



Food and Agriculture
Organization of the
United Nations

SUSTAINABLE
DEVELOPMENT
GOALS



Voices of the Hungry

**Global food security research using
data from the Gallup World Poll**

One metric for the world

FAO's Voices of the Hungry Project has developed a new global standard for estimating the number of people experiencing food insecurity, called the Food Insecurity Experience Scale (FIES). This global food security measure makes it possible to provide **annual information** regarding levels of severity of food insecurity based on people's self-reported experiences, with great potential to inform international and national policy making as well as global monitoring of the Sustainable Development Goals (SDGs).

The FIES builds upon established tools such as the USDA Household Food Security Survey Module and the Latin

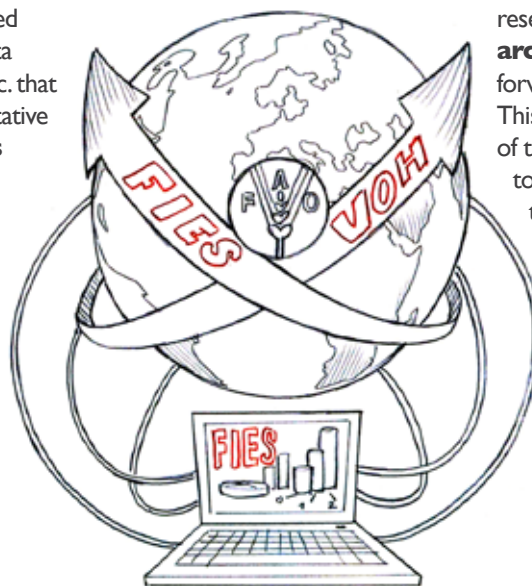
American and Caribbean Food Security Scale, which have been tested and validated in developed and developing countries. The FIES is an experience-based metric of severity of food insecurity that relies on **people's direct responses to eight questions** regarding their economic access to adequate food. Since this measurement tool is not specific to any particular sector such as nutrition, agriculture or economics, the FIES can contribute to a multidisciplinary understanding of the phenomenon of food insecurity.

The Gallup World Poll

The Voices of the Hungry Project has used the Gallup World Poll as a vehicle for data collection. GWP is a branch of Gallup, Inc. that has been conducting nationally representative surveys in **more than 150 countries** annually since 2005.

The FIES was first incorporated into the GWP questionnaire in January 2014, making it possible for FAO to provide annual country-level estimates of the prevalence of food insecurity at different levels of severity.

Through a competitive selection process, licenses have been granted to



researchers to obtain **access to the full archive of GWP datasets** from 2005 forward, including the FIES beginning in 2014. This serves one of the primary objectives of the Voices of the Hungry project, which is to promote innovative high-level research that will contribute to deepening our understanding of food insecurity in the world through exploration of the data generated by the GWP.

We are pleased to present briefs on each researcher, including their published studies.

Alisha Coleman-Jensen

Ph.D. is a social science analyst with the Food Assistance Branch at the Economic Research Service of the U.S. Department of Agriculture. Her research focuses on the measurement and determinants of U.S. food insecurity using an experiential food security measure. She is the lead researcher on USDA's annual report Household Food Security in the United States. Recent published research examined the linkages between food insecurity and disabilities, the relationship between food insecurity and the national unemployment rate, inflation, and the price of food relative to other goods and services, geographic variation in food costs and food security, food security measurement in households with children, and the relationship between food insecurity and cost-related-medication-underuse of prescription drugs.

PUBLICATIONS

Frongillo, E. A., Nguyen, H. T., Smith, M. D. & Coleman-Jensen, A. 2017. Food Insecurity Is Associated with Subjective Well-Being among Individuals from 138 Countries in the 2014 Gallup World Poll. *The Journal of Nutrition*, 147(4): 680-687. doi:10.3945/jn.116.243642

Smith, M. D., Rabbitt, M. P. & Jensen, A. C. 2017. Who are the World's Food Insecure? New Evidence from the Food and Agriculture Organization's Food Insecurity Experience Scale. *World Development*, 93: 402-412. doi:10.1016/j.worlddev.2017.01.006

Smith, M. D., Kassa, W. & Winters, P. 2017. Assessing food insecurity in Latin America and the Caribbean using FAO's Food Insecurity Experience Scale. *Food Policy*, 71: 48-61. doi:10.1016/j.foodpol.2017.07.005

Smith, M. D. 2018. *Essays on Food Security, Health, and Immigration*. American University. (Doctoral dissertation)

Smith, M. D. & Floro, M. S. 2018. Food Insecurity, Gender, and International Migration. UNU-WIDER Migration and Mobility Conference Proceedings. 5 October, 2017, Accra, Ghana.

Frongillo, E. A., Nguyen, H. T., Smith, M. D. & Coleman-Jensen, A. 2018. Food insecurity was more strongly associated with poor subjective well-being in more-developed countries than in less-developed countries. *Journal of Nutrition*, Forthcoming (in press). doi:10.1093/jn/nxy261

Key points of the proposed research

New Frontiers in understanding Global Food Insecurity.

We propose to use FAO's Food Insecurity Experience Scale (FIES) in the Gallup World Poll (GWP) data to investigate factors related to the level and severity of food insecurity within and across all 150 countries in the GWP. Our team will utilize the person-level detail and common measures of food security available across countries in the FAO's FIES/GWP data to systematically expand our understanding of individual perceptions and personal characteristics associated with food security as well as examine how these new data integrate with other measures of food security analysis to provide a more complete picture. Building on our expertise and the innovations in research made possible with these data, the goal of our proposal is to improve our

understanding of how household and individual factors, gender, and national conditions affect the prevalence and severity of food insecurity within and across countries.

Our proposed research has three objectives: (1) examine person and household-level correlates of experiential food insecurity within and across individual countries with a focus on the gender gap in food insecurity and other measures of well-being; (2) examine the relationship between macro indicators of food insecurity, especially the U.S. Department of Agriculture (USDA) Economic Research Service's (ERS) International Food Security Assessment, and the FIES; (3) examine the relationship of the FIES to weather and production shocks. As we move into an era of increasing climate change and volatility, understanding the latter element will be of growing importance.

Alessio Farcomeni

Associate professor in the Department of Public Health and Infectious Diseases at the University of Rome La Sapienza.

His work focuses on robust statistics, longitudinal models, categorical data analysis, cluster analysis, and multiple testing. He also is involved in clinical, ecological, and econometric research.

Key points of the proposed research

The main research questions and objectives are:

1. Estimation of the effects of current and lagged GWP indexes on FIES scale low quantiles.
2. Exploration of small-area estimation methods to reliably evaluate area-level relationships.
3. Exploration of causal discovery methods to estimate a causal graph among GWP indexes and FIES scale.
4. Robustly cluster countries on the basis of GWP and FIES.
5. Multidimensional Rasch analysis to evaluate relationships among all the indexes and validate index separation. Correction of memory effects due to different time horizons used in different questions.



PUBLICATIONS

Dotto, F., Farcomeni, A., García-Escudero, L. A. & Mayo-Isacar, A. 2017. A reweighting approach to robust clustering. *Statistics and Computing*, 28(2): 477-493. doi:10.1007/s11222-017-9742-x

Hala Ghattas

Associate Research Professor and Interim Director of the Center for Research on Population and Health at the Faculty of Health Sciences of the American University of Beirut. As a public health nutritionist with interests in the nutritional and health manifestations of poverty and food insecurity, Hala has been involved in various multi-disciplinary research projects investigating associations between poverty, livelihoods, social safety nets, health and food security experience in marginalized populations in the Middle East and North Africa. She was involved in the development and validation of the Arabic Family Food Security Scale, and the Arabic language adaptation of the FIES.

Key points of the proposed research

Food insecurity in the Arab world; youth, gender and wellbeing differentials

The Arab region has recently experienced large political, economic and demographic fluxes, with implications on poverty, inequality, food insecurity and wellbeing of its populations. It has been implied that the youth bulge and consequently high levels of youth unemployment, combined with increases in food prices and food insecurity, contributed to the recent Arab uprisings. Gender inequality in employment rates is also remarkable in Arab countries, which are consistently ranked at the bottom of Global Gender Gap analyses, placing women in the region at potentially increased risk of food insecurity. In addition to differential vulnerabilities among groups within countries, the region also exhibits differences in vulnerabilities across countries to food insecurity and its

potential effects on wellbeing. This project aims to explore these differentials within and across countries of the Arab region, with a particular focus on understanding social, gender- and age-specific vulnerability to food insecurity experience. More specifically, this research project will:

1. Investigate prevalence of food insecurity across countries of the Arab region.
2. Describe the socio-economic and demographic correlates of food insecurity in the Arab world, at both macro and micro levels.
3. Explore the potentially modifying effects of gender and age on the hypothesised socioeconomic predictors of food insecurity.
4. Assess the associations between food insecurity and measures of subjective wellbeing, and explore whether these associations are modified by socio-economic and demographic variables.

PUBLICATIONS

Asfahani, F., Kadiyala, S. & Ghattas, H. 2018. Food Insecurity and Subjective Wellbeing Among Arab Youth Living in Varying Contexts of Political Instability. *Journal of Adolescent Health*. 64(1): 70-78. doi:10.1016/j.jadohealth.2018.08.010

Ghattas, H. & Battistin, F. 2016. Differentials in Food Insecurity Experience and its Determinants in the Arab Region. APPAM International Conference, London, UK. (Published abstract)

Sudhanshu Handa

Chief of Social & Economic Policy at UNICEF Office of Research and Professor of Public Policy at the University of North Carolina at Chapel Hill. He is an Economist by training, and currently the co-Principal Investigator on the Transfer Project, a multi-country initiative to understand the impacts of national cash transfer programs on child and household well-being in SSA. He previously held positions at the University of the West Indies in Jamaica, Eduardo Mondlane University in Mozambique, the International Food Policy Research Institute, and the Inter-American Development Bank in Washington DC. In 2007-08 he served as UNICEF's Regional Advisor on Social Policy for Eastern and Southern Africa. He was born in Ghana and is a citizen of the United States and Canada.



PUBLICATIONS

Handa, S., Pereira, A. L. & Holmqvist, G. 2017. *Prevalence and Correlates of Food Insecurity Among Children Across the Globe*. Innocenti Working Paper 2017-09. Florence, Italy: UNICEF Office of Research. doi:10.18356/9206b37d-en

Key points of the proposed research

This project will provide new evidence on an under-studied area of food security – the food security of children and young people. Using the FIES, the first research aim is to provide prevalence estimates of food insecurity among households with children under age 15, and among young people age 15-24, by region, globally, and for selected countries where sample size permits. The second research objective is to estimate the determinants of food insecurity among households with children under age 15, and among young people age 15-24 using the FIES in 2014. This analysis will then be extended to

2006-2014 using the Global World Poll indicator of household food insecurity. These estimates will be conducted by world region and since the time period includes a period of both food price volatility and the Great Recession, it provides an opportunity to understand how the determinants of food insecurity were affected by these macroeconomic phenomena. The third and final objective is to use the UNICEF Office of Research Structural Determinants Framework to understand the importance of food insecurity as a determinant of young person's (age 15-24) well-being.

Andrew Jones

Andrew Jones is a public health nutritionist interested in understanding how food systems impact the diets and nutritional status of vulnerable populations in low- and middle-income countries (LMICs). His research examines: 1) how agricultural biodiversity influences diet diversity and quality among smallholder farming households; 2) the role of fisheries and aquaculture in contributing to the diets, health and livelihoods of vulnerable households; and 3) how urbanization and the formalization of markets in LMICs influence diets and potentiate the risk of both undernutrition and obesity. Andrew has ongoing research in Ghana, Ethiopia, Kenya, and Vietnam. Andrew is currently the John G. Searle Assistant Professor of Nutritional Sciences in the School of Public Health at the University of Michigan. He has worked as a consultant for several institutions, including the World Bank, the International Food Policy Research Institute, the Chicago Council on Global Affairs, the Global Alliance for Improved Nutrition, and UNICEF. He also served as a U.S. Peace Corps Volunteer in Kazakhstan from 2002-2004. Andrew received his PhD in Nutritional Sciences from Cornell University, and holds BA degrees from the Pennsylvania State University in Geography and Film.

PUBLICATIONS

Jones, A. D. 2017. Food Insecurity and Mental Health Status: A Global Analysis of 149 Countries. *American Journal of Preventive Medicine*, 53(2): 264-273. doi:10.1016/j.amepre.2017.04.008

Key points of the proposed research

Household food insecurity has increasingly been recognized as an important determinant of health status. However, there is a dearth of data from low- and middle-income countries examining the potential impacts of food insecurity on health outcomes, particularly using standard metrics that allow for comparisons across contexts. The objective of this research is to determine global and regional associations between household food insecurity and the self-reported physical and mental health status of adults. Specifically, this research aims to: 1) characterize the prevalence of food insecurity, using a global data set, across strata of urbanicity and across categorizations of livelihood strategies; 2) determine the association of household food insecurity with the self-reported physical and

mental health status of survey respondents of the Gallup World Poll (GWP); and 3) assess heterogeneity in these associations across urban gradients and across the distinct world regions surveyed through the GWP. The research will use data from the complete set of more than 150 countries available through the GWP data between 2006 and 2014, and will include analyses of data using the FAO Food Insecurity Experience Scale (FIES). This research is expected to advance our understanding of the health implications of food insecurity across distinct global regions, and provide unique insights into how these relationships may differ by region, by urban environment, as well as how differing livelihoods strategies in different contexts may protect against vulnerability to food insecurity.

Lamis Jomaa

Dr. Jomaa is an assistant professor at the Department of Nutrition and Food Sciences within the Faculty of Agricultural and Food Sciences (FAFS) and the co-director of the Refugee Health Program within the Global Health Institute at the American University of Beirut (AUB), Lebanon. As a Fulbright scholar, Dr. Jomaa earned her Master's and doctoral degrees in Nutritional Sciences from the Pennsylvania State University (USA) and she currently serves as an affiliate assistant professor at PSU. Her research interests include the assessment of food and nutrition security of vulnerable population groups, including women and children from refugee and impoverished host communities, in addition to designing and evaluating the effectiveness of community-based nutrition interventions aimed at alleviating the risk of food insecurity and malnutrition among vulnerable groups.

Key points of the proposed research

Exploring the Determinants and Differentials of Food Insecurity among Migrants and Nationals: Evidence from the Middle East and North African Region (MENA) and Europe.

This project aims to explore the food insecurity, migration, and development nexus using data from the Gallup World Poll (GWP). The GWP dataset together with the internationally validated food insecurity experience scale (FIES) as part of the Voices of Hunger project (VOH/FAO) presents a unique opportunity to explore the interplay between the three dimensions of migration, food insecurity, and the wellbeing and development of individuals. This data

allows for intra-country analysis and inter-country comparisons with respect to the experience of food insecurity among migrants and nationals. More specifically, the project aims to explore the impact of migration policies (inclusive versus less-inclusive policies) on the food insecurity experience and the human development outcomes of migrants and nationals using data from selected countries in the Middle East and North Africa (MENA) region and Europe. Findings from this project can provide the evidence-base needed to formulate policy-level strategies and recommendations that can be best tailored to help alleviate food insecurity and improve the overall wellbeing of migrants and nationals in host countries.



Mywish Maredia

Mywish Maredia has worked extensively in the area of impact evaluation and the economics of agricultural development and food security policies. She is currently a Professor, International Development, in the Department of Agricultural, Food and Resource Economics and serves as the Director of the Food Security Policy Innovation Lab. She served as the Deputy Director of the USAID funded Dry Grain Pulses CRSP (and its predecessor Bean/Cowpea CRSP) from 2000-09, and as a member of the Standing Panel on Impact Assessment of the CGIAR's Science Council from 2006-11.

She has also worked as a consultant with many international organizations including, the World Bank, Asian Development Bank, FAO, UNDP, CGIAR, CIMMYT and WIPO. She has published extensively in the major agricultural and development economics journals and made presentations at international conferences and workshops on topics related to impacts of agricultural research, technology adoption, and policies that impact food security in developing countries. Dr. Maredia was the recipient of the Outstanding Ph.D. Dissertation Award in 1994 from the American Agricultural Economics Association.

Key points of the proposed research

The proposed research will examine the nexus between food insecurity and unrest. The analysis will focus on two critical aspects of the relationship between food insecurity and national security, but from a policy perspective. We plan to examine the causal relationship between: 1) food insecurity and unrest; and 2) between unrest and food insecurity. Improved understanding of the complex relationships between food insecurity and unrest, and the underlying causal pathways, presents the potential to design food security-related strategies and policies to prevent terrorism and other forms of unrest and improve the efficiency and effectiveness of post-crisis rehabilitation and redevelopment efforts. The proposed

research will combine the GWP and FIES data with existing data from the Global Terrorism Database (GTD) and the Armed Conflict Location and Event Database (ACLED) to bi-directionally link food insecurity indicators with various forms of unrest. The proposed research promises to be highly valuable in generating evidence to empower advocates of food security programs to better justify the relevance of such programs, vis-a-vis the many intervention programs aimed at avoiding national security problems in areas at risk of or experiencing unrest. This new evidence will also support in the development of more place-based food security interventions and post-conflict stabilization strategies.

Hugo Melgar-Quiñonez

Dr Melgar-Quiñonez is the Director of the Institute for Global Food Security and the Margaret A. Gilliam Faculty Scholar in Food Security with an appointment in the McGill School of Dietetics and Human Nutrition at McGill University. With a degree in Medicine (1992) and a doctoral degree (1996) from the Friedrich Schiller University in Germany, he moved to McGill in September of 2012, after 9 years of work as a professor in the Department of Nutrition at the Ohio State University (2003-2012).

Previously he worked in public health nutrition and food security research at the University of California in Davis (1998-2003) and at the Mexican Institute of Public Health (1996-1998). Dr Melgar-Quiñonez has been a food security advisor to several countries in Latin America. He has conducted food security research in 20 countries in Africa, Asia and the Americas, and maintains a strong collaboration with the United Nations Food and Agriculture Organization (FAO) as a researcher in the project Voices of the Hungry which incorporates 150 countries.

PUBLICATIONS

In addition to the below publications, members of McGill University's International Food Security Research Group have produced 9 Master's theses and several conference presentations based on Gallup World Poll and FIES data.

Ahmadi, D. & Melgar-Quiñonez, H. 2018. Use of the Food Insecurity Experience Scale to assess food security status in Ireland, 2014–17: A cross-sectional analysis. *The Lancet*, 392. doi:10.1016/s0140-6736(18)32868-x

Ahmadi, D. & Melgar- Quiñonez, H. 2018. Determinants of food security status in Palestinian territories. Accepted abstract for publication in *The Lancet*.

Ebadi N., Ahmadi D., Sirkeci I. & Melgar- Quiñonez H. 2018. The Impact of Remittances on Food Security Status in the Global South. *Remittances Review*, 3(2): 135 – 150.

Garzón-Orjuela, N., Melgar-Quiñonez, H. & Eslava-Schmalbach, J. 2018. Escala Basada en la Experiencia de Inseguridad Alimentaria (FIES) en Colombia, Guatemala y México. *Salud Pública De México*, 60(5): 510-519. doi:10.21149/9051

Ahmadigheidari, D., Sinclair, K., Abdi, T., Ebadi, N., Cortbaoui, P. & Melgar-Quiñonez, H. 2017. The Economic Condition and Food Security Status: The Study of European Countries on 2015. *Food Studies: An Interdisciplinary Journal*, 8(1): 9-22. doi:10.18848/2160-1933/cgp/v08i01/9-22





Muzi Na

Assistant Professor of Nutritional Epidemiology at the Department of Nutritional Sciences, Pennsylvania State University.

Her research interests include food insecurity and socio-behavioral risk factors in relation to human nutrition and health. She holds a Ph.D. in Nutrition and a M.H.S. in Biostatistics from Johns Hopkins University, a B.S. in Economics and a B. Medicine (M.D. equivalent) from Peking University, Beijing, China.

PUBLICATIONS

Na, M., Miller, M., Ballard, T., Mitchell, D. C., Hung, Y. W. & Melgar-Quiñonez, H. 2018. Does social support modify the relationship between food insecurity and poor mental health? Evidence from thirty-nine sub-Saharan African countries. *Public Health Nutrition*, 1-8. doi:10.1017/s136898001800277x

Key points of the proposed research

Association between Social Support and Food Insecurity: An analysis of the Gallup World Poll Data

To date, evidence has accumulated linking risk of food insecurity to economic determinants. Few studies have focused on how social access affects food acquisition. Less well understood is the role that non-economic determinants, such as social support structures modulate food insecurity under circumstances when physical or financial access to food is limited. The goal of the proposed study is to explore relationships between aspects of social support and food stress experiences in

sub-Saharan African countries, where food insecurity and malnutrition are the most prevalent around the world. Using consistent measures of social support and food insecurity in Gallup World Poll 2006-2014 in more than 30 sub-Saharan African countries, the proposed study aims 1) to assess cross-country variation in the associations between social support and the risk of being food insecure; 2) to explore the potential dose-response relationship between social support and different levels of food insecurity; 3) to analyze the reciprocal aspects of receiving and giving support in relation to food security; and 4) to compare the relationship by proposed modifiers of these associations.

Edwina Wambogo

Cancer Research Training Award Fellow (CRTA) with the Risk Factor and Assessment Branch (RFAB) in the Epidemiology and Genomics Research Program (EGRP) at the National Cancer Institute, National Institutes of Health. She conducts research in the areas of dietary assessment methods, dietary surveillance, and dietary patterns. Her other research interests are in the areas of aging, maternal child health, HIV/AIDS and diabetes. She holds a PhD in Nutrition from the University of Maryland College Park, a MPH in Community Health Education from the University of Maryland College Park, and a MS in Foods, Nutrition and Dietetics from Kenyatta University, Nairobi, Kenya.

Key points of the proposed research

Food insecurity among older adults in sub-saharan africa: a comparative study.

The population of older adults worldwide is growing rapidly, with estimates for people 60 years and above projected to reach 2 billion by 2050 compared to 605 million in 2000. Compared with global percentages, Sub-Saharan Africa (SSA) has a lower percentage of older adults 60 years and above, but has one of the highest growth rates for this age group. Older adults are vulnerable to food insecurity due to many factors such as low income, limited mobility and poor health, yet food insecurity among older adults in SSA has largely been ignored with priority being given to women and children with manifested under-nutrition. The intent of this study is to determine

the prevalence of food insecurity among older adults that is not an outcome of war and displacement and where implementation of policy recommendation may be possible. We will examine the internal validity of the Food Insecurity Experience Scale (FIES) in several SSA countries and assess the possibility of pooling data from 11 relatively comparable countries. These countries from the Western, Eastern and Southern Africa regions are selected based on life expectancy, political stability and relatively higher GNI. We will explore determinants of food insecurity and associations with health and well-being as potential consequences of food insecurity among older adults in SSA. This study could have implications for food security interventions and policy recommendations targeting older adults in Sub-Saharan Africa.

PUBLICATIONS

Wambogo, E. A., Ghattas, H., Leonard, K. L. & Sahyoun, N. R. 2018. Validity of the Food Insecurity Experience Scale for Use in Sub-Saharan Africa and Characteristics of Food-Insecure Individuals. *Current Developments in Nutrition*, 2(9). doi:10.1093/cdn/nzy062

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