

THE FOOD SECURITY INDEX

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March 15, 1991

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FOOD INSECURITY – WHAT IT MEANS

What it means is that almost a third of the world's population lives in countries characterized by pervasive hunger. Close to a billion people live in households with inadequate diets, and almost half as many again live in situations of personal vulnerability associated with drought, civil disorder, famine and even starvation. Many individuals in these food insecure households – most often children and their mothers -- live in a lonely world of hunger, neglect and exhaustion.

What it means is that too many countries, too many households, too many individuals have inadequate access to food -- either because it simply isn't there or because they don't have the ability to acquire it. Too many countries fail to produce adequate supplies of food domestically or fail to earn the foreign exchange revenues necessary to buy it from the abundant world market. Too few households have incomes adequate to buy such supplies as may be available, or have resource bases too poor to support even subsistence farming, and too many households face unreasonably high and unstable food prices for the food they must purchase.

This is what we are talking about when we use the words "food insecurity". And because there is an almost insatiable demand to know which countries are food insecure--food insecure because of

- o inadequate production or import capacity,
- o insufficient incomes and assets or unstable food prices,
- o the absence of social structures to assure an ethical, equitable and cost-effective safety net,
- o unsustainable agricultural production and marketing practices, and
- o failures in weather or civil disorder

--we have tried to construct a simple index that takes the first three factors into account, as the starting point for understanding where we feel food insecurity is the most severe.

SUMMARY OF FINDINGS

The Food Security Index ranks 79 countries from most food insecure to relatively food secure. Countries are then grouped into three categories reflecting different generalized levels or degrees of relative food security. Readers are encouraged to identify particular countries with their corresponding category of food security rather than compare country

ranks. This is because the ranking methodology does not lend itself to such precise country-by-country comparison.

Most Food Insecure Countries: Thirty-seven developing countries were categorized as most food insecure. During the period 1985-87, these 37 countries contained over 1.4 billion people, or 28% of the world's 5 billion people. Of these countries, thirty are in Africa, four are in Asia, one is in the Middle East and two are in the Western Hemisphere. Countries suffering the most extreme food insecurity include: Mozambique, Somalia, Ethiopia, Sierra Leone, Chad, Guinea, Central African Republic, Bangladesh, Mali, Rwanda, Haiti, Burkina Faso, Yemen and Malawi.

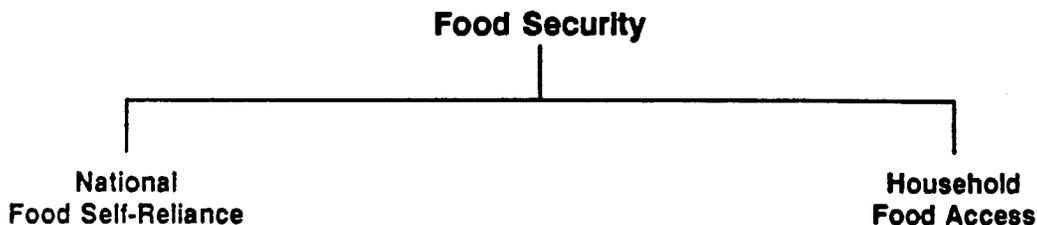
Relatively Food Secure Countries: At the other end of the food security spectrum, twenty-seven countries constitute the relatively food secure group. During the same three-year period, these 27 countries contained 650 million people, about 13% of the world's population. Of these countries, only four are in Africa and three in Asia; nine are located in Europe and the Middle East and eleven come from the the Western Hemisphere. Relatively food secure countries include: Hungary, Panama, Yugoslavia, Poland, Argentina, Korea, Paraguay, Malaysia, Turkey, Uruguay and Mexico.

Borderline Countries: Fifteen countries constitute a middle group because they are not obvious members of either the most food insecure or the relatively food secure. These 15 countries contained 370 million people, or about 7% of the world's total. Of these countries, three are in Africa, five are in Asia and seven are in the Western Hemisphere.

Note: Countries included in the analysis account for only about half of total world population because China and all the developed countries are not included.

THE FOOD SECURITY INDEX -- WHAT IT MEASURES

The Food Security Index is a composite index, combining effects at the national and household level. The national food self reliance (NFR) index, representing food security at the national level, ranks countries according to their capacity to supply enough food to meet domestic effective demand. The household food access (HFA) index, representing food security at the household level, ranks countries according to the ability of households in those countries to exercise effective demand over the food supply actually made available.

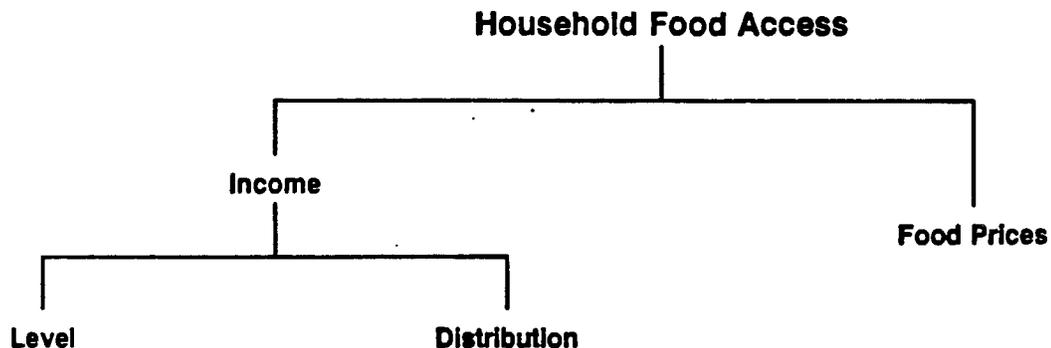


The *concept of food self reliance* has become a tenet of A.I.D.'s agricultural development strategy, embracing as it does a country's capacity to produce food for domestic consumption and its capacity to import commercially the food it cannot or does not want to produce domestically. Operationally, the national component of food security uses the socio-economic indicators of domestic food production and gross foreign exchange earnings to measure a country's capacity to supply enough food to meet household effective demand.



Food self reliance differs markedly from the concept of food self sufficiency. The latter relies solely on domestic food production to meet national food needs, thus rejecting the tenet of comparative advantage. Increasingly, development economists accept the self reliance concept because it represents a more effective and efficient strategy to attain food security and eliminate hunger, using the scarce investment resources and more plentiful land and labor usually found in developing economies.

The household component of food security draws upon the *concept of economic access to food* to measure households' ability to demand food. Economic access is conceived in terms of three major determinants: income levels, income distribution and food prices. Operationally, proxies for income distribution and food prices had to be found due to the paucity of such data for many countries. The proxies chosen were: child mortality for the distribution effect and average daily calorie supply for food prices.



Economic access is at the heart of A.I.D.'s increased emphasis on economic growth. Broad-based income and employment growth is an effective way to increase household economic access to food. Higher incomes translate into faster economic growth while the rapid creation of new employment opportunities broadly spreads these income increases. The other half of the economic access equation has to do with the price of food. Over the long term, productivity growth and more efficient food marketing will lower food prices; over the short term, a cost-effective safety net may be necessary to target lower prices to the lowest income groups; more efficient food import systems will help stabilize prices.

Relatively food secure countries are more self reliant in their ability to supply enough food, and households in these countries have better access to the food supplies made available. In contrast, the most food insecure countries lack the capacity to produce or import adequate food supplies, and many households in these countries are constrained in accessing the available food. Disruptive situations such as drought, floods and war are major contributing factors to the weak food security status of many countries.

DERIVING THE FOOD SECURITY INDEX

The Food Security Index uses five indicators of national and household level food security to rank seventy-nine developing countries from the least to the most food secure. Two of the indicators -- domestic food production and gross foreign exchange earnings -- measure national food security, what we call national food self reliance (NFR). Three of the indicators -- gross national product, daily calorie supply and child mortality -- measure household food security, what we call household food access (HFA). Unfortunately, four important food aid recipient countries -- Afghanistan, Angola, Cape Verde and Lebanon -- lack data for one or more of the five indicators used to compose the Food Security Index and had to be excluded from the statistical analysis.

The indicators are expressed in per capita terms so that countries with different populations can be compared (actually, four of the five indicators are expressed in per capita terms, the fifth as a rate per 1000). The five per capita indicators are "normalized"; that is, a simple statistical procedure is used to convert the per capita indicators into comparable index units. These comparable index units are aggregated into one index value that permits country-by-country comparisons. Note, however, that although the ranking methodology is statistically valid, reader focus on country-by-country comparisons of these index units can create a spurious impression of precision in the same way that country-by-country comparisons of country ranks can.

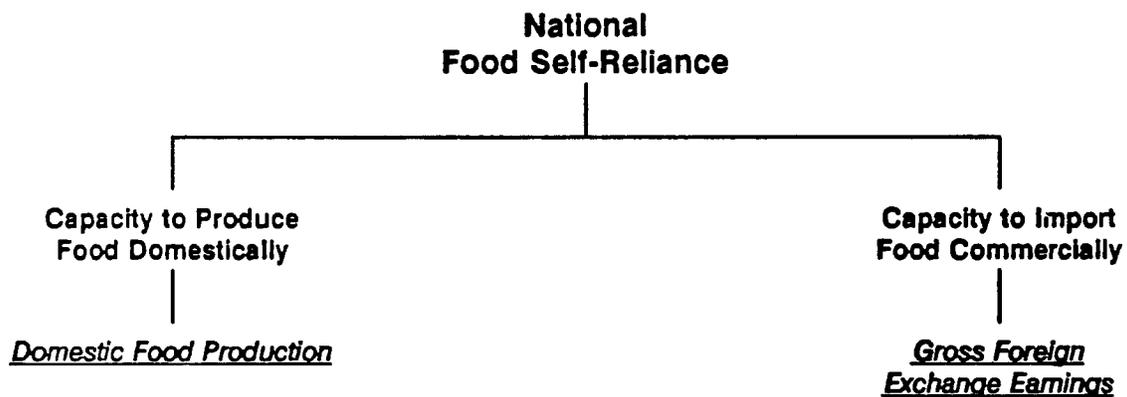
Each normalized indicator has a mean value of zero and a standard deviation of one. As a result, normalized indicators have approximately the same range and commensurate absolute values. In contrast, the absolute values and the range of values vary widely among the original indicators expressed in nominal per capita terms. Consequently, the nominal per capita values of the five indicators cannot be added together to compose a meaningful

index, whereas normalized indicators can. When normalized indicators are added, each indicator exerts an equal impact on the index value -- no indicators have wider ranges of values that swamp the effect of indicators with narrower ranges.

In aggregating the normalized values of the five indicators, some explicit weighting rule must be applied, even if that rule is simply to weight each indicator equally. The Food Security Index was aggregated in two stages. In the first stage, normalized per capita values of domestic food production and gross foreign exchange earnings were weighted equally to form the national food self reliance (NFR) index. Similarly, normalized per capita values of gross national product, daily calorie supply and child mortality were weighted equally to form the household food access (HFA) index. In the second stage, the two sets of index values are, themselves, normalized. These normalized index values are then weighted equally to form the composite Food Security Index.

INDICATORS of NATIONAL FOOD SECURITY

Countries that are food secure (i.e. food self reliant) at the national level have the capacity either to produce domestically the food they consume, or to import it.



Domestic Food Production per Capita: As used here, domestic food production includes cereal, tuber, pulse, banana and plantain production, and is measured in terms of grain equivalents. Of the cereals, rice is expressed in husked form. Tons produced of each non-cereal food commodity are converted to grain-equivalent tonnages, based on the relative calorie content of each food commodity compared to wheat, and these grain-equivalencies are then aggregated.

Overall food production is a better indicator of a country's capacity to produce food than partial measures such as cereal production. Although cereals account for over 80% of developing country food production, on average, many countries obtain a large portion of their nutritional input from tubers (in Africa) and plantains (in some Latin American

countries). A stable, expanding and more productive domestic food and agriculture sector remains a critical ingredient to food self reliance at the national level, albeit only half of the equation.

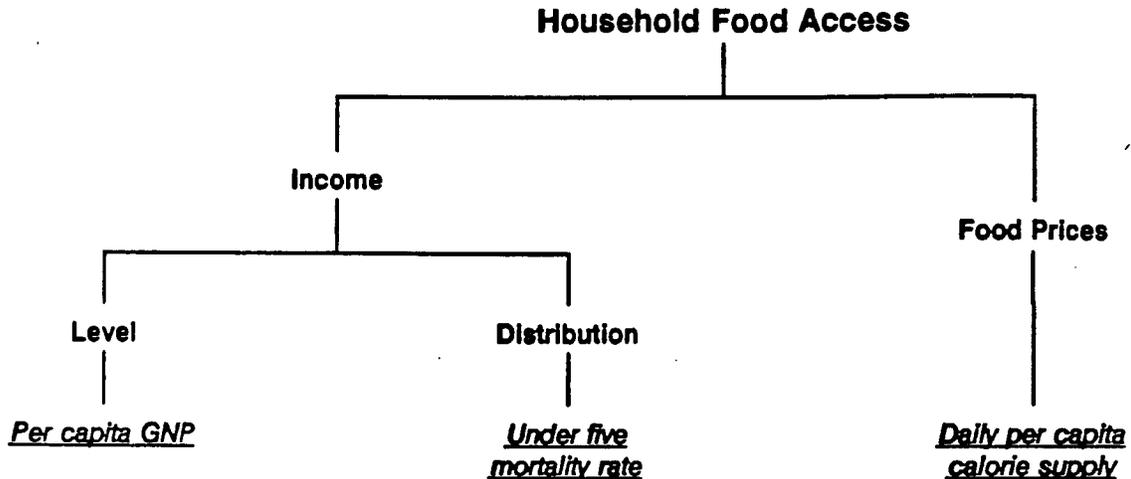
Gross Foreign Exchange Earnings per Capita: A country's capacity to import food constitutes the other important ingredient to national food self reliance. Import capacity depends on the country's ability to pay cash for food imports and on international lenders' willingness to extend credit to that country for food purchases. Gross foreign exchange earnings provides the most comprehensive measure of a country's ability to import, whether on a cash basis or through external borrowing. Alternatively, one could use a more direct measure of lender's willingness to extend credit, such as gross long- and medium-term loan disbursements or net financial flows that take interest and amortization payments into account. However, gross foreign exchange earnings provide an adequate measure of a country's ability to repay foreign loans, and thereby of lender willingness to extend credit.

Gross foreign exchange earnings are a better indicator of import capacity than merchandise exports, which leave out exports of services and transfer receipts, important elements of some countries' export earnings. However, if all goods and services exports are included in total foreign exchange transactions, should not official as well as private transfers also be included? Admittedly, a country's capacity to import is enhanced by the existence of official transfers. But since the purpose of the food security index is to identify the countries most in need of official transfers for food imports, including official transfers as an explanatory variable would amount to circular reasoning. Thus, gross foreign exchange earnings exclude official transfers.

Gross foreign exchange earnings also represent import capacity better than net trade figures do. In attempting to measure a country's 'discretionary' import capacity, gross foreign exchange earnings can be adjusted to a net concept by subtracting expenditures on critical imports like petroleum, and even debt service. But governments do not necessarily view petroleum imports or debt repayment obligations as any more critical than food imports.

INDICATORS of HOUSEHOLD FOOD SECURITY

Economic theory tells us that incomes and food prices determine households' economic access to food. Unfortunately, domestic food price data comparable across countries is simply not available, as is the case for income distribution data. Thus, household food security (i.e. food access) is defined in terms of average per capita incomes, per capita calorie availability and child mortality rates, the latter two being proxies for food prices and income distribution.



Gross National Product (GNP) per Capita: World Bank data indicate that an average developing country resident has about \$700 to spend in the cash economy each year compared to a resident of the developed world who has \$10,000, or 14 times more. Per capita GNP is a good, though imperfect, indicator of household income. There are, however, certain drawbacks to using GNP numbers:

- o official GNP figures, though adjusted for a few countries with grievously overvalued currencies, tend to overstate income levels in many countries where the currency is overvalued;
- o official GNP figures understate actual incomes in countries where a large portion of the population is employed in subsistence agriculture and only marginally involved in the cash economy; and
- o average income levels misrepresent the actual incomes of the poorest groups in countries with wide gaps between rich and poor.

Therefore, it is critical to include other indicators of household access to food that compensate for these drawbacks.

Daily per Capita Calorie Supply: Calorie consumption is generally recognized as the major determinant of adequate nutrition, although other factors such as vitamin and protein consumption are also important. The U.N. Food and Agriculture Organization has tentatively defined a minimum standard daily calorie requirement of 2300. However, minimum calorie requirements vary by country and depend on a number of factors, such as age and sex composition of the population and estimated "maintenance" needs of adults and adolescents. Instead of adopting a standard, the Food Security Index simply assumes that higher average daily calorie supply levels are better than lower ones. Like per capita income levels, average calorie supply says nothing about distribution, although it does avoid the first two pitfalls noted above for per capita GNP and may partially compensate for lack of food price data.

Child Mortality Rate: The United Nations International Children's Fund (UNICEF) estimates that 20-30 out of 100 children in many developing countries die before reaching their fifth birthday. In the developed world, child mortality is around 2-3 out of 100. Both infant (under one year of age) and child (under five years of age) mortality are sensitive indicators of health and sanitation conditions because the young are more vulnerable to such conditions. Child mortality is preferred to infant mortality as a determinant of food security because the one-through-four age group is more sensitive to nutritional deficiencies than are infants. Child mortality is included in the food security index as a proxy for distribution effects missed by per capita GNP and average daily calorie supply figures because higher child mortality rates are associated with a more unequal distribution of living standards, whether measured in terms of average income levels or average food consumption.

UNITS of MEASURE and SOURCES of DATA

Domestic Food Production per Capita: The volume of all cereal and non-cereal food commodities produced within a country's borders is measured in metric tons of annual grain-equivalent production. A three-year average production figure for the period 1985-87 is calculated, then divided by the average population over the same period, to obtain a per capita figure expressed in kilograms. Source: International Food Policy Research Institute data tapes, as of January 1990, based on data from the United Nations Food and Agriculture Organization (FAO).

Gross Foreign Exchange Earnings per Capita: The sum of a country's gross foreign exchange earnings -- merchandise exports, non-factor service exports, factor service receipts and private transfers -- are measured in dollar terms. A three-year average of gross foreign exchange earnings is calculated for the period 1985-87, then divided by the average population over the same period, to obtain a per capita figure expressed in dollars. A few countries lack export earnings data for 1987 (Cape Verde, Costa Rica, Ghana and Guyana), so a two-year average is used. Source: World Bank data tapes for the *World Tables*, as of August 1990.

Gross National Product per Capita: The annual market value of the total resources made available for use by a country, including final output of goods and services plus net factor payments from abroad, is divided by population. Figures expressed in dollars represent average GNP per capita over the three-year period 1985-87. Source: World Bank data tapes for the *World Tables*, as of August 1990.

Daily per Capita Calorie Supply: The calorie content of all foods available in-country, where food availability is defined as domestic food production plus food imports minus food exports, is calculated in average per capita daily terms for any given year. A three-year average per capita daily calorie availability figure is obtained for the period 1985-87 and expressed in kilocalories. Source: World Bank data tapes for *Social Indicators of Development 1990*, as of August 1990, although the World Bank obtains this data from the United Nations Food and Agriculture Organization data.

Child Mortality Rate: The annual number of deaths of children under five years of age, per 1000 children in that age group, is available for almost all countries. Average child mortality rates are calculated for the three-year period 1985-87 and are expressed in number of deaths. Source: United Nations International Children's Fund (UNICEF), *State of the World's Children*, 1987-89.

Table 1
FOOD SECURITY INDEX
COUNTRIES CATEGORIZED by DEGREE of FOOD SECURITY

Most Food Insecure Countries

Mozambique	Somalia	Ethiopia
Sierra Leone	Chad	Guinea
Central African Rep	Mali	Rwanda
Burkina Faso	Malawi	Mauritania
Guinea-Bissau	Sudan	Zaire
Ghana	Uganda	Benin
Gambia	Kenya	Lesotho
Zambia	Nigeria	Tanzania
Togo	Liberia	Bangladesh
Niger	Burundi	Nepal
Haiti	Senegal	Pakistan
Bolivia	Madagascar	India
* Angola	Yemen	* Afghanistan

Borderline Countries

Peru	Nicaragua	Sri Lanka
Honduras	Dominican Republic	Philippines
Cameroon	Guatemala	Papua New Guinea
Zimbabwe	El Salvador	Indonesia
Ivory Coast	Ecuador	Burma
* Cape Verde	* Lebanon	

Relatively Food Secure Countries

Colombia	Morocco	Guyana
Jamaica	Egypt	Chile
Brazil	Tunisia	Costa Rica
Mexico	Algeria	Uruguay
Paraguay	Jordan	Argentina
Swaziland	Turkey	Panama
Congo	Poland	Thailand
Botswana	Yugoslavia	Malaysia
Mauritius	Hungary	Korea

Note: * indicates four important food aid recipient countries that lack data for one or more of the socio-economic indicators used to calculate the food security index. Therefore, in an *ad hoc* manner, Afghanistan and Angola have been grouped with the most food insecure countries while Cape Verde and Lebanon have been included among the borderline countries.

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Table 2
Food Security Index
Countries in Order of Food Security Index Rank

Reg	COUNTRY	Household Food Access					National Food Self-Reliance				Food Security Index		Normalized Values
		GNP per capita	Daily Calorie Supply	Under5 Mortality Rate	rankings by		Food Prod per capita	Gross ForEx Earning per cap	rankings by		Food Security Index	rankings by	
					Indiv	norm			Indiv	norm			
		\$	kcalories	deaths	rank values	kg	\$	rank values	rank values	rank values	rank values	rank values	
AFR	Mozambique	180	1605	274	2	1	118	15	1	2	1	1	-1.2987
AFR	Somalia	160	1783	246	4	4	103	31	2	1	2	2	-1.1904
AFR	Ethiopia	120	1668	258	1	2	152	18	3	5	3	3	-1.1801
AFR	Sierra Leone	333	1828	290	7	3	135	45	4	4	4	4	-1.1395
AFR	Chad	153	1765	229	3	6	196	33	10	12	6	5	-0.9663
AFR	Guinea	350	1975	255	14	9	143	101	8	8	7	6	-0.9314
AFR	Central Africa Rep.	303	1880	229	12	10	171	74	11.5	11	9	7	-0.8951
ASIA	Bangladesh	157	1972	193	8	15	194	18	6	9	5	8	-0.8339
AFR	Mali	177	2055	298	6	5	269	50	45	39	18	9	-0.8158
AFR	Rwanda	297	1909	211	13	12	219	35	19.5	20	11	10	-0.7877
LAC	Haiti	337	2090	177	21	22	137	71	5	6	8	11	-0.7749
AFR	Burkina Faso	160	1917	241	5	7	263	56	45	37	17	12	-0.7633
EME	Yemen	583	2258	203	33	30	80	140	7	3	15	13	-0.7500
AFR	Malawi	157	2169	271	10	8	259	42	28.5	32	16	14	-0.7499
AFR	Mauritania	420	2329	224	32	23	66	241	17	7	22	15	-0.7263
ASIA	Nepal	163	1977	203	9	13	250	22	21	24	10	16	-0.7242
AFR	Guinea-Bissau	193	2098	229	11	14	257	22	22	28	12	17	-0.7093
AFR	Sudan	383	2033	184	18	18	192	49	11.5	13	13	18	-0.7085
ASIA	Pakistan	340	2190	171	28	28	184	67	13	14	20	19	-0.6264
AFR	Zaire	153	2100	167	15	20	222	64	26	23	19	20	-0.6207
ASIA	India	297	2121	155	24	27	218	22	9	18	14	21	-0.6068
LAC	Bolivia	440	2126	180	27	25	187	112	24	22	26	22	-0.5901
AFR	Ghana	383	2136	151	31	32	193	69	19.5	17	24	23	-0.5740
AFR	Uganda	227	2040	175	16	17	280	31	32.5	40	23	24	-0.5538
AFR	Benin	293	2133	190	19	19	246	84	47	34	29	25	-0.5490
AFR	Gambia	193	2321	281	17	11	283	147	59.5	50	39	26	-0.5406
AFR	Kenya	323	2117	118	29	35	181	87	17	16	21	27	-0.5367
AFR	Lesotho	380	2263	141	36	36	113	209	14.5	15	25	28	-0.5258
AFR	Zambia	290	2073	132	22	31	204	120	32.5	27	27	29	-0.5064
AFR	Nigeria	673	2136	179	35	33	217	91	30.5	26	31	30	-0.4898
AFR	Tanzania	260	2212	180	23	24	286	30	35	41	28	31	-0.4799
AFR	Togo	257	2179	158	25	29	220	140	48.5	36	34	32	-0.4666
AFR	Liberia	463	2343	182	37	34	165	217	27	31	33	33	-0.4605
AFR	Niger	250	2284	234	20	16	349	56	56	53	36	34	-0.4026
AFR	Burundi	250	2342	196	28	26	322	29	39.5	48	30	35	-0.3890
AFR	Senegal	430	2289	226	30	21	279	161	59.5	51	46	36	-0.3768
AFR	Madagascar	227	2282	126	34	37	273	42	39.5	38	35	37	-0.3641
LAC	Peru	1207	2189	129	43	47	138	166	17	19	32	38	-0.3076
AFR	Cameroon	907	2128	159	38	38	185	248	52	43	42	39	-0.2961
ASIA	Sri Lanka	403	2424	46	52	53	144	124	14.5	10	37	40	-0.2895

Most Food Insecure

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Table 2
Food Security Index
Countries in Order of Food Security Index Rank

Reg	COUNTRY	Household Food Access					National Food Self-Reliance				Food Security Index		Normalized Values
		GNP per capita	Daily Calorie Supply	Under5 Mortality Rate	rankings by indiv. norm		Food Prod per capita	Gross ForEx Earning per cap	rankings by indiv norm		rankings by Index norm		
					\$	kcalories			deaths	ranks		values	
LAC	Honduras	773	2126	113	40	41	178	221	39.5	35	40	41	-0.2795
LAC	Nicaragua	777	2374	101	50	49	189	99	23	21	41	42	-0.2637
LAC	Dominican Republic	737	2343	86	54.5	50	131	258	25	25	43	43	-0.2069
ASIA	Philippines	573	2249	76	46	45	224	154	54	42	50	44	-0.1761
LAC	Guatemala	1067	2282	106	49	51	194	151	39.5	29	45	45	-0.1741
ASIA	Papua New Guinea	700	2199	90	45	44	138	342	45	44	44	46	-0.1734
LAC	El Salvador	837	2382	89	59	52	156	233	30.5	30	47	47	-0.1480
ASIA	Indonesia	483	2581	123	47.5	46	263	109	56	46	52	48	-0.1288
ASIA	Burma	193	2520	93	41	43	347	10	28.5	49	38	49	-0.0886
AFR	Zimbabwe	567	2140	118	39	39	313	191	63	58	55	50	-0.0784
LAC	Ecuador	1117	2255	90	52	55	166	296	50	45	51	51	-0.0468
AFR	Ivory Coast	690	2461	152	44	42	227	333	64	56	61	52	-0.0225
AFR	Swaziland	710	2510	179	42	40	144	583	56	61	49	53	0.0365
LAC	Colombia	1290	2538	70	61	60	165	234	35	33	54	54	0.0789
EME	Morocco	587	2764	126	52	54	283	219	65	55	63	55	0.1191
EME	Egypt	633	3170	132	56.5	59	197	245	58	47	58	56	0.1213
AFR	Congo	990	2531	119	56.5	58	139	519	52	57	53	57	0.1546
LAC	Guyana	447	2424	40	54.5	56	257	333	67	59	64	58	0.1872
LAC	Jamaica	900	2555	24	64	61	50	674	39.5	54	57	59	0.3146
EME	Tunisia	1153	2836	101	60	62	210	446	62	60	65	60	0.4218
EME	Algeria	2603	2620	113	63	70	111	509	39.5	52	56	61	0.5146
LAC	Chile	1383	2556	26	68	65	239	452	69	63	70	62	0.5899
AFR	Botswana	960	2227	97	47.5	48	45	1191	48.5	70	48	63	0.5972
LAC	Brazil	1827	2678	89	65.5	67	362	202	68	62	67	64	0.6046
AFR	Mauritius	1277	2692	31	70	66	12	908	35	64	59	65	0.6154
ASIA	Thailand	817	2287	53	58	57	522	243	71	69	66	66	0.6698
LAC	Costa Rica	1537	2767	23	74	69	216	569	66	66	69	67	0.7895
EME	Jordan	1540	2836	62	70	68	36	1052	43	67	60	68	0.8747
LAC	Mexico	1947	3118	71	72	74	324	350	73.5	65	74	69	0.9179
LAC	Uruguay	1973	2719	32	73	73	357	515	76	68	75	70	1.0978
EME	Turkey	1137	3011	100	62	64	617	274	73.5	73	72	71	1.1657
ASIA	Malaysia	1883	2656	36	70	71	104	1140	52	71	62	72	1.1755
LAC	Paraguay	1027	2782	63	65.5	63	684	212	70	74	71	73	1.2017
ASIA	Korea	2593	2846	34	75.5	75	180	1081	61	72	68	74	1.5215
LAC	Argentina	2310	3201	39	75.5	76	827	303	75	75	76	75	2.1187
EME	Poland	1990	3384	20	77	77	866	417	77	76	77	76	2.3582
EME	Yugoslavia	2280	3586	30	78	79	684	824	78	77	78	77	2.5355
LAC	Panama	2173	2479	35	67	72	230	2775	72	78	73	78	3.2005
EME	Hungary	2067	3568	20	79	78	1412	1058	79	79	79	79	4.2924

Borderline

Relatively Food Secure

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Table 3
Food Security Index
Countries in Alphabetical Order

Reg	COUNTRY	Household Food Access					National Food Self-Reliance				Food Security Index		Normalized Values
		GNP per capita	Daily Calorie Supply	Under5 Mortality Rate	rankings by		Food Prod per capita	Gross ForEx Earning per cap	rankings by		rankings by Index norm		
					Indiv.	norm			Indiv	norm			
		\$	kcalories	deaths	rank	value	kg	\$	rank	value	rank	value	
EME	Algeria	2603	2620	113	63	70	111	509	39.5	52	56	61	0.5146
LAC	Argentina	2310	3201	39	75.5	76	827	303	75	75	76	75	2.1187
ASIA	Bangladesh	157	1972	193	8	15	194	18	6	9	5	8	-0.8339
AFR	Benin	293	2133	190	19	19	246	84	47	34	29	25	-0.5490
LAC	Bolivia	440	2126	180	27	25	187	112	24	22	26	22	-0.5901
AFR	Botswana	960	2227	97	47.5	48	45	1191	48.5	70	48	63	0.5972
LAC	Brazil	1827	2678	89	65.5	67	362	202	68	62	67	64	0.6046
AFR	Burkina Faso	160	1917	241	5	7	263	56	45	37	17	12	-0.7633
ASIA	Burma	193	2520	93	41	43	347	10	28.5	49	38	49	-0.0886
AFR	Burundi	250	2342	196	26	26	322	29	39.5	48	30	35	-0.3890
AFR	Cameroon	907	2128	159	38	38	185	248	52	43	42	39	-0.2961
AFR	Central Africa Rep.	303	1880	229	12	10	171	74	11.5	11	9	7	-0.8951
AFR	Chad	153	1765	229	3	6	196	33	10	12	6	5	-0.9663
LAC	Chile	1383	2556	26	68	65	239	452	69	63	70	62	0.5899
LAC	Colombia	1290	2538	70	61	60	165	234	35	33	54	54	0.0789
AFR	Congo	990	2531	119	56.5	58	139	519	52	57	53	57	0.1546
LAC	Costa Rica	1537	2767	23	74	69	216	569	66	66	69	67	0.7895
LAC	Dominican Republic	737	2343	86	54.5	50	131	258	25	25	43	43	-0.2069
LAC	Ecuador	1117	2255	90	52	55	166	296	50	45	51	51	-0.0468
EME	Egypt	633	3170	132	56.5	59	197	245	58	47	58	56	0.1213
LAC	El Salvador	837	2382	89	59	52	156	233	30.5	30	47	47	-0.1480
AFR	Ethiopia	120	1668	258	1	2	152	18	3	5	3	3	-1.1801
AFR	Gambia	193	2321	281	17	11	283	147	59.5	50	39	26	-0.5406
AFR	Ghana	383	2136	151	31	32	193	69	19.5	17	24	23	-0.5740
LAC	Guatemala	1067	2282	106	49	51	194	151	39.5	29	45	45	-0.1741
AFR	Guinea	350	1975	255	14	9	143	101	8	8	7	6	-0.9314
AFR	Guinea-Bissau	193	2098	229	11	14	257	22	22	28	12	17	-0.7093
LAC	Guyana	447	2424	40	54.5	56	257	333	67	59	64	58	0.1972
LAC	Haiti	337	2090	177	21	22	137	71	5	6	8	11	-0.7749
LAC	Honduras	773	2126	113	40	41	178	221	39.5	35	40	41	-0.2795
EME	Hungary	2067	3568	20	79	78	1412	1058	79	79	79	79	4.2924
ASIA	India	297	2121	155	24	27	218	22	9	18	14	21	-0.6068
ASIA	Indonesia	483	2581	123	47.5	46	263	109	56	46	52	48	-0.1288
AFR	Ivory Coast	690	2461	152	44	42	227	333	64	56	61	52	-0.0225
LAC	Jamaica	900	2555	24	64	61	50	674	39.5	54	57	59	0.3146
EME	Jordan	1540	2836	62	70	68	36	1052	43	67	60	68	0.8747
AFR	Kenya	323	2117	118	29	35	181	87	17	16	21	27	-0.5367
ASIA	Korea	2593	2846	34	75.5	75	180	1081	61	72	68	74	1.5215
AFR	Lesotho	380	2263	141	36	36	113	209	14.5	15	25	28	-0.5258
AFR	Liberia	463	2343	192	37	34	165	217	27	31	33	33	-0.4605

3/27/91

Table 3
Food Security Index
Countries in Alphabetical Order

Reg	COUNTRY	Household Food Access					National Food Self-Reliance				Food Security Index		Normalized Values
		GNP per capita	Daily Calorie Supply	Under5 Mortality Rate	rankings by indiv. norm		Food Prod per capita	Gross ForEx Earning per cap	rankings by indiv norm		rankings by index norm		
					rankings	values			rankings	values	rankings	values	
\$	kcalories	deaths			kg	\$			rankings	values			
AFR	Madagascar	227	2282	126	34	37	273	42	30.5	38	35	37	-0.3641
AFR	Malawi	157	2169	271	10	8	259	42	28.5	32	16	14	-0.7499
ASIA	Malaysia	1883	2656	36	70	71	104	1140	52	71	62	72	1.1755
AFR	Mali	177	2055	298	6	5	269	50	45	39	18	9	-0.8158
AFR	Mauritania	420	2329	224	32	23	66	241	17	7	22	15	-0.7263
AFR	Mauritius	1277	2692	31	70	66	12	908	35	64	59	65	0.6154
LAC	Mexico	1947	3118	71	72	74	324	350	73.5	65	74	69	0.9179
EME	Morocco	587	2764	126	52	54	283	219	65	55	63	55	0.1191
AFR	Mozambique	180	1605	274	2	1	118	15	1	2	1	1	-1.2987
ASIA	Nepal	163	1977	203	9	13	250	22	21	24	10	16	-0.7242
LAC	Nicaragua	777	2374	101	50	49	189	99	23	21	41	42	-0.2637
AFR	Niger	250	2284	234	20	16	349	56	56	53	36	34	-0.4026
AFR	Nigeria	673	2136	179	35	33	217	91	30.5	26	31	30	-0.4898
ASIA	Pakistan	340	2190	171	28	28	184	67	13	14	20	19	-0.6264
LAC	Panama	2173	2479	35	67	72	230	2775	72	78	73	78	3.2005
ASIA	Papua New Guinea	700	2199	90	45	44	138	342	45	44	44	46	-0.1734
LAC	Paraguay	1027	2782	63	65.5	63	684	212	70	74	71	73	1.2017
LAC	Peru	1207	2189	129	43	47	138	186	17	19	32	38	-0.3076
ASIA	Philippines	573	2249	76	46	45	224	154	54	42	50	44	-0.1761
EME	Poland	1990	3384	20	77	77	866	417	77	76	77	76	2.3582
AFR	Rwanda	297	1909	211	13	12	219	35	19.5	20	11	10	-0.7877
AFR	Senegal	430	2289	226	30	21	279	161	59.5	51	46	36	-0.3768
AFR	Sierra Leone	333	1828	290	7	3	135	45	4	4	4	4	-1.1395
AFR	Somalia	160	1783	246	4	4	103	31	2	1	2	2	-1.1904
ASIA	Sri Lanka	403	2424	46	52	53	144	124	14.5	10	37	40	-0.2895
AFR	Sudan	383	2033	184	18	18	182	49	11.5	13	13	18	-0.7085
AFR	Swaziland	710	2510	179	42	40	144	583	56	61	49	53	0.0365
AFR	Tanzania	260	2212	180	23	24	286	30	35	41	28	31	-0.4799
ASIA	Thailand	817	2287	53	58	57	522	243	71	69	66	66	0.6698
AFR	Togo	267	2179	158	25	29	220	140	48.5	36	34	32	-0.4666
EME	Tunisia	1153	2836	101	60	62	210	446	62	60	65	60	0.4218
EME	Turkey	1137	3011	100	62	64	617	274	73.5	73	72	71	1.1657
AFR	Uganda	227	2040	175	16	17	280	31	32.5	40	23	24	-0.5538
LAC	Uruguay	1973	2719	32	73	73	357	515	76	68	75	70	1.0978
EME	Yemen	583	2258	203	33	30	80	140	7	3	15	13	-0.7500
EME	Yugoslavia	2280	3586	30	78	79	684	824	78	77	78	77	2.5355
AFR	Zaire	153	2100	167	15	20	222	64	26	23	19	20	-0.6207
AFR	Zambia	290	2073	132	22	31	204	120	32.5	27	27	29	-0.5064
AFR	Zimbabwe	557	2140	118	39	39	313	191	63	58	55	50	-0.0784