, and we truly value the unique contributions of each member, no matter where you are in the world.

Before diving into the exciting content of our inaugural newsletter, on behalf of the Takwimu YAS executive committee, I would like to extend my heartfelt gratitude, to Mr. Oliver Chinganya, Director of the African Centre for Statistics (ACS) of the United Nations Economic Commission for Africa and his team, for spearheading the establishing of the Takwimu Programme in 2021 and their continued unwavering support.

We are also immensely grateful to the members of the Statistical Commission for Africa (StatCom-Africa) for endorsing our programme and providing ongoing support for our initiatives.

In this newsletter, you will discover the genesis and history of the Takwimu Programme, learn about our current leadership, explore opportunities available to our members, and celebrate the achievements of our community. You will also find valuable resources and information about upcoming events.

As an existing member, you can participate in a variety of enriching activities including workshops and training sessions that provide hands-on skills with a focus on data analytics, machine learning, and data visualization tools; networking events during which you have a chance to connect with fellow statisticians, industry experts, and mentors fostering collaboration and knowledge exchange.

In addition, you are welcome to engage in thought provoking discussions with leaders in the field on current trends and challenges in statistics through our webinars and panel discussions; to contribute to ongoing research initiatives that aim to address statistical challenges relevant to Africa through focused innovative research projects; to access the wealth of self-paced courses designed to enhance your statistical skills and knowledge through relevant online learning modules and courses; and to connect with experienced statisticians who can provide guidance and support as you navigate your career through our mentorship opportunities.

New members of the Takwimu YAS programme are welcome to explore the wealth of resources through access to exclusive Publications to keep informed with the latest research, case studies, and articles published by and for our members; as well as our community fora that provide a space for you to participate in discussions and share ideas on our online platforms, nurturing collaboration and support among peers.

I am also excited to announce the upcoming hybrid side event of the Young African Statisticians at the 9th Statistical Commission for Africa scheduled to take place on 29th October 2024. This event presents a unique opportunity for our members to showcase their skills and talents, as well as to shape the future of the Takwimu YAS Programme.

During this side event, you will have the chance to set recommendations for consideration by StatCom, ensuring that your voices are heard in the discussions that will influence the coming years of our programme.

I encourage you to engage deeply with the content, participate actively in the programme, and share your thoughts and experiences with us. Together, we can create a dynamic network that not only enhances our professional growth but also makes a significant contribution to the development of statistics in Africa.

Thank you for being a part of this initiative. I am excited to witness the incredible impact we will make together!

I wish you enjoyable reading our Newsletter!

JOIN TAKWIMU YAS !

The Takwimu YAS Programme builds on existing Young African Statistician initiatives

Above: Members of the Takwimu YAS programme held a side event on the sidelines of the 8th StatCom-Africa

The Genesis of the Takwimu YAS Programme

ANGELA KICONCO

Africa's population currently stands at about 1.5 billion with a median age of 19.2 years signifying that the continent is largely young. Indubitably, the young people of Africa are poised to lead in all sectors if meangingful change is to be realised on the continent.

Statistical development in Africa is one among the many areas that require transformative change to meet the ever-evolving data needs to inform and guide implementation of National Development Plans, the continental Agenda 2063 and the global Agenda 2030 among others. This calls for stronger involvement of African's young statisticians in the statistical affairs that will shape the future statistical landscape of the continent.

In 2008, Statistics South Africa with support from the Economic Commission for Africa initiated the ISIbalo programme in response to growing concerns about the shortage of African-driven statistical research and knowledge generation, and engagement of the African statistical community. This led to the birth of ISIbalo programme to nurture, grow and mentor a cadre of future statistical professionals and leaders.

Since its inception in 2008, Statistics South Africa bore the visionary role of the programme in terms of administrative, financial and intellectual costs of birthing, growing and driving the programme, efforts that the African continent deeply acknowlededgs and is grateful for.

A plethora of young statisticians have since been involved in statistical activities at the continental and national levels. These include among others: organization of special seminars, participation in Experts Group Meetings (EGM) and workshops, contribution to the Statistical Commission for Africa (StatCom) and the African Symposium on Statistical Development (ASSD) events. Young Statisticians have also taken part in the early planning of Africa's responses to the global Sustainable Development Goals and Agenda 2063.

Other initiatives at the sub-regional level include the young statisticians' programme of the AFRISTAT (Economic and Statistical Observatory of Sub-Saharan Africa) which hosts young statisticians and demographers for internship programmes as part of its recruitment strategy for young statisticians. These young statisticians from the network of francophone Statistical Training Centres in partnership with the Support Centre for African Statistical Training Centres – (CAPESA) tha is affliated with French speaking countries in West and Central Africa to ensure harmonization and a high-quality standard of statistical training among others.

The other sub-group iniataive worth mentioning is the West Africa Young Statisticians Association (WAYAS) founded in 2016

at International conference, Statistical Application for Development in Africa (SADA2016) and is hosted at Institut des Sciences Biomedicales Appliques (ISBA) Cotonou.

The objectives of the WAYAS are to foster statistics and its applications, to promote statistics at the grassroots through mentorship in the field of statistics, and to increase the contribution of statistics to Africa's development. It also cooperates with other organizations in the advancement of statistics, stimulates research, and promotes high professional standards and integrity in the application of statistics

The African Group on Statistical Training and Human Resources (AGROST) was established in 2009 to promote statistical training through better coordination between Statistical Training Centres (STCs), to harmonize curricula, to facilitate experience sharing and help STCs acquire more capabilities in terms of knowledge and infrastructure. AGROST is hosted by UN Economic Commission for Africa, is one of the Specialized Technical Group of the Strategy for the Harmonization of Statistics in Africa (SHaSA) that reports to both, the Statistical Commission for Africa of the ECA and the Committee of Directors General of the AUC.

Against this backdrop, building on existing initiatives, coupled with the transitions arising from the global multiple crises and the shift towards more digital technologies to deliver high quality data for development, it is imperative that the change of guard as older professionals in the statistical community hand over to younger professionals. In the context of the African Centre of Statistics of the UNECA's mandate in statistical development, and its linkages with the Statistical Commission for Africa and the UN statistical commission, young african statisticians are being were mobilized to play their essential role through a consolidated and harmonised programme.

Furthermore, cognizant of the gender gap in the STEAM including the statistician profession, the Takwimu programme envisages engagements through awareness campaigns and promotion of the profession among young females in the spirit of leaving no one behind.

The worthy responsibility of the African Statistical community is to prepare Young African Statisticians to adequately respond to the current data deluge and demand, and to future data demands. These reasons and more compelled the creation of a dedicated programme for Young African Statisticians operated and led by young statisticians with the ECA as the secretariat and the necessary support of all African countries, other Pan-African institutions, Statistical Training Centres and statistical partners.

Africa's wealthy resource of young people must be engaged and strongly involved in the transformation of the continent to the "Africa we want"

The Takwimu YAS Programme was endorsed at the 8th Statistical Commission of Africa in October 2022

Members of the Takwimu YAS pose for a group photo with the Director of the African Centre of Statistics (middle with red tie) at the 8th StatCom-Africa

Takwimu YAS Journey to the 8th Statistical Commission for Africa

LANGUTANI NESCO MIYAMBU

The Eighth Session of the Statistical Commission for Africa was held from 24th October 2022 in Addis Ababa, Ethiopia, alongside other regional meetings that included (i). Eighth Meeting of the Regional Committee of United Nations Global Geospatial Information Management for Africa; and (ii). Experts Group Meeting of the 6th Conference of African Ministers Responsible for Civil Registration.

On 29 September 2022, young African statisticians held their first session – a virtual pre-event to the Statcom. It was during this meeting that recommendations for consideration by the StatCom were agreed upon. The proposed resolutions called upon member States to support the implementation of the Takwimu Young African Statisticians Programme at the country level, including by funding and facilitating the establishment and operationalization of national associations for young statisticians.

In line with the theme of the 8th StatCom-Africa "Modernizing the data ecosystem in Africa to support regional integration" and cognisant of the role of the young statisticians, the Secretariat of the Takwimu YAS Programme sponsored 12 members from across the continent to participate in the side events on the Takwimu YAS programme.

The participants were privileged to hold a meeting with Mr. Oliver Chinganya, Director of the African Centre of Statistics who encouraged young statisticians to constantly conduct research and ensure that they have something to present in meetings and conferences.

Some of the young statisticians revealed that they found the plenary session of the StatCom-Africa insightful especially the quality of the discussions held. Others intimated that they were grateful for the opportunity for exposure of a continental event on statistical development issues.

On 28 October 2022, members of the Takwimu Young African Statisticians expressed excitement when the recommendations regarding the programme were presented to the StatCom-Africa by Ms. Angela Kiconco a member of the Takwimu secretariat. The resolutions proposed were successfully endorsed by the Director Generals of the National Statistical Offices in Africa opening the door to official operation of the Takwimu Young African Statisticians Programme.

Members of the Takwimu YAS in a meeting with the Director of the African Centre of Statistics (middle with red tie) on the sidelines of the 8th StatCom-Africa in Addis Ababa, Ethiopia

Takwimu YAS Programme at a Glance

Transforming the African statistical landscape to create a brighter future for all

LINAH NGUMBA

The Takwimu YAS Programme is dedicated to empowering a vibrant new generation of young African statisticians who will drive the continent's data agenda. This initiative was born from the pressing need for strong statistical leadership to ensure the sustainability and advancement of the African Statistical System (ASS) in the face of challenges such as limited funding, inadequate capacity, and the transition to digital technologies.

The vision of Takwimu YAS is *to make young statisticians the cornerstone of transformation and modernization of the African statistical system*. To achieve this vision, our mission is *to mobilize young statisticians to support and contribute to the modernization of National Statistical Systems (NSS) in Africa.*

Takwimu YAS Programme offers a dynamic platform for young professionals eager to be involved in the critical work of building Africa's data future. Through collaboration, mentorship, and a focus on practical skills, the programme prepares young statisticians to take on leadership roles and drive progress for decades to come. The programme has successfully registered close to 600 members from 38 African countries, one-third of whom are female.

The strategic objectives of the programme include mobilizing and embedding the YAS at the country level to enhance local engagement and support; advocating for the involvement of young statisticians in modernizing Africa's national statistical systems, ensuring they play a vital role in shaping the future of data in Africa; and building capacity for research, knowledge, and information management, equipping young professionals with the skills needed to thrive in an ever evolving statistical landscape.

The Takwimu YAS stands as a beacon of hope and opportunity for empowering young statisticians. Investing in the future of the young statisticians will not only build a robust statistical foundation that supports and advances the sustainable development of the African continent but drive the continent's data agenda forward!

Chairperson: Mr. Sassire Napo is a seasoned Economist at the International Monetary Fund (IMF), working at the Togo office. He has extensive experience in monitoring and evaluation, and data analysis amassed during his pervious role at the African Development Bank, he also served as a tax statistician at the Togo Revenue Authority between 2014 and 2018. He is a lecturer in advanced econometrics at National School of Statistics and Applied Economics (ENSEA) in Côte d'Ivoire, and actively engaged in the research field with two published scientific research papers. Sassire holds a master's degree in Statistics and Economics and currently pursuing a PhD at the ENSEA doctoral programme.

First Vice Chairperson : Ms. Linah Ngumba works with the Kenya National Bureau of Statistics since 2012. She is the pioneer of the ICT statistics chapter in the Economic survey report, ICT enterprise and public institutions surveys, E-commerce survey and an ICT module in the 2019 Population Census. Ms. Linah chairs the UNCTAD working group on measuring E-commerce and the digital economy, and the ITU's Expert Group on ICT Households Indicators. Ms Linah holds a Master's in Science in Communications management and a Master of Arts in Economics.

Second Vice Chairperson : Mr. Miyambu Langutani Nesco is passionate about analytics. He is a teaching professional with a Master`s degree of Social Science in Population and Sustainable Development, Honours in Bachelor of Social Science in Population Studies (Cum Laude) and Bachelor of Social Science in Population and Development Studies. He gained invaluable experience over five years working by undertaking several research writing duties. Mr. Miyambu is currently pursuing a PhD at the University of Witwatersrand in the Department of Pediatrics and Child Health. Mr Miyambu has perviously worked as lecturer at North-West University.

First Rapporteur: Ms. Khadidjatou THIAM is a statistician, she holds a master degre in Applied Statistics from Gaston Berger University in Saint Louis, Senegal. She specialized in monitoring and evaluation of projects and programs, She served as the monitoring manager at the Senegal office of Helen Keller International from December 2013 to July 2016. She has 8 years of experience in the field of civil registration systems and vital statistics. Currently, She heads the Division of vitals statistics and archiving at the National Agency of Civil Registration in Senegal. As part of the capacity building programs, she has acquired skills in planning, conducting surveys, project evaluation, and the development of strategic program documents.

Second Rapporteur: Mr. Mahmoud Mohamed ElSarawy is an Economic Statistician who has served at the Central Agency for Public Mobilization and Statistics (CAPMAS) of Egypt since 2009. He obtained a Master's of Business Administration (MBA) from the ESLSCA Paris University in 2020 and a Master's of planning and development from the Institute of National Planning in 2019. Mahmoud has published over 20 scientific research papers., ascwel as participated in various statistical field researches and censuses at CAPMAS. He is one of the founders and the current General Director of the Egyptian Young Statistician Association (EYSA). He serve as a National Accounts Expert for the League of Arab States; as Consultant for the International Scientific Journal, and the Union of Arab Statisticians. Mr. Mahmoud has worked as a data expert at African Capacity Building Foundation (ACBF).

The leaders of the Takwimu YAS Programme

ANGELA KICONCO

The Takwimu YAS programme is guided by a dedicated Executive Committee (ExCom) that plays a vital role in coordinating and providing strategic direction to the programme's activities. The ExCom operates under the auspices of the African Centre for Statistics of the United Nations Economic Commission for Africa (ECA) which serves as the secreatariat of the Programme. This committee is essential for ensuring that the objectives of the programme are met effectively.

The ExCom is composed of a diverse group of individuals who represent various countries and institutions. Its structure includes: A Chairperson, First Vice Chairperson, Second Vice Chairperson, First and Second Rapporteurs each from a country across the continent. This composition ensures adherence to principles of gender balance and includes representation from different subregions and languages across Africa.

Members of the Takwimu ExCom serve on a voluntary basis, demonstrating their commitment to advancing the statistical affairs in Africa's data ecosystem. Each member is elected for a maximum term of two years, with the Chairperson limited to serving no more than two consecutive terms. This structure and approach promotes fresh perspectives and continuous engagement among young statisticians.

The Takwimu YAS ExCom primarily operates remotely, allowing for flexibility and inclusivity among its members. However, the committee members may convene physically at least once every two years, particularly in the lead-up to the Statistical Commission for Africa. This hybrid approach ensures that members can engage effectively while accommodating various logistical considerations.

Recognizing the dynamic nature of statistical challenges and opportunities, the committee could co-opt additional members as appropriate. This enables the committee to remain adaptive and responsive to emerging needs within the young African statistical community.

Serving on the Takwimu ExCom is an opportunity to drive significant advancement in the African Statistical System while empowering young statisticians to play a leading role in a transformative journey.

> ## "The key message that deeply resonated with me is that as young statisticians, we are the future of statistical leadership in Africa, and we have a crucial role in driving the continent towards achieving the regional and global agendas"

Fransina Amutenya

Fransina Amutenya a Senior Statistician at the Namibia Statistics Agency represented the young statisticians as a panelist during the roundtable plenary session on transfroming and modernising statistical stayems in Africa at the 10th ARFSD

Featured Article

FRANSINA AMUTENYA

In March 2024, I came across a call for applications from the Takwimu YAS Programme, through the United Nations Economic Commission for Africa (ECA). It was an opportunity for young African statisticians (YAS) to participate in a roundtable discussion on statistics at the 10th Africa Regional Forum on Sustainable Development (ARFSD) in Addis Ababa, Ethiopia. Excited by the prospect of contributing to such an important dialogue, I quickly expressed my interest. Little did I know that this would lead to one of the most significant moments in my professional journey.

By April 2024, I received an official invitation from the ECA to serve as a panelist of the roundtable focused on transforming and modernizing statistical systems across Africa to produce high-quality data and statistics towards accelerating progress on national policies and the implementation of the 2030 Agenda and Agenda 2063.

As I prepared for the panel discussion, I reflected on how statistical offices could contribute to the future and how my generation of young statisticians could contribute to a lasting impact. On the day of the plenary session, my presentation focused on how National Statistical Offices (NSOs) can leverage modern technologies to enhance their systems

I highlighted practical solutions like using web scraping and scanning technologies to collect Consumer Price Indices and trade value-added data, that is essential for advancing the African Continental Free Trade Area (AfCFTA). I also emphasized the critical need to embrace the use of big data for real-time results including mobile phone and spatial data. I also proposed ramping up the efforts on digitization of civil registration systems, allowing rural mothers to instantly report births using their mobile phones—a simple yet profound way to ensure timely, accurate data.

The panel discussion was moderated by Dr. Mavis Matenge, Director of Public Diplomacy Research and Policy Analysis at Botswana's Ministry of Foreign Affairs. H.E. Dr. Fitsum Asseffa, Ethiopia's Minister of Planning and Development delivered a keynote address that set the tone for an engaging conversation. I was honored to sit alongside distinguished experts like Mr. Oliver Chinganya, Director of the African Centre for Statistics, Ghana's Government Statistician Professor Kobina Annim, Mr Stephen Chaha, the Director of the East Africa Hub Development Initiatives and Ms. Lydia Zigomo, Regional Director for the UNFPA.

The key message that deeply resonated with me is that as young statisticians, we are the future of statistical leadership in Africa, and we have a crucial role in driving the continent towards achieving the regional and global agendas.

I realized that to thrive as future statistician-generals, we must fully embrace modern data technologies, data mining, and innovative practices. These tools will allow us to manage our statistical processes more efficiently and accurately, positioning Africa as a leader in data-driven development

The realization that we cannot achieve the goals of accelerating the required progress toward sustainable development in isolation opened my eyes to the critical need for young statisticians and young economists across Africa and beyond to collaborate by sharing expertise, exchanging views, and learning from each other's experiences among others. These partnerships are essential as we move toward a future where evidence-based policies, reduction of poverty and inequality, and where development is driven by accurate and timely data.

At a personal level, participating in the 10th ARFSD not only elevated my professional outlook but also gave me a profound sense of belonging as my belief that sustainable development is within reach was reinforced. The eye-opening experience I got has reaffirmed my commitment to the field of statistics. My call to fellow young African statisticians, is for us to recognize ourselves as a vital asset in the transformation of our continent with the energy, creativity, and innovation that define us.

SDG 16.9.1

Intervention on Birth Registration

KHADIDJATOU THIAM

I was privileged to be selected and invited to participate as a panellist in the session on the "Data to unlock the relevance and accuracy of Voluntary National Reviews

(VNRs)". The aim was to discuss SDG 16 with a focus on target 16.9 related to birth registration

I shared about how Senegal had modernized its civil registration and vital statistics by digitizing the registers of census data. Mapping software was being used to geolocate civil status centres spatial information, as well as mobile telephone outreach and automated data collection processes. I also highlighted that the health sector was still lacking in data collection structures and statisticians however, expanding computerization at the civil status centre level could assist in dealing with the challenges

I was highly motivated given that the topic of discussion assigned to me aligns with the work I do. In addition, the opportunity to discuss with experts in a field that I have been passionate about for over eight years was exciting. Given that I am from a Francophone country, speaking in English was a bit of a challenge although I was encouraged to speak in French by the moderator of the panel – Mr. Oliver Chinganya the Director of the African Centre for Statistics.

I was able to deliver my intervention with the time allocated as I presented the case of Senegal in improving the collection, analysis and reporting for the information of SDG indicator 16.9.1 on birth registration.

At a personal level, this experience allowed me to better understand the challenges of the professional world, but even more so of regional and international meetings where time is of the essence and high-quality discussions are expected. At the professional level, I returned to Dakar Senegal with many questions about the statistical journey I still have to travel and the courage I would need to arrive. As a young statistician, I appreciated the availability and support of my statistical elders, especially the Director of the African Centre for Statistics who I look upto as a role model.

Khadidjatou Thiam, Head of Vital Statistics, Senegal National Agency for Civil Registration,(Yellow dress) as panellist and represenatative of the youth discussed " Data to unlock the relevance and accuracy of voluntary national reviews as sideevent of the 10th ARFSD "

Success Story

(Top left): Simon T. Onilimor presents the winnng solution during the celebration of the African Statistcs Day: (Top Right) Ghana Statistical Services winning team during a working session at the 2023 UN Datathon at the National Statistical Institute of Rwanda - Kigali Rwanda

SIMON TICHUTAB ONILIMOR

A five-member team of Data Scientists from the Ghana Statistical Service (GSS) took home the top prize of the UN Datathon 2023 competition. The prize was for a Story Map developed for monitoring progress towards the achievement of the Sustainable Development Goals (SDG). The 2023 UN Datathon challenged competitors to develop innovative data-driven solutions in form of a product(s) that advance the implementation of the SDGs within a 72-hour period.

Out of over 400 participating teams representing 110 countries from across the world, the GSS team emerged as the winners. In addition, the team won three special prizes out of the five categories for which they were eligible: **Best Visualization, Best Presentation, and Best Youth team**. As the overall winner, they were also awarded the prize **for the best team from Sub-Saharan Africa**.

The award-winning Story Map provides a graphical illustration of how disaggregated data from different sources (such as from censuses and non- traditional data) can be used to produce near real time information for decision-making. The information can be used to track a country's progress on the SDGs at the national, regional, and districts levels. The team also developed an index to measure differences in access to information across districts in Ghana.

As part of the prize, the team had the opportunity to showcase their product at the 2024 UN World Data Forum. The winning product and presentations can be viewed on the UN website, YouTube, and Story Map.

The 2023 UN Datathon is a global data science competition where participants were expected to develop innovative data-driven statistical applications, tools or models that combine geospatial data with other data sources to help advance the implementation of the Sustainable Development Goals.

The broad themes for which innovation solutions were sought included: Food security; Climate change; biodiversity loss and pollution; Energy Access and Affordability; Digital Connectivity; Education; and Jobs and Social protection. The GSS Data Science team contextualized their solution in Digital Connectivity with a focus on how SDG indicators can be localized and computing the Novel access to information index

In our pursuit to localize SDG indicators and compute the Novel Access to Information Index, two challenges emerged i.e., –limited information at local levels and limited access in cases where information exists. Addressing these issues was paramount as the team inquired into accessibility of information and performance of SDGs at the local level for accountability by local policy makers and opinion leaders.

The two critical questions were 1) do key policy makers and stakeholders have access to information on the local performance of SDG goals? 2) Can the available localized information be easily accessed from most locations? Regrettably, the general response to these enquiries in most developing countries is a resounding "No."

Access to information, at the lower levels particularly in specific districts, remains a constraint that poses a significant obstacle to informed decision-making and targeted interventions required for sustainable development. Transformative and innovative approaches are imperative for monitoring and enhancing local access to information. After all, information that is not readily accessible might just equally hinder the progress sustainable development.

The three main solutions provided by the GSS data science team were: 1) Localized SDG indicators using both census data and non-traditional data sources; 2) development of the novel Access to Information Index (A.I.I), and 3) an interactive tool to allow for adjustability and adaptability of the A.I.I.

The team seeks to leverage on the use of big data to measure the progress of Sustainable Development Goal indicators. Using geospatial information to measure indicators for which data is not readily available. Thus far, engagement with stakeholders in the data space within Ghana have been held and policies are being implemented in line with the solution. The team is available and willing to exchange knowledge and support other countries with similar interest in the use of non-traditional data for official statistics.

> **"The hackathon experience allowed us to explore the intersection of data science, geospatial analysis, and sustainability. Our project demonstrated the potential of technology to address the complex challenges of food security in Africa."**
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> *Data for Change Team*

Data for Change Team: Prosper Deogratias: Statistician & Data Analyst, Sara Adel Abbas: Statistician at CAPMAS Egypt, Eman El-Maasarawi: Software Developer at CAPMAS Egypt, Radwa Khaled: Data Scientist & Analyst, and Yonas Mersha: Data Science – Consultant, Kigali, Rwanda, 2024

Geospatial Analysis for Sustainable FoodDistribution and Consumption in Africa

DATA FOR CHANGE TEAM

Our journey to participating in the hackathon began with a passion for using technology to solve real-world problems. Inspired by a network of tech enthusiasts and sustainability advocates, we joined a community eager to make a difference. The hackathon provided a platform to apply our data science skills to a project with tangible impacts on food security in Africa.

The participation process involved registering, assembling a team, and brainstorming ideas aligned with the SDGs. Our team focused on optimizing food distribution and consumption in Africa by leveraging data science and geospatial analysis. Our project aimed to address inefficiencies in food distribution that contribute to insecurity and waste, proposing solutions for more sustainable consumption patterns.

Africa faces numerous challenges in ensuring food security and sustainable consumption. Population growth, limited resources, and inefficient distribution systems make it difficult to provide access to nutritious diets for all. These challenges underscore the need for innovative approaches to food distribution, where data science and geospatial analysis can play a crucial role.

The project aimed to shed light on these challenges by analyzing various data sources to understand consumption patterns and predict nutrient needs across different regions. By incorporating a geospatial component, we sought to identify areas where food distribution could be optimized to minimize waste and ensure that nutritious food reaches all communities equitably. Data from the Living Standards Measurement Study Fifth Integrated Household Survey 2019-2020 Malawi, which includes predictors such as annual food consumption, annual drug consumption, annual tobacco consumption, annual health consumption, total annual consumption, poverty line, received social safety net, and consumed foods such as Cereals, Grains, Roots, Tubers, Nuts, Pulses, vegetables, Meat, Fish, Fruits, Milk products, Fats, Oil, and Sugar products at the household level was used.

We utilized web scraping techniques to collect nutrient recommendations from the Dietary Reference Intakes (DRI) provided by the national institutes of health. This refined our analysis by focusing on individual-level data rather than just household-level data, ensuring more accurate predictions and recommendations.

A comprehensive data science workflow was followef, from data collection to model deployment. Exploratory Data Analysis (EDA) to understand the relationships within the data, using summary statistics, correlations, and visualizations. Feature scaling normalized the data, and we encoded categorical variables. Several machines learning models, including Random Forests, Decision Trees, and Support Vector Machines, were trained and evaluated to determine the best-performing model based on accuracy metrics to predict Vitamin/Mineral Deficiency in each household in Malawi

The best model was selected and saved for future use, paving the way for developing a web application or dashboard that could make these insights accessible to policymakers and stakeholders.

The use of Geospatial analysis was pivotal in the project, allowing us to predict the distribution of needed vitamins and minerals based on food consumption patterns, health data, and socioeconomic indicators like the poverty line. The analysis enabled us to identify areas with limited access to nutritious diets and potential regions for sustainable food interventions.

Mapping areas informed our proposals for strategic planning of locations of distribution centers and optimal geospatial routing to serve high-demand, underserved regions. This approach aims to enhance food distribution efficiency, minimize waste, and ensure equitable access to nutritious food across all communities

Effective application of our proposed solutions by the Food and Agriculture Organization (FAO), the UN World Food Program (WFP), and relevant ministries, may help to achieve; better delivery of health-suited food to poor populations; and facilitate better management and monitoring of food distribution cards systems leading to improved health outcomes for cardholders; among others.

The hackathon experience allowed us to explore the intersection of data science, geospatial analysis, and sustainability. Our project demonstrated the potential of technology to address the complex challenges of food security in Africa. Continued development and refinement of these tools, would contribute to a future where nutritious food is accessible to all in a sustainable and equitable manner

Member of the Takwimu YAS Programme at the 8th Session of the Statistical Commission for Africa, in Addis Ababa , Ethiopia

Member of the Takwimu YAS Programme at the 2023 IAOS-ISI in Livingstone, Zambia - Over 40 Young African statisticians from 17 African countries presented their research papers during the Confrence.

Upcoming Events:

Stay tuned for the upcoming Takwimu YAS Side event at the 9th StatCom-Africa

Feel free to share our newsletter with as many of your peers interested in contributing to meaningful change through Africa's Young People

To contribute articles, ideas and feedback on the Takwimu Young African Statisticians' Newsletter

Contact us via Email: *takwimu@un.org*

This Newsletter was compiled by Members of the Executive Committee of the Takwimu YAS, Young African Statisticians and the Takwimu Secretariat

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