115 for IQ scores), one expects to find the scores of about two thirds of all test takers. Further, only about two and a half percent of test takers will score higher than two standard deviations above the mean (about 130).

Although psychologists rely on the fact that many measurements are normally distributed, there are certain cases where scores are unlikely to be normally distributed. Whenever scores cannot be higher than some upper value or smaller than some lower value, a non-normal distribution may occur. For example, salaries are not normally distributed because there is a lower value (i.e., nobody can make less than zero dollars), but there is no upper value. Consequently, there will be some high salaries that will not be balanced by corresponding, lower salaries. It is important to know whether scores are normally distributed because it makes a difference in the kind of statistical tests that are appropriate for analyzing and interpreting the numbers.

**Further Reading**


---

### Normal

Represents the characteristics that are typical for—that is, exhibited by—most members of a particular group.

For statistical purposes, normal means whatever is average for a given group of people (“the norm”). Therefore, the term normal does include those group members who deviate significantly from the measures of central tendency (the mean, the median, or the mode) of a given distribution.

The term normal is fundamentally statistical and quantitative. In testing and measuring, for example, normal can be defined as a central cluster of scores in relation to a larger grouping. In *intelligence* testing normal is also defined by the average, or mean, which is established as an IQ score of around 100.

However, in many contexts normal is a subjective term that is very difficult to define. In the absence of fixed standards, normal and abnormal are often defined in terms of each other. However, rather than a simple pairing of opposites, they are generally thought of as points on a continuum of social adjustment, with normal people possessing certain positive traits to a greater degree, while abnormal people are characterized by deficiencies in these traits. Some of the traits that help define psychological normalcy are efficient perception of reality; self-knowledge; self-control; ability to form affectionate relationships; self-esteem; and productivity. The notion of defining normalcy in terms of social adjustment has its detractors, who argue that such a definition places too much emphasis on conformity and too little on such traits as individuality and creativity.

**Further Reading**


---

### Norm

A measure of central tendency in statistics, describing a value’s frequency.

In testing, norms are figures describing the frequency with which particular scores appear. They provide information about whether a score is above or below average and about what percentage of the persons tested received that score. Norms may apply to tests of mental ability or achievement, such as IQ tests or SATs. They are also used in personality assessment to measure variables such as anxiety, introversion-extroversion, and paranoia. The term “norm” may also refer to social norms, unwritten social rules that define acceptable and unacceptable behavior in a variety of situations.

See also Mean; Median; Mode
Obesity

A condition of having an excessive accumulation of fat in the body, resulting in a body weight that is at least 20 percent above normal when measured against standard tables of optimal weight ranges according to age, sex, height, and body type.

Individuals who are 20 percent overweight are considered slightly obese. Those who are 40 percent above standard weight are moderately obese, while those 50 percent above it are morbidly obese. Persons who exceed desired weight levels by 100 pounds (45 kg) or more are hyperobese. Obesity is a serious health problem in the United States. Studies suggest that between 10 and 20 percent of Americans are slightly to moderately obese. Obesity places stress on the body’s organs, and is associated with joint problems, high blood pressure, indigestion, dizzy spells, rashes, menstrual disorders, and premature aging. Generally, when compared to persons of normal weight, obese individuals suffer more severely from many diseases, including degenerative diseases of the heart and arteries, and a shorter life expectancy. Obesity can also cause complications during childbirth and surgery.

Obesity may be familial, as the body weight of children appears to be linked to that of their parents. Children of obese parents have been found to be 13 times more likely than other children to be obese, suggesting a genetic predisposition to body fat accumulation. Recent animal research suggests the existence of a “fat gene,” and the tendency toward a body type with an unusually high number of fat cells—termed endomorphic—appears to be inherited. However, the generational transmission of obesity may be as cultural as it is genetic, as early feeding patterns may produce unhealthy eating habits.

Some cases of obesity have a purely physiological cause, such as glandular malfunction or a disorder of the hypothalamus. Individuals with a low production of the hormone thyroxin tend to metabolize food slowly, which results in excess unburned calories. When more calories are consumed than the body can metabolize, excess calories are stored in the body as fat, or adipose tissue. Some persons with hypoglycemia have a specific metabolic problem with carbohydrates that can also lead to the storage of unburned calories as fat.

In the great majority of cases, however, obesity is caused by overeating. Overeating itself often combines physical and psychological components. People may eat compulsively to overcome fear or social maladjustment, express defiance, or avoid intimate relationships. However, researchers have also suggested physical correlates for overeating, including deficits in the neurotransmitter serotonin that increase cravings for carbohydrates, and possibly a higher “set point” for body weight that makes obese persons feel hungry more often than thinner people. This raised set point could result from both genetics and early nutritional habits. Lack of exercise and sedentary living also contribute to obesity.

The most effective treatment of obesity includes both the reduction of surplus body fat and the elimination of causative factors, and is best accomplished under medical supervision. An appropriate weight loss plan includes exercise (which burns calories without slowing metabolism), reduced food intake, behavior modification to change food-related attitudes and behavior, and psychotherapy if there are underlying psychological causes for overeating. Other possible treatment measures include hormone therapy, appetite-suppressant drugs, and surgical intervention to alter satiety signals by reducing the size of the stomach and intestines.

Behavior modification has been especially successful and widely used in the treatment of obesity. Treatment techniques include stimulus control (removing environmental cues that play a role in inappropriate eating), eating management (slowing the pace of eating to allow satiety to catch up with it), contingency management (applying a system of positive reinforcement and punishments), and self-monitoring of daily dietary intake and factors associated with it. Despite all of the available treatments, the difficulty of reversing obesity in adults makes...