

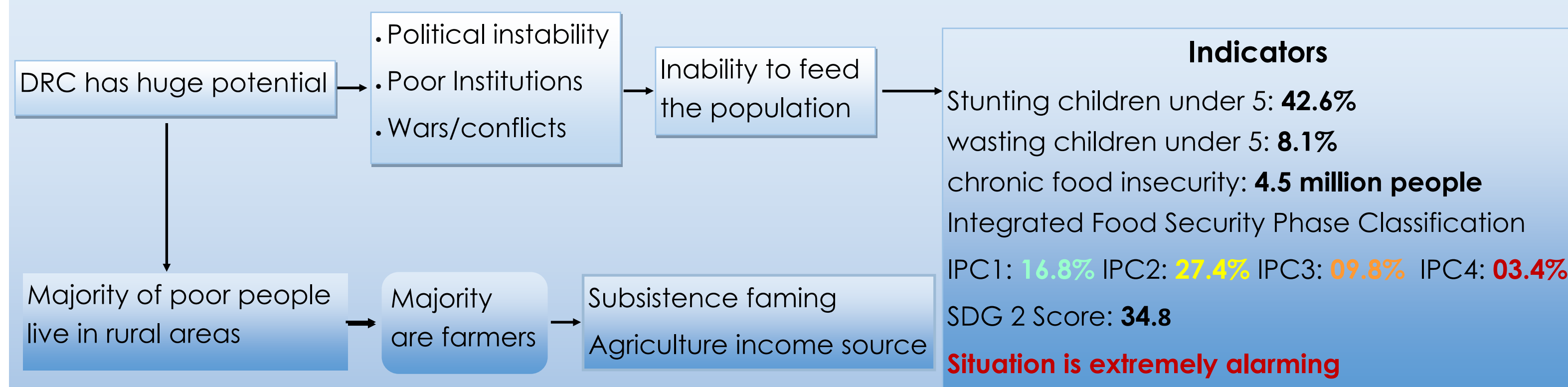
Food consumption and nutrient deficiencies trends in the Democratic Republic of the Congo rural areas

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Introduction



Government and partners focus on peace, stability and food aids. Very little attention is directed towards improving the quality of the food consumption/diet and nutritional diversity. And very little is known about FSN in DRC.

Objective Generates evidence to inform policymaking on food and nutrition security in the DRC rural areas

- Specific objectives**
- 1) To determine the food budget share and consumption rural areas
 - 2) To analyse the trends of the food share in consumption share in rural areas 2005 - 2012
 - 3) To map the nutrient deficiencies trends in food consumed in rural areas 2005 - 2012

This research is very useful tool to be used at the national and provincial level to design and formulate policies, that will aim to diversify the diet Congolese people in rural areas. Fill the knowledge gap and contribute to achieving SDGs 2, 3.

Research designs

The study adopted a historical research design. The design made it possible to make predictions and inference on the relationship between economic characteristics and the nutritional trends of households.

Study area and Data source

The study used two independent rounds of data from the National Household Surveys (Enquête 123 or 123 survey) collected in 2005 and 2012. The numbers represent the phase of the survey: "1" for employment, "2" for informal sector and "3" for consumption. Data on consumption were used.

The Sample size 17,412 households (6,228 – 2005 and 11,184 – 2012). The country has 25 provinces plus Kinshasa the capital (no rural area). Country: size 2,345,000 Km², Population: 80 millions, 2019 Growth Rate: 3.24%.

Empirical Framework

Objectives 1, 2 and 3 descriptive analysis and the inferential analysis.

1) Food budget share Food budget share (%) = ((food expenditure)/(total expenditure))*100 (1)

trends = Food budget share₂₀₁₂ - Food budget share₂₀₀₅ (2)

2) Food consumption: In order to define a more homogeneous diet, we clustered provinces using calorie shares intake from each food groups for 2012 as indicators.

Clustering analysis (Wald's linkage algorithm) $D_{ES}(X_i, X_j) = \sum_{l=1}^{16} (X_{il} - X_{jl})^2$ (3)

Food consumption $w_i = (Exp_{fgi}) / (Exp_{food}) * 100, i \in [1,16]$ (4)

trend = $w_{i2012} - w_{i2005}$ (5)

3) Nutrient Intake: To evaluate the consumption nutrient deficiencies, we estimated the Adult Male Equivalence (AME) scales for calories, protein, vitamin A, folate, zinc, calcium, iron and vitamin B12 based on the recommended intake levels by sex and age. We considered a 30 years old male as reference for the AME scale. We assumed his physical activity as a moderate lifestyle. The daily intake requirements were therefore 2750 Kcal, 50 g, 600 mcg, 1000 mg, 14 mg, 27.4 mg 400 mcg and 2.4 mcg for calories, protein, vitamin A, calcium, zinc, iron, folate and Vitamin B12 respectively. These nutrients were selected because they are more problematic in developing countries.

Results

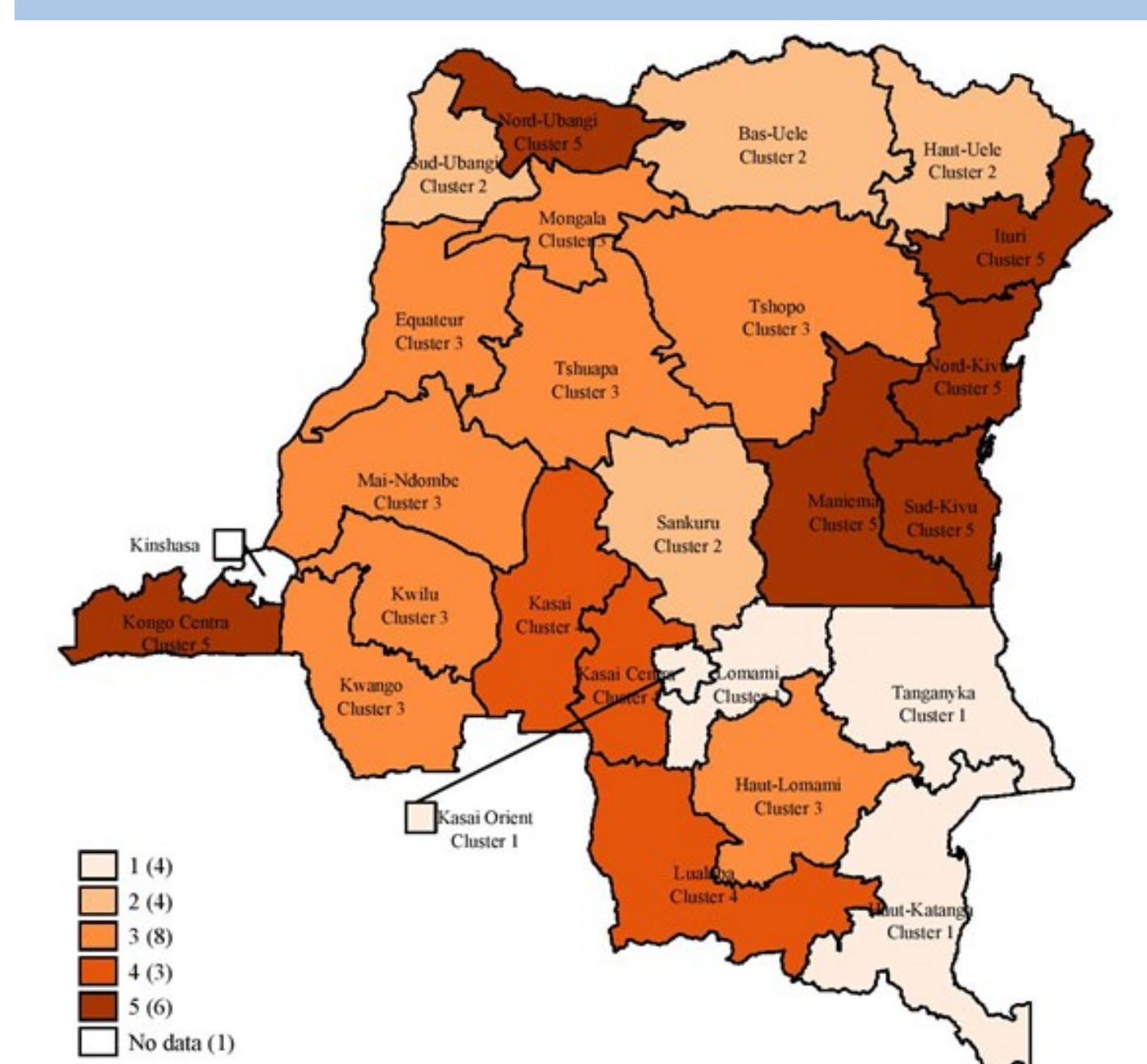
1) Food expenditure shares

Provinces	Rural		
	2005	2012	Change
	Mean (%)	Mean (%)	(%)
Kinshasa	-	-	-
Kongo Central	70.4	83.5	13.1***
Mai-Ndombe	67.5	77.5	10.0***
Kwilu	73.8	76.0	2.2**
Kwango	75.8	81.6	5.8***
Equateur	68.4	81.7	13.3***
South Ubangi	65.4	84.0	18.6***
North Ubangi	65.2	82.0	16.8***
Mongala	72.8	78.9	6.1***
Tshuapa	69.2	66.6	-2.6
Tshopo	69.9	76.0	6.1***
Bas Uele	81.0	83.5	2.5*
Haut Uele	75.8	85.3	9.5***
Ituri	75.2	82.7	7.5***
North Kivu	74.0	84.0	10.0***
South Kivu	79.3	80.5	1.2
Maniema	70.9	81.0	10.1***
Lualaba	69.9	83.8	13.9***
Haut Lomami	73.4	77.9	4.5***
Tanganyika	78.1	84.0	5.9***
Haut Katanga	75.1	78.4	3.3**
Kasai Oriental	71.6	87.6	16.0***
Sankuru	75.9	73.2	-2.7*
Lomami	68.5	85.0	16.5***
Kasai	72.8	78.0	5.2***
Kasai Central	72.6	76.7	4.1***

Households spend more than 75% their budget on food. This implies that households are highly vulnerable towards food security. This should be due to a lower standard of living in the rural areas of DRC.

2) Households food consumption

- Rural areas provinces cluster



Cluster 1 composed of **Kasai Oriental, Lomami, Tanganyika and Haut Katanga.**

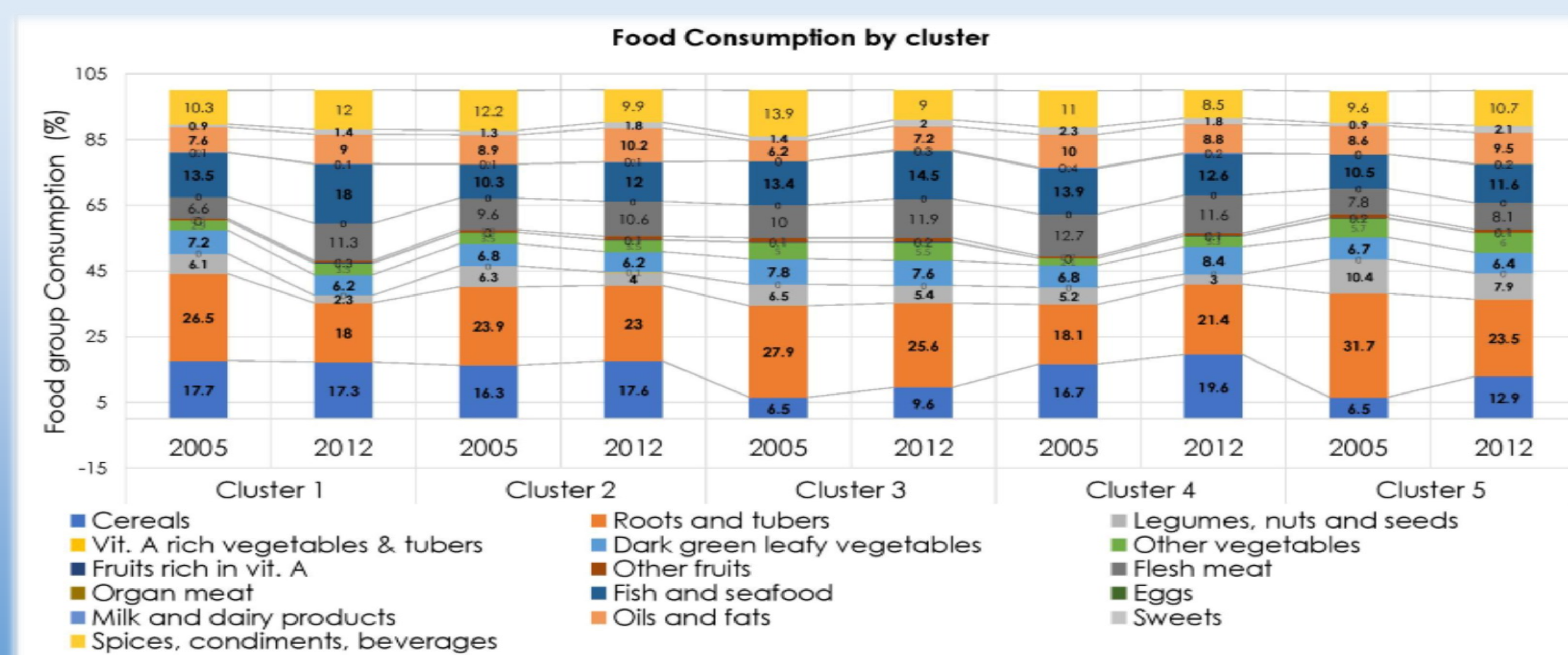
Cluster 2 composed of **Tanganyika, South Ubangi, North Ubangi, Bas Uele, Haut Uele and Ituri.**

Cluster 3 composed of **Kwango, Kwilu, Mai-Ndombe, Tshuapa, Equateur, Mongala, Tshopo and Haut-Lomami.**

Cluster 4 composed of **Kasai, Kasai Centrale and Lualaba.**

Cluster 5 composed of **Kongo Centrale, North Ubangi, Maniema, Ituri, South Kivu and North Kivu.**

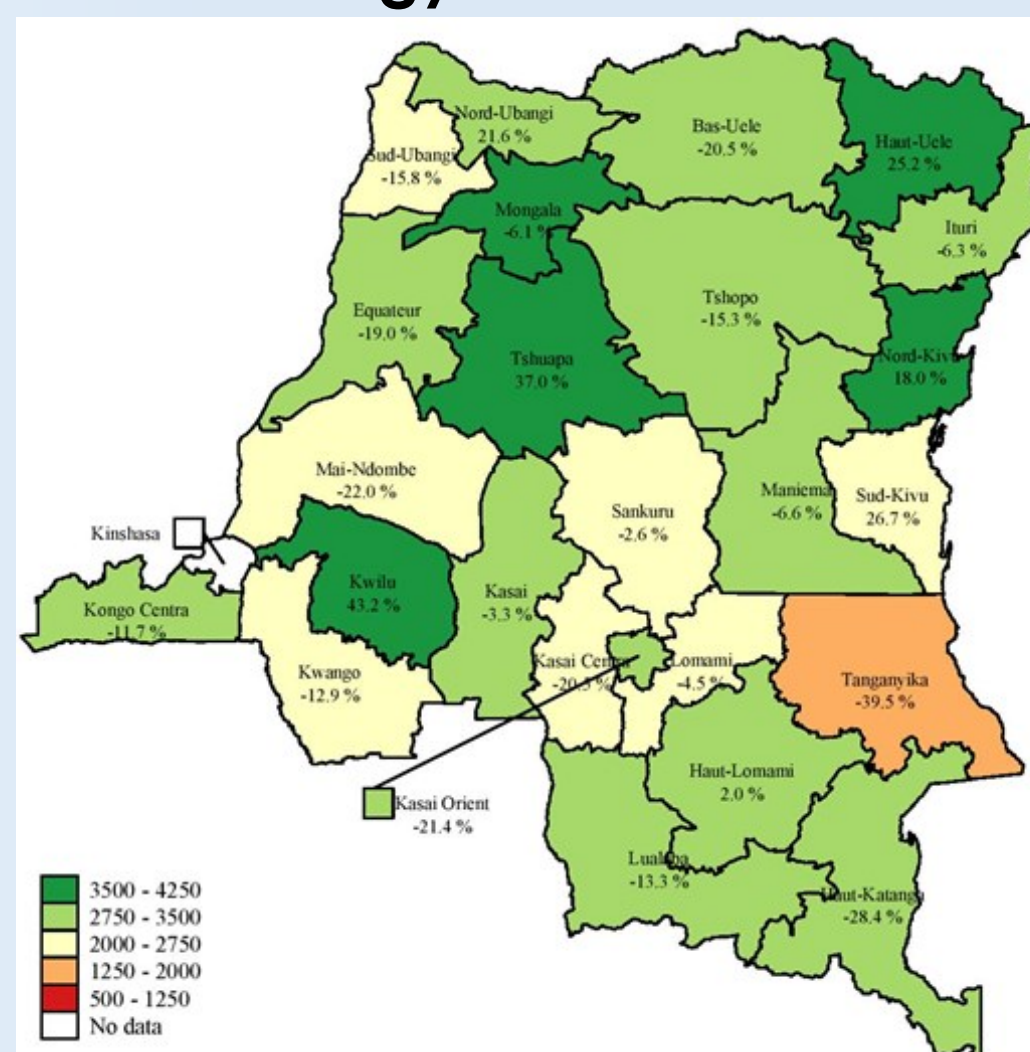
Food Consumption by cluster



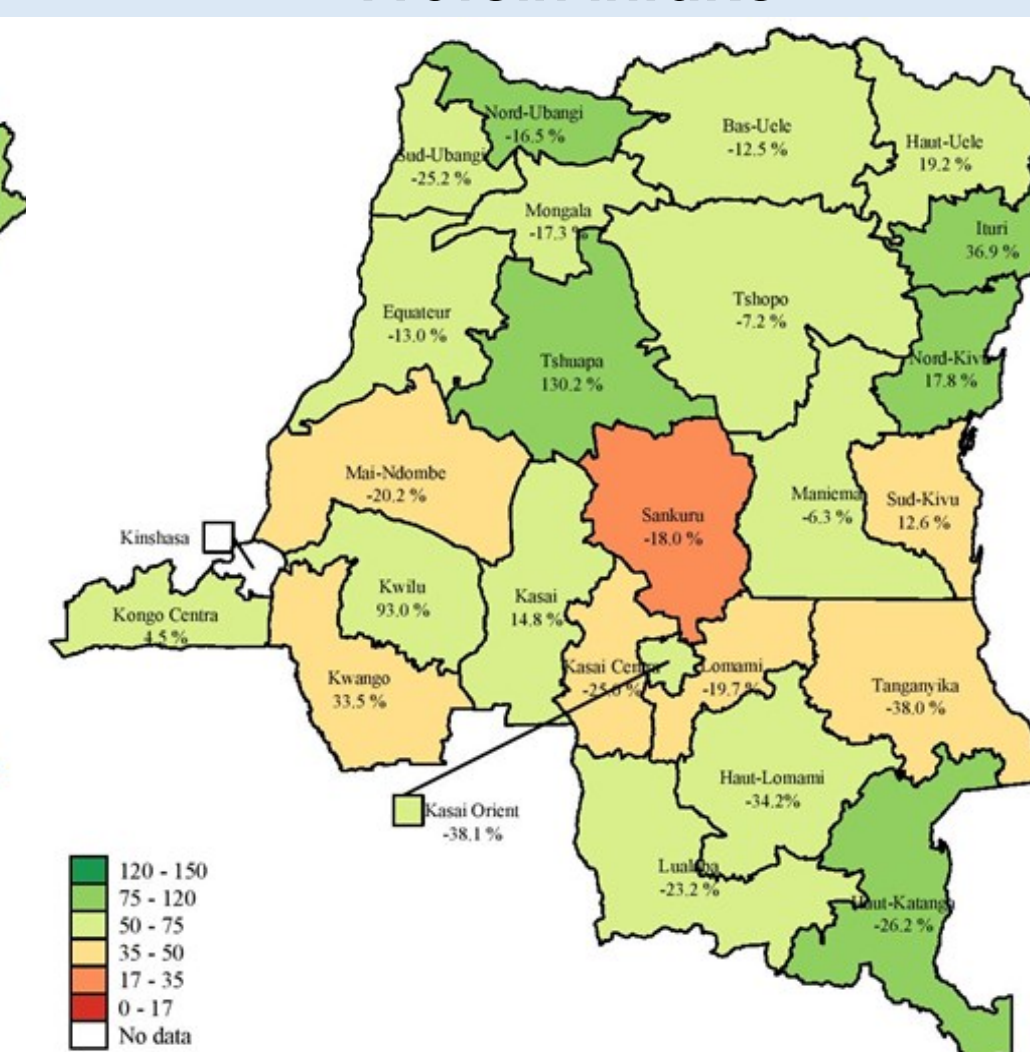
Roots and tubers are the most important food purchased for all the clusters except for cluster 4 whereby both cereals, and roots and tubers, are the most important. For clusters 1, 2 and 5 cereals, as well as fish and seafood, are the second most important food purchased. Coming to cluster 3 and 4 flesh-meat, as well as fish and seafood, are the second most important food purchased.

3) Nutrient intake

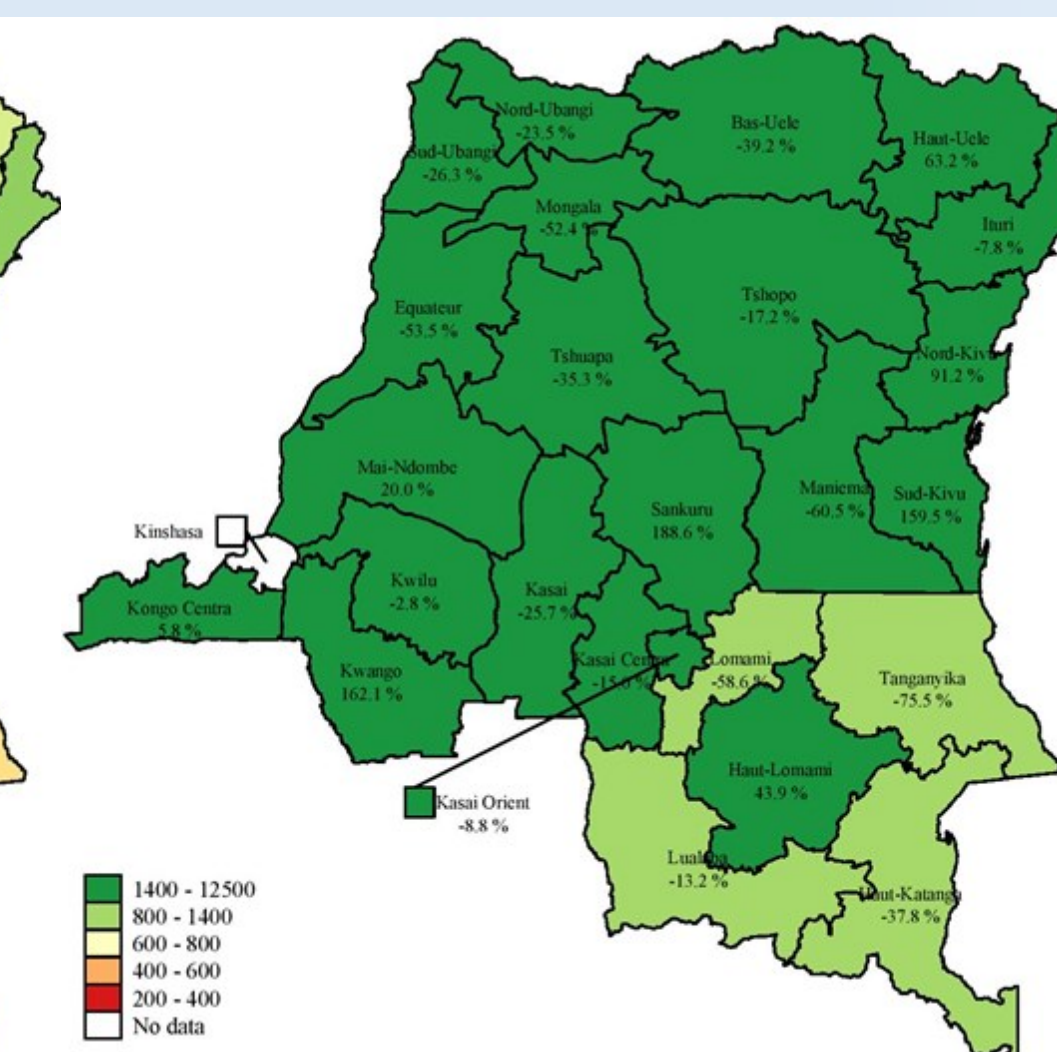
- Energy intake



- Protein intake

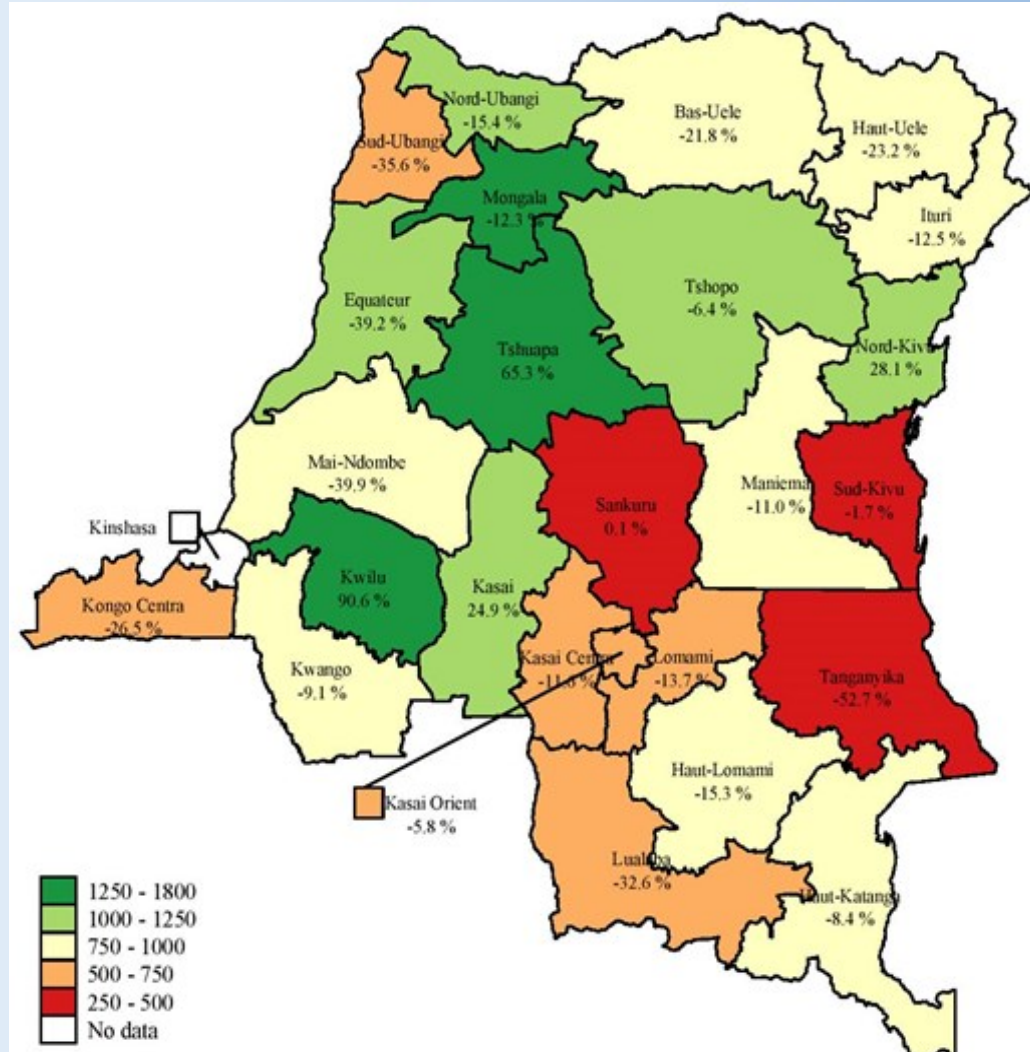


- Vitamin A intake

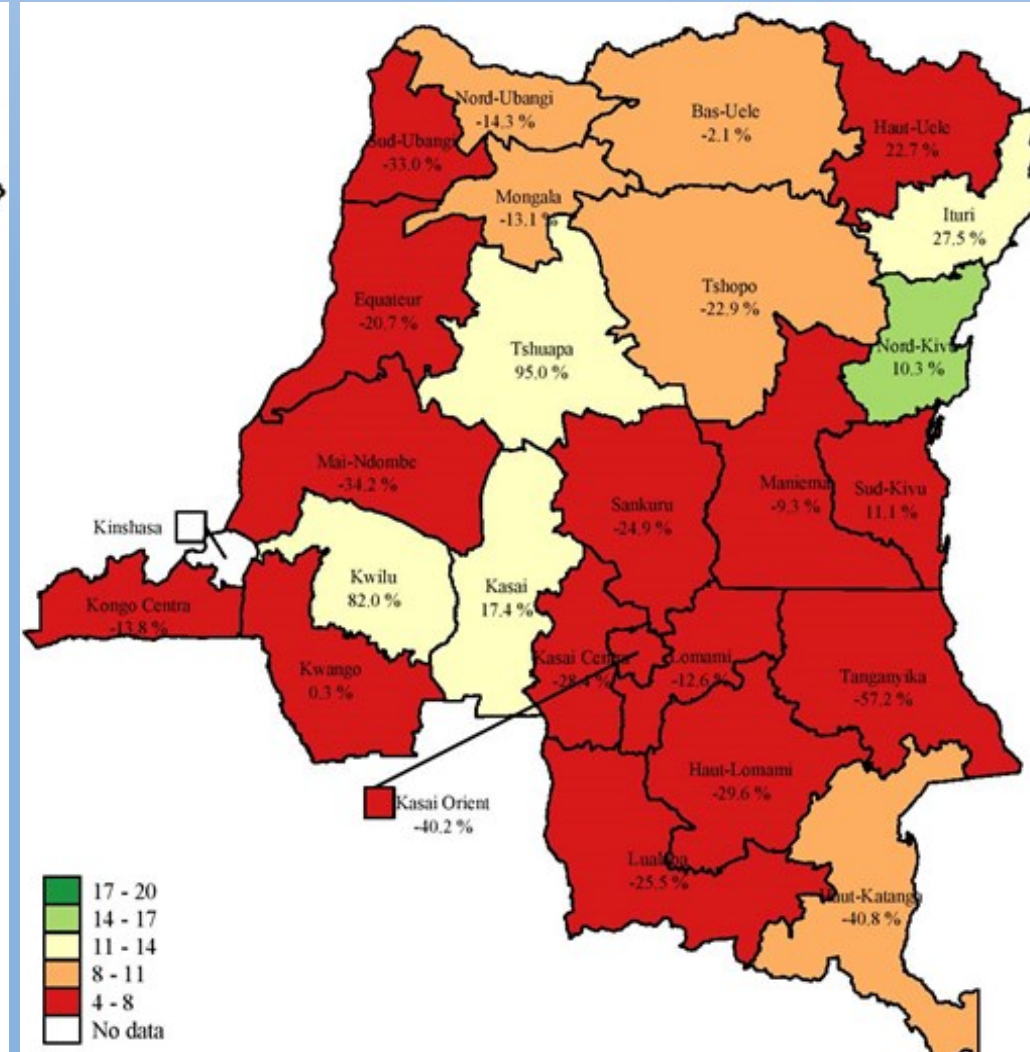


8 provinces were deficient in calories. The intake decreased in 18 provinces. 7 provinces were deficient in protein intake. The intake decreased in 16 provinces. This is due to the high consumption of palm oil.

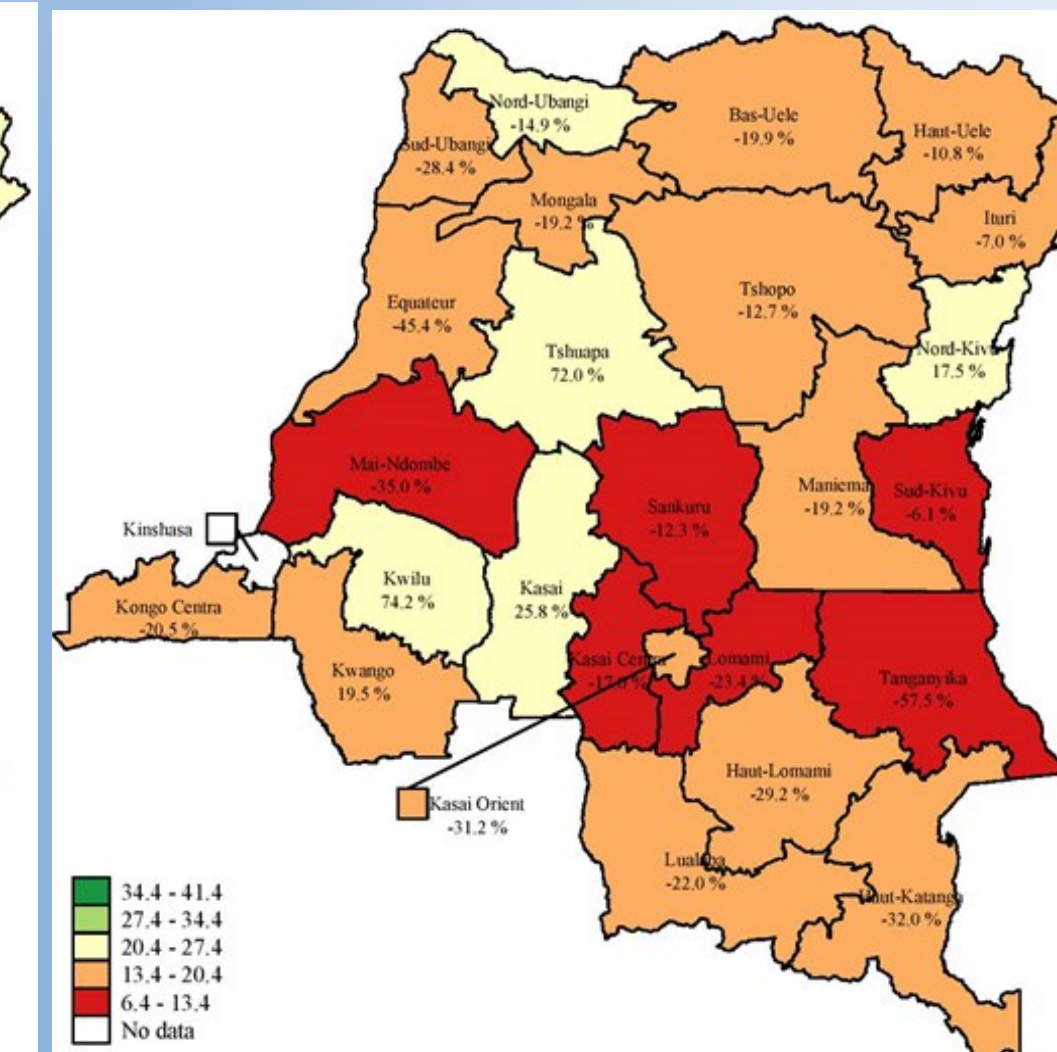
- Calcium intake



- Zinc intake



- Iron intake

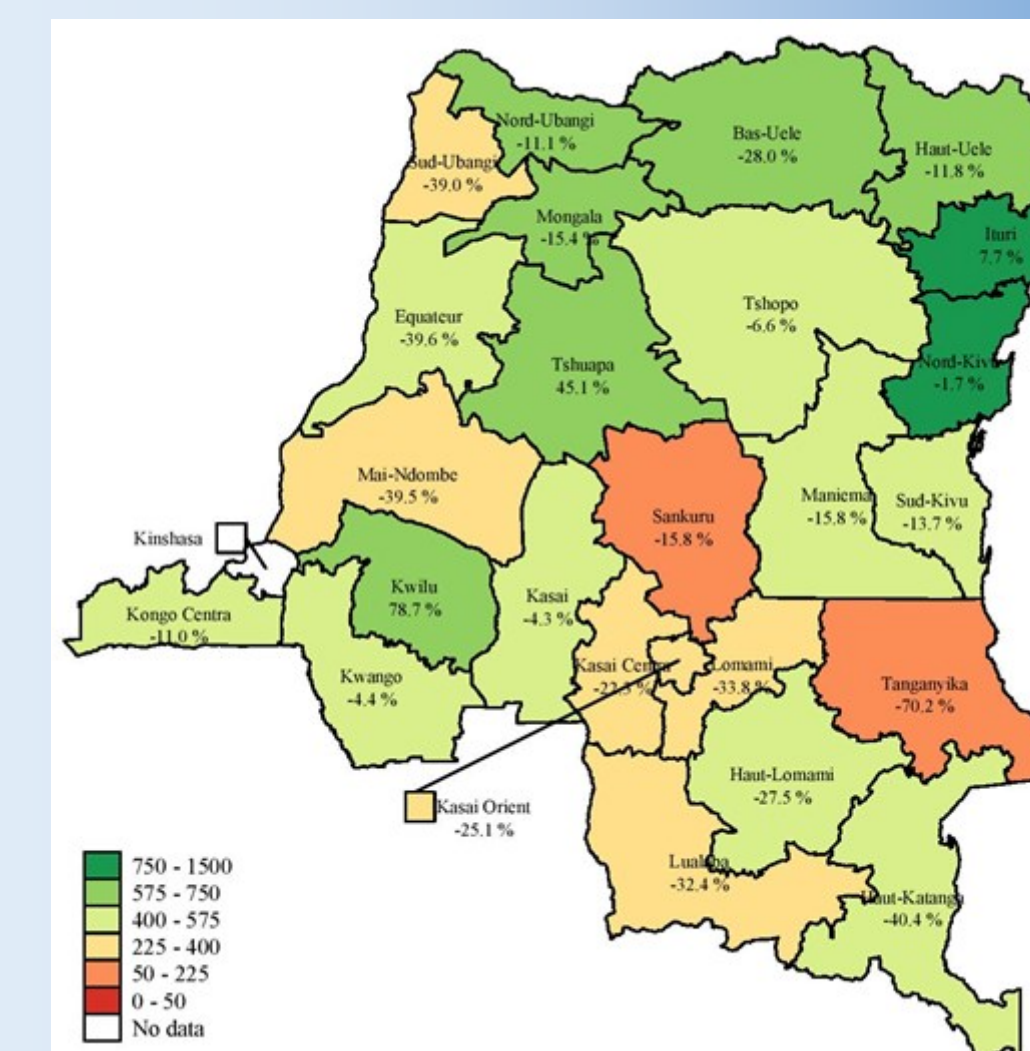


17 provinces were deficient in calcium intake. The intake decreased in 16 provinces.

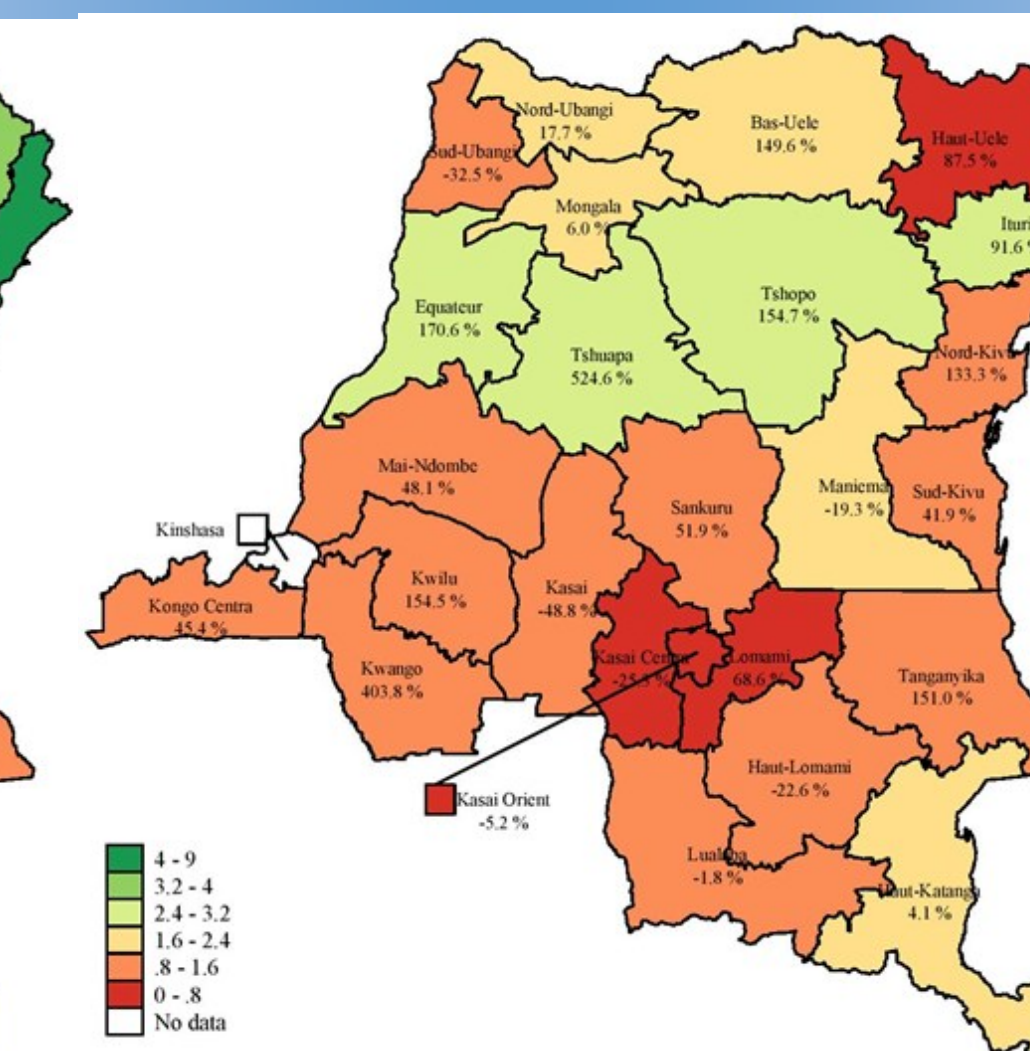
All provinces except North Kivu were deficient in zinc intake. The intake decreased in 16 provinces.

All provinces were deficient in iron intake. The intake decreased in 20 provinces.

- Folate intake



- Vitamin B12 intake



8 provinces were deficient in folate intake. The intake decreased in 24 provinces. 21 provinces were deficient in vitamin B12 intake. The intake decreased in 5 provinces.

Discussion and Conclusion

Overall, households allocated a huge amount of their income on food. Implying that any shock such as the loss of a parent, an epidemic disease, a price shock, etc. can lead to severe food security and nutrition issues. This because households are highly vulnerable.

Household spends about 80 per cent of their budget on cereals, root and tubers as well as meat and fish. This is because they are the food group available on the market. However, the high consumption of meat and fish is more cultural. Although a considerable share of the budget is allocated to meat, the deficiency in vitamin B12 show that the consumption remain insufficient. Furthermore, the diet composition is not balanced all over the country and exposes households to nutrient deficiency.

Nutrient deficiency suggests a hidden hunger all over the country and it is manifest in micronutrient deficiencies.

Finally, to satisfy nutritional needs, the promotion of multi-stakeholder partnership in the food system is needed. It is important for stakeholders to understand that the government alone cannot be able to ameliorate the nutrition status of the population. International organisations, community-based organisations and social movement, non-governmental organisations, donors, researchers and academia, private and public sectors need to be involved in all the dimension of the food system. Programs to raise the awareness of the population about nutrition security should be encouraged.

Recommendation

Policies should to stimulate economic growth and lead to poverty reduction. Food policy should consider the aspect of nutrition-sensitive food systems. Any public campaigns or programs aimed to improve the nutritional status of the population should look at the nutrition composition of indigenous foods. Finally, nutrition security should be introduced in schools curriculum from primary school..

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