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EDUCATIONAL COMMENT

WHAT ARE PERCENTILES?

Recently, the writer heard a psychologist in a public address refer to the "top ten percentile" of a distribution. This psychologist is a statistician of considerable prominence and, undoubtedly, knows better. His careless use of the term "percentile" was probably induced by hearing other psychologists and educators employ the term in this manner.

An article in an educational periodical refers in its title to the "first decile of college Freshmen." (Unfortunately, a typographical error made the word appear *docile* instead.) Many speakers and some writers continually make references to the lowest quartile of a class, the second quintile of a distribution, and the like. As we shall see, these terms are not properly employed in this manner.

Percentiles are *points*, not *ranges*. The 10-percentile, for example, is the theoretically determined point on a scale below which 10 per cent of the distribution lies. It is a theoretically determined point because of the assumption which we make regarding the distribution of the scores in an

interval. The scale on which this point lies is the scale employed as an instrument of measurement in collecting the data.

All percentiles, including deciles, quintiles, quartiles, and the median, are points. It is then impossible for an individual to be "in the first quartile," or "in the top decile." We might as well speak of an individual as being *in* the median. The expression "top ten percentile" is meaningless. If the top 10 per cent is meant, why not say so? Instead of talking about quartiles of a class as parts of a class, let us say "quarters" or "fourths." Likewise, we should say fifths, if we mean fifths, and "tenths" if we mean tenths. Quintiles are percentiles which are multiples of 20; deciles are percentiles which are multiples of 10. They are points which divide the distribution into fifths and tenths respectively.

The careless use of the language of statistics misleads the young student. If one speaker uses the term "third quartile" to designate the point separating the lower three-fourths of the distribution from the upper one-fourth, while another speaker, perhaps on the same program, employs this expression to indicate those individuals lying above the median but below the 75-percentile, confusion of interpretation on the part of the listeners is to be expected.

Textbooks in statistics indicate clearly that percentiles are points. Kelley says, "The 10-percentile is the value below which 10 per cent of the measures lie." Odell talks about tertiles, quintiles, deciles, and percentiles, and the "calculation of these . . . points." Garrett speaks of the "decile points" and other "percentile points." Holzinger defines a percentile as "a value of the variable below which a given per cent of the frequencies lie." Thurstone refers to "quartile points," and uses these measures entirely as points. Mills says that quartiles "are points on the scale which divide the entire number of measures into

four equal groups." Chaddock refers to the various percentiles as "values." In the language of Chambers, "the deciles separate the whole range into ten intervals." Crum and Patton state that "the quartiles divide the array into sections each of which contains one-quarter of the total frequency." Finally, we read in Lovitt and Holtzclaw that "percentiles are those values of the variable which divide the entire frequency into one hundred equal parts."

In this day, it is more or less fashionable to use the language of statistics. Statistical language is frequently used, however, when a better-known, good old-fashioned term correctly expresses the intended meaning. The man who says "lowest quartile" when he means "lowest fourth" probably does not know the meaning of the word "quartile." Is it possible that he is affecting an educational "highbrow"?

In some quarters an effort is being made to substitute the word "centile" for percentile. There is little evidence that this effort is meeting with success.—R. L. MORTON, in the *Educational Research Bulletin* for Oct. 22, 1930.

"CANNED" MUSIC IN SCHOOLS

The unique service rendered by a branch library in New York City of enabling people to listen by appointment to their favorite music played on a fine phonograph in a sound-proof room presages a new trend in schools generally, it is predicted by some educators.

In the first place, the success of the venture in the New York library, which is attested to by the fact that the music room is patronized every minute of the nine hours a day it is open and that appointments are made weeks in advance, punctures the claims of certain educators that so-called "canned" music lowers the taste for good music. Of the 1,500 records on file at the library, most of them are symphonies, operatic numbers, and other standard works.

Moreover, claim these educators who advocate a greater acceptance by schools of the modern mechanical means of widening the mental horizon of youth, a steady diet of music is stimulating and breaks the monotony of hours of study. When this music is rendered by superb artists, as it is on the records played by mechanical instruments, a sense of art and a great appreciation of music generally accompanies the other benefits.

JANUARY RADIO GUILD PLAYS

There follows a list of stations from which are broadcast each Friday in January at 4:00 p. m. E. S. T. the dramatic productions of the Radio Guild, a series of plays selected from high school reading lists and presented by outstanding actors. A list of the plays and players to be presented during January may be obtained from the National Broadcasting Company, 711 Fifth Ave., New York: WJZ, WBZ, WBZA, WBAL, WHAM, WRC, WLW, KYW, KWK, WREN, CKGW, WTMJ, WMC, WPTF, KOA, WJAX, KGO, WSB, WSMB, KVOO, KPRC, WOAI, KSL, KFI, KOMO, KFSD, KFAB, KSTP, WEBC, WSM, KTAR.

THE PRESIDENT RECOMMENDS—

"I urge further consideration by the Congress of the recommendations I made a year ago looking to the development through temporary federal aid of adequate State and local services for the health of children and the further stamping out of communicable disease, particularly in the rural sections. The advance of scientific discovery methods and social thought imposes a new vision in these matters. The drain upon the federal treasury is comparatively small; the results both economic and moral, are of the utmost importance.—*From President Hoover's Message to Congress*, December 3, 1930.

LAND-GRANT COLLEGES

The report of the survey of 52 land-grant colleges and universities, including America's largest institutions of higher learning such as the University of California, The University of Illinois, Ohio State University, University of Minnesota, and Massachusetts Institute of Technology, is now available. It is the first of a series of nation-wide educational studies being conducted by the Office of Education of the Department of the Interior.

All phases of the operations of modern universities; teaching staff, salary scale, athletics, student activities, success of alumni, library facilities, stock judging contests, scholarships, student loans and fraternities, are evaluated and summarized in the report, which contains more than 1,800 pages and is printed in two volumes.

The survey was started July 1, 1927, by authorization of Congress, which appropriated \$117,000 to defray its cost. It was completed June 30, 1930.

Only land-grant colleges, which are the 52 institutions located one in each State and

the outlying possessions of Alaska, Hawaii, and Porto Rico, except Massachusetts, which has two, were studied. Land-grant colleges were established under the first Morrill Act, passed by Congress and signed by President Lincoln in 1862, providing a total endowment amounting to \$13,478,96. Now the total value of the land-grant colleges is nearly half a billion dollars.

Although the 52 land-grant colleges and universities are but one-half of one per cent of the colleges and universities of the United States, they enroll 164,000 resident students, which is 16 per cent of the student population of the American institutions of higher education. Shortly after their organization the land-grant colleges had an enrollment of only 2,243 students, the report shows. Only men attended the institutions in the early days, but they now register 104,992 women students.

ADOLESCENTS NEED MORE SLEEP

Long hours of sleep, from 8:30 p. m. to 7:00 a. m., are more needed by the adolescent than by even the younger child, says Dr. Josephine Kenyon, of Columbia University.

PUNISHMENT VERSUS TRAINING

<i>Do You—</i>	<i>Or</i>	<i>Do You—</i>
Nag children about eating proper foods?		Serve the proper kind of food, making meal-time a pleasant occasion, and allowing no "piecing"?
Slap your child to make him keep away from the vacuum cleaner?		Teach him how to run it?
Scold your child for taking dishes from the table?		Show him how to handle dishes without breaking them?
Punish children for being slow and untidy?		Practice with them dressing and toilet duties, under a time limit?
Punish children for getting their clothes dirty when playing?		Realize that play is more important for them than keeping clean?