

Land Use and Land Loss in the United States

The Impact of Land Use Trends on Real Estate Development

by

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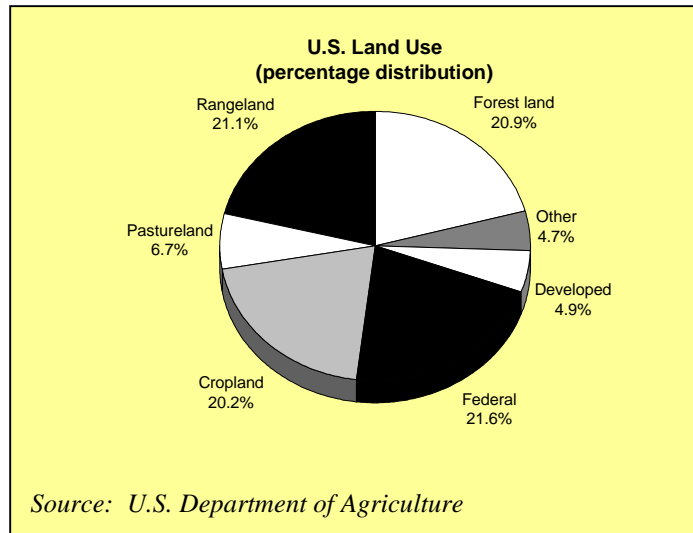
Under all is the Land...¹

National Land Use Trends

How America makes use of and conserves its land is the fundamental question in both environmental and real estate policy.

The total land area of the United States is 3,540,558 square miles. (For the current U.S. population, that is about 76 persons per square mile of land area.) Most of this land was acquired in the 1800s, with the largest portion acquired as the Louisiana Purchase in 1803, which added some 909,000 square miles.

Around 75 percent of land in the U.S. falls into one of three “land use” categories – cropland, grazing land, or forestland. All other uses make up only a fourth of U.S. land cover and include rural transportation areas, recreation and wildlife areas, various public facilities and installations, farm roads, urban areas, areas not inventoried, wetlands, desert, bare rock areas, and tundra.



Cropland and forestland have both increased dramatically over the last 100 years. Total cropland has increased from 319 million acres in 1900 to 375 million acres in 1997, while non-pastured forest land has increased from 278 million acres in 1900 to 399 million acres in 1997. The growth in other lands, from 175 million acres in 1900 to 564 million acres currently has come at the expense of mostly grazing lands (which include pastures and rangeland) and with the addition of Alaska and Hawaii in 1959. (Alaska and Hawaii both fall mostly into the “other lands” category.)

Growth of the Suburbs

The last 50 years have witnessed a more than doubling of the percentage of Americans living in suburban areas. With this growth has come a concern over the efficiency of land used for suburban residential development. Prior to the Second World War, most Americans lived in rural areas, with most of the remainder living in urban-city areas. In 1950, only 23.3% of the U.S. population lived in a suburban area. By 1994, 50.1% of U.S. residents lived in suburban areas. In percentage terms, the bulk of suburban growth occurred between 1950 and 1970. The rate of suburban population growth has since slowed, from 115% between 1950 and 1970 to 51% between 1970 and 1990.

¹ from the Preamble to the National Association of REALTORS® Code of Ethics.

The vast majority of the increase in suburban residency has come at the expense of rural areas. Over the last 50 years almost a third of the U.S. population has consistently resided in urban areas. The percentage living in rural areas has in contrast fallen dramatically, from almost 44 percent of the population in 1950 to only about 20 percent of the population today. And while urban areas have witnessed an increase in absolute population over the last 50 years, the population in rural areas has declined. The growth of the suburbs has been one largely of internal increase and migration from rural areas.

How much land is developed?

Growth in the number of acres used for urban purposes has trailed growth in most other land use categories. (Urban purposes include residential, commercial and government-related development.) In 1945, 15 million acres in the U.S. were used for urban purposes. By 1992 this figure had increased to 58.8 million acres – an increase of almost 300%. This increase, however, pales next to the explosion in park and wildlife uses. In 1945, 22.6 million acres were set aside for park and wildlife purposes. By 1992 this figure had increased to 228.9 million acres, an increase of over 900 percent. The rate and amount of land set aside for public and open spaces has been growing far beyond that used for residential and commercial purposes.

A History of Land Conservation

One method of preserving open space is to bring more land into public ownership. Trends in the federal ownership of land show dramatic increases in recent decades. For instance the number of acres under control of the National Park System almost tripled between 1970 and 1996, from 29.6 million acres to 83.2 million acres. Land under the National Wildlife Refuge System has seen even more dramatic growth, from 30.7 million acres in 1970 to 92.6 million acres in 1996. Land controlled under the National Wilderness Preservation System grew almost ten-fold, from 10.4 million acres in 1970 to 103.6 million acres in 1996. Forest Land under control of the National Forest Service has remained steady (182.6 million acres in 1970 to 187.3 million acres in 1996). Federal conservation and protection of land has increased at a tremendous rate over the past thirty years, as has the private conservation of land (to be discussed below).

States Differ in Federal Land Holdings

Most Americans, while occasionally making use of the great recreational opportunities offered by our national park system, are likely more concerned about the conservation of open space near where they live. And while the federal government has a long history of land conservation, most of the federal government's holdings are concentrated in a few states. In fact, 93 percent of federal lands, exclusive of federal facilities, offices and installations, are located in the western United States. Over a third of all federal land is in Alaska.

However, several states that have been the focus of land use debates contain a large share of federal lands. Oregon, often pointed to as a model of land-use planning, has over half its land held by the Federal government. California has almost 45 percent of its land held by the Federal government. The other half of California is dominated by rural land, mostly crop and forestland. For the majority of Californians, beautiful vistas and federal parks are only a short drive away.

State Differences in Developed Land

States not only differ dramatically in the amount of land owned by the federal government, but also in the amount of land developed. Few states are predominately covered by developed, urban land. Only 10 states have more than 10 percent of their land developed; over half have less than 5 percent developed. Unsurprisingly the most developed states are those small states located in the northeast, such as New Jersey, Connecticut, Rhode Island and Massachusetts.

Density is a commonly used measure of the intensity of land usage. An obvious measure of density is persons per square mile of land area. While the United States as a whole averages 76 persons per square mile of land, this figure masks the large differences in density across states – one person per square mile in Alaska to 8,576 persons per square mile in the District of Columbia. The state with the highest density is New Jersey with 1,094 persons per square mile. The negative correlation (-0.48) between population growth (1990 to 1998) and density reveals that population growth in the U.S. has been occurring in the relatively less densely populated states.

Farmland Trends

Several proposed and existing local land-use restrictions focus on the perceived need to preserve farmland. The motives behind these measures range from ensuring an ample food supply to preserving an agricultural way of life. Some of the restrictions are based on the belief that the U.S. is losing vast amounts of farmland.

Statistics from the U.S. Census Bureau and U.S. Department of Agriculture paint a different picture. While the number of farms has steadily declined over the last hundred years (due mainly to consolidation into larger farms), the total land in farms has remained remarkably stable. For example the total land in farms in 1997 was 956 million acres, far above the 1900 total of 837 million acres. America does not appear to be losing farmland.

Concerns about ensuring an ample food supply are even more unfounded. U.S. agricultural productivity has more than doubled in the last 30 years. In general it takes half the necessary land to grow the same amount of crops today as it did in 1960. If productivity measures fail to convince one of the improbability of a food shortage, the long term declining trend in the price of agricultural commodities and products would indicate a glut of farm output rather than a shortage.

Farmland and Population Growth: A look at the States

Between 1992 and 1997, the total acreage of land held as farmland in the U.S. declined by slightly more than three percent. This slight decline on the national level masks significant state differences – from an almost nine percent decline in Maine to a 3.6 percent increase in Utah. Only two states, Utah and New Mexico, have seen recent increases in the amount of farm land. Another seven states saw no net change in their farmland acres between 1992 and 1997.

Policy debates over farmland loss often focus on the role of residential development and population growth in driving the conversion of farmland to other uses. While it is of course true that the country’s population has been growing at the same time that farmland is being converted to other uses, it does not follow that population growth, and concurrent residential development, leads to loss of farmland. Looking at states where population growth is occurring at the greatest rate reveals that these same states are losing farmland at a rate lower than states experiencing little or no population growth. Among the ten fastest growing states in the U.S., only one, Georgia, has recently lost farmland at a rate equal to or greater than that of the nation. At the other extreme, four of the ten slowest growing states, in terms of population, have recently lost farmland at a rate greater than the nation.

No Shortage of Land

While select areas have seen significant changes in land use, the U.S. is in no danger of losing farmland or open spaces. Developed and urban land continues to be a small fraction of available land. Federal holdings and conservation of land remains high and has been trending upward. The Federal Bureau of Land Management alone holds four times the amount of land than is used for urban purposes. And in spite of the concerns expressed by some, America continues to retain a large portion of farmland. Land use statistics show that there is no national shortage of land.

Land Used for Residential Development

In 1999 over 1.6 million new homes were constructed in the U.S., 1.3 million of which were single-family homes. 2000 promises to deliver only a slightly lower number of newly constructed homes. On average, each new single family home sold is packaged with 12,910 square feet of land (the median for 1999 is 8,750).

Median Lot Size by Purpose (1999)	
Built for Sale	9,000
Contractor-built	32,670
Owner-built	45,759
Built for Rent	6,460

Source: U.S. Department of Commerce, Bureau of the Census.

Custom homes and owner built homes tend to have a much larger lot size. In fact owner built homes in 1999 had a median lot size of almost 46,000 square feet (slightly greater than one acre), over four times as large as homes built for sale (speculative building). Custom

built contractor homes also use a larger amount of land than homes built for sale, 32,670 square feet compared to the 9,000 found among built for sale homes.

According to lot size statistics collected by the Census Bureau, a disproportionate share of land used for single family residential construction comes not from speculative, built for sale homes, but from either custom homes or owner built homes. With both custom built and owner built homes, the land in question is generally already owned by the prospective occupant/owner. In addition, these homes are less likely to be built within existing subdivisions or neighborhoods, and hence attempts to influence land use intensity via subdivision regulations (such as clustering) are unlikely to impact those newly constructed homes which currently use a disproportionately larger share of land.

In sum, newly constructed homes in 1999 utilized almost 658,000 acres of land. This amounts to about 3 hundredths of a percent of the total land mass of the U.S. At this rate, which is one of the highest in history and likely to decline, it would take almost 600,000 years to cover the U.S. in single-family homes.

Most newly constructed homes built for sale, however, fall well below the average, as is indicated by the 1999 median lot size of 8,750. Only about 1 in 10 homes are built on lots of 22,000 square feet or more, while over a third are built on lots of under 7,000 square feet. In recent years, housing units on smaller lots have been increasing faster than those on larger lots. Occupied housing units on lots of less than one-eighth acre increased 62 percent from 1995 to 1997, according to the American Housing Survey, while occupied housing units on 5 acres or more increase by about 5 percent.

New Homes Built for Sale (1999)	
Size Distribution	
Under 7,000 sq. ft.	34%
7,000 to 8,999 sq. ft.	17%
9,000 to 10,999 sq. ft.	16%
11,000 to 21,999 sq. ft.	23%
22,000 sq. ft. or more	11%

Source: U.S. Department of Commerce,
Bureau of the Census. C25/99A.

Focusing exclusively on the lot size of new homes misses important dynamics that occur in land and housing markets over time. A large share of newly constructed housing, even within the suburbs, occurs as infill. For example many homes built upon ten acre or more lots will later see half the lot or more sold off and used for another home. So what may be a home with ten acres could be a home with 5 acres, or even 1 acre several years later. For instance, the American Housing Survey indicates that between 1993 and 1997, almost 220,000 homes located on ten acres or more in 1993, had less than ten acres by 1997, which equals about six percent of the 1993 housing stock on land of ten acres or more. Additionally, over 80 percent of the increase in housing stock located on less than an eighth of an acre between 1993 and 1997 came from existing homes previously located on greater acreage.

From current policy discussions, one might conclude that those parts of the country characterized by sprawl or growing the fastest might also be using a disproportionate share of land per new home. Although Census statistics on lots sizes are not reported for states or cities, statistics are available for the nine Census Divisions. Interestingly in New England, which has lagged the nation recently both in terms of population and construction growth, the average lot size is twice that of any other area in the country. Also of interest is the fact that those areas experiencing the greatest growth and seemingly, the worst complaints regarding sprawl and traffic, are also the areas with the smallest lot sizes for new construction. The Pacific states of California, Oregon and Washington have the smallest average lot size for homes constructed in 1999, 6,500 square feet, about half the national average. In addition the Mountain states and the South Atlantic, often considered to contain some of the more sprawling cities, both have lot sizes below the national average.

Despite differences, or perhaps due to them, many of those areas with relatively small new home lot sizes are the same areas witnessing the largest aggregate amounts of land used for new residential single-family construction.

Median Lot Size by Area (1999)	
New England	32,670
Middle Atlantic	15,380
East North Central	13,950
West North Central	11,050
South Atlantic	10,890
East South Central	12,750
West South Central	8,250
Mountain	7,661
Pacific	6,500

Source: U.S. Department of Commerce, Bureau of the Census.

Differences in state usage of land for single-family residential construction are dramatic, especially when one considers population growth and existing state size. States witnessing the largest absolute conversion of land to single-family use include Florida, Georgia, California, Illinois, Michigan, North Carolina, Ohio, Pennsylvania and Texas.

Nongovernmental solutions to conservation

All too often in environmental and land use debates the choice is framed as either more government intrusion or less protection of the environment. There are, however, solutions and methods for conserving the environment that lie outside of the standard government regulation versus the market trade-off. One of the most successful of these is the rise of private land trusts.

A land trust is a nonprofit, nongovernmental, voluntary organization that works directly with land owners to protect and conserve open and green spaces. Land trusts utilize a variety of methods including easements, land purchases and donations. Targeted lands include wetlands, farms, forestland, scenic vistas, animal habitats, and watersheds; although almost any site with value as an open space would be considered. The Land Trust Alliance estimates that as of 1998 over 3 million acres are being protected by over 1,200 distinct land trusts.

Acres protected by land trusts while found in almost all states, are concentrated in a few. California leads the nation in acres protected by land trusts with over 500,000 acres protected. Other states with large holdings by land trusts include New York, Montana, Pennsylvania, New Hampshire, Vermont, Virginia, Massachusetts, Maryland, and Colorado.

Almost half of all lands protected by land trusts are accomplished by either the purchase or donation of a private easement, totaling almost 1.4 million acres in 1998. The use of conservation easements has increased almost 400 percent since the Tax Act of 1986 allowed for the deductibility of easements against one's income taxes. In general, the total value of the easement can be deducted up to an amount equal to 30 percent of the donor's adjusted gross income. Any remaining deduction can be carried forward for up to five years. Conservation easements can also serve as a useful tool in planning for estate taxes.

The popularity of conservation easements differs dramatically across states. Montana leads the country in easements, with almost a fifth of all acres held in easements located there. Other states with large holdings of easements include New York, Vermont, Virginia, Colorado, Maryland and California.

Summary

Current land use trends in the U.S. show that residential development has not impinged on the amount of land set aside for public and open space use. Concerns over the loss of open space, and farmland to insure an ample food supply, are exaggerated. There is plenty of land in the U.S. to meet the demand for open space, farmland, commercial and residential needs for years to come.

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