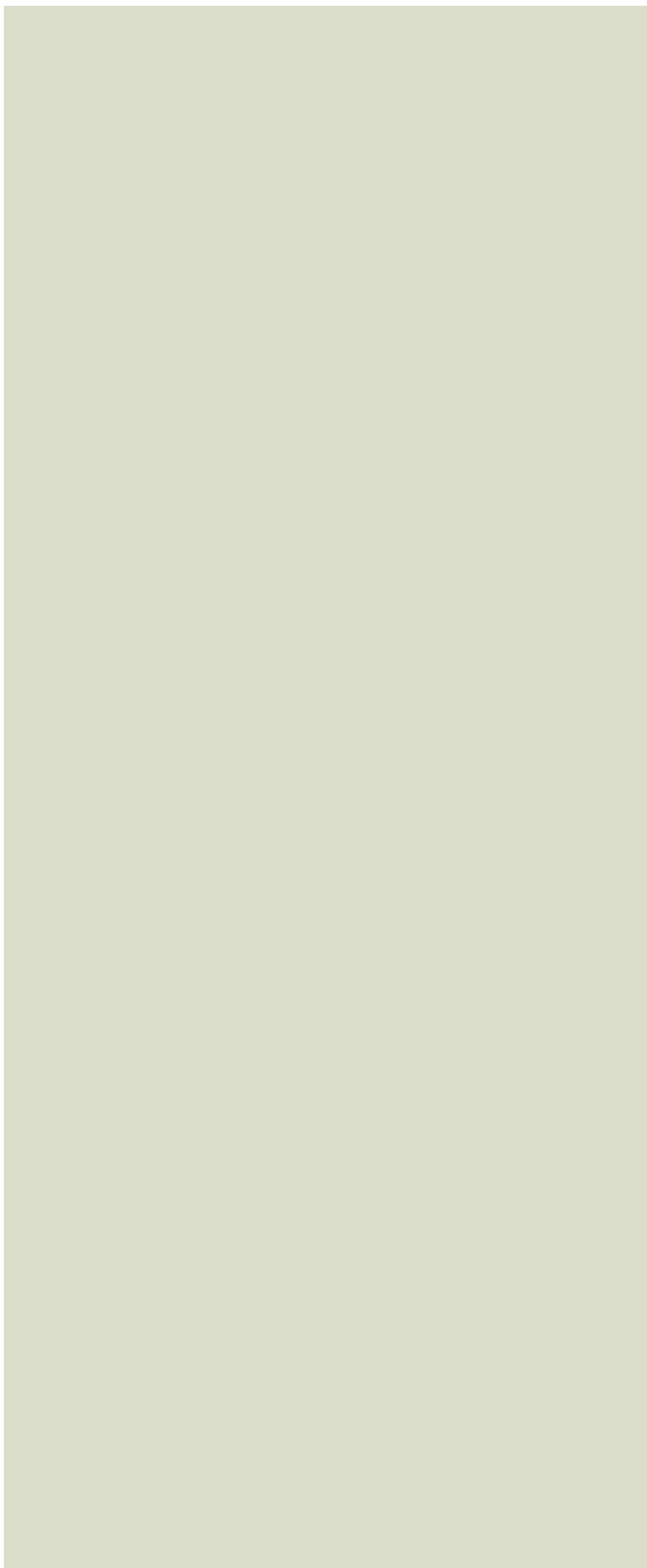




DOLLARS & CENTS

FUNDAMENTAL FACTS
ABOUT U.S. MONEY

Federal Reserve Bank of Atlanta



Introduction

With more than \$1 trillion in circulation worldwide, U.S. currency and coin play an important role in facilitating the exchange of goods and services here and around the globe. This publication gives some basic information about U.S. currency and coin, including how they are made, how they were designed, what some of their features are, and how they circulate. It also explains how to spot counterfeit currency.



History of paper money

Federal Reserve notes

Federal Reserve notes make up the majority of U.S. paper money in circulation today. The rest consists of U.S. notes and other currency still in circulation but no longer issued. The Bureau of Engraving and Printing (BEP), a division of the U.S. Treasury, prints Federal Reserve notes in denominations of \$1, \$2, \$5, \$10, \$20, \$50, and \$100. Until 1946, it also printed \$500, \$1,000, \$5,000, and \$10,000 notes. These larger denominations circulated until 1969, when Congress discontinued them due to lack of use.

As the nation's central bank, the Federal Reserve issues, distributes, processes, and accounts for Federal Reserve notes in the United States and abroad. Congress passed the Federal Reserve Act in 1913, which mandated an elastic currency that would expand and contract based on public demand. The 12 regional Federal Reserve Banks, through their network of branches throughout the country, distribute Federal Reserve notes to the public through depository institutions. Federal Reserve assets are used as collateral for Federal Reserve notes in circulation. The Federal Reserve holds these assets chiefly in the form of U.S. Treasury, federal agency, and government-sponsored enterprise securities.

Former currencies

The U.S. Treasury issued demand notes in 1861 to finance the Civil War. Nicknamed “greenbacks” because of their color, they were the first paper currency to circulate in the United States after the Continentals (issued during the Revolutionary War). The following year, Congress authorized a new class of currency. Called United States notes—sometimes “legal tenders”—they ranged in denomination from \$1 to \$10,000. These notes, considered the first legal national currency, circulated alongside Federal Reserve notes until their issuance ended in 1971.

Other paper currency no longer in circulation includes national bank notes, which national banks issued from 1863 to 1935, and gold certificates, which the Treasury issued in exchange for gold coin and bullion. These notes circulated from 1865 to 1933. Silver certificates, authorized in 1878 and issued in exchange for silver dollars, accounted for nearly all of the \$1 notes in circulation until November 1963, when the first \$1 Federal Reserve notes were issued. ■

HOW CURRENCY IS PRINTED

The Bureau of Engraving and Printing (BEP) prints Federal Reserve notes using a combination of traditional printing techniques and advanced technology.

The process begins with large, blank sheets of currency paper crafted from cotton and linen especially for the BEP.

The Treasury began redesigning currency in the 1990s. For the redesigned currency, the first step of the printing process adds the subtle background colors to the blank sheets using offset printing. The printed sheets dry for 72 hours before moving to the next step—intaglio printing.

Intaglio, which comes from the Italian word meaning “to cut or engrave,” is what makes the intricate artwork on the note possible and gives U.S. currency its distinctive texture.

Images are engraved onto soft steel plates. When the ink is applied, it pools into the recessed areas of the plate. Paper is laid over the plate and the two are pressed together under 20 tons of pressure.

Each printing plate makes 32 copies of the bill being printed. Computers examine the large printed sheets for mistakes. After the sheets are cut into smaller sheets of 16, they move to letterpress, the third and final printing process. A letterpress overprints the Federal Reserve seal and its corresponding number designation, as well as the Treasury seal and serial numbers.

Last, the guillotine cutters separate the sheets into two sheets, then into individual notes, which are organized in “bricks” containing 40 packages of 100 notes each.

Initially, the BEP produced all U.S. currency in Washington, D.C., but in 1991 a second printing facility opened in Fort Worth, Texas. ■

U.S. currency

Security features

The U.S. Treasury Department established the U.S. Secret Service in 1865 to curtail counterfeiting. However, protecting and maintaining confidence in U.S. currency requires a combination of effective law enforcement, public education, and security features. Starting in the 1990s, the U.S. government began redesigning Federal Reserve notes to stay ahead of counterfeiting threats. New features include watermarks, color-shifting inks, and security threads in the \$5, \$10, \$20, \$50, and \$100 notes. These features make the notes easier to authenticate and more difficult to counterfeit.



GEORGE WASHINGTON
\$1 note



THOMAS JEFFERSON
\$2 note



ABRAHAM LINCOLN
\$5 note



ALEXANDER HAMILTON
\$10 note



ANDREW JACKSON
\$20 note



ULYSSES S. GRANT
\$50 note



BENJAMIN FRANKLIN
\$100 note



Please check out the website of the Bureau of Engraving and Printing for up-to-date information.



MAKING SENSE OF THE REDESIGNED \$100 NOTE

A new \$100 note, the latest denomination of U.S. currency to have been redesigned, began circulating on October 8, 2013. The redesigned note features two new security features: the 3-D security ribbon and the “Bell in the Inkwell”.

- **3-D Security Ribbon** A blue ribbon is woven into the paper near the center of the note. The ribbon contains images of bells that change to “100”s when you tilt the note. The bells and numbers move side to side when you tilt the note back and forth, and move up and down when you tilt the note side to side.
- **The Bell in the Inkwell** A copper inkwell containing a color-shifting bell is located to the right of the portrait. When you tilt the note, the bell changes from copper to green, making it seem to appear and disappear within the inkwell.

Like the other redesigned denominations, the \$100 note features American symbols of freedom. Phrases from the Declaration of Independence and the quill the Founding Fathers used to sign the document are located to the right of the portrait on the front of the note. Like the previous \$100 note, the redesigned note features a vignette of Independence Hall on the back, but it shows the rear of the building instead of the front. Another difference: the vignette is larger and the oval that used to surround it has been removed.

The new \$100 note retains several effective security and design features from the previous redesign in 1996: the portrait watermark of Benjamin Franklin, the security thread, and the color-shifting 100.

You can learn more about the redesigned \$100 by visiting www.newmoney.gov. ■



The most recent series of redesigned notes began in 2003 with the new \$20 bill. It was followed by the \$50 note in 2004, the \$10 note in 2006, and the \$5 note in 2008. A redesigned \$100 note, the last in the series, began circulating in October 2013. No redesign is planned for the \$2 and \$1 notes.

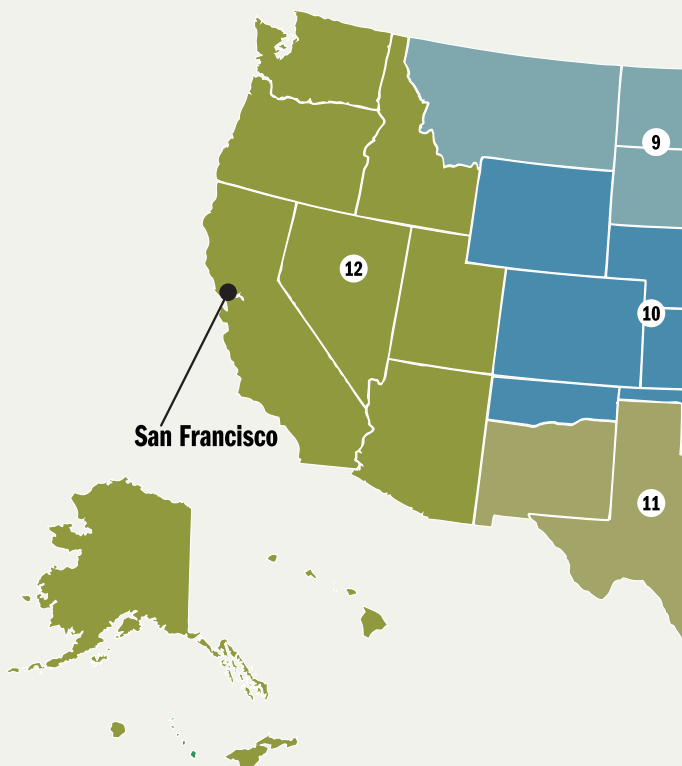
You should know that you do not need to trade in your original notes for the new ones. All U.S. currency remains legal tender, regardless of when it was issued.

Other design features

Many physical characteristics of Federal Reserve notes have changed over time since the Federal Reserve first issued the notes in 1914, though the notes retain the traditional look and feel of U.S. currency. Many of the changes, including a smaller size and more standardized designs, first appeared in 1928 as part of the first set of sweeping changes to the currency.

Federal Reserve indicators

On redesigned notes, a seal representing the Federal Reserve System appears to the left of the portrait. A letter and number below the left serial number identify the issuing Federal Reserve Bank. (See the map.) The \$1 and \$2 notes, which have not been redesigned, feature the individual seal of the issuing Reserve Bank.



Symbols of freedom

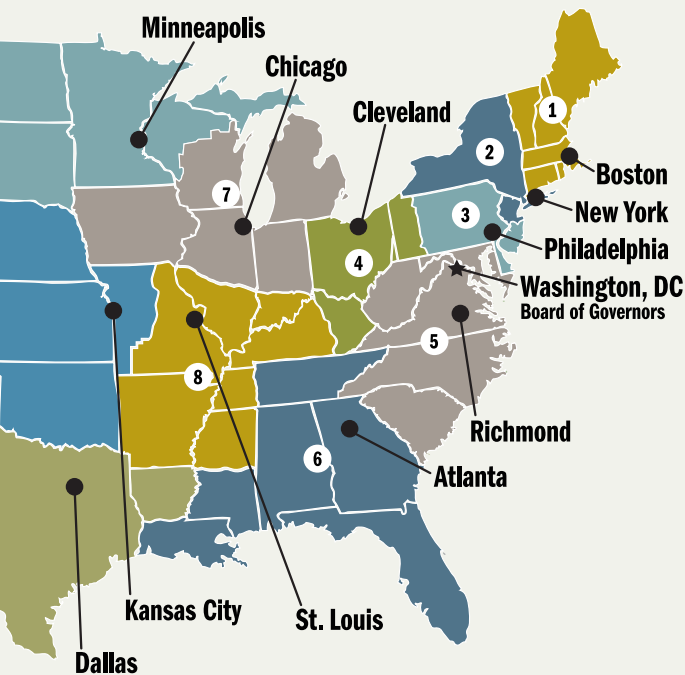
The 2003 series of redesigned notes features different American symbols for each denomination. For example, two American eagles appear on the front of the \$20 note. The large blue eagle in the background to the left of President Andrew Jackson's portrait represents the eagles drawn and sculpted during President Jackson's time. The smaller green metallic eagle to the lower right of the portrait is a relatively modern illustration, made with the same raised-ink intaglio process as the portrait, numerals, and engravings.

Series

A new series year designation is necessary when the note's appearance undergoes a major change, when the signatures of the secretary of the Treasury or the Treasurer change, or when there is a significant gap in production times.

Serial number

A unique combination of 11 numbers and letters appears twice on the front of each redesigned note. The first letter of the serial number corresponds to the series year (see the table). The second prefix letter identifies the Federal Reserve Bank that issued the note. The \$1 and \$2 notes have only one prefix



Series Year and Serial Number Relationship

Series year	First prefix letter	Denomination
1996	A	\$20, \$50, \$100
1999	B	\$5, \$10, \$20, \$100
2001	C	\$5, \$10, \$20, \$50, \$100
2003	D	\$5, \$10, \$100
2003A	F	\$5, \$100
2004	E	\$20, \$50
2004A	G	\$10, \$20, \$50
2006	H	\$5, \$100
2006A	K	\$100
2006	I	\$5, \$10, \$20, \$50
2009	J	\$5, \$10, \$20, \$50, \$100
2009A	L	\$100
2013	M	\$5, \$10, \$20

Sources: moneyfactory.gov/images/Series_Year_and_Serial_Number_Relationship_Table.pdf;
newmoney.gov/uscurrency/seriesyear.htm

THE GREAT SEAL OF THE UNITED STATES

Although the Great Seal of the United States was created early in the history of the United States, the first currency note to include it in the design was the \$1 silver certificate, series 1935. The seal has appeared on the reverse (green) side of all \$1 notes since then.

In 1776, the Continental Congress appointed Benjamin Franklin, Thomas Jefferson, and John Adams to a committee to arrange for the preparation of a seal for the United States of America. This committee and two subsequent others labored over the design for six years. The third committee enlisted the aid of William Barton, the son of a Philadelphia Episcopal clergyman and an authority on heraldry. Barton created two designs, one of which Secretary of Congress Charles Thompson simplified. Congress adopted this simplified design in 1782. This design incorporates multiple sets of 13 items each, which represent the original 13 states.

The face of the seal, on the right-hand side of the bill, shows the American bald eagle with wings and talons outstretched. A

letter, which corresponds to the issuing Federal Reserve Bank. For example, the letter F, which represents the Sixth Federal Reserve District, would precede the serial number on a \$1 note issued by the Federal Reserve Bank of Atlanta.

Because serial numbers are unique identifiers, they help law enforcement officials identify counterfeit notes. They also help the BEP track quality standards for the notes they produce.

Note on star notes: If the BEP detects an imperfect note during the manufacturing process after it has already overprinted the serial number, it replaces the flawed note with a new one, called a “star” note. However, to use the exact serial number would be costly and time-consuming, so the replacement note has its own special serial number followed by a star in place of a suffix letter—hence its name. The BEP does not reuse the serial number of the note that it replaced in the same numbering sequence.

“glory,” or burst of light, containing 13 stars appears above the eagle’s head. The right foot holds an olive branch with 13 leaves, representing peace; the left, a bundle of 13 arrows, symbolizing war. The eagle’s head is turned toward the olive branch, indicating a desire for peace. The shield (with 13 stripes) covering the eagle’s breast symbolizes a united nation. A ribbon in the eagle’s beak bears the Latin motto E Pluribus Unum (13 letters), which means “out of many, one.”

The back of the Great Seal, on the left side of the bill, depicts a pyramid, a symbol of material strength and endurance. The pyramid is unfinished, symbolizing a striving toward growth and a goal of perfection. Above the pyramid another glory contains an eye inside a triangle representing the eternal eye of God and placing the spiritual above the material. At the top edge is the 13-letter Latin motto Annuit Coeptis, meaning “He has favored our undertakings.” The base of the pyramid bears the roman numerals MDCCLXXVI (1776). Below this number is the motto Novus Ordo Seclorum, “a new order of the ages.” ■

Size

Until July 1929, U.S. currency was 7.42 inches by 3.13 inches. Currency printed since then measures 6.14 inches by 2.61 inches, a size easier to handle and less expensive to produce.

Portraits and emblems

Federal Reserve notes feature portraits of American statesmen on the face and emblems and monuments on the back.

“In God We Trust”

Secretary of the Treasury Salmon P. Chase authorized the use of “In God We Trust” on U.S. money—on the 2¢ coin in 1864—after he received a number of requests from citizens. Several Acts of Congress allowed for the motto to appear on all coins, although its use was not continuous for some time. In 1956, Congress declared “In God We Trust” as the national motto and mandated the use of this phrase on all currency and coins. ■

U.S. coins

U.S. coins have changed many times since the Coinage Act of 1792 established the U.S. Mint and adopted the dollar as the standard monetary unit.

The U.S. Mint has issued dollar coins at various times since 1794, discontinued them altogether in 1935, and then resumed them in 1971 with the introduction of the silverless Eisenhower dollar. The silverless Susan B. Anthony coin, honoring the famed suffragette, replaced the Eisenhower dollar in 1979.

Currently, there are two dollar-coin series in production. Both are made of a blend of metals that include copper, zinc, manganese, and nickel. This blend gives them a golden color.

- The Presidential \$1 Coin Act of 2005 created a series of coins depicting U.S. presidents in the order they served. Beginning in 2007 and ending in 2016, four designs appear each year. In December 2011, the U.S. Department of the Treasury suspended minting and issuing of the presidential \$1 coins. The U.S. Mint began producing the coins anew in 2012, but in very small numbers to meet demand from collectors and others who pre-order the coins.
- The \$1 Native American coin features Sacagawea, the Native American woman whose presence was essential to the Lewis and Clark expedition, on the obverse. Starting in 2009 and ending in 2016, the Mint is introducing a reverse design celebrating the important contributions of Native Americans to the history and development of the United States.

Half dollars virtually disappeared from circulation following the introduction of the Kennedy half dollar in 1964. Despite heavy production, the half dollar was scarce in general circulation through 1970 for several reasons. For one, the U.S. Mint issued the coin shortly after Kennedy's assassination, so many people kept it as a memento. The rising price of silver also contributed to the coin's scarcity.

The U.S. Mint introduced the first silverless half dollars in 1971.

Other coin denominations in common use today are the 25¢, 10¢, 5¢, and 1¢ pieces, familiarly known as the quarter, dime, nickel, and penny.

ABRAHAM LINCOLN
Penny



THOMAS JEFFERSON
Nickel



FRANKLIN D. ROOSEVELT
Dime



GEORGE WASHINGTON
Quarter



JOHN F. KENNEDY
Half dollar



SACAGAWEA
Dollar



The composition of U.S. coins has changed considerably since the 1960s. Because of a worldwide silver shortage, the Coinage Act of 1965 authorized a change in the composition of dimes, quarters, and half dollars, which had been 90 percent silver. Silver was eliminated from the dime and the quarter. The half dollar's silver content was reduced to 40 percent and, after 1970, was eliminated.

In 1981, Congress authorized a change in the penny's composition, abandoning the 95 percent copper and 5 percent zinc alloy used for decades. The 1¢ piece is now copper-plated zinc—97.5 percent zinc and 2.5 percent copper. The old and new pennies look virtually identical, but the new coin is about 19 percent lighter.



MAKING CENTS

The first step in minting coins is to produce strips of metal in the proper thickness. (The U.S. Mint buys these strips, for all coins except pennies, from commercial suppliers.)

The metal strips are fed into blanking presses, which cut round blanks (or planchets) the approximate size of the finished coin. (The blanks for pennies, made of zinc, are coated with copper before the next step. Commercial companies provide the planchets for pennies to the Mint.) The blanks go through annealing furnaces to soften them and then through tumbling barrels, which are rotating cylinders that contain chemical solutions to clean and burnish the metal. Next, the blanks run through a washer and dryer. The blanks then go through milling, or “upsetting,” machines to produce the raised (upset) rim.

Next, the blanks go through the coining press. A ring, or collar, holds the blank in place as they are stamped under tremendous pressure. Pennies require about 40 tons of pressure, and the larger coins require proportionately more. Upper and lower dies stamp the design on both sides of the coin at the same time. Grooves inside the ring holding the blank form the “reeding,” or ridges, on the rim of all finished coins except pennies and nickels, which have smooth rims. The presidential and Native American dollar coins have lettering on the rims. ■

Past U.S. coin denominations include the half-cent, 2¢, 3¢, and 20¢ coins, as well as a small silver coin called a half-dime. From 1795 until 1933, the United States also issued gold coins in denominations of \$1, \$2.50 (“quarter eagle”), \$3, \$5 (“half eagle”), \$10 (“eagle”), and \$20 (“double eagle”).

The United States Mint

Congress established the United States Mint, which makes all U.S. coins, in 1792. The U.S. Mint became an operating bureau of the Treasury Department in 1873.



U.S. Mint facility	Mint mark
Philadelphia, PA	P or no mint mark
Denver, CO	D
San Francisco, CA	S
West Point, NY	W
Mints no longer in operation	
Carson City, NV	CC
Charlotte, NC	C
Dahlonega, GA	D
New Orleans, LA	O

The Mint in Philadelphia has operated continuously since 1792. In addition to its headquarters in Washington, D.C., the Mint operates facilities in Denver, Colorado; San Francisco, California; and West Point, New York. The U.S. Bullion Depository is in Fort Knox, Kentucky.

U.S. coins typically bear a mark indicating which Mint produced them. The chart below shows the mint marks and their corresponding production facilities.



COMMEMORATIVE COINS

Congress authorizes coins to commemorate American people, places, events, and institutions. Commemorative coins are manufactured in limited quantities and may be gold, silver, or clad. Clad coins are covered in a material that is different from its center. Commemorative coins usually sell at a premium, so they seldom circulate as regular coins.

Legislation specifies that commemorative coin programs must operate at no net cost to taxpayers. Surcharges raised from the sale of commemorative coins are designated for a specific purpose or for reducing the national debt.

The first commemorative coin featured Christopher Columbus. It was minted in 1892 to help finance the World's Columbian Exposition in Chicago. Since then, the U.S. Mint has issued many other commemorative coins.

Recent commemorative coins include a \$5 gold, \$1 silver, and half-dollar clad coin issued in 2011 recognizing and celebrating the founding of the U.S. Army in 1775. Also in 2011, the U.S. Mint issued \$5 and \$1 coins in recognition of the Medal of Honor, which was established in 1861. ■

The Coinage Act of 1965 specified that no mint marks would be used for five years, but in late 1967 Congress authorized their use again. The marks reappeared on regular coinage in 1968.

Design

The director of the U.S. Mint selects designs for coins with the Secretary of the Treasury's approval. However, Congress may prescribe a coin design. A design may not change more often than every 25 years unless Congress determines otherwise.

Emblems

Most U.S. coins portray past presidents on the obverse (front, or face) side. In 2010, the U.S. Mint introduced the America the



Beautiful Quarters series to honor 56 national sites in each state, the District of Columbia, and the five U.S. territories. Starting in 2010, the Mint is issuing five new reverse designs each year in the order that the featured site was established as a national park or site. These quarters are in general circulation, but the Mint also sells sets of collector-edition proof coins, which are made especially for collectors, as well as uncirculated coins and silver proof coins.

Two designs for the nickel, issued in 2004 and 2005 only, have images commemorating the Louisiana Purchase and the Lewis and Clark expedition. The designs appear on the reverse side of the coin, while the obverse depicts Thomas Jefferson. The obverse design for the 2005 nickel also features a cursive “Liberty” inscription modeled after Jefferson’s handwriting. In 2006, a redesigned obverse portrait featured a likeness of Jefferson based on a portrait by Rembrandt Peale.

In 2010, the Mint debuted newly designed “Preservation of the Union” pennies. These pennies feature a union shield with a scroll draped across it with the inscription “ONE CENT.” ■

Circulation of money

The amount of U.S. currency and coin in circulation increased dramatically during the 20th century, as the table below shows. (Figures are from Treasury Department publications.)

Date	Amount of currency in circulation (in millions)
June 30, 1910	\$ 3,148
June 30, 1920	5,698
June 30, 1930	4,522
June 30, 1940	7,848
June 30, 1950	27,156
June 30, 1960	32,065
June 30, 1970	54,351
June 30, 1980	127,097
June 30, 1990	266,902
June 30, 2000	571,121
June 30, 2010	945,138

Over the past 20 years, the amount of Federal Reserve notes in circulation has grown by about \$700 billion.

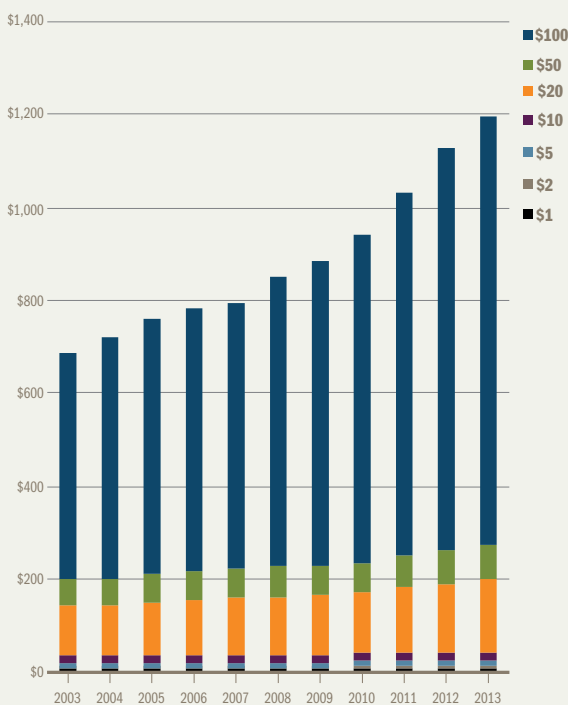
As of October 2011, approximately \$1.03 trillion worth of U.S. currency was in circulation, of which \$1 trillion was in Federal Reserve notes. The Federal Reserve estimates that as much as two-thirds of the total value of U.S. currency is held outside the United States.

How money circulates

The amount of currency in circulation depends on demand. Each year, the Federal Reserve Board estimates the public's demand for new currency in the upcoming year and submits a print order to the BEP. The order includes estimated changes in currency usage and the destruction rate of unfit currency. The Federal Reserve pays the BEP the cost of printing new currency. It also arranges for and pays for transporting the currency from the BEP facilities in Washington, D.C., and Fort Worth, Texas, to all Reserve Bank cash offices.

Value of Currency in Circulation

Billions of dollars, as of December 31 of each year



Note: Includes Federal Reserve notes, U.S. notes, and currency no longer issued. Excludes the dollar value of denominations larger than the \$100 note.

Source: Federal Reserve Board

When the cash offices receive the currency, they then distribute it to commercial banks, savings and loan associations, and other depository institutions. Customers of these institutions withdraw cash as they need it. After people spend their cash—whether at department stores, grocery stores, and so on—retailers and others redeposit most of it with the banks. When banks have more cash than they need to meet customer demand, they deposit the excess with the Fed.

The Federal Reserve's role in coin operations is more limited than its role in cash operations, as the United States Mint is the issuing authority for coins. Reserve Banks distribute new and circulated coins to depository institutions to meet the public's demand, and take as deposits coins that exceed the public's needs.



On average, the Atlanta Fed shreds about \$11-17 million each day.

When money wears out

Money wears out from handling and is sometimes damaged. Banks send old, worn, torn, or soiled notes to their Federal Reserve Bank to exchange them for new bills. The Reserve Banks sort the money they receive from commercial banks to determine if it is fit or unfit. If the money is fit, the Reserve Banks store it in their vaults until it goes out again through the commercial banking system. Reserve Banks destroy unfit currency and return damaged and worn coins to the Treasury.

Redeeming damaged money

You can redeem mutilated currency either by mail or in person at the Treasury Department's Bureau of Engraving and Printing. When you submit mutilated currency, you should include a letter describing the estimated value of the currency and how the currency was damaged. An experienced mutilated currency examiner carefully researches each case. The time it takes to process each case varies with its complexity and the examiner's workload.

For information on how to submit a claim, visit: the Treasury Department's Mutilated Currency web page.

The redemption value of mutilated coins depends on their type, denomination, and extent of mutilation. The U.S. Mint in Philadelphia



handles the redemption of mutilated coins. Coins that are merely bent or worn slick through natural wear are not considered mutilated and are exchangeable at full face value. ■

Spotting counterfeit currency

The best way to authenticate U.S. currency is to check a combination of features in the note as opposed to a single feature. For example, in the current \$20 note, you can check the color-shifting ink in the numeral 20 in the right corner. In a genuine \$20 note, this ink changes from copper to green when you tilt it 45 degrees. You can also check the security thread, which runs to the left of the portrait of President Jackson. In genuine \$20s, this security thread contains the printed characters “USA20,” repeated down the length of the thread.

If you think you’ve received a counterfeit note, notify the local police or the nearest United States Secret Service field office. You can find



RULES ABOUT REPRODUCING MONEY

The law places strict limitations on photographs or other printed reproductions of U.S. and foreign paper currency, checks, bonds, stamps, and securities.

U.S. currency

The Counterfeit Detection Act of 1992 permits color illustration of U.S. currency provided that you meet the following conditions:

- The illustration is less than three-quarters of or more than one-and-one-half times the size, in linear dimension, of any part of the bill.
- The illustration is one-sided.
- You destroy, delete, or erase any negatives, positives, plates, or digital, magnetic, or optical files you used to make the illustration after their final use.

Other obligations

Similar restrictions apply to photographs or printed reproductions of foreign currency as well as U.S. and foreign checks, bonds,

Secret Service office locations on the agency's website. Write your initials and the date in the white border of the note, and surrender it only to a properly identified police officer or U.S. Secret Service special agent. If the note is genuine, you will get it back. You cannot exchange a counterfeit note for a genuine note.



stamps, and securities. In addition, these items may appear only in black and white. You can make color or black-and-white motion picture films, microfilms, videotapes, and slides of U.S. and foreign paper currency, securities, and other obligations for projection or telecasting. But you cannot make prints from these media unless the prints conform to size and color restrictions.

Coins

There are no restrictions on printed or motion picture reproductions of U.S. or foreign coins. However, the law prohibits, with few exceptions, the manufacture, sale, or use of any token or device meant to resemble a U.S. or foreign coin and that is issued as money.

For more information on the rules about reproducing money, contact the U.S. Secret Service office nearest you. You can find office locations on the Treasury Department's website or by contacting the U.S. Secret Service, Office of Government Liaison and Public Affairs, 950 H Street, N.W., Suite 8400, Washington, D.C. 20001-4518, 202/406-5708. ■

It is illegal to knowingly pass counterfeit currency. Manufacturing counterfeit United States currency or altering genuine currency to increase its value is a violation of Title 18, Section 471 of the United States Code and is punishable by a fine or imprisonment for up to 15 years, or both. ■





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