

- Objective:** Provide a geographical overview on the access to food and nutrition in the DR Congo in 2004-5
- Methods:**
 - Food price analysis
 - Dietary analysis

3. Data & challenges:

"1-2-3 Survey" (2004-5)

Size: 12 085 households (nationally representative)

1. Employment
2. Informal sector
3. Consumption → used for this analysis

Phase 3: Household consumption

- Track record of outlays: quantity x price = expenditure
- Size: 12 085hhs x 15d x 5exp/d ≈ 923 282 food purchases
- Problem: use of spatially diverse local selling units (*ekolo*, *sakombi*, etc.) → Extra teams to weigh/measure food purchases

Output:

Standardized price matrix (CF/kg) of 56 localities by 211 food items

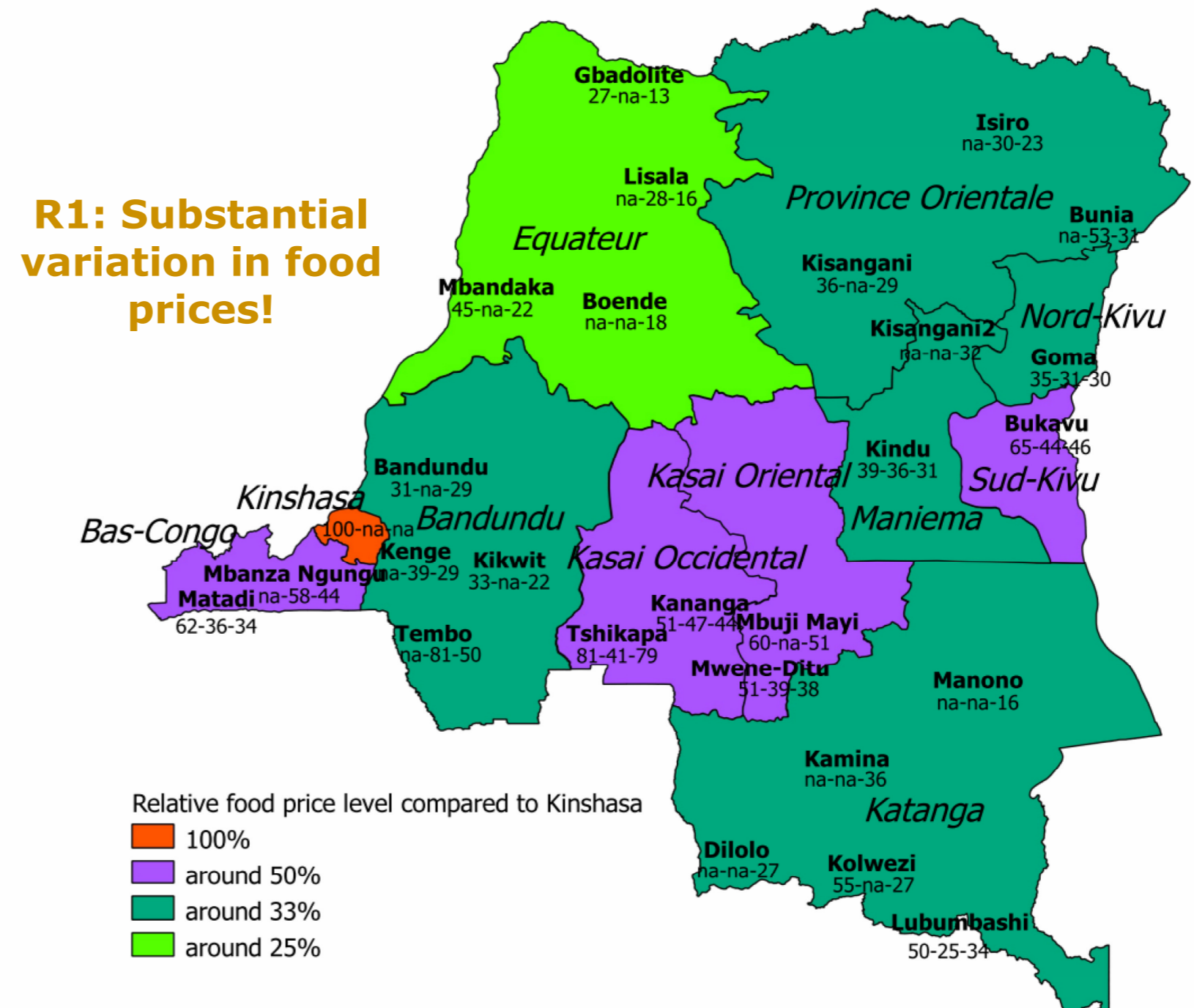
- Localities were derived by combining 26 pools and 3 sectors
- GEKS-Fisher price index:

Illustration of R1: Kinshasa

Table 2. Prices of top 10 food items consumed in Kinshasa

Food items	Food share	Mean standardized food prices (CF/kg) for Kinshasa and the 5 cheapest pools					
		Kinshasa	1st	2nd	3rd	4th	5th
1 Cassava flour	9.4%	439	36 Lisala	44 Lumb'shi	64 Kikwit	67 Dilolo	85 Kenge
2 Frozen fish (Mpodi)	8.7%	629	468 Matadi	629 Kinshasa	636 Bandundu	657 Kananga	701 Mbanza-N.
3 Import rice	7.7%	307	97 Goma ²	261 Matadi	286 Mbanza-N.	307 Kinshasa	318 Lumb'shi
4 Bread ('baguette')	7.0%	452	402 Mbanza-Ng.	410 Matadi	452 Kinshasa	474 Lumb'shi	552 Mbandaka
5 Maize flour	5.6%	281	50 Gbadolite	65 Lisala	65 Manono	75 Kolwezi	88 Lumb'shi
6 Palm oil	4.2%	255	57 Manono	62 Gbadolite	65 Isiro	70 Boende	75 Kikwit
7 Sugar (crystallized)	3.3%	388	289 Lumb'shi	369 Bandundu	369 Kolwezi	388 Kinshasa	399 Matadi
8 Dry corn (husked)	3.1%	143	46 Kolwezi	50 Kikwit	76 Lumb'shi	83 Bunia	89 Mwene-D.
9 Chicken (frozen)	2.9%	1346	1018 Matadi	1346 Kinshasa	---	---	---
10 Cassava leaves	2.6%	384	12 Mbandaka	13 Gbadolite	20 Lisala	24 Isiro	25 Kisangani
	54.5%						

Figure 1. EKS-Fisher food price index per pool and sector (big cities-small cities-villages: Kinshasa=100)



Source: Based on the 1-2-3 Survey (2004-5). The map itself has been created using Quantum GIS and geographic data coming from Africover.

Two minor exceptions of R1

Table 3. Prices of top 10 food items consumed in the urban sector of Kasai-Occidental and Kasai-Oriental

Food items	Food share	Prices Kasai (urban)			max/min	Prices DRC (urban)			max/min	diff. mean
		min	max	mean		min	max	mean		
1 Maize flour	25.6%	109	340	211	3.1	77	555	196	7.2	7.7%
2 Cassava flour	10.9%	102	310	185	3.0	44	439	183	9.9	0.8%
3 Palm oil	8.6%	187	786	544	4.2	65	816	382	12.6	42.6%
4 Fried sardines (Ndak)	5.7%	808	1996	1310	2.5	363	2396	1032	6.6	27.0%
5 Salted fish (Bitoyo)	3.8%	738	2701	1513	3.7	345	5944	1438	17.2	5.2%
6 Dry corn (husked)	3.5%	103	313	176	3.1	103	313	153	3.1	14.7%
7 Cassava leaves	3.2%	57	248	113	4.3	29	443	114	15.3	-1.2%
8 Frozen fish (Mpodi)	3.0%	657	1098	859	1.7	331	1992	833	6.0	3.1%
9 Multicolored beans	2.5%	272	800	466	2.9	175	800	405	4.6	15.0%
10 Sugar (crystallized)	2.2%	440	1246	697	2.8	289	1420	610	4.9	14.3%
	69.0%				3.1					

Note: For each food item, the minimum and maximum price estimates respectively refer to the cheapest and most expensive average price level observed over all pools concerned.

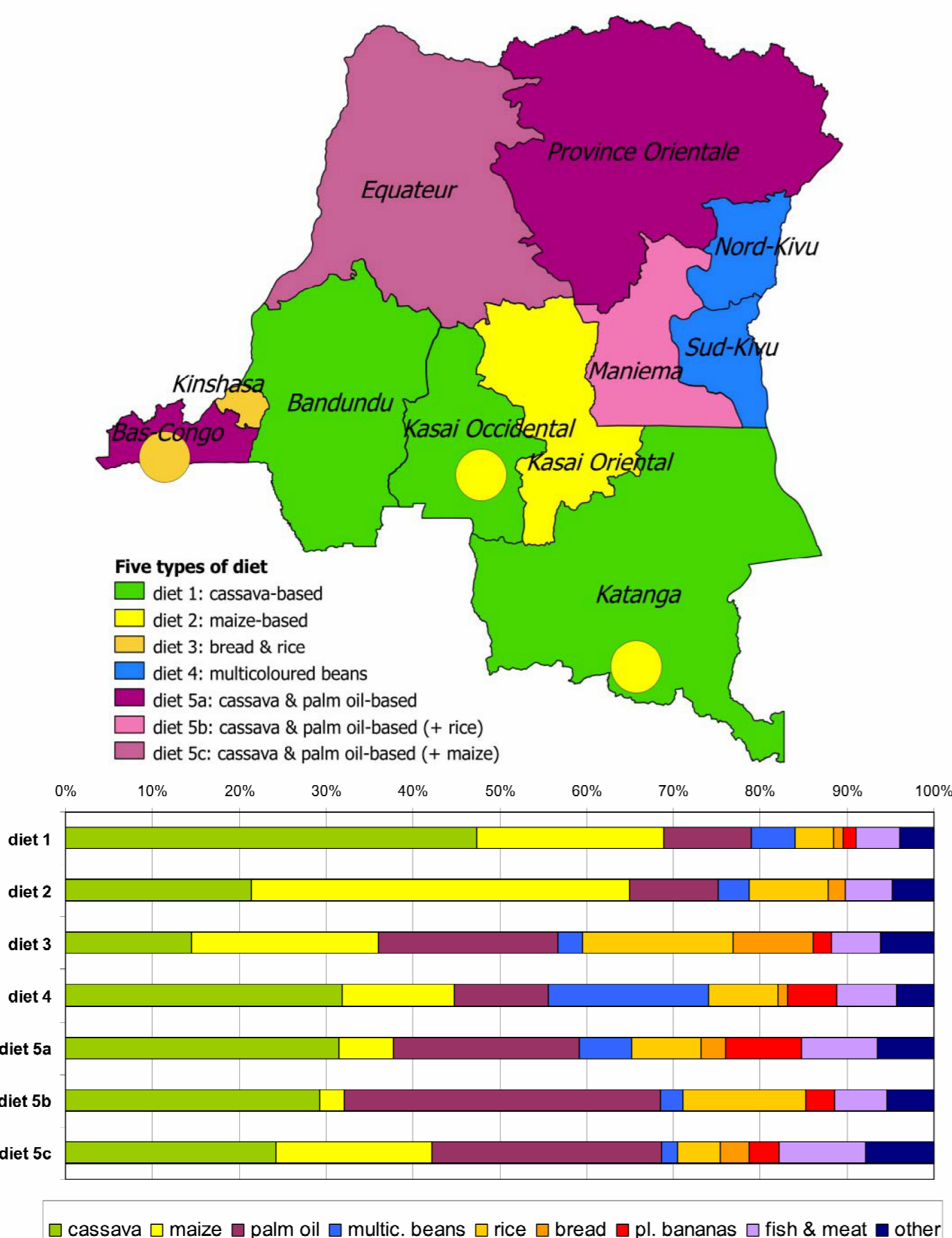
Table 4. Prices of top 10 food items consumed in the urban sector of North Kivu, Orientale and Maniema

Food items	Food share	Prices region (urban)			max/min	Prices DRC (urban)			max/min	diff. mean
		min	max	mean		min	max	mean		
1 Cassava flour	9.5%	128	206	167	1.6	44	439	183	9.9	-8.9%
2 Local rice	8.1%	226	417	327	1.8	144	491	313	3.4	4.6%
3 Palm oil	6.9%	65	621	233	9.6	65	816	382	12.6	-38.9%
4 Multicolored beans	6.1%	175	513	294	2.9	175	800	405	4.6	-27.4%
5 Beef with bone	4.1%	922	1030	962	1.1	838	2417	1228	2.9	-21.7%
6 Dried/smoked fish	3.9%	469	1842	851	3.9	285	2185	1009	7.7	-15.7%
7 Fresh fish	3.4%	642	1161	810	1.8	145	2784	759	19.2	6.7%
8 Salted fish (Bitoyo)	3.3%	448	1261	832	2.8	345	5944	1438	17.2	-42.1%
9 Cassava leaves	3.1%	34	443	131	13.1	29	443	114	15.3	15.0%
10 Sugar (crystallized)	2.7%	430	611	489	1.4	289	1420	610	4.9	-19.9%
	51.1%				4.0				9.8	-14.8%

Note: For each food item, the minimum and maximum price estimates respectively refer to the cheapest and most expensive average price level observed over all pools concerned.

R3: Five major diet types across the DRC

Figure 2. Spatial variation in diets across the country



Note: The composition of each diet is based on the relative caloric contribution of each of the display categories within the 20 most consumed food items.
Source: Based on the 1-2-3 Survey (2004-5).

Table 6. From real expenditure levels to calorie intakes per sector and province

	Daily mean expenditures ¹ (EKS, adult equi)		Mean non-food share (%)		Mean diet diversity ² (score on 7)		Daily mean calorie intake ³ (adult equi)	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Kinshasa	561	---	45%	---	5.81	---	1818	---
Bas-Congo	817	711	38%	31%	5.47	5.35	2212	3331
Bandundu	752	575	34%	29%	5.38	4.30	2511	2585
Équateur	876	898	33%	31%	5.52	5.08	3027	3593
Oriental	746	882	36%	26%	4.90	4.50	2156	3825
North Kivu	1359	782	45%	28%	4.89	3.98	2708	3408
Maniema	1202	992	29%	30%	4.83	4.45	3805	3472
South Kivu	583	429	40%	21%	5.27	4.41	1722	1427
Katanga	969	827	38%	26%	5.40	4.81	3256	3939
Kasai-Oriental	912	679	36%	30%	5.32	4.61	3077	2732
Kasai-Occidental	768	601	35%	30%	4.97	4.46	2690	2847
Total	784	737	40%	28%	5.44	4.60	2454	3186

Note: ¹ FAO/WHO/UNU dietary calorie reference: 2500 - 2900 - 3400. These daily expenditure levels are expressed per adult equivalent and controlled for regional price differences using the EKS-fisher food index as displayed in Figure 1.

² Inspired by Arimond and Ruel (2004:22-24), this diet diversity has been obtained by applying a seven-point score card to each household's food basket during a 3-day reference period.

³ For Kinshasa and Kikwit, the calorie intakes expressed per person are well in line with observations from other small budget surveys executed by PNUD-SOCOMEG (2000) and FAO (2002). On the contrary, for Lubumbashi and Kindu this similarity does not seem to hold (Tollens 2003:21-28).

Source: Based on the 1-2-3 Survey (2004-5).

$$P_F^{cd} = \left[\sum_{g=1}^N \sum_{s=1}^S \frac{p_g^d}{p_g^c} \right]^{-1} ; P_F^c = \left(\prod_{j=1}^M P_F^{1j} P_F^{jc} \right)^{\frac{1}{M}}$$

for all goods g observed in sector $j = 1, c, d, \dots, 56$

R2: Most competitive food producers are Équateur and North Kivu

Table 5. Lowest mean prices and origin of top 20 food items consumed in the DRC

Food items	Food share	Top 1		Top 2		Top 3	
		Province	Price	Province	Price	Province	Price
1 Cassava flour	11.6%	Katanga	98	Équateur	127	Bandundu	136
2 Maize flour	7.1%	Équateur	91	Katanga	109	Oriental	174
3 Palm oil	6.5%	Équateur	116	Maniema	176	North Kivu	219
4 Multicolored beans	3.9%	North Kivu	166	Katanga	221	South Kivu	271
5 Cassava leaves	3.2%	Équateur	32	North Kivu	46	Bandundu	56
6 Frozen fish (Mpodi)	2.9%	Katanga	494	Bas-Congo	597	Kinshasa	629
7 Dry corn (husked)	2.7%	Oriental	83	Katanga	89	Bandundu	96
8 Local rice	2.6%	Équateur	168	Bandundu	236	Équateur	245
9 Cassava chips	2.5%	Katanga	34	Kasai-Ori.	63	North Kivu	63
10 Import rice	2.4%	North Kivu	261	Bas-Congo	304	Kinshasa	307
11 Dried/smoked fish (other)	2.2%	Équateur	565	Maniema	607	Kinshasa	630
12 Fresh fish (other)	2.1%	Katanga	450	Équateur	512	Oriental	542
13 Salt	2.1%	North Kivu	212	Bas-Congo	282	Équateur	333
14 Sugar (crystallized)	2.1%	Kinshasa	388	North Kivu	452	Katanga	473
15 Fried sardines (Ndakala)	2.0%	North Kivu	353	Maniema	770	Équateur	770
16 Salted fish (Bitoyo)	1.9%	South Kivu	651	North Kivu	697	Oriental	984
17 Plantain bananas	1.8%	Bas-Congo	46	North Kivu	68	Équateur	77
18 Meat (other)	1.7%	Équateur	343	North Kivu	420	Kasai-Ori.	431
19 Cassava tuber	1.4%	Équateur	22	Bas-Congo	46	Oriental	47
20 Bread ('baguette')	1.3%	Bas-Congo	435	Kinshasa	452	Katanga	474

Source: Based on the 1-2-3 Survey (2004-5).

R4: Low overall calorie intake

R5: Cassava-palm oil diet most calorie nutritious

R6: Trade-offs:

- Calorie intake vs. non-food goods
- Nutritional quantity vs. quality

4. Further research:

- Econometric modelling:
 - Market integration models
 - Calorie intake = $f(Y, p, \text{diet}, \dots)$
- Check non-recording of food consumption