



EURO HOPE Mini-Conference 2024

Panel Discussion with Practitioners

Madrid, 4 October 2024, 12:15h.-13:45h.

- **Laura Medialdea Marcos**

Action against Hunger (ACF)

Bio: Laura is Principal Investigator & Research Coordinator of Severe Acute Malnutrition (SAM) Photo Diagnosis App© Program in the Research, Development and Innovation Department of Action Against Hunger Spain since 2015. She holds a degree in Biology at the Autonomous University of Madrid and completed an Official Master's Degree in Biomedicine at the University of Alicante. She later obtained her PhD in Biology at the Autonomous University of Madrid, getting specialized in the application of Geometric Morphometric techniques in the field of Physical Anthropology. With a research career spanning 16 years, her work has received nearly 20 research and professional awards, approximately half of which were awarded to the SAM Photo Diagnosis App Program. In addition to her role at Action Against Hunger, she serves as an Associate Professor in the Department of Statistics at Carlos III University of Madrid. <https://www.linkedin.com/in/lauramedialdea/>

Title: ***Transforming malnutrition detection with technology: insights from the SAM Photo Diagnosis App Program***

Abstract: The Severe Acute Malnutrition Photo Diagnosis App© is a novel, efficient, and user-friendly smartphone tool designed to detect acute malnutrition in children aged 6-59 months. It operates by analyzing an image of the child's left arm and provides results in real-time, even offline. The tool serves as a proxy variable closely correlated with standard World Health Organization (WHO) indicators commonly used in health facilities, offering a quick and reliable means for malnutrition screening. Through the analysis of over 1,600 images of children, a classification algorithm was developed using geometric morphometric techniques. This algorithm was constructed based on cross-sectional observational studies that assessed

morphogeometric variability across different populations. These studies considered factors such as sex, age, and nutritional status. A methodology for classifying out-of-sample individuals was then created, utilizing the classifier built from the training data. The result is a fully functional prototype that automatically records and processes data, offering an accurate, easy-to-interpret malnutrition detection result. This tool is currently being tested in Senegal, with further validation and adaptation studies underway in Guatemala, India, Mauritania, and Uganda. The SAM Photo Diagnosis App© holds significant potential to revolutionize epidemiological monitoring of malnutrition at both institutional and community levels. By enabling the widespread collection and sharing of reliable nutritional data across health systems, the tool can support governments and community health workers in making better-informed decisions. This, in turn, will lead to more efficient resource allocation and more effective strategies for combating malnutrition.

- **Carlos Valera Rojo**

Doctors without Borders (MSF)

Bio: Supply Chain Officer at Médecins Sans Frontières (MSF) since 2021, at the headquarters in Paris, he has been recently deployed in Tchad, as Deputy Supply Chain Coordinator for the Sudan emergency (July 2024-September 2024). Carlos holds a degree in Materials Engineering (Technical University of Madrid), he has completed a Postgraduate on International Cooperation and Development of Human Settlements at the Technical University of Madrid, and he has followed courses of an Official Master's Degree in Disaster Management at the Complutense University of Madrid and Technical University of Madrid. After finishing the Master courses, he enrolled at Action contre la Faim (ACF) being assigned to a mission in Senegal as Log Base and Supply Activities Officer for one year. From Senegal, he moved to Paris working for the World



Coalition Against the Death Penalty as Logistics and Partnership Manager for one year, and then to Médecins sans Frontières (MSF) as Supply Chain Officer.

<https://www.linkedin.com/in/carlosvalerarojo/>

Title: ***Humanitarian operations: organisation, planning and then... blocked?***

Abstract: Humanitarian logistics must face important challenges, especially when developed in unsafety places, which is very usual in this area. Carlos has been deployed in Tchad, preparing the operation to attend the terrible emergency in Sudan. Working in this environment for months, everything was prepared (transportation, warehouses, monthly purchases, etc.), finally, anything has not been sent for security reasons, resulting in a full warehouse in Tchad waiting for the day they decide to let us pass to Sudan. He also knew at the headquarters how sometimes everything is well planned, with shipments prepared for ongoing operations, and sudden events change priorities and planning, such as the disruption caused by the outbreak of war in Ukraine. Humanitarian logistics must face enormous challenges, with uncertainty about the environment and the actions to be undertaken probably being the most difficult to deal with.

- **Alejandro Linayo**

Disaster Risk Reduction Research Center (CIGIR)

Bio: He is a Systems Engineer, with MSc Organizational Studies, PhD in Education/Social Sciences and Doctoral Studies (PhD-C) in Human Sciences. He has specialization studies in Operational Research, Urban Risk Management, International Cooperation and United Nations System (United Nations University), and Disaster Damage Assessment in the Water and Sanitation Sector (PAHO). He is a consultant, researcher and lecturer in emergency systems management, disaster planning and integrated management of natural and technological risks. Creator and professor of the Master's Program in Socio-natural Risk Management at the Universidad de Los Andes, he worked as CEO of the National Applied Research for Disaster Reduction Program of the Ministry of Science and Technology (Venezuela) (2000-2006), and as Vice Minister for Risk Management and Civil Protection (2014-2015).

Invited lecturer and consultant for international projects promoted by several international development cooperation agencies. Founding President of the Centre for Research in Integral Risk Management CIGIR, he also serves as President of the Foundation for the Prevention of Seismic Risk FUNDAPRIS.

<https://www.linkedin.com/in/alejandro-linayo-241938120/>

Title: ***About applied OR in Disasters and Emergency Management: From Theory to Practice***

Abstract: This presentation summarizes some experiences and lessons learned in the Latin American context in promoting the use of Operations Research tools to support decision making within the work of emergency and disaster response institutions, as well as in the planning and coordination of some crisis scenarios that are usually attended by these services.

Based on these results, it is suggested that - although it could be argued that "theoretically" the suitability of the use of these tools to support most of the tasks that take place in these areas is guaranteed - real experience seems to show that the viability of such use varies greatly depending on the peculiarities and limitations of each particular context of implementation.

To illustrate the above, a brief description will be given of the contributions and limitations encountered in the integration of Operations Research tools in real cases related to the design and management of prehospital emergency care services, the planning of search and rescue operations and the management of extreme scenarios of major disasters, whose complexity and scale seem "by definition" to exceed the predictive/operational capacity of the traditional models that are provided by Operations Research. Finally, some recent experiences promoting the integration of tools based on the use of emerging technologies such as machine learning, data science and artificial intelligence are mentioned, suggesting the potential that these kinds of tools could bring in supporting the efforts of humanitarian cooperation agencies that works in countries characterized by a high historical recurrence of socio-natural disasters.