



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

## **USDA Food Security Dashboard**

**Saquib Ahsan and Keithly Jones**

*Selected presentation for the International Agricultural Trade Research Consortium's (IATRC's) 2023 Annual Meeting: The Future of (Ag-) Trade and Trade Governance in Times of Economic Sanctions and Declining Multilateralism, December 10-12, 2023, Clearwater Beach, FL.*

*Copyright 2023 by Saquib Ahsan and Keithly Jones. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.*



# USDA Food Security Dashboard

Saqib Ahsan & Keithly Jones

Global Market Analysis - Trade & Economic Analysis Division



Foreign Agricultural Service  
U.S. DEPARTMENT OF AGRICULTURE

# What is it?

- Evaluates food security and guides evidence-based policy decisions
- Has variety of metrics that reflect different facets of food security
  - Food insecurity indicators
  - Trade disruption vulnerability
  - Importance of imports
  - Daily caloric intake per person
  - Dietary calories by food groups
- Promotes evidence-based policies, stakeholder accountability, and collaboration

Powered by:



# Purpose & Motivation

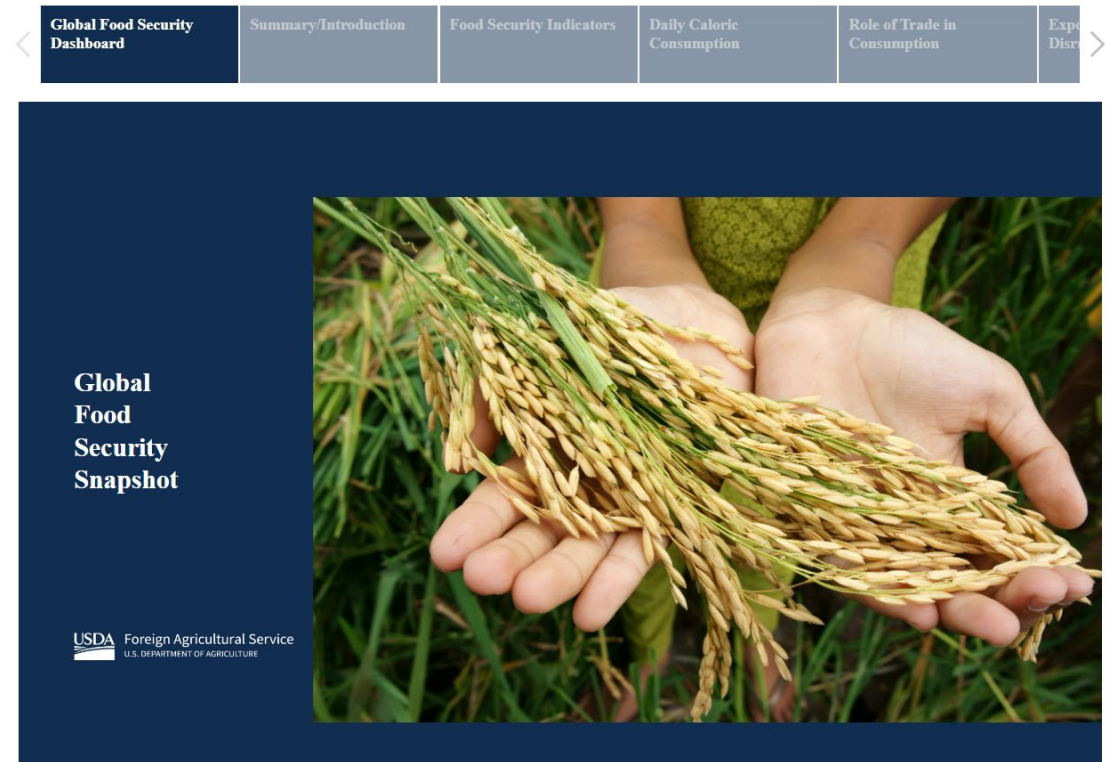
- Provide a one-stop shop for a range of food security measures
- Russian invasion in Ukraine resulted in a restriction of grain exports to several vulnerable countries, especially Africa. The geopolitical issues have impacted global food security.



# Sections of Dashboard



1. Summary/Introduction
2. Food Security Indicators
3. Daily Caloric Consumption
4. Role of Trade in Consumption
5. Exposure to Trade Disruption
6. Definitions of Indicators



# 1. Summary/Introduction

- Definitions and World Map
- 3 Food Security Data Sources
  - Global Food Security Index (GFSI) – The Economist
  - UN Food and Agriculture Organization (FAO)
  - USDA Economic Research Service (ERS)



The Economist

Global Food Security Dashboard | Summary/Introduction | Food Security Indicators | Daily Caloric Consumption | Role of Trade in Consumption | Exports and Imports

Food security means having, at all times, both physical and economic access to sufficient food to meet dietary needs for a productive and healthy life. Six core elements build the framework of food security:

1. **Availability** – having sufficient quantities of appropriate food available.
2. **Access** – having adequate income or other resources to access food.
3. **Utilization/Consumption** – having adequate dietary intake and the ability to absorb and use nutrients in the body.
4. **Stability** – having food security over time rather than being a temporary state that is subject to fluctuations.
5. **Agency** – capacity to make own decisions about what food to eat, produce, how food is produced, processed and distributed within the food system and the ability to engage in processes that shape food system policies and governance.
6. **Sustainability** – long-term ability of food system to provide food security & nutrition that does not compromise the economic, social and environmental bases that generate food security and nutrition for future generations.

Choose Indicator:  
Overall Food Security Score (%)

Country: United States

**GFSI Indicators**

Overall score:	78.00
Affordability:	87.10
Availability:	65.10
Quality and Safety:	88.80
Sustainability and Adaptation:	69.40

**FAO Indicators**

Daily Per Capita Calorie Supply:	
Moderate/Severe Insecurity (%):	
Undernourishment (%):	
Cost of a healthy diet (USD/person/day):	3.383
Population unable to afford a healthy diet (millions):	5.5

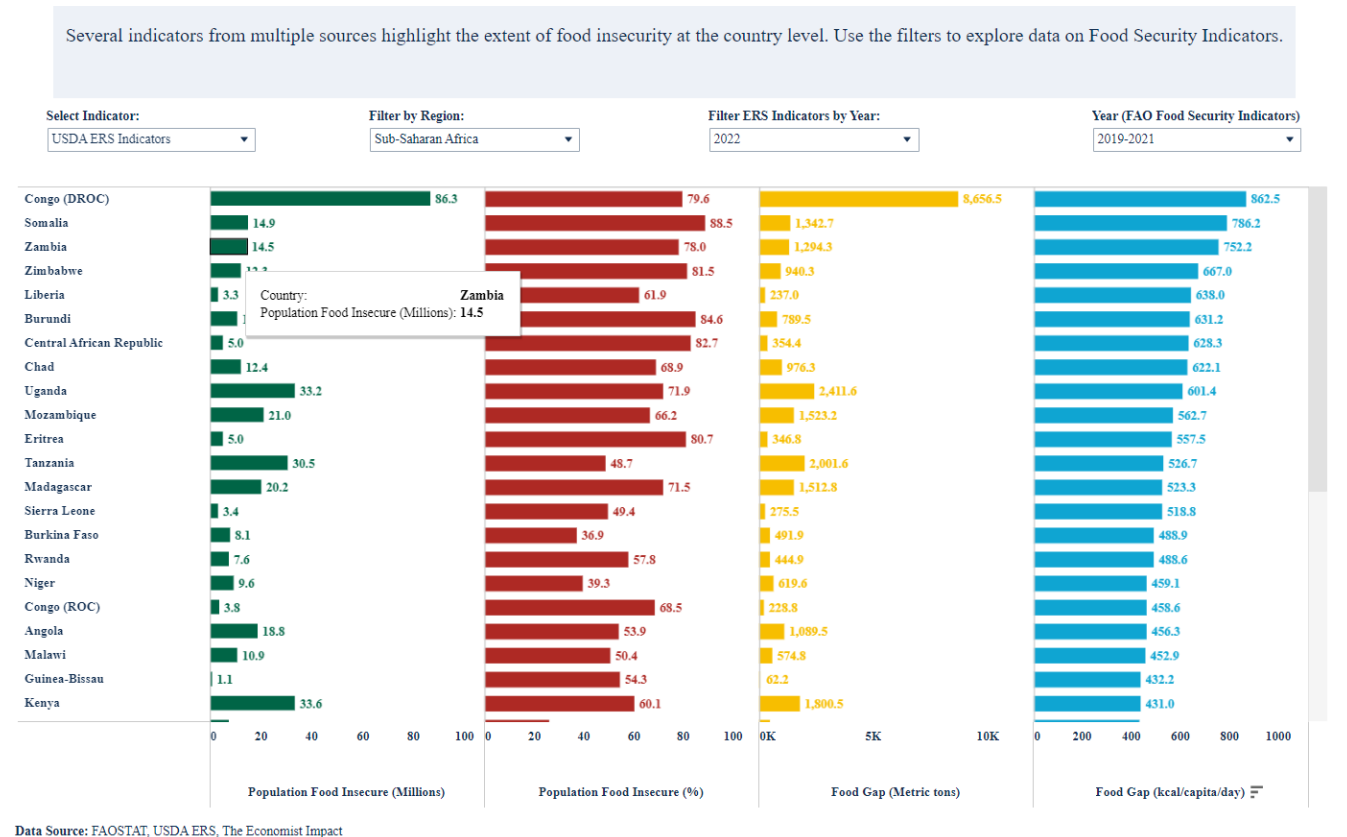
**ERS Indicators**

Food gap (per capita, kilo-calories/day):	
Food gap (total, metric tons):	
Population Food Insecure (population, millions):	
Population Food Insecure (share, %):	

# 2. Food Security Indicators



- More in-depth analysis from the Summary/Introduction tab
- Compare countries/metrics within a region
- Filter by:
  - Food security data source
  - Region
  - Year/Timeframe

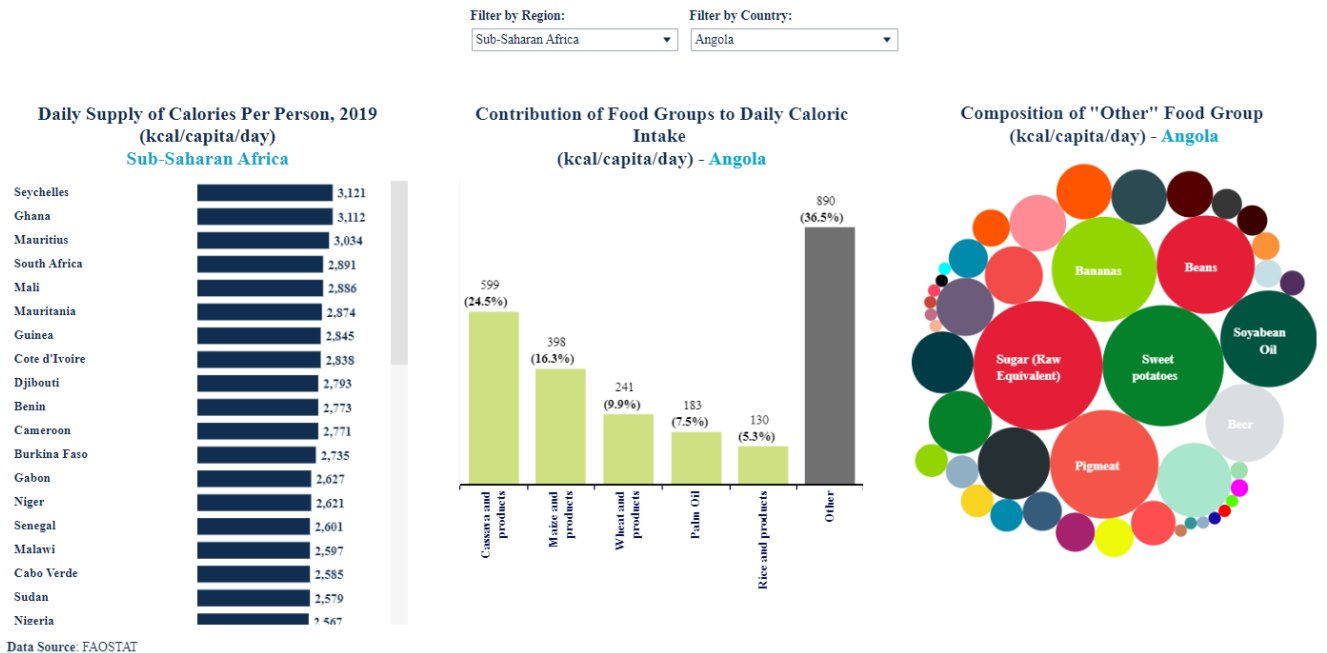




# 3. Daily Caloric Consumption

- Dietary consumptions vary among countries
- Compare overall daily supply of calories per person by country
- Pick a country to see breakout of major food groups
- For each food group, see the food balance in terms of supply and distribution
- Find out what accounts for “other” food groups

Dietary compositions vary considerably around the world. Calorie availability per capita per day is a key variable for measuring and evaluating the food security situation at the global, regional, and country levels. Per capita kilocalorie supply from all food sources highlights the importance of different food categories in the daily diet and also has a bearing on the design of relief operations in cases of emergency.



# Trivia Question #1

In Southeast Asia, which country has the highest Daily Supply of Calories Per Person, 2019 (kcal/capita/day)?

- A. Malaysia
- B. Vietnam
- C. Timor Leste
- D. Cambodia

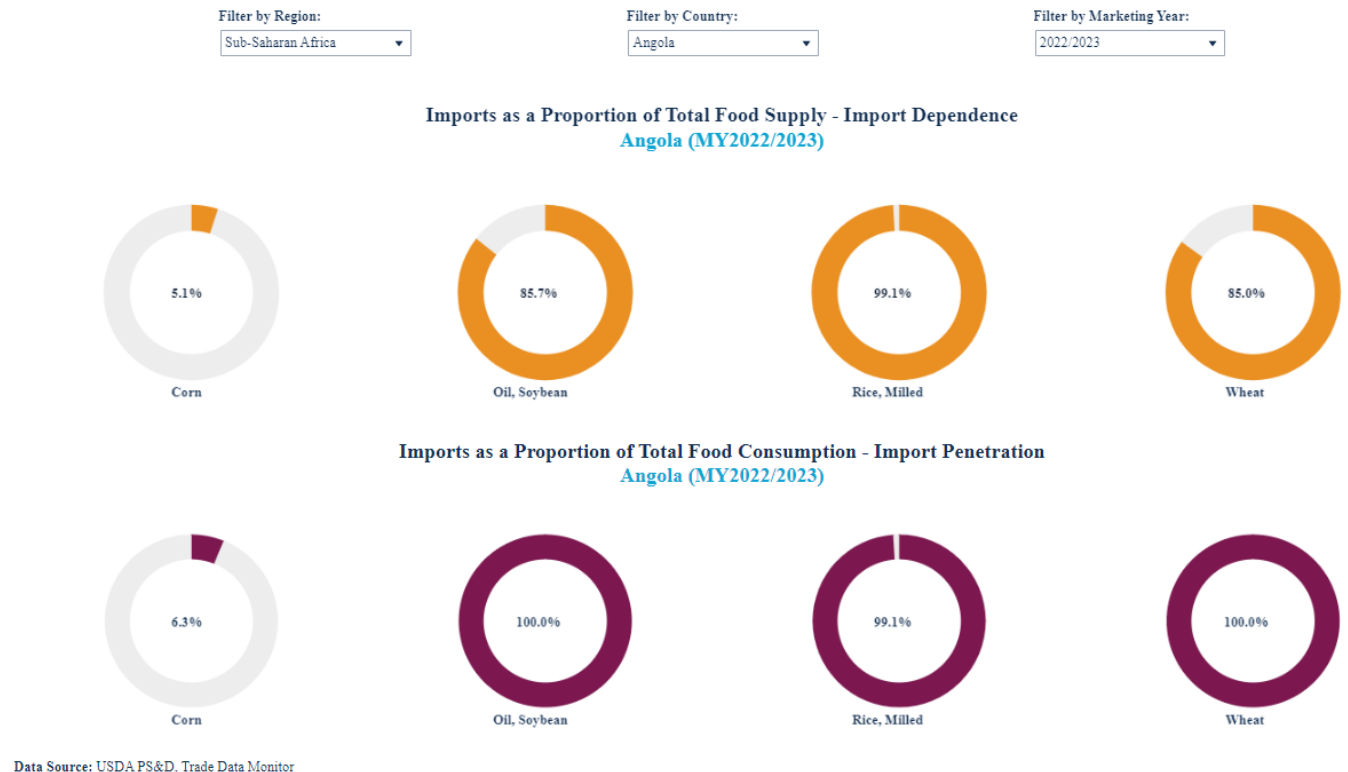
# Trivia Question #1

In Southeast Asia, which country has the highest Daily Supply of Calories Per Person, 2019 (kcal/capita/day)?

- A. Malaysia (2,933)
- B. Vietnam (2,937)**
- C. Timor Leste (2,231)
- D. Cambodia (2,697)

# 4. The Role of Trade in Consumption

- Countries must produce and import the proper proportion of foods
- For each country, get metrics for import dependence and penetration for each major commodity group, including:
  - Corn
  - Soybean oil
  - Milled rice
  - Wheat
  - Soybeans
  - Sunflower oil



# 4. The Role of Trade in Consumption

$$\text{Import Dependence} = \frac{\text{Imports}}{\text{Total Supply}}$$

$$\text{Import Dependence} = \frac{\text{Imports}}{\text{Total Supply}}$$

$$\text{Import Penetration} = \frac{\text{Imports}}{\text{Total Consumption}}$$

$$\text{Import Penetration} = \frac{\text{Imports}}{\text{Total Consumption}}$$

# 5. Exposure to Trade Disruption



- Food importers could be exposed to trade disruptions and failures
- Determine level of exposure to trade disruption in the Black Sea Region for certain commodities.
- Key commodities: barley, corn, soybean oil, sunflower seed oil, wheat
- Find:
  - Market share of key suppliers
  - Level of trade disruption
  - Undernourishment
  - Insecurity score
- Data sources: USDA PS&D and CEPII



Data Source: USDA PS&D, Centre d'Etudes Prospectives et d'Informations Internationales

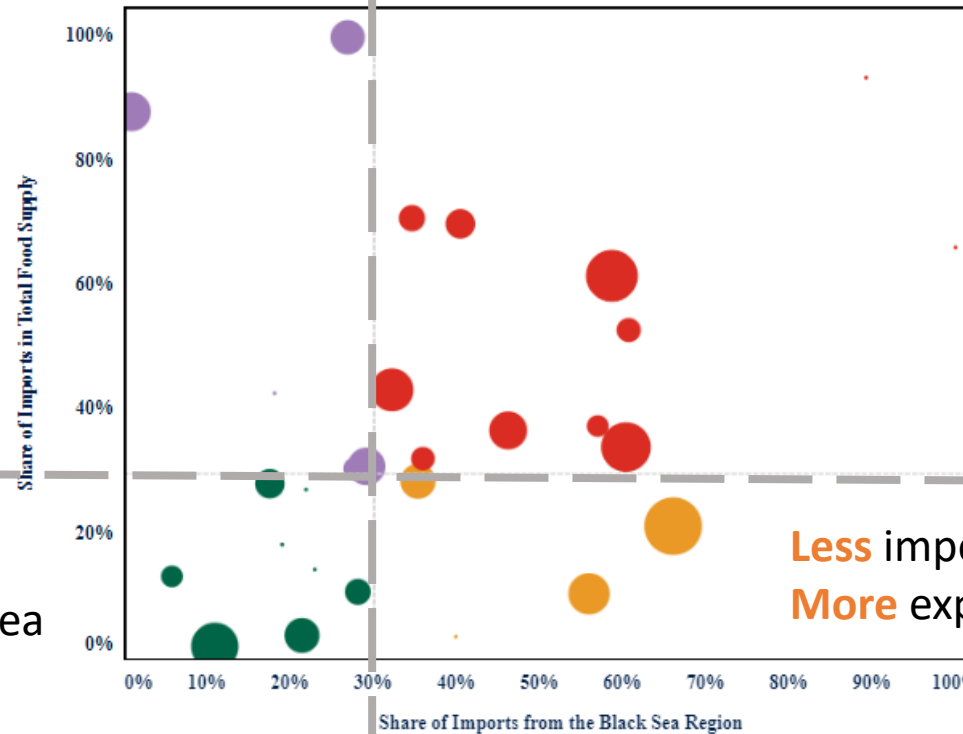
# 5. Exposure to Trade Disruption



**Highly** import dependent  
**Less** exposed to imports from the Black Sea

**Highly** import dependent  
**More** exposed to imports from the Black Sea

Level of Vulnerability from Disruption of Trade in the Black Sea Region -  
Wheat



**Less** import dependent  
**Less** exposed to imports from the Black Sea

**Less** import dependent  
**More** exposed to imports from the Black Sea

# Trivia Question #2

In Sub-Saharan Africa, which country is less dependent on wheat imports but highly exposed to the Black Sea Trade?

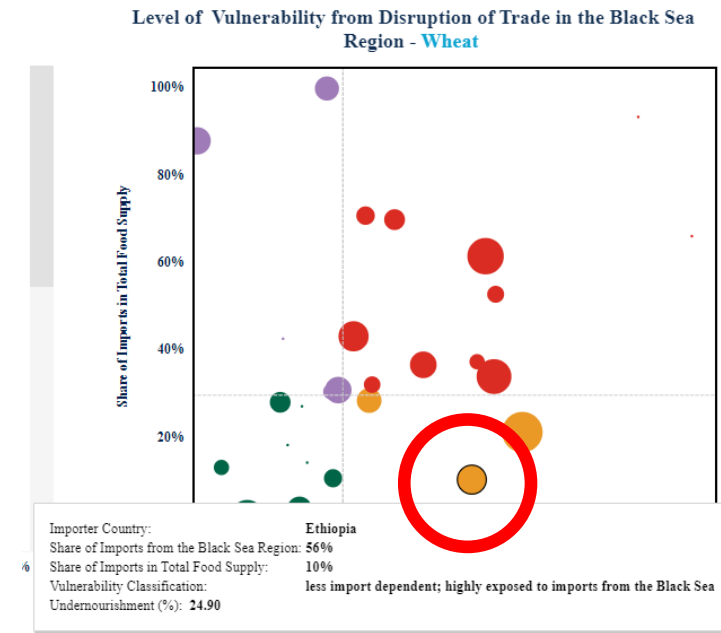
- A. Zambia
- B. Botswana
- C. Liberia
- D. Ethiopia



# Trivia Question #2

In Sub-Saharan Africa, which country is less dependent on wheat imports but highly exposed to the Black Sea Trade?

- A. Zambia
- B. Botswana
- C. Liberia
- D. Ethiopia



# 6. Definitions



- Reference for key food security terms for:
  - The Economist Impact's Global Food Security Index
  - UN Food and Agriculture Organization (FAO)
  - USDA ERS
- Import penetration and dependency
- Quadrants of the Black Sea Grain Trade in terms of level of vulnerability

## Definitions of Indicators

### The Economist Impact Global Food Security Index

**Affordability:** measures the ability of consumers to purchase food, their vulnerability to price shocks, and the presence of programs and policies to support consumers when shocks occur.

**Availability:** measures agricultural production and on-farm capabilities, the risk of supply disruption, national capacity to disseminate food, and research efforts to expand agricultural output.

**Quality and Safety:** measures the variety and nutritional quality of average diets, as well as the safety of food.

**Sustainability and Adaptation:** assesses a country's exposure to the impacts of climate change, its susceptibility to natural resource risks, and how the country is adapting to these risks.

### Food and Agriculture Organization Indicators

**Prevalence of Undernourishment:** expresses the probability that a randomly selected individual from the population consumes an amount of calories that is insufficient to cover her/his energy requirement for an active and healthy life. The indicator is computed by comparing a probability distribution of habitual daily dietary energy consumption with a threshold level called the minimum dietary energy requirement. Both are based on the notion of an average individual in the reference population.

The estimated number of people at risk of undernourishment is calculated by applying the estimated prevalence of undernourishment

tableau A set of small navigation icons typically found in Tableau dashboards, including symbols for back, forward, search, refresh, zoom in, zoom out, and print.

# Uses & Moving Forward

- The International Food Assistance Division is using the dashboard to evaluate countries for the McGovern Dole Food Assistance Program
- Collect feedback and make improvements
- Measure impact and results
- Update data yearly

# Questions?

Please send follow up questions, comments, and suggestions to:

[saquib.ahsan@usda.gov](mailto:saquib.ahsan@usda.gov)