

Cartography

Information extracted from <http://www.bls.gov>, the website of the U.S. Department of Labor, Bureau of Labor Statistics

Nature of the work

Cartographers measure, map, and chart the Earth's surface. Their work involves everything from performing geographical research and compiling data to producing maps. Cartographers collect, analyze, and interpret spatial data (such as latitude, longitude, elevation, and distance) as well as non-spatial data (population density, land-use patterns, annual precipitation levels, and demographic characteristics). Their maps may give both physical and social characteristics of the land. They prepare maps in either digital or graphic form, using information provided by geodetic surveys, aerial photographs, and satellite data.

Photogrammetrists prepare detailed maps and drawings from aerial photographs, usually of areas that are inaccessible, difficult, or more costly to survey by other methods.

Map editors develop and verify the contents of maps, using aerial photographs and other reference sources. Some states require photogrammetrists to be licensed as surveyors.

Advanced computer software known as Geographic Information Systems (GIS) has become the cartographers' invaluable tool. GIS software is capable of assembling, integrating, analyzing, and displaying data identified according to location and compiled from previous surveys and mappings. The software typically is used to handle maps which combine information that is useful for environmental studies, geology, engineering, planning, business marketing, education, and other disciplines.

As more of these systems are developed, a new type of mapping scientist is emerging from the older specialties of photogrammetrist and cartographer—the **geographic information specialist** or the **GIS cartographer**.

Qualifications

Cartographers and photogrammetrists usually have a bachelor's degree (or higher) in cartography or geography, or a related field, such as physical science. Photogrammetric or cartographic technicians usually have some specialized post-secondary school training. With the advent of GIS, cartographers and photogrammetrists need strong computer skills, knowledge of GIScience, and ability to work with GPS, GIS, and remote sensing technologies.

Employment

Out of 131,000 jobs held by surveyors, cartographers, photogrammetrists, and surveying and mapping technicians in 2004, 11,000 were held by cartographers and photogrammetrists.

Two out of three "geography" workers were employed by architectural, engineering, and other companies. Federal, state, and local governmental agencies provided about one in six jobs. Major federal government employers are the U.S. Geological Survey, the National Geo-intelligence Agency (NGA), the Census Bureau, and the National Oceanic and Atmospheric Administration.

Earnings

The median annual earnings of cartographers and photogrammetrists in May 2004 were \$46,080. The middle fifty percent earned between \$35,160 and \$59,830. The lowest ten percent earned less than \$28,210 and the highest ten percent earned more than \$74,440.

Related occupations

Geographers and urban and regional planners usually have knowledge of cartography or work with cartographers. Environmental scientists, hydrologists, and geoscientists are other occupations that do work related to cartography and/or geodetic surveying.

Professional organizations

The Cartography and Geographic Information Society (CaGIS) is a professional society for cartographers and geographic information science (GIS) professionals in the United States. CaGIS supports research, education, and practice to improve the understanding, creation, analysis, and use of maps and geographic information so as to support effective decision-making and improve quality of life. CaGIS is a member organization of the American Congress on Surveying and Mapping (ACSM), National Member of the International Cartographic Association (ICA), member of the University Consortium for Geographic Information Science, and partner organization of the U.S. Federal Geographic Data Committee.

CaGIS aims to bridge the activities of academia, government, and private industry to facilitate the transfer of cartographic and geographic information among and within these sectors. The society represents mapping and geographic information activities in the the U.S. to ICA, and it promotes the scholarship and professional career development of students in mapping and GIScience. The society serves as a forum for the exchange of original concepts, techniques, approaches, and experiences by those who design, implement, and use cartography, geographical information systems, and related geospatial technologies. For more information, visit <http://www.cartogis.org>.