

## Appendix A: Definitions

### *Farm household income and our adjustment*

The total income of farm operator households includes income from both farm and nonfarm sources.

Consistent with the Census Bureau's definition of self-employment income, we define farm income to the household as net cash farm income less depreciation (adjusted for the share received by the primary operator household in the case of multiple-household farms). Most farm households receive some off-farm income, including off-farm wages and salaries, the net income of any off-farm businesses, interest and dividends, and any other off-farm cash income received by household members including cash assistance from government programs. Farm household income defined in this manner can be compared with nonfarm household income from the Current Population Survey to determine the need for a safety net in agriculture.

In determining costs associated with the four safety nets, we adjusted farm household income to ignore both farm business losses and depreciation.

Depreciation is added back into farm income, and any farm reporting a negative farm income has its farm income set to zero. While this adjusted income is not consistent with the Census Bureau's household income definition, we expect that a safety net would not compensate farmers for expected future replacement of depreciable assets nor would it make up for past losses. In addition, these types of compensation (as well as many others) are treated as part of Federal income tax reporting. This analysis attempts to measure safety net costs on a pre-tax basis. A safety net would most likely provide a moderate amount of support to meet current needs. These adjustments obviously increase farm income on average, but they also have differing effects on the income of farms by typology group and region. Farm household income data are from the U.S. Department of Agriculture's Agricultural Resource Management Study (ARMS), described in more detail in the "Data Sources" section below.

### *Farm proprietors' hourly earnings*

For the comparison of farm to nonfarm proprietors' earnings and for the earnings safety net analysis, we estimated hourly earnings for the approximately 700,000 farm operators who identified farming as their primary occupation and were established as sole pro-

prietorships. While all the safety net analyses omitted retired farmers and their households, the analysis also omitted residential lifestyle farmers since they do not consider farming as their primary occupation. Very large family farms were also excluded from analysis since many of the farms have multiple operators and more complex compensation programs. Hourly earnings were estimated as the retained earnings of the operator divided by the number of hours worked by the operator during the year. Retained earnings represent the amount of cash income left over after paying all cash expenses and compensating any household labor other than the operator. Hourly earnings were rounded to the nearest \$.50 and farmers were ranked from lowest to highest earnings for the comparison of the distribution of farmers by earnings with the distribution of nonfarm proprietors by earnings.

### *Nonfarm household income*

Household income is defined by the Census Bureau as the sum of money income received by all persons 15 years old and over in the household. Sources of money income include wages and salaries, proprietors' net earnings, unemployment compensation, workers' compensation, social security, supplemental security income, public assistance, veterans' payments, survivor benefits, disability benefits, pension or retirement income, interest and dividends, rents, royalties, estates, trusts, educational assistance, alimony and child support, financial assistance from outside of the household, and any other sources of cash income. We used the March Supplement to the 1998 Current Population Survey to estimate the 1997 income of nonfarm households. We identified nonfarm households as those in which no household member reported farm proprietor's earnings. Nonfarm household income data are used to assess the need for a farm household safety net shown in figure 1.

### *Nonfarm proprietors' hourly earnings*

For the comparison of the distributions of farm and nonfarm proprietors' hourly earnings and to set the earnings safety net standard used in scenario 4, we calculated nonfarm proprietors' earnings as follows. Using data from the March Supplement to the 1998 Current Population Survey, we selected persons who reported a nonfarm proprietorship as their only job. We then divided the amount of net nonfarm proprietors'

earnings they reported by the result of multiplying the usual hours they worked per week by the number of weeks they worked in 1997. Usual hours and weeks worked are reported in the CPS for all jobs held, which necessitated the selection of those working only as a nonfarm proprietor. The distribution of these hourly earnings is compared with the distribution of

farm proprietors' hourly earnings in the section on the need for a safety net. For the earnings safety net standard, we used the median amount of hourly earnings (\$10) per nonfarm proprietor. The Consumer Price Index was used to adjust this 1997 median to appropriate values in the other years analyzed.

## Appendix B: Methodology

### Scenario 1—Median household income

Scenario 1 uses an income standard equal to median U.S. household income in each region, based on 1995 county median household income estimates from the Census Bureau (see the Data Sources section below for additional detail). We weighted the county medians by the number of households in each county to accurately represent their contributions to regional income. Annual estimates of the number of households by county are not available for recent years, so we multiplied the number of households in each county in 1990 according to the Census of Population by the county population growth rate from 1990 to 1996 to obtain a 1996 estimate of households. We used the 1996 estimate of households to weight the 1995 median incomes to be consistent with both the Census of Population and the March Current Population Survey, which collects income information based on the year prior to interview.<sup>1</sup> We then calculated the weighted average median income in each farm typology region. The regional household income standards used in the median household income safety net scenario are shown below. The 1995 amounts were adjusted using the Consumer Price Index to appropriate values for the other years in the analysis.

#### **Estimated median household income, 1995 dollars**

Heartland	37,255
Northern Crescent	39,756
Northern Great Plains	36,140
Prairie Gateway	35,098
Eastern Uplands	30,982
Southern Seaboard	36,053
Fruitful Rim	36,123
Basin and Range	35,380
Mississippi Portal	28,666

### Scenario 2—185 Percent of the Poverty Line

Scenario 2 is based on an income threshold equivalent to 185 percent of the poverty line for a family of four. In 1997, the weighted average poverty threshold for this size of family was \$16,400, according to the Office of Management and Budget's official poverty

<sup>1</sup> The estimation process is consistent with both the Census of Population and the March Current Population Survey, which measure household characteristics at the time of interview and prior year income data.

thresholds; 185 percent of this poverty line was \$30,340 (see "Data Sources" section below for more details on the poverty thresholds). Weighted average poverty thresholds for a family of four for the years of the analysis, 1993-97, are listed below:

1993	\$14,763
1994	\$15,141
1995	\$15,569
1996	\$16,036
1997	\$16,400

The 1997 amount was adjusted using projections of the Consumer Price Index to appropriate values for 1999-2003.

### Scenario 3—Average Adjusted Expenditures

Scenario 3 uses an income threshold based on average U.S. household expenditures from the Consumer Expenditure Survey (see the "Data Sources" section below for more detailed information on the survey). Expenditures consist of the transaction costs, including excise and sales taxes, of goods and services acquired during the interview or recordkeeping period. U.S. household expenditures averaged \$33,797 in 1996, including costs for food, housing, apparel and services, transportation, health care, entertainment, and other expenses such as insurance and personal items. Housing and transportation expenditures incurred by farm households, however, are about half those incurred by other U.S. households. To reflect this fact, we adjusted average U.S. household expenditures to \$25,863. This adjustment does not imply that farm households spend less on housing and transportation than other households, but that some of these expenses are commingled with the farm business.

### Scenario 4—Median Hourly Earnings of Nonfarm Self-employed:

For scenario 4, we use a standard equivalent to the median hourly earnings of persons who reported a nonfarm proprietorship as their only job. Based on data from the March supplement to the 1997 Current Population Survey, we determined that the median hourly earnings of the nonfarm self-employed were \$10 in 1997 (see "Data Sources" section below for additional details on the survey).

### ***Agricultural Resources Management Study***

The ARMS is conducted annually by the Economic Research Service (ERS) and the National Agricultural Statistics Service (NASS) in all States except Alaska and Hawaii. The survey was formerly named the Farm Costs and Returns Survey (FCRS). For the 1997 calendar year, approximately 15,000 farms and ranches (defined as establishments from which \$1,000 or more of agricultural products were sold or would normally be sold during the year) were contacted and their operators personally interviewed during February and March of 1998. The ARMS is a probability-based survey in which each respondent represents a number of farms of similar size and type. Thus, sample data can be expanded using appropriate weights to represent all farms in the contiguous United States.

Estimates based on an expanded sample differ from what would have occurred if a complete enumeration had been taken. However, a measure of sampling variability is available from survey results. The relative standard error (RSE) is the standard error of the estimate represented as a percentage of the estimate. We question the reliability of an estimate when the RSE exceeds 25 percent, and data users should use caution when interpreting items reported with RSE's of this magnitude or higher. Visit the ERS website at <http://www.econ.ag.gov/briefing/fbe/sf/sf2.htm> for more information on this survey.

### ***Current Expenditure Survey***

The Consumer Expenditure Survey (CES) is a national probability sample of households designed to provide information on the buying habits of American consumers, including data on their expenditures, income, and consumer unit characteristics. The survey is conducted by the Bureau of the Census under contract with the Bureau of Labor Statistics (BLS). The data are collected in independent quarterly interview and weekly diary surveys of approximately 5,000 sample households. Each survey has its own independent sample and questionnaire, and each collects data on household income and socioeconomic characteristics. The interview survey includes monthly out-of-pocket expenditures such as housing, apparel, transportation, health care, insurance, and entertainment. The diary survey includes weekly expenditures for frequently purchased items such as food and beverages, tobacco,

personal care products, and nonprescription drugs and supplies. Data from both surveys are integrated into annual published reports. The 1996 CES was used to calculate the average U.S. household expenditures used in scenario 3. Visit the BLS website at <http://stats.bls.gov/csxhome.htm> for more detailed information on the survey.

### ***Current Population Survey***

The Current Population Survey (CPS), conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics, provides detailed information on the labor force, employment, unemployment, and demographic characteristics of the U.S. population. The CPS derives estimates based on monthly interviews of a national sample of about 47,000 households that are representative of the U.S. civilian noninstitutional population 15 years of age and over. In March each year, the CPS includes a supplement that asks questions on sources and amounts of money received during the previous calendar year. Data from the 1998 March supplement were used to calculate 1997 nonfarm household income used in scenario 1 and nonfarm proprietors' hourly earnings used in scenario 4. For more information on this data source, visit the BLS website at <http://www.bls.census.gov/cps/cpsmain.htm>.

### ***County Income Estimates***

Small area income and poverty estimates are made by the Bureau of the Census for states, counties, and school districts on a periodic basis for years between the decennial censuses. The most recent county household income estimates are for 1995 and were used in this report to estimate median household income in nine farm regions. Detailed information on how the Bureau makes the county estimates can be found on its website at: <http://www.census.gov/hhes/www/saibe/documentation.html>.

### ***Poverty Thresholds***

Following the Office of Management and Budget's Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to ascertain who is poor. If a family's total income is less than that family's threshold, then that family, and every individual in it, is considered poor. The poverty thresholds do not vary geographically, but they are

updated annually for inflation with the Consumer Price Index-Urban (CPI-U). The official poverty definition counts money income before taxes and excludes capital gains and noncash benefits (such as public housing, Medicaid, and food stamps). The weighted average

poverty thresholds for a family unit of four were used to calculate the 185 percent of poverty measure used in scenario 2. For additional information about poverty thresholds visit the Bureau of Census website at: <http://www.census.gov/hhes/www/poverty.html>.

**Appendix table 1—Results for median household income safety net by resource region**

	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	MS Portal
<b>1993</b>									
Number of farm households	377,518	282,443	85,453	236,736	259,952	198,394	172,398	64,966	81,161
Households below threshold	186,590	123,771	49,339	111,452	150,548	94,604	72,925	32,054	47,360
Cost (\$million)	2,753	2,033	793	1,767	2,772	1,586	1,305	428	528
<b>1994</b>									
Number of farm households	415,483	247,374	99,636	231,828	262,852	183,577	172,126	60,626	73,690
Households below threshold	181,800	139,588	37,508	118,124	142,944	89,245	75,583	28,123	35,405
Cost (\$million)	3,001	2,459	640	2,528	2,319	1,719	1,439	465	621
<b>1995</b>									
Number of farm households	392,692	266,900	84,357	238,276	275,595	179,916	171,155	66,779	61,261
Households below threshold	151,880	110,534	46,568	106,947	142,132	98,847	69,205	28,641	28,209
Cost (\$million)	2,577	1,767	825	1,873	2,480	1,910	1,467	463	501
<b>1996</b>									
Number of farm households	339,080	216,811	69,948	236,288	273,263	170,556	176,246	54,712	104,525
Households below threshold	154,362	121,170	30,072	112,763	165,969	91,136	105,828	20,506	81,033
Cost (\$million)	2,656	1,979	514	1,758	3,030	1,600	2,364	295	1,333
<b>1997</b>									
Number of farm households	385,288	256,468	75,312	233,703	250,669	174,314	157,405	59,223	69,089
Households below threshold	151,623	132,233	35,691	104,820	101,599	91,647	53,884	29,787	27,217
Cost (\$million)	2,553	3,089	671	1,420	1,581	1,285	1,074	411	499
Program costs 1993-97 (\$million)	13,541	11,329	3,445	9,346	12,184	8,101	7,651	2,064	3,484
Estimated costs 1999-2003 (USDA baseline)	18,874	18,139	4,311	9,457	9,189	10,684	6,413	2,764	2,897

Source: Calculated by ERS using data from the ARMS and forecasts from the USDA baseline.

**Appendix table 2—Results for 185 percent of poverty safety net by resource region**

	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	MS Portal
<b>1993</b>									
Number of farm households	377,518	282,443	85,453	236,736	259,952	198,394	172,398	64,966	81,161
Households below threshold	128,976	83,966	33,938	81,050	122,086	71,872	56,810	18,578	27,860
Cost (\$million)	1,477	1,219	475	1,001	1,709	892	774	239	418
<b>1994</b>									
Number of farm households	415,483	247,374	99,636	231,828	262,852	183,577	172,126	60,626	73,690
Households below threshold	125,505	104,975	26,228	89,113	106,825	79,367	58,463	20,126	27,250
Cost (\$million)	1,726	1,441	393	1,173	1,278	1,030	899	651	369
<b>1995</b>									
Number of farm households	392,690	266,899	84,357	238,276	275,595	179,916	171,155	66,779	61,261
Households below threshold	111,562	78,532	36,067	81,353	107,625	83,961	57,868	17,740	22,068
Cost (\$million)	1,487	981	478	1,049	1,432	1,137	939	261	290
<b>1996</b>									
Number of farm households	339,080	216,811	69,948	236,288	273,263	170,556	176,246	54,712	104,525
Households below threshold	101,642	85,568	21,025	81,896	132,930	78,551	92,592	15,701	58,726
Cost (\$million)	1,493	1,085	297	929	1,711	1,339	1,480	138	708
<b>1997</b>									
Number of farm households	385,286	256,468	75,312	233,703	250,669	174,314	157,405	59,223	69,089
Households below threshold	98,477	95,821	28,289	64,574	68,818	75,768	39,825	15,650	26,315
Cost (\$million)	1,291	1,589	384	785	1,274	1,075	676	207	479
Program costs 1993-97 (\$million)	7,477	6,318	2,028	4,939	7,407	5,475	4,770	1,497	2,265
Estimated costs 1999-2003 (USDA baseline)	9,992	9,313	2,567	5,207	7,273	6,511	4,005	1,419	2,760

Source: Calculated by ERS using data from the ARMS and forecasts from the USDA baseline.

**Appendix table 3—Results for adjusted expenditure income safety net by resource region**

	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	MS Portal
<b>1993</b>									
Number of farm households	377,518	282,443	85,453	236,736	259,952	198,394	172,398	64,966	81,161
Households below threshold	106,676	73,125	27,939	74,853	113,359	62,716	53,686	14,389	25,371
Cost (\$million)	1,043	928	356	712	1,278	643	574	90	319
<b>1994</b>									
Number of farm households	415,483	247,374	99,636	231,828	262,852	183,577	172,126	60,626	73,690
Households below threshold	107,742	88,055	23,964	79,009	90,674	67,909	52,949	17,699	25,442
Cost (\$million)	1,293	1,090	300	853	910	758	693	423	271
<b>1995</b>									
Number of farm households	392,690	266,899	84,357	238,276	275,595	179,916	171,155	66,779	61,261
Households below threshold	95,248	61,527	30,355	72,796	89,216	73,034	51,478	15,507	18,952
Cost (\$million)	1,089	713	348	753	1,057	830	729	197	212
<b>1996</b>									
Number of farm households	339,080	216,811	69,948	236,288	273,263	170,556	176,246	54,712	104,525
Households below threshold	91,113	72,480	15,244	70,796	117,075	63,663	89,095	11,171	56,892
Cost (\$million)	1,110	769	228	624	1,213	585	1,118	97	476
<b>1997</b>									
Number of farm households	385,286	256,468	75,312	233,703	250,669	174,314	157,405	59,223	69,089
Households below threshold	82,578	80,277	23,955	53,704	74,348	63,880	35,887	12,979	24,328
Cost (\$million)	920	1,230	280	548	948	790	846	147	376
Program costs 1993-97 (\$million)	5,458	4,732	1,515	3,492	5,409	3,608	3,961	956	1,655
Estimated costs 1999-2003 (USDA Baseline)	7,320	7,163	1,893	3,649	5,368	4,815	3,084	986	2,132

Source: Calculated by ERS using data from the ARMS and forecasts from the USDA baseline.



**Appendix table 4—Results for median wage rate income safety net by resource region**

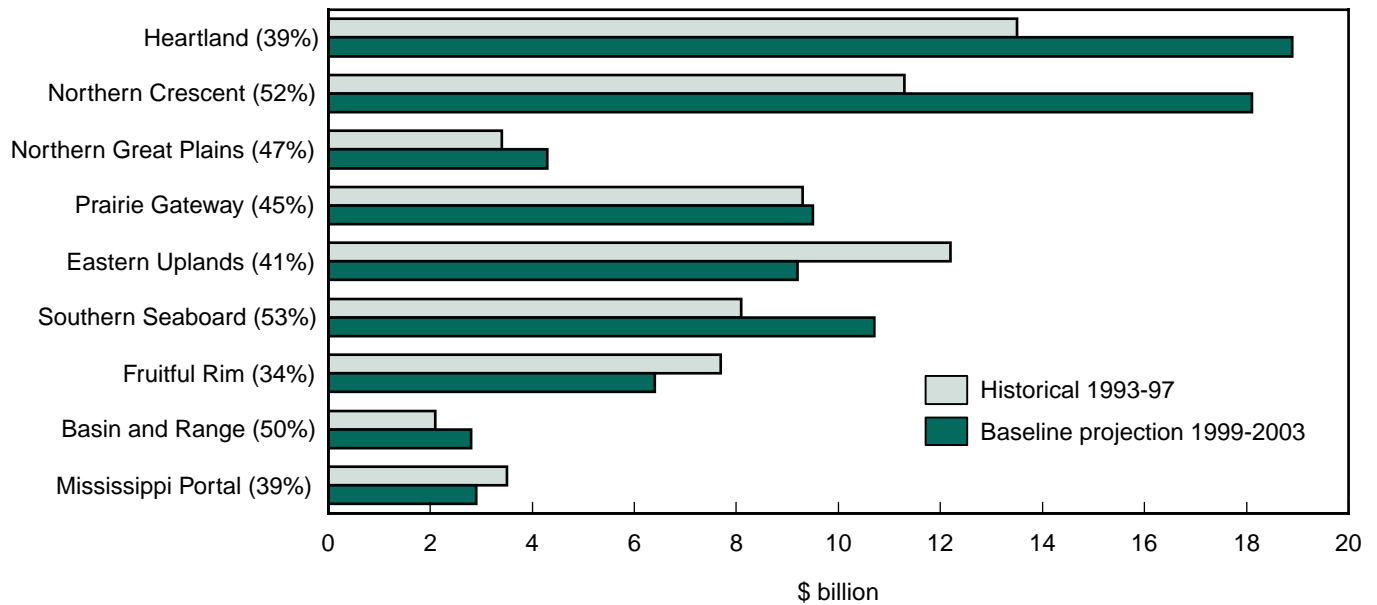
	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	MS Portal
<b>1993</b>									
Number of farm households	228,584	135,782	68,269	126,809	95,880	75,546	85,972	30,240	33,928
Households below threshold	178,944	120,439	54,550	100,113	88,106	59,929	67,096	25,578	26,634
Cost (\$million)	3,432	2,733	1,012	1,652	1,476	955	1,027	437	398
<b>1994</b>									
Number of farm households	218,381	138,605	60,531	119,566	96,259	188,068	80,801	30,805	34,805
Households below threshold	144,996	102,179	41,016	83,301	79,169	63,351	52,414	20,688	22,468
Cost (\$million)	2,335	2,186	759	1,209	1,159	777	740	326	351
<b>1995</b>									
Number of farm households	216,363	143,758	63,249	125,067	97,707	71,122	83,086	36,408	27,305
Households below threshold	127,214	112,355	39,851	94,823	84,038	56,639	60,987	29,537	20,035
Cost (\$million)	2,219	2,104	840	1,655	1,491	827	1,099	605	320
<b>1996</b>									
Number of farm households	141,010	122,151	43,663	130,251	82,606	88,495	93,057	20,828	28,490
Households below threshold	87,528	96,033	23,325	98,898	74,322	75,674	77,034	15,016	19,971
Cost (\$million)	1,293	1,875	471	1,521	935	1,165	1,221	263	204
<b>1997</b>									
Number of farm households	177,969	115,742	50,982	98,238	88,884	68,657	56,060	28,172	28,546
Households below threshold	110,510	93,490	35,759	71,670	77,899	54,551	37,742	21,151	19,689
Cost (\$million)	2,160	2,133	830	1,482	1,182	1,051	711	490	362
Program costs 1993-97 (\$million)	11,440	11,033	3,914	7,522	6,245	4,776	4,799	2,123	1,637
Estimated costs 1999-2003 (USDA Baseline)	14,649	11,691	4,898	8,535	6,347	5,814	3,962	2,837	2,018

Source: Calculated by ERS using data from the ARMS and forecasts from the USDA baseline.

Appendix figure 1

**Scenario 1—Regional median household income costs by resource region**

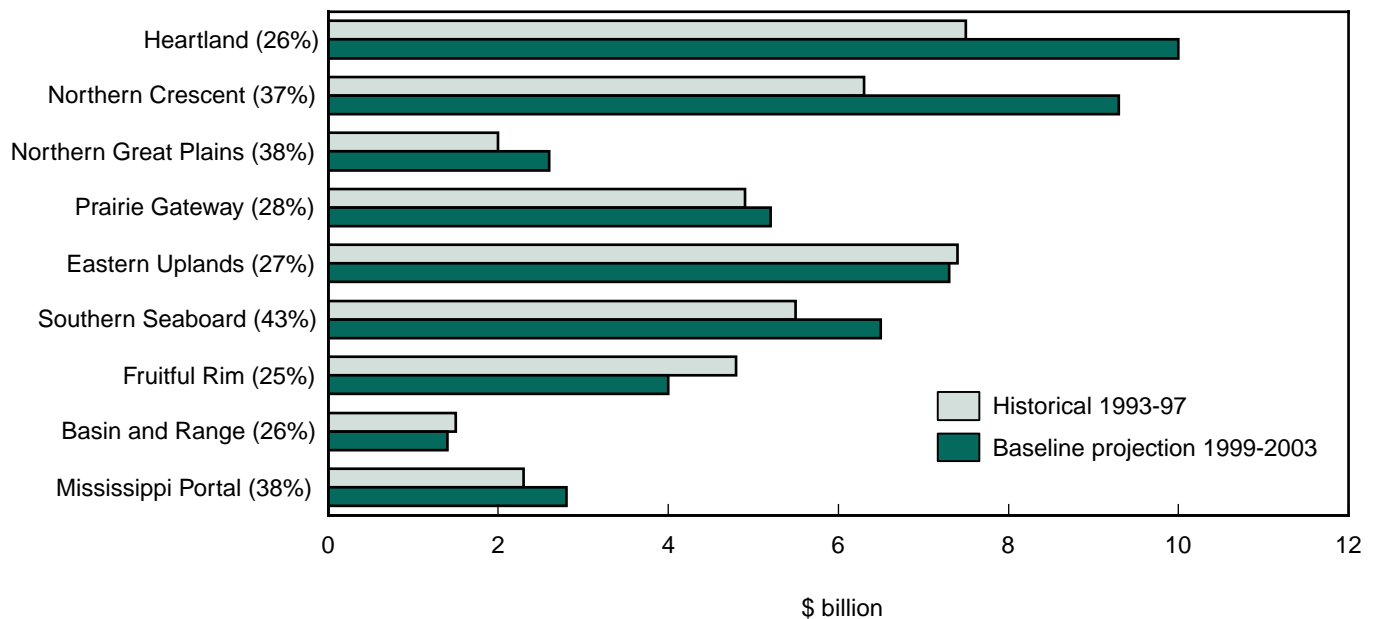
Resource region  
(Percent below safety net threshold in 1997)



Appendix figure 2

**Scenario 2—185-percent-of-the-poverty-line costs by resource region**

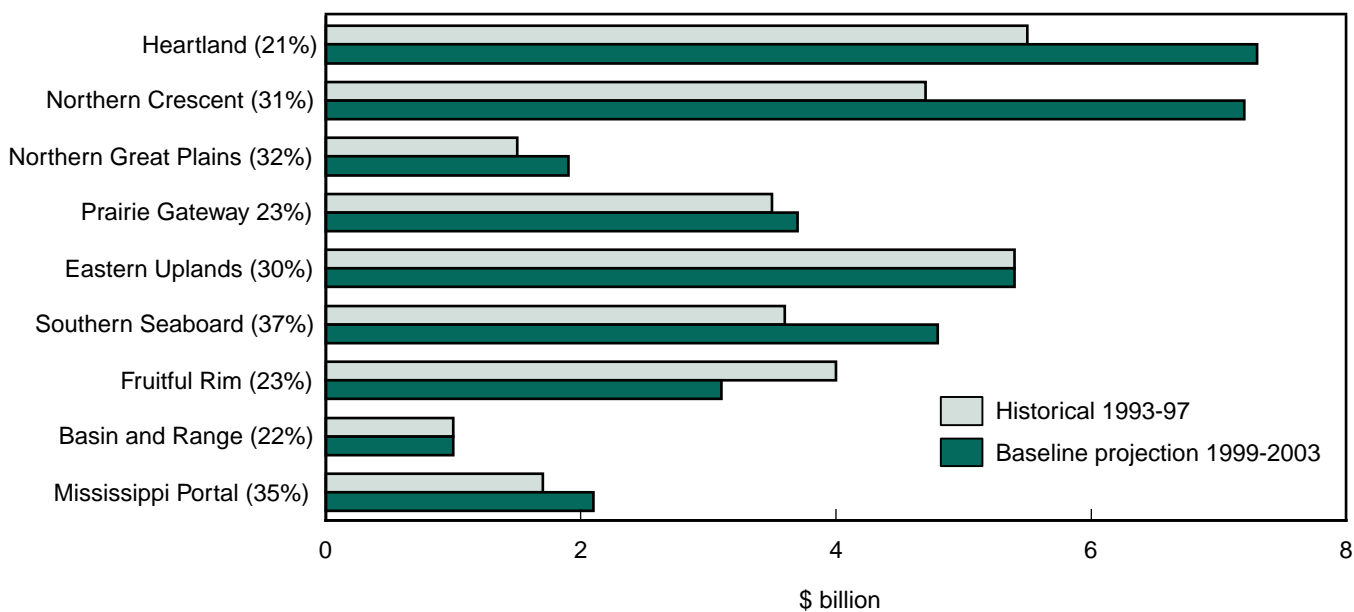
Resource region  
(Percent below safety net threshold in 1997)



Appendix figure 3

**Scenario 3—Average adjusted expenditures costs by resource region**

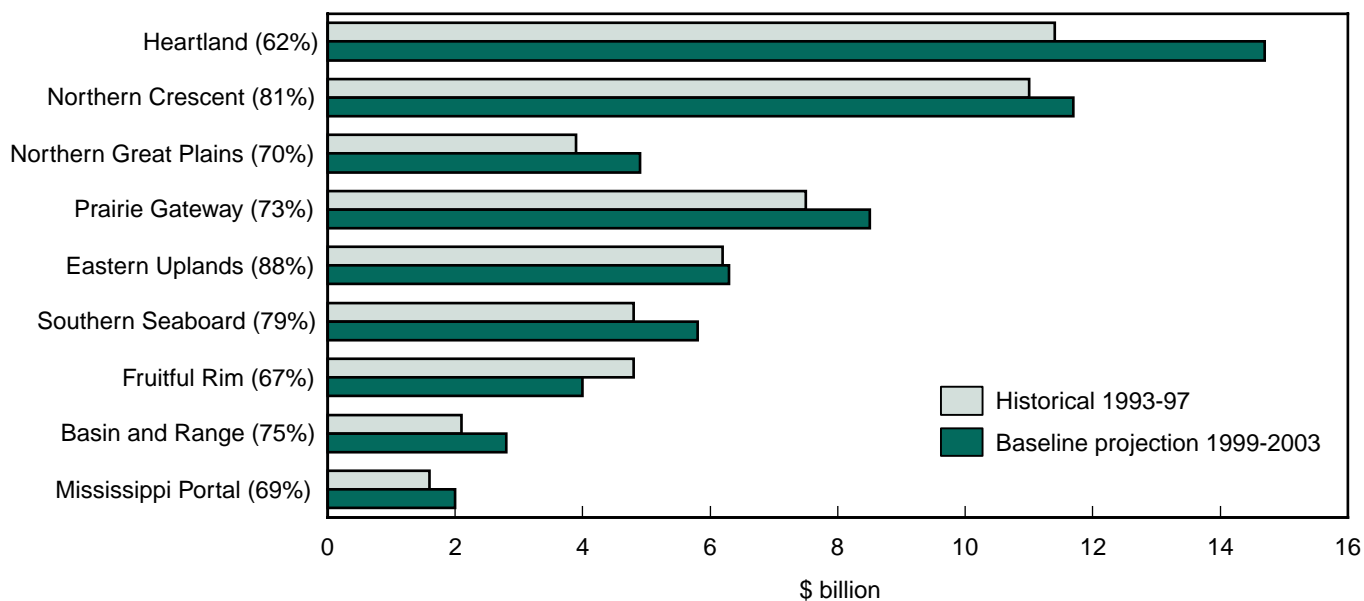
Resource region  
(Percent below safety net threshold in 1997)



Appendix figure 4

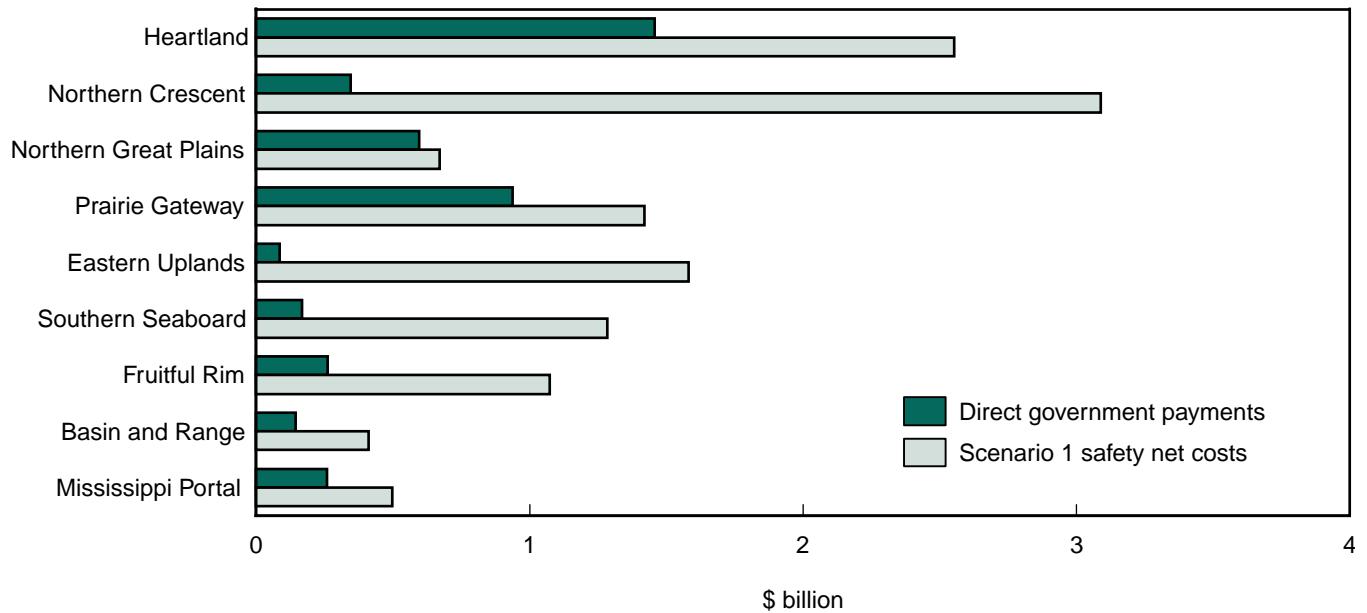
**Scenario 4—Median hourly earnings of nonfarm self-employed costs by resource region**

Resource region  
(Percent below safety net threshold in 1997)



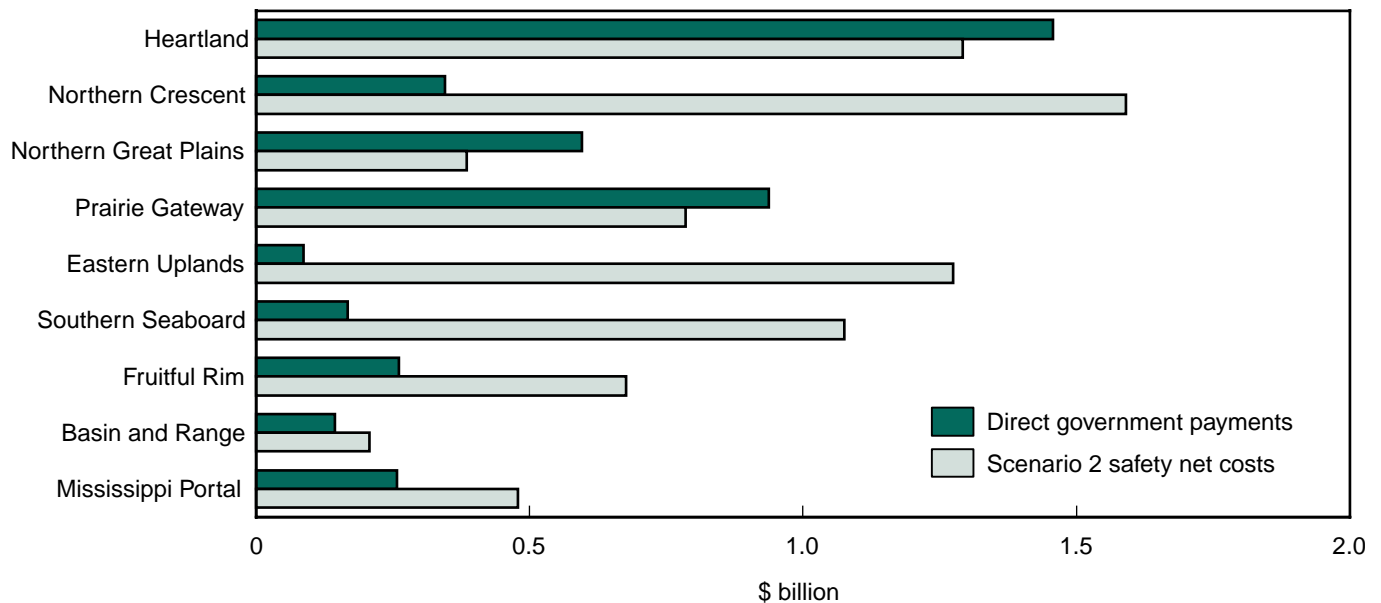
Appendix figure 5

**Scenario 5—Regional median household income compared with direct government payments in 1997: By resource region**



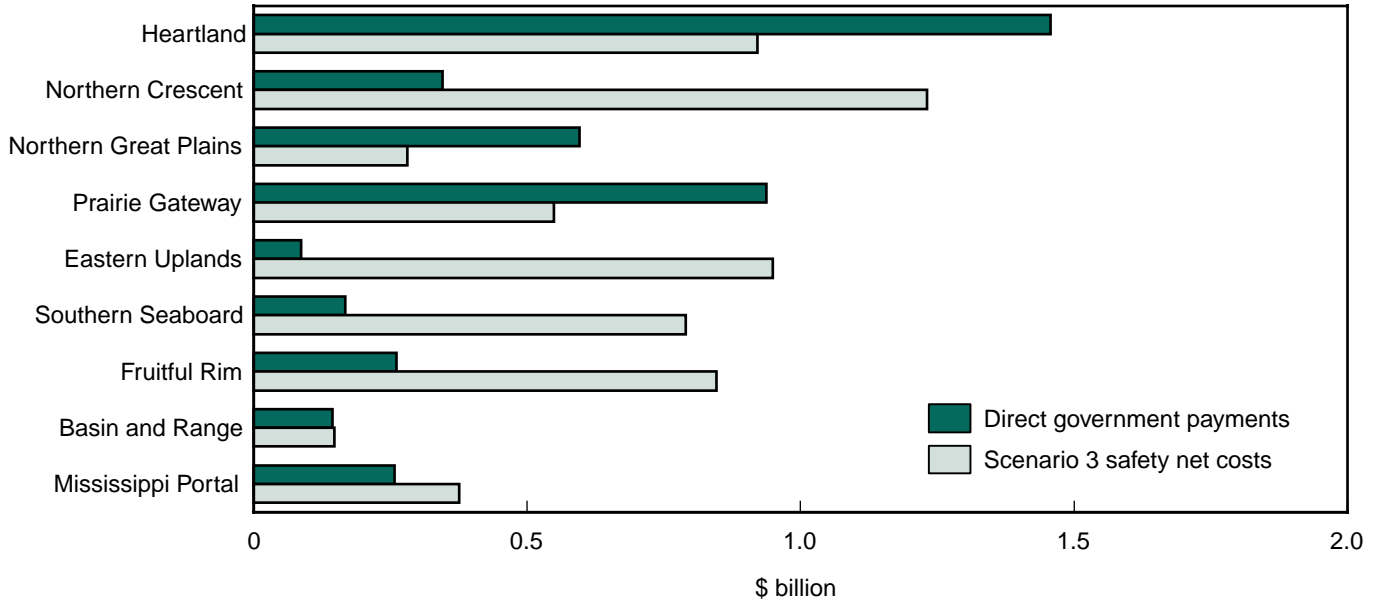
Appendix figure 6

**Scenario 6—185-percent-of-the-poverty-line compared with direct government payments in 1997: By resource region**



Appendix figure 7

**Scenario 7—Average adjusted expenditures compared with direct government payments in 1997: By resource region**



Appendix figure 8

**Scenario 8—Median hourly wage of nonfarm self-employed compared with direct government payments in 1997: By resource region**

