



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Income and Diet Differences Greatly Affect Food Spending Around the Globe

**Birgit Meade and Stacey Rosen**  
(202) 219-0632 (202) 501-8445

**F**ood spending varies widely around the world. For example, residents of high-income countries spend an average of 16 percent of their income on food, compared with 35 percent in middle-income countries, and 55 percent in low-income countries. Household income, food prices, and the composition of diets greatly affect food expenditures. As incomes rise, a smaller share of expenditures is devoted to food, diets become more diverse, and caloric intake increases up to a point where satiation sets in. A closer look at these components helps us understand trends in food spending, consumption, and trade.

The share of private consumption expenditure (PCE) spent on food at home in a country mostly reflects the prosperity or poverty of that country's citizens, but it also hints at differences in diets. Some such differences can be explained by a country's geographic location and culture, while others are based on economic conditions, such as per capita income and food prices.

Food, an essential private expenditure to ensure a healthy life, is not the only important component. The greater the share of PCE spent on

food, the greater the "squeeze" on other essential items, such as health care, housing, education, and fuel.

This study examined 51 countries, home to 2.5 billion of the world's 5.8 billion people, to compare spending and consumption patterns and how they relate to income. International comparisons indicate that, in general, the richer a country is, the smaller the share of PCE its citizens spend on food (see box on private consumption expenditures). Of the countries included in this study, the United States spent the smallest

share of its PCE on food at home, only 9 percent, while Tanzania, with the lowest per capita income, spent the highest share, 71 percent.

The countries studied have been divided into three groups based on per capita gross domestic product (GDP) in U.S. dollars: high income (per capita GDP exceeding \$10,000), middle income (per capita GDP between \$700 and \$10,000), and low income (per capita GDP less than \$700). This grouping is used in the World Bank's 1995 *World Development Report*.

## Private Consumption Expenditures

The United Nations defines private consumption expenditure (PCE) as the sum of resident household spending and the spending of private nonprofit organizations. Resident household spending consists of expenditures on food, clothing, rent, fuel, furniture, household operation, medical care and health, transportation, communication, recreation and entertainment, education and cultural services, personal care, and other miscellaneous items.

Expenditures by private nonprofit organizations consist of spending on research and science, education, and medical, health, and welfare services by religious, profes-

sional, and labor organizations serving households.

Expenditure data are collected by countries and compiled by the United Nations in its System of National Accounts. Detailed data are available only for some high- and middle-income countries. For the low-income countries, World Bank data on food spending as a share of GDP and on PCE as a share of GDP were used by USDA's Economic Research Service to compute food spending as a share of PCE. These figures were used to calculate absolute spending in 1993 U.S. dollars on food for each country in the study.

The authors are agricultural economists with the Commercial Agriculture Division, Economic Research Service, USDA.

The high-income countries in the sample spend an average of 16 percent of their PCE on food, while the middle-income countries spend 35 percent, and the low-income countries spend 55 percent. Note that these numbers refer only to food consumed at home. Data on food eaten in cafeterias, restaurants, fast-food outlets, and other eating places are not available for some countries and were, therefore, not included. (For some countries, including the United States, spending on food eaten away from home is significant, amounting to one-third or more of total food spending.)

Within each income group, percentages differ considerably (table 1). Residents of Canada, Luxembourg, and the United Kingdom, like the United States, spend less than 12 percent of their PCE on food. Among the 24 countries in the high-income group, 5 spend more than 20 percent of their PCE on food, with the highest share held by Israel (22 percent).

For the 18 middle-income countries, the share of PCE spent on food ranges from a low of 26 percent in Thailand to a high of 55 percent in the Philippines. Among the 9 low-income countries, Tanzania, the poorest, devotes 71 percent of its PCE to food, closely followed by Nepal and Sierra Leone. The share of PCE spent on food exceeds 40 percent for all the low-income countries.

In most developing countries, food expenditure data do not capture the total amount of food available to the average household, because they exclude food grown for personal use in individual gardens and on subsistence farms. In low-income countries there is substantial home food production in rural areas, where an average of 73 percent of the population live. A study on Peru indicates that vegetables, meats, and dairy products are mostly produced at home, whereas cereals and oils are mostly purchased.

## Food Prices, Preferences, and Incomes Affect Food Spending

Differences in per capita income are the principal force behind differences in food expenditure shares. People with very low incomes are forced to spend most of their income on food simply to survive. As their incomes rise, they will almost always buy more and better food (see box for an exception to this rule). But as soon as basic food needs are satisfied, extra income will also be spent on other consumer goods, such as clothes or entertainment. While absolute spending on food may still increase, its share of total PCE will decline.

Within the same income group there are large differences in the share of PCE spent on food that can be attributed to differences in food prices and preferences for various food items. Food prices vary for a number of reasons. Efficient food production and marketing, favorable import conditions, and govern-

ment-provided food subsidies can reduce food prices. Because of efficiencies in meat production and marketing, for example, meat prices are lower in the United States than in other industrial countries. For decades, the industrial countries in the Northern Hemisphere have enjoyed low-priced tropical foods imported from Latin America and Africa. Food subsidies have helped to keep prices for meat and other basic foods relatively low in Russia, especially during the Soviet regime.

Differences in food preferences also dictate differences in per capita food expenditures. In the United Kingdom, for instance, only 12 percent of PCE is spent on food, compared with 18 percent in Italy. But a closer look at diets shows that potatoes—an inexpensive food item—are consumed four times as much in the United Kingdom as in Italy, and that Italians eat almost twice as much of other, more expensive vegetables and fruits. Per capita meat consumption is also higher in Italy than in the United Kingdom.

### Japan Is the Exception to the Rule

While rising incomes usually translate into the purchase of larger quantities of food, this is not always the case. Japan, the nation with the highest per capita GDP, is at the bottom of the high-income group when it comes to calorie consumption, with less than 2,900 calories per capita per day. On the other hand, Ireland has the highest calorie consumption—3,837 calories per capita per day—even though it is one of the poorest of the high-income countries. At the same time, both countries allocate a similar share of their PCE to food.

Even though Japan is wealthier than Ireland, its per capita consumption is almost one-quarter

lower. Part of this discrepancy can be explained by differences in diet. In Ireland, the amount of calories derived from animal products is twice as much as in Japan. Beef, pork, and butter, all high in fat (which contains more calories per gram than protein or carbohydrates), are particularly popular in Ireland, whereas the Japanese prefer fish and seafood, which have a lower fat content. Milk, another important source of calories, is consumed four times as much in Ireland as in Japan. Vegetable products, which consist mainly of carbohydrates, account for almost 80 percent of the Japanese diet but less than 70 percent of the Irish diet.

Table 1

**Poorest Countries Allocate Larger Share of Expenditures to Food Consumed at Home**

Country	Spending on food <sup>1</sup> as a share of private consumption expenditure <sup>2</sup>	GDP <sup>3</sup> per capita, 1993	Expenditure on food per capita per year, 1993	Cost per 100 calories	Average calorie consumption per capita per day, 1992
	Percent	U.S. dollars	U.S. dollars	U.S. cents	Calories
<b>High income:</b>					
Japan <sup>5</sup>	20.8	33,667	4,071	39	2,887
Switzerland <sup>4</sup>	18.2	32,919	3,547	29	3,381
Luxembourg	11.8	31,590	2,043	15	3,681
Denmark	15.7	26,077	2,147	16	3,664
United States	8.7	24,279	1,427	10	3,732
Norway	19.8	24,060	2,456	21	3,244
Germany <sup>4</sup>	18.3	23,679	2,513	21	3,340
Austria	16.8	23,159	2,146	17	3,502
Iceland	20.1	23,075	2,811	25	3,058
France	15.5	21,779	2,057	16	3,632
Sweden	14.3	21,320	1,674	15	2,972
Belgium	15.0	20,957	1,948	14	3,681
Singapore	17.0	20,486	1,500	13	3,198
The Netherlands	12.5	20,237	1,543	13	3,222
Hong Kong	13.5	20,004	1,550	14	3,125
Canada	10.5	18,982	1,211	11	3,092
Italy	17.6	17,356	1,890	15	3,549
Finland	15.9	16,629	1,503	14	3,017
Australia	14.5	16,444	1,493	13	3,179
United Kingdom	11.9	16,255	1,242	10	3,317
Ireland	20.6	13,495	1,555	11	3,837
Israel	22.1	13,362	1,750	16	3,050
New Zealand <sup>4</sup>	16.3	12,530	1,235	9	3,666
Spain <sup>5</sup>	21.3	12,122	1,633	12	3,705
<b>Middle income:</b>					
Cyprus	27.9	8,930	1,508	11	3,779
Republic of Korea <sup>5</sup>	33.6	7,497	1,373	11	3,285
Greece	30.7	7,053	1,572	11	3,814
Malta	30.5	6,766	1,252	10	3,480
Mexico <sup>5</sup>	33.7	4,064	968	8	3,177
Hungary	27.7	3,769	772	6	3,503
South Africa	30.3	2,882	526	5	2,703
Venezuela <sup>4</sup>	37.1	2,869	779	8	2,620
Russia <sup>6</sup>	38.4	2,214	397	4	3,071
Thailand	26.3	2,157	307	3	2,434
Algeria, 1990	35.7	1,862	364	3	2,897
Peru, 1980	41.6	1,796	584	9	1,882
Jamaica	37.5	1,696	405	4	2,607
Colombia	29.6	1,515	316	3	2,677
Ecuador	33.9	1,303	312	3	2,583
Guatemala, 1980	36.8	1,128	352	4	2,255
Philippines	55.3	839	344	4	2,255
Bolivia, 1980	43.3	762	267	3	2,100
<b>Low income:</b>					
Egypt, 1985	50.8	697	287	2	3,335
Honduras, 1985	40.3	629	177	2	2,306
Sri Lanka	47.2	578	204	2	2,271
Zimbabwe, 1985	45.1	526	153	2	1,985
India	50.8	279	97	1	2,394
Nepal, 1985	67.3	180	96	1	1,957
Sierra Leone	67.9	164	93	2	1,694
Ethiopia, 1985	51.8	118	52	1	1,610
Tanzania, 1985	71.0	85	49	1	2,018

Notes: Computed mainly from data provided by the United Nations (UN) System of National Accounts and World Bank data. Cost per 100 calories was calculated by converting annual into daily per capita food expenditures and then dividing by average daily per capita calorie consumption. Average daily calorie consumption from the UN Food and Agricultural Organization. GDP per capita expressed in 1993 U.S. dollars. <sup>1</sup>Includes nonalcoholic beverages. <sup>2</sup>Consumer expenditures for goods and services. <sup>3</sup>Proxy for income. <sup>4</sup>Food includes nonalcoholic and alcoholic beverages. <sup>5</sup>Food includes nonalcoholic and alcoholic beverages and tobacco. <sup>6</sup>These data were published by the Statistical Committee of the Commonwealth of Independent States (CIS), Moscow, 1995.

## Calorie Intake Is Below Recommended Levels in Many Countries

A high share of PCE spent on food does not necessarily translate into high consumption. Often quite the opposite is true. On average, the lower the share of PCE spent on food, the higher the daily per capita calorie consumption. While the United States has the lowest share of PCE spent on food, its per capita daily calorie consumption is one of the highest in the world—3,732 calories. High-income countries average 3,364 calories a day, 50 percent more than low-income countries, whose consumption as a group is less than 2,200 calories a day (fig. 1). This is only slightly more than the 2,100 calories the United Nations recommends as a minimum to sustain life without allowing for work or play, and it is less than the 2,300 calories that the U.S. Agency for International Development uses as a threshold level to determine food aid needs.

These recommended calorie levels represent guidelines for national averages and must not be confused with personal intake recommendations as provided by USDA for U.S.

consumers. The data on per capita calorie consumption are not actual intakes because they include food that was available but ended up being wasted. In high-income countries, some food ends up as trash; in low-income countries, food may spoil because of inadequate transportation and storage facilities.

The eight middle-income countries that have per capita GDP above \$2,800 average almost the same level of calorie consumption as high-income countries—close to 3,300 calories a day. However, four middle-income countries—Peru, Guatemala, the Philippines, and Bolivia—fall below 2,300 calories, even though the average for the middle-income group is near 2,800.

In the low-income group, only Egypt, Honduras, and India have per capita daily calorie consumption above 2,300 calories. Egypt's consumption of 3,335 calories per capita per day is extraordinarily high considering its yearly per capita GDP of \$697. This high value results from government subsidies that keep food prices low and provide a safety net for low-income people.

Almost 20 percent of the 51 countries studied have calorie consump-

tion below the suggested nutritional requirement of 2,300 calories. In Ethiopia, the average daily consumption in 1992 of 1,610 calories per capita was 30 percent below the threshold for nutritional requirements, even though the country received 1 million tons of cereals in food aid. Ethiopia's extremely low calorie consumption is reflected in all nutrition indicators. For example, in 1992, World Bank data showed almost half of Ethiopian children were underweight, and life expectancy at birth was 48 years. The Tanzanian population, despite allocating the highest proportion of their PCE on food, averages only 2,018 calories per capita per day. Malnutrition affects 28 percent of children under 5 years of age in Tanzania.

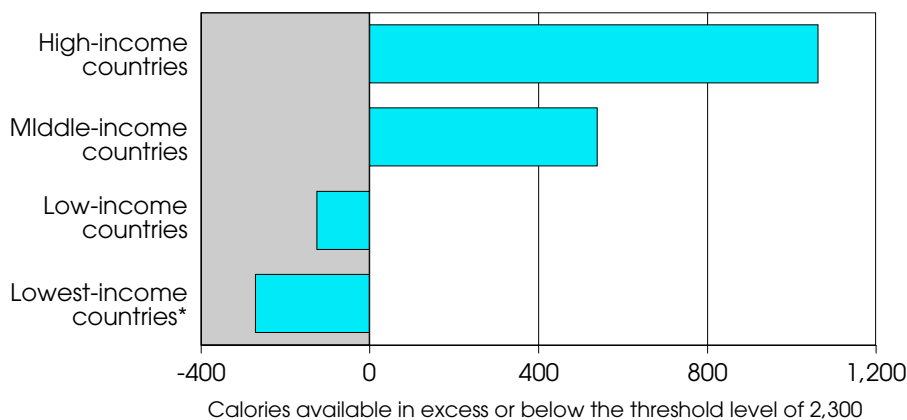
## Cost per Calorie Varies With Diets and Food Prices

Even though high-income countries spend a lower share of their PCE on food, the amount spent on food by these countries is much higher than by low-income countries. The Japanese spend an average of \$4,071 a year on food at home, more than 80 times the \$49 spent by Tanzanians. Yearly U.S. at-home food spending averages \$1,427.

Higher absolute spending on food translates into higher cost per calorie. High-income countries spend 16 cents per 100 calories on average—8 times as much as the cost in the low-income countries—while the per capita GDP in high-income countries is almost 60 times greater. In middle-income countries, the cost per 100 calories is 6 cents (fig. 2).

This large difference in cost per calorie results partly from differences in diets (table 2). High-income countries consume larger amounts of costly meat and fish, dairy products, and processed foods. France consumes the highest share of meat

Figure 1  
**Calorie Availability of Low-Income Countries Well Below Requirements**



Note: \*Excluding Egypt.



and fish, which account for 19 percent of daily calorie consumption. In the United States, meat and fish account for 16 percent of daily calories. Annual per capita meat consumption is only 40 pounds in Algeria and 89 pounds in Mexico,

nowhere near the 223 pounds in France or the 264 pounds in the United States.

Meats are not the only dietary difference among countries. People in Algeria and Mexico, for example, consume almost twice the amount of

cereals per capita that U.S. residents do, but only half the amount of vegetables. Milk consumption in the United States is 2.5 times that in Algeria and Mexico. Vegetable oils, a relatively expensive food item, are another important source of calories in high-income and middle-income countries. In contrast, cheaper cereals and root crops make up three-quarters of the daily diet in Tanzania, Nepal, and Ethiopia.

High costs per calorie can also result from high domestic food prices. For example, in Japan, high farm production costs, import tariffs, and manufacturers' traditional control of retail prices have contributed to food prices that are among the highest in the world. In Japan, rice (the main staple), as well as meat and fruit, are very expensive and constitute a large part of food spending. Moreover, converting the Japanese currency into U.S. dollars for comparison purposes results in higher prices in Japan due to the recent high value of the yen.

Figure 2

### Cost Per Calorie High, Relative to GDP, in Low-Income Countries

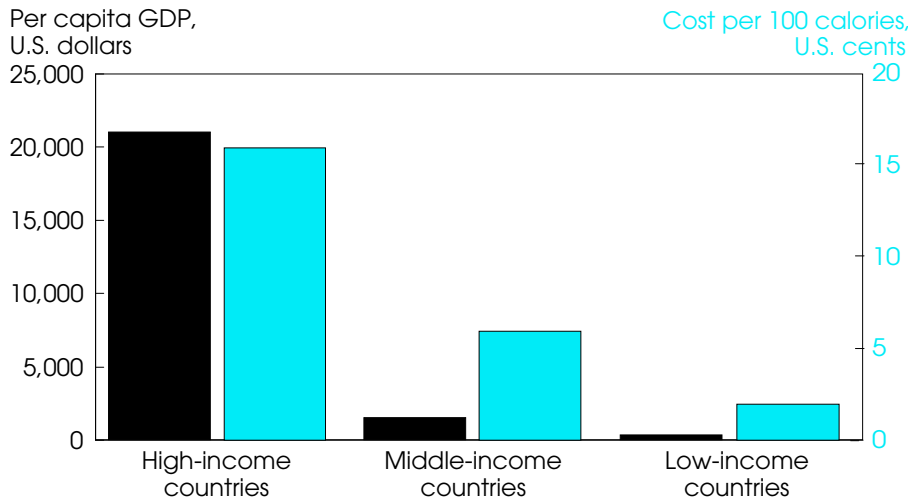


Table 2

### Grain Share of Diet Rises as Incomes Fall

Country	Cost per 100 calories	Average daily calorie consumption	Share of total calorie consumption from—			
	U.S. cents	Calories	Cereals and roots	Meat and fish	Vegetable-oil	Milk
<b>High income:</b>						
Japan	39	2,887	42	13	9	4
Switzerland	29	3,381	24	18	10	12
France	16	3,632	26	19	11	11
Ireland	11	3,837	32	13	11	11
Canada	11	3,092	25	16	13	8
United States	10	3,732	25	16	13	10
<b>Middle income:</b>						
Peru	9	1,882	51	7	7	4
Mexico	8	3,177	48	8	10	5
Algeria	3	2,897	58	3	13	6
Ecuador	3	2,583	40	6	20	5
<b>Low income:</b>						
Tanzania	1	2,018	69	4	5	2
Nepal	1	1,957	78	1	4	4
Ethiopia	1	1,610	74	3	3	2

## **Rising Incomes Key to Changes in Diets**

As incomes rise, low- and middle-income countries are likely to replace some of the cereals, roots, and tubers in their diets with high-value foods, such as meat, milk, vegetable oil, fruits, and vegetables. In low-income countries, the impact of this dietary change on health will be revealed most in decreasing numbers of malnourished children and underweight infants. In middle-income countries, the health of citizens is likely to improve because of more balanced diets that better supply important minerals and vitamins.

But as middle-income countries follow the path of high-income countries, they will also encounter

some of the negative consequences of excess consumption. For example, in the United States, one-third of adults are overweight. Eating too many calories, particularly from fat and saturated fats, is associated with a high prevalence of obesity and chronic diseases, such as coronary heart disease, hypertension, adult-onset diabetes, and some forms of cancer. In some developing countries, obesity is now becoming a health problem of not only the high-income, but also the middle-income groups.

Many people in the low-income countries continue to subsist on diets that are inadequate—in terms of both quantity and quality. Poverty is widespread. Growth in food production is low due to insufficient inputs, technology, marketing, and infrastructure. And, high population

growth allows for little or no improvement on a per capita basis. Added to these problems are political strife and ethnic warfare impeding food production, distribution, and consumption.

Low-income countries will have to increase agricultural production and raise the productivity and incomes of their people through investments in health services, education, and infrastructure. Greater agricultural production can be used for both domestic needs and exports, which in return can earn foreign exchange for essential imports. Higher incomes will stimulate demand for food and other goods and thus encourage continued food production and economic growth. ■