

EDUCATIONAL OUTPUT BY LEVELS, KINDS, AND NUMBERS

Marjorie O. Chandler, U.S. Office of Education

In this paper, I should like to discuss certain output measures obtained by the U.S. Office of Education.

At the outset, a brief statistical overview of the educational system may be in order. At the lower end of the scale, we find that about two-thirds of 5-year olds are now enrolled in school. During the usual age span for elementary grades (6 to 13) about 99 per cent of our youngsters are attending school. During the usual high school age span (14 to 17) about 93 per cent are enrolled in educational institutions.

At present, about two-thirds of our youth graduate from high school. A little over half of the high school graduates--or about one-third of the age group--may be expected to enter college. The number of college graduates will probably be a little over half the size of the group that entered four years before, or about a fifth of the age group. The number of Master's degrees will be about a quarter as large as the number of Bachelor's two years before, or about one-twentieth of the age group. The number of Doctor's degrees will be about one-sixth as large as the Master's three years earlier, or under one per cent of the age group.

Now I should like to give you some more detailed facts and figures on outputs which will also serve to indicate the sorts of data that USOE collects. I shall also mention some areas where we do not collect data.

It seems reasonable to begin our consideration of outputs at the point of high school graduation. So far as lower levels are concerned I might note that USOE does collect data on the number of students enrolled in each grade in elementary and secondary school.

Since we do not yet have a firm count for the academic year just ended (1964-65) I am going to use as a base the academic year 1963-64. Table 1 gives a quick summary starting with that year's group of high school graduates.

In 1963-64, the total number of high school graduates was about 2 1/3 million. This figure represents an increase of about 18 per cent from the immediately preceding year, reflecting the great rise in birth rate following world war II. It is estimated that graduates in 1964-65 (the year just past) will be up 18 per cent from 1963-64. To indicate how atypical these bulges are, I might point out that from 1961-62 to 1962-63 the rise in graduates was about 1 per cent, and for the previous year, there was a decline of about 2 per cent. Further, the current estimates suggest changes of less than one per cent a year for each of the next three years.

The 1963-64 high school graduates represent about 69 per cent of their age group. It would be beyond the scope of my paper to discuss in detail the problems in defining and identifying an appropriate denominator for a figure such as this. Let me just note that USOE has been using as a denominator (the base population) one-half of the 17-and 18-year-old population, since these are typical ages at the time of high school graduation.

One thing we don't know enough about is the curriculum pursued by the high school graduates, a point of special importance for those not going on to college. How many were trained in business courses, in auto mechanics, and so forth? Some data have been collected on curriculum for a recent class, and the analysis is in progress. Meanwhile, we do know specific course enrollments for certain years--how many students were enrolled in typing classes, in mathematics, and so forth--but this is probably not as helpful as information classified by over-all curriculum.

As noted earlier, about 69 per cent of young people finish high school. When did the other 31 per cent leave, and where did they go? We can tell something about when on the basis of our grade-by-grade enrollment statistics. While some few get lost every year the number is slight until about 8th grade when several per cent start to drop off each year. The biggest single loss is between 10th and 11th grade; about 10 per cent of 10th graders do not show up for 11th grade. As it happens, a student who progresses at the usual rate should reach 11th grade at age 16; school attendance laws often relate to age 16, so perhaps drop out at this grade is not very surprising. What happens to the drop-outs is a question which USOE does not survey routinely, although some information is available elsewhere on this very interesting point.

Turning now to the college level, we find that there were about one and a quarter million (1,225,000) first-time students in degree credit programs in fall 1964. This figure is about 53 per cent as large as the number of high school graduates for the immediately preceding year. It should be noted that not all of the 1964 college entrants came from the 1963-64 graduating class, although the majority undoubtedly did. Another point to keep in mind is that our fall enrollment studies somewhat underestimate the total number entering college: some students may enter at other times. Periodically we have collected full-year data but have not done so for the past few years. Despite these limitations, the figures on fall enrollment versus high school graduates are generally of interest.

First-time college enrollment spurted in an unprecedented way in 1964, increasing about 17 per cent from fall 1963. Another rise of about 18 per cent is expected for this fall (1965). This is quite different from what the colleges have been seeing--about 1 or 2 per cent rises from 1962 to 1963, and from 1961 to 1962. These figures closely parallel the changing figures on high school graduates which I cited earlier in this paper.

The college output in 1968 will consist heavily, although certainly not exclusively, of 1964 entrants. The forecasted total is for some 666,000 Bachelor's and first professional degrees. This figure is about half as large (54%) as the number entering four years earlier (1964). Like the 1964 entrants, the 1968 graduates will be substantially more numerous than the immediately preceding class; the rise in graduates is estimated as 19 per cent over 1967.

Other forecasted outputs that involve substantial numbers of 1964 high school graduates are those for Master's in 1969-70 and for Doctorates in 1972-73. The Master's degree group will then be about one-fourth the size of the Bachelor's group two years earlier. The 1972-73 Doctorate group, in turn, will be about one-sixth the Master's group of three years earlier. We are now dealing with very small fractions of our starting group of 1964 high school graduates: about 7 per cent for Master's and about 1 per cent for Doctorates.

Our 1964 college outputs, on which current data are available, may be worthy of somewhat more detailed mention. In 1963-64 there were about 460,000 Bachelor's degrees and about 42,000 1st professional degrees. At this point it might be appropriate to explain that in USOE statistics, 1st professional degrees (such as M.D. or Bachelor of Laws) have traditionally been grouped with 4-year Bachelor's degrees. In the past few years, however, data have been collected separately for 4-year degrees and for the 1st professional degrees requiring a total of 5 or more years of higher education.

For each level of degree the U.S. Office of Education reports a count by field of specialization. Perhaps a few of the findings of this field count for 1963-64 will be of interest. Starting with the 460,000 4-year degrees, we find that the largest of the 25 broad fields considered is education, accounting for virtually a quarter of degrees at this level. The second largest at the Bachelor's level is social sciences, with about one-sixth (17 per cent) of all degrees, and third is business and commerce with about one-eighth (12 per cent).

Among 1st professional degrees requiring 5 or more years (about 42,000 degrees) by far the largest number are found in health (33 per cent) and legal areas (26 per cent).

At the Master's level there were about 101,000 degrees in 1963-64. Education looms very large, accounting for 40 per cent of the total number of Master's degrees. Engineering is second with 11 per cent of all Masters, and social sciences is third with 9 per cent.

At the Doctorate level there were about 14,500 degrees in 1963-64. Here, the largest fields are physical sciences with 17 per cent of all Doctorates, education with 16 per cent, and social sciences and engineering with 12 per cent each.

In giving you an overview of USOE statistics on higher education, I have deliberately postponed the question "what is higher education." The issue of definition arises in this paper because when I spoke of output of higher education I was speaking only of that segment on which the U.S. Office of Education collects data. Undoubtedly, data on other types of post-secondary output would be valuable for a variety of purposes.

For statistical purposes, the USOE includes in its universe of higher education those institutions which meet the following criteria: (1) Institutions accredited or approved by a nationally recognized agency, by a State Department of Education, or by a State university are included. (2) Institutions not meeting the first criterion are eligible for inclusion if their credits are accepted by not fewer than three accredited institutions. I want to emphasize that I am speaking of inclusion for statistical purposes and not of USOE approval of institutions; USOE does not accredit, rate, or otherwise approve institutions.

Clearly, other criteria of higher education are conceivable; in the realm of post-secondary education the borderline between in-out of higher education is a rather hard one to establish. There is probably general agreement that colleges of barbering, for example, are properly excluded. On the other hand, Major Seminaries of the Roman Catholic church or schools of nursing--many of which are not included in USOE statistics--may for some purposes belong in "higher education." In any case it seems clear that the 1964 USOE figures of about 1½ million first-time students and about 5 million total enrollment represent only a modest portion of post-high school education.

Table 1. Actual and expected educational outputs at various levels.

		Per cent based on:					
	<u>Date</u>	<u>N</u>	<u>(17-18)/2 popul. * 1964</u>	<u>High school graduates 1963-64</u>	<u>1st time college 1964</u>	<u>B.A. and 1st prof. 1967-68</u>	<u>M.A. 1969-70</u>
Population age (17+18)/2*	1964	3,340,000	100				
High school graduates	1963-64	2,302,000	69	100			
First-time college enrollments	Fall 1964	1,225,000	37	53	100		
B.A. and 1st professional degrees	1967-68	666,000	20	29	54	100	
Master's degrees	1969-70	168,000	5	7	14	25	100
Doctor's degrees	1972-73	28,000	0.8	1.2	2.3	4.1	16.4

* $\frac{1}{2}$ population aged 17 + 18

Source: Unpublished data prepared by
Reference, Estimates, and Projections Branch,
Division of Statistical Analysis,
National Center for Educational Statistics,
United States Office of Education.