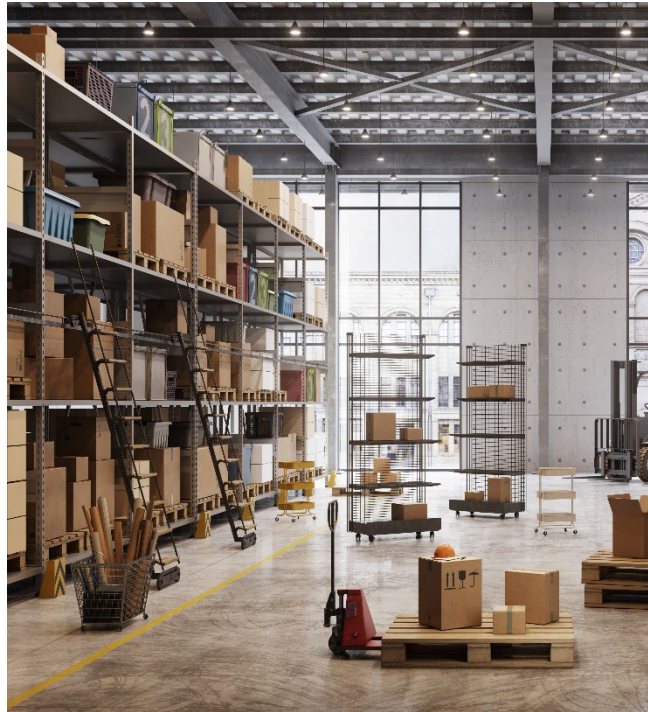


2018 Commercial Buildings Energy Consumption Survey





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Preliminary Results

November 2020

U.S. Energy Information Administration
Office of Energy Statistics
U.S. Department of Energy
Washington, DC 20585

This publication is available at:

<https://www.eia.gov/consumption/commercial>

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What is the *Commercial Building Energy Consumption Survey (CBECS)*?

CBECS is

- The only independent, statistically representative source of national-level data on the characteristics and energy use of commercial buildings
- A snapshot of the commercial buildings stock and energy use for the reference year—in this case, 2018
- A sample survey where every commercial building has a known chance of being selected

The U.S. Energy Information Administration (EIA) collects data for commercial buildings in two parts:

- Building characteristics are collected in an in-person or web survey of building owners and managers (6,436 building owners and managers responded in 2018).
- Energy usage data are collected from suppliers of electricity, natural gas, fuel oil, and district heat.

EIA has conducted the CBECS periodically since 1979, as required by Congress.

- The 2018 CBECS is the 11th iteration.





Key takeaways from EIA's 2018 CBECS preliminary building characteristics results

- Growth in building size continues to outpace increases in building stock; since 2012, the number of buildings has grown by 6% and floorspace by 11%.
- Most buildings are small, but large buildings account for more total floorspace.
- Warehouse and storage, office, and service buildings are the most common building types.
- Building types with the largest percentage increase in the number of buildings since 2012 were service, public assembly, and lodging.
- Based on average square footage, lodging buildings are the largest building type, and buildings used primarily for food service are the smallest.
- More than half of U.S. commercial buildings were built between 1960 and 1999; 25% have been built since 2000.
- Newer buildings are larger, on average, than older commercial buildings.
- Shares of commercial buildings, commercial floorspace, and the U.S. population are highest in the South.



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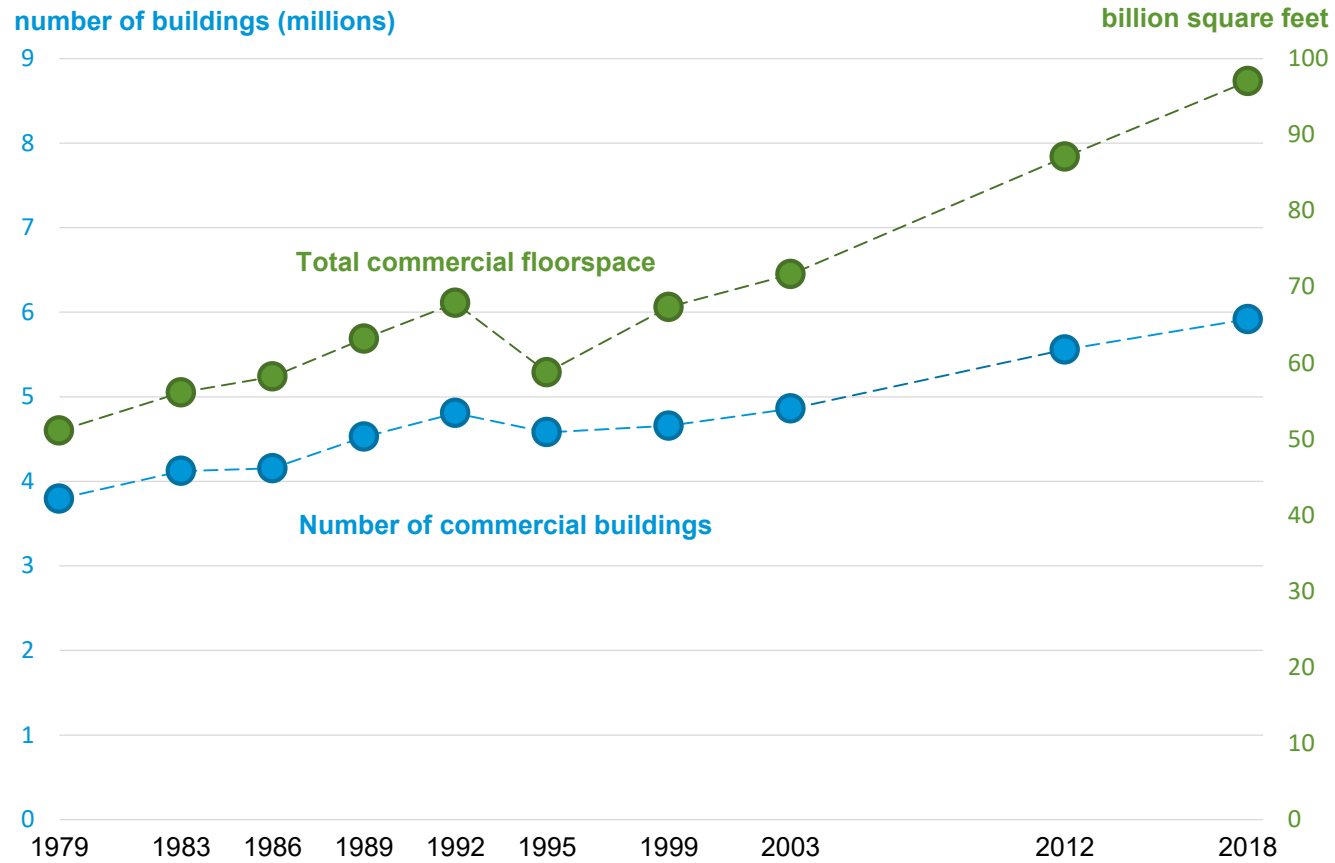
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Buildings and floorspace

The CBECS includes buildings larger than 1,000 square feet that use more than half of their floorspace for activities that are neither residential, manufacturing, industrial, nor agricultural.

Growth in building size outpaces increases in building stock

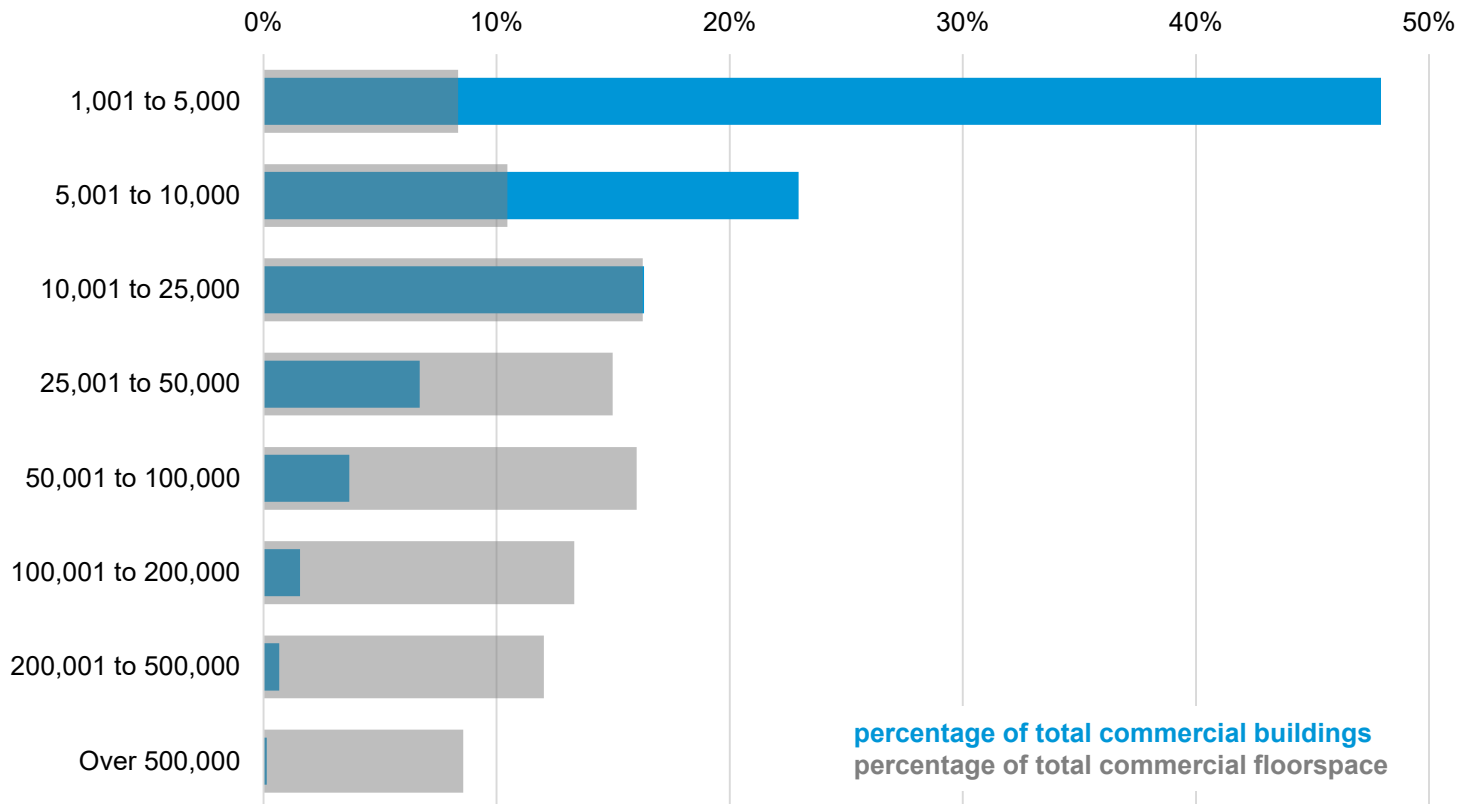
Number of commercial buildings and floorspace number of buildings (millions) and billion square feet



- The CBECS estimates that the total number of buildings increased 6% from 2012 to 2018, and total floorspace increased 11%.
- From the first CBECS we conducted in 1979 to the 2018 CBECS, the number of buildings has increased from 3.8 million to 5.9 million (55%), and the amount of commercial floorspace has increased from 51 billion square feet to 97 billion square feet (90%).

Most buildings are small, but large buildings dominate total floorspace

Total commercial buildings and floorspace by square footage category
percentage



- The smallest buildings (1,001 square feet (sf) to 5,000 sf) account for almost half of all commercial buildings, but occupy only 8% of total commercial floorspace.
- Nearly three-fourths (71%) of buildings are 10,000 sf or smaller.
- Buildings larger than 100,000 sf account for less than 3% of commercial buildings but 34% of commercial floorspace.
- The median building size is 5,400 sf; the average is 16,400 sf.

Principal building activity

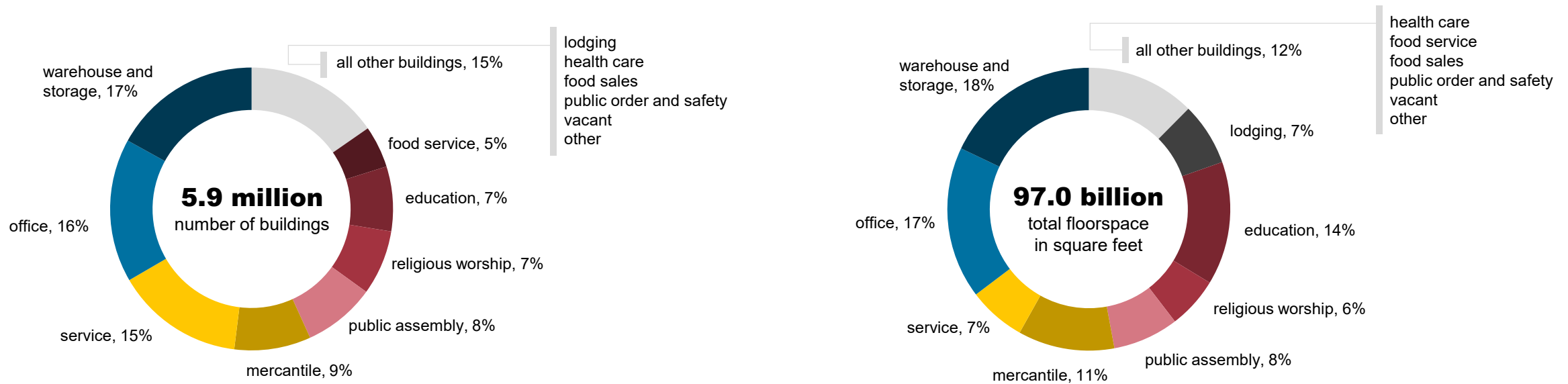
The principal building activity is the activity or function that occupies the most floorspace in a building. EIA designed the following principal building activity categories to group buildings that have similar patterns of energy consumption:

- Education
- Food sales
- Food service
- Health care
- Lodging
- Mercantile
- Office
- Public assembly
- Public order and safety
- Religious worship
- Service
- Warehouse and storage
- Other
- Vacant

Visit [Building Type Definitions](#) on the CBECS web page to learn more about these building type definitions.

Warehouse and storage, office, and service buildings are the most common building types

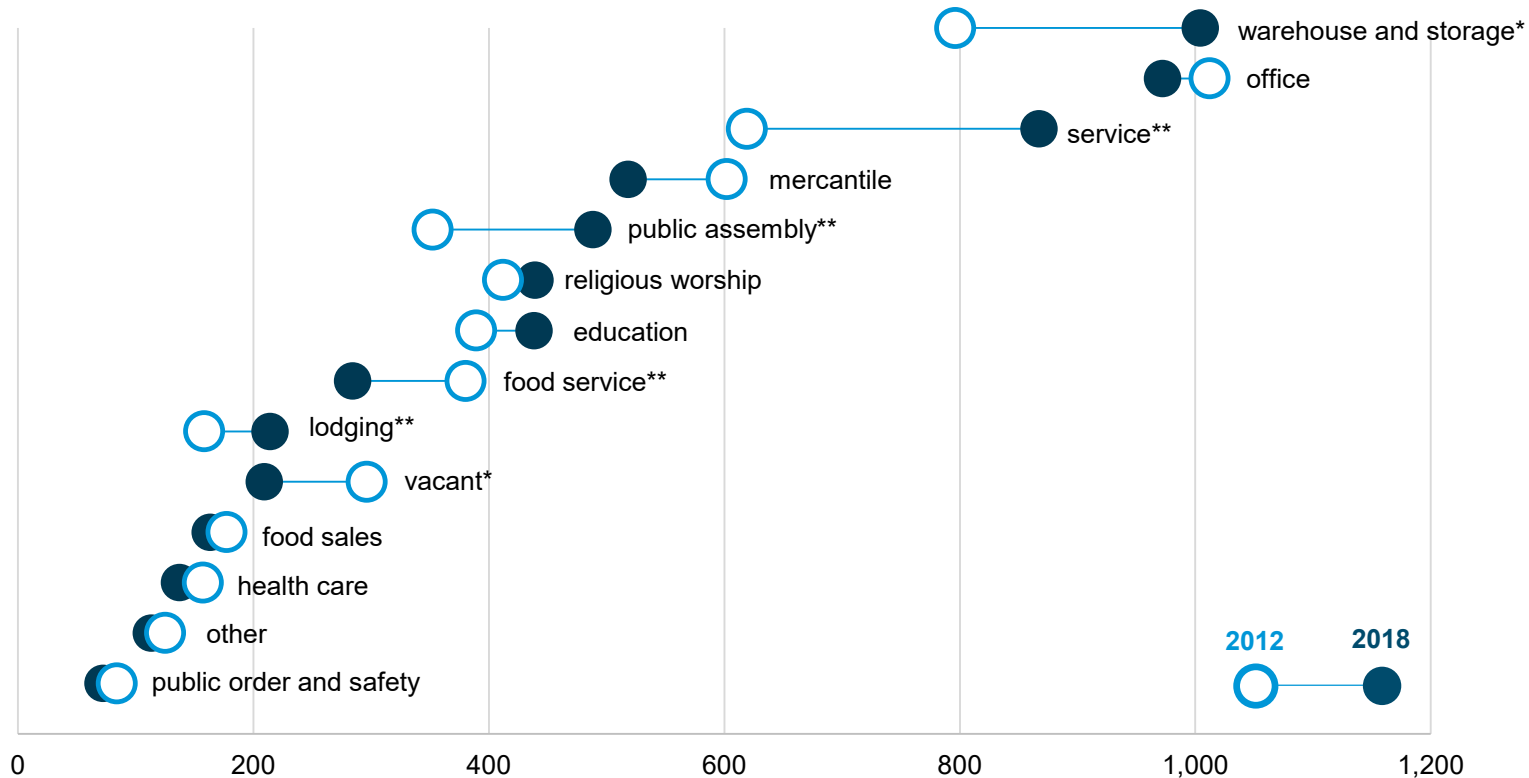
Percentage of commercial buildings and floorspace by principal building activity



- Warehouse and storage, office, and service buildings together account for 48% of all commercial buildings and 42% of total commercial building floorspace.
- Although service buildings are the third most common, these buildings only occupy 7% of total floorspace.
- Education buildings account for 7% of all buildings, but they occupy 14% of total floorspace.
- Although food service buildings account for 5% of all commercial buildings, they occupy only 1% of total floorspace. Lodging buildings account for 4% of commercial buildings, but occupy 7% of total floorspace.

Many principal building activities saw an increase in the number of buildings from 2012 to 2018

Number of commercial buildings by principal building activity
thousands

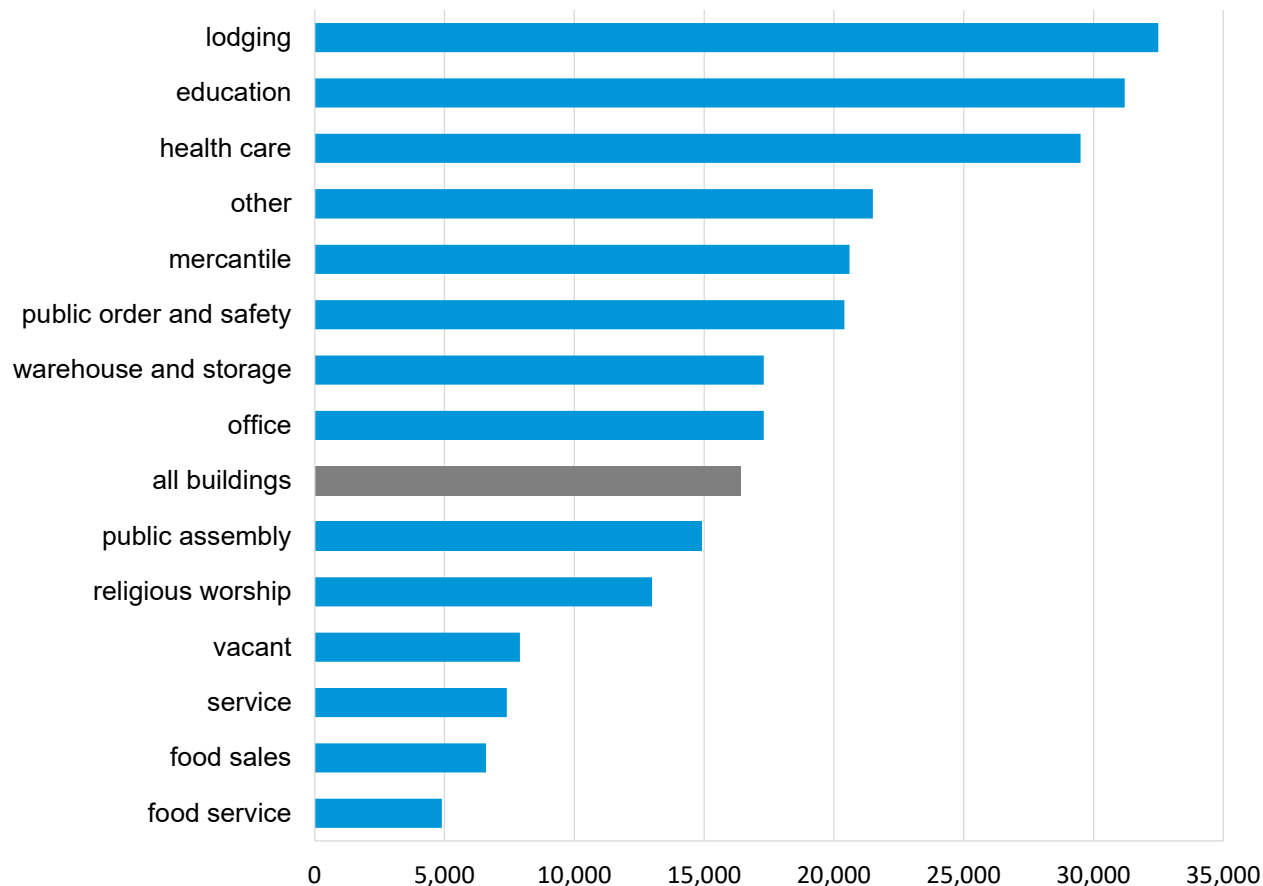


- The largest percentage increases in the number of buildings were for service (40%), public assembly (39%), lodging (35%), and warehouse and storage (26%).
- The largest percentage decreases in the number of buildings were for vacant (29%) and food service (25%).

* Change is statistically significant at the 90% confidence level.
 ** Change is statistically significant at the 90% and 95% confidence levels.

Buildings used for lodging are the largest, and buildings used primarily for food service are the smallest

Average floorspace by principal building activity
square feet per building



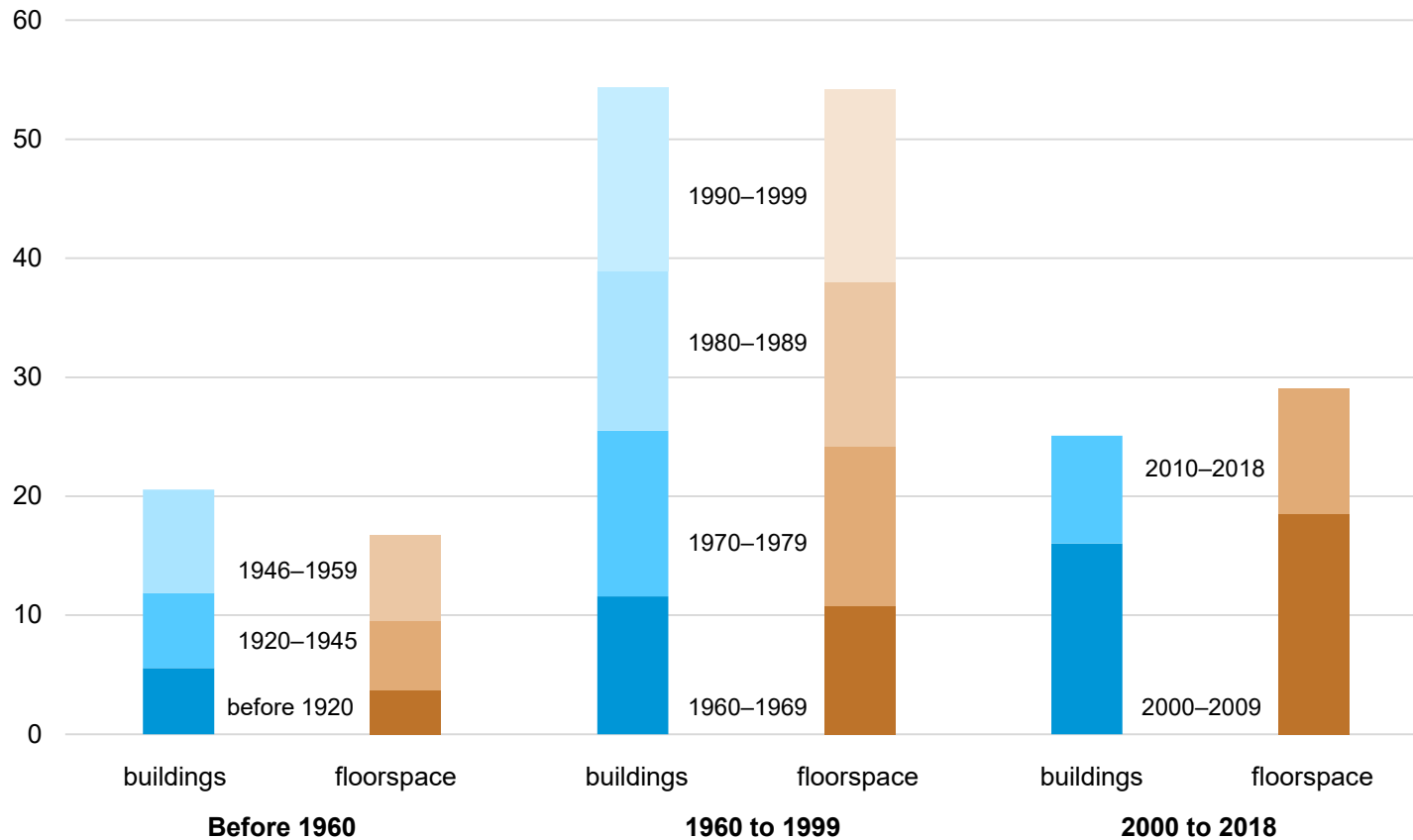
- On average, among the principal building activities, lodging (32,500 square feet (sf)), education (31,200 sf), and health care (29,500 sf) are the largest buildings.
- The size of inpatient health care buildings (hospitals) contributes greatly to the health care category's average floorspace. Hospitals average 269,100 sf per building, compared with outpatient health care buildings, which average 13,600 sf.
- On average, buildings in food service (4,900 sf), food sales (6,600 sf), and service categories (7,400 sf) are the smallest.

Year of construction

The year of construction is the year in which the major part or the largest portion of a building was constructed.

More than half of U.S. commercial buildings were built between 1960 and 1999

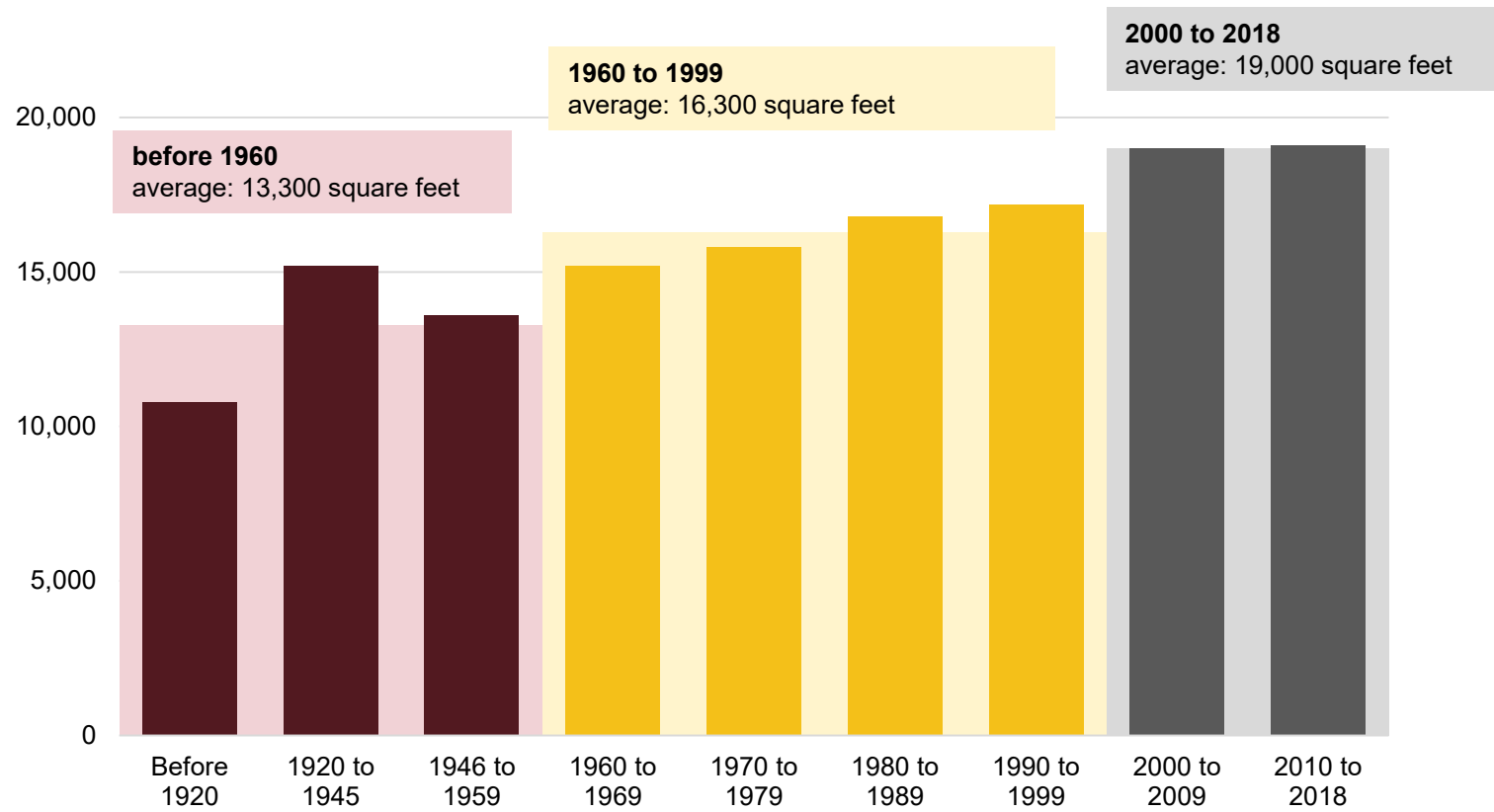
Share of number of buildings and floorspace by year constructed
percentage of total for all buildings



- Buildings built between 1960 and 1999 account for 54% of both number of buildings and of floorspace.
- One-quarter of buildings (25%) were built since 2000, accounting for 29% of total floorspace.
- Buildings built before 1960 represent 21% of buildings but only 17% of total floorspace.
- The median year of construction is 1982.

Newer buildings are larger, on average, than older commercial buildings

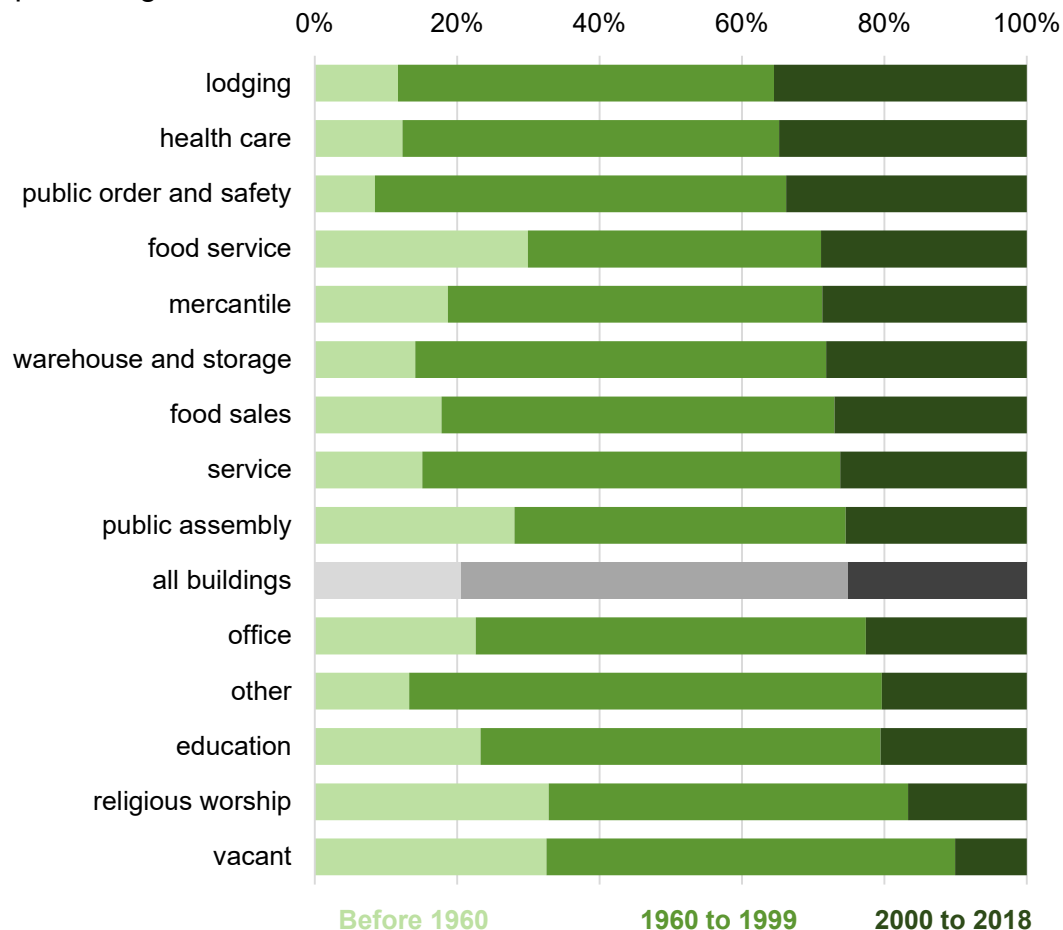
Average building size by year of construction
square feet



- Buildings constructed before 1960 are smaller than buildings constructed since 2000—more than 5,000 square feet smaller, on average.
- Buildings constructed since 2000 averaged 19,000 square feet, or 2,600 square feet larger than the national average.

Health care, lodging, and public order and safety buildings are newer than other building types

Proportion of commercial buildings by year of construction and principal building activity
percentage

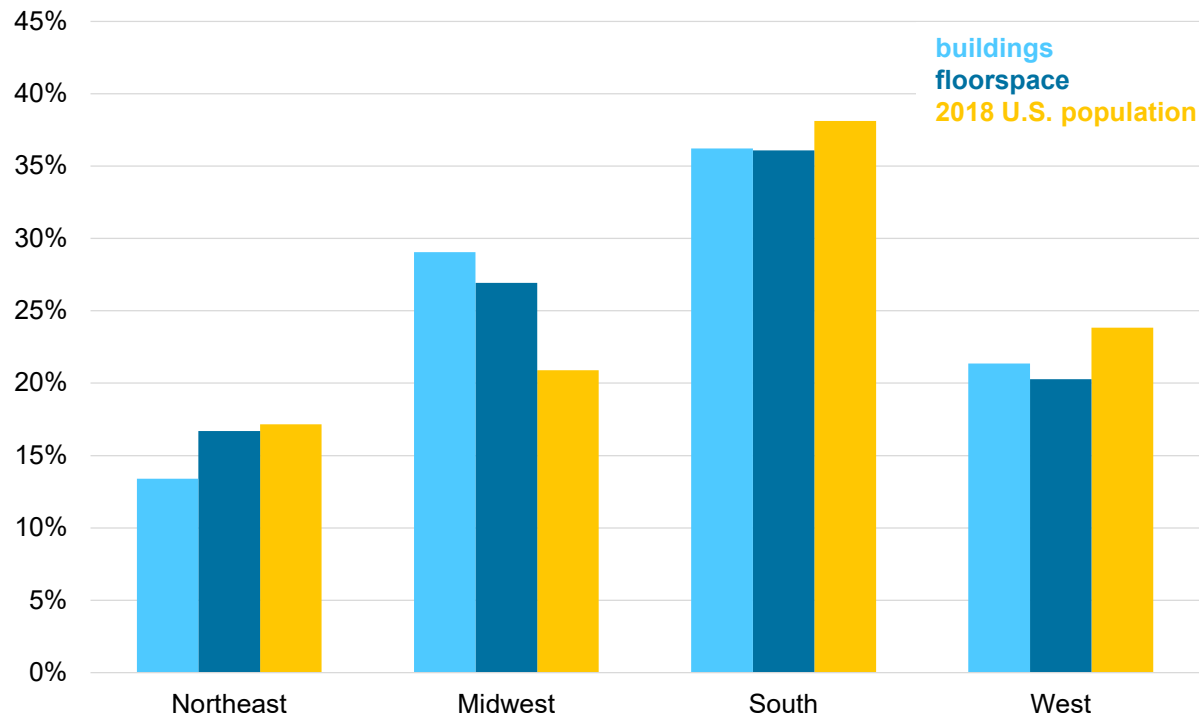


- More than one-third of health care, lodging, and public order and safety buildings have been constructed since 2000.
- More than 30% of food service, religious worship, and vacant buildings were constructed before 1960.

Regional estimates

Commercial buildings, floorspace, and population are highest in the South

Commercial buildings, floorspace, and U.S. population by region percentage

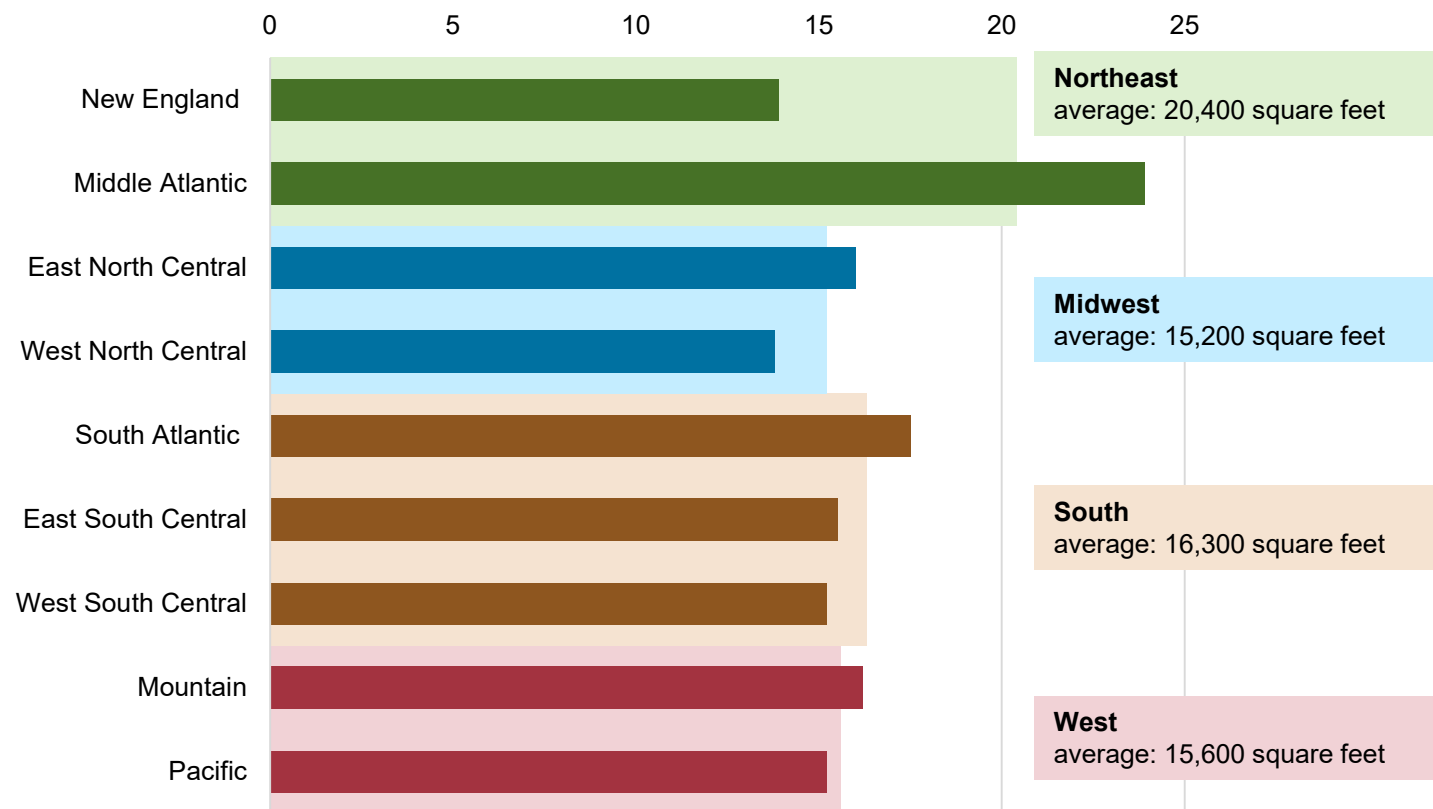


Note: Population estimates are as of July 1, 2018.

- More than one-third of the U.S. population (38%), buildings (36%), and floorspace (36%) are in the South.
- The Midwest is the only region with a smaller share of the total U.S. population than buildings. It has the second-highest share of buildings (29%) and floorspace (27%) but has the third-highest share of the U.S. population (21%).
- The West has nearly one-fourth of the U.S. population (24%) and about one-fifth of buildings (21%) and floorspace (20%).

Commercial buildings are largest in the Middle Atlantic

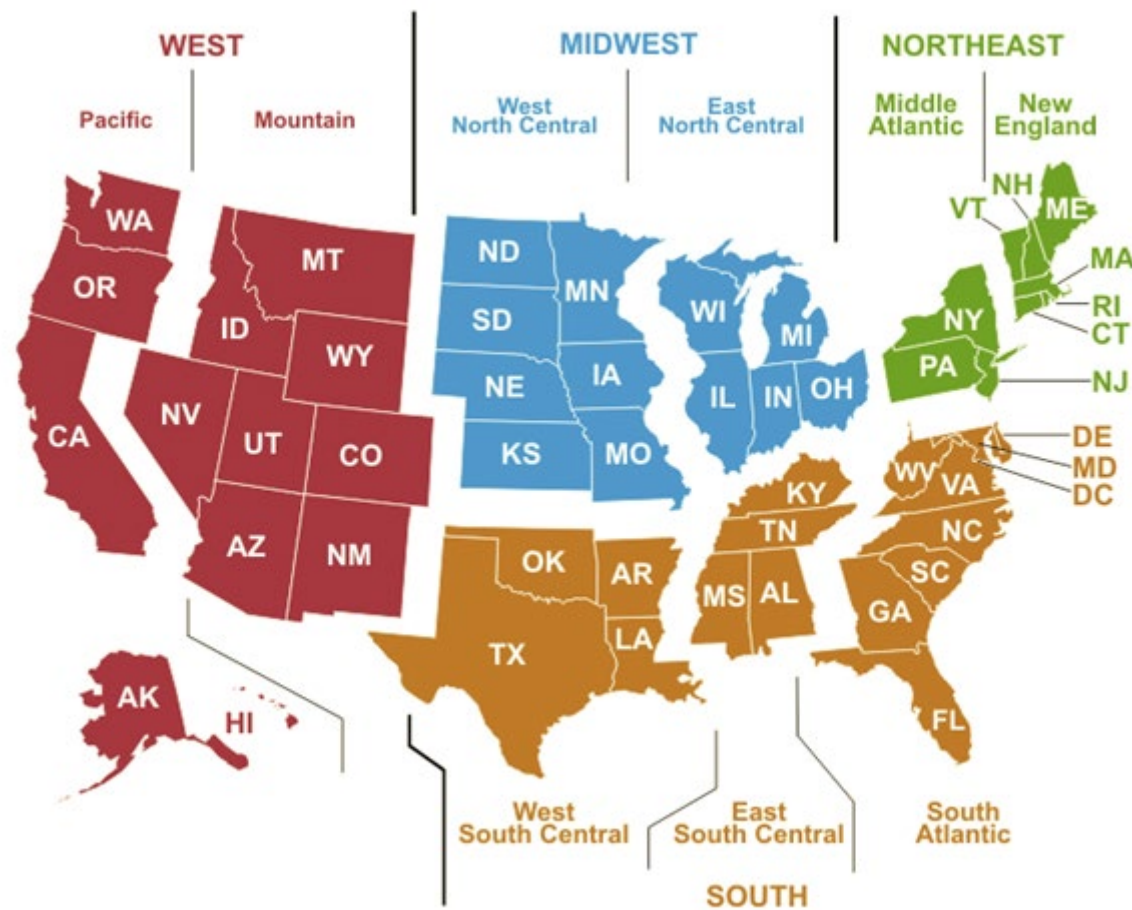
Average square feet per building by census division
thousands



- Commercial buildings in the Middle Atlantic Division average 23,900 square feet (sf), 46% more than the average for all U.S. buildings (16,400 sf).
- Commercial buildings are the second smallest on average (13,900 sf) in New England and bring the average building size for the entire Northeast region down to 20,400 square feet, which is 24% more than the national average floorspace.
- Buildings are smallest, on average, in the West North Central (13,800 sf).
- The South Atlantic is the only other census division where the average building size is larger than the national average at 17,500 sf.

References and additional information

U.S. Census Regions and Divisions





References

All graphs are sourced from Form EIA-871A, Commercial Buildings Energy Consumption Survey.

U.S. population estimates are sourced from the U.S. Census Bureau, [*Population Estimates Program*](#), based on one-year estimates from the [*American Community Survey*](#).

Please direct questions about CBECS to Joelle Michaels, Survey Manager, joelle.michaels@eia.gov



Projected schedule of additional 2018 CBECS data releases

Building characteristics detailed tables and public use microdata | Spring/Summer 2021

Consumption and expenditures preliminary estimates | Spring 2022

Consumption and expenditures detailed tables and microdata | Spring/Summer 2022



For more information

U.S. Energy Information Administration homepage | www.eia.gov

Commercial Buildings Energy Consumption Survey | www.eia.gov/consumption/commercial

Consumption and Efficiency | <https://www.eia.gov/consumption>

Today in Energy | www.eia.gov/todayinenergy