

What Piece of the Pie?



LEVEL: Grades 4-12
SUBJECTS: Mathematics, Social Studies, (Economics), Consumer Education, Family and Consumer Science, Business Education, Social Studies

SKILLS: Analyzing; brainstorming; collaborating; comparing similarities and differences; comprehending; creating, reading, and interpreting charts and graphs; developing vocabulary; discussing; estimating; explaining; following directions; predicting; reasoning; recording; synthesizing; understanding cause and effect; using numbers

MATERIALS

Colored pencils in sets of 13 colors or a combination of markers and pencils which have 13 colors; a set of colored transparency pens; transparencies of the attached *What Piece of the Pie?* and *Class Dollar Predictions* sheets; and photocopies of the attached *Class Dollar Predictions*, *What Part of a Dollar?*, *Piece of the Pie in 2000*, and *Farm Costs* sheets.

Optional: crayons, calculators, *Accurate Food Dollar*, *Divided Food Dollar*, *Food Dollar*.

VOCABULARY

advertising, bar graph, profits, depreciation, farm value, transportation, labor, packaging, pie chart, product damage, mean, median, mode

RELATED LESSONS

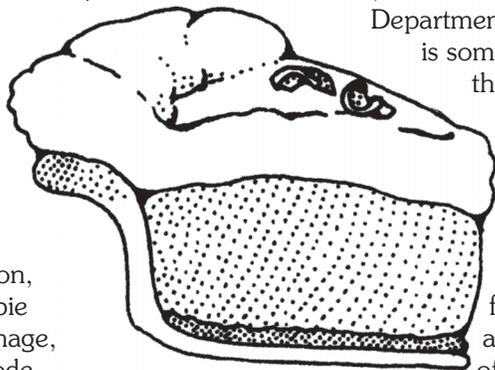
From Sea to Shining Sea
From Fiber to Fashion
Step by Step
Tomatoes to Ketchup,
Chickens to Omelettes

SUPPORTING INFORMATION

As consumers in an economy that produces a bountiful supply of foods and many other agricultural products, Americans give little thought to the millions of workers involved in the system that produces that bounty. Much like the story of the *Little Red Hen* we enjoy ready-to-eat foods without contributing a great deal of work to the process. In addition, consumers in the United

States are spending less of their disposable income for food than any other country in the world. According to the Economic Research Service (ERS) of the United States Department of Agriculture (USDA), consumers spent only 10.4 percent of their disposable income for food in 2000; thereby having more money left over to spend on other things.

While we often hear that less than 2 percent of the U.S. population produces food, this statistic from the United States Department of Agriculture (USDA)



is somewhat misleading. Less than 2 percent of the U.S. population is involved with growing crops and raising animals on U.S. farms or in other production facilities such as greenhouses or feedlots. However, approximately 17 percent of the U.S. population is

involved in the total food and fiber system. This involves producing a raw product; processing that product into a consumable food, beverage or item of clothing; marketing that product; transporting of raw materials and finished products; and retailing those products. Also included in this listing should be those that provide research and development to the food and fiber system; education and dissemination of information; other types of communication; and those that supply inputs and services, e.g. machinery, fertilizer, management advice, financing, etc.

Millions of workers and billions of dollars move food products from the land to our grocery stores and onto our dining tables.

BRIEF DESCRIPTION

Students explore the economics of consumer food products by analyzing who gets what portion of the price we pay for our food.

OBJECTIVES

The student will:

- predict and compare the expenses of retailing a food product;
- create, read, and interpret pie charts and bar graphs; and
- given the range for each expense, compute the average.

ESTIMATED TEACHING TIME

Three Sessions:
45 to 60 minutes each.

The cost includes producing, processing, packaging, advertising, and distributing the food product. As raw materials are changed into forms we can eat and use, they pass through a production cycle. This cycle occurs for all food whether it is a salad, burger or bread. Some of the steps involved may have been breeding, growing, feeding, planting, harvesting, baking, freezing, canning, bottling, packaging, advertising, shipping, warehousing, and more. Production, processing and distribution take time, use energy and equipment, and provide jobs for millions of workers. Each of those workers needs to earn a living to buy a home or pay rent, buy a vehicle, buy their own food and clothing, educate their children, save for retirement, etc. Everybody gets a “piece of the pie,” a portion of the money that makes up the cost of food.

Economic Questions

There are five basic economic questions that deal with the production of any goods. Whether the farmer, processor or consumer, anyone involved in any aspect of the process that takes goods from the field to the consumer, needs to ask these questions:

1. What and how much should be produced?

There are key decisions to be made in any economy or business, which may spell its success or failure. Resources are limited and so is the potential market base. Each decision is a trade-off. If the land is used to grow corn, a producer does not grow soybeans on it at the same time. A business cannot exceed the capability of its labor force, available natural resources, or capital.

At the same time, a business needs to speculate about its potential market. Will exports for corn be strong and help bolster prices? Will other growers plant more or less corn? Will automobile sales remain strong or will consumers want to buy sports utility vehicles? After deciding what to produce, the business must decide how much of each item should be produced.

2. How should goods and services be produced?

At every stage, from buying the seeds to getting the goods to the consumer, decisions must be made about how to get the job done for the least cost, be compatible with good stewardship of the land, and make efficient use of water resources.

3. Who should produce what and who should benefit from that productivity?

Within each economic system, different people do different jobs, businesses sell or provide different services, people and businesses specialize. Who decides which people or companies will produce which goods and services? This question relates to career and business choices. Will a person become an auto mechanic, teacher, musician, veterinarian, or choose some other career? Will a business sell software, produce milk, grow geraniums, or produce advertisements? Between economies, there is specialization as well. Some countries have a competitive advantage due to their resource base, climate, labor force, technologies, or market access.

There are many factors that determine the distribution of income within an economic system. For instance, some of the money will go toward payment for work. Highly trained or skilled labor is valued more than low skilled or labor that requires little training. Demand also affects the amount paid to labor. During times when the economy is slow and unemployment high, labor is more available (in greater supply than demand) and wages tend to be lower than when the economy is thriving. If unemployment is low (in greater demand than supply), then wages tend to be higher. Whether or not labor is organized also influences wages in some cases as well as other factors in income distribution. Each business makes its own decisions about wages, with government setting a minimum wage for all workers.

Other funds will pay for benefits such as health care, retirement pensions, paid vacations, stock options, etc. Benefits are used to entice and retain labor needed for a particular industry in the same way as good wages. Each business makes its own decisions about the benefits it will offer its employees.

The share received by the government for social programs, defense, operating the treasury, entitlements, building roads, etc., is the tax rate. Each country's form of government determines its own tax rate and the services it provides.

Employee benefits vary widely between businesses, within sectors of a single, national economy and between national economies. What should be produced and who benefits from it determine where goods will be produced in the global economy.

4. How should resources be used or conserved? Should we invest in research and technology?

With a limited resource base, the use of resources is a key economic question. Resources need to be used wisely from both a near-term and long-term perspective. Human history seems to indicate that invention shores up a limited resource base or averts a looming resource crisis. The development of the kerosene lantern averted the whale oil crisis at the turn of the 20th century as whales were being hunted to extinction. Norman Borlaug's development of short-stem hybrid wheat initiated the "Green Revolution" and averted the looming food crisis forecast by Thomas Malthus.

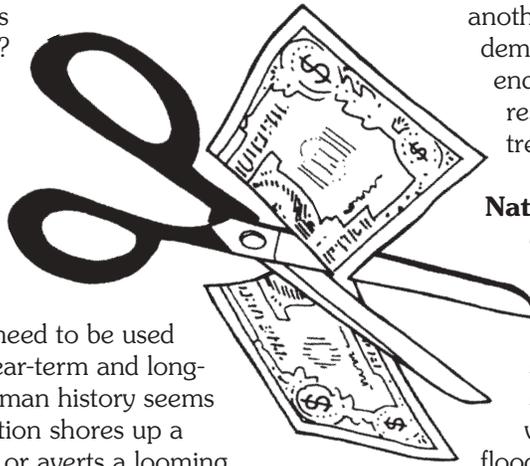
5. Can we change as technology evolves and the market demands shift?

Consumer demands change and new technology is constantly being developed. If a business or economy cannot adapt to ever changing business climates, it will be replaced by those that can. In a global economy, the businesses that have the competitive advantage or meet consumer needs best, will be the survivors. The same will be true for agriculture.

Factors That Influence Food Prices

Beyond the basic questions answered when planning to produce any given product, the food and fiber system must deal with five specific areas that influence food and other agricultural prices. These are supply and demand, natural disasters, perishability of the product, processing and storage costs, and the cost to produce a product.

Supply and Demand: If consumer demand for a food is greater than the supply, the price will increase. If supply is greater than demand, the price will decrease. The available supply may vary widely throughout the year. For example, the supply of many crops reaches a peak at certain times of the year. When supplies are readily available, demand may not keep up with supply, so prices are lower. Foods in limited supply have high prices because demand for limited or scarce items means people will pay more to get them. Since weather has such a significant impact on agriculture, the supply may vary widely from one locale to



another, season to season, or year to year. The demand for a given commodity may be influenced by media attention to recent nutritional research, advertising, medical breakthroughs, trends, and/or fads.

Natural Disasters: Severe weather, earthquakes, floods, and droughts affect food prices. Freezing temperatures in California or Florida can damage orange trees, reducing the supply for a season or even years. Again, demand for a scarce supply increases prices. When weather-related disasters such as hurricanes, floods, and early or late freezes destroy vegetable crops, vegetable supplies decrease and prices increase. A freeze that hits the coffee crop in South America can change the face of coffee prices across the globe.

Perishability of the Product: Many foods are perishable products. Cucumbers, for example, have a very short shelf life. Of all the cucumbers that leave the farm, perhaps a third or less will be sold to consumers. When shipments are damaged in transport or when careless consumers damage food while shopping, the store manager may have to discard those damaged items. Because the store paid for items it cannot sell, such losses are added to the food prices.

Processing and Storage Costs: Food processing may include canning, freezing, curing, drying, freeze-drying, baking, or culturing. Some of these processes destroy or slow the growth of harmful microorganisms and are used to preserve the nutrients or quality of foods until we eat them. Other processing provides ready-made food for consumers. In the 1800s, a farmer took the wheat to the mill one sack at a time to be ground into flour, carted it home, and baked bread. Today, consumers purchase a sliced loaf of bread in a plastic wrapper or perhaps a sandwich made-to-order as they wait.

Refrigeration and controlled atmospheric storage keep foods fresh by delaying the growth of microbes and slowing the ripening and gradual deterioration of fresh foods. During controlled atmospheric storage, food is held in a cold area enriched with carbon dioxide. This process helps extend the shelf life of some foods, especially fruits and vegetables.

Expenses: The USDA divides the expense of food into two segments, the cost to purchase raw commodities from farms and the cost to transform those commodities into finished consumer products. The USDA calls the second group of expenses "marketing ser-

vices.” Everyone involved in the production of food has expenses. The payment farmers receive for their raw product is called farm value. This was 19 percent of the \$661.1 billion consumers spent in 2000 for foods grown on U.S. farms. In 2000, farm value or gross return paid to farmers was \$125.6 billion. (See the attached **Piece of the Pie in 2000**.) Farmers must pay all of their expenses out of that payment, including labor, taxes, loans, interest, rent, seeds, utilities, and other costs. (See the attached **Farm Costs** sheet.)

According to the National Agricultural Statistics Service (NASS), during 2000 the average U.S. farm spent 13 percent for animal feed, over 10 percent for labor, 8.5 percent for rent, almost 14 percent for fertilizers, lime, and crop-protecting chemicals, when combined, almost 10 percent for livestock and poultry; and almost 4 percent each for seed and plants, farm machinery, and property taxes. Add to that the cost for farm services such as veterinarian care, interest on loans, fuel, farm supplies and repairs, farm improvements and construction, and the purchase of a truck or other farm vehicles, and it becomes apparent that the profit margin is very small. In addition, when farmers or ranchers go to market with their products, it is a very rare occasion that they are able to negotiate the price for their commodity.

Marketing services include the expenses associated with transporting, processing and distributing foods that originate on U.S. farms. In 2000, that represented 81 percent (\$537.8 billion) of food expenditures. Consumer expenditures rose \$211.3 billion from 1990 to 2000. The rising costs of labor, transportation, packaging materials, and other inputs used in marketing are primarily responsible for the considerable increase in the cost of marketing foods grown on U.S. farms. If goods are to be exported, additional expenses may be added. Those costs include additional market research to determine appropriate markets, reformulating product to meet market demands, providing a special package for a certain market (including its appropriate

language), additional transportation, and advertising and promotion in various languages.

There are 12 categories for marketing services: labor, packaging, transportation, depreciation, advertising, energy, profits, rent, interest, repairs, business taxes, and other costs. These items are operating expenses for processors, distributors and retailers. Farmers also have many of these same expenses, but they are not included in the categories already discussed. Due to large differences in producing agricultural products, it is difficult for the USDA to assign a single figure to the same expense categories as farm costs to produce those goods. Therefore, for ease in reporting, the USDA assigns a “farm value” to the agricultural product based on market prices. Any expenses incurred by the farmer also are included in that sum. This figure does not represent farm profit! This will be examined later in one of the activities of this lesson.

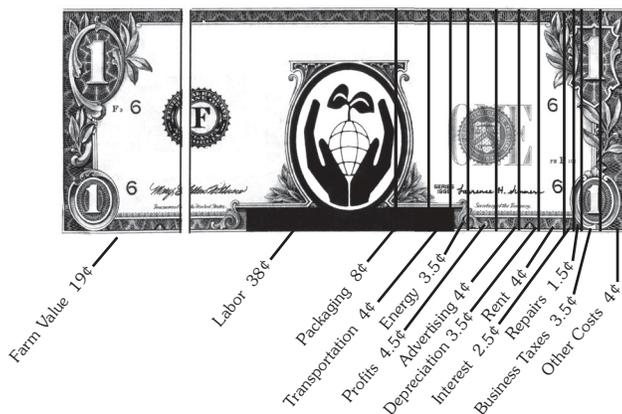
The following explanations of marketing services will be helpful to your students.

Labor: Includes payroll, wage supplements, and benefits earned by food marketing workers such as assemblers, manufacturers, wholesalers, retailers, and restaurant employees. Labor is the greatest cost, accounting for almost 40 percent in the food marketing bill. Payroll accounted for 88 percent of those labor costs in 2000. The remaining 12 percent primarily consisted of employer social security and unemployment taxes, pension payments, insurance for employees, and wage supplements (tips or bonuses). Labor is the largest portion of the total food cost (see the attached **Piece of the Pie in 2000**).

Packaging: Includes the costs of paper, plastic, glass, cardboard, or other materials used to cover, wrap, seal, or contain a raw or processed food product. This is the third largest cost in total food cost and second in marketing costs.

Transportation: Includes the cost to move food among processors, distributors, and retailers. All of the transportation costs that occur after commodities leave the farm are included here.

Depreciation: The decrease in the price or value of a particular item over time is known as depreciation. In a sense, depreciation is the loss of value as an item wears out or becomes obsolete. Generally, depreciation is related to machinery and equipment, but it also covers technology, which becomes obsolete.



Advertising: The use of commercial communication such as newspapers, magazines, billboards, radio, or television to encourage someone to purchase a particular item by emphasizing its desirable qualities. A small amount of the total food cost is used for advertising.

Energy: Includes resources such as water, oil, gasoline, natural gas, and solar, wind, and thermal energy, which are used to provide heating, cooling, lighting, and power to assist in processing, storage and marketing products. Fuels for transportation are not included here, but appear under transportation.

Profits: Income in goods or money after deduction of expenses, but before payment of taxes to government. The USDA lists profits in this way to represent that each business involved in the marketing process (as well as those in the production end) must exceed the cost of expenses to remain in operation.

Rent: An agreed-upon amount of money paid to the owner at fixed intervals for the use of land, equipment, or buildings. Any item that is used on a lease is included.

Interest: A fee paid for borrowed money.

Repairs: Any costs incurred to restore equipment, machinery or buildings, which are torn, damaged or broken. It also includes routine maintenance such as changing oil, painting buildings, or replacing parts for sanitary reasons to insure food safety.

Business taxes: Includes payments to local, state and federal governments for property, state, unemployment insurance, and social security taxes (FICA). Federal income tax is not included.

Other costs: Includes property taxes and insurance, accounting and professional services, promotion, bad debts, and many miscellaneous items.

NOTE: The Economic Research Service and National Agricultural Statistics Service of the USDA collected information used in this lesson in the year 2000.

GETTING STARTED

A set of colored transparency pens, one colored-pencil set of 13 colors (or a combination of markers and colored pencils, with 13 colors) per group of three or four students, transparencies of the **What Piece of the Pie?** and **Class Dollar Predictions** sheets, and one photocopy per group of the **Class Dollar Predictions, What Part of a Dollar?, Piece of the Pie in 2000** and **Farm Costs** sheets, and two photocopies per group of the **What Piece of the**

Pie? sheet. (Note: Decide if you or your students will determine the colors for each expense category to be used in Session One, Step 5.)

PROCEDURE

SESSION ONE

1. Introduce the lesson by asking:
 - How many of you shop at the grocery store with your parents? By yourselves? With friends?
 - Why does the cost of some food items change from one month to the next or from one season to another?
 - What kinds of expenses do you think go into the foods you see in the grocery store? Have students brainstorm a list of expenses. Write the list in a visible place. (*Possible answers include processing, transporting, packaging, packing, advertising, paying for utilities and labor, and more.*)
2. Explain to students that everyone involved in the production of food has expenses. Tell them the expenses are grouped by the USDA into 13 categories: farm value, labor, packaging, transportation, depreciation, advertising, energy, profits, rent, interest, repairs, business taxes, and other costs. Explain that for every dollar spent on food at the grocery store, a certain amount or percentage of that dollar goes to each of the 13 categories.
3. Divide the class into groups of three or four students, but no more than 10 groups. Assign each group a number. Distribute the **Class Dollar Predictions** sheet to each group. Go over each of the categories, making sure that students understand the meaning of each one. (See Supporting Information.)
4. Each group works with the **Class Dollar Predictions** sheet to predict what part of a dollar (the number of pennies) or what percentage goes to each of the categories. Tell students to add their amounts as they complete each category to make sure their total adds to \$1 (or 100 percent). Each group records its predictions for each category under the column for its group number. Each group should be prepared to explain its predictions. Have students star their top three predictions.
5. Distribute a colored-pencil set of 13 colors or marker/pencil combination or 13 differently colored crayons to each group for the students to

color pennies and pie charts. If you did not predetermine the colors to use, the class needs to agree on what color to use for each category. For example, farm value is green, labor is blue, packaging is brown, and so on. Tell students that all groups must use the agreed on color assignments throughout the lesson. This is important for students to be able to make comparisons.

6. Distribute the **What Part of a Dollar?** (stacks of pennies) and **What Piece of the Pie?** (pie chart) sheets to each group. Within each group have two students work with the **What Part of a Dollar?** sheet and the remaining students work with the **What Piece of the Pie?** sheet. Students complete their stack of pennies or the pie chart using their group's **Class Dollar Predictions** sheet.

Explain to students working with the **What Part of a Dollar?** sheet that each stack of pennies is divided in half lengthwise. The left side of the stack of pennies represents their group's predictions; the right side will be used in Session Two. In each category, students shade in the number of pennies to match their group's prediction.

Use the transparency to explain to students working with the **What Piece of the Pie?** sheet that each pie-shaped wedge represents two pennies (or 2 percent). To determine how many pie-shaped wedges to color in, students divide their prediction by two. For example, if students predicted that farm value was 10 pennies (or 10 percent), 10 divided by two is five. Students color five wedges on the pie chart. Have them color in the pie chart as well as the boxes in the Pie Chart Legend. Tell students to begin coloring where they see the word "START" on the top of the pie chart and to color clockwise. They begin with Farm Value and continue completing the pie chart in the same order as the categories are listed on the **Class Dollar Predictions** sheet.

For younger students

Use the predictions from one group. Begin by having each group color in the Pie Chart Legend on their **What Piece of the Pie?** sheet, using the colors you assigned to each category. Point out "START" so all students begin to color the pie chart in the same place. As you color several predictions on the transparency of **What Piece of the Pie?**, have students follow you on their **What Piece of the Pie?** sheet. Then, working

within their group, let them complete the rest of their pie chart.

7. Have each group display their stacks of pennies and pie chart sheets. Tell students to save all of their sheets for Session Two.
8. Summarize this session by asking:
 - What did you use as the basis for your predictions?
 - What similarities did you discover in the predictions? Differences?
 - Which category did you select as the greatest expense? Why? The least expense? Why?
 - Which three categories did you predict as the top expenses?

SESSION TWO

1. Working with the **Class Dollar Predictions** sheet, ask each group to give you its predictions for each category. As you fill in each group's responses on the transparency **Class Dollar Predictions**, have each group fill in the responses on its sheet.
2. Write the class range of predictions (lowest and highest numbers) and calculate the class average of predictions for one or more of the categories. Tell students to write the class range and calculate the class average for each of the remaining categories. Where necessary, have students round to the nearest whole number. Remind students that the total of the averages must equal \$1 (or 100 percent).

For older students

Ask each group to calculate the mean, median and mode predictions for all of the categories.

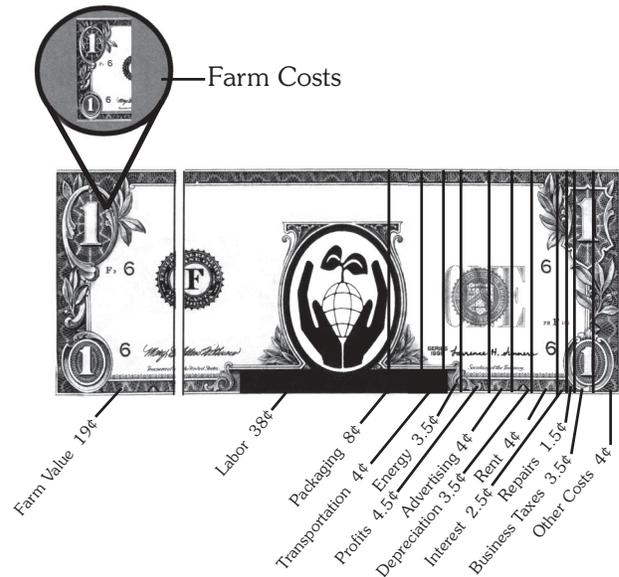
3. As soon as the groups have completed the remaining categories, have each group report its answers to determine the range and average of the predictions in the class. As you complete the transparency, have each group compare their answers, making changes if necessary.
4. Ask:
 - Which category prediction had the largest range? The smallest?

- Which category prediction had the highest average? The lowest?
 - How did each of your group's prediction compare to the range for each category (e.g., low end, middle, high end)? What are some reasons for the differences?
 - Which category did the class predict to be the highest? How does this compare with your group's highest category? Lowest category? What are some reasons for the differences in highest and lowest?
5. Distribute the ***Piece of the Pie in 2000*** sheet to each group. Explain that the United States Department of Agriculture (USDA) collected this information. It provides the actual part of \$1 (or actual percentage) each of the categories represented in 2000. Tell students to read the bar graph on the ***Piece of the Pie in 2000*** and transfer the data to the last column on their ***Class Dollar Predictions*** sheet. Have them star the top three actual expenses according to the USDA.
 6. Distribute the colored-pencil sets or crayons to each group.
 - A. Have the students who worked with the ***What Part of a Dollar?*** sheet in Session One, use their group's sheet to color in the right half of each stack of pennies to represent the actual USDA data.
 - B. Distribute a new ***Piece of the Pie in 2000*** sheet to each group. Using the USDA data from the ***Piece of the Pie in 2000*** sheet, have the students who completed the pie chart in Session One, complete the new pie chart for the USDA data. If necessary, review with students the starting spot and the order of colors and categories.
 7. Have students use the ***What Part of the Dollar*** sheet and the two pie chart sheets to compare their predictions with the USDA data. Have students use the mathematical terms greater than and less than to describe their comparisons. Ask:
 - Are any of the categories the same or very close (your prediction and the actual amount)? If so, which ones? Which categories are very different? Why?
 - Which group arrived closest to the actual amount in each category?
- According to the USDA data, what are the top three average expenses? (*labor, farm value, packaging*) How do your top three predictions compare to the actual top three?
 - How much of every dollar goes to advertising? Transportation? Farm value? Packaging?
 - What percentage of average costs for consumer goods goes for labor?
 - Did the actual data surprise you? Why?
 - What costs were not what you expected? Why?
 - What will you think about the next time you go to the grocery store? What do you think causes prices to change? Stay constant? How are you and your family affected by these changes?
 - What kind of things might be done to reduce the price of food we pay at the grocery store? (*Less packaging, advertising, transporting and others.*)
- SESSION THREE**
1. Ask the students what their instincts tell them about the way the food dollar is divided up.
 - Does anything seem strange?
 - If the farmer is receiving 19 cents from every food dollar spent, why are so few people in farming?
 - Why are there repeated farm crises?
 2. Hand out the ***Farm Costs*** sheet. Explain that the reason that the USDA has created this "farm value" category is because raw commodities must be purchased from a producer. They are a real expense to the processor and to the consumer. This category is not profit. It includes all of the costs that farmers incur on farm labor, machinery, buildings, interest, taxes, seed, feed, fertilizer, etc. There is not any set amount for each that can easily fit into the categories the USDA has created. This broad category has been developed because the cost of producing one crop or product varies so much from another.

For example, the Economic Research Service, USDA reported that the total value of farm labor was \$19.7 billion for all agricultural production in 2000. Between commodities, there is a huge range in the cost of labor because some types of

agriculture are highly mechanized, such as growing grain crops. Labor amounts to only 5 percent of the production expenses in these crops. Other farms require a great deal of human labor, at certain times, because of the commodity produced. On fruit farms, harvest is very labor intensive because we have not invented a machine to harvest fresh cherries, apples, grapes or many other fresh fruits. (Cherries and grapes may be mechanically harvested for processing.) Labor costs for this type of agriculture are 40 percent of all production cost.

So, the USDA has chosen this method to depict these expenses to consumers to simplify the statistics and make the information easily understood.



should either be included as miscellaneous expenses or new categories should be added.

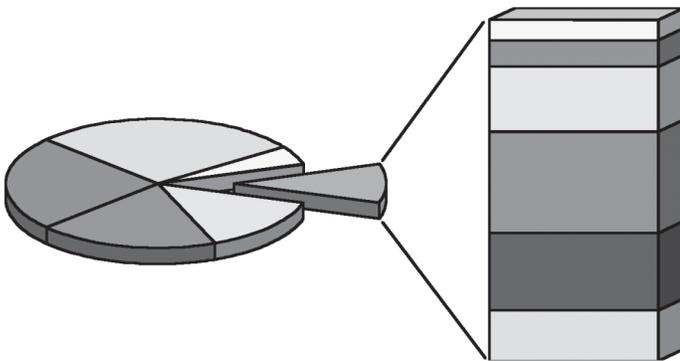
For example, the farm cost of labor is 10.5 percent.
 $\$.19 \times 10.5\% (.105) = \$.01995$ or 2 cents

This 2 cents should be added to the labor costs of 38 cents. The new labor cost is 40 cents.

Repeat this for each category then re-create the graph in a more accurate depiction.

- Have the students create their own graph that represents how the farm value portion of the food dollar is actually spent. Students have two options as to how they wish to depict a more accurate cost of food. They can either develop an add-on graph, which will show how the 19 cents paid to farmers is spent (A), or add the farm costs into the dollar graph to make it more accurate (B).

A. Students may make a pie graph, bar graphs, cut up the portion of the dollar that the 19 cents of farm value depicted in the visual represents, or create their own graphic visual of the 19 cents in some other way using the percentage breakdown given in the **Farm Cost** sheet.



B. Calculate new figures to add the farm cost figures to the original expenses and recreate the graph of where your food dollar goes. Using the figure of 19 cents, multiply the percentages in each category given to it and calculate additional costs for each category the USDA has created. Some of the farm cost categories differ from the USDA figures and

- Display their food cost graphs. Ask:

- What have you learned about the amount of money a farmer or rancher actually gets for his or her crops or livestock? (See Farm Value in the Supporting Information.)
- How will this lesson help you in the future?
- What will you share with family and friends?

EVALUATION OPTIONS

- Have students graph the averages of the class predictions from Session Two.
- Evaluate students' **What Part of a Dollar?** or **What Piece of the Pie?** sheets or original graphs and their ability to compute averages.
- Students write in their journals a paragraph using one of the following phrases.
 - I was surprised at (how little, how much) the farmer and rancher actually make because...

- The next time I grocery shop, I will be more aware of...
 - I learned that...
 - I did not expect that...
 - I was not aware that...
4. Write the names of each of the 13 categories of expenses on a separate slip of paper and place them in a hat or box. Divide the class into 13 groups and have each group select a slip of paper. Each group writes a brief description of its category. Students place the descriptions, without their category name, back in the hat or box. Each group selects a slip of paper, reads the description aloud, and identifies the category. If a group selects its description, they return it, and select another slip of paper.
 5. Referring to the ***Piece of the Pie in 2000*** graph, rank the following choices from highest to lowest cost to get a jar of peanut butter to the grocery store: advertising, labor, packaging, peanuts, transportation.

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- B. Give each group 100 M&Ms or another kind of candy or food. One piece of candy or food represents one penny. Students make piles of candy or stacks of food (e.g., crackers) for each of the categories.

2. Invite a variety of farmers, ranchers or producers to visit the class to explain what he or she grows or raises. Share the ***Piece of the Pie in 2000*** data with the farmers or ranchers before they come to the class. Have the speaker(s) explain his or her highest expenses related to the 12 marketing services. If possible, locate a producer that exports his/her products and ask him/her to speak about the special needs of exporting, any additional steps, and costs involved. Include in the discussion, the flat growth rate for domestic sales of agricultural products and the additional opportunities for foods to be sold to foreign markets in the class discussion.
3. Have students take a field trip to a grocery store. Have them compare the range of prices of generic and brand name foods (e.g., cereal). What are some of the reasons for the price differences? Have students think about packaging, advertising, transporting, and so on. Ask the manager to talk about different products and the costs associated with those products.
4. Students write a story about a farmer or a rancher using the 13 categories of expenses (farm value and the 12 marketing services). The story should include how much money the person gets from the sale of his/her crop or livestock and why. Ask the person to include some of the situations that influence the costs of his/her crop or livestock and the amount of money he/she receives. Tell students to express the attitude and feelings of the farmer in the story.
5. Use the FLP lesson “Step by Step” to discover the sequence of steps involved in transferring a product from the field to the consumer (path of production). Use the FLP lesson “From Fiber to Fashion” to learn about fabric production.
6. Invite a conservationist or environmental educator to speak to the class about the “indirect” costs of our economic production. This could include a discussion of solid waste, air and water pollution costs, environmental degradation costs, etc.

EXTENSIONS AND VARIATIONS

1. Continue to work with the USDA data to reinforce actual expenses for each category. The National Agricultural Statistics Service has a variety of expenses listed and also provides color graphics at its Web site, which is listed in the Resources section.
 - A. Photocopy the attached ***Food Dollar***, one per group. The bill is 10 inches long; each inch represents 10 percent or 10 cents. Using the USDA data information from the ***Piece of the Pie in 2000***, cut the dollar into the appropriate parts. For example, Farm Value is 19 cents (\$0.19) or 19 percent. Cut slightly less than two inches of the 10-inch dollar. Place all the pieces in a hat or box. Divide the class into 13 groups and have each group select one of the pieces of the dollar bill. The students determine the value of their piece of the dollar bill (knowing that one inch equals 10 cents) and label it as one of the 13 categories. Ask each group to identify their category and the value of their piece of the dollar. Glue or tape all of the pieces onto a sheet of paper to see how well they reassemble the dollar. **(For older students use the *Divided Dollar* and have them label each category appropriately.)**

CREDITS

Farm Production Expenditures 2000 Summary. Agricultural Statistics Board, National Agricultural Statistics Service, United States Department of Agriculture. July 2001. <http://www.usda.gov/nass>

Elitzak, Howard. *Food Marketing Costs: A 1990's Retrospective*. Economic Research Service, United States Department of Agriculture. September-December 2000. <http://www.ers.usda.gov/>

Food Marketing Costs at a Glance — In 2000. Food Review: Global Food Trade, Vol 24. No 3. December 2001. <http://www.ers.usda.gov/publications/FoodReview/septdec01/5>

ADDITIONAL RESOURCES

Local agricultural producers, contractors, transporters, warehouse and store owners or managers; local conservation districts, cooperative extension offices, and state departments of agriculture. Locate international bankers, freight forwarders, or export agents who may operate in your community. Ask them to speak to the class about their work. If none can be found locally, seek them out on the Internet.

Economic Research Service publications, United States Department of Agriculture, 1301 New York Avenue NW, Washington, DC 2005-4788. <http://www.ers.usda.gov>

Fact Book of Agriculture. United States Department of Agriculture. <http://www.usda.gov>

Farm Facts. American Farm Bureau Federation. 225 Touhy Avenue, Park Ridge, IL 60068. (847) 685-8864. <http://ageducate.org>

General Information and Frequently Asked Questions. 1997 Census of Agriculture. National Agricultural Statistics Service, United States Department of Agriculture. 1997. <http://www.nass.usda.gov/census/census97/cenfaqs.htm>

Miller, Roger LeRoy. *Economics Today and Tomorrow*. Glencoe (Macmillan/McGraw-Hill), 1995. ISBN: 0028231023.

2000-2001 Statistical Highlights of U. S. Agriculture. National Agricultural Statistics Service, United States Department of Agriculture. 2002. <http://www.usda.gov/nass/pubs>

Wallace, L. Tim. *Agriculture's Futures: America's Food System*. Springer Verlag. 1987.

Wilson, J. Holton and J.R. Clark. *Economics*, 4th ed. South-Western Thomson Learning. 1996. ISBN: 0538655933.

WEB SITES

United States Department of Agriculture. 2002. <http://www.usda.gov>

Economic Research Service, United States Department of Agriculture. 2002. <http://www.ers.usda.gov>

The National Agricultural Statistics Service, United States Department of Agriculture. 2002. <http://www.usda.gov/nass>

EDUCATOR'S NOTES

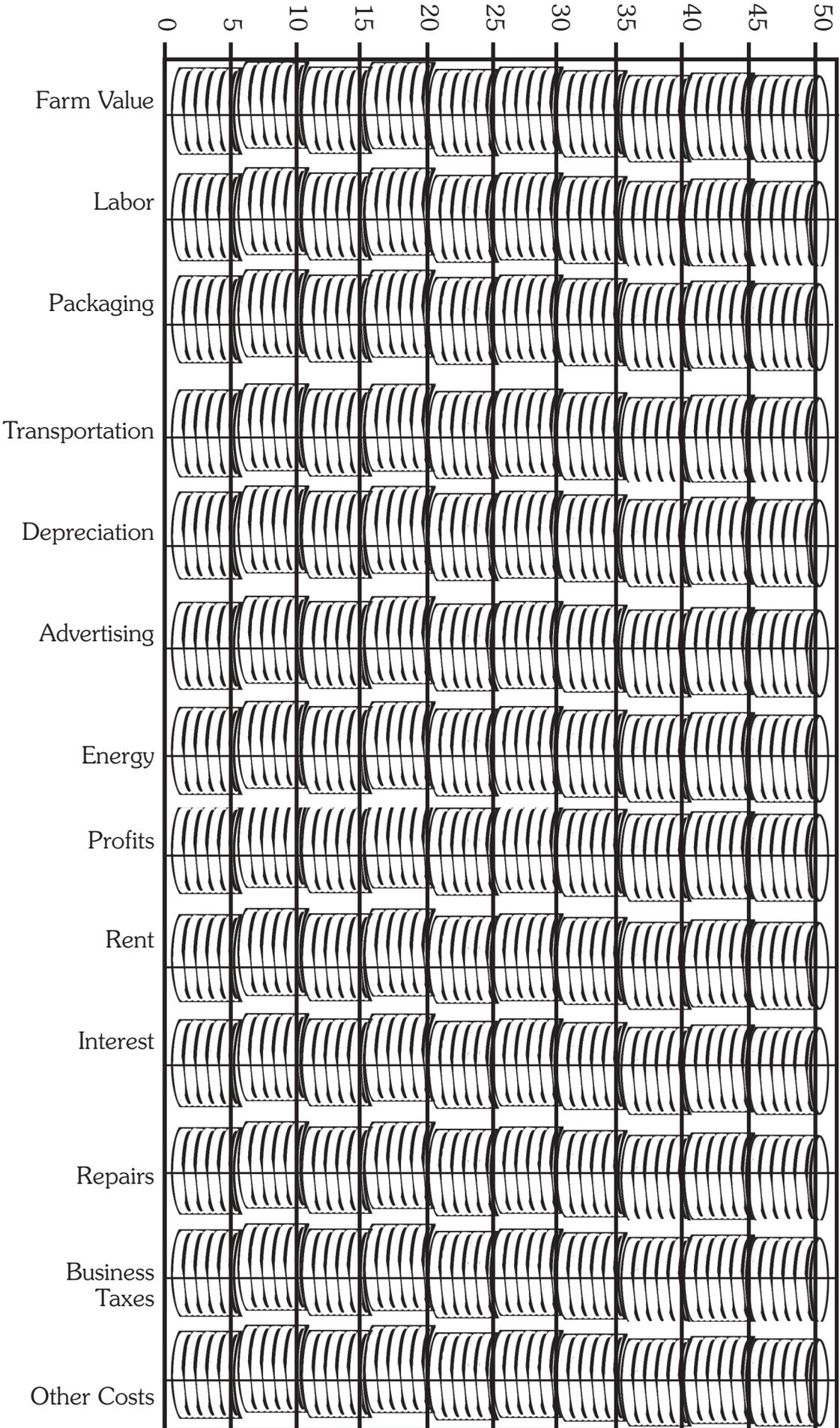
CLASS DOLLAR PREDICTIONS

Directions: Predict what part of a dollar spent on food goes to each of the 13 categories. Record your prediction for your group number. Star your top 3 predictions.

CATEGORY	GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5	GROUP 6	GROUP 7	GROUP 8	GROUP 9	GROUP 10	CLASS RANGE	CLASS AVERAGE	USDA DATA
Farm Value													
Labor													
Packaging													
Transportation													
Depreciation													
Advertising													
Energy													
Profits													
Rent													
Interest													
Repairs													
Business Taxes													
Other Costs													

WHAT PART OF A DOLLAR?

Directions: Each category represents an expense of retailing a food product. You will use the agreed upon color scheme to color each stack of pennies.
 Session One: On the left side of each stack of pennies, color in your group's predicted number of pennies from the **Class Dollar Predictions** sheet.
 Session Two: On the right side of each stack of pennies, color in the actual expense from the **Piece of the Pie in 2000**.



WHAT PIECE OF THE PIE?

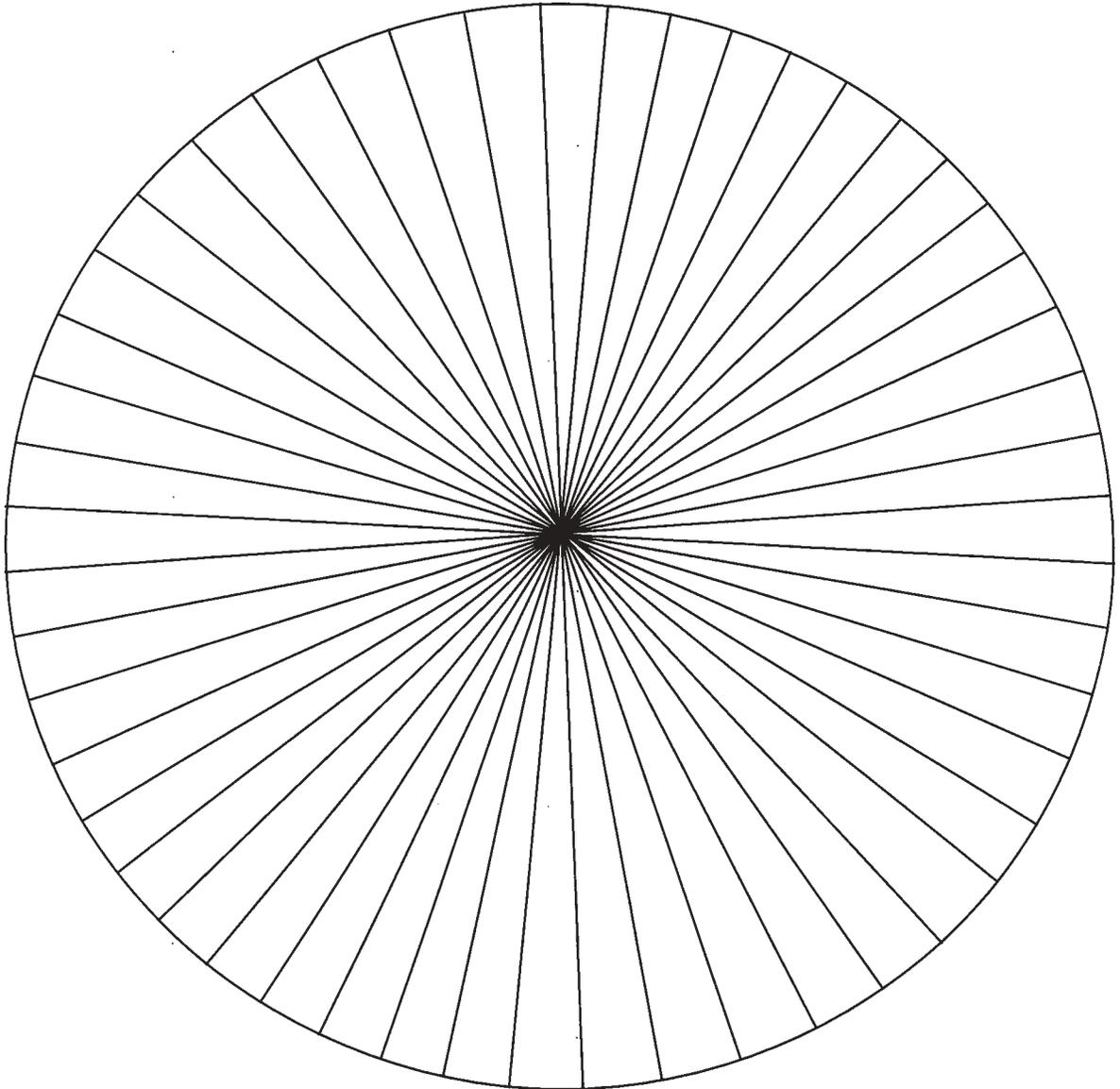
Directions: Color in the Pie Chart Legend using the agreed upon colors. Start coloring the pie chart at the "Start" arrow and move clockwise (marked in 2 percent increments). Begin with Farm Value and follow the order in the Pie Chart Legend.

Group Prediction

USDA Data

Check the box for the data you used.

↓ **Start**



Farm Value

Labor

Packaging

Transportation

Depreciation

Advertising

Energy

Profits

Rent

Interest

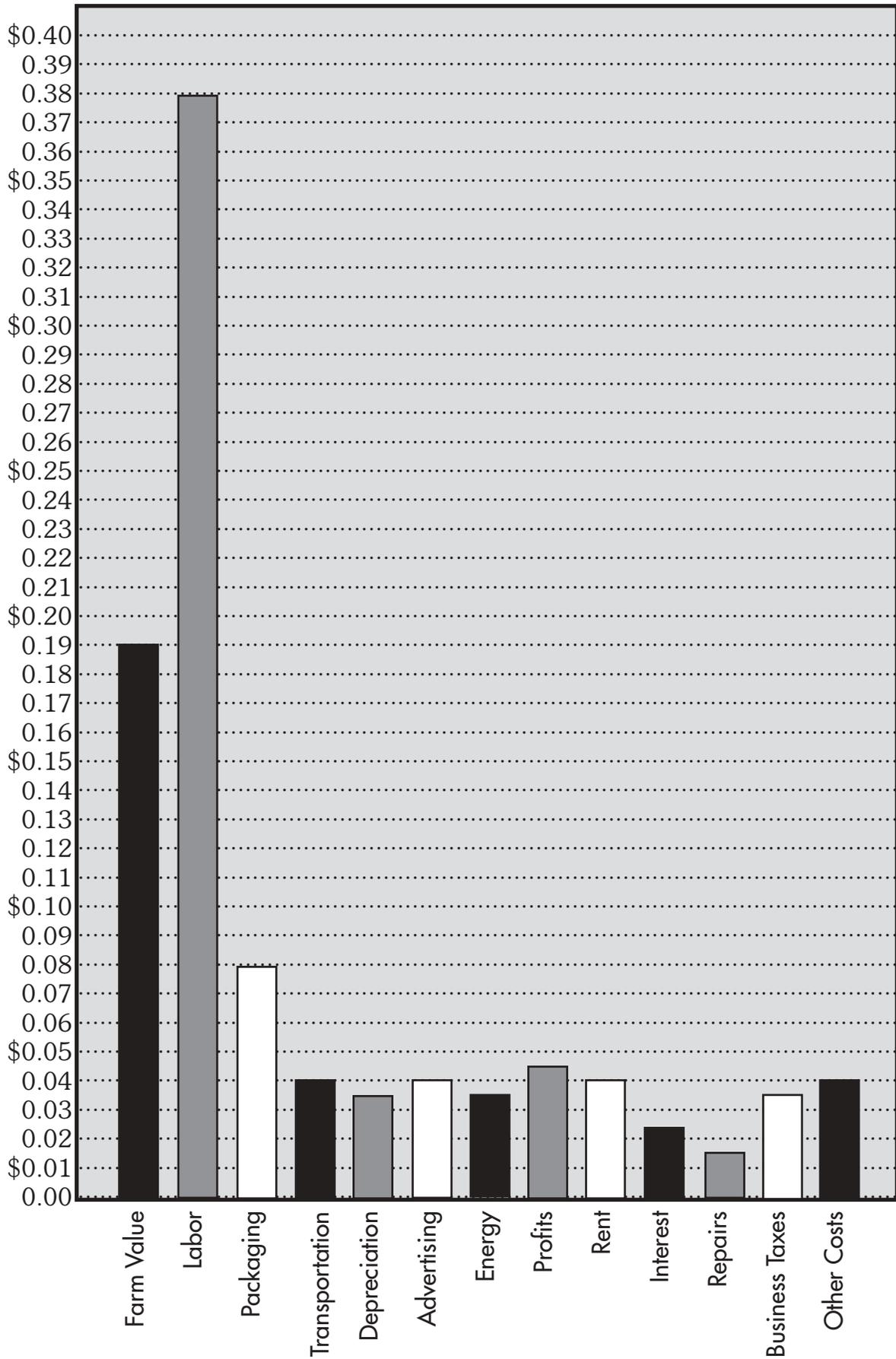
Repairs

Business Taxes

Other Costs

PIECE OF THE PIE IN 2000

Part of One Dollar Spent On Food (USDA data)

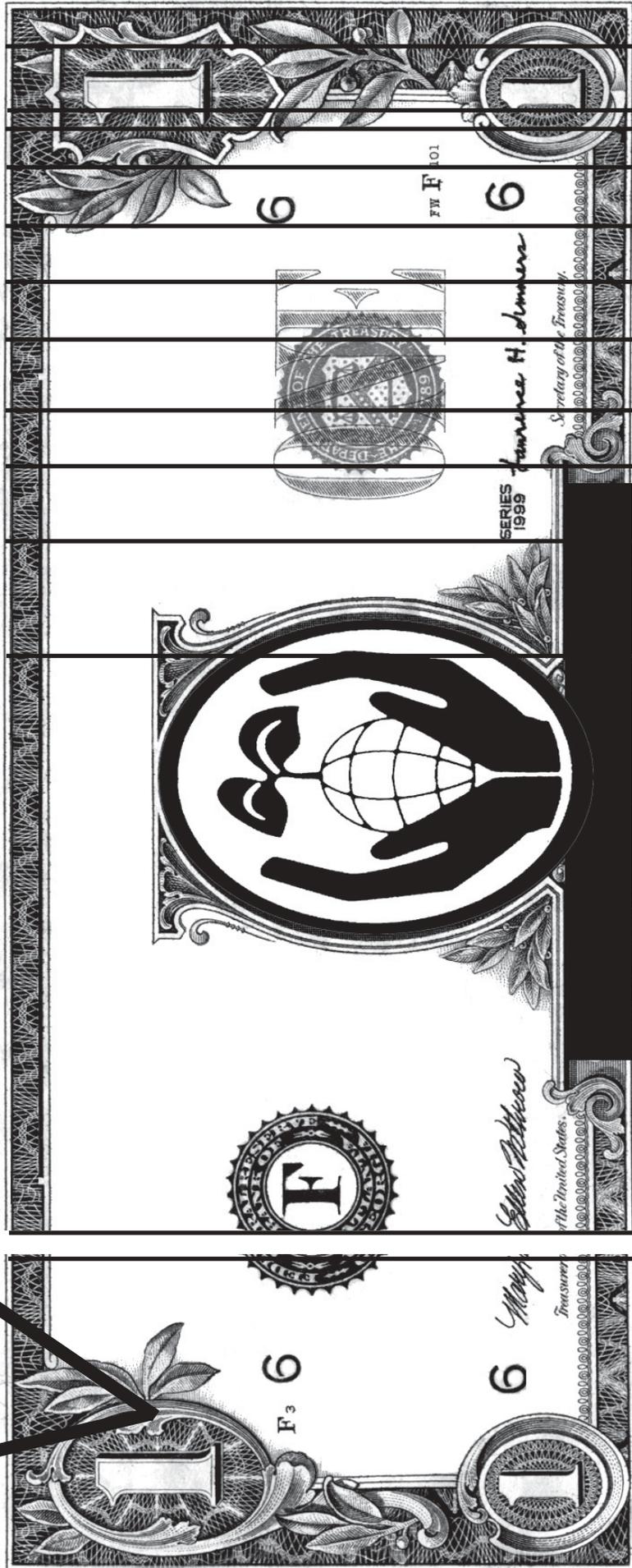
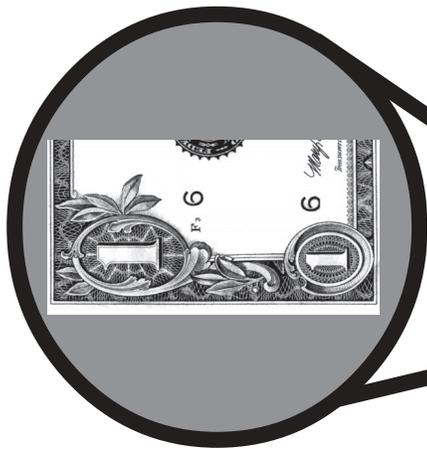


FARM COSTS

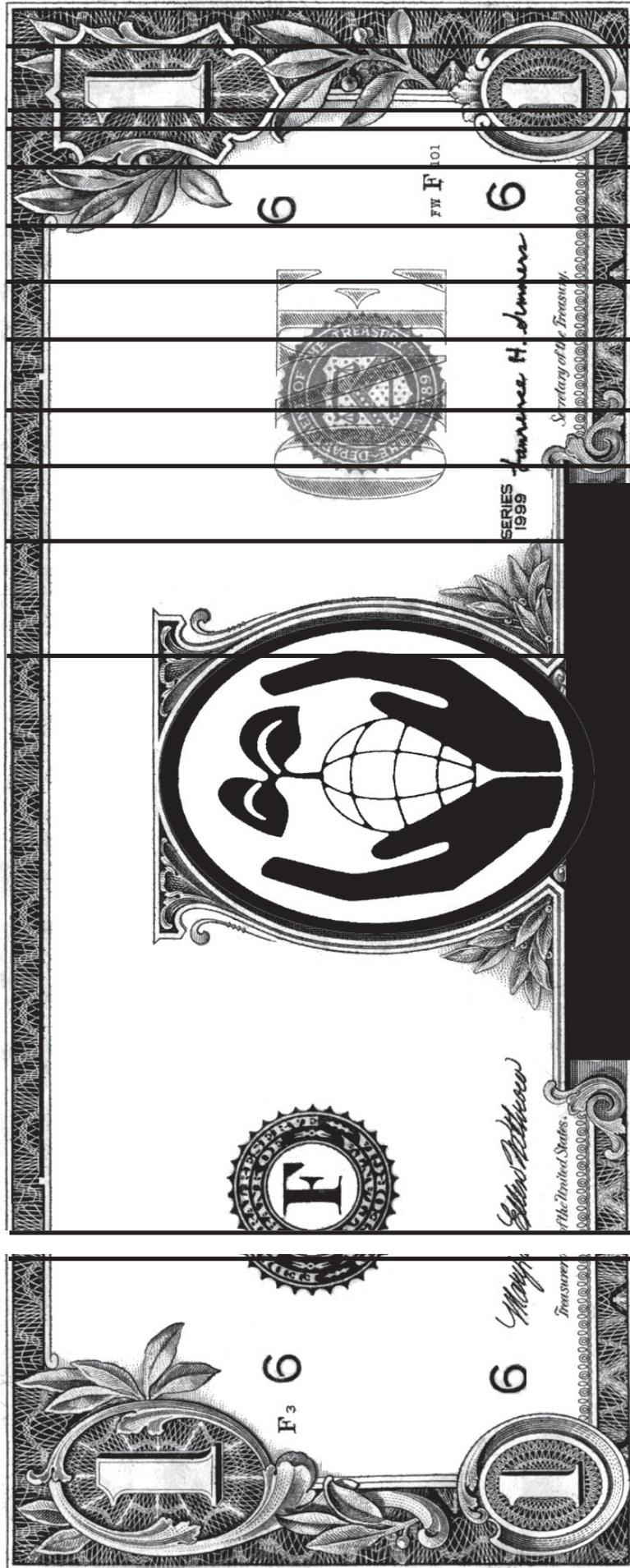
Farm Labor	10.5%
Farm Services	13.5%
Feed	13.0%
Fertilizer, Seeds, Crop-Protecting Chemicals	13.7%
Fuel	3.7%
Interest	5.8%
Taxes	3.7%
Livestock	9.5%
Machinery, Vehicles	6.9%
Rent	8.5%
Supplies, Repairs, & Construction	11.1%

Agricultural Statistics Board, National Agricultural Statistics Service, United States
Department of Agriculture. July 2001. (2000 data)

ACCURATE FOOD DOLLAR



DIVIDED FOOD DOLLAR



FOOD DOLLAR

