

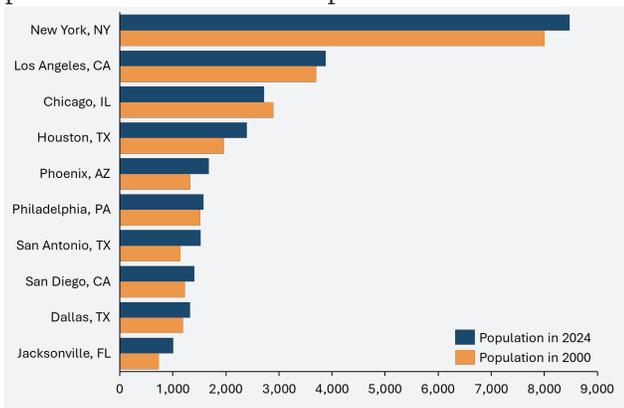
U.S. Cities

Large, densely populated cities serve as cultural and economic hubs, offering employment, education, and recreation. To sustain their populations and infrastructure, cities require constant flows of energy and resources. There is increasing attention on the environmental impacts of cities, and the opportunities to reduce the footprint of the built environment and enhance the quality of life for residents.

Urban Land Use Patterns

- 83% of the U.S. population lives in urban areas, up from 64% in 1950. By 2050, 89% of the U.S. population and 68% of the world population is projected to live in urban areas.¹

Population of the 10 Most Populous U.S. Cities^{2,3}



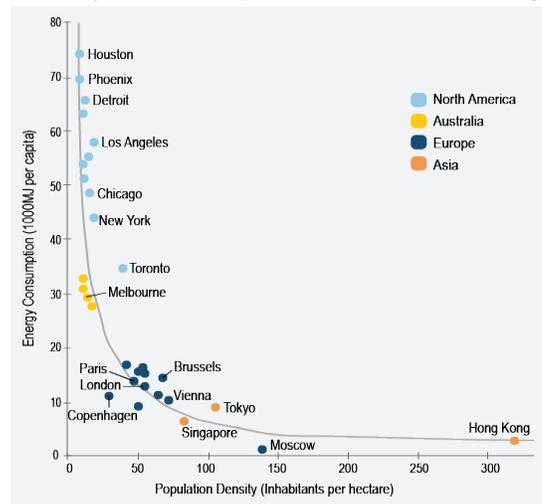
- The U.S. has over 340 urban areas with populations above 100,000; New York City, the largest, has 8.48M inhabitants.³
- In 2010, the average population density of U.S. MSAs was 283 people/mi², compared to the national average of 87.4. By 2020, the U.S. average had increased to 94 people/mi².^{8,12}
- In New York City, population density in 2020 was 29,303 people/mi².⁵
- Total housing units increased by 6.7% from 2010–2020, compared to 13.6% from 2000–2010.¹¹ New York County (Manhattan) has the highest density of housing units in the country, with 40,339 units/mi² of land area.⁹
- Doubling population-weighted urban density can reduce CO₂ emissions from household travel and residential energy use by 48% and 35%, respectively.¹³
- From 2000 to 2020, urban land area in the U.S. grew by 14%, reaching 105,493 mi², or 3% of total U.S. land area.^{8,9} It is projected to more than double by 2060.¹⁰ Even as the rate of urban land conversion slowed, from 2.2% in 2020 to 1.7% in 2024, the fraction of the global population living in urban areas grew from 46.7% in 2000 to 58% in 2024.^{6,7}
- Sprawl, the expansion of cities and suburbs into surrounding rural land, increases traffic and energy use, and contributes to air and water pollution as well as flooding.¹⁴

- Sprawl also leads to habitat loss, automobile dependency, reduced open space, and diminished quality of life.¹⁵
- According to Smart Growth America’s Sprawl Index (based on development density, land use mix, activity centering and street accessibility), the most sprawling MSAs of the 221 surveyed are Hickory-Lenoir-Morganton, NC, Atlanta-Sandy Springs-Marietta, GA, Clarksville, TN-KY, and Prescott, AZ.¹⁶

Built and Natural Environment

- In 2024, residential (19 quads) and commercial (17 quads) sectors accounted for 37% of U.S. energy consumption and 33.5% of energy-related emissions, 1,602 Mt of CO₂.¹⁷
- 70% of global emissions can be attributed to urban areas, driven by population size, income, and form of urbanization.¹⁸ Of these emissions, 21% come from urban transport.¹⁹
- The “urban heat island effect,” in which average annual temperatures average 1-7 °F higher in cities than surrounding suburban and rural areas, results in increased energy demand, air pollution, GHG emissions, and heat-related illness, as well as decreased water quality.²⁰
- Urban tree canopies mitigate the urban heat island effect.²¹ Urban tree cover in the U.S. has declined to 39.4%, while impervious cover increased to 26.6% of urban area.¹⁰ Extensive urban reforestation would increase carbon sequestration, reduce electricity-related GHG emissions, and provide over \$9B in benefits annually.²²
- Since 2000, emissions from key pollutants have decreased and, with them, the number of unhealthy air days for urban residents. Almost 4 in every 10 Americans, 131.2M people, still live in regions containing unhealthy levels of particulate or ozone pollution.^{23,24}
- Contaminant concentration and toxicity in streams increase with urban development, due to runoff, treated and untreated sewage, and industrial discharge.²⁵
- Stormwater runoff from the built environment is a principal contributor to water quality impairment of water bodies.²⁶

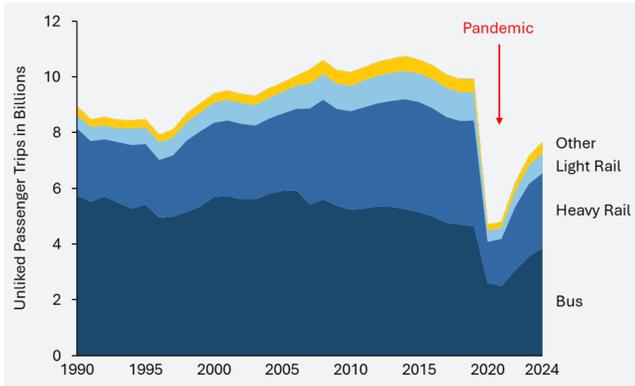
Urban Density and Transportation-Related Energy Use²⁷



Transportation and Mobility

- In 2019, 56.1B passenger-miles were traveled on U.S. public transit. This decreased to 23.3B in 2021 during the COVID-19 pandemic and rose to 31.3B in 2022.^{28,29}
- In 2022, buses, BRT, and trolleybuses accounted for 48% of U.S. public transit trips, while heavy rail made up 38%. Using public transit rather than a personal vehicle lowers carbon emissions by 55%.^{29,31}
- Between 2020 and 2024, public transportation ridership across all modes rose by 63%, yet 2024 levels remained 22% below 2019.³⁰

Public Transportation Ridership 1990-2024³⁰



- Urban congestion remains a major challenge—costing Americans an extra 8.7B hours of travel time and 3.5B gal of fuel in 2019.³⁴
- Public transportation in the U.S. prevents 148B VMT, saves 6.6B gal of gasoline, and 63 Mt of CO₂ emissions annually.³² \$1B invested in public transportation yields \$5B in GDP growth and supports nearly 50,000 jobs.³³
- In 2019, transit buses used 89.5T Btu to travel 19.3B PM, while rail used 47.1T Btu for 39.3B PM. In contrast, passenger cars and trucks consumed 15,108T Btu and traveled 4,470B PM.³⁵
- In large U.S. cities, parking lots cover an average of 26% of land area.³⁹

Socioeconomic Patterns

- The average unemployment rate of metropolitan areas in May 2025 was 4%, ranging from 1.7% in Sioux Falls, SD to 17.4% in El Centro, CA.⁴⁰ In 2018, U.S. metro economies accounted for 91% of GDP, 92% of wage income, and 88% of jobs.⁴¹ Only 9 countries had a higher 2018 GDP than the NYC area.⁴¹
- In 2023, the median household income inside metropolitan areas was \$83,590; outside metropolitan areas it was \$62,520.⁴² Poverty rates are lower within metropolitan areas (10.7%) than outside (13.5%).⁴³
- In 2015, the top 1% of U.S. families earned 26 times more income than the bottom 99%. In the 17 most unequal metro areas, the top 1% earned at least 35 times more than the bottom 99%. In Jackson, WY, the ratio was 132:1.⁴⁴

- MSAs with a high concentration of tech and finance workers tend to have higher income inequality. Rust Belt and Midwest MSAs, many of which still rely on manufacturing, tend to have more equal wage distributions.⁵¹

Solutions and Sustainable Alternatives

- A sustainable urban area preserves environmental quality, uses renewable energy efficiently, maintains a healthy population with access to healthcare, and fosters economic vitality, social equity, and civic engagement.⁴⁶
- Achieving urban sustainability requires an integrated approach to environmental management, measures to limit sprawl, strong connections among community, ecology, and economy, and coordinated stakeholder interaction.^{46,47}
- Well-being can be improved by prioritizing means to reduce climate risk for low-income and marginalized communities.¹⁸
- 1,066 mayors have signed on to the 2005 U.S. Mayors Climate Protection Agreement, committing to reduce carbon emissions below 1990 levels, in line with the Kyoto Protocol.⁴⁸
- The EPA offers clean energy programs, information, training, grants, and resources to assist local governments.
- ICLEI (International Council for Local Environmental Initiatives) is an international association of national, regional, and local governmental organizations that develops locally designed initiatives to achieve sustainability objectives.⁴⁹
- Smart Growth America is a coalition working to improve the planning and building of towns, cities, and metro areas.⁵⁰

U.S. Cities Future Climate Solutions⁴⁵

