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INTRODUCTION

The prevalence of moderate and severe food insecurity (FI) (Sustainable Development Goal Indicator 2.1.2) has consistently increased at the global level. Among all regions, sub-Saharan Africa (SSA) shows the highest prevalence of FI. The latest estimates by the Food and Agriculture Organization of the United Nations (FAO) state that moderate and severe levels of FI have increased from 50.3% in 2014 to 56.8% in 2019 in SSA.

OBJECTIVE

The purpose of this study is to assess country-scale changes in the status of food security (FS) in SSA and explore its association with socioeconomic and individual factors from 2014-2017.

METHODS

This cross-sectional study used Gallup World Poll (GWP) data from 36 SSA countries from 2014 to 2017 (n = 127,036, ages > 15). FI status was measured by the Food Insecurity Experience Scale (FIES) (Table 1).

FIES is an eight-item questionnaire with simple dichotomous response options (Yes = 1 and No = 0). Responses to each of the eight questions are summed and respondents are categorized into 4 levels of food security status: 1) zero is labeled “food security”, 2) 1-3 as “mild food insecurity”, 3) 4-6 as “moderate food insecurity”, and 4) 7-8 as “severe food insecurity” (Voices of Hungry project, FAO).

Table 1. Food Insecurity Experience Scale (FIES)

During the last 12 MONTHS, was there a time when:

1	You were worried you would run out of food because of a lack of money or other resources?
2	You were unable to eat healthy and nutritious food because of a lack of money or other resources?
3	You ate only a few kinds of foods because of a lack of money or other resources?
4	You had to skip a meal because there was not enough money or other resources to get food?
5	You ate less than you thought you should because of a lack of money or other resources?
6	Your household ran out of food because of a lack of money or other resources?
7	You were hungry but did not eat because there was not enough money or other resources for food?
8	You went without eating for a whole day because of a lack of money or other resources?

Descriptive analyses were used to assess the differences between FS least squares-means (LS-means) over the period. An ordered logistic regression analysis was performed to investigate associations between degrees of FI and socioeconomic and individual factors.

RESULTS

The proportion of the overall population classified as FS decreased in SSA (from 22.7 ± 0.74% to 12.5 ± 0.52% of the surveyed population) (Figure 1). Mild FI decreased as well (18.2 ± 0.65% to 13.7 ± 0.52%) ($p < 0.0001$), however the changes in moderate FI were not statistically significant (20.4 ± 0.67% to 20.6 ± 0.62%) and severe FI increased from 28.6 ± 0.78% to 44.6 ± 0.83% ($p < 0.0001$). The ordered logit model was statistically significant across all years ($p < 0.0001$, average. pseudo- $R^2 = 0.115$) (Table 2). During the studied years, people were less likely to be food insecure with higher education and social support, better health status and healthcare, more child welfare and youth development, and no corruption in the community and businesses ($p < 0.0001$). Living in a rural area was associated with higher FI across all years. The observed difference between men and women on FI status was statistically significant in 2014, even while other factors were held constant ($p = 0.023$). Country-level fixed effects highlighted significant differences in FI between nations, with the highest probability of severe FI observed in South Sudan and the lowest in Mauritius.

Figure 1. Mean plot where hollow circles represent mean (least squares-means) food insecurity status of survey respondents in sub-Saharan Africa, whiskers represent 95% confidence intervals

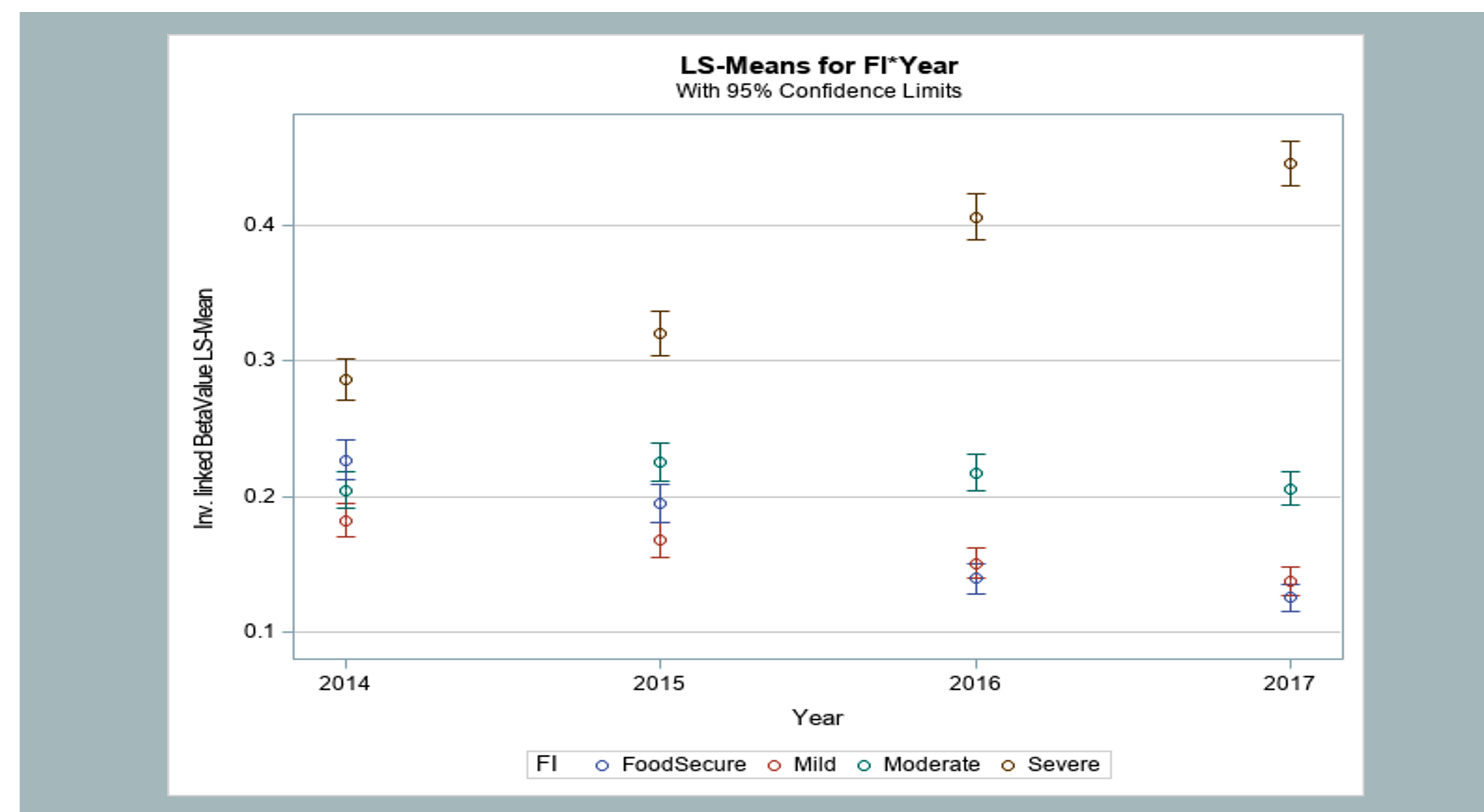


Table 2. Odds ratios (OR) for food insecurity based on logistic regression analysis (SAS PROC GLIMMIX), for SSA countries from 2014 to 2017

Variables	2014			2015			2016			2017		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Age	1.001	0.999	1.003	0.999	0.997	1.001	1.001	1.000	1.003	1.001	0.999	1.002
Male	0.941*	0.893	0.991	0.979	0.929	1.032	0.996	0.945	1.050	0.985	0.937	1.036
Married	0.848*	0.800	0.897	0.953	0.898	1.010	0.954	0.900	1.012	0.970	0.917	1.026
Number of children ¹	1.004	0.998	1.009	1.008	1.001	1.015	0.997	0.987	1.006	0.998	0.993	1.003
Household size	1.006	0.994	1.018	0.995	0.985	1.004	1.013*	1.003	1.024	1.012*	1.004	1.020
Employed	0.977	0.923	1.034	0.937*	0.886	0.990	1.037	0.981	1.096	1.054*	1.000	1.111
Education	0.639*	0.600	0.681	0.691*	0.653	0.732	0.695*	0.660	0.731	0.718*	0.686	0.752
Income ²	1.000*	1.000	1.000	1.000*	1.000	1.000	1.000*	1.000	1.000	1.000*	1.000	1.000
Rural	1.198*	1.113	1.290	1.243*	1.160	1.333	1.323*	1.237	1.414	1.208*	1.136	1.284
Good healthcare ³	0.714*	0.673	0.757	0.819*	0.773	0.867	0.779*	0.736	0.825	0.764*	0.724	0.806
High PHI ⁴	0.521*	0.494	0.550	0.513*	0.486	0.542	0.484*	0.459	0.511	0.469*	0.445	0.493
High SLI ⁵	0.639*	0.605	0.674	0.652*	0.618	0.688	0.657*	0.623	0.693	0.708*	0.673	0.745
No corruption ⁶	0.861*	0.804	0.922	0.848*	0.792	0.909	0.882*	0.824	0.943	0.798*	0.750	0.848
High YDI ⁷	0.743*	0.699	0.790	0.814*	0.766	0.866	0.869*	0.818	0.924	0.901*	0.852	0.954

* p -value < 0.001

¹ Children < 15 years living in household

² Per capita annual income in international dollars

³ Level of satisfaction with the availability of quality healthcare

⁴ Personal Health Index (PHI): Perceptions of one's own health

⁵ Social Life Index (SLI): Respondent's social support structure

⁶ Corruption Index: Perceptions in a community about the level of corruption in business and government

⁷ Youth Development Index (YDI): Measures of development of youth and respect for youth, along with satisfaction with the educational system



SDG Indicators
2.1.1 AND 2.1.2
Measuring
HUNGER AND
FOOD SECURITY



End hunger, achieve food security and improved nutrition and promote sustainable agriculture

<http://www.fao.org/sustainable-development-goals/indicators/212/en/>

CONCLUSION

Since 2014, FI prevalence has increased in most SSA countries. Given that the world is not on track to achieve Zero Hunger by 2030, this calls for more effective implementation and delivery of policies aligned with the Sustainable Development Goal 2 - Zero Hunger.

Displayed levels of FI in this study illustrate the situation before the COVID-19 pandemic. Various assessments across the world suggest that the COVID-19 pandemic will exacerbate the already negative trend, adding to the total number of food insecure people in SSA.

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