
 Leibniz Institute of Vegetable and Ornamental Crops (IGZ) 

Intrahousehold Distribution of Food Insecurity in Kyrgyzstan



using Food Insecurity Experience Scale (FIES) and the Life in Kyrgyzstan (LiK) data 2019

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 **Outline** 

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2. Motivation and country context
3. Data source and FIES application
4. Prevalence of food insecurity
5. Intra-household distribution
6. Simulations of food insecurity estimates
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Summary

- Focus: intrahousehold distribution of food insecurity
- Use LiK data for 2019 and FIES methodology
- Food insecurity prevalence at 14%; severe - 7%. Key determinants are ethnicity, and residence in rural areas and south regions
- In 84% of food insecure households members have varying access to food – gender and decision making look as decisive factors for more food insecure members
- FIES-based food insecurity estimates depend on who responds to a survey – we show this in simulations

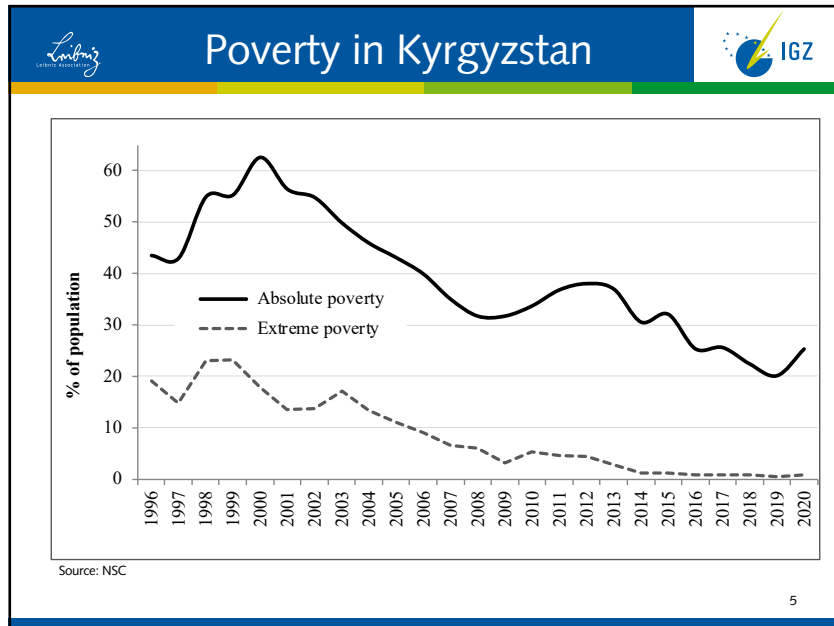
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Research on intra-household FI

- Intra-household food allocation is affected by its members' income, bargaining power, food behaviors, social status, and preferences (Harris-Fry et al., 2017).
- Older adults and women are most vulnerable groups in Arab states (Sheikomar et al., 2021); but Brunelli & Viviani (2014) find no gender differences in food insecurity in Malawi.
- Male and female respondents may see food insecurity differently (Coates et al., 2010): "*Men get the food from the market; women decide what to cook..*" (WFP, 2020)
- Lack of intra-household data may result in mis-measurement in malnutrition, poverty and inequality (D'Souza & Tandon, 2019; De Vreyer & Lambert, 2021; Mercier & Verwimp, 2017)

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Data Source is LiK 2019

- LiK Study is a multi-topic panel survey of households and individuals
- Initial sample in 2010 was 3,000 households and 8,000 individuals representative at national, rural/urban, and South/North.
- Six waves are collected so far: 2010-2013, 2016, 2019
- We use Wave 6 of the LiK study collected Nov 2019-Feb 2020
- Total sample: 2,316 households, 7,044 adults, 700 youth (14-17 y.o.)
- A rich set of socio-economic characteristics at individual, household, and community levels
- FIES questions asked individually from each member aged 14+
- Analytical sample includes 6,901 responses from 2,233 HHs

Level	Total	Rural, %	South, %	Female, %
Individual	6,901	69	53	53
Household	2,233	67	52	
2+ respondents per HH	1,969	69	53	..
1 respondent per HH	264	62	49	..



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Food Insecurity Measurement

- The Food Insecurity Experience Scale (FIES) is one of the indicators for monitoring SDG Target 2.1
- It measures the prevalence of moderate and severe food insecurity (FI) in a population
- Subjective measure – asks people directly about access to food
- Previous research on experience-based FI scales identified common patterns of FI:
 - Worry about lack of food
 - Changing diets to make food last longer
 - Decreasing amount of food consumed
- Represents a shift in food security measurement from dietary energy adequacy to measurements that include social, economic and psychological factors (Cafiero et. al, 2014)

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FIES Description -1

- The FIES comprises of 8 questions of self-reported food behaviors that are sequenced per degree of difficulty in accessing food
- *During the last 12 months, was there a time when, because of lack of money or other resources:*
 1. You were worried you would not have enough food to eat?
 2. You were unable to eat healthy and nutritious food?
 3. You ate only a few kinds of foods?
 4. You had to skip a meal?
 5. You ate less than you thought you should?
 6. Your household ran out of food?
 7. **You were hungry but did not eat?**
 8. **You went without eating for a whole day?**
- Response options in LiK 2019: *Never; 1-2 times; Many times*

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Data Validation using Rasch model

- The Rasch model is used to determine that each FIES question is measuring a different aspect of food insecurity
- The WORRIED item is dropped as both Infit (1.22>1.2) and Outfit (3.33>2.0) statistics were beyond the border values, indicating there are some unexpected response patterns.
- Both statistics are in an adequate range after the correction; Rasch reliability score is 0.7; residual correlations are below 0.4.

FIES Items	% of positive responses	Item severity	Infit	Outfit
WORRIED	26.0			
HEALTHY	20.2	-2.02	1.18	1.65
FEWFOOD	19.6	-1.85	1.00	1.56
SKIPPED	12.5	-0.02	0.89	0.91
ATELESS	11.7	0.28	0.89	0.76
RUNOUT	11.4	0.38	0.95	0.92
HUNGRY	9.2	1.47	0.83	0.74
WHLDAY	8.9	1.76	0.98	0.77

Source: LIK 2019


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Food Insecurity: How to Calculate?


- Use raw score parameters (SP) to define food insecurity
- Applied thresholds of food insecurity on the latent trait: moderate or severe: -0.70; severe: 2.44

Raw Score	Score parameter	Food Insecurity degree	N
0	-3.32	zero	5,168
1	-2.42	mild	381
2	-1.25	mild	411
3	-0.35	moderate	192
4	0.46	moderate	140
5	1.29	moderate	54
6	2.34	moderate	49
7	3.77	severe	506

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Prevalence of Food Insecurity




We estimate the level of moderate and severe food insecurity at 14% at individual level and 20% at household level

Level	Total	Food Secure	Food Insecure	Mild	Moderate	Severe
Individual	6,901	5,168	1,733	792	435	506
%		75	25	11	6.3	7.3
Household, mean parameter score /1	2,233	1,569	664	228	343	93
%		70	30	10	15.4	4.2


Source: LiK 2019.
1/ Household-level food insecurity rates are based on average respondent parameter scores

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Descriptive statistics



	Total	Food secure	Food Insecure	Diff.
Individual characteristics				
Female	0.53	0.52	0.55	*
Age, years	40	40	41	***
Kyrgyz	0.67	0.67	0.69	
Uzbek	0.16	0.15	0.24	***
Years of schooling	11.1	11.2	10.4	***
Employed	0.44	0.45	0.36	***
Religious person	0.88	0.87	0.96	***
Has strong social network	0.40	0.41	0.36	**
Gender attitudes index, 0-5	1.2	1.2	1.0	***
Life satisfaction, 0-10	7.3	7.4	6.3	***
Satisfaction with health, 0-10	7.3	6.5	5.4	***
Mental health issues, 0-27	2.1	1.8	4.1	***

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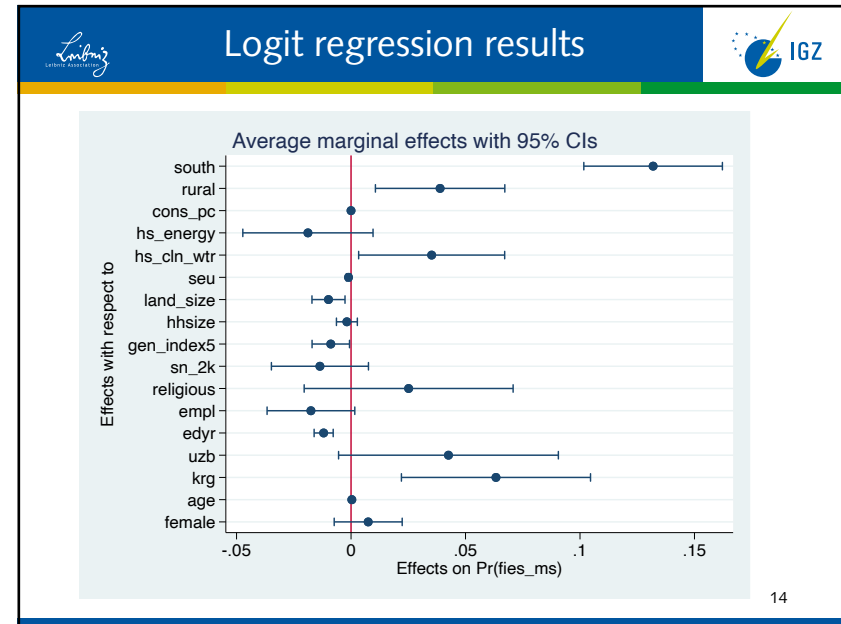
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Descriptive statistics – 2

	Total	Food secure	Food Insecure	Diff.
Household characteristics				
Household size	6.6	6.6	7.1	***
# of rooms in dwelling	3.9	3.9	4.0	
Land size, Ha	1.4	1.6	0.5	**
Livestock units	8.7	9.2	5.8	***
Household has access to clean drinking water	0.81	0.81	0.80	
Household has reliable electricity supply	0.82	0.83	0.75	***
Household own economic status assessment, 1-1	5.7	5.8	5.2	***
Food consumption per capita, soms/month	3,726	3,721	3,761	
Consumption per capita, soms/month	6,657	6,741	6,123	***
Household income per capita, Soms/month	6,308	6,587	4,307	***
Location				
Rural	0.69	0.67	0.77	***
South oblasts	0.53	0.49	0.79	***
# of obs.	6,890	5,949	941	

Source: Life in Kyrgyzstan Study 2019.
 Note: The means for food secure individuals are compared to food insecure individuals using t-tests.
 Significant differences are indicated by * p<0.1, ** p<0.05, *** p<0.01.

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Intra-household food insecurity

In 84% food insecure households, the members experience food insecurity differently

	Total	Food Secure	Food Insecure	Equal responses	Mixed responses
Total # of households with 2 and more responses	1,969	1,392	577	93	484
<i>in % to total food insecure</i>			100	16	84
# of individuals	6,637	4,697	1,940	242	1,698
<i>in %</i>			100	12	88

Source: Life in Kyrgyzstan Study 2019.
Note: there are 264 households with one individual response

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Within-HH food insecure and secure

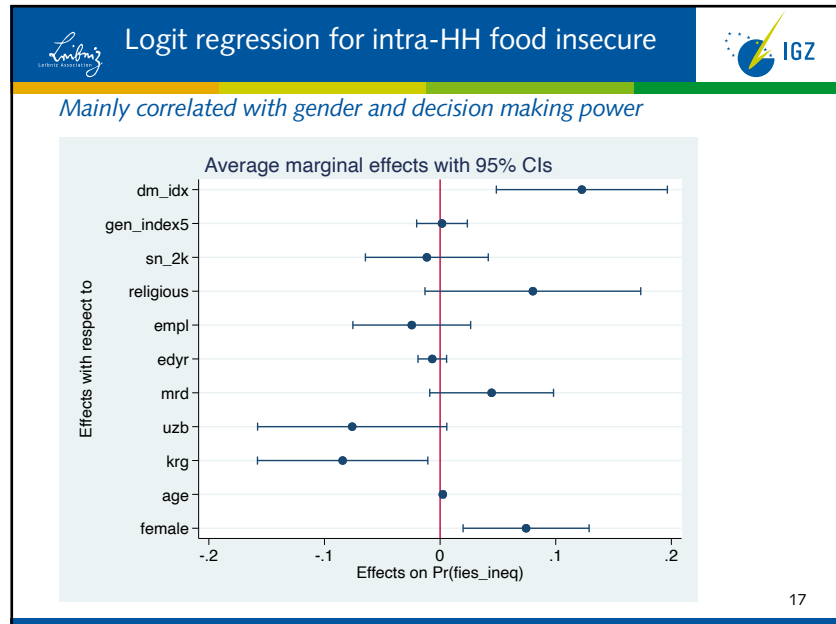
Inequality in food security within households appear to be associated with gender, age, being married, decision making power

	Total	Indiv.FI<=mean HH	Indiv.FI>mean HH	Diff.
Female	0.53	0.49	0.56	***
Age	38.6	36.0	41.6	***
Kyrgyz	0.64	0.65	0.63	
Uzbek	0.27	0.27	0.26	
Married	0.65	0.61	0.69	***
Years of schooling	10.6	10.6	10.5	
Employed	0.37	0.37	0.37	
Religious	0.95	0.95	0.95	*
Strength of social network	0.37	0.38	0.36	
Gender attitudes index, 0-5	1.02	1.02	1.02	
Decision-making index, 0-1, only adu	0.60	0.54	0.66	***
Raw.Score	2.53	0.67	4.72	***
# of obs.	1,697	919	778	

Source: Life in Kyrgyzstan Study 2019.
Note: This table compares the characteristics of household members whose food insecurity is higher than the average food insecurity of all household members with the other household members. The significance of differences in means tested by t-test are indicated by * p<0.1, ** p<0.05, *** p<0.01.

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Food insecurity by respondent


It matters who is interviewed; household head and first interviewed my bias the food insecurity estimates

Variable	All household members	Household head interviewed	First interviewed member	Member with earliest birth month	Randomly selected member
Moderate or severe food insecure	0.14	0.17	0.16	0.15	0.15
Severe food insecure	0.07	0.08	0.09	0.07	0.08
Female	0.53	0.32	0.47	0.52	0.54
Age	39.9	54.0	48.1	41.7	41.5
Kyrgyz	0.67	0.68	0.68	0.68	0.68
Uzbek	0.16	0.14	0.14	0.14	0.13
Married	0.66	0.72	0.70	0.65	0.65
Years of schooling	11.1	11.0	11.1	11.1	11.1
Employed	0.44	0.53	0.47	0.45	0.44
Decision-making index, 0-1	0.67	0.90	0.82	0.72	0.71
Rural	0.69	0.67	0.67	0.67	0.67
South	0.53	0.51	0.52	0.52	0.52
N	6,901	2,046	2,233	2,233	2,233


Source: LiK 2019

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Discussion




- Inequality in intrahousehold food security exist and widespread
- Not many factors that define food insecurity and intrahousehold inequality, but rural residence and gender seem most prominent determinants.
- FIES may result in variations in food insecurity estimates (25% in Gallup data in 2017; 14% in LiK in 2019; 8% using KIHS in 2020).
- Data collection risks to be addressed (e.g. fasting during Ramadan; presence of other members during interview).

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Thank you


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Comparing LiK with KIHS


- The Kyrgyz Integrated Household Survey for 2020 includes FIES data (for the first time)
- KIHS is a multi-topic rotating panel survey of households with the sample of 5,000 households.
- The sample is nationally and regionally representative.
- FIES questions asked from one person in a household

	Food Insecurity, %	Moderate, %	Severe, %
LiK, 2019/20			
Individual	13.6	6.3	7.3
Household	19.5	15.4	4.2
KIHS, 2020			
Individual	7.9	7.5	0.4
Household	8.3	7.8	0.5

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