

Calculate Food Cost and Menu Prices

CALCULATING accurate food costs and appropriate menu prices is essential for restaurants to stay in business. When menu items are incorrectly priced, restaurants with great products and high sales can go out of business. To understand menu pricing, a person must fully understand all the elements that impact food cost. The process is not difficult.



Objectives:



1. Calculate food costs and variances.
2. Calculate menu prices.

Key Terms:



as purchased (AP)
chain restaurants
cooking loss test
economy of scale
edible portion (EP)

food cost (FC)
food cost percent (FC%)
market price
menu price
quantifier

standardized recipe
standard portion
standard portion cost
yield
yield factor (YF)

How to Determine Food Cost

Food is the single-largest dollar cost for foodservices. Depending on the type of business, it is estimated to be between 30% and 50% of the business income.

FOOD COST

Food cost (FC) is the cost of the ingredients to prepare a food item as opposed to the menu price of an entrée, dessert, or beverage. The amount one pays for the raw food drives what must be charged to customers.

Food cost percentage (FC%) is a ratio between the cost of the raw food ingredients and what it takes to get that food to the table. For every dollar a guest spends on food, the restaurant spends a specific percentage of that dollar to pay for the food to remain profitable. Most restaurants average a 30% to 35% food cost percentage. Food cost percentage is averaged among all the items on the menu to account for fluctuations in food prices and high-end or expensive menu items (market price items). The remaining costs to operate the business are based on the food cost. For example, a food cost percentage of 29% means that \$0.29 of every dollar a customer pays the restaurant for food is spent by the restaurant to purchase the food, which leaves \$0.71 from every incoming dollar to pay for all the other business expenses (e.g., payroll and overhead).

PORTION CONTROL

Portion control is a critical element in the financial success of a foodservice operation.

Standard portion size is the amount of a specific food item served to each guest based on weight, volume, or count. Every guest receives the same amount of fries, the same size piece of cake, and the same number of ounces of soda. The management establishes portion sizes. Then posted charts of food items are provided for employees. For the restaurant to make a profit on each order, the portion size must be the same. **Standard portion cost** is the cost of one serving of a food item. For instance, the price of a case of potatoes is certainly food cost, but restaurants need to know the food cost per serving. To determine this, restaurants must establish the amount of food that will be served to each guest. Once the standard portion size is determined, the portion cost can be determined. Standard portion sizes are displayed on the standardized recipe near the top and include how the dish is to be portioned (e.g., scale, scoop, ladle, measuring cup, or count). For example, standard portion cost may be determined in a number of ways. Simple food cost is merely the sum of each food item for a fresh fruit melon salad. For instance, a watermelon cost \$4.99, a honeydew melon cost \$3.99, and a cantaloupe cost \$2.99. The total food cost is $\$4.99 + \$3.99 + \$2.99 = \11.97 .

Calculating Portion Cost

Food cost shown as portion cost requires additional computations. For example, if a case of individual yogurt cups cost \$12, and there were 24 cups in the case, the cost per serving (the cup) would be found by dividing the cost by the number of cups or servings in the case or $\$12 \div 24 \text{ cups} = \0.50 per serving.

Calculating Portion Size

When portion cost is desired but the portion is not predetermined (e.g., individual yogurt cups), the portion size must be provided and shown in a volume measurement or a weight, which are **quantifiers**. The portion is no longer one unit (e.g., one yogurt), but rather one ounce, pound, quart, etc. In this situation, additional division and conversion is required. For example, if a serving of roast beef is 6 ounces, and the roast cost is \$5.29 per pound, the portion

cost would be determined by dividing the cost per pound by 16 (16 ounces = 1 pound) to determine price per ounce. That price would then be multiplied by the portion size to find the portion cost. So $\$5.29 \div 16 = \0.33 per ounce $\times 6$ ounces = $\$1.98$ per serving (food cost or FC).

Calculating Price Per Pound

When the price per pound is unknown, it must be determined. For example, an entire pork loin costs \$22.50 and weighs 14 pounds. The standard portion size is 5 ounces per serving. To find portion cost, the cost per pound and cost per ounce are determined. First, you must divide the cost of the loin by its weight to determine the cost per pound. Next, you determine the cost per ounce by dividing the cost per pound by 16 (16 oz./lb.). The cost per ounce is multiplied by the portion size to find the standard portion cost.

$$\$22.50 \div 14 \text{ lb.} = \$1.61/\text{lb.}$$

$$\$1.61 \div 16 (16 \text{ oz./lb.}) = \$0.10 \text{ per oz. (rounded)}$$

$$\$0.10 \times 5 \text{ oz.} = \$0.50 \text{ per standard portion cost}$$

Calculating Price Per Ounce

When converting to a price per ounce from a larger quantifier, the divisor is based on the number of ounces in the larger quantifier. For example, to find the cost of 6 ounces of milk when a gallon costs \$3.29, the problem is solved by:

$$\$3.29 \div 128 (\text{ounces in a gallon}) = \$0.26/\text{oz. (rounded)}$$

$$\$0.26 \times 5 (\text{ounces per serving}) = \$0.13 \text{ per standard portion cost}$$

Calculating Price Per Serving

Another way to determine the price per serving for a recipe with multiple ingredients would be to follow the processes noted above to find the food cost for the entire recipe (in bulk) and then divide it by the **yield** (the number of servings). The resulting price would be the food cost for one serving. For instance, a simple bread recipe with flour, yeast, sugar, salt, and shortening that makes 6 loaves (each with 12 slices) requires the cost of each ingredient in the recipe to determine the total recipe cost. The cost of a standard serving (portion) is determined by dividing the recipe cost by the number of servings (yield). In this case, the number of servings from each loaf is 12.

$$\text{Yield} = 6 \text{ loaves} \times 12 \text{ slices per loaf} = 72 \text{ servings per recipe}$$

If the bulk recipe costs \$6, the serving cost would be found as follows:

$$\$6 \div 72 \text{ servings} = \$0.08 \text{ per slice (serving) (rounded)}$$

Calculating Full-Menu Item Costs

To determine the cost of a full-menu item (e.g., “Cheeseburger Deluxe” with French fries and coleslaw), the cost of each element of the meal would need to be calculated in its standard portion size and added together to find the food cost for the entire meal. In this example, the individual cost of the hamburger, the bun, the cheese, the French fries, and the coleslaw are calculated separately and then added together. For the most accurate cost of the meal, the condiment and garnish costs would also have to be estimated and added to the price.

VARIANCE FORMULAS

As Purchased (AP)

As purchased (AP) foods are foods purchased whole and in a natural state (with minimal processing). AP foods will require some processing for use in food preparation. For example, whole fresh produce, meat, and fish all fit the AP description. When they are processed (e.g., peeled, trimmed, and/or de-boned), there is waste. Waste affects the “real” price of the food item.

Edible Portion (EP)

The **edible portion (EP)** is the usable part of the whole food product after initial processing. The inedible parts are those that are peeled, trimmed, and/or de-boned and discarded or put in the stockpot for stock-making purposes. The difference between the two weights (AP and EP) is critical in determining an accurate food cost.

To determine real food cost when considering AP vs. EP, the following computations are required. Start with the AP weight of a product, and subtract the weight of the waste. What remains is EP weight. The price per pound of the original item is determined in standard format as, “**food cost (FC) ÷ AP weight = AP cost** (per pound for example).” The trimmed weight, or EP weight, will always be less than AP weight.

The EP cost per pound will always be higher than the AP cost per pound and is calculated as “**AP cost ÷ EP (trimmed) weight = EP cost/pound.**”

6 lb. honeydew melon = \$5 AP
\$5 ÷ 6 lb. = \$0.83/AP pound
4.5 lb. = EP weight
\$5 ÷ 4.5 lb. EP weight = \$1.11/EP pound



FIGURE 1. Between the pit and the skin, there is much waste in an avocado. The edible portion is much less than the as-purchased weight of the whole fruit.

Yield Factor

Yield factor (YF) is the ratio between the AP and EP weights or the percentage of the item that is edible. When “yield factor” is displayed in a recipe, it is shown as a whole number—75—without the percent sign. The percent is understood when talking about yield factor. For instance, the 6 lb. honeydew melon that provided 4.5 lb. of edible fruit has a yield factor of 75%. The formula for YF is:

$$\text{EP weight} \div \text{AP weight} = \text{YF}$$
$$4.5 \text{ lb.} \div 6 \text{ lb.} = 0.75 \text{ (75\%)}$$

If you already know the yield factor, it can simply be used and applied to the problem without having to weigh each item before and after trimming by applying these formulas:

$$\text{AP weight} \times \text{YF (as a decimal)} = \text{EP weight}$$
$$\text{AP food cost (FC)} \div \text{EP weight} = \text{EP cost/pound}$$

For example, broccoli costs \$1.29 per pound and has a 61 YF. The EP cost per pound is determined by:

$$1 \text{ lb.} \times 0.61 \text{ (YF)} = 0.61 \text{ lb. (EP weight)}$$
$$\$1.29 \div 0.61 \text{ lb.} = \$2.11 \text{ (EP cost/pound)}$$

COOKING LOSS TEST

Cooking affects the total amount of available food just as trimming does, particularly with meat. Generally, meat shrinks when it cooks and bones are removed or are at least considered inedible. The only way to be certain how much meat is actually edible (the actual EP food cost) is to do a cooking loss test. A **cooking loss test** is a process in which you weigh the raw meat, trim the meat, cook the meat, remove the bones, conduct other trimmings, and weigh the meat again. The difference in weight is “cooking loss.” The process to determine EP food cost works just as it does for trimming.

Bone-in pork roast weighs 9.5 lb. raw @
\$2.49 lb. = \$23.66

After cooking and with the bone removed, it yields 6.75 lb. (a total cooking loss of 2.75 lb.)



FIGURE 2. This lamb roast lost weight during cooking. After the bone is removed, it will weigh even less, making the remaining edible meat (EP) cost more per pound.

$$\begin{aligned} \$23.66 \text{ (AP cost)} \div 6.75 \text{ lb. (EP weight)} &= \$3.50/\text{lb. (EP cost/pound)} \\ 6.75 \text{ lb.} \div 9.5 \text{ lb.} &= 0.71 \text{ YF (or a 71 YF)} \end{aligned}$$

The YF could be applied to all subsequent pieces of similar meat.

Cooking loss tests are most accurate for large roasts and turkeys that are cooked, sliced, and served by weight in a standard portion size and provide true yield and true food cost. Cooking loss tests would not be conducted for individual steaks, chops, and hamburgers or for cut portions of chicken and fish.

Menu Pricing

The **menu price** is the set selling price of food and beverages to customers. While menu writing is an art form, pricing food on menus is a specific science that uses mathematics to determine the charges for food and beverages to cover business costs and (hopefully) leave a profit. The process of determining menu prices is the same no matter what form the menu takes (e.g., menu board, flyer, or leather-bound). One of the ways restaurant and foodservice operations provide a level playing field for menu costs is through a standardized recipe or formula. A **standardized recipe** is a physical and/or electronic record of the recipe name, yield, portion size, ingredients, weight, measure, unit cost, and total cost. A standard recipe is used for two reasons: The customer is assured of a consistent product from visit to visit, and the food costs remain stable.

FOOD COST

One of the most common methods for determining menu prices is based on food cost. Specifically, the food cost percentage (FC%) formula helps establish the selling price. Food cost percentage is a ratio between the cost of the food and what it takes to get that food to the table. Therefore, for every dollar a guest spends on food, the restaurant spends a specific percentage of that dollar to pay for the food to remain profitable. For example, if the restaurant sets a food cost percentage of 29%, 0.29 of every dollar a customer pays the restaurant for food is spent by the restaurant to purchase that food. That example would leave 0.71 from every incoming dollar to pay for all the other business expenses.

To help find the menu (selling) price based on a calculated food cost percentage (FC%) derived from beginning and ending inventory, the following mathematical formula is applied:

$$\text{FC (raw food cost)} \div \text{FC\%} = \textit{minimum menu price}$$

If a slice of cake cost the restaurant \$0.71 in raw food costs, and a FC% of 25% has been calculated, the selling price would be determined as follows:

$\$0.71 \div 0.25 = \2.84 per slice, which is the *minimum* menu selling price to make a profit on the slice of cake

The formula would be applied to every menu item. It would be common to round menu prices to a comfortable or natural number. Computed prices (e.g., \$9.69) would likely be rounded up to \$9.75 or \$9.95.

Other issues impact menu prices. The same food cost percentage may not apply to every menu item. Pricing menu items in restaurants must take other costs into consideration to ensure profitability. Labor, utilities, mortgage, equipment purchase and maintenance, insurance, decor, entertainment, and advertising all cost money. The primary income is food and beverages.

Geography

Geography is a particularly important consideration in menu pricing. A cheeseburger in a Manhattan, NY, restaurant would be priced far differently than the same cheeseburger at a drive-thru restaurant in Omaha, NE, because of the vastly different cost of living in those two areas. Transportation costs also play a huge role in the actual food cost, depending on the specific food. Obviously, fresh fish and seafood are less expensive in areas adjacent to oceans, lakes, and rivers. The transportation costs to bring that seafood inland must be accounted for in the raw food cost and the menu pricing. It is the same phenomenon for beef and fresh produce. Beef is less expensive in the Midwest, and fresh produce is the least expensive where it is grown—Arizona and California.

“In-Season” Versus “Out-of-Season”

“In-season” versus “out-of-season” produce affects menu prices. **Market price** is the opposite of set price and indicates to the customer that the dish fluctuates (changes) in price, which helps protect the owner’s food cost margin. Market-priced menu items are often seasonal or “imported” foods (e.g., fresh seafood or fresh fruits) from another part of the United States or from other countries. For example, one week a case of iceberg lettuce may cost \$10. The next week, due to weather or supply and demand, the case price could jump to \$40. One way to control this type of fluctuation is through market pricing and by routinely changing the price of menu items according to the market. However, some customer backlash may occur if more than a few items carry the “Market Price” rather than a set price. Customers do not like surprises related to price.



FIGURE 3. The menu price of fresh seafood, such as this Maine lobster, would be marked up on a Midwest menu beyond the average food cost percentage (FC%) because of transportation costs. The other option would be to list it as “market price” on the menu. It would be less expensive at an ocean-side restaurant.

Economy of Scale

Chain restaurants are a group of identical restaurants in multiple locations, all with identical or similar menus and similar buildings. Menu prices in these businesses can be quite inexpensive (e.g., fast-food restaurants) due to the type of food served or because of economy of scale. **Economy of scale** is volume purchasing to reduce the raw food cost. Chains purchase for multiple locations, so the price paid for goods is substantially reduced from the price the owner of a single restaurant would pay. Typically, a chain restaurant's food cost percentage is low.

Summary:



It is essential to appropriately determine food costs, food cost percentages, and menu prices to keep businesses profitable. Food cost is determined by adding together the cost of each ingredient for a dish. Standard food costs are based on standard portion sizes—set amounts of food served to every guest. Standard portion cost is usually determined by the following formula: $FC \div \text{Yield (number of servings)}$. These costs should take into consideration the EP cost of food rather than the AP cost. YF reflects the percentage of AP food that is EP.

Menu prices are generally determined by a set food cost percentage (FC%) of the selling price. The formula to find menu price is $FC \div FC\%$. Menu prices found this way are the *minimum* amount to charge and can be adjusted to reflect higher operation costs in specific restaurants or adjusted through the addition of “Market Price” to the menu.

Checking Your Knowledge:



1. If a yield factor for cucumbers is 92, what percentage of a cucumber is edible?
2. What is the food cost of 1.5 lb. of granulated sugar if a 50-lb. bag costs \$22.90?
3. What is the menu price for a club sandwich if the food cost (FC) is \$1.12 and the food cost percentage (FC%) is 26?
4. What is the EP cost per pound of celery if it costs \$0.89 a pound AP and has a YF of 81?
5. What is the standard portion cost of a slice of pizza if the food cost (FC) for a whole pizza is \$5.20 and it has a yield of 12 slices?

Expanding Your Knowledge:



Restaurants that have grown in popularity have proven track records of financial success and commonly open additional restaurants just the like original, effectively

becoming “chain restaurants.” Chains benefit financially from the economic theory called “economy of scale.” Find out more about this phrase. Research how it affects food costs and menu prices. Does economy of scale offer any benefits to smaller or independent restaurants? For restaurants that do benefit, is the benefit passed along to the consumer? Is this an economic property that only affects food costs and menus? Create a PowerPoint to share your findings with your class.

Web Links:



How Do I Figure My Food Cost

<http://www.foodservice.com/articles/article.cfm?ContentID=1682>

How to Price Your Restaurant Menu

<http://restaurants.about.com/od/menu/a/foodcost.htm>

Finding Your Maximum Menu Profit

<http://www.musthavemenus.com/guide/restaurant-management/menu-design/menu-prices.html>

The Four Aspects of Food Costs

<http://www.foodreference.com/html/artfoodcost.html>