# Exploring Occupational Trends

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What is the desirable number of workers to enter agriculture each year? No one knows! What is the desirable number to enter industry? No one knows! How many boys and girls should enter medicine or teaching each year? No one knows! Do we know anything about the answers to these questions? Very little! It would be possible to arrange matters so that we could find out. Let us review a few fields of work to see what is known about trends in these particular occupations.

In 1790 approximately 90 per cent of our working population was engaged in agriculture and closely allied fields. By 1930 this had dropped to 20 per cent. During the early thirties there was doubtless some slight increase in the number of people in agriculture. The number has now started to decline again. And there is every reason to think that over the longer period it will continue to decline.

From time immemorial, 70 per cent, 80 or 90 per cent, even 95 per cent of the population had to be engaged in agriculture in order to provide the basic food, clothing, and shelter. A hundred and fifty or two hundred years ago powerful forces were set in motion that have greatly reduced this number. These forces were primarily more efficient plants and more efficient methods of cultivation, better fertilizer, better machinery, and better animals. Coupled with these has come highly efficient transportation, making it possible to transport food from places where it can be grown cheaply, to other places. Using modern methods, wheat can be shipped from Karachi, India, to Liverpool, or from points in Australia or the Argentine to France and Germany, at the amazing rate of half a cent a pound. Accordingly we could ship food entirely around the world at a cent a pound! This means that such food as wheat can be shipped to any place in the world where these low rates apply and the cost of the shipment will be less than the usual price of the grain. On the other hand, there are still sections in the interior of China where grain can be transported only a few score miles by coolie without adding a transportation cost equal to the value of the product. One of the most efficient means of providing food in the world, then, has been improved transportation making it possible to grow food at one place where it can be produced easily and consumed in another where it cannot be so produced.

There is no reason to think that the forces that have brought about this reduction in the proportion of the population in agriculture, have exhausted themselves. We can be reasonably sure, then, that we shall have a smaller and smaller proportion of our people engaged in agriculture.

If we assume that there are ten million workers engaged in agriculture now and that the average working life is forty years, this would give us 250,000[1] new agricultural workers required to maintain

[1] Compare these figures in the text with the tabular estimates on page 771 *infra*.

the same gross number. If we further assume a one per cent increase in population and a one per cent increase in efficiency of agriculture we should still need approximately 250,000 new agricultural workers a year. It is doubtful, however, whether we maintained our one per cent increase in population over an extended period. One would expect our increased efficiency to be at the rate of more than one per cent a year. If all of these assumptions prove correct, they would mean that fewer than 250,000 people should enter agriculture each year. What we obviously need, of course, is an accurate estimate made of the number that seemingly will be needed; an accurate estimate of the number that actually enter; then methods could easily be found to revise the procedure for estimating the number needed. It is quite needless to point out that it would make no difference whether 250,000 people enter farming at a full-time job, or 500,000 enter it at a half-time job. A slight correction would have to be made for a probable decrease in efficiency for the part-time job and the number might become 550,000. But in any case, the basic number should always be expressed in the number of full-time workers needed regardless of how many people are provided with the work. All things considered, then, it is probably safe to say that about 240,000 should enter farming in 1936.

II

The gross total number of people employed in the manufacturing industry in the United States tended to increase from the early days of our country up to the 1920's. Seemingly, the figure flattened out some time in the twenties and probably actually started down before the boom of the late twenties. There are substantial reasons for thinking that the increase in manufacturing efficiency will proceed at a greater rate than the growth of population for some time in the future. There are further reasons for thinking that the increased use of labor and machinery will more than take care of the rise of new manufacturing industries at least over the period of the next two or three decades. Admitting that accurate estimates ought to be made industry by industry and that we have no competent organization to do this, in the "light of our ignorance" we shall risk the prediction that not more than 275,000 people would be needed to enter manufacturing industry each year. Probably an estimate of 260,000 would be more nearly correct.

It is exceedingly difficult to determine the number of people that are engaged in construction industries. Some estimates would run as high as five million at the height of the boom some years ago. There are strong reasons for thinking that such a number of people could not be wisely used over long periods of time and kept regularly employed in this industry. If it is assumed that three million was something like the correct number and that forty years was the usual working life, this would give 75,000 new workers required. The calculations here become far more dangerous and uncertain. There are competent authorities in the field who hold that there should be and will be drastic changes in methods of construction involving wider use of prefabricated materials. Such people contend that this will bring about a great reduction in the number of workers needed in the construction industry. This, of course, shows the precarious nature of all estimates and is proof positive of the necessity of building our estimates year by year and in close detailed contact with every unit of the industry. What we might well discover, of course, would be a great de-

crease, let us say, in carpenters and masons, and a smaller but substantial increase in people trained to assemble prefabricated units.

All factors considered, it is probable that three million was too large a number in the first place. This would mean that 75,000 new entrants would be too many; further, that increased efficiency of the industry would outrun the growth of the population. This would lead to some relative decline in the occupation, and would probably go so far as to lead to an absolute decline in the old types of construction. In other words, at least over the period immediately ahead, the number should be reduced sharply below 75,000 —perhaps to 70,000 or even less.

III

In attempting to estimate the number of workers required in transportation we face some peculiar difficulties. We might argue with the support of the facts, that there had been a sharp decrease in the number required in railroad transportation during the course of the past ten years. The railroads today could probably go back to peak traffic and still operate with far smaller numbers of people than in earlier days. This, of course, simply means that more efficient locomotives, larger locomotives, and larger trains are being used; more efficient means of loading and unloading, better routing, and other changes have increased the efficiency of this type of transportation. But the number of workers involved on the railroads is so small as no longer to need the chief consideration in this group. The group at one time was well over a million people. It is now probably not more than 600,000 or 700,000 and is not at all likely to increase much even though we see enormous increases in railroad traffic.

The great employment in transportation comes today in the handling of goods by truck. It is exceedingly difficult to know how many people are employed in this branch. Some estimates have run as high as two and a half or three million trucks each employing sometimes one man and sometimes two men. Estimates have run as high as four or even five million people employed in this phase of transportation. Although there has been an amazing rate of growth in this field there will doubtless be further increase and perhaps at a rate even more rapid than the growth in population. The numbers have certainly increased far more rapidly than the population during the course of the last two decades. There probably will be some easing off of the rate of growth in this field, but it well may be that the growth would be so fast that it would still increase the relative size of this occupational group. Much smaller numbers, of course, are involved in transportation by electric cars and by boats. We are not likely to see any particular increase in movement by water or inland waterways, and the number of people involved in ocean commerce may well depend upon our subsidy and tariff policy. The numbers are small in any case.

The total field of transportation is largely dominated by the situation in regard to trucks as far as movement of commodities is concerned. If we assume four million people and a working life of forty years, we should need 100,000 new entrants a year. If we assume one per cent growth of the population and a more rapid growth in demand than efficiency, we might expect some slight growth not only in gross numbers but in relative numbers in this occupation. Perhaps 130,000 or 135,000 entrants would be a good beginning guess.

The whole field of distribution or trade has increased enormously during the

course of the past decade or two. Some estimates go as high as seven million people for this field at present. The 1930 figures are only about six million. It probably has shown as little growth in efficiency as any other major occupational group. Some day, of course, some one will find a way of greatly reducing the labor involved in the present distribution of goods, but until that time comes we can probably expect an increase in this field, at least equal to the growth of the population. If we assume seven million people attached to the industry at the beginning of 1936, our assumption would give us 175,000 people needed a year. If we assume this number has been stabilized at this figure for forty years and that forty years is the average working life, we should need 175,000 new entrants each year. As a matter of fact, owing to the rapid growth of the occupation, the exits from it will probably not be 175,000. If we assume a working life of ten years for this occupation, we should need approximately 700,000 new workers.

IV

The clerical occupations are another group that has grown with great rapidity during the course of the last generation. Probably at least five million people are involved in these occupations at present. They also are likely to grow as rapidly as the population, or possibly faster. Making the usual formal assumption, we should need 112,000 people a year for this group.

The total governmental expenditures of all units in the United States may approximate ten billion dollars during the current year. The total income of the country will almost certainly be between fifty and sixty billion—probably nearer the latter figure than the former. From this it would seem as though the total governmental expenditures would be somewhat less than a fifth of the total income of the country. If governmental services provided their proportionate part of employment directly, we should expect about a fifth of our workers to be employed in governmental occupations. A classification such as government service, of course, would cross all of our other classifications. Outside of the emergency governmental activities probably three or four million people are employed by the government. Counting all types of persons now being paid by the federal government, seven or eight million or perhaps even more are supported by the total governmental expenditures. This, of course, is hardly a classification which would be planned upon in the future. There are probably fewer than a million governmental employes that are not classified under other headings. The number in this group is likely to expand and may even expand more rapidly than the population. It might not be unreasonable to estimate thirty thousand people a year as needed in the classification of "governmental services," not otherwise classified.

There are approximately 3.5 million people engaged in professional occupations in the United States. We know, of course, that this is one of the most rapidly growing of all occupational groups, although it is still small in gross numbers. It is hard to realize that those engaged in the professions of law, medicine, engineering, and the ministry total only about 600,000 persons. Considering the amount of attention these professions are given in guidance programs, you would think the numbers involved would be very much larger.

From some of the sample studies that have been made, we know that a large proportion of boys in high school expect to enter one of these professions. It is

perfectly possible that if we made a study of the entire high school population tomorrow we should find that there are more people in high school planning to enter these fields than are now in them. We all know from past experience that most of these boys and girls will never enter these occupations. In many cases they do not have the ability and in many other cases they lack the financial resources. The shortage of training facilities will be the effective barrier.

If we are generous in our interpretation of a profession and include the groups in the census classification, such as poolroom attendants, stagehands, and theatre ushers, there are about 3.5 million people in the professions. If we accept this grouping we can proceed to make calculations regarding entering numbers. If all of these groups were lifetime jobs of approximately forty years, we should expect about 87,500 new entrants a year in all of these groups.

V

It is by this time clear that an enormous correction has to be made. The following will show the danger of proceeding on the simple assumptions we have used above in regard to the numbers needed.

We have included the occupation of teaching among the professions. This occupation includes more than a million people or about a third of the entire professional group. We know from other and more detailed studies that substantially more than 90,000 people will enter the teaching profession in a normal year, although we should hardly consider the present year entirely normal, there probably will be more than 90,000 teaching positions filled in the United States during the coming year, 1936, by people new to the teaching occupation. Our flat estimate earlier was 90,000 people entering all professional groups a year. Here we have an estimate of a single profession requiring more than 90,000. This shows very clearly that we have to have far more accurate information regarding the length of time that people spend in occupations than is now available.

What happens in the case of teaching is that tens of thousands of girls enter the occupation each year and marry within two, three, or five years. If we had a million people in an occupational group with an average working life of five years, we should expect 200,000 new entrants into the field. If we consider that the usual practice is to spend a lifetime in law, medicine, engineering, and dentistry we can easily make a crude estimate of the entry requirements into these fields. If we assume 600,000 people in these four professions and our usual estimate of a forty-year working life (which, incidentally, in these fields we know is too short) we get only about 15,000 new entrants required each year. We know from other sources that one of these professions is growing very fast; another one probably should and would do so if there were adequate training facilities; another is growing probably slightly faster than the population; and the fourth is probably holding its own. This again shows us the complexity of compiling a group of estimates to obtain one figure.

But we are surely going to proceed with an estimate. All indications point toward the fact that we should have and probably will have a far more rapid growth in the professions than in the population at large. But even if we increase the entering number by ten per cent annually, it still would be a long time before the number would be very large. Presumably if our population were growing at the rate of one per cent a year we should need one per cent increase in the

## ESTIMATES OF THE USE OF OUR HUMAN RESOURCES

*The Occupational Distribution of Those Leaving School in 1936*

| Occupation | Estimated Distribution of Occupational Choices | Estimated Numbers Actually Attempting to Enter the Occupation in 1936 | Estimated Number that Actually Will Enter Occupation in 1936[1] | Estimated Number that Should Enter the Occupation in 1936[2] | Number Attached to Occupation in 1930 (in millions) | Estimated Number Attached to Occupation, 1936 (in millions)[3] |
|---|---|---|---|---|---|---|
| Agriculture | 100,000 | 260,000 | 250,000 | 240,000 | 10.4 | 10.5 |
| Forestry and Fishing | 5,000 | 5,000 | 6,000 | 5,000 | .25 | .25 |
| Mining | 20,000 | 25,000 | 25,000 | 22,000 | 1.0 | 1. |
| Manufacturing | 100,000 | 235,000 | 275,000 | 260,000 | 14. | 11. |
| Construction | 50,000 | 60,000 | 75,000 | 70,000 | .. | 3. |
| Transportation | 125,000 | 115,000 | 112,000 | 115,000 | 3.8 | 4.5 |
| Trade | 200,000 | 200,000 | 175,000 | 180,000 | 6.0 | 7. |
| Public Service | 50,000 | 50,000 | 25,000 | 25,000 | .8 | 1. |
| Professional | 400,000 | 200,000 | 87,500 | 225,000 | 3.2 | 3.5 |
| Domestic and Personal | 100,000 | 150,000 | 137,000 | 140,000 | 5.0 | 5.5 |
| Clerical | 350,000 | 200,000 | 112,000 | 190,000 | 4.0 | 4.5 |
| Total | 1,500,000[4] | 1,500,000 | 1,279,000 | 1,472,000 | 48.8 | 51.75 |

[1] Estimate based on assumption of average working life of 40 years, stabilized population, no change in relative wants of the people, and the rise of no new occupations.

[2] Estimate based on very slight reductions from figures in previous column where reduction "should" occur, or upon increases where the estimates of length of life are known to be greatly in error.

[3] Additional columns entitled "average life earnings," "length of working life," "average length of time spent in occupation," and "actual number that will get jobs in each occupation," might be added to this table.

[4] This total is arrived at from subtracting the estimated number of 750,000 who will not look for gainful employment (largely girls who will marry or work at home) from the total of 2,250,000 leaving school in 1936.

number entering each year, assuming that the professions are going to grow only as fast as the population. It has been stated that we expect a more rapid growth than this. If we say twice as rapid and make 12,000, we still should have only 27,000 new entrants needed for these particular professional groups. Considering the short length of time that some of the professional groups spend in the field, we probably could expect to use at least 200,000 entrants a year.

## VI

We have gone into some detail in regard to the different professions to show the inadequacy of our block method of estimating the requirements for these groups. If there were time we should like to go over each of our major occupational groups and work it up into subgroups and change the estimate very substantially in some cases. Although there is tremendous shifting in and out of the field of agriculture, we are probably not far wrong in assuming that it tends to be a life occupation—this in spite of the fact that the Department of Agriculture estimates that as high as a million or even two million people leave or return to the farms in a single year. Taking care of these shifts is a refinement that should come in any estimates of occupational trends, but it is one that will have to be postponed until cruder work is done.

Much the same situation holds for the manufacturing industry as a whole. There are tremendous shifts going on at all times in the field of the manufacturing industry—entire industries disappearing and new industries rising. Any adequate occupational planning, of course, would attempt to stem the flow into the declining industries and divert it into expanding industries. By and large it may safely be said that for our purposes the manufacturing industry tends to be a life occupation.

The same situation holds to a certain extent for construction and transportation. It becomes far more complicated in distribution and trade because of the large number of young people who work as clerks selling in grocery stores, department stores, and other retail establishments. Some million of these jobs perhaps are much more comparable to school teaching, many of them having even a shorter length of working life. There are doubtless some occupations in this field of 100,000 workers that could absorb 25,000 or 50,000 workers a year, hiring them and passing them on to other jobs.

We have a total of approximately two and a quarter million young people to account for each year. We are far short of accounting for that total. Something of the order of three-fourths of a million (largely girls) pass into occupations other than those classified by the census as gainfully employed. Many of these girls get married shortly after leaving school; many others work about the home or farm.

For years estimates of the number of people who should enter each occupation annually have been urged without results. It is hoped that this attempt to accomplish that need will not end with negative criticism, but will cause attention to be directed toward the setting up of an organization composed of representatives of each occupation and of guidance people. Such an organization should provide fairly accurate estimates each year of the number of people that should enter each occupation.