Estimates of Food Loss at the Retail and Consumer Levels

Economic Research Service (ERS), U.S. Department of Agriculture

What Is Food Loss?

FOOD LOSS represents the edible amount of food, postharvest, available for human consumption but not consumed for any reason. Food loss includes:

- loss from mold, pests, or inadequate climate control;
- cooking loss and natural shrinkage (e.g., moisture loss); and
- food waste (e.g., food left on plate).

Why and Where Does Food Loss Occur?

Food loss occurs for many reasons, with some types of loss—such as spoilage—occurring at every stage of the production and supply chain. Between the farm gate and retail stages, food loss can arise from problems during drying, milling, transporting, or processing that expose food to damage by insects, rodents, birds, molds, and bacteria. At the retail level, equipment malfunction (such as faulty cold storage), over-ordering, and culling of blemished produce can result in food loss. Consumers also contribute to food loss when they cook more than they need and throw out the extras.

How Much Food Loss Is There?

ERS estimates that in 2010, a total of 31 percent, or 133 billion pounds, of the 430 billion pounds of the available food supply at the retail and consumer levels went uneaten, with an estimated retail value of **$162 BILLION**.

133 BILLION POUNDS

This translates into 141 trillion calories (kcal) of food available in the U.S. food supply but not consumed in 2010. Expressed on a per capita basis, food loss at the retail and consumer levels in 2010 totaled roughly **1.2 POUNDS OF FOOD PER PERSON PER DAY**, with a retail value of **OVER $1.40**.

VEGETABLE EXAMPLE:

Broccoli Loss Along the Farm-to-Fork Chain

Farm to Retail

- Damage from **pests** after harvest
- Damage from **equipment malfunction**
- Inadequate **temperature** and **moisture** control

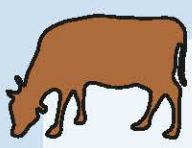
Retail

- Excessive **trimming**
- Inadequate **temperature** and **moisture** control
- **Culling** edible broccoli for appearance (e.g., unappealing color)

Consumer

- Biological **aging**
- **Moisture loss** leading to limp, unappealing texture
- **Dislike** of taste by some consumers
- **Plate** waste

Uneaten Food



MEAT EXAMPLE:

Beef Loss Along the Farm-to-Fork Chain

Farm to Retail

- **Culling** of sick and injured animals
- **Damage** from packaging failure
- Cold **storage** malfunction
- **Spoilage**
- Rejection of meat for food **safety** reasons (e.g., pathogen contamination)

Retail

- **Packaging** failure
- Culling for unappealing **color** changes
- **Overstocking** ground beef due to difficulty predicting consumer demand
- **Spoilage**

Consumer

- Inadequate **storage**
- **Spoilage**
- **Overpreparing** (e.g., cooking too many hamburgers at a BBQ)
- **Recalls** for food safety concerns
- **Plate** waste
- Confusion about **use-by** or **sell-by dates**

Uneaten Food

What Are the Considerations and Incentives Concerning Food Loss?

- In the farm-to-fork chain, each player is maximizing returns. The food production and marketing system is generally efficient. Some amount of loss may be economically justifiable. *Example: It may cost more to harvest a field than the crop can be sold for.*

- Individual tastes and preferences also come into play for consumers. *Example: Some people may not like to eat the crusts on their sandwiches.*

- Some loss is inevitable because food is inherently perishable, and spoiled or deteriorated food must be discarded to ensure the safety and wholesomeness of the food supply. *Examples: Restaurant leftovers not taken home by patrons are appropriately discarded out of health considerations. Also, some meat, poultry, and other foods are recalled when there is a health or safety concern.*

- There are often tradeoffs between technologies that reduce loss and the advantages of reducing loss. *Example: The chemical methyl bromide helps extend the shelf life of almonds, but also acts as an ozone-depeting gas when released into the atmosphere.*

How Much Could Be Reduced?

There are tradeoffs and limits to how much food loss the United States could realistically prevent, recover for human consumption, or divert to another economic use (e.g., energy creation, composting). Factors such as the **perishable nature of most foods** and food safety, storage, and temperature considerations limit how much food loss can be prevented or reduced. Also, **logistical challenges** of getting wholesome food to the hungry exist, such as the dispersion of uneaten food among millions of households, food plants, and food-service locations, and the time and expense needed to deliver food to a new destination, such as to a food bank. **Economic factors** may only provide limited incentives to reduce food loss.

Advances in food packaging, handling, and tracking technologies show promise in reducing food loss. For example, special plastic films—which allow produce to breathe—continue to be developed and improved.

Source: USDA's Economic Research Service. These estimates are from the ERS's Loss-Adjusted Food Availability data series, which has the primary purpose of estimating the loss-adjusted amount of food available for consumption. Estimating food loss is a secondary purpose of the series. Note that ERS does not estimate food loss prior to the retail level in the farm-to-fork chain. This data series is considered preliminary because ERS continues to improve and document the underlying loss assumptions.