

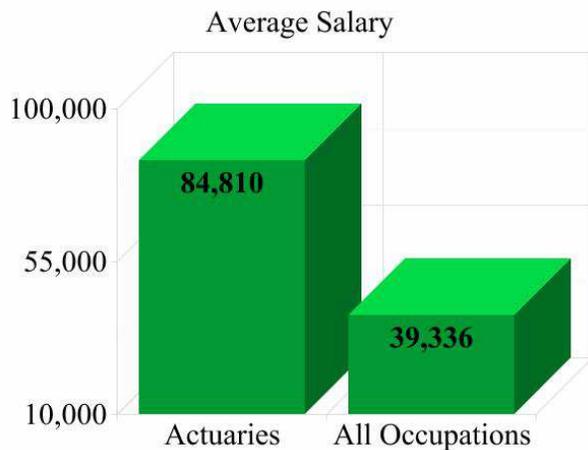
## Actuaries

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### WHAT THEY DO

Through their knowledge of statistics, finance, and business, actuaries assess the risk of events occurring and help create policies for businesses and clients that minimize the cost of that risk. For this reason, actuaries are essential to the insurance industry.

Actuaries analyze data to estimate the probability and likely cost to the company of an event such as death, sickness, injury, disability, or loss of property. Actuaries also address financial matters, such as how a company should invest resources to maximize return on investments, or how an individual should invest in order to attain a certain retirement income level. Using their expertise in evaluating various types of risk, actuaries help design insurance policies, pension plans, and other financial strategies in a manner which will help ensure that the plans are maintained on a sound financial basis.



Most actuaries are employed in the insurance industry, specializing in either property and casualty insurance or life and health insurance. They use sophisticated modeling techniques to forecast the likelihood of certain events occurring, and the impact these events will have on claims and potential losses for the company. For example, property and casualty actuaries calculate the expected number of claims resulting from automobile accidents, which varies depending on the insured person's age, sex, driving history, type of car, and other factors. Actuaries ensure that the premium charged for such insurance will enable the company to cover potential claims and other expenses. This premium must be profitable, yet competitive with other insurance companies.

Within the life and health insurance fields, actuaries help companies develop health and long-term-care insurance policies by predicting the likelihood of occurrence of heart disease, diabetes, stroke, cancer, and other chronic ailments among a particular group of people who have something in common, such as living in a certain area or having a family history of illness.

### EDUCATION REQUIRED

Actuaries need a strong foundation in mathematics and general business. Usually, actuaries earn an undergraduate degree in mathematics, statistics, or actuarial science, or a business-related field such as finance, economics, or business. While in college, students should complete coursework in economics, applied statistics, and corporate finance, which is a requirement for professional certification. Furthermore, many students obtain internships to gain experience in the profession prior to graduation. More than 100 colleges and universities offer an actuarial science program, and most offer a degree in mathematics, statistics, economics, or finance.

Increasingly, companies are requiring potential employees to have passed the initial actuarial exam described in the next section, which tests an individual's proficiency in mathematics—including calculus, probability, and statistics before being hired.

Beginning actuaries often rotate among different jobs in an organization, such as marketing, underwriting, financial reporting and product development, to learn various actuarial operations and phases of insurance work. At first, they prepare data for actuarial projects or perform other simple tasks. As they gain experience, actuaries may supervise clerks, prepare correspondence, draft reports, and conduct research. They may move from one company to another early in their careers as they advance to higher positions.

### CERTIFICATION NEEDED

Two professional societies sponsor programs leading to full professional status in their specialty: the Society of Actuaries (SOA) and the Casualty Actuarial Society (CAS). The SOA certifies actuaries in the fields of life insurance, health benefits systems, retirement systems, and finance and investment. The CAS gives a series of examinations in the property and casualty field, which includes automobile, homeowners, medical malpractice, workers compensation, and personal injury liability.

Four of the first seven exams in the SOA and CAS examination series are jointly sponsored by the two societies and cover the same material. For this reason, students do not need to commit themselves to a specialty until they have taken the initial examination, which tests an individual's competence in mathematics and helps evaluate their potential as actuaries. If candidates pass the initial exam, prospects can begin taking the next series of exams with the help of self-study guides and courses. Those who pass two or more examinations have better opportunities for employment at higher starting salaries than those who do not. These initial exams can be taken while the candidate is still in college.

## Actuaries - Continued

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### OTHER USEFUL SKILLS

Actuaries should have strong computer skills and be able to develop and use spreadsheets and databases, as well as standard statistical analysis software. Knowledge of programming languages, such as Visual Basic for Applications, SAS, or SQL, is also useful. Companies also increasingly prefer well-rounded individuals who, in addition to having acquired a strong technical background, have some training in business and possess strong communication skills. Good interpersonal skills also are important, particularly for consulting actuaries.

To perform their duties effectively, actuaries must keep up with current economic and social trends and legislation, as well as developments in health, business, and finance that could affect insurance or investment practices.

### HOW TO ADVANCE

Advancement depends largely on job performance and the number of actuarial examinations passed. Actuaries with a broad knowledge of the insurance, pension, investment, or employee benefits fields can rise to executive positions in their companies, such as Chief Risk Officer or Chief Financial Officer. These generally require that actuaries use their abilities for assessing risk and apply it to the entire company as a whole. Actuaries with supervisory ability may advance to management positions in other areas, such as underwriting, accounting, data processing, marketing, and advertising. Some experienced actuaries move into consulting, often by opening their own consulting firm. A few actuaries transfer to college and university faculty positions.

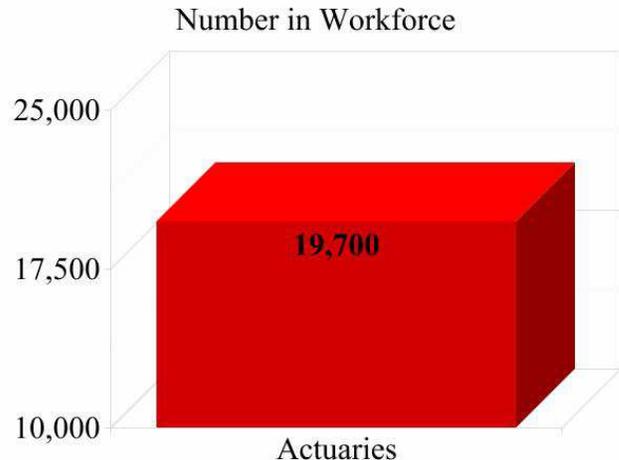
### WORK ENVIRONMENT

Actuaries have desk jobs, and their offices usually are comfortable and pleasant. While most actuaries work at least 40 hours a week, those in consulting type jobs may be required to travel and thus work more than 40 hours per week.

### JOB GROWTH

Employment of actuaries is expected to increase by 21 percent over the 2008—18 period, which is much faster than the average for all occupations. While employment in the insurance industry—the largest employer of actuaries—will experience some growth, greater job growth will occur in other industries, such as financial services and consulting.

Despite slower than average growth of the insurance industry, employment in this key sector is expected to increase during the projection period as actuaries will be needed to develop, price, and evaluate a variety of insurance products and calculate the costs of new risks. Natural disasters should continue to require the work of actuaries in property and casualty insurance while the growing popularity of annuities, a financial product offered primarily by life insurance companies, will also spur demand. Penetration among actuaries into non-traditional areas, such as the financial services sector, to help price corporate security offerings, for example, will also contribute to some employment growth.



Consulting firms should experience strong employment demand as an increasing number of industries utilize actuaries to assess risk. Increased regulation of managed healthcare companies and drafting healthcare legislation will also spur employment growth.

Nonetheless, growth may be, to a degree, offset by corporate downsizing and consolidation of the insurance industry—the largest employer of actuaries. Life insurance companies, for example, are expected to increasingly shed high level actuarial positions as companies merge and streamline operations. Pension actuaries will also experience declining demand.