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Abstract

Discussions in the public arena have raised fundamental questions about the ultimate goals of farm policy and the need for establishing a safety net for farm households. This report examines four scenarios for government assistance to agriculture based on the concept of ensuring some minimum standard of living. Lower income farmers would benefit relatively more from the safety net scenarios, while farmers producing selected commodities benefit relatively more from current farm programs. Farm households in the Northern Crescent, the Eastern Uplands, the Southern Seaboard, and the Fruitful Rim all would generally receive a higher level and a greater proportion of benefits than under current programs. A clear understanding of objectives and intended beneficiaries must be the starting point for discussions of future farm policy.

Keywords: Safety net, poverty, assistance programs, farm policy, farm households.

Acknowledgments

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Summary

Government assistance to the farm sector provides relatively little to small farms. Instead, most government assistance is to larger farms that receive support through traditional farm program instruments such as crop insurance, direct payments, and environmental conservation programs. This report looks at the issue from a different perspective, one which might reduce government spending and ensure that all full-time farmers receive an income to meet basic needs. Our study applies the concept of a farm household safety net based on a set of standards commonly used in the economics literature and in Federal assistance programs for low- to moderate-income households.

The report considers four safety net scenarios that would assure farm households a certain level of income or consumption:

◆ Income equal to that of the median nonfarm household in the region.

◆ Income equal to 185 percent of the poverty line.

◆ Income equal to the average nonfarm household's annual expenditures.

◆ Income equal to the median hourly earnings of the nonfarm self-employed ($10 per hour).

The analysis estimates the distribution effects and costs of the four scenarios for two time periods: 1993-97 and 1999-2003.

Current farm programs distributed some type of direct government payment to about 36 percent of all farms in 1997, with payments averaging $7,987. The share of farms receiving payments ranged from less than 20 percent for very small farms to 75 percent for large farms. Under any of the four safety net scenarios, however, all very small farm households would receive payments and payments per recipient to other small farms would be more than twice as high as under current programs.

Farms in the Northern Crescent (Northeast and Great Lakes areas), the Eastern Uplands (southeastern Appalachian Mountain areas), the Southern Seaboard (Virginia through Alabama, excluding Florida), and the Fruitful Rim (coastal areas in Southeast and West) would all benefit more from the safety net scenarios described here than from current farm programs. Farms in these regions typically produce dairy products, beef, hogs, other field crops, fruits, and vegetables and produce less of the farm program crops than producers in other regions.

We base the four farm safety net scenarios outlined here on the income characteristics of farm households, not on commodities produced by a farm. Thus, lower income farmers are more likely to benefit under these safety net scenarios, while farmers producing selected commodities benefit more from current farm programs.

The scenarios considered here are meant to be illustrative. Safety nets may be defined in many different ways, and future research should explore other scenarios and the applicability of the concept to sole proprietors in other occupations. Our findings point out that national policy should recognize the diversity within the farm sector and the need for something other than one-size-fits-all policy prescriptions. A clear understanding of the objectives and intended beneficiaries is an important starting point for discussions of future farm policy.

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Introduction

Low commodity prices have renewed the debate regarding the farm safety net provided by current Federal farm programs. Farmers received $4.3 billion in direct government payments in 1997, $6.0 billion in 1998, and $8.7 billion in 1999. Payments are an important source of income to individual farmers and can be very high; for example, in 1997, the average large family farm recipient received over $18,000 in benefits. Farm programs dating back to the Great Depression are unlike safety nets available today to nonfarmers in the United States. Safety net programs for the general public (including farmers) are constructed so that people have enough resources to maintain a minimum standard of living. Current direct government payments to farmers do not generally benefit the lowest income farmers but instead go to the most well-off.

In this report, we analyzed the implications of an alternative set of safety net programs for farmers. Unlike the present safety net programs, which generally target producers of major field crops, this alternative set of safety nets targets farm households that fall below certain income- and earnings-based criteria.

We identified four safety net scenarios based on different thresholds: median incomes; 185 percent of the poverty line; median household expenditures; and median earnings of nonfarm self-employed households. Assuming that all households with incomes below these thresholds qualify for benefits, we analyzed how the costs and distributional impacts of these scenarios differed from those of current farm safety net programs. We found that, while costs were roughly similar for some of the alternative scenarios, the distribution of benefits was markedly different.

What Is a Safety Net?

Secretary of Agriculture Dan Glickman called 1999 the "Year of the Safety Net." Yet most discussions of the concept for the farm sector consider only tradi-

tional farm program instruments, such as crop insurance, direct payments, and the Conservation Reserve Program. Some members of Congress even favor a return to price support policies. These concepts are decidedly different from the way the economics literature treats a safety net. For economists, a safety net is a policy that ensures a minimum income, consumption, or wage level for everyone in a society or subgroup. It may also provide people (or businesses) with protection against risks, such as lost income, limited access to credit, or devastation from natural disasters.

The construction of a safety net first requires some concept of a minimum standard of living. From Adam Smith in 1776 to Nobel laureate Amartya Sen, economists have linked poverty to the lack of "necessities," which Smith defined as "not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without" (Smith, 1993 ed.). This minimum standard of living can be translated into a monetary figure, such as the poverty line.

Researchers in other fields have echoed these economic constructions with a particular emphasis on the social dimensions of the safety net. Sociologist Peter Townsend observed that people are "social beings expected to perform socially demanding roles as workers, citizens, parents, partners, neighbors and friends" (1992, p. 5). He defines economic security as sufficient income for people to "play the roles, participate in the relationships, and follow the customary behavior which is expected of them by virtue of their membership in society" (Townsend, 1992, p. 10).

Theoretical Rationale

Building on this concept of a minimum standard of living, the economics literature establishes several well-known arguments for the provision of a safety net. One class of arguments is based on people's preference to reduce income uncertainty and variability.

For example, people may favor a safety net as a form of social insurance that offers them protection against future income volatility (Buchanan and Tullock, 1962). As Haveman (1985) claims, "[T]he primary economic gain from the welfare state is the universal reduction in uncertainty faced by individuals." Thurow (1971) argues that if people's utility (or level of satisfaction) depends on other people's consumption as well as their own, they will favor a policy that ensures everyone a minimum standard of living. Thurow also asserts that if people are concerned about the way that income is distributed, they will receive satisfaction from the redistributive effect of safety net programs.

Another class of arguments for the provision of a minimum standard of living stems from social welfare considerations. The approaches in this class of arguments utilize the concept of a Social Welfare Function (SWF), which is obtained by aggregating over the utilities of everyone in a nation, society, or subgroup (for example, farmers). The utility of any person with respect to income is denoted by U(y) and the SWF by:

$$W \equiv \int_0^{\bar{y}} U(y)f(y)dy$$

where f(y) is the frequency distribution of income. Suppose that this SWF is additively separable (i.e., a person's utility is independent of others' utilities) and symmetric with respect to income (i.e., no person's utility is judged to be more important than another's). In terms of individual utility functions, suppose that U(y) is strictly concave (i.e., the marginal utility of an additional unit of income is positive but decreasing). Under these assumptions, any transfer of wealth from a richer person to a poorer person improves the social welfare of a country. (See Atkinson, 1970; Blackorby and Donaldson, 1978; Dalton, 1920; Dasgupta, Sen, and Starret, 1973; and Rothschild and Stiglitz, 1973.) A social safety net that makes this transfer will therefore improve societal welfare, as defined by this general SWF. Of particular importance to this report is the idea that this social safety net need not be available to all members of a society to ensure an improvement in social welfare; it need only transfer income from a richer to a poorer person. Thus, a social safety net designed for farmers, for example, will be welfare improving (under this general class of SWFs) as long as income is not transferred from poorer persons in the general population to richer farmers.

Within this social welfare framework, economic theorists such as Harsanyi (1953, 1955), Vickrey (1960), and Rawls (1971) explored other conditions under which a society would be better off with a social safety net. They found that, if its members are uncertain as to their income potential and are averse to risk, society is better off with a social safety net. These arguments relate closely to the concept of safety nets, discussed above, as a form of social insurance.

Precedents in Existing Federal Programs

Under the assumptions of the SWF established above, an improvement in social welfare is garnered whenever income is transferred from someone higher to someone lower in the income distribution. In this section, we review some of the methods used by current Federal assistance programs to obtain this improvement. In particular, we describe the safety net thresholds (i.e., persons with well-being below this threshold qualify for assistance) defined by these programs.

Many programs use a household's position in the income distribution to target benefits. Several examples can be drawn from Federal housing assistance programs. Freddie Mac and Fannie Mae subsidize mortgage loans for families whose income is less than or equal to an area's median family income. USDA's Section 502 Single Family Direct Loan Housing Program, which assists rural residents in the purchase, construction, repair, or relocation of a dwelling, targets households with incomes below 80 percent of the area's median income, as does HUD's Public Housing/Section 8 Program in providing rental assistance to households.

Rather than defining the safety net threshold with respect to the income distribution, some programs use the exogenously set poverty line as a starting point for the threshold.[1] Most of the child nutrition programs, including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the National School Lunch and School Breakfast Programs, are targeted to those with incomes less than

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[1] The poverty line in the United States was originally defined as the income needed to purchase three times the cost of the Thrifty Food Plan, a minimally adequate, food-sufficient diet constructed by the U.S. Department of Agriculture. Since then it has been updated annually by the Consumer Price Index. See Orshansky (1965) for more on how the poverty line was originally defined.

185 percent of the poverty line. The Food Stamp Program targets households with gross incomes below 130 percent of the poverty line.[2]

The above thresholds are defined with respect to income; other methods use consumption to define thresholds and benefits. USDA's Rural Rental Housing Assistance Program, which provides rental assistance to low- and moderate-income rural families, is targeted to households spending more than 30 percent of their income on rent. The Food Stamp Program sets benefit levels such that recipients can afford the Thrifty Food Plan, a USDA-established food plan composed of suggested amounts of foods that make up a nutritious diet and can be purchased at a relatively low cost.

Federal programs also use household earnings to set safety net thresholds. The best-known example of this standard is the minimum wage, which ensures that workers in covered occupations earn at least $5.15 per hour, or the equivalent of $10,700 in earnings from full-time, full-year employment. Another illustration is the Earned Income Tax Credit, which provides a refundable tax credit to low-income workers. As earned income increases, benefits increase to a certain point and are then phased out.

There is one further important precedent for a farm safety net within many existing Federal programs. Just as only farmers qualify for a farm safety net, many Federal programs are available to only a subset of the population. For example, the Temporary Assistance to Needy Families Program (TANF) is primarily intended for single parents with children. WIC is available only to pregnant and postpartum women and children under the age of 5. Public policymakers decided that these subgroups need program assistance and, historically, policymakers had made a similar argument for farmers (Effland, 2000).

Farmers' deep poverty was a rationale for assistance in the past. In the 1940's, per capita income of farmers was, on average, 50.7 percent that of nonfarmers (Gardner, 1992; table 1). Moreover, given that most people lived on farms in the first half of the 20th century, efforts to alleviate poverty among farmers likewise eased the burden of poverty for a large segment of the population.[3] Following the next section, where we describe the farm sector, we define four scenarios based on the theoretical foundations described in the previous section and precedents in other government programs described in this section.

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[2] These programs use additional criteria beyond income, however. For example, a recipient of WIC must either be a child under the age of 5, a pregnant woman, or a postpartum woman and deemed to be at nutritional risk.

[3] Both of these arguments are less tenable today. By the 1970's, the ratio of farm to nonfarm income had risen to 87.3 percent, and the number of farmers as a proportion of the population had declined markedly.

Heterogeneity of the Farm Sector

A serious discussion of farm policy needs to recognize the heterogeneity of the sector; there is no representative farm (Kuhn and Offutt, 1999). Farm households and firms differ along a variety of dimensions. ERS has developed two ways to capture this diversity—a new denotation of regions based on resources, and a farm typology. Using these farm classification schemes, we compare four alternative safety-net scenarios in terms of cost, distribution of farm household benefits, and rate of qualification for assistance. We then contrast the scenarios with the amount and distribution of actual direct government payments to farms in 1997. In the next section, we use these two classification schemes to assess the distributional impacts of alternative safety net measures.

Farm Typology

The farm typology distinguishes farms and farm households based on sales volume, occupational choice, and in some cases, level of assets (see "Farm Typology"). This typology identifies eight categories, five of which distinguish among farms with gross sales below $250,000 (the Small Farm Commission's defini-

tion of "small farms" (Hoppe, Perry, and Banker, 1999)). *Residential lifestyle* farms, the largest group with more than 800,000 households, are small farms where the operator's primary occupation is something other than farming. The category defined as *farming, low sales* (around 400,000 households) are farms with sales of $100,000 or less where farming is the primary occupation of the operator. *Large family* farms have annual gross sales between $250,000 and $500,000. *Very large family* farms have gross sales of more than $500,000. The latter two typology groups accounted for more than 40 percent of the total value of agricultural production in 1997.

By definition, *very large family* farms had the highest mean household income ($205,323) in 1997 (table 1).[4] The next highest income groups were *large family* farms ($79,693) and *residential lifestyle* farms ($65,758). The farm type with by far the lowest average household incomes were *limited resource* farms ($8,605). Their average income was over $25,000 less than that of the next lowest farm type. For our safety net calculations below, we further adjust farm house-

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[4] See appendix A for our definition of income.

Table 1—Average farm household income and poverty rates by farm typology, 1997

	Household income	Farm business source	Off-farm sources	Depreciation	Adjusted income
			Dollars		
All farm households	52,562	6,204	46,357	6,577	64,171
	(3.29)	(2.53)	(4.17)	(3.49)	(2.53)
Households in					
Limited resource farms	8,605	-3,229	11,833	897	13,045
	(12.76)	(17.19)	(9.32)	(17.66)	(9.46)
Retirement farms	40,515	1,157	39,358	2,124	46,275
	(6.16)	(88.93)	(7.23)	(12.69)	(5.45)
Residential lifestyle farms	65,758	-3,668	69,426	2,291	73,089
	(6.39)	(14.24)	(6.08)	(7.99)	(5.54)
Farming, low sales farms	34,132	1,216	32,917	5,843	45,963
	(6.07)	(125.14)	(5.83)	(3.89)	(4.62)
Farming, high sales farms	50,964	22,048	28,916	16,652	73,082
	(10.13)	(10.25)	(17.82)	(4.67)	(7.19)
Large family farms	79,693	45,233	34,460	30,238	116,733
	(5.11)	(6.86)	(7.88)	(5.18)	(3.64)
Very large family farms	205,323	169,034	36,289	62,616	275,428
	(10.66)	(11.97)	(8.17)	(3.24)	(7.34)

Note: The Relative Standard Error (RSE) is in parentheses. Relative standard error (RSE) is defined as the standard error divided by the estimate expressed as a percentage. Column 5 reflects an adjustment of household income such that: (a) depreciation was not deducted from farm businesses, and (b) negative farm business earnings were set to zero.

Source: Calculated by ERS using data from the 1997 Agricultural Resource Management Study (ARMS).

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The Farm Typology

Small Family Farms (sales less than $250,000)

◆ **Limited resource farms.** Any farm with: (1) gross sales less than $100,000, (2) total farm assets less $150,000, and (3) total operator household income less than $20,000. Limited resource farmers may report farming, a nonfarm occupation, or retirement as their major occupation.

◆ **Retirement farms.** Small farms whose operators report they are retired. (Excludes limited resource farms operated by retired farmers.)

◆ **Residential/lifestyle farms**. Small farms whose operators report they had a major occupation other than farming. (Excludes limited resource farms with operators reporting a nonfarm major occupation.)

Other Farms

◆ **Farming occupation/lower sales.** Farms with sales less than $100,000 whose operators report farming as their major occupation. (Excludes limited resource farms whose operators report farming as their major occupation.)

◆ **Farming occupation/higher sales.** Farms with sales between $100,000 and $249,999 whose operators report farming as their major occupation.

◆ **Large family farms.** Sales between $250,000 and $499,999.

◆ **Very large family farms.** Sales of $500,000 or more.

◆ **Nonfamily farms.** Farms organized as nonfamily corporations or cooperatives, as well as farms operated by hired managers.

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hold income by not deducting depreciation from farm income and by setting farm business earnings to zero when they were negative. We make these adjustments under the assumption that safety nets should not be reimbursing households for depreciation or providing households more income than the chosen safety net threshold. This income adjustment, shown in column 5, does not change the ordering of farm types. For example, *very large* farms still had the highest average adjusted incomes at $275,323 and *limited resource* farms had the lowest average adjusted incomes at $13,045. The greater average income of larger farms is also reflected in the distribution of income: 91.9 percent of limited resource farms have incomes between $0 and $25,000 while 70.6 percent of *very large* farms have incomes greater than $100,000 (table 2).

Consistent with their lower incomes, *limited resource* farms have a higher than average percentage of household heads without a high school degree (31 percent versus 15.3 percent) (table 2). With the exception of *retirement* farms, age of household head also tends to be correlated with lower average incomes since *limited resource* and *farming, low sales* farms have a higher percentage of household heads older than 65 than *farming, high sales, large family*, and *very large family* farms. The number of hours worked on the farm also correlates with lower average incomes—the combined average annual hours of the household head and spouse are about 3,500 for *farming, high sales, large family,* and *very large family* farms and less than 1,200 for *limited resource* farms. The latter result probably reflects the far greater reliance on off-farm income for *limited resource* farms.

Resource Regions

The resource regions merge information about characteristics of land areas and commodity emphasis to generate geographic areas that are more homogeneous with

Table 2—Demographic characteristics of farm households by farm typology, 1997

	All farm households	Limited resource	Retirement	Residential lifestyle	Farming, low sales	Farming, high sales	Large family	Very large family
Age of household head								
Under 45 years (%)	26.5	21.3	--	34.9	23.8	37.3	37.0	34.6
Between 45 and 65 years (%)	44.0	26.6	21.6	57.2	48.1	48.5	52.7	53.1
Over 65 years (%)	27.2	52.0	78.3	7.7	28.0	14.1	10.1	12.2
Education of household head								
Without high school degree (%)	15.3	31.0	28.5	8.2	18.2	9.8	6.8	7.0
With high school degree (%)	65.4	60.9	54.3	67.5	67.2	74.4	73.0	63.5
With college degree (%)	19.3	6.2	17.2	24.3	14.6	15.8	20.3	29.5
Average number of household members	2.7	2.4	2.1	3.2	2.3	3.1	3.3	3.0
Average annual hours worked by household head and spouse	1,771	1,135	1,015	1,019	2,765	3,726	3,488	3,527
Adjusted income								
≤$0 (%)	4.7	7.7	2.8	1.0	9.0	9.0	8.5	9.1
$1 - $25,000 (%)	26.3	91.9	31.4	12.0	32.0	14.3	3.8	1.9
$25,001 - $50,000 (%)	30.4	0.0	40.5	37.5	33.4	22.4	10.4	5.1
$50,001 - $100,000 (%)	26.0	0.0	16.2	38.0	18.2	34.9	31.2	13.1
>$100,000 (%)	12.4	0.0	8.9	11.3	7.2	19.2	46.0	70.6

Source: Calculated by ERS using data from the 1997 Agricultural Resource Management Study (ARMS).

regard to both resource and production activities (see fig. 1). This classification identifies nine regions. The Heartland region has more than 20 percent of farms and the largest concentration of corn and soybean acreage. The Northern Great Plains has the largest farms on average and a relatively high proportion of wheat, oats, and barley acreage. The noncontiguous Fruitful Rim region accounts for the largest share of vegetable, fruit, and other specialty crops acreage. The Basin and Range region has the largest share of nonfamily farms and the smallest share of U.S. cropland. The Northern Crescent is primarily composed of dairy, general crop, and cash grain farms. The Prairie Gateway is the second largest region in terms of wheat, oat, barley, rice, and cotton production. Compared with other regions, the Mississippi Portal has a higher proportion of both small and larger farms. The Southern Seaboard has many part-time cattle, general field crop, and poultry farms and the Eastern Uplands has the most small farms of any region. (See *<http://www.ers.usda.gov/whatsnew/issues/regions/>* for more on U.S. farm resource regions.)

The Fruitful Rim was by far the wealthiest region in 1997 with an average farm household income of $73,140.[5] Average farm income in this region was over $17,000 higher than in the next wealthiest region, the Heartland. The Northern Great Plains had the lowest average household income—$39,702. The income adjustment described above is shown in column 5 of table 3. The Fruitful Rim was still by far the wealthiest region with an average adjusted income of $90,091. After this adjustment, however, the Northern Great Plains ($57,992) was wealthier than the Southern Seaboard ($56,122) and the Eastern Uplands, which fell to the lowest income region ($50,531). Farm demographic characteristics are more similar across resource regions than they are across farm typologies (table 4).

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[5] Farm household income includes both farm and nonfarm earnings. In addition, it includes cash income received through government assistance programs (e.g., TANF).

Figure 1
Farm Resource Regions

Basin and Range
- Largest share of nonfamily farms, smallest share of U.S. cropland.
- 4% of farms, 4% of value of production, 4% of cropland.
- Cattle, wheat, and sorghum farms.

Northern Great Plains
- Largest farms and smallest population.
- 5% of farms, 6% of value of production, 17% of cropland.
- Wheat, cattle, and sheep farms.

Heartland
- Most farms (22%), highest value of production, (23%), and most cropland (27%).
- Cash grain and cattle farms.

Northern Crescent
- Most populous region.
- 15% of farms, 15% of value of production, 9% of cropland.
- Dairy, general crop, and cash grain farms.
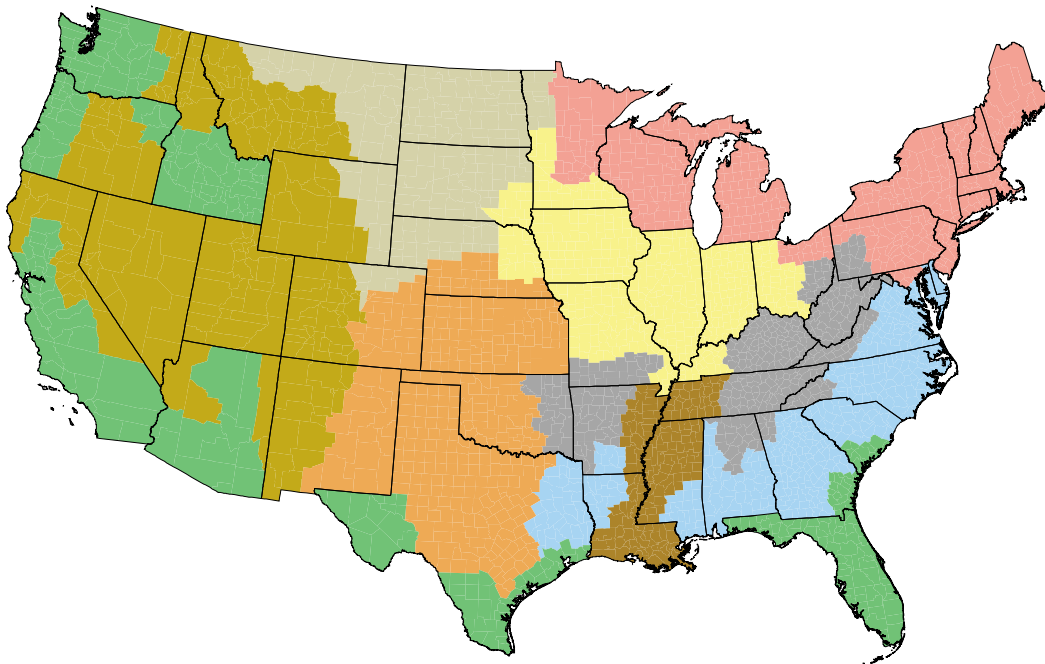
Fruitful Rim
- Largest share of large and very large family farms and nonfamily farms.
- 10% of farms, 22% of value of production, 8% of cropland.
- Fruit, vegetable, nursery, and cotton farms.

Prairie Gateway
- Second in wheat, oat, barley, rice, and cotton production.
- 13% of farms, 12% of value of production, 17% of cropland.
- Cattle, wheat, sorghum, cotton, and rice farms.

Mississippi Portal
- Higher proportions of both small and lager farms than elsewhere.
- 5% of farms, 4% of value of production, 5% of cropland.
- Cotton, rice, poultry, and hog farms.

Southern Seaboard
- Mix of small and larger farms.
- 11% of farms, 9% of value of production, 6% of cropland.
- Part-time cattle, general field crop, and poultry farms.

Eastern Uplands
- Most small farms of any region.
- 15% of farms, 5% of value of production, and 6% of cropland.
- Part-time cattle, tobacco, and poultry farms.

Table 3—Average farm household income and poverty rates by resource region, 1997

	Household income	Farm business source	Off-farm sources	Depreciation	Adjusted income
			Dollars		
All farm households	52,562	6,205	46,358	6,578	64,171
	(3.29)	(2.53)	(4.17)	(3.49)	(2.53)
Farm households in					
Heartland	55,189	9,148	46,040	8,173	67,383
	(9.04)	(13.09)	(12.52)	(7.01)	(6.80)
Northern Crescent	49,372	3,318	46,053	6,610	61,457
	(13.65)	(38.05)	(15.01)	(7.65)	(11.70)
Northern Great Plains	39,702	9,357	30,345	11,352	57,991
	(8.97)	(32.18)	(4.51)	(7.76)	(4.92)
Prairie Gateway	54,489	4,315	50,174	6,423	66,032
	(9.63)	(38.60)	(9.83)	(12.59)	(7.66)
Eastern Uplands	43,475	787	42,688	2,816	50,530
	(9.89)	(289.29)	(10.85)	(10.86)	(9.29)
Southern Seaboard	47,266	4,897	42,369	4,393	56,121
	(9.29)	(49.58)	(8.54)	(7.55)	(8.17)
Fruitful Rim	73,140	15,852	57,288	9,676	90,091
	(6.43)	(15.73)	(7.26)	(12.14)	(4.97)
Basin and Range	51,271	3,277	47,994	6,518	63,004
	(6.71)	(161.72)	(17.36)	(43.63)	(3.88)
Mississippi Portal	54,895	6,673	48,222	5,519	65,647
	(26.76)	(45.42)	(32.89)	(15.96)	(22.47)

Note: The Relative Standard Error (RSE) is in parentheses. Relative standard error (RSE) is defined as the standard error divided by the estimate expressed as a percentage. Column 5 reflects an adjustment of household income such that: (a) depreciation was not deducted from farm businesses, and (b) negative farm business earnings were set to zero.

Source: Calculated by ERS using data from the 1997 Agricultural Resource Management Study (ARMS).

Table 4—Demographic characteristics of farm households by resource region, 1997

	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	MS Portal
Age of household head									
Under 45 years (%)	31.8	27.7	33.4	24.0	25.8	18.3	25.4	29.3	20.3
Between 45 and 65 years (%)	44.1	45.6	42.8	47.1	46.6	51.2	51.2	36.1	44.1
Over 65 years (%)	24.1	26.8	23.8	28.9	27.6	30.5	23.4	34.6	35.6
Education of household head									
Without high school degree (%)	11.1	13.9	13.5	10.2	24.8	20.0	9.9	18.9	23.6
With high school degree (%)	73.2	72.6	71.5	65.8	60.5	55.6	56.4	62.9	58.2
With college degree (%)	15.7	13.5	10.1	23.9	14.6	24.4	33.7	18.2	18.1
Average number of household members	2.9	2.9	2.8	2.5	2.6	2.5	2.4	2.8	2.7
Average annual hours worked by household head and spouse	1,824	2,086	2,543	1,785	1,549	1,594	1,519	1,847	1,379
Adjusted income									
≤$0 (%)	4.3	4.5	9.3	4.1	3.8	5.0	4.8	4.1	7.1
$1 - $25,000 (%)	20.7	31.4	26.6	23.6	29.9	34.7	23.9	17.8	26.7
$25,001 - $50,000 (%)	29.0	29.9	25.5	31.9	37.7	21.1	22.8	42.2	40.9
$50,001 - $100,000 (%)	29.9	23.4	26.7	28.8	23.2	29.2	28.9	12.5	15.6
>$100,000 (%)	15.9	10.6	11.8	11.4	5.2	9.8	19.4	23.2	9.4

Source: Calculated by ERS using data from the 1997 Agricultural Resource Management Study (ARMS).

Analysis of Alternative Safety Net Measures

Based on precedents from existing Federal assistance programs and justified with economic theory, we identify four alternative scenarios. The first three scenarios ensure that farm households maintain an income standard relative to: (1) regional median household income; (2) 185 percent of the poverty line; or (3) average adjusted household expenditures. A fourth scenario is based on the median hourly earnings of the nonfarm self-employed. Using the farm sector classifications discussed above, we explore the distributional effects and costs of four alternative safety net measures by examining two 5-year time periods: 1993-97 and 1999-2003. These time periods extend from the year that the most current farm-level data were available, which was 1997. One drawback in partitioning the temporal analysis in this way is that the time periods overlap a change in agricultural policy regimes.

For the retrospective portion of the scenarios, we used data from 1997 because this was the most recent year for which Agricultural Resource Management Study (ARMS) data were available when this project began. For the projected portion, we used data from 1999 to 2003 because these were the years for which the USDA baseline projections were made at the time this project began. (For more on the baseline projections, see World Agricultural Outlook Board, 1998.) For symmetry, we used the same number of years for the retrospective portion.

Data from the ARMS were used to provide annual estimates of individual farm household income during 1993-97. The ARMS is a survey of about 15,000 farms and, with proper weights, represents all farms in the contiguous United States (see appendix C for more detail on the survey). Our analysis includes roughly 80 percent of farm households. We excluded two types of farms, *retirement* farms and *very large family* farms, from our analysis because, by definition, members of the first group are not active participants in the sector (though they do have substantial assets and land-ownings) and most of the second group would not qualify for a safety net because of their high income level.

Projections for the 1999-2003 period are generated using a farm business financial partial budgeting model. Any potential structural or production response on the part of farms is not considered here. In this aspect the model is static. The model incorporates ele-

ments of income and expenses to project cash flow, assets, and debt. Parameters from USDA's Short-Term Forecast Model, the Baseline Model, and FAPSIM are used as input. Specific categories of income and expenses such as corn receipts and feed costs are inputs into the model. The model operates on individual farm data obtained from ARMS. Model results are summarized here by resource region and farm typology group.

The analyses in the previous section were based on household income. In the rest of this report, however, we use the adjusted farm household income found in column 5 of tables 1 and 3. This household income is adjusted so that (a) depreciation was not deducted from farm businesses, and (b) negative farm business earnings were set to zero.[6]

One distinction between our scenarios and the precedents found in other Federal assistance programs is that some programs use income cutoffs to decide who should receive benefits. However, upon receipt of these benefits, there is no presumption that a recipient's income will rise to that cutoff. For example, even if a family receives the maximum amount of benefits from the largest cash assistance program for poor families in the United States (TANF), household income may still be far below the eligibility cutoff. In the scenarios discussed below, we consider the cost of raising low-income farm households to a particular level of income; existing safety net programs for the general population described above do not do this.

Scenario 1: Regional Median Household Income

The median U.S. household income in 1995 was $35,050, based on data from the Bureau of the Census. Median household income in the farm resource regions ranged from $28,666 in the Mississippi Portal to $39,756 in the Northern Crescent. These income levels were adjusted using the Consumer Price Index (CPI) to define the regional income thresholds for earlier and later years contained in the analysis. In the theoretical section, we demonstrated how any transfer of money from someone richer to someone poorer improved the social welfare as defined by the SWF. This scenario

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[6] Implicitly, we are assuming a safety net would not compensate farmers for expected future replacement of depreciable assets or for past losses. A safety net could instead compensate farmers for these and the results in the following scenarios would change accordingly.

uses the highest relatively reasonable safety net threshold to achieve this result; all the remaining scenarios use lower levels.[7]

For scenario 1, the amount of money needed to raise all farm households to the regional median income is calculated as follows. We first establish the median household income in each region, denoted as $M_{r,t}$, where r denotes the region and t denotes the year. We then calculate the difference between these median household incomes and the income (Y) for each lower income farm household by farm typology and region using the following equations. For the farm typology groups, the gap in each year analyzed is calculated as:

$$\text{Gap}_{\text{typ},t} = \sum_{i=1}^{n_{\text{typ1}}} (M_{r,t} - Y_{r,t,i}), \text{typ} = 1,\dots,5$$

where typ is the farm typology classification and n_{typ1} is the number of farm households in that farm typology class with incomes below $M_{r,t}$. We calculated the income gap by region in a similar manner:

$$\text{Gap}_{r,t} = \sum_{i=1}^{n_{r1}} (M_{r,t} - Y_{r,t,i}), r = 1,\dots,9$$

where n_{r1} is the number of farm households in region r with income below $M_{r,t}$. See appendix C for more details on the data used to estimate costs under the different scenarios.
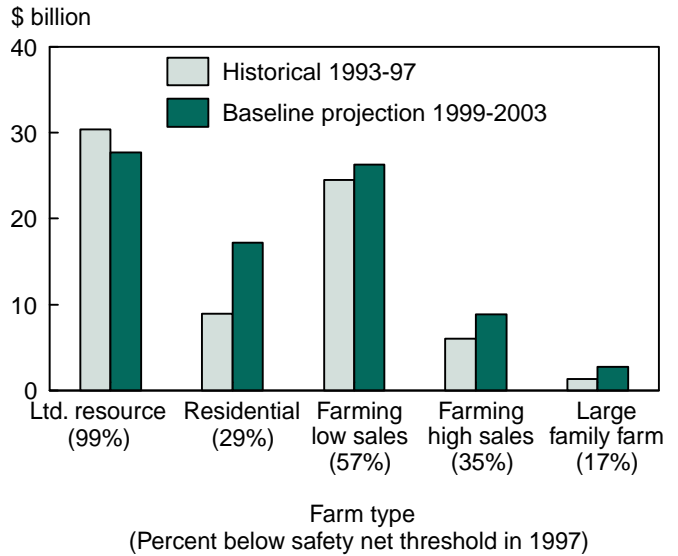
The historical 5-year cost of a safety net based on median U.S. household income was about $71 billion and would cover roughly 800,000 farm households. Annual costs ranged between $12.5 billion in 1997 to $15.5 billion in 1996. The projected cost of this safety net for the 1999-2003 period was $82 billion.

The majority of the benefits ($54 billion) would accrue to *limited resource* and *farming, low sales* households (fig. 2 and table 5). Costs of this safety net were lowest for the *large family farm* typology group at $1.3 billion. While there were farms with income below the safety net threshold in each farm typology group, the proportion in need of assistance varied greatly. For example, in 1997, nearly all *limited resource* farm households qualified for assistance using this safety net measure. In contrast, only 17 percent of *large family farm* households had income below the safety net threshold. More than one in three farms designated as *farming, high sales* qualified for assistance, but histori-

Figure 2

Scenario 1—Regional median household income costs by farm type

$ billion

Farm type
(Percent below safety net threshold in 1997)

cal costs were less than for the *residential lifestyle* group where only 29 percent qualified for assistance.

By region, the historical 5-year cost of a safety net based on median U.S. household income ranged from $2 billion in the Basin and Range to $13.5 billion in the Heartland (appendix fig. 1 and appendix table 1). In 1997, almost 40 percent of Heartland farm households qualified for assistance using this safety net measure. The highest costs within the Heartland region were for *farming, low sales* farm households at $5.6 billion. Almost one in five farms in this region were categorized as this type in 1997. *Residential lifestyle* farms accounted for a larger share of Heartland farms (43 percent), but they did not qualify for assistance as often as farming, low-sales farms. The cost for this safety net was also relatively high in the Eastern Uplands region at $12.2 billion. More than half of the farm households in this region were categorized as *limited resource* or *farming, low sales*. The Fruitful Rim region had the lowest percentage (34 percent) of farms qualifying for assistance.

In 1997, three regions—the Northern Crescent, Southern Seaboard, and Basin and Range—had 50 percent or more of farms qualifying for assistance, using the median regional household income safety net measure. The Northern Crescent has one of the largest concentrations of *limited resource* farms at 14 percent. The Southern Seaboard region contained a relatively high proportion of *limited resource* and *farming, low sales* farm households that qualified for assistance.

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[7] Note that, theoretically, a transfer of money from the wealthiest person in a country to the second wealthiest person is welfare-improving under the SWF established above.

Table 5—Results for median household income safety net by farm typology

	Limited resource	Residential lifestyle	Farming, low sales	Farming, high sales	Large family	Total
1993						
Number of farm households	290,710	689,842	506,207	204,149	68,113	1,759,021
Households below threshold	289,801	186,655	320,647	59,957	11,583	868,643
Cost ($million)	6,277	1,480	4,954	1,042	216	13,969
1994						
Number of farm households	281,404	717,581	484,969	193,436	69,802	1,747,192
Households below threshold	278,840	189,784	296,140	71,800	11,756	848,320
Cost ($million)	6,564	1,770	4,914	1,721	226	15,196
1995						
Number of farm households	244,903	718,021	507,370	195,028	71,609	1,736,931
Households below threshold	244,320	169,140	291,075	65,541	12,887	782,963
Cost ($million)	5,647	1,616	5,240	1,113	251	13,867
1996						
Number of farm households	291,655	537,178	524,847	192,266	95,483	1,641,429
Households below threshold	291,290	172,378	347,396	55,898	15,877	882,839
Cost ($million)	6,924	1,611	5,705	933	360	15,533
1997						
Number of farm households	195,572	811,752	396,698	178,210	79,240	1,661,471
Households below threshold	194,566	233,321	226,037	61,460	13,118	728,501
Cost ($million)	4,988	2,413	3,706	1,217	261	12,585
Program costs 1993-97 ($million)	30,401	8,890	24,520	6,026	1,314	71,150
Estimated costs 1999-2003 (USDA baseline)	27,706	17,179	26,295	8,832	2,720	82,732

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

The Basin and Range region had a high proportion of farm households that qualified, as a result of the low household income of *residential lifestyle* farms in that region. These patterns largely reflect regional disparity in the nonfarm economy, because for the majority of *residential lifestyle* farm households, off-farm income more than offsets any negative farm income in terms of total farm household income.

Scenario 2:
185 Percent of the Poverty Line

The poverty line for a family of four was $16,400 in 1997; 185 percent of this amount is $30,340. This income cutoff is denoted as $PL_{185,t}$. We then calculate the income gap by farm typology and region in a manner similar to above. By farm typology:

$$\text{Gap}_{\text{typ},t} = \sum_{i=1}^{n_{typ2}} (PL_{185,t} - Y_{t,i}), \text{typ} = 1,...,5$$

and by region:

$$\text{Gap}_{r,t} = \sum_{i=1}^{n_{r2}} (PL_{185,t} - Y_{t,i}), r = 1,...,9$$

where n_{typ2} is the number of farm households in a farm typology class with incomes below $PL_{185,t}$ and n_{r2} is the number of farm households in region r with incomes below PL_{185}.

The historical 5-year cost of the scenario 2 safety net was about $42 billion. The threshold for scenario 2 was about $8,000 less than that of scenario 1, based on the median household income. As a result, costs for scenario 2 over the 1993-97 period were nearly $30 billion lower than costs for scenario 1. Under the 185 percent of poverty measure, just over 530,000 farm households would receive assistance compared with approximately 800,000 households using the median household income safety net measure. The projected cost for the 1999-2003 period based on the 185-percent-of-poverty measure was $49 billion.

The total costs for this scenario would be substantially less if we had applied the official poverty line to each household rather than using the weighted average of the four-person poverty line for all households, regard-

less of household size.[8] As seen in table 2, the average farm household size was 2.7 persons in 1996. In addition, farm types with especially low incomes have lower than average farm household sizes. For example, the average household size in *limited resource* farms was 2.4 people in 1996.

Similar to patterns under scenario 1, the bulk of the benefits accrued to *limited resource* and *farming, low sales* households (fig. 3 and table 6). These two typology groups had the highest proportion of farms that qualified for assistance, at 96 percent and 45 percent. Only 12-14 percent of *residential lifestyle* and *large family farm* households qualified for assistance using the 185-percent-of-poverty measure. Average cost per recipient is highest for *limited resource* and *large family farm* classifications, each having costs at over $18,000 in 1997. This finding suggests that the largest differences between the median household income scenario and the 185-percent-of-poverty scenario occur for these groups. The regional distribution of costs for the 185-percent-of-poverty scenario was similar to that of the median household income scenario (appendix fig. 2 and appendix table 2). Three regions, the Heartland, Northern Crescent, and Eastern Uplands, accounted for half of the historical costs. Costs per eligible household were highest in the Eastern Uplands and Mississippi Portal regions, at over $18,000 per eligible household. The Mississippi Portal, Northern Great Plains, and the Basin and Range Regions were the lowest historical cost regions at $2.3 billion, $2 billion, and $1.5 billion, respectively. This Mississippi Portal had high cost per recipient, but low overall costs because a small proportion of farms are located in that region.

The proportion of farm households that qualified for assistance in 1997 ranged from 25 percent in the Fruitful Rim region to 43 percent in the Southern Seaboard. The eligible proportion varied from one year to the next. For example, 53 percent of farm households in the Fruitful Rim region qualified for assistance in 1996 compared with 25 percent in 1997. Although total safety net costs were relatively stable across years, annual costs varied considerably by region. A quantitative measure of variability such as the coefficient of variation equaled 14 percent for total costs over the 1993-97 period. Regional coefficients of variation ranged from 21 percent for the Heartland to

Figure 3

Scenario 2—185-percent-of-the-poverty-line costs by farm type

$ billion

Farm type
(Percent below safety net threshold in 1997)
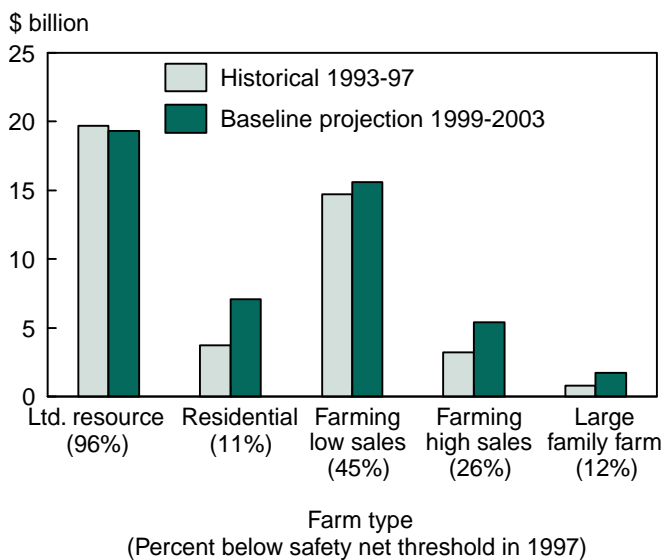
more than 60 percent for the Fruitful Rim, Basin and Range, and Mississippi Portal.

Scenario 3:
Average Adjusted Expenditures

U.S. household expenditures averaged $33,797 in 1996, according to the Consumer Expenditure Survey (CES). However, housing and transportation expenditures incurred by farm households (as distinct from the farm business) are about half those incurred by U.S. households.[9] We adjusted average U.S. household expenditures to $25,863 to reflect this difference in housing and transportation expenses. Using methods similar to those described above, we define average household expenditures as EXPt and then calculate the income gap by farm typology class and region as:

$$\text{Gap}_{\text{typ},t} = \sum_{i=1}^{n_{typ3}} (\text{EXP}_t - Y_{t,i}), \text{typ} = 1,\ldots,5$$

$$\text{Gap}_{\text{P}_{r,t}} = \sum_{i=1}^{n_{r3}} (\text{EXP}_t - Y_{t,i}), r = 1,\ldots,9$$

where n_{typ3} is the number of farm households in each farm typology class with incomes below EXP_t and n_{r3} is the number of households in each region with incomes below EXP_t.

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[8] Information on the number of farm household members was not available in the 1997 ARMS Phase III.

[9] This difference 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.

Table 6—Results for 185 percent of poverty safety net by farm typology

	Limited resource	Residential lifestyle	Farming, low sales	Farming, high sales	Large family	Total
1993						
Number of farm households	290,710	689,842	506,207	204,149	68,113	1,759,021
Households below threshold	279,252	60,632	231,414	44,574	9,264	625,136
Cost ($million)	3,966	459	3,027	623	134	8,209
1994						
Number of farm households	281,404	717,581	484,969	193,436	69,802	1,747,192
Households below threshold	266,579	87,433	226,114	49,039	8,687	637,852
Cost ($million)	4,331	667	3,117	706	145	8,966
1995						
Number of farm households	244,902	718,020	507,370	195,027	71,609	1,736,928
Households below threshold	237,465	82,914	219,229	47,316	9,852	596,776
Cost ($million)	3,612	568	3,077	645	156	8,058
1996						
Number of farm households	291,655	537,178	524,847	192,266	95,483	1,641,429
Households below threshold	288,990	68,677	260,741	37,925	12,298	668,631
Cost ($million)	4,398	989	3,065	490	242	9,184
1997						
Number of farm households	195,571	811,751	396,697	178,210	79,240	1,661,469
Households below threshold	187,836	90,353	179,601	46,414	9,333	513,537
Cost ($million)	3,423	1,001	2,449	723	168	7,765
Program costs 1993-97 ($million)	19,730	3,685	14,736	3,186	845	42,181
Estimated costs 1999-2003 (USDA baseline)	19,251	7,120	15,604	5,367	1,709	49,051

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

The total cost during 1993-97 of an expenditure safety net is estimated at $30.8 billion, which is lower than the other scenarios. The number of farm households that would qualify for assistance in 1997 was 450,000 or about 25 percent of all households considered. Average cost per household was just over $13,000. The projected cost for this safety net measure was $36 billion for the 1999-2003 period.

More than 80 percent of the total cost of this safety net was accounted for by *limited resource* and *farming, low sales* farm households (fig. 4 and table 7). Only about 10 percent of *residential lifestyle* or *large family* farms qualified for assistance. Almost one in four households of *farming, high sales* farms were eligible for assistance. The 5-year cost for this typology group was relatively low at $2.4 billion, reflecting the small difference between farm household income and this safety net threshold during the 1993-97 period.

The share of farms below the expenditure safety net threshold ranged from 21 percent in the Heartland to 37 percent in the Southern Seaboard region. The Heartland and Northern Crescent regions had the high-

est 5-year historical costs, at $5.4 billion each (appendix fig. 3 and appendix table 3). Most of the costs in the Heartland region were accumulated by farm households classified as *farming, low sales*. In the Northern
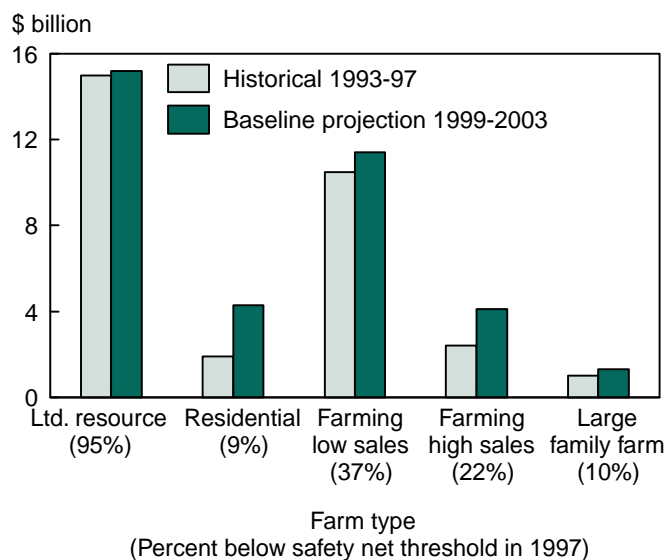
Figure 4

Scenario 4—Average adjusted expenditures costs by farm type

$ billion

Farm type
(Percent below safety net threshold in 1997)

Table 7—Results for adjusted expenditure income safety net by farm typology

	Limited resource	Residential lifestyle	Farming, low sales	Farming, high sales	Large family	Total
1993						
Number of farm households	290,710	689,842	506,207	204,149	68,113	1,759,021
Households below threshold	265,790	41,666	198,871	37,632	8,155	552,114
Cost ($million)	2,954	270	2,149	473	102	5,947
1994						
Number of farm households	281,404	717,581	484,969	193,436	69,802	1,747,192
Households below threshold	259,940	59,911	183,808	42,117	7,667	553,443
Cost ($million)	3,342	417	2,187	536	114	6,595
1995						
Number of farm households	244,902	718,020	507,370	195,027	71,609	1,736,928
Households below threshold	223,544	49,356	188,019	39,236	7,958	508,113
Cost ($million)	2,725	320	2,288	477	122	5,931
1996						
Number of farm households	291,655	537,178	524,847	192,266	95,483	1,641,429
Households below threshold	274,918	50,416	220,617	30,195	11,383	587,529
Cost ($million)	3,276	292	2,101	362	194	6,225
1997						
Number of farm households	195,571	811,751	396,697	178,210	79,240	1,661,469
Households below threshold	186,021	73,425	144,948	39,278	8,264	451,936
Cost ($million)	2,663	632	1,791	548	456	6,091
Program costs 1993-97 ($million)	14,960	1,931	10,515	2,395	988	30,790
Estimated costs 1999-2003 (USDA Baseline)	15,171	4,346	11,429	4,146	1,323	36,415

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

Crescent region, *limited resource* farms accounted for two-thirds of the 1993-97 cost. In the Fruitful Rim region, which is characterized by relatively large specialty-crop farms, cost per qualifying household, $23,000, was nearly twice as high as for other regions.

Scenario 4:
Median Hourly Earnings of Nonfarm Self-Employed

Median hourly earnings of nonfarm self-employed individuals (those who worked at no other job) were $10 per hour in 1997, based on data from the Current Population Survey. This safety net measure focuses more specifically on the ability of farm businesses to provide an adequate return to the owners/operators. In addition, the safety net scenario based on wage rate concepts is limited to operators of farm businesses who identified farming as their primary occupation and were organized as sole proprietorships. This group includes just over 700,000 farm businesses (36 percent of the total). Median hourly earnings of nonfarm self-employed is denoted by $NFHEARN_t$ and the estimated hourly earnings of farm operators who identify their

primary occupation as farming is denoted by $FHEARN_{t,i}$. Let $HOUR_{t,i}$ be the number of hours worked by farmer i. The income gaps by farm typology and region are then

$$\text{Gap}_{typ,t} = \sum_{i=1}^{n_{typ4}} (NFHEARN_t - FHEARN_{t,i})HOUR_{t,i}, typ = 1,...,5$$

$$\text{Gap}_{r,t} = \sum_{i=1}^{n_{r4}} (NFHEARN_t - FHEARN_{t,i})HOUR_{t,i}, r = 1,...,9$$

where n_{typ4} and n_{r4} are the number of farm households with wages below $NFHEARN_t$ for each type of farm and region.

This scenario allows us to illustrate two aspects of farm households not illuminated by the other three scenarios. First, the number of hours per week worked by farmers is about 20 percent higher than the number worked by nonfarm proprietors. According to the CPS, the average number of hours worked was 47.3 hours for farmers and 39.6 hours for nonfarm proprietors. Using the ARMS, for farms where farming appears to be the main occupation as judged by the number of annual

hours, the hours are substantially higher than the average in the CPS. For example, the farm operator in *farming, high sales* farms averaged 59.7 hours a week.

Second, this scenario demonstrates the low wages earned by many farmers in comparison to what they might earn in nonfarm professions. Possible reasons for this choice to farm rather than engage in nonfarm activities include the nonpecuniary intrinsic values associated with farming; the lack of better-paying jobs located nearby; and a possible nontransferability of the farming skills to nonfarm professions. One potential criticism of a farm safety net is that government support goes to persons who could earn more in alternative occupations.

Historical costs for the earnings safety net were $53.5 billion, and nearly three in four farm businesses qualified for assistance. Projected costs of this safety net for the 1999-2003 period were $60.8 billion.

Among the farm typology groups, *farming, low sales* farm businesses had the largest historical cost at $34 billion under this scenario (fig. 5 and table 8). Most farms in this classification (86 percent) qualified for assistance, second only to the 98 percent of *limited resource* operators who earned less than $10 per hour. Average costs per recipient ranged from $13,000 for *limited resource* farms to nearly $24,000 for the *farming, high sales* category.

Figure 5

Scenario 4—Median hourly earnings of nonfarm self-employed costs by farm type

$ billion

Farm type
(Percent below safety net threshold in 1997)
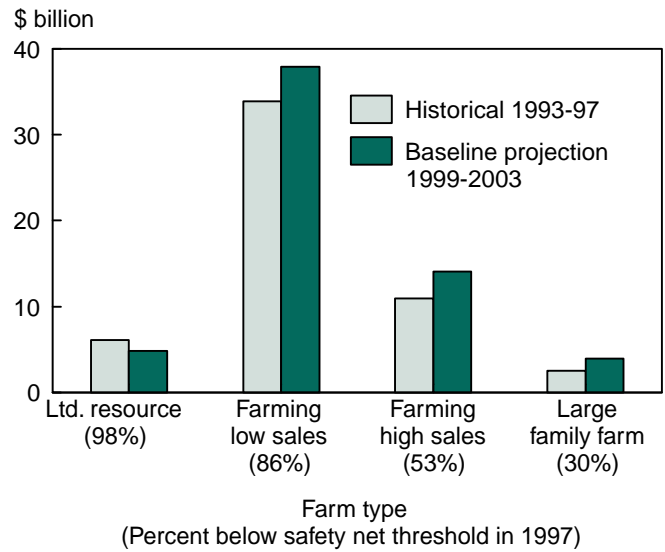
Two regions, the Heartland and Northern Crescent, accounted for nearly half of the earnings rate safety net costs for the 1993-97 period (appendix fig. 4 and appendix table 4). These regions had 36 percent of *farming, low sales* farm businesses in 1997. Costs per recipient ranged from $15,000 in the Eastern Uplands to over $23,000 in both the Northern Great Plains and Basin and Range regions. The Eastern Uplands region had the highest share of farm businesses that qualified for assistance, at 88 percent.

Table 8—Results for median wage rate income safety net by farm typology

	Limited resource	Farming, low sales	Farming, high sales	Large family	Total
1993					
Number of farm households	99,048	509,703	206,455	65,804	881,010
Households below threshold	93,720	452,092	141,149	34,428	721,389
Cost ($million)	1,392	7,754	3,173	806	13,125
1994					
Number of farm households	110,203	487,400	302,435	67,783	967,821
Households below threshold	103,412	391,309	101,783	15,365	609,582
Cost ($million)	1,549	5,845	2,107	346	9,847
1995					
Number of farm households	95,861	504,725	195,547	67,932	864,065
Households below threshold	87,618	421,388	95,274	21,199	625,479
Cost ($million)	1,353	7,328	2,006	478	11,165
1996					
Number of farm households	87,826	455,650	142,442	64,633	750,551
Households below threshold	87,587	393,196	68,683	18,335	567,801
Cost ($million)	959	6,248	1,365	381	8,953
1997					
Number of farm households	67,103	396,698	178,210	71,239	713,250
Households below threshold	66,005	340,320	94,690	21,446	522,461
Cost ($million)	897	6,754	2,258	496	10,405
Program costs 1993-97 ($million)	6,150	33,928	10,909	2,508	53,494
Estimated costs 1999-2003 (USDA Baseline)	4,828	37,936	14,095	3,895	60,755

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

Comparison with Current Farm Programs

During the period 1993-97, direct government payments to farms, including production flexibility contract payments, loan deficiency payments, and other program payments, totaled $43.4 billion. Program costs during this time period reflect the economic environment in agriculture and the pre-1996 farm bill mechanisms for program payments (e.g., deficiency payments). Projections for program costs in the 1997-2002 time period reflect more pessimistic commodity prices and differences in the mechanisms of how program payments are made (e.g., Loan Deficiency Payments and Production Flexibility Contract Payments). As seen in fig. 6, for scenarios 1 and 4 (the regional median household income and median hourly earnings of nonfarm self-employed scenarios), total costs from 1993 to 1997 are higher than under current farm programs. For scenarios 2 and 4 (185 percent of the poverty line and average adjusted expenditures), total costs are lower than under current farm programs. One way to compare the costs of the alternative construction of a farm safety net proposed in this report with current farm programs is to calculate the safety net threshold such that the costs of this alternative safety net are lower. As measured for 1993-97, any safety net threshold less than about $30,000 will result in a lower total cost than current farm programs.

Regardless of the safety net threshold chosen, however, the distributional effects by both farm type and region are strikingly different than with current programs (see fig. 7-10 and appendix fig. 5-8).[10] Only lower income farmers would benefit under these safety net scenarios, while farmers producing selected commodities benefit from current farm programs.

The Federal Agriculture Improvement and Reform (FAIR) Act of 1996 instituted a shift in Federal farm programs toward increased operator control by removing acreage restrictions. In addition, the FAIR act eliminated automatic, counter-cyclical payments, although such payments are still possible on an *ad hoc* basis. Farmers with a historical production base for wheat, corn, grain sorghum, barley, oats, upland cotton, and rice were eligible to sign production flexibil-

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[10] Recall that *large family* farms and *agribusinesses* are not included in our safety net scenarios because the incomes of *large family* farms, by definition, are too high to qualify for any safety net program and *agribusinesses* are not households. Both of these farm typologies do qualify for current farm programs.

Figure 6

Scenario costs compared with direct government payments

$ billion
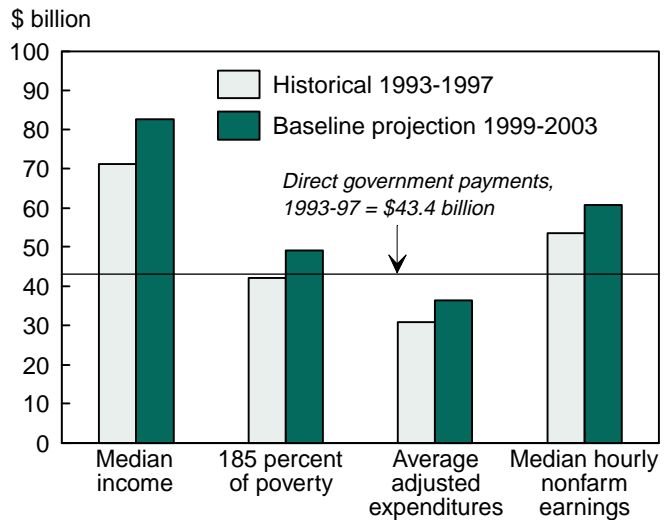
ity contracts. The legislation provides specific payments to farmers over a 7-year period, with the payments generally declining after the first few years (except as modified by subsequent emergency legislation). The FAIR Act also continued loan deficiency payments (LDP) for major field crops, including oilseeds. Farmers are eligible for LDPs when posted county prices (or adjusted world prices for upland cotton and rice) fall below the established government commodity loan rate adjusted for local conditions. The third major component of programs providing direct government payments are environmental conservation programs, from which eligible farmers receive annual payments on the amount of environmentally sensitive acreage enrolled in the programs.

Under current farm programs, only about 36 percent of all farms received a direct government payment in 1997, with an average payment of $7,987 per participating farm. By farm typology group, the share of farms receiving payments ranged from less than 20 percent of *limited resource* farms to 75 percent of farms in *farming, high sales* and *large farm* groups (table 9). With the safety net concept applied using the alternative scenarios, the distribution of total program benefits would change dramatically. Almost all *limited resource* farm households would receive safety-net payments—partly because *limited resource* farm households are much more likely than more well-off farms to specialize in beef cattle (Hoppe, 1999, p. 12). Since current farm programs tend not to direct payments to farms specializing in beef cattle, a safety net designed with respect to income rather than

Figure 7

Scenario 1—Regional median household income compared with direct government payments in 1997: By farm type
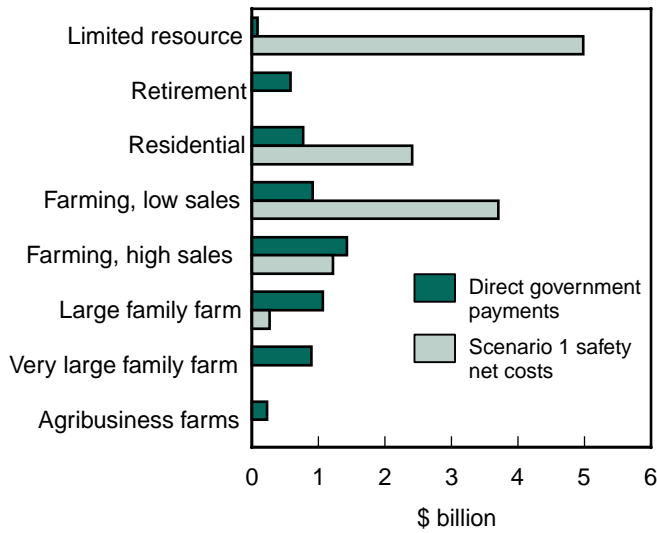

Figure 8

Scenario 2—185-percent-of-the-poverty line compared with direct government payments in 1997: By farm type

Figure 9

Scenario 3—Average adjusted expenditures compared with direct government payments in 1997: By farm type
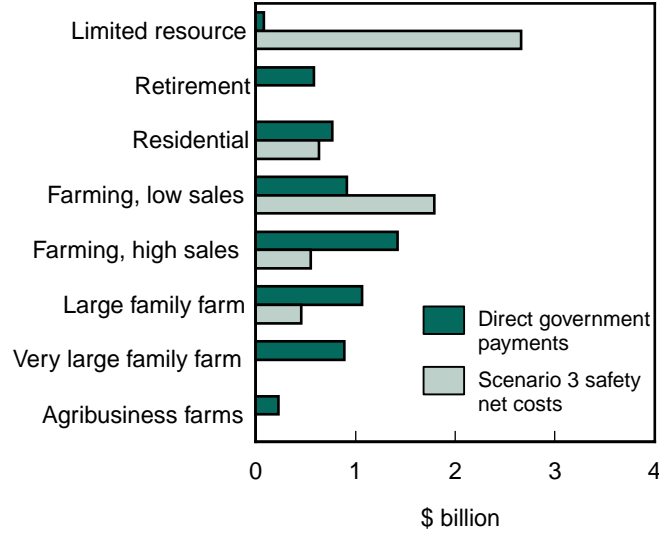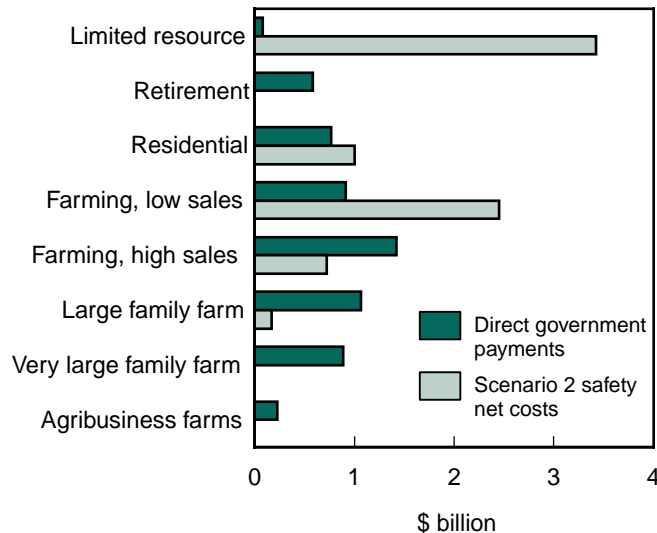

Figure 10

Scenario 4—Median hourly earnings of nonfarm self-employed compared with direct government payments in 1997: By farm type
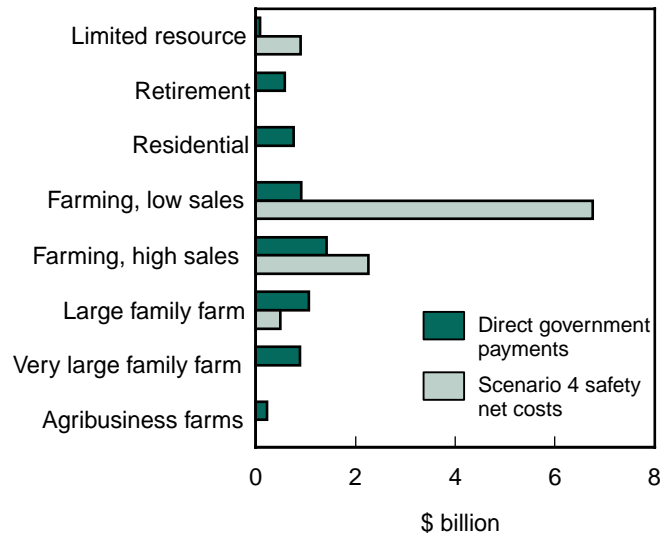
production will therefore direct more payments to *limited resource* farm households. Even though a lower percentage of *farming, low sales* households would receive benefits than under current farm programs, the amount of payment per recipient would be more than twice as high. The total amount of safety-net payments going to *large* and *very large* farms would be half the amount of direct payments to these categories of farms in 1997.

The regional results (table 10) also show that under the scenarios described here, farm households in the Northern Crescent, Eastern Uplands, Southern Seaboard, and Fruitful Rim regions would generally receive a higher level and a greater proportion of benefits than under current programs. Farms in these regions generally produce dairy products, beef, hogs, fruits, vegetables, and other farm products not included in the commodity programs that provide direct government payments.

Table 9—Distribution of farm program payments by farm typology, 1997

	Limited resource	Retirement	Residential lifestyle	Farming, low sales	Farming, high sales	Large family	Very large family	Agribusiness	Total
Average direct government payment ($)	424	1,906	941	2,307	7,987	13,483	19,411	5,975	2,903
Payment per recipient ($)	2,183	6,395	3,844	4,948	10,889	17,766	32,087	16,401	7,987
Farms receiving payments (%)	19.4	29.8	24.5	46.6	73.4	75.9	60.5	36.4	36.4
AMTA (%)	11.9	17.5	17.1	40.7	69.1	72.3	55.9	22.8	28.8
CRP and WRP (%)	5.4	17.3	9.3	9.1	13.0	10.7	10.4	18.7	10.6

Source: Calculated by ERS using data from the 1997 Agricultural Resource Management Study (ARMS).

Table 10—Distribution of farm program payments by resource region, 1997

	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	MS Portal
Average direct government payment ($)	4,338	1,656	8,592	4,272	345	1,233	2,177	2,484	4,781
Payment per recipient ($)	7,054	4,567	10,831	10,110	2,596	5,701	15,055	15,301	13,450
Farms receiving payments (%)	61.5	36.3	79.3	42.3	13.3	21.6	14.5	16.2	35.5
AMTA (%)	51.9	27.2	67.6	35.8	9.0	13.3	10.4	11.2	25.1
CRP and WRP (%)	17.0	9.5	26.3	13.6	2.5	9.4	3.3	5.0	11.8

Source: Calculated by ERS using data from the 1997 Agricultural Resource Management Study (ARMS).

In theory, the existence of safety nets leads to actions that people would not take in the absence of assistance programs. For example, due to the existence of unemployment insurance, some people may spend more time in a job search than they would without such programs (Diamond, 1981). Or, if benefits are targeted based on geographic considerations, some people may move to an area to obtain the benefits (Baker and Grosh, 1994). In the case of current farm programs, the main problem appears to be nonoptimal production levels. For example, McDowell, Kramer, and Price (1989) found that agricultural production would have been 17 percent lower from 1970 to 1982 in the absence of farm programs. And, Gardner (1987) for example, showed that there was a $6 billion net social cost due to $17.7 billion in farm program spending in 1987. Implicitly, therefore, some farmers absent a safety net would no longer farm. (For more about negative consequences of the current farm safety net, see, for example, Gardner, 1992.) A farm safety net based on household income would probably have different negative behavioral incentives than current farm safety net programs insofar as the structure of the benefits would be different. The magnitude of these negative incentives is likely to be directly related to the safety net threshold—with a higher threshold, the incentives are likely to be larger.

One should be cautious, however, about ascribing too much of an impact of safety net programs on behavior, especially when the safety net thresholds are set low enough. Take the case of the now defunct Aid to Families with Dependent Children (AFDC), a program primarily designed for low-income single mothers. The benefit levels from this program were set such that recipients' total income would be below the poverty line, far below the poverty line in some States. While hours of work were lower than they would have been without AFDC benefits, the work disincentives were calculated to have led to about a 5-percent increase in the AFDC caseload (Moffitt, 1992, p. 17). Over time, the number of single-parent households has increased, but that increase, despite the claims of some policymakers, has not been attributed to the AFDC program (Moffitt, 1992; p. 29). While a farm safety net would not be implemented like AFDC, this research shows that, just as concerns about negative incentives in other programs were overstated, so too might be concerns about negative incentives associated with a reconstructed farm safety net based on household income.

Conclusions

This report presented three approaches to a farm household safety net based on income or expenditure thresholds, and a fourth based on a minimum standard of living similar to that of the average nonfarm proprietor. While we do not address implementation issues, these safety-net approaches could be used with a mix of commodity and conservation programs. Were this minimum-standard safety-net concept introduced as policy, the amount of compensation would likely be adjusted to lower threshold levels than used in this analysis. Any threshold less than roughly $30,000 in household income would result in lower safety net costs than current farm program payments. A safety net that used a mix of commodity and conservation programs might cost more than current farm programs.

The current set of farm safety net programs generally benefits farmers producing selected commodities, and the primary beneficiaries are larger farms. For economists and others, safety nets are judged by their ability to ensure some minimum standard of living for everyone in a society or a subset of society. In this report, we have analyzed four farm safety net scenarios that are explicitly defined as ensuring all farm households have some minimum standard of living. We find that these scenarios would lead to a very different distribution of farm safety net payments than current programs, with smaller, lower income farmers benefiting more than farmers with large farms. The current farm safety net may have appeal as a commercial or industrial policy. In light of this report, policymakers and researchers may wish to further consider the costs and benefits of maintaining the current farm safety net.

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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.

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.[1] 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

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[1] 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/saipe/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
1993									
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 ($million)	2,753	2,033	793	1,767	2,772	1,586	1,305	428	528
1994									
Number of farm households	415,483	247,374	99,636	231,828	262,852	183,577	172,126	60,626	73,690
Households below threshold	181,800	139,588	37,508	118,124	142,944	89,245	75,583	28,123	35,405
Cost ($million)	3,001	2,459	640	2,528	2,319	1,719	1,439	465	621
1995									
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 ($million)	2,577	1,767	825	1,873	2,480	1,910	1,467	463	501
1996									
Number of farm households	339,080	216,811	69,948	236,288	273,263	170,556	176,246	54,712	104,525
Households below threshold	154,362	121,170	30,072	112,763	165,969	91,136	105,828	20,506	81,033
Cost ($million)	2,656	1,979	514	1,758	3,030	1,600	2,364	295	1,333
1997									
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
1993									
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 ($million)	1,477	1,219	475	1,001	1,709	892	774	239	418
1994									
Number of farm households	415,483	247,374	99,636	231,828	262,852	183,577	172,126	60,626	73,690
Households below threshold	125,505	104,975	26,228	89,113	106,825	79,367	58,463	20,126	27,250
Cost ($million)	1,726	1,441	393	1,173	1,278	1,030	899	651	369
1995									
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 ($million)	1,487	981	478	1,049	1,432	1,137	939	261	290
1996									
Number of farm households	339,080	216,811	69,948	236,288	273,263	170,556	176,246	54,712	104,525
Households below threshold	101,642	85,568	21,025	81,896	132,930	78,551	92,592	15,701	58,726
Cost ($million)	1,493	1,085	297	929	1,711	1,339	1,480	138	708
1997									
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
1993									
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 ($million)	1,043	928	356	712	1,278	643	574	90	319
1994									
Number of farm households	415,483	247,374	99,636	231,828	262,852	183,577	172,126	60,626	73,690
Households below threshold	107,742	88,055	23,964	79,009	90,674	67,909	52,949	17,699	25,442
Cost ($million)	1,293	1,090	300	853	910	758	693	423	271
1995									
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 ($million)	1,089	713	348	753	1,057	830	729	197	212
1996									
Number of farm households	339,080	216,811	69,948	236,288	273,263	170,556	176,246	54,712	104,525
Households below threshold	91,113	72,480	15,244	70,796	117,075	63,663	89,095	11,171	56,892
Cost ($million)	1,110	769	228	624	1,213	585	1,118	97	476
1997									
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.

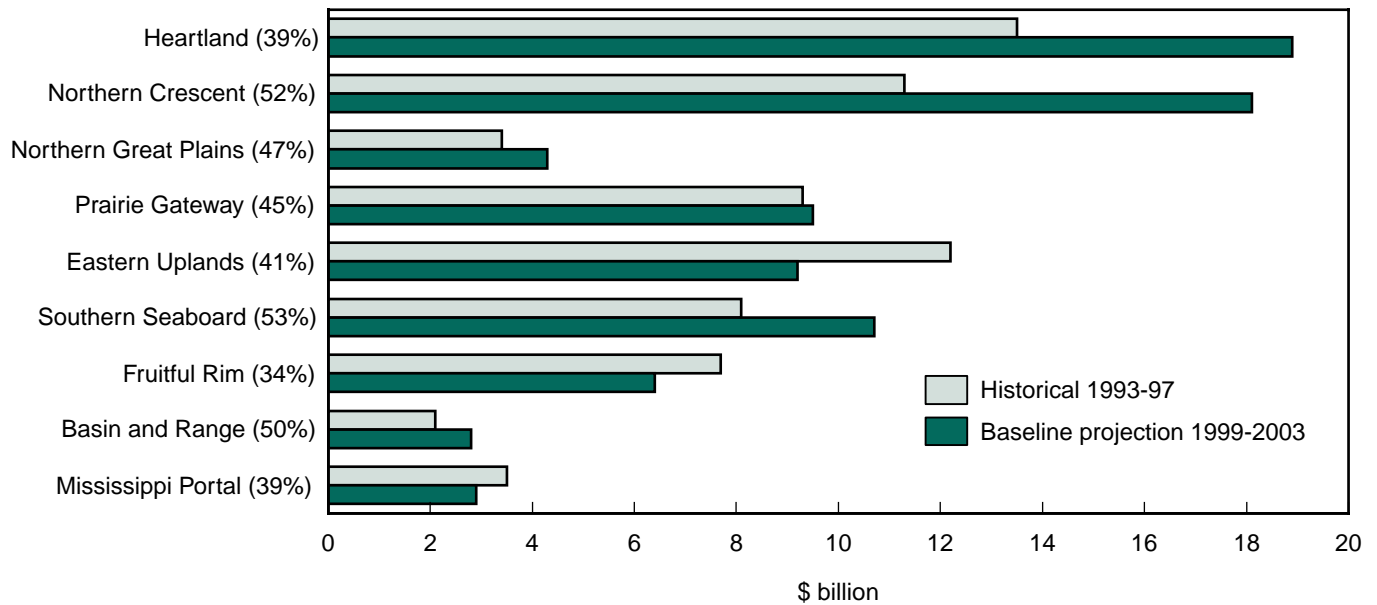**Appendix table 4—Results for median wage rate income safety net by resource region**

	Heartland	Northern Crescent	Northern Great Plains	Prairie Gateway	Eastern Uplands	Southern Seaboard	Fruitful Rim	Basin and Range	MS Portal
1993									
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 ($million)	3,432	2,733	1,012	1,652	1,476	955	1,027	437	398
1994									
Number of farm households	218,381	138,605	60,531	119,566	96,259	188,068	80,801	30,805	34,805
Households below threshold	144,996	102,179	41,016	83,301	79,169	63,351	52,414	20,688	22,468
Cost ($million)	2,335	2,186	759	1,209	1,159	777	740	326	351
1995									
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 ($million)	2,219	2,104	840	1,655	1,491	827	1,099	605	320
1996									
Number of farm households	141,010	122,151	43,663	130,251	82,606	88,495	93,057	20,828	28,490
Households below threshold	87,528	96,033	23,325	98,898	74,322	75,674	77,034	15,016	19,971
Cost ($million)	1,293	1,875	471	1,521	935	1,165	1,221	263	204
1997									
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
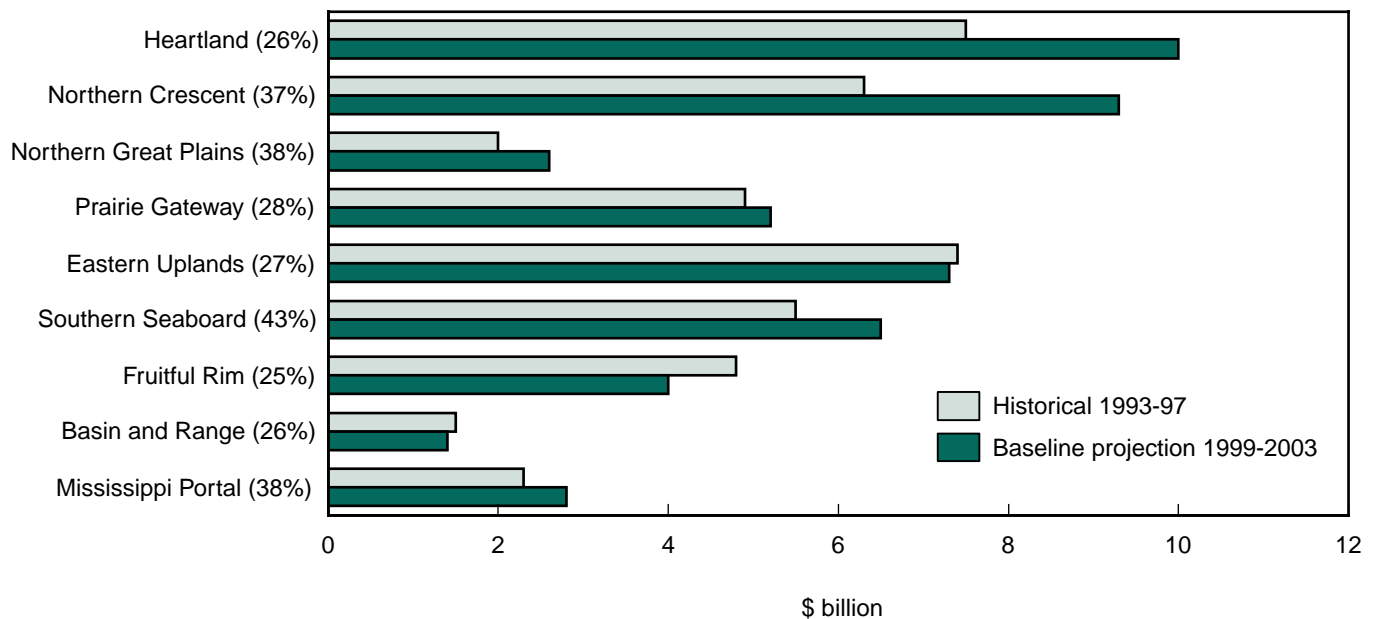**Scenario 1—Regional median household income costs by resource region**

Resource region
(Percent below safety net threshold in 1997)

Heartland (39%)
Northern Crescent (52%)
Northern Great Plains (47%)
Prairie Gateway (45%)
Eastern Uplands (41%)
Southern Seaboard (53%)
Fruitful Rim (34%)
Basin and Range (50%)
Mississippi Portal (39%)

☐ Historical 1993-97
■ Baseline projection 1999-2003

0   2   4   6   8   10   12   14   16   18   20

$ billion

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

Resource region
(Percent below safety net threshold in 1997)

Heartland (26%)
Northern Crescent (37%)
Northern Great Plains (38%)
Prairie Gateway (28%)
Eastern Uplands (27%)
Southern Seaboard (43%)
Fruitful Rim (25%)
Basin and Range (26%)
Mississippi Portal (38%)

☐ Historical 1993-97
■ Baseline projection 1999-2003

0   2   4   6   8   10   12

$ billion

Appendix figure 3
Scenario 3—Average adjusted expenditures costs by resource region
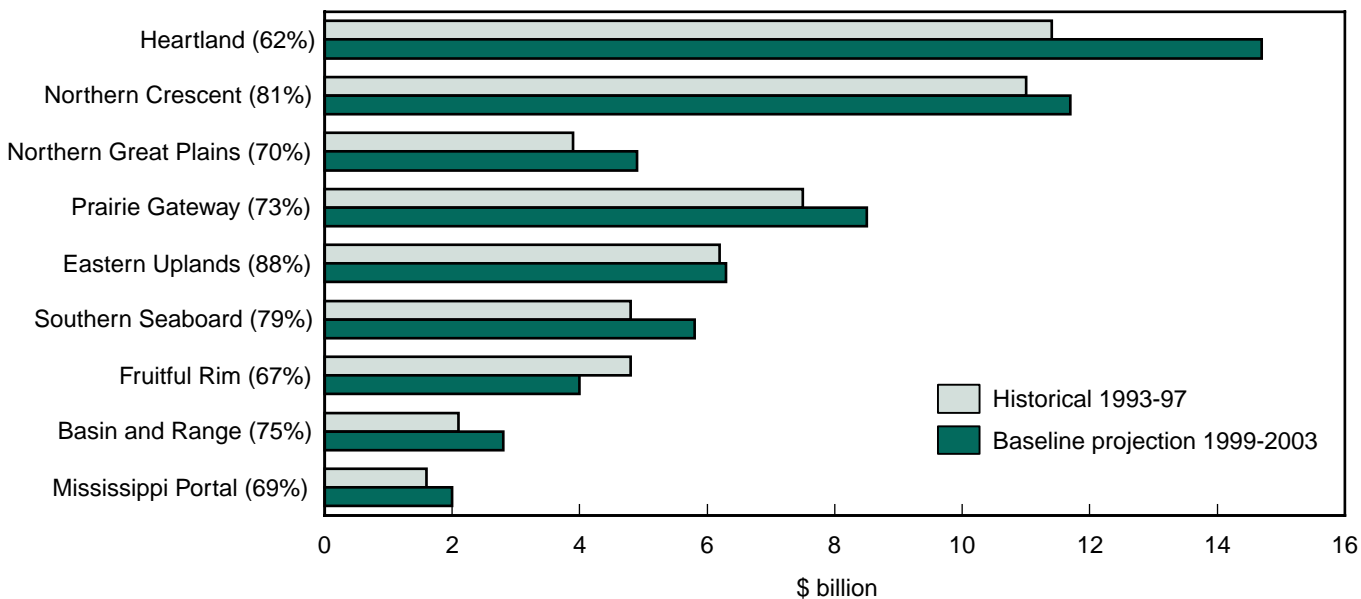
Resource region
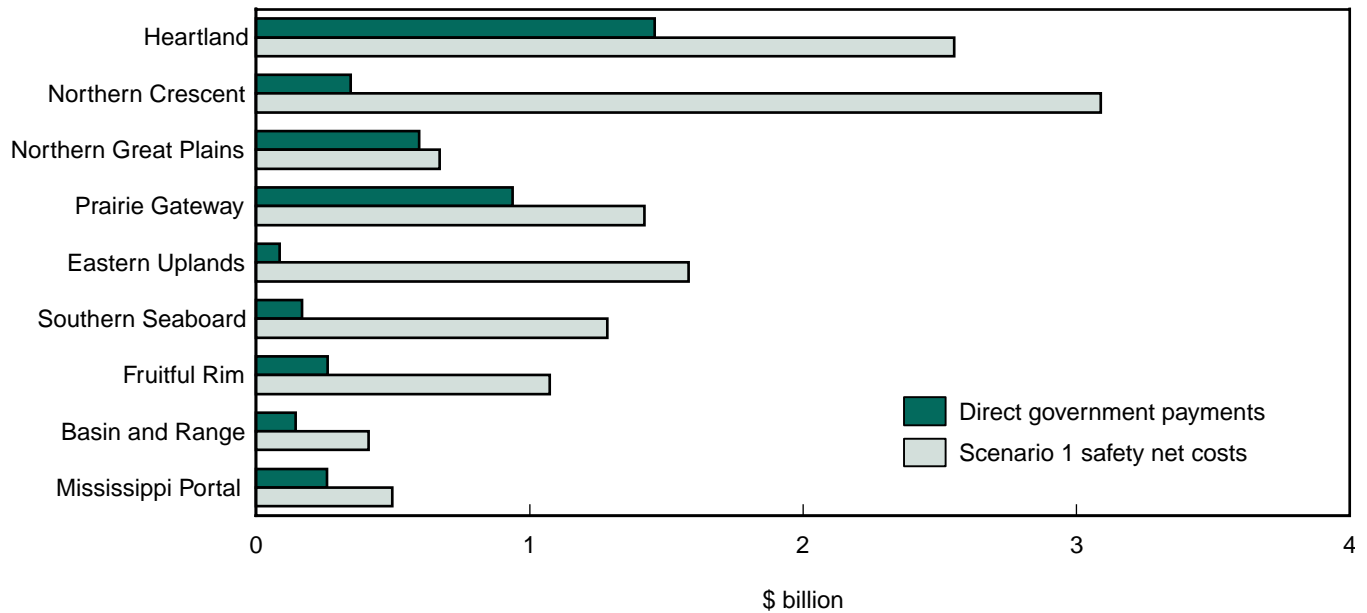(Percent below safety net threshold in 1997)
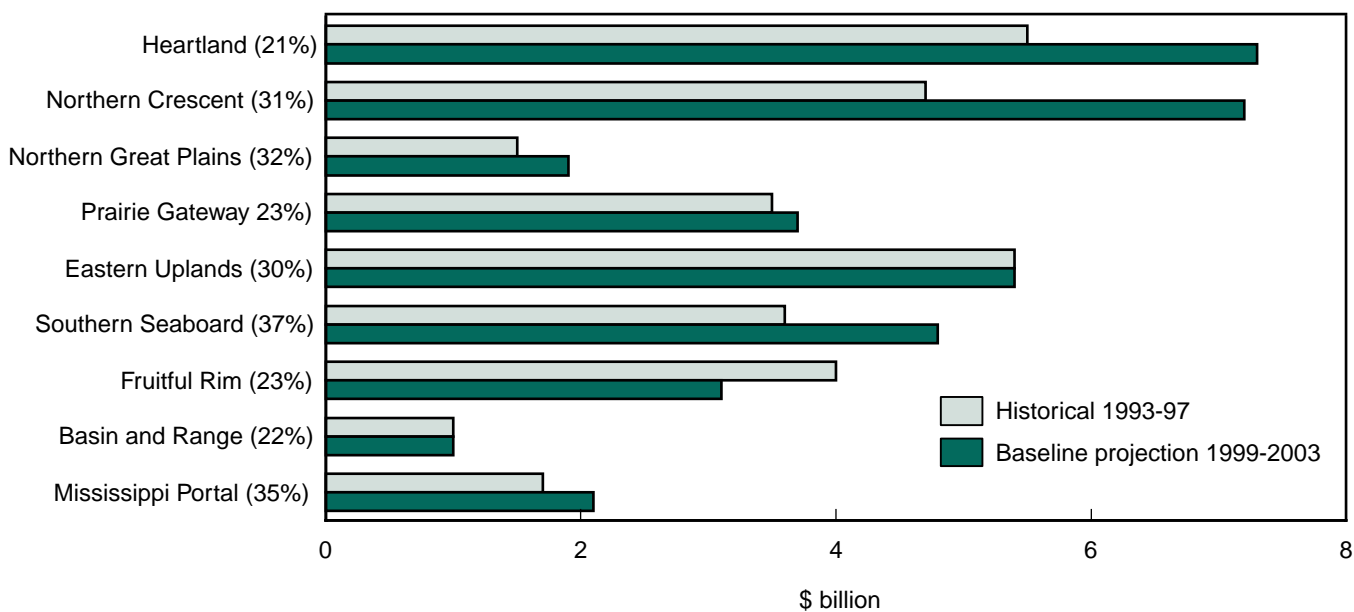
Appendix figure 4
Scenario 4—Median hourly earnings of nonfarm self-employed costs by resource region

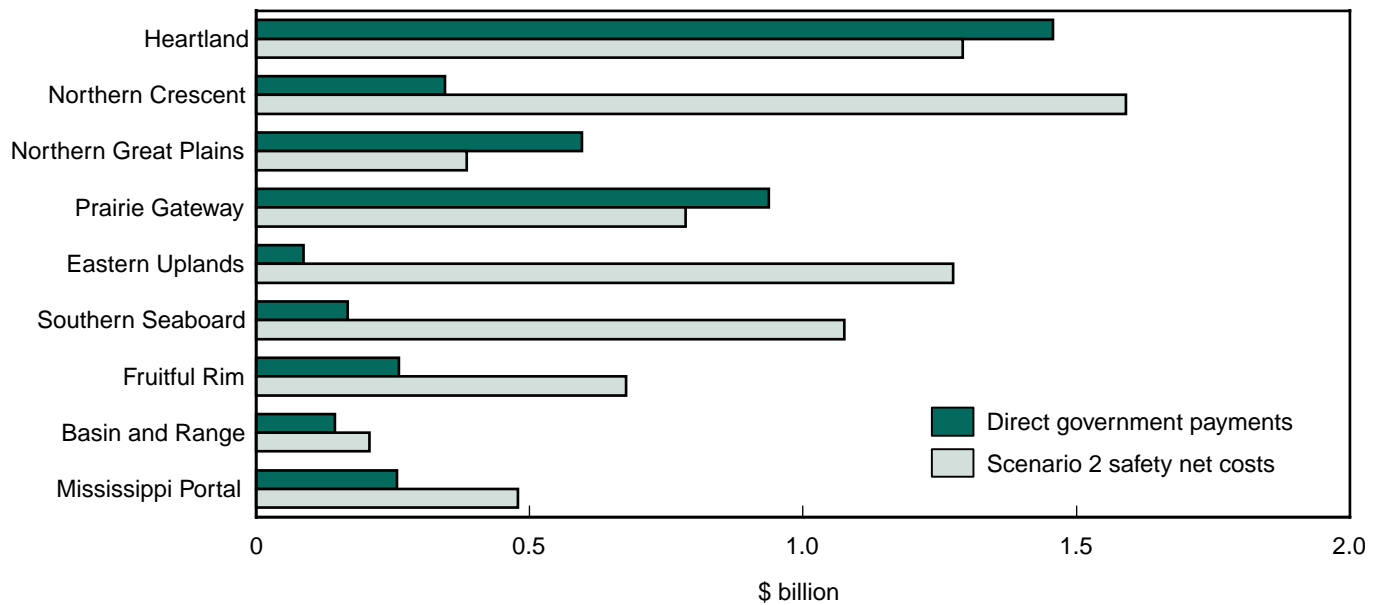Resource region
(Percent below safety net threshold in 1997)

Appendix figure 5

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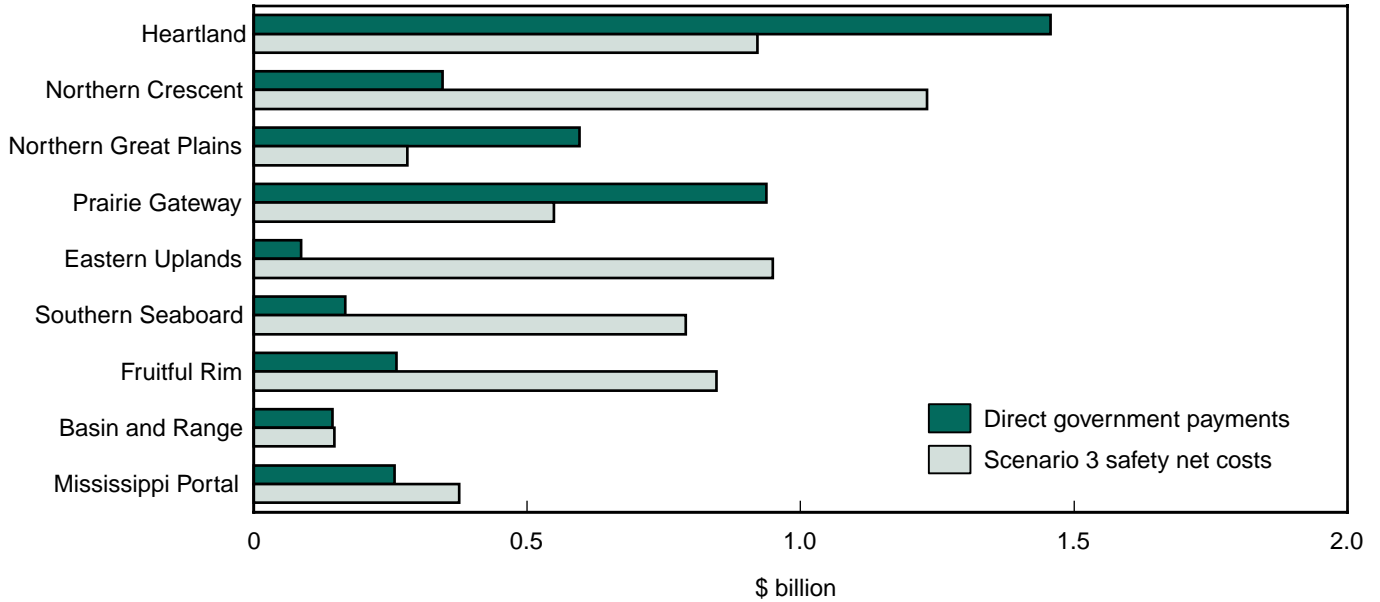

$ billion

Appendix figure 6

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

$ billion

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