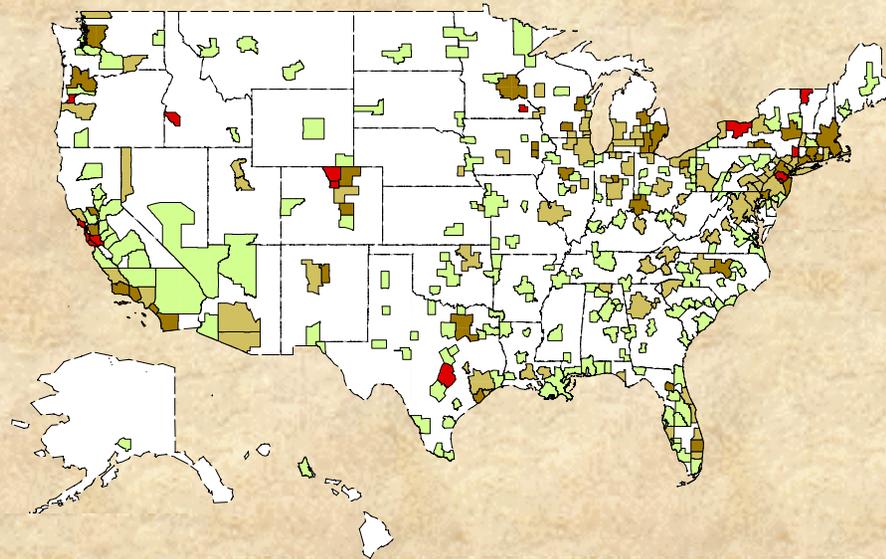


**UNITED STATES PATENT GRANTS---  
Number of Grants per 100,000 Population,  
By Metropolitan Area, 1998**



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# UNITED STATES PATENT GRANTS—

## *Number of Grants per 100,000 Population, by Metropolitan Area, 1998*

This report, prepared by the Technology Assessment and Forecast Branch of the United States Patent and Trademark Office (USPTO), presents the number of patent grants and the number of patents granted per 100,000 population in each metropolitan area in 1998. Levels of patent activity are provided in map and tabular presentations.

The geographic distribution of patents is based on the residence of the inventor whose name appears first on the printed patent. The types of patents included in this report include utility, design, and plant. Separate presentations are provided for utility and design patents granted to independent inventors (i.e., the patent was unassigned or assigned to an individual at the time of issue).

The patent data used to prepare this report were derived from the USPTO's Technology Assessment and Forecast database. Records in this relational database contain patent status and bibliographic information that is used by the Technology Assessment and Forecast Branch to develop statistical summaries of patent activity. A general description of the methodology used to generate the geographic distributions of patent activity in this report is contained in the sections that follow.

The population data used to compute patent counts per 100,000 population are the estimated populations of each metropolitan area on July 1, 1998. Data were obtained from the U.S. Census Bureau, Population Estimates Program, Population Division, Washington, DC 20233

For additional information about this report, or other patent data that are available from the Technology Assessment and Forecast Branch, please contact the Technology Assessment and Forecast Branch by telephone at (703) 306-2600, or by facsimile at (703) 306-2737. Technology Assessment and Forecast reports can be viewed or downloaded from our web site at <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/tafp.html>. Written correspondence should be addressed to: USPTO, Technology Assessment and Forecast Branch, PK3--Suite 441, Washington, DC 20231

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Thematic maps that depict levels of patent activity within each metropolitan area are accompanied by tabular presentations that show: metropolitan area name, number of patents granted in 1998, population in 1998, and patents granted per 100,000 population. Maps and tabular presentations are provided for the following types of patent grants:

- Utility
- Design
- Plant
- Utility (independent inventors only)
- Design (independent inventors only)

## DATA SOURCES AND METHODOLOGY

The distributions of patents by metropolitan area are derived from a distribution of patents at the county level. Unfortunately, the inventor county of residence seldom appears on patent records. Most patent records show only the inventor city and state of residence. Full address information, including zip code, is present only when an individual (as opposed to an organization) owns the patent. Less than one quarter of the patents awarded to U.S. resident inventors are individually owned. Therefore, a distribution of patents by county is, to a large extent, based on inventor city and state data.

The methodology used to determine inventor county of residence involves matching the inventor city, state, and zip code (if present) with corresponding data from a geographic reference file that also contains the county location of each combination of city, state, and zip code in the United States.

The geographic reference file used by USPTO to determine inventor county of residence contains 185,000 records that identify the city, state, zip code, and county location of populated places in the United States. This file was developed from three data sources:

- Federal Information Processing Standards Publication 55: Guideline: Codes for Named Populated Places, Primary County Divisions, and Other Locational Entities of the United States and Outlying Areas (Department of Commerce, National Institute of Standards and Technology);
- the *Geographic Names Information System* (U.S. Department of the Interior, U.S. Geological Survey); and
- a data file based on the 1990 City-State file developed by the United States Postal Service.

Additional records are continuously added to the geographic reference file to reflect naming conventions that frequently appear on patent records, such as abbreviations (e.g., “hghts.”, “heights” or “hts.”). New records for frequently misspelled city names (e.g., “Tucson” or “Tuscon”), and for new zip codes are also added to the reference file.

About 88% of utility patents can be associated with one specific county by matching inventor address information with records in the geographic reference file. The remaining 12% of utility patents contain inventor addresses that correspond to two or more counties. Usually, this situation occurs when the inventor address corresponds to a single, populated place that spans multiple counties. Occasionally, this situation can occur when the inventor address corresponds to two or more places within a state that share the same name. In some states, for example, the same township name can appear in ten or more counties.<sup>1</sup> A relatively small number of utility patents (.02% of total patents issued) can not be associated with any county due to insufficient or incorrect inventor address information.

The program that matches inventor address data to geographic reference data also assigns a weight to each patent to indicate the number of counties associated with that patent. When a patent is associated with a single county, the county weight equals “1.” When a patent is associated with multiple counties within a state, a fractional weight is assigned (e.g., .5 = two counties; .33 = three counties, etc.). Patent counts for each county are calculated from the sum of these weights. State and metropolitan area counts are calculated from the appropriate county totals.

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<sup>1</sup> Although relatively few patents contain place names that correspond to multiple places within a single state, this can be a source of error in patent counts for some counties. This is particularly true if a larger city with a high volume of patent activity shares the same name as a small town with little or no patent activity (e.g., Mountain View, CA). The procedure for identifying these situations was to first identify any incorporated place, census designated place or minor civil division with a 1990 population of 2,500 or more inhabitants. These place names were then compared to place names on the geographic reference file to identify multiple places with the same name within each state. The resulting place names were queried on USPTO’s Automated Patent System to determine if patents were issued to inventors in one or more of the places with the same name. The residence of other inventors and assignees was used to determine the probable geographic location of each patent. If research indicated high patent activity was concentrated in some, but not all of the locations, duplicate place names without patent activity were deleted from the geographic reference file.

## METROPOLITAN AREAS

The numbers of patents awarded to inventors within a county do not necessarily reflect the level of inventive activity that is occurring within that county. County totals are based on inventor county of *residence*, which is not necessarily the same as the inventor county of employment. A distribution of patent activity by metropolitan area is, by definition, more likely to encompass residential and employment areas.

A metropolitan area is a geographic area that contains a large population nucleus, plus surrounding communities with a high degree of social and economic integration with that population nucleus. At a minimum, the population nucleus consists of a city or urbanized area with a population of at least 50,000 inhabitants.

The Office of Management and Budget established criteria to define several categories of metropolitan areas. These criteria consider factors such as percent urban, population density, and patterns of commuting to work to establish the limits of the metropolitan area. With the exception of the New England region, the geographic limits of a metropolitan area are defined by county boundaries. This facilitates the comparison of various socio-economic data that are compiled at the county level. In the New England region, cities and towns have a high degree of administrative importance and these are typically used to define the boundaries of a metropolitan area. One exception is the New England County Metropolitan Area (NECMA). The limits of a NECMA are defined by county boundaries, instead of cities and towns, in order to facilitate analysis of socio-economic data that can not be compiled at the sub-county level.

Other categories of metropolitan area include the Metropolitan Statistical Area (MSA), formerly known as a Standard Metropolitan Statistical Area, the Consolidated Metropolitan Statistical Area (CMSA), and the Primary Metropolitan Statistical Area (PMSA). Generally, an MSA includes a city or urban area with at least 50,000 inhabitants, plus surrounding counties (or subcounties in New England) with metropolitan characteristics. The CMSA is a much larger metropolitan area with at least one million inhabitants and which meets certain other definitional criteria. CMSAs are composed of PMSAs and PMSAs are composed of counties (or subcounties in New England).

New metropolitan areas can be established or the geographic composition of current metropolitan areas can occur each year. The metropolitan areas identified in this report were announced by the Office of Management and Budget and were effective July 1, 1999. Some metropolitan areas in this report may not have been established in 1998.