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MEASURING FOOD SECURITY IN THE UNITED STATES

**HOUSEHOLD FOOD SECURITY IN THE UNITED STATES  
1995 -- 1998 (ADVANCE REPORT)**

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Food and Nutrition Service

United States Department of Agriculture

July 1999

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The long-running expansion of the U.S. economy and the continuing strength of the nation's nutrition safety net has helped a large majority of American households achieve or maintain food security. Preliminary estimates indicate that during the 12 months ending in August 1998, 93 million U.S. households, or 89.8 percent of all households, were food secure. That is, they had access at all times to enough food for an active healthy life, with no need for recourse to emergency food sources or other extraordinary coping behaviors to meet their basic food needs. More than 230 million Americans lived in food-secure households during this period.

At the same time, about 10.5 million U.S. households (10.2 percent of all households) were food insecure, meaning that they did not have this same access to enough food to fully meet basic needs at all times. About 36 million persons lived in these food-insecure households, with children accounting for nearly 40 percent of this group.

Clearly, despite the great strength of the U.S. economy and the nation's nutrition

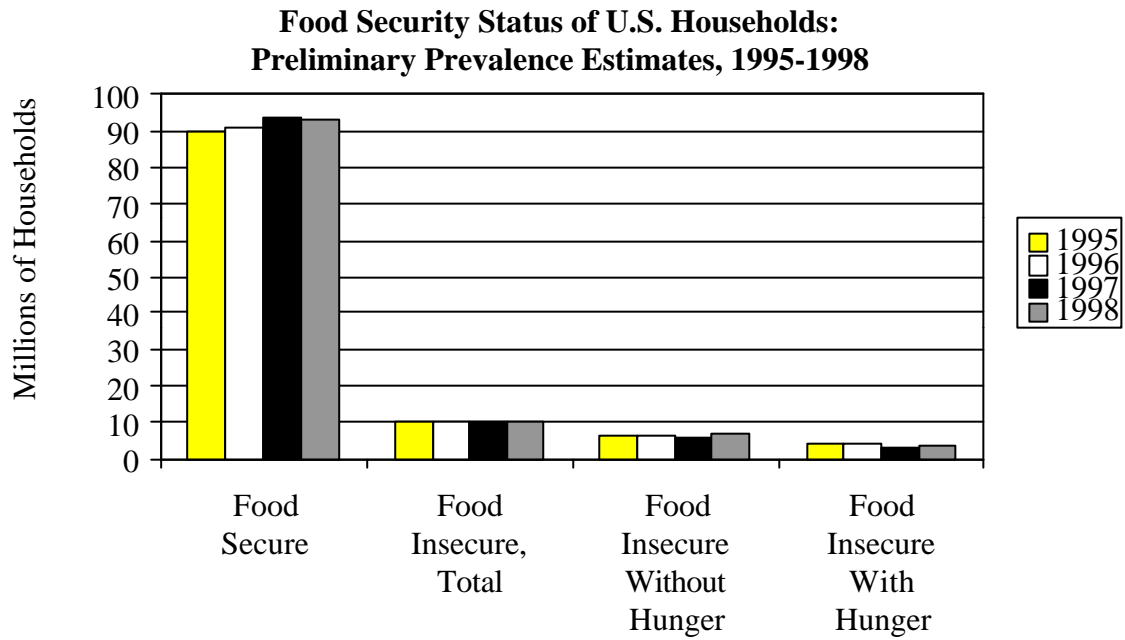
safety net, many American families and individuals still struggle to meet basic needs. Among the estimated 10.5 million households that experienced some degree of food insecurity in 1998, 3.7 million reached a level of severity great enough that one or more household members were hungry at least sometime during the period due to inadequate resources for food. Altogether, some 6.6 million adults and 3.4 million children lived in such households in 1998 (Figures 1 and 2).

Table 1 shows estimated prevalence levels based on comparable data and consistent methods applied across the four years between 1995 and 1998. The trend over the period shows the food security of U.S. households improving through 1997, then declining again in the 12 months ending in August 1998. Comparing the rates of U.S. food security (insecurity) between 1995 and 1998 shows virtually no overall change for the period as a whole. Food secure (insecure) households were 89.7 (10.3) percent of all households in 1995 and 89.8 (10.2) percent in 1998.

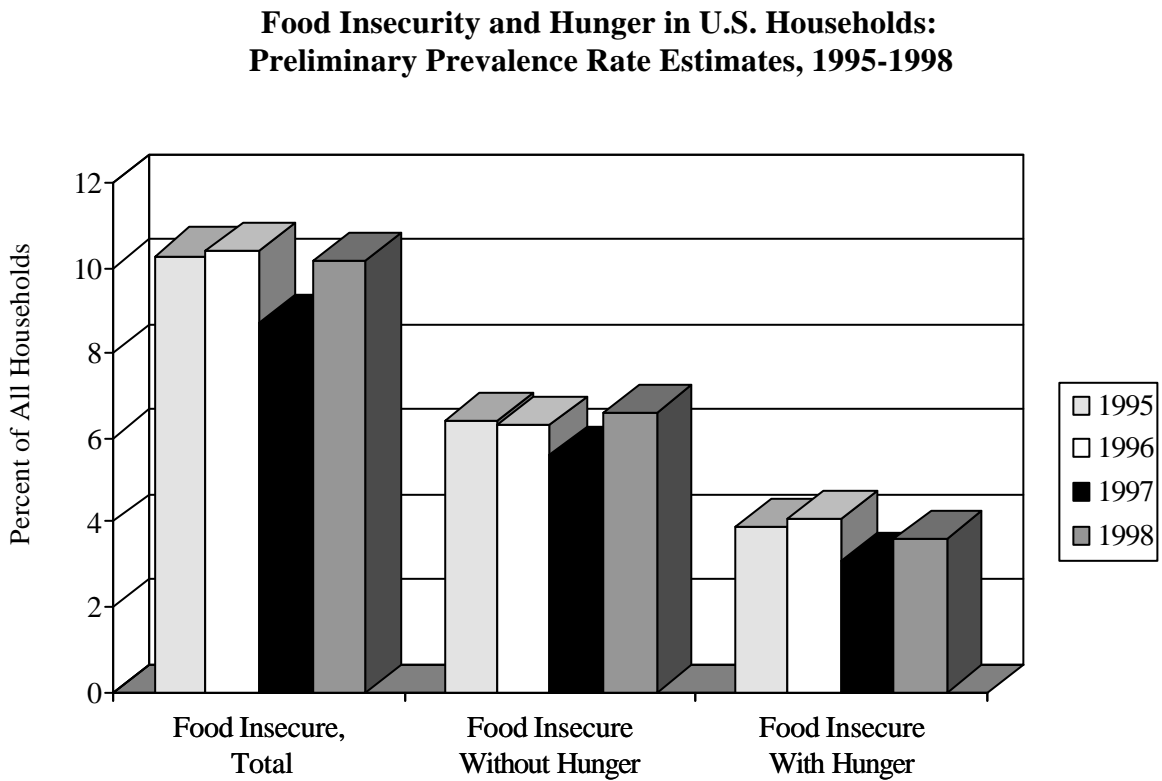
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This report was prepared by Gary Bickel and Steven Carlson of the Food and Nutrition Service and Mark Nord of the Economic Research Service. The data for 1995-1997 were prepared by James Ohls, Abhijay Prakash, Larry Radbill, and Allen Schirm of Mathematica Policy Research, Inc.; the 1998 data were prepared by Mark Nord. The information reported is based on data collected for USDA by the U.S. Bureau of the Census in the Food Security Supplement to the Current Population Survey of April 1995, September 1996, April 1997, and August 1998.

**FIGURE 1**



**FIGURE 2**



**TABLE 1**

**Preliminary Food Security Prevalence Estimates, 1995-1998**

	1995 a/ (000)	(%)	1995 b/ (000)	(%)	1996 b/ (000)	(%)	1997 b/ (000)	(%)	1998 b/ (000)	(%)
All U.S. Households	100,210	(100.0)	100,445	(100.0)	101,508	(100.0)	102,373	(100.0)	103,480	(100.0)
Food Secure	88,266	88.1	90,097	89.7	90,964	89.6	93,459	91.3	92,972	89.8
Food Insecure:	11,943	11.9	10,348	10.3	10,544	10.4	8,914	8.7	10,509	10.2
Without Hunger	7,783	7.8	6,402	6.4	6,407	6.3	5,760	5.6	6,820	6.6
With Hunger	4,160	4.2	3,946	3.9	4,137	4.1	3,154	3.1	3,689	3.6
Adult Members (total) and by Household Food Security Level:	190,550	(100.0)	191,063	(100.0)	193,608	(100.0)	195,180	(100.0)	196,972	(100.0)
Food Secure	169,590	89.0	172,862	90.5	175,003	90.4	179,420	91.9	174,761	88.7
Food Insecure:	20,997	11.0	18,200	9.5	18,606	9.6	15,761	8.1	22,210	11.3
Without Hunger	14,066	7.4	11,611	6.1	11,582	6.0	10,601	5.4	15,646	7.9
With Hunger	6,931	3.6	6,589	3.4	7,024	3.6	5,160	2.6	6,564	3.3
Child Members (total) and by Household Food Security Level:	70,160	(100.0)	70,279	(100.0)	71,172	(100.0)	70,948	(100.0)	71,296	(100.0)
Food Secure	56,480	80.5	58,048	82.6	58,218	81.8	60,589	85.4	57,252	80.3
Food Insecure:	13,689	19.5	12,231	17.4	12,953	18.2	10,359	14.6	14,044	19.7
Without Hunger	9,427	13.4	8,131	11.6	8,537	12	7,444	10.5	10,653	14.9
With Hunger	4,262	6.1	4,100	5.8	4,416	6.2	2,915	4.1	3,391	4.8

Source:

Estimates based on data from the April 1995, September 1996, April 1997, and August 1998 Food Security Supplement to the Current Population Survey, prepared by Mathematica Policy Research, Inc. and U.S. Department of Agriculture, Economic Research Service.

Notes:

a/ Estimates based on exact application of method reported in Hamilton et al., 1997a and 1997b.

b/ Consistent estimates across years, based on weighted data from samples that passed the least restrictive common screen in all years, and with imputed values for all missing items (present in < 2 percent of sample households).

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The more severe range of food insecurity reported here--the category of food insecure households with evidence of hunger among household members--followed a similar year-to-year trend, but over the period as a whole registered a decline in the prevalence of hunger among household members. In 1995, 3.9 percent of all households were food insecure with hunger while the comparable figure for 1998 was 3.6 percent.

The profile of household characteristics shown in Tables 2A-2D reveals the variation in rates of food insecurity and hunger in various household types. For example, the national rate of food insecurity in 1998 was exceeded substantially in high-risk groups such as single-woman headed households with children (31.9%), Hispanic and Black households generally (21.8 and 20.7 percent respectively), and households with incomes below the official poverty line (35.4%).

Overall, households with children experienced food insecurity at more than double the rate for households without children (15.2 versus 7.2 percent). Among households with children, only married-couple families showed a lower rate of food insecurity (9.6%) than the national average.

The prevalence of food-insecurity in central cities (14.2%) and rural areas (10.6%) substantially exceeded that of suburbs and other metropolitan areas outside central cities (7.6%). Regionally, the rate was higher in the South and West (11.1 and 12.2% respectively) and lower in the Midwest (7.7%).

This pattern of variation in prevalence of food insecurity across household types and characteristics is closely followed by the

variations observed in prevalence of hunger across household types. The national prevalence rate for hunger in 1998--present in 3.6 percent of all households--was exceeded by hunger prevalence among families headed by a single woman (10.4%), men living alone (5.6%), Black and Hispanic households generally (8.2 and 6.7 percent respectively), households below the poverty line (13.5%), central-city households (5.6%), and those in the South and West (4.0 and 4.2 percent respectively).

Below-average hunger prevalence occurred in households with elderly (1.8%), married-couple families with children (2.0%), White non-Hispanic households generally (2.5%), and households at or above 185% of the poverty line (1.2%).

### **Background**

This advance report of preliminary findings for the period 1995-1998 introduces the second installment in the annual series, *Measuring Food Security in the United States*. The series was inaugurated in September 1997 with the three-volume U.S. Department of Agriculture (USDA) report, *Household Food Security in the United States in 1995* (Hamilton et al., 1997a and 1997b; Price et al., 1997). Both the earlier and the present report utilize a new direct survey measure of the severity and extent of food insecurity and hunger among U.S. households due to lack of resources to obtain food. The measure was developed over several years by the Food Security Measurement Project, an ongoing collaboration among Federal agencies, academic researchers, and commercial and non-profit private organizations (Carlson, et al., 1999; Olson, 1999).

**TABLE 2A**

**1995 – Prevalence of Food Security, Food Insecurity, and Hunger  
by Selected Characteristics of Households**

	Total	Food Secure		Food Insecure:					
		(000)	(%)	All		Without Hunger		With Hunger	
				(000)	(%)	(000)	(%)	(000)	(%)
<b>All Households</b>	100,445	90,097	89.7	10,348	10.3	6,402	6.4	3,946	3.9
Adults in households	191,063	172,862	90.5	18,200	9.5	11,611	6.1	6,589	3.4
Children in households	70,279	58,048	82.6	12,231	17.4	8,131	11.6	4,100	5.8
<b>Household Composition</b>									
With Children < 6	18,003	14,955	83.1	3,047	16.9	2,149	11.9	898	5.0
With Children < 18	37,520	31,728	84.6	5,791	15.4	3,940	10.5	1,851	4.9
Married Couple Families	26,810	24,159	90.1	2,650	9.9	1,943	7.2	707	2.6
Female Head, No Spouse	8,811	5,975	67.8	2,836	32.2	1,784	20.2	1,052	11.9
Male Head, No Spouse	1,897	1,592	83.9	305	16.1	213	11.2	92	4.8
Other Households with Child *	663	544	82.1	120	18.1	52	7.8	68	10.3
With No Children < 18	62,925	58,369	92.8	4,556	7.2	2,461	3.9	2,095	3.3
More Than One Adult	36,777	34,864	94.8	1,914	5.2	1,137	3.1	777	2.1
Women Living Alone	15,161	13,728	90.5	1,433	9.5	798	5.3	635	4.2
Men Living Alone	10,325	9,214	89.4	1,092	10.6	475	4.6	617	6.0
Households With Elderly	23,776	22,598	95.0	1,178	5.0	731	3.1	447	1.9
Elderly Living Alone	10,069	9,505	94.4	565	5.6	319	3.2	246	2.4
<b>Race and Hispanic Ethnicity</b>									
White Non-Hispanic	78,100	72,334	92.6	5,766	7.4	3,588	4.6	2,178	2.8
Black Non-Hispanic	11,906	9,342	78.5	2,565	21.5	1,522	12.8	1,043	8.8
Hispanic**	7,753	6,008	77.5	1,745	22.5	1,132	14.6	613	7.9
Other Non-Hispanic	2,687	2,414	89.8	273	10.2	161	6.0	112	4.2
<b>Household Income-to-Poverty Ratio</b>									
Under 0.50	5,603	3,495	62.4	2,107	37.6	1,173	20.9	934	16.7
Under 1.00	15,924	10,791	67.8	5,133	32.2	3,064	19.2	2,069	13.0
Under 1.30	21,953	15,562	70.9	6,392	29.1	3,805	17.3	2,587	11.8
Under 1.85	32,182	24,130	75.0	8,051	25.0	4,910	15.3	3,141	9.8
1.85 and Over	58,400	56,634	97.0	1,766	3.0	1,169	2.0	597	1.0
Income Not Known	9,863	9,333	94.6	531	5.4	322	3.3	209	2.1
<b>Area of Residence</b>									
Inside Metropolitan Area ***	76,907	69,072	89.8	7,837	10.2	4,788	6.2	3,059	4.0
In Central City	24,701	21,197	85.8	3,505	14.2	2,132	8.6	1,373	5.6
Not In Central City	37,059	34,138	92.1	2,921	7.9	1,748	4.7	1,173	3.2
Outside Metropolitan Area	23,066	20,579	89.2	2,487	10.8	1,606	7.0	881	3.8
<b>Census Geographic Region</b>									
Northeast	19,491	17,804	91.3	1,687	8.7	1,049	5.4	638	3.3
Midwest	23,656	21,454	90.7	2,201	9.3	1,365	5.8	836	3.5
South	35,891	31,934	89.0	3,958	11.0	2,495	7.0	1,463	4.1
West	21,407	18,905	88.3	2,503	11.7	1,493	7.0	1,010	4.7

\*, \*\*, \*\*\* -- See End Notes

**TABLE 2B**

**1996 – Prevalence of Food Security, Food Insecurity, and Hunger  
by Selected Characteristics of Households**

Category	Total	Food Secure		Food Insecure:					
		(000)	89.6	All (000)	(%)	Without Hunger (000)	(%)	With Hunger (000)	(%)
<b>All Households</b>	101,508	90,964	89.6	10,544	10.4	6,407	6.3	4,137	4.1
Adults in households	193,608	175,003	90.3	18,606	9.6	11,582	5.9	7,024	3.6
Children in households	71,172	58,218	81.8	12,953	18.2	8,537	11.9	4,416	6.2
<b>Household Composition:</b>									
With Children < 6	17,560	14,526	82.7	3,034	17.2	2,105	11.9	929	5.2
With Children < 18	37,460	31,677	84.5	5,783	15.4	3,868	10.3	1,915	5.1
Married Couple Families	26,738	24,034	89.8	1,894	7.0	1,904	7.1	800	2.9
Female Head, No Spouse	8,721	5,987	68.6	2,733	31.3	1,735	19.0	998	11.4
Male Head, No Spouse	2,001	1,656	82.7	346	17.2	229	11.4	117	5.8
Other Household with Child *	736	600	81.4	137	18.6	99	13.4	38	5.1
With No Children < 18	64,048	59,287	92.5	4,760	7.4	2,538	3.9	2,222	3.4
More Than One Adult	37,806	35,790	94.6	2,016	5.3	1,122	2.9	894	2.3
Women Living Alone	14,961	13,471	90.0	1,490	9.9	789	5.2	701	4.6
Men Living Alone	10,545	9,426	89.3	1,119	10.6	529	5.0	590	5.5
Households With Elderly	24,087	22,882	95.0	1,205	5.0	766	3.1	439	1.8
Elderly Living Alone	9,760	9,188	94.1	572	5.8	352	3.6	220	2.2
<b>Race/Ethnicity of Households:</b>									
White Non-Hispanic	77,830	72,131	92.6	5,699	7.3	3,423	4.4	2,276	2.9
Black Non-Hispanic	12,083	9,386	77.6	2,697	22.3	1,670	13.8	1,027	8.4
Hispanic**	8,165	6,360	77.8	1,805	22.1	1,097	13.4	708	8.6
Other Non-Hispanic	3,430	3,088	90.0	342	9.9	217	6.3	125	3.6
<b>Household Income-to-Poverty Ratio:</b>									
Under 0.50	6,442	3,962	61.5	2,450	38.2	1,339	20.7	1,111	17.3
Under 1.00	14,548	9,456	65	5,093	35.0	2,930	20.1	2,163	14.8
Under 1.30	20,252	13,942	68.7	6,340	31.2	3,705	18.2	2,635	12.9
Under 1.85	32,814	24,551	74.8	8,264	25.1	5,004	15.2	3,260	9.9
1.85 and Over	57,123	55,385	96.9	1,738	3.0	1,077	1.8	661	1.1
Income Not Known	11,571	11,028	95.3	542	4.6	326	2.8	216	1.8
<b>Area of Residence:***</b>									
Inside Metropolitan Area	81,285	73,010	89.8	8,275	10.1	4,945	6.0	3,330	4.0
In Central City	26,262	22,664	86.3	3,597	13.6	2,123	8.0	1,474	5.6
Not In Central City	40,956	37,683	92.0	3,273	7.9	1,950	4.7	1,323	3.2
Outside Metropolitan Area	20,223	17,955	88.7	2,268	11.2	1,461	7.2	807	3.9
<b>Census Geographic Region:</b>									
Northeast	19,740	18,204	92.2	1,536	7.7	925	4.6	611	3.0
Midwest	24,132	22,046	91.3	2,089	8.7	1,273	5.2	813	3.3
South	35,792	31,543	88.1	4,249	11.8	2,612	7.3	1,637	4.5
West	21,811	19,171	87.7	2,673	12.2	1,596	7.3	1,077	4.9

\*, \*\*, \*\*\* -- See End Notes

**TABLE 2C**

**1997 – Prevalence of Food Security, Food Insecurity, and Hunger  
by Selected Characteristics of Households**

Category	Total	Food Secure		Food Insecure:					
		(000)	89.6	All (000)	(%)	Without Hunger (000)	(%)	With Hunger (000)	(%)
<b>All Households</b>	102,373	93,459	91.2	8,914	8.7	5,760	5.6	3,154	3.1
Adults in households	195,180	179,420	91.3	15,761	8.1	10,601	5.4	5,160	2.6
Children in households	70,948	60,589	85.4	10,359	14.6	7,444	10.4	2,915	4.1
<b>Household Composition:</b>									
With Children < 6	17,306	14,944	86.3	2,363	13.6	1,764	10.1	599	3.4
With Children < 18	37,497	32,681	84.1	4,816	12.8	3,437	9.1	1,379	3.6
Married Couple Families	26,323	24,333	92.4	1,989	7.5	1,503	5.7	486	1.8
Female Head, No Spouse	8,973	3,460	72.0	2,512	27.9	1,681	18.7	831	9.2
Male Head, No Spouse	2,201	1,887	85.7	314	14.2	252	11.4	62	2.8
Other Household with Child *	698	595	85.1	104	14.8	73	10.3	31	4.4
With No Children < 18	64,877	60,778	93.6	4,098	6.3	2,324	3.5	1,774	2.7
More Than One Adult	37,788	36,056	95.4	1,732	4.5	1,078	2.8	654	1.7
Women Living Alone	15,411	14,180	92.0	1,231	7.9	678	4.4	553	3.5
Men Living Alone	10,980	9,947	90.5	1,032	9.3	495	4.5	537	4.8
Households With Elderly	24,420	23,306	95.4	1,115	4.5	766	3.1	349	1.4
Elderly Living Alone	10,323	9,816	95.0	508	5.6	329	3.1	179	1.7
<b>Race/Ethnicity of Households:</b>									
White Non-Hispanic	78,021	73,311	93.9	4,711	6.4	2,914	3.7	1,797	2.3
Black Non-Hispanic	12,289	10,006	81.4	2,283	18.5	1,490	12.1	793	6.4
Hispanic**	8,384	6,755	80.5	1,628	19.4	1,167	13.9	461	5.4
Other Non-Hispanic	3,680	3,386	92.0	293	7.9	189	5.1	104	2.8
<b>Household Income-to-Poverty Ratio:</b>									
Under 0.50	6,206	4,085	65.8	2,121	34.1	1,312	21.1	809	13.0
Under 1.00	14,157	9,871	69.7	4,287	30.2	2,656	18.7	1,631	11.5
Under 1.30	20,158	14,812	73.4	5,346	26.5	3,359	16.6	1,987	9.8
Under 1.85	31,560	24,712	78.3	6,849	21.7	4,434	14.0	2,415	7.6
1.85 and Over	58,980	57,492	97.4	1,488	2.5	964	1.6	524	0.8
Income Not Known	11,833	11,255	95.1	385	3.2	362	3.0	213	1.8
<b>Area of Residence:***</b>									
Inside Metropolitan Area	82,005	75,001	91.4	6,704	8.1	4,436	5.4	2,568	3.1
In Central City	26,314	23,241	88.3	3,073	11.6	1,840	6.9	1,233	4.6
Not In Central City	41,354	38,591	93.3	2,764	6.6	1,832	4.4	932	2.2
Outside Metropolitan Area	20,369	18,458	90.6	1,911	9.3	1,325	6.5	586	2.8
<b>Census Geographic Region:</b>									
Northeast	19,897	18,342	92.1	1,556	7.8	972	4.8	584	2.9
Midwest	24,555	22,699	92.4	1,854	7.5	1,136	4.6	718	2.9
South	35,844	32,452	90.5	3,392	9.4	2,262	6.3	1,130	3.1
West	22,077	19,966	90.4	2,111	9.5	1,391	6.3	720	3.2

\*, \*\*, \*\*\* -- See End Notes

**TABLE 2D**

**1998 – Prevalence of Food Security, Food Insecurity, and Hunger  
by Selected Characteristics of Households**

Category	Total	Food Secure		Food Insecure:					
		(000)	(%)	All (000)	All (%)	Without Hunger		With Hunger	
				(000)	(%)	(000)	(%)	(000)	(%)
<b>All Households</b>	103,480	92,972	89.8	10,059	10.2	6,820	6.6	3,689	3.6
Adults in households	197,423	178,631	90.5	18,792	9.5	12,657	6.4	6,135	3.1
Children in households	71,463	59,090	82.7	12,373	17.3	9,114	12.8	3,259	4.6
<b>Household Composition:</b>									
With Children < 6	17,176	14,381	83.7	2,796	16.3	2,132	12.4	664	3.9
With Children < 18	38,178	32,365	84.8	5,812	15.2	4,216	11.0	1,596	4.2
Married Couple Families	26,415	23,873	90.4	2,542	9.6	2,019	7.6	523	2.0
Female Head, No Spouse	8,826	6,013	68.1	2,813	31.9	1,898	21.5	915	10.4
Male Head, No Spouse	2,167	1,832	84.5	336	15.5	225	10.4	111	5.1
Other Household with Child *	769	647	84.2	122	15.9	75	9.7	47	6.1
With No Children < 18	65,302	60,607	92.8	4,695	7.2	2,603	4.0	2,092	3.2
More Than One Adult	38,691	36,634	94.7	2,057	5.3	1,219	3.2	838	2.2
Women Living Alone	15,525	14,091	90.8	1,434	9.2	807	5.2	627	4.0
Men Living Alone	11,086	9,882	89.1	1,203	10.9	577	5.2	626	5.6
Households With Elderly	24,478	23,131	94.5	1,346	5.5	913	3.7	433	1.8
Elderly Living Alone	10,129	9,577	94.6	552	5.4	349	3.4	203	2.0
<b>Race/Ethnicity of Households:</b>									
White Non-Hispanic	78,294	72,700	92.9	5,594	7.1	3,650	4.7	1,944	2.5
Black Non-Hispanic	12,529	9,941	79.3	2,588	20.7	1,560	12.4	1,028	8.2
Hispanic**	8,721	6,823	78.2	1,898	21.8	1,313	15.1	585	6.7
Other Non-Hispanic	3,937	3,508	89.1	429	10.9	298	7.6	131	3.3
<b>Household Income-to-Poverty Ratio:</b>									
Under 0.50	5,205	3,187	61.2	2,018	38.8	1,202	23.1	816	15.7
Under 1.00	12,358	7,980	64.6	4,378	35.4	2,712	21.9	1,666	13.5
Under 1.30	18,018	12,261	68.0	5,757	32.0	3,630	20.1	2,127	11.8
Under 1.85	29,540	21,985	74.4	7,555	25.6	4,870	16.5	2,685	9.1
1.85 and Over	61,775	59,482	96.3	2,293	3.7	1,558	2.5	735	1.2
Income Not Known	12,165	11,505	94.6	660	5.4	391	3.2	269	2.2
<b>Area of Residence:***</b>									
Inside Metropolitan Area	83,189	74,824	89.9	8,364	10.1	5,361	6.4	3,003	3.6
In Central City	26,682	22,903	85.8	3,778	14.2	2,286	8.6	1,492	5.6
Not In Central City	42,196	38,969	92.4	3,227	7.6	2,178	5.2	1,049	2.5
Outside Metropolitan Area	20,291	18,148	89.4	2,142	10.6	1,458	7.2	684	3.4
<b>Census Geographic Region:</b>									
Northeast	19,635	17,852	90.9	1,784	9.1	1,161	5.9	623	3.2
Midwest	24,321	22,446	92.3	1,875	7.7	1,235	5.1	640	2.6
South	37,328	33,188	88.9	4,139	11.1	2,653	7.1	1,486	4.0
West	22,196	19,486	87.8	2,710	12.2	1,770	8.0	940	4.2

\*, \*\*, \*\*\* -- See End Notes



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In the National Nutrition Monitoring and Related Research Act of 1990, Congress recognized the need to bolster the scientific and data resources devoted to assessing nutritional well-being in the U.S. population. The Ten-Year Plan developed under the Act specified the following task, undertaken by the Food Security Measurement Project:

*Recommend a standardized mechanism and instrument(s) for defining and obtaining data on the prevalence of "food insecurity" or "food insufficiency" in the U.S. and methodologies that can be used across the NNMRR Program and at State and local levels.<sup>1</sup>*

Beginning in 1992, staff of the USDA Food and Nutrition Service (FNS) examined the existing research literature in the field, giving particular attention to the conceptual basis for measuring the severity of food-insecurity and hunger and to the practical problems of developing a survey instrument feasible for use in sample surveys at national as well as State and local levels.

In January 1994, FNS joined with the U.S. Public Health Service, Centers for Disease Control and Prevention National Center for Health Statistics (NCHS) in sponsoring a national Conference on Food Security Measurement and Research. The conference brought together leading academic experts and other private researchers with key staff of the concerned Federal agencies. The conference identified the consensus existing among researchers in the field as to the most appropriate conceptual basis for a national measure of food insecurity and hunger and reached working agreement as to the best operational form for implementing

such a measure in national surveys (USDA, 1995).

After extensive cognitive assessment, field testing, and analysis by the U.S. Bureau of the Census in collaboration with FNS and the interagency working group, a food security questionnaire was fielded by the Bureau as a supplement to the Current Population Survey (CPS) of April 1995.<sup>2</sup> Essentially the same CPS supplement was implemented again in September 1996, April 1997, August 1998, and April 1999. While maintaining the same content, a revised questionnaire design was introduced in August 1998 to reduce respondent burden and improve data quality.

In September 1995, a competitive contract was awarded to Abt Associates, Inc. to analyze the 1995 CPS food security data in a cooperative venture with FNS, the interagency working group, and other key researchers involved in developing the questionnaire.

The Abt team applied state-of-the-art scaling methods developed and used most widely in the educational testing industry to the CPS data. This work produced a measurement scale for the severity of deprivation in basic food needs as experienced in U.S. households, based on a core set of food-security indicators from the CPS data.<sup>3</sup> Extensive testing was carried out to establish the validity and reliability of the scale and its applicability across various household types in the broad national sample.

A second, categorical measure of food-security also was created, corresponding to four designated ranges of severity on the underlying near-continuous scale. Abt classified each survey household into one of these four categories based on its scale

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<sup>1</sup> See end notes.

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score, which in turn depends on the overall pattern of response by the household to a core set of 18 CPS food security questions. Attaching population weights supplied by the Census Bureau, Abt then estimated household prevalence levels for each of the four severity-range categories, designated as: food secure, food insecure without hunger, food insecure with moderate hunger, and food insecure with severe hunger (Hamilton et al., 1997a, 1997b and Price et al., 1997).

Following collection of the September 1996 and April 1997 CPS food security data, a second research contract was awarded to Mathematica Policy Research, Inc. (MPR) to carry out the following tasks:

- reproduce the earlier results obtained from the 1995 CPS data;
- replicate the 1995 analysis with the 1996 and 1997 data sets;
- assess the stability and robustness of the measurement model when applied independently to the separate data sets.

Beginning with the August 1998 CPS, the questionnaire format of the food security supplement was redesigned for improved screener efficiency and reduced respondent burden. Coincident with this redesign, the USDA Economic Research Service (ERS) assumed sponsorship of the Census Bureau's annual food-security data collection for USDA. ERS has analyzed the 1998 data, applying the procedures developed and established for USDA in the Abt and MPR research. The MPR findings, which will be presented in full in a forthcoming final report, establish the stability and robustness of the food-security measure over the 1995-

1997 period. The ERS work, which will be presented in a subsequent report, has found continuing stability of the measure in 1998.

### **Method**

The means by which the U.S. food-security scale measures the severity of food insecurity and hunger as experienced in American households has been described in several places (Hamilton et al., 1997a, 1997b; Andrews et al. 1998; Bickel et al. 1998; Carlson et al., 1999.) Briefly, in each household surveyed, the person most knowledgeable about the food eaten there is asked a series of questions about conditions and behaviors occurring for them over the past 12 months that are known to characterize households having difficulty meeting basic food needs. The household's overall pattern of responses to a validated set of 18 such questions, reflecting a wide range of severity of food insecurity, determines the food security status of the household. Each question specifies lack of money to buy food as the reason for the condition or behavior so that voluntary fasting or dieting to lose weight are not included in the measure.

The wide range of severity covered by the indicator questions is reflected in the widely differing proportions of households that affirm the various scale items (Table 3). For example, 12.8 percent of households in 1998 reported that they worried whether their food would run out before they got money to buy more, while less than 1 percent reported that adults went whole days without eating in 3 or more months because there wasn't enough money for food, and only 0.2 percent of households with children reported that children went whole days without eating sometime during the year. Comparable scale item response figures for 1995-1997 will be included in the final report for those

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years. (Full question wordings are presented in Hamilton et al. 1997a, Price et al. 1997, and Bickel et al. 1998.)

The preliminary results presented in this advance report are based on the CPS Food Security Supplement data for 1995-1998, edited to create consistency among data files for comparative analysis across the four years. Two sets of results are shown in Table 1 for 1995. The first column is comparable to the results reported in Hamilton et al. (1997a) and the second reflects the technical adjustments applied to establish consistency across the four years.

The main adjustment required for strict comparability of estimates was to apply common screening criteria to each year's data. In collecting the CPS food-security data, an initial screener is applied to higher-income households to avoid undue burden for households showing no preliminary signs of any food adequacy problem. In the 1996 and 1997 surveys, a similar screen was applied to lower-income households as well. The households screened out were deemed to be food-secure, based on negative responses to the broad initial screening questions. However, analysis of the 1995 data indicated that we should expect a small but non-trivial proportion of the low-income households screened out in 1996 and 1997 to be classified as food-insecure if they had been asked the full set of food-security indicator questions.

Thus, the 1996 and 1997 data under-represent somewhat the prevalence of food insecurity, while the 1995 and 1998 data,

which are nearly comparable as collected, provide more complete information.

In the present report, in order to achieve strict comparability across years, households in the 1995 and 1998 data are, in effect, subject to the 1996-1997 screening rules.<sup>4</sup> Those households that would be screened out under the more restrictive rules simply are deemed to be food secure. This method achieves cross-year comparability, but at the cost of understating the prevalence of food insecurity. For example, the best estimate of food-insecurity prevalence in 1998, using all data available, was 11.9 percent, while the estimate based on the more restrictive screening (Table 2D) was 10.2 percent. The estimated prevalence of hunger is less affected by the screening change. The full-data estimate for 1998 is 3.8 percent, compared with estimated prevalence of 3.6 percent based on the more restrictive screen.

For future data collections, continued use of the 1998/1999 screen is anticipated. Thus, food-security and hunger prevalence statistics based on the full data as collected will be directly comparable from 1998 onward, while the present report provides the bridging comparison from 1998 to the earlier years.<sup>5</sup>

Other technical refinements which were applied to each year's estimates presented in this report, and which produce slight variations from the original 1995 estimates, include: fitting the model to population-weighted rather than unweighted data; and revised treatment of item non-response (present in under 1% of sample households).

**TABLE 3**

**Food Security Scale Item Responses, 1995 and 1998 <sup>a/</sup>**

Scale Items <sup>b/</sup>	Percent of Households Affirming Item <sup>c/</sup>	
	1995	1998
<b>Household Items:</b>		
Worried food would run out before (I/we) got money to buy more	13.0	12.8
Food bought didn't last and (I/we) didn't have money to get more	10.6	10.8
Couldn't afford to eat balanced meals	10.0	9.1
<b>Adult Items:</b>		
Adult(s) cut size of meals or skipped meals	6.5	6.0
Respondent ate less than felt he/she should	6.3	5.7
Adult(s) cut size or skipped meals in 3 or more months	4.7	4.2
Respondent hungry but didn't eat because couldn't afford	3.1	2.6
Respondent lost weight	1.7	1.6
Adult(s) did not eat for whole day	1.5	1.3
Adult(s) did not eat for whole day in 3 or more months	1.1	0.9
<b>Child Items:</b>		
Relied on few kinds of low-cost food to feed child(ren)	13.2	13.6
Couldn't feed child(ren) balanced meals	8.7	8.4
Child(ren) were not eating enough	4.8	4.4
Cut size of child(ren)'s meals	2.0	1.6
Child(ren) were hungry	1.7	1.1
Child(ren) skipped meals	0.8	0.8
Child(ren) skipped meals in 3 or more months	0.6	0.5
Child(ren) did not eat for whole day	0.2	0.2

**Source:** Current Population Survey Food Security Supplement, April 1995 and August 1998.

**Notes:**

a/ Item response frequencies weighted to population totals. All estimates are based on least restrictive common screen, 1995-1998.

b/ The actual wording of each item includes explicit reference to resource limitation, e.g., "because (I was/we were) running out of money to buy food," or "because there wasn't enough money for food."

c/ Households not responding to item are excluded from the denominator. Households without children are excluded from the denominator of child-referenced items.

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## Caveats

- The preliminary findings presented in this advance report are based on application of a consistent methodology to the 1995, 1996, 1997, and 1998 data sets. Analysis of all these data sets is still in progress for presentation in subsequent final reports. These ongoing analyses may produce further refinements to the prevalence estimates for these years, or in their form of presentation. Consequently, final estimates may differ in minor detail from those presented in the present report.
- The measure of children in food-insecure households with hunger is not, as such, a valid estimate of the number of children directly experiencing hunger, but a rather wide upper-bound for this figure. In most households, children present are shielded from food deprivation until the level of deprivation among adult members is quite severe. Work is currently under way to develop a more accurate estimate of children's hunger from the CPS data.
- Other sources of possible estimation bias in the prevalence estimates presented include: the omission of homeless persons from the CPS household-based sample, probable underreporting bias of unknown size, and a potential over-estimation bias resulting from the highly skewed distribution of households across the range of severity measured by the scale.

## Notes:

<sup>1</sup> Task V-C-2.4, U.S. Department of Health and Human Services and U.S. Department of Agriculture: Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program. Federal Register 1993, 58:32 752-806.

<sup>2</sup> The Current Population Survey is a representative national sample of approximately 50,000 households conducted monthly by the U.S. Bureau of the Census for the U.S. Department of Labor, Bureau of Labor Statistics. Its primary purpose is to monitor labor force participation and employment in the nation and each of the 50 states. The CPS also collects specialized supplementary data each month sponsored by various Federal agencies. USDA plans to collect the Food Security Supplement on a regular annual basis, alternating between the April and September CPS.

<sup>3</sup> The food security scale reported here is based on the Rasch measurement model, an application of maximum likelihood estimation in the family of Item Response Theory models (Wright, 1977, 1983). These statistical measurement models were developed in educational testing, where test items vary systematically in difficulty and the overall score measures the level of difficulty that the tested individual has mastered. In the present application, the severity of food insecurity recently experienced by household members is analogous to the level of test difficulty that an individual has mastered.

<sup>4</sup> Other minor differences in the screening criteria used in different years also exist. As a result, the common screen applied in the four years is actually somewhat more restrictive than the screen applied in any single year, representing the least restrictive screening rules that could be applied uniformly across all four years.

<sup>5</sup> The bridging comparison between 1998 and earlier years will be presented by detailed breakdown in a future full report.

### Notes to Tables 2A - 2D.

\* Households with children in complex living arrangements, e.g., children of other relatives or unrelated roommate or border.

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\*\* Hispanics may be of any race.

\*\*\* Subtotals do not add to metropolitan totals because central city residence is not identified for some areas. Households not identified as to area were 0.88 percent of all households.

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