DEPARTMENT OF THE INTERIOR
BUREAU OF EDUCATION

BULLETIN, 1925, No. 33

EDUCATION PAYS THE STATE

By

MERLE A. FOSTER
PRINCIPAL STATISTICAL ASSISTANT
BUREAU OF EDUCATION

WASHINGTON
GOVERNMENT PRINTING OFFICE
1926

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
5 CENTS PER COPY

EDUCATION PAYS THE STATE

Chapter I

INTRODUCTION

In discussing such an intangible subject as education we must deal with averages, groups, and totals almost entirely. If an attempt is made to deal with specific examples, some special local condition is likely to be ignored, although such local influence may have a very decided effect upon the final result.

The plan adopted in this study has been (1) to make a correlation between the ranking of the various States in each of the items compared, and (2) to compare the various States with each other directly with reference to the mean of the entire United States in those items.

The Pearson coefficient of correlation points out the approximate degree of relationship between the two series, and the charting furnishes the actual proof of the reliability of the relationship indicated. The mean is the mathematical average, or average for the United States.

The most important reason for the use of this method has been the change in the value of the dollar over the two decades considered. This change has no effect upon correlations by rank excepting as there may be a difference between States in the same year, and it may well be assumed that this difference has not been of sufficient importance materially to influence the correlations.

As an example of this method, consider the relationship between the amount spent (per capita of the total population) for education in 1910 and the per cent of illiterates in 1920 as shown by the United States census figures for the entire population 10 years of age and over. The correlation between these two sets of rankings is 0.7773.[1] The figures themselves are illustrated by graphical method in Figure 1.

Charting to scale the actual figures for the educational expenditures per capita and the per cent of illiteracy brings out the fact that, with only two exceptions, every State which spent more per capita

[1] Perfect correlation would be 1.0000 and would indicate that in every case the State had the same rank in both expenditure and illiteracy. For example, a State ranking fifth in expenditure would be fifth in total percentage of illiteracy, number six in expenditure would rank sixth in illiteracy, and so on through the entire list of States. The more the two sets of rankings vary from this order the smaller is the coefficient of correlation (r value).

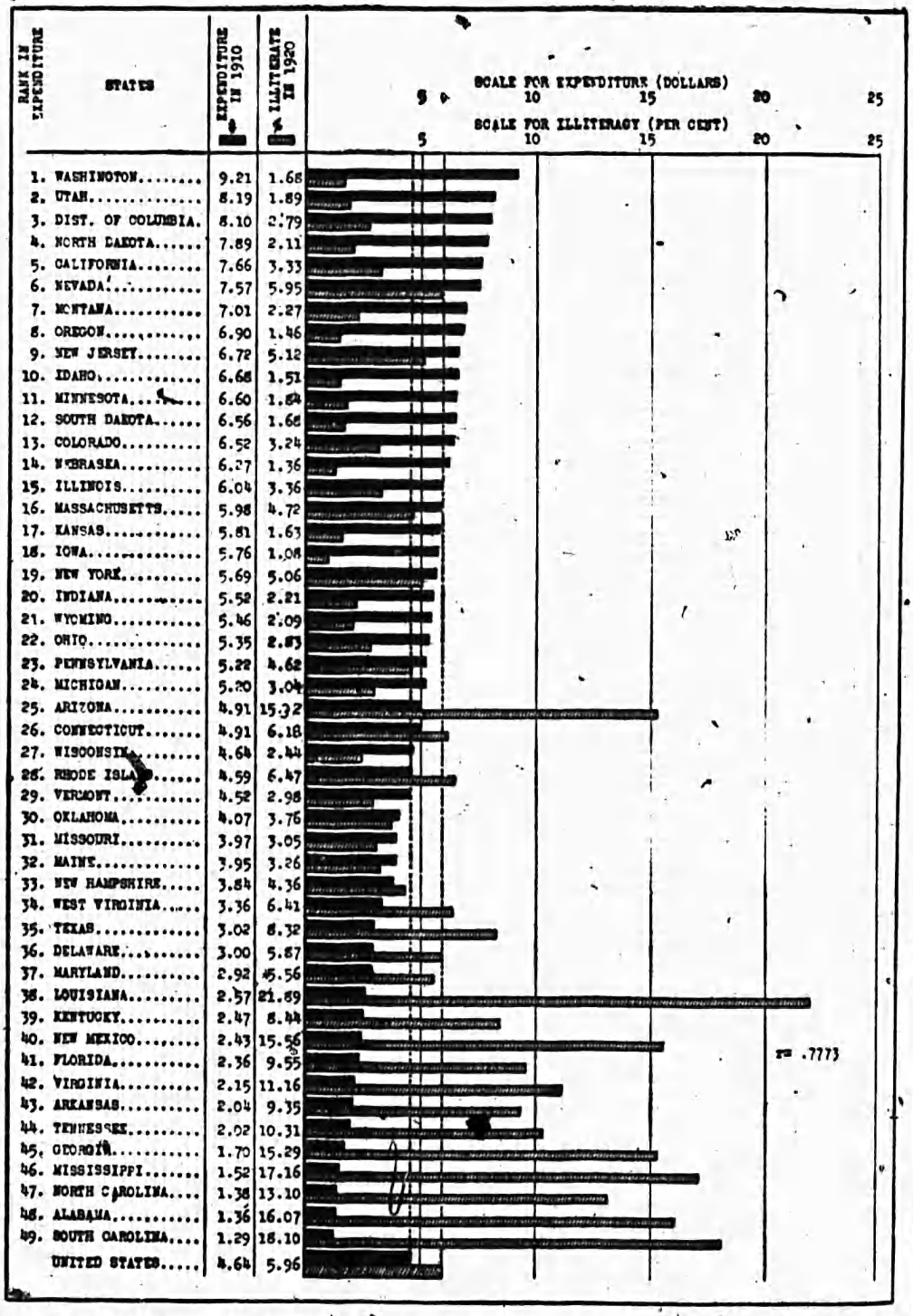


FIG. 1.—Expenditure for education in 1910 per capita of total population, and per cent of total population illiterate in 1920

for education than the mean for the United States in 1910 had less than the average percentage of illiteracy, and every State, except two, spending less than the average in 1910, had more than the average percentage of illiteracy in 1920.

Of the four exceptions mentioned, the percentage of illiterates is divided as follows:

Percentage of illiterates

State	Total	Native white of native parents	Native white of foreign or mixed parents	Foreign-born white	Negro	Indians and all other unclassified
Arizona	15.32	0.57	0.70	7.55	0.13	6.37
Connecticut	6.18	.14	.13	5.80	.10	.01
Delaware	5.87	1.28	.07	1.89	2.63	.00
Maryland	5.56	1.20	.13	1.17	3.05	.01

The foregoing example also illustrates very clearly one of the reasons why it is not safe to make too exact statements from the data studied. Although there is evidently a very definite relationship between the expenditures for education and the amount of illiteracy in the State it is unwise to assume that a mere increase in expenditure for education will entirely eliminate illiteracy, since immigration of illiterates from other States and other countries, as well as the efficiency of the State's own school system, would have a very direct influence upon the results secured from the effort to eradicate illiteracy.

Many factors influence correlations with respect to financial figures. In some cases the other influences may be sufficient to overbalance the effect of the educational efforts of the State and make it appear as an exception to the general rule. These influences are at least partially counteracted by the use of groups of States and by the use of the State as the smallest unit of comparison in this study of educational influence on the State itself.

Since this is a financial study, little effort is made to compare the school systems of the various States, although the degree of efficiency of the school system has a very important bearing upon the returns to the State from the expenditure for education.

If improvement in educational conditions is desired, it usually means a corresponding increase in educational expenditures, although it may be in some cases that a more efficient administration of funds would result in an improvement in the educational system.

Both the length of the school term and the percentage of attendance are low in many States. Small schools with poor attendance, insufficient equipment, and untrained teachers all decrease the productive value of the school expenditure. Even though the salary of the teacher be very low in such a school, the cost of each day of schooling may be above that of other schools in which the total

cost may be greater but which have a larger and more regular attendance. Not only should the amount appropriated for education be given attention but also the manner in which it is spent.

The expenditure [2] for education is probably not the only standard which might be used in this study, nor is it an entirely satisfactory one. It is used because (1) the study is an investigation of "dollar values," and expenditure represents very nearly the annual cost of public education; (2) these figures represent most nearly the investment made by the State in education from year to year; and (3) nothing else is available which is less influenced by the general efficiency of the school system and is still exclusively educational and financial in its nature.

There is some evidence of a tendency toward a "cycle effect" in education—more education tending to produce more wealth and less illiteracy, which in turn increase the desire to have and ability to pay for more education, and so on around the circle, each decade placing the State higher in its educational and financial standing.

The figures for national income, both total and per capita, as used in this study, are derived from "Distribution of the National Income by States, 1919," published by the National Bureau of Economic Research (Inc.).

Chapter II

EDUCATION AND INCOME

Not all States have received the same return from their per capita expenditures for education during the period of this study. Some States have been favored by natural resources and others by large manufacturing plants already in operation. Several have been benefited by good transportation or by climatic conditions, whereas a few have been adversely affected by these same factors.

One significant feature of these correlations is that the degree of correlation is much higher in 1900 and 1910 than in 1920, which might be taken to indicate that there is a very direct relationship between the expenditure for education and the income 10 or 20 years later.

"Correlations" [3] between the expenditures for education and income in 1919

Correlation of income per capita in 1919 with—		
Expenditure per capita of population 5–17, inclusive, in	1900	0.7558
Do	1910	.7531
Do	1920	.6284
Expenditure per capita of total population in	1900	.7530
Do	1910	.6761
Do	1920	.5214

[2] Educational expenditure as used in this study does not include payments for debt service—bonds and interest on indebtedness.

[3] Coefficients of correlation, r values, marked on the charts in this study are based upon the correlations of rankings.

Figure 2 shows graphically the relationship between the per capita income in 1919 and the expenditures for education per capita of the total population for the school year 1899–1900.[1]

Some variation appears from the statement that high expenditure for education is very closely associated with a high per capita income a decade or two later. This is not surprising. A State follows the same general laws of economics that apply to individuals. It is improbable that a survey of all the manufacturing plants in a given territory would show exactly the same percentage of profit for each plant. Just as the factors of location, management, capital invested, overhead expenses, and the like vary among different firms with direct effect upon the net profit, so the factors of location, transportation, natural resources, administration, and the like vary between States and thereby affect the income of the individuals within the borders of each State.

In order to make some reduction of the local effect of the various factors just mentioned, the States will be considered in groups—the first group consisting of the 12 States ranking highest on the chart and the second including the 12 States at the lower end of the list. In this table each State is considered as a separate unit.

The original data for Figure 2 show that in 1900 the first group expended $4.60 per capita of the total population and had an average per capita income of $799 in 1919. The last group expended $0.98 per capita in 1900 and received a per capita income of $417 in 1919—a difference between the averages for the two groups of $3.62 in per capita expenditure and $382 in per capita income.

Figure 3 gives the expenditure per capita of the population 5–17 years of age, inclusive, and the per capita figures are therefore considerably higher in per capita expenditure. Since the chart is intended for direct comparisons of expenditures, the income figures and the scales have not been changed.

In Figure 3 it appears that the first group spent $28.07 per capita of the 5–17 (inclusive) population in 1910 and the last group $6.31. The per capita income of the first group of States averaged $800 and of the last group $417.

Table 1 gives the data from which the charts are constructed. For ready reference the States are arranged alphabetically, and columns 14 and 17 give the rankings used in arranging the States for Figures 2 and 3, respectively. These columns may be used as indexes for finding States on the charts.

The ranking of the States in total amount of income follows very closely the ranking of the States in total population. The correlation

[1] Charts in this group represent the bar for income with a value 20 times that of the bar for expenditure; otherwise the expenditure bar would frequently be so short as to be practically invisible.

TABLE 1.—*Income in 1919, and expenditures for education in 1900 and 1910*

States	Income, 1919		Expended for education		Expended for education per capita total population		Expended for education per capita population 5–17, inclusive		Rank in income, 1919		Rank in total expended		Rank in expenditure per capita total population		Rank in expenditure per capita population 5–17, inclusive		Rank in total population	
	Total (in thousands)	Per capita	Total, 1900	Total, 1910	1900	1910	1900	1910	Total	Per capita	1900	1910	1900	1910	1900	1910	1900	1910
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Continental United States	$66,250,695	$627	$214,964,618	$426,250,434	$2.84	$4.64	$9.58	$17.04										
Alabama	812,496	346	923,464	2,904,537	.50	1.36	1.42	4.25	26	49	39	35	48	48	48	48	18	18
Arizona	223,208	668	299,730	1,000,628	2.44	4.91	9.59	20.40	44	21	47	45	32	25	30	25	47	46
Arkansas	666,354	380	1,369,810	3,187,063	1.04	2.04	2.93	5.99	29	46	32	31	42	43	42	44	25	25
California	2,816,710	822	6,909,351	18,210,747	4.65	7.66	19.61	33.72	6	4	10	6	5	5	4	4	21	12
Colorado	603,538	642	2,793,648	5,211,186	5.18	6.52	23.53	27.03	32	22	20	21	2	13	2	10	32	32
Connecticut	991,276	718	3,189,249	5,450,006	3.51	4.91	14.92	21.35	21	11	17	20	17	26	11	20	29	31
Delaware	174,862	784	453,670	604,796	2.40	3.00	5.69	11.28	46	7	44	49	33	36	37	35	45	47
District of Columbia	388,256	887	1,076,620	2,679,564	3.86	8.16	17.36	37.30	38	1	35	37	11	3	7	2	41	43
Florida	408,156	421	765,777	1,773,720	1.45	2.36	4.36	9.36	37	41	42	42	39	41	38	37	33	33
Georgia	1,144,924	395	1,980,016	4,419,596	.89	1.70	2.52	5.32	15	43	24	24	43	45	44	45	11	10
Idaho	262,708	608	400,043	2,175,063	2.47	6.68	9.14	23.87	42	23	45	40	30	10	31	15	46	45
Illinois	4,968,008	766	17,757,145	34,036,195	3.08	6.04	13.03	24.15	3	9	3	3	24	15	15	14	3	3
Indiana	1,710,953	584	8,182,526	14,910,500	3.25	5.52	11.02	21.71	12	27	7	8	19	20	24	19	8	9
Iowa	1,711,725	712	8,496,522	12,767,210	3.81	5.76	12.04	20.14	11	14	6	12	13	18	20	26	10	15
Kansas	1,071,445	606	4,622,364	9,812,671	3.14	5.81	9.95	19.54	18	24	14	16	22	17	28	27	22	22
Kentucky	950,801	393	3,037,908	5,648,644	1.41	2.47	3.93	7.98	23	44	18	19	40	39	40	40	12	14
Louisiana	770,704	429	1,135,125	4,252,244	.82	2.57	2.41	7.90	27	40	33	27	46	38	45	41	23	24
Maine	449,750	586	1,712,795	2,934,263	2.47	3.95	10.02	17.04	34	26	26	34	31	32	26	30	31	34
Maryland	1,000,786	690	2,803,032	3,792,424	2.30	2.92	8.43	10.49	19	18	19	30	34	37	33	36	26	27
Massachusetts	3,017,861	783	13,826,243	20,13[illegible]745	4.93	5.98	21.55	27.68	5	8	4	5	3	16	3	6	7	6
Michigan	2,580,409	703	7,297,691	14,596,819	3.01	5.20	9.88	19.24	7	16	9	9	25	24	29	28	9	8
Minnesota	1,391,378	583	5,630,013	13,724,437	3.21	6.60	10.11	22.49	14	28	12	10	20	11	25	18	19	19
Mississippi	629,512	352	1,385,112	2,726,248	.89	1.52	2.34	4.46	31	48	31	36	44	46	46	46	20	21
Missouri	1,825,325	536	7,816,050	13,067,193	2.52	3.97	8.09	14.45	10	31	8	11	29	31	34	32	5	7
Montana	284,367	518	923,310	2,633,521	3.79	7.01	19.43	31.40	40	36	40	38	14	7	5	5	43	40

Nebraska	918, 751	797	4, 408, 222	7, 454, 210	4. 13	6. 27	13. 68	20. 77	24	15	10	17	8	14	13	22	27	29
Nevada	66, 500	859	224, 622	619, 268	5. 30	7. 57	24. 26	35. 51	49	3	49	48	1	6	1	3	49	49
New Hampshire	266, 092	601	1, 052, 202	1, 654, 163	2. 56	3. 84	11. 56	17. 79	41	25	37	43	28	33	22	29	37	39
New Jersey	2, 394, 845	759	6, 608, 692	17, 064, 990	3. 51	6. 72	12. 82	27. 33	9	10	11	7	16	9	17	8	16	11
New Mexico	147, 971	411	343, 429	793, 202	1. 76	2. 43	6. 26	9. 27	48	42	46	47	36	40	35	38	44	44
New York	8, 960, 762	863	33, 421, 491	51, 861, 986	4. 60	5. 69	18. 71	25. 09	1	2	1	1	6	19	6	12	1	1
North Carolina	981, 034	383	950, 317	3, 037, 907	. 50	1. 38	1. 59	4. 40	22	45	38	33	49	47	49	47	15	16
North Dakota	335, 520	519	1, 526, 090	4, 549, 660	4. 78	7. 89	16. 54	27. 19	39	35	30	23	4	4	8	9	40	37
Ohio	3, 971, 647	690	13, 335, 211	25, 500, 216	3. 21	5. 35	11. 30	23. 71	4	19	5	4	21	22	23	16	4	4
Oklahoma	1, 086, 829	536	686, 095	6, 739, 216	1. 72	4. 07	5. 71	12. 99	16	32	43	18	37	30	36	33	30	23
Oregon	558, 711	713	1, 594, 420	4, 646, 270	3. 86	6. 90	14. 30	27. 62	33	13	28	22	12	8	12	7	36	35
Pennsylvania	5, 950, 620	682	21, 476, 995	39, 988, 180	3. 41	5. 22	12. 21	21. 14	2	20	2	2	18	23	19	21	2	2
Rhode Island	433, 114	717	1, 548, 675	2, 486, 757	3. 61	4. 59	15. 36	20. 63	36	12	29	39	15	28	10	23	35	38
South Carolina	738, 091	438	894, 004	1, 951, 945	. 67	1. 29	1. 80	3. 72	28	38	41	41	47	49	47	49	24	26
South Dakota	440, 470	692	1, 605, 623	3, 825, 273	4. 00	6. 56	13. 59	22. 59	35	17	27	29	9	12	14	17	38	36
Tennessee	855, 467	366	1, 751, 047	4, 402, 575	. 87	2. 02	2. 53	6. 32	25	47	25	26	45	44	43	43	14	17
Texas	2, 517, 469	540	4, 465, 255	11, 777, 036	1. 46	3. 02	4. 18	9. 09	8	30	15	13	38	35	39	39	6	5
Utah	234, 042	521	1, 094, 757	3, 052, 990	3. 96	8. 19	11. 96	25. 08	43	34	34	32	10	2	21	13	42	41
Vermont	186, 812	530	1, 074, 222	1, 608, 996	3. 13	4. 52	12. 68	20. 55	45	33	36	44	23	29	18	24	39	42
Virginia	994, 443	431	1, 989, 238	4, 407, 853	1. 07	2. 15	3. 15	6. 77	20	39	23	25	41	42	41	42	17	20
Washington	1, 073, 048	791	2, 375, [illegible]	10, 493, 347	4. 59	9. 21	16. 53	40. 66	17	6	21	15	7	1	9	1	34	30
West Virginia	657, 729	449	2, 009, 123	4, 094, 092	2. 10	3. 36	9. 97	11. 57	30	37	22	28	35	34	27	34	28	28
Wisconsin	1, 472, 664	560	5, 493, 370	10, 789, 236	2. 65	4. 64	8. 88	15. 57	13	29	13	14	27	27	32	31	13	13
Wyoming	154, 552	795	253, 551	796, 021	2. 74	5. 46	12. 84	25. 77	47	5	48	46	26	21	16	11	48	48

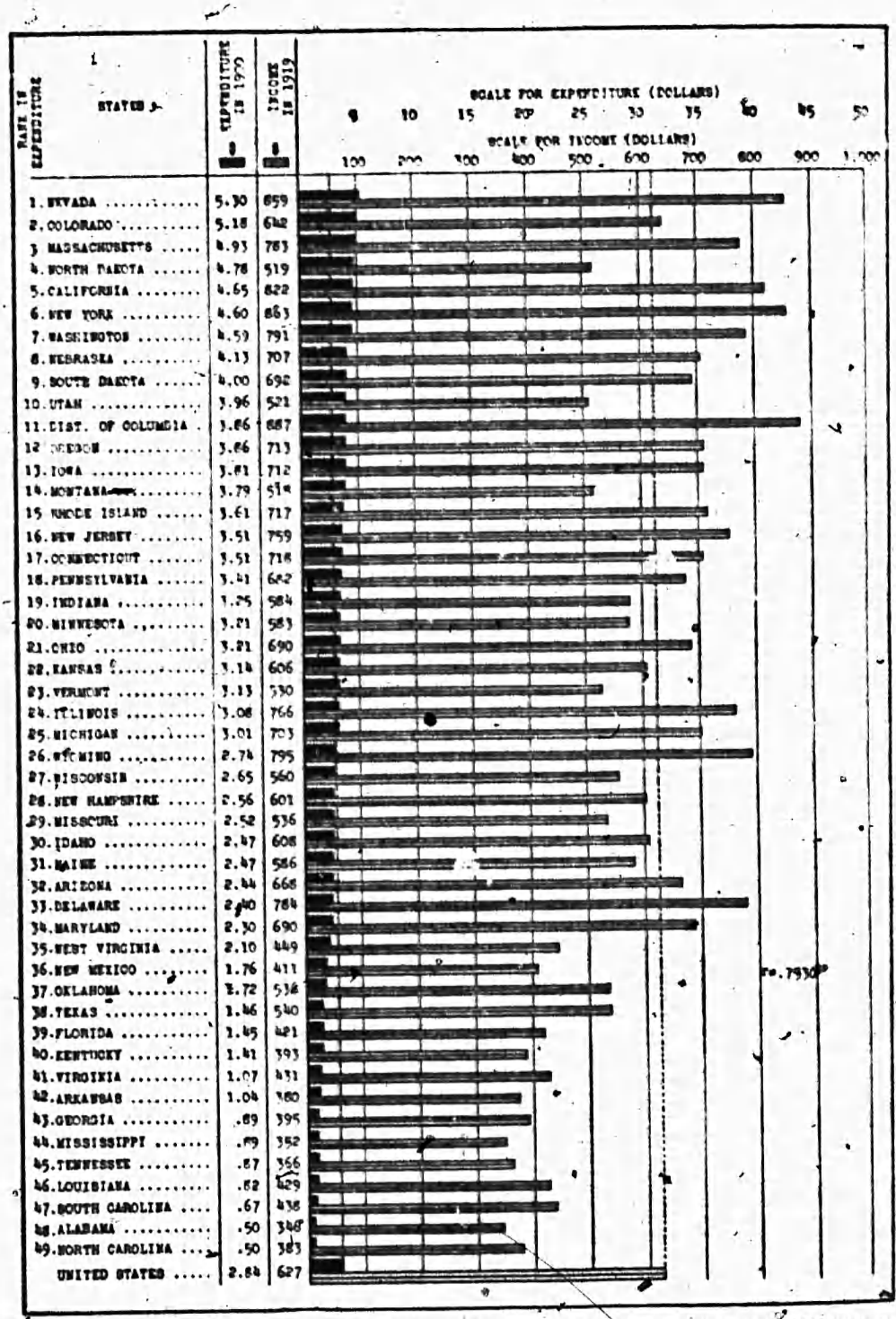


FIG. 2.—Expenditure for education in 1900 per capita of total population, and income in 1919 per capita of total population.

RANK IN EXPENDITURE	STATES	EXPENDITURE IN 1910	INCOME IN 1919
1.	WASHINGTON	40.66	791
2.	DIST. OF COLUMBIA	37.30	887
3.	NEVADA	35.51	859
4.	CALIFORNIA	33.72	822
5.	MONTANA	31.40	518
6.	MASSACHUSETTS	27.68	783
7.	OREGON	27.62	713
8.	NEW JERSEY	27.33	799
9.	NORTH DAKOTA	27.19	519
10.	COLORADO	27.03	642
11.	WYOMING	25.77	795
12.	NEW YORK	25.09	863
13.	UTAH	25.08	521
14.	ILLINOIS	24.15	766
15.	IDAHO	23.87	608
16.	OHIO	23.71	690
17.	SOUTH DAKOTA	22.59	692
18.	MINNESOTA	22.49	583
19.	INDIANA	21.71	584
20.	CONNECTICUT	21.35	718
21.	PENNSYLVANIA	21.14	668
22.	NEBRASKA	20.77	707
23.	RHODE ISLAND	20.63	717
24.	VERMONT	20.55	570
25.	ARIZONA	20.40	668
26.	IOWA	20.14	712
27.	KANSAS	19.54	606
28.	MICHIGAN	19.24	703
29.	NEW HAMPSHIRE	17.79	601
30.	MAINE	17.04	586
31.	WISCONSIN	15.57	560
32.	MISSOURI	14.85	536
33.	OKLAHOMA	12.99	536
34.	WEST VIRGINIA	11.57	449
35.	DELAWARE	11.28	784
36.	MARYLAND	10.49	690
37.	FLORIDA	9.36	421
38.	NEW MEXICO	9.27	411
39.	TEXAS	9.09	540
40.	KENTUCKY	7.98	393
41.	LOUISIANA	7.90	429
42.	VIRGINIA	6.77	431
43.	TENNESSEE	6.32	366
44.	ARKANSAS	5.99	380
45.	GEORGIA	5.32	395
46.	MISSISSIPPI	4.46	352
47.	NORTH CAROLINA	4.40	383
48.	ALABAMA	4.25	346
49.	SOUTH CAROLINA	3.72	438
	UNITED STATES	17.04	687

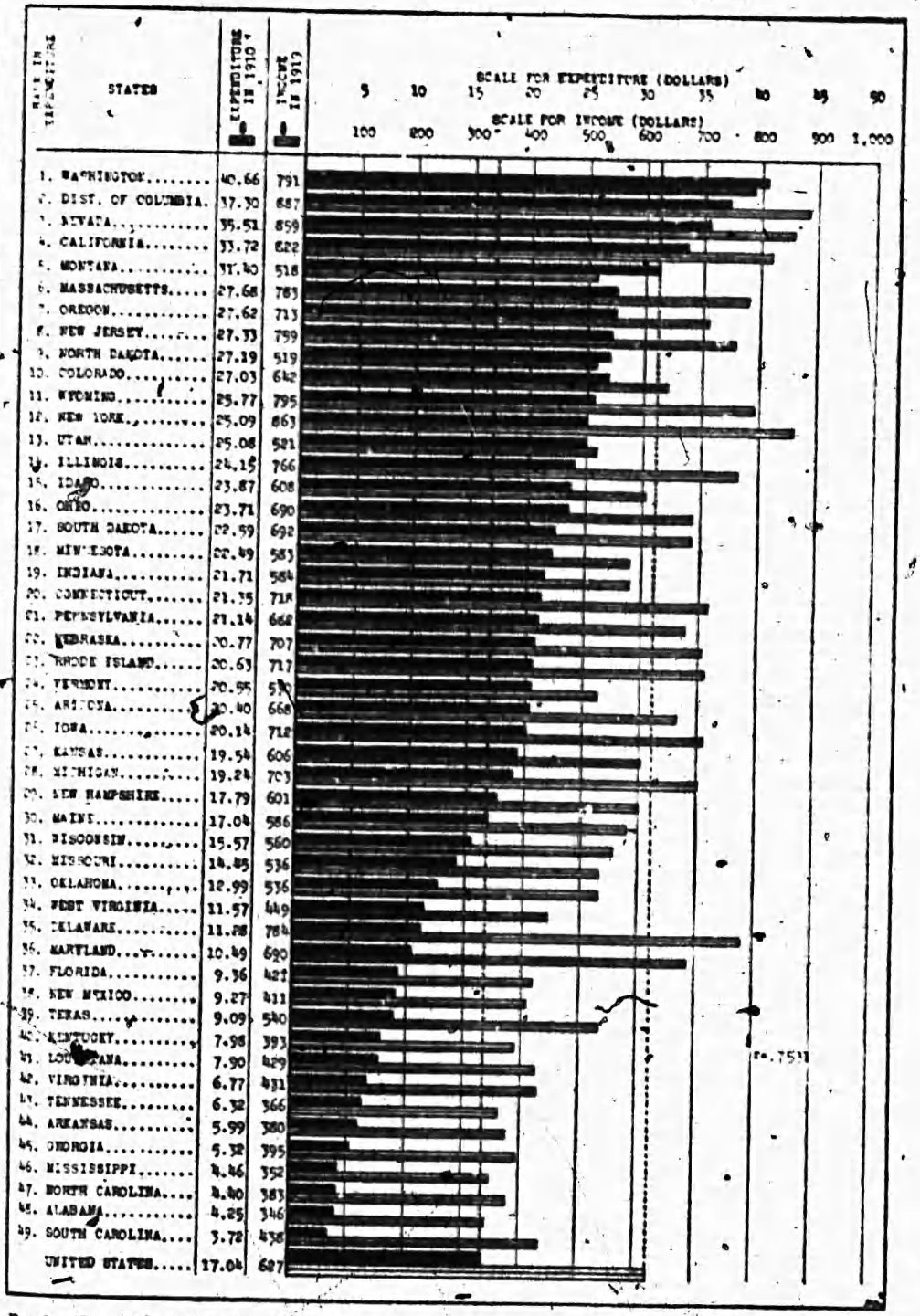


FIG. 3.—Expenditure for education in 1910 per capita of population 5 to 17 years of age, and income in 1919 per capita of total population

of rankings by total income in 1919 with total population in 1900 is 0.9139, with 1910 population 0.9470, and with 1920 population 0.9529. This close relationship, however, does not hold in the comparison of per capita income rankings with the rankings in total population—the correlation coefficient being 0.1096 for 1900, 0.0285 for 1910, and 0.0804 for 1920.

From these correlations it would appear that a State may rank very high in total income and yet not compare very favorably with other States in per capita income, just as a large factory might have a much larger total pay roll than a smaller one near by and yet the average wage of the employees of the large plant be much lower than the average wage received by the employees in the smaller factory. A large total income does not imply a high per capita income any more than does a large factory pay roll indicate high wages for all employees, nor does the total expenditure for education show in any better way the economic condition of the schools.

The correlation between total income in 1919 and the per capita income for the same year is only 0.1531 (by rankings), but there is a good correlation between the rankings in total expenditure for education and total population the same year (0.8138 in 1900, 0.8476 in 1910, and 0.8209 in 1920). This seems to substantiate the studies of the State per capita expenditures by showing that some States rank high in total expenditure merely because of large population.

Table 2 shows the close relationship between total income, total expenditures, and total population.

The two groups are the 12 highest and 12 lowest States in total expenditure for education in the years indicated. The same States appear in the first group for both 1900 and 1910, but in the lowest group of States there was some change during the decade from 1900 to 1910. This table offers a good illustration of the "total pay-roll" type of comparisons.

In this table, however, there is evidence of the effect of high and low per capita expenditures, since it is evident that the rankings for total income follow the order of total expenditure for education more closely than they do the rankings of the States in total population. In itself, and for this table only, this fact would have little significance; but when the results of the study of the per capita relationships are considered, this tendency appears to be still further evidence of the effect of educational expenditure upon income. This relationship is worthy of careful consideration because the very considerable difference between the order of States when arranged according to total income and the rankings in per capita income causes an entirely different arrangement of the States.

If the rankings were exactly the same for 1900 and 1910, then the means of the rankings would be the same. The minimum mean for the first group is 6.6 and for the last group 43.6. The mean ranking

TABLE 2.—*Income of 1919 compared with population and expenditures for education*

IN 1900

Rank in total educational expenditure, 1900	States	Rank in total income, 1919	Rank in population, 1900	Total amount expended for education, 1900	Total income (in thousands), 1919	Total population, 1900
1	2	3	4	5	6	7
1	New York	1	1	$33,421,491	$8,960,762	7,268,894
2	Pennsylvania	2	2	21,476,995	5,950,620	6,302,115
3	Illinois	3	3	17,757,145	4,968,008	4,821,550
4	Massachusetts	5	7	13,826,243	3,017,861	2,805,346
5	Ohio	4	4	13,335,211	3,971,647	4,157,545
6	Iowa	11	10	8,496,522	1,711,725	2,231,853
7	Indiana	12	8	8,182,526	1,710,953	2,516,462
8	Missouri	10	5	7,816,050	1,825,325	3,106,665
9	Michigan	7	9	7,297,691	2,580,409	2,420,982
10	California	6	21	6,909,351	2,816,710	1,485,053
11	New Jersey	9	16	6,608,692	2,394,845	1,883,669
12	Minnesota	14	19	5,630,013	1,391,378	1,751,394
6.6		7.1	8.8	159,757,930	41,300,243	40,731,528
98	North Carolina	22	15	950,317	981,034	1,893,810
99	Alabama	26	18	923,464	812,496	1,828,697
40	Montana	40	43	923,310	284,367	243,329
41	South Carolina	28	24	894,004	738,091	1,340,316
42	Florida	37	33	765,777	408,156	528,542
43	Oklahoma	16	30	686,095	1,086,829	790,391
44	Delaware	46	45	453,670	174,862	184,735
45	Idaho	42	46	400,043	262,708	161,772
46	New Mexico	48	44	343,429	147,971	195,310
47	Arizona	44	47	299,730	223,208	122,931
48	Wyoming	47	48	253,551	154,552	92,531
49	Nevada	49	49	224,622	66,500	42,335
43.6		37.1	36.9	7,118,012	5,340,774	7,424,699

IN 1910

Rank in total expended for education, 1910	States	Rank in total income, 1919	Rank in population, 1910	Total amount expended for education, 1910	Total income (in thousands), 1919	Total population, 1910
1	8	9	10	11	12	13
1	New York	1	1	$51,861,986	$8,960,762	9,113,614
2	Pennsylvania	2	2	39,988,180	5,950,620	7,665,111
3	Illinois	3	3	34,036,195	4,968,008	5,638,591
4	Ohio	4	4	25,500,216	3,971,647	4,767,121
5	Massachusetts	5	6	20,135,745	3,017,861	3,366,416
6	California	6	12	18,210,747	2,816,710	2,377,549
7	New Jersey	9	11	17,064,990	2,394,845	2,537,167
8	Indiana	12	9	14,910,500	1,710,953	2,700,876
9	Michigan	7	8	14,596,819	2,580,409	2,810,173
10	Minnesota	14	19	13,724,437	1,391,378	2,075,708
11	Missouri	10	7	13,067,193	1,825,325	2,293,335
12	Iowa	11	15	12,767,210	1,711,725	2,224,771
6.6		7.1	8.1	275,864,218	41,300,243	48,570,432
38	Montana	40	40	2,633,521	284,367	376,053
39	Rhode Island	36	38	2,486,757	433,114	542,610
40	Idaho	42	45	2,175,063	262,708	325,594
41	South Carolina	28	26	1,951,945	738,091	1,515,400
42	Florida	37	33	1,773,720	408,156	752,619
43	New Hampshire	41	39	1,654,163	266,092	430,572
44	Vermont	45	42	1,608,996	136,812	355,956
45	Arizona	44	46	1,000,628	223,208	204,354
46	Wyoming	47	48	796,021	154,552	145,965
47	New Mexico	48	44	793,202	147,971	327,301
48	Nevada	49	49	619,268	66,500	81,875
49	Delaware	46	47	604,796	174,862	202,322
43.6		42.0	41.5	18,098,080	3,346,433	5,260,621

TABLE 3.—*Total population and expenditures for education, 1922*

States	Total population		Total expenditures for education		Expended per capita of total population		Expended per capita of population 5–17 years of age, inclusive	
	Rank	Estimated July 1, 1922	Rank	1921–22	Rank	1921–22	Rank	1921–22
1	2	3	4	5	6	7	8	9
Continental United States	.....	109,248,393	.....	$1,580,671,296	.....	$14.47	.....	$55.22
Alabama	18	2,402,273	33	12,827,945	46	5.34	46	16.19
Arizona	45	367,589	42	7,065,189	17	19.22	18	73.26
Arkansas	23	1,797,978	39	8,828,859	48	4.91	48	15.18
California	8	3,697,070	5	93,534,315	1	25.30	1	127.26
Colorado	33	975,837	22	19,366,016	14	19.85	12	79.57
Connecticut	29	1,449,097	20	21,341,789	24	14.72	25	62.13
Delaware	47	228,330	48	2,465,708	35	10.80	32	46.37
District of Columbia	43	[1]437,571	43	5,722,520	28	13.08	21	71.09
Florida	32	1,024,054	35	9,768,506	39	9.54	39	34.01
Georgia	12	2,969,664	32	13,505,702	49	4.55	49	14.08
Idaho	41	459,233	37	9,556,267	12	20.81	19	73.09
Illinois	3	6,703,312	4	103,201,265	22	15.40	23	64.14
Indiana	11	2,989,403	8	63,358,907	9	21.19	7	87.68
Iowa	16	2,450,180	12	49,514,571	13	20.21	11	82.33
Kansas	25	1,789,423	15	34,319,377	18	19.18	17	73.47
Kentucky	17	2,449,263	29	14,149,189	44	5.78	44	19.93
Louisiana	22	1,835,106	24	16,452,576	40	8.97	41	28.99
Maine	35	774,617	40	8,266,289	37	10.67	35	45.14
Maryland	28	1,489,399	28	14,719,273	38	9.88	37	40.13
Massachusetts	6	3,977,490	9	57,332,711	25	14.41	24	63.22
Michigan	7	3,989,418	6	72,739,880	19	18.70	13	79.21
Minnesota	15	2,467,318	11	52,210,972	10	21.16	10	82.94
Mississippi	24	[1]1,790,618	38	9,390,413	47	5.24	47	15.84
Missouri	9	3,432,566	13	40,986,065	31	11.94	30	47.70
Montana	39	593,396	30	13,976,623	4	23.55	4	92.03
Nebraska	31	1,323,193	16	30,687,770	6	23.19	6	87.72
Nevada	49	[1]77,407	49	1,673,249	7	21.62	2	105.04
New Hampshire	42	446,304	46	4,883,243	34	10.94	28	48.41
New Jersey	10	3,315,231	7	63,966,428	16	19.29	14	79.07
New Mexico	44	368,861	44	5,162,674	27	14.00	33	46.36
New York	1	10,712,680	1	183,421,841	20	17.12	15	75.28
North Carolina	14	2,649,982	19	22,079,183	42	8.33	42	25.31
North Dakota	36	664,850	26	15,420,977	5	23.19	16	74.08
Ohio	4	6,014,914	2	116,568,994	15	19.38	9	84.20
Oklahoma	21	2,123,851	17	30,479,357	26	14.35	34	45.54
Oregon	34	811,875	31	13,629,983	21	16.79	20	72.57
Pennsylvania	2	8,991,666	3	109,468,075	30	12.17	31	46.80
Rhode Island	38	620,308	41	7,135,714	33	11.50	29	48.38
South Carolina	26	1,727,070	36	9,567,519	45	5.54	45	16.32
South Dakota	37	650,108	25	15,552,102	3	23.92	8	85.84
Tennessee	19	2,377,308	27	15,155,845	43	6.38	43	21.01
Texas	5	4,860,658	10	52,452,075	36	10.79	38	35.92
Utah	40	468,979	34	9,959,777	8	21.24	22	70.47
Vermont	46	[1]352,428	47	4,129,358	32	11.72	27	48.85
Virginia	20	2,372,940	21	21,212,606	41	8.94	40	30.06
Washington	30	1,411,890	18	29,633,324	11	20.99	5	91.32
West Virginia	27	1,526,169	23	18,616,312	29	12.20	36	40.96
Wisconsin	13	2,708,858	14	40,146,691	23	14.82	26	57.91
Wyoming	48	206,875	45	5,067,272	2	24.49	3	98.53

[1]Population January 1, 1920; no increase estimated.

in total income is the same (7.1) in both 1900 and 1910 for the first group because the same States compose both groups. Since 7.1 is nearer 6.6 than is either 8.8 or 8.1, it is evident that the rankings in

total income more nearly approach the rankings in total expenditure for education than they do the rankings in total population, as indicated in the previous paragraph.

The same condition appears for the lower group in both years. The change of three States is responsible for the difference in the means of the rankings in total income.

Chapter III

EDUCATION AND WEALTH

To know the financial strength of either an individual or a State we need to know not only the current income but also the total accumulated wealth of the individual or of the State.

Because the wealth of the State includes so many things other than accumulated income, the effect of educational expenditure should be much less evident than in the case of comparisons with income. Natural forces and resources constitute a very considerable part of the accumulated wealth of some States, and these are influenced only indirectly by educational expenditures, although their usefulness and value are due largely to the development of their possibilities by men who have received the benefits of education.

Again, the accumulation of wealth within a State extends over a considerable period of time, and we should not expect to find such immediate influence upon the comparative figures as would take place with incomes which change from year to year. A sudden change in the educational policy of a State might greatly increase the relative earning power of its students who become wage earners a few years hence, but it would require a number of years longer before the increased earning power of these same students would add a very material percentage of increase to the total of accumulated wealth within the State. This is especially true as only a relatively small portion of the circulating capital known as income becomes transferred into a fixed form of wealth.

Another source of difficulty is introduced into this study by our national tendency to migrate. The boys and girls educated in the Eastern States often go west to newer lands; farmers educated in the North may go south to take up work in a climate which they consider more satisfactory, and within the past few years there has been a noticeable migration of the Negro northward. These interstate movements,[5] together with foreign immigration, are factors which must be kept in mind when considering a study of wealth accumulation over a period of years. In some States change in the character and number of inhabitants may have been sufficient to change considerably the normal rate of increase of wealth.

[5] In 1920 there were 22.2 per cent of the total native-born population living in other than their native States.

TABLE 4.—*Accumulated wealth*

States	Total accumulated wealth						Per cent of increase		Accumulated wealth per capita of the total population						Per cent of increase	
	Rank	1902 [1] (in thousands)	Rank	1912 (in thousands)	Rank	1922 (in thousands)	1902–1912	1912–1922	Rank	1902 [1]	Rank	1912	Rank	1922	1902–1912	1912–1922
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Continental United States	.....	$97,810,759	.....	$186,299,664	.....	$320,803,862	90.5	72.2	.....	$1,241	.....	$1,950	.....	$2,918	57.1	49.6
Alabama	28	869,848	28	1,977,218	30	3,002,043	127.3	51.8	45	459	44	896	48	1,244	95.2	38.8
Arizona	47	284,658	47	451,996	44	1,314,255	58.8	190.8	6	2,189	18	2,031	14	3,511	−7.2	72.9
Arkansas	34	704,063	31	1,694,835	32	2,599,595	140.7	53.4	43	521	42	1,038	45	1,439	99.2	38.6
California	7	3,667,032	5	8,444,038	5	15,031,734	130.3	78.0	5	2,375	5	3,277	6	4,007	38.0	22.3
Colorado	21	1,072,856	22	2,291,614	29	3,229,352	113.6	40.9	8	1,892	9	2,674	20	3,285	41.3	22.8
Connecticut	19	1,306,694	21	2,346,118	17	5,281,559	79.6	125.1	26	1,387	19	2,020	11	3,610	45.6	78.7
Delaware	48	220,986	49	304,012	48	629,430	37.6	107.0	31	1,175	35	1,474	32	2,744	25.5	86.2
District of Columbia	24	984,561	36	1,162,925	40	1,697,270	18.1	45.9	2	3,411	3	3,392	8	3,878	−.6	14.3
Florida	42	393,576	40	921,796	34	2,423,602	134.2	162.9	39	701	39	1,148	36	2,341	63.8	103.9
Georgia	22	1,051,723	25	2,117,410	25	3,896,759	101.3	84.0	46	458	47	785	47	1,306	71.4	66.3
Idaho	44	309,623	43	571,241	42	1,533,893	84.5	168.5	10	1,752	32	1,577	18	3,301	−10.0	109.3
Illinois	3	7,896,516	3	15,294,979	3	22,232,794	93.7	45.4	20	1,568	11	2,627	19	3,295	67.5	25.4
Indiana	12	2,856,137	12	5,301,506	12	8,329,726	85.6	60.6	33	1,105	22	1,933	28	2,942	74.9	52.2
Iowa	6	3,708,192	6	7,659,401	9	10,511,682	106.6	37.2	15	1,669	2	3,443	4	4,274	106.3	24.1
Kansas	15	2,095,612	14	4,543,785	15	6,263,058	116.8	37.8	25	1,393	12	2,611	15	3,492	87.4	33.7
Kentucky	17	1,446,308	23	2,235,353	26	3,582,727	54.6	60.3	40	655	43	963	44	1,459	47.0	51.5
Louisiana	26	923,693	29	1,957,074	28	3,416,860	111.9	74.6	41	642	40	1,139	41	1,855	77.4	62.9
Maine	33	728,878	38	1,002,960	38	2,006,531	37.6	100.1	35	1,039	38	1,332	34	2,586	28.2	94.1
Maryland	18	1,414,430	24	2,206,760	24	3,990,530	56.0	80.8	32	1,161	30	1,672	33	2,665	44.0	59.4
Massachusetts	5	4,657,741	8	6,279,266	6	12,980,839	34.8	106.7	17	1,613	26	1,798	22	3,243	11.5	80.4
Michigan	10	2,968,350	13	5,233,760	8	11,340,150	76.3	116.7	29	1,197	25	1,806	31	2,883	50.9	59.6
Minnesota	11	2,928,671	11	5,380,746	13	8,547,918	83.7	58.9	19	1,582	13	2,505	16	3,443	58.3	37.4
Mississippi	37	622,915	35	1,204,267	37	2,177,795	93.3	80.8	48.5	388	49	650	49	1,216	67.5	87.1
Missouri	8	3,502,065	10	5,634,808	10	9,981,409	60.9	77.1	34	1,096	29	1,690	29	2,903	54.2	71.8
Montana	35	680,104	37	1,121,638	36	2,223,007	64.9	98.2	4	2,578	8	2,764	10	3,691	7.2	33.5
Nebraska	16	1,817,883	16	3,690,359	16	5,320,075	103.0	44.2	13	1,704	6	3,024	7	4,004	77.5	32.4
Nevada	49	205,680	46	451,328	49	541,716	119.4	20.0	1	4,858	1	4,975	1	6,998	2.4	40.7
New Hampshire	40	494,477	42	649,881	43	1,374,135	31.4	111.4	30	1,181	34	1,495	25	3,074	26.6	105.6
New Jersey	9	2,984,606	9	5,956,414	7	11,794,101	99.6	98.0	22	1,499	16	2,220	13	3,524	48.1	58.7
New Mexico	46	300,274	45	488,473	46	851,836	62.7	74.4	23	1,480	37	1,369	37	2,299	−7.5	67.9

New York	29	13,657,186	1	25,031,447	1	36,986,638	83.6	47.8	9	1,794	10	2,628	17	3,431	46.5	30.6
North Carolina	36	762,027	82	1,647,781	21	4,543,110	116.2	178.7	47	390	48	724	43	1,703	85.6	135.2
North Dakota		639,001	26	2,100,485	33	2,467,772	228.7	17.5	11	1,735	4	3,309	9	3,692	90.7	11.6
Ohio	4	5,482,986	4	9,011,026	4	18,473,316	64.4	105.0	27	1,287	24	1,838	26	3,045	42.8	65.7
Oklahoma	25	963,307	18	3,083,288	23	3,993,524	223.4	29.5	7	2,111	31	1,665	40	1,864	−21.1	12.0
Oregon	32	742,466	27	2,032,299	27	3,419,459	173.7	68.3	12	1,708	7	2,781	5	4,182	62.8	50.4
Pennsylvania	2	10,394,380	2	16,014,202	2	28,833,745	54.1	80.1	18	1,593	20	2,009	23	3,187	26.1	58.6
Rhode Island	30	754,957	39	972,993	39	1,924,326	28.9	97.8	14	1,680	28	1,712	24	2,086	1.9	80.3
South Carolina	39	535,765	34	1,225,541	35	2,404,845	130.6	94.6	48.5	388	46	795	46	1,385	104.9	74.2
South Dakota	38	616,286	33	1,314,881	31	2,925,968	113.4	122.5	24	1,453	17	2,106	3	4,482	44.9	112.9
Tennessee	23	1,030,447	30	1,844,630	22	4,228,253	79.0	129.2	44	497	45	830	42	1,773	67.0	113.6
Texas	14	2,679,236	7	6,298,246	11	9,850,896	144.2	56.4	37	801	33	1,541	39	2,010	92.4	30.4
Utah	41	460,212	41	756,720	41	1,535,477	74.7	93.2	21	1,550	21	1,992	21	3,247	28.5	63.0
Vermont	43	345,123	44	498,318	47	840,076	44.4	68.6	36	998	36	1,389	33	2,384	39.2	71.6
Virginia	20	1,196,139	20	2,864,575	19	4,891,570	97.9	106.9	42	630	41	1,122	38	2,060	78.1	82.7
Washington	27	916,635	17	3,147,258	18	5,122,405	243.3	62.8	16	1,657	14	2,456	12	3,600	48.2	46.6
West Virginia	31	749,826	19	2,404,346	20	4,677,919	220.7	94.6	38	749	23	1,879	27	3,040	150.9	61.8
Wisconsin	13	2,622,016	15	4,277,569	14	7,866,081	83.1	83.9	28	1,227	27	1,787	30	2,887	45.6	61.5
Wyoming	45	305,502	48	852,139	45	976,239	16.3	177.2	3	2,169	15	2,230	2	4,663	−29.6	109.1

[1] Average of census figures for 1900 and 1904.

These movements of the population tend toward the leveling of wealth and educational attainments. No State is independent of other States so long as there is any movement of inhabitants between them, for low standards in one State tend to discount the efforts of other States in maintaining higher ideals. Each State is therefore interested in what other States are doing.

If we are to compare wealth from decade to decade, we must also take into consideration the fluctuating value of the dollar. Because of the many standards of comparison it is extremely difficult to make comparisons of this type.[6] The value of the dollar depends upon what it is expected to buy, and where and when.

For example,[6] in January, 1913, the dollar was considered worth 100 cents in the cost of living, but in January, 1923, only 64 cents in the purchase of the same commodities; in May of 1920 the dollar would buy only as much as 40 cents in 1913. In the purchase of building materials the dollar was worth $0.99 in January, 1913, and $0.53 10 years later, sagging to $0.34 in May, 1920. In other words, in May, 1920, it required $2.93 to buy as much building material as $1 would have bought in 1913. A still more striking example is given in the item of structural steel—the 1913 dollar buying at the rate of $1.37 in 1914, and as low as $0.30 in June, 1917; that is, in 1913 a certain unit of steel cost $1; in January, 1914, it cost $0.73, and in June of 1917 the cost was $3.33.

These quotations show very clearly, the manifest impossibility of fixing any absolute value for the dollar in order to compare wealth or income at various periods.

Following a plan similar to that of the previous chapter, we find the correlations between the rankings for educational expenditure and wealth per capita of the total population:

Comparison of wealth with school expenditures

Correlation of rank in per capita wealth in 1902 with—		
Expenditure for education per capita of total population	1900	0.7801
Do	1910	.8212
Do	1920	.8032
Expenditure for education per capita of population 5–17, inclusive	1900	.8087
Do	1910	.8470
Do	1920	.8478
Correlation of rank in per capita wealth in 1912 with—		
Expenditure for education per capita of total population	1900	.8725
Do	1910	.8893
Do	1920	.7944
Expenditure for education per capita of population 5–17, inclusive	1900	.8535
Do	1910	.8537
Do	1920	.8454

[6] Monthly Labor Rev., Sept., 1923 (U. S. Dept. of Labor).

Correlation of rank in per capita wealth in 1922 with—		
Expenditure for education per capita of total population	1900	0.8485
Do	1910	.8769
Do	1920	.8454
Expenditure for education per capita of population 5–17, inclusive	1900	.8470
Do	1910	.8683
Do	1920	.9014

Not only does the educational improvement of the individual worker tend toward the increase of national wealth by increasing his personal efficiency in the particular place he fills, but many workers are enabled by their special technical knowledge to invent more efficient and therefore more profitable ways of doing work, new machinery to replace the more expensive hand labor, and more systematic organization to reduce the economic waste.

All these things tend to increase the amount of wealth within the State. They are usually, at least indirectly, the results of education, but it is impossible even to approximate their relative value. These advantages may well be considered as gains from educational expenditure over and above the actual increase in wealth which the study shows to be apparently due to the educational expenditures by the State.

Chapter IV

EDUCATION AND ILLITERACY

This study is concerned chiefly with the question of reduction in total and percentage of illiteracy as a possible effect of educational expenditure, and with the effect of illiteracy upon the financial standing of the State.

For the purpose of this study the figures of illiteracy from the United States Census are used.

In general the illiterate population as shown by the census figures should be understood as comprising only those persons who have had no education whatever, [and] signifies inability to write in any language, not necessarily English, regardless of ability to read.[1]

The population figures used in this chapter relate to the population 10 years of age and over and include only the continental United States.

[1] Fourteenth Census of U. S., 1920, vol. 2, p. 1145.

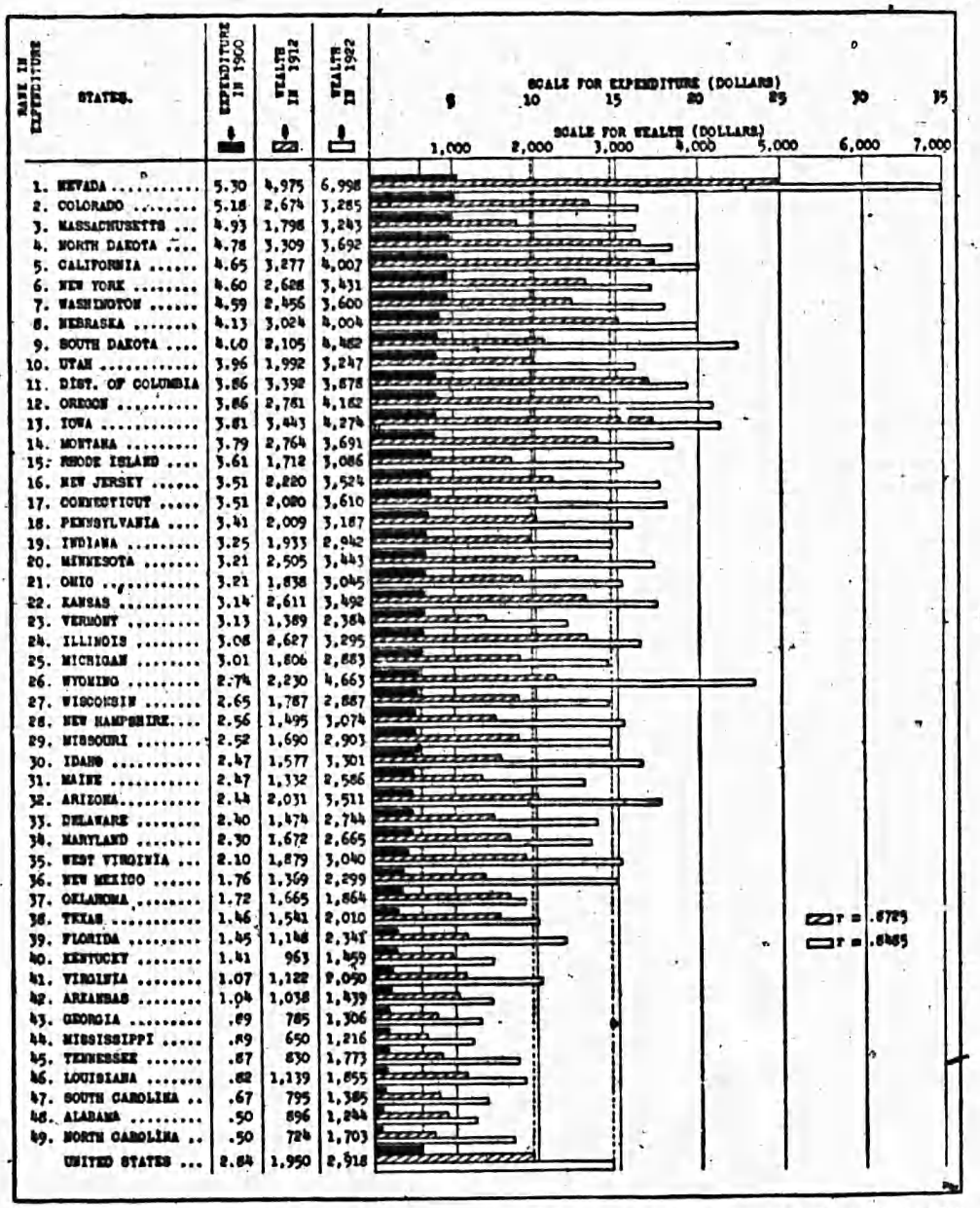


FIG. 4.—Expenditure for education in 1900 per capita of total population; accumulated wealth in 1912 per capita of total population; and accumulated wealth in 1922 per capita of total population

RANK IN EXPENDITURE	STATES.	EXPENDITURE IN 1900	WEALTH IN 1912	WEALTH IN 1922
		■	▨	□
1.	NEVADA	24.86	4,975	6,998
2.	COLORADO	23.53	2,674	3,285
3.	MASSACHUSETTS	21.55	1,798	3,243
4.	CALIFORNIA	19.61	3,277	4,007
5.	MONTANA	19.43	2,764	3,691
6.	NEW YORK	18.71	2,628	3,431
7.	DIST. OF COLUMBIA	17.36	3,392	3,878
8.	NORTH DAKOTA	16.54	3,309	3,692
9.	WASHINGTON	16.53	2,456	3,600
10.	RHODE ISLAND	15.36	1,712	3,086
11.	CONNECTICUT	14.92	2,020	3,610
12.	OREGON	14.30	2,781	4,182
13.	NEBRASKA	13.68	3,024	4,004
14.	SOUTH DAKOTA	13.59	2,105	4,482
15.	ILLINOIS	13.03	2,621	3,295
16.	WYOMING	12.84	2,230	4,563
17.	NEW JERSEY	12.52	2,220	3,524
18.	VERMONT	12.48	1,389	2,384
19.	PENNSYLVANIA	12.21	2,009	3,187
20.	IOWA	12.04	3,443	4,274
21.	UTAH	11.95	1,992	3,247
22.	NEW HAMPSHIRE	11.56	1,495	3,074
23.	OHIO	11.30	1,838	3,045
24.	INDIANA	11.02	1,933	2,982
25.	MINNESOTA	10.11	2,505	3,443
26.	MAINE	10.02	1,332	2,586
27.	WEST VIRGINIA	9.97	1,879	3,040
28.	KANSAS	9.95	2,611	3,492
29.	MICHIGAN	9.88	1,806	2,883
30.	ARIZONA	9.59	2,031	3,511
31.	IDAHO	9.14	1,577	3,301
32.	WISCONSIN	8.88	1,787	2,887
33.	MARYLAND	8.43	1,678	2,665
34.	MISSOURI	8.09	1,690	2,903
35.	NEW MEXICO	6.26	1,369	2,299
36.	OKLAHOMA	5.71	1,665	1,864
37.	DELAWARE	5.69	1,474	2,744
38.	FLORIDA	4.36	1,148	2,341
39.	TEXAS	4.18	1,541	2,010
40.	KENTUCKY	3.93	963	1,459
41.	VIRGINIA	3.15	1,122	2,050
42.	ARKANSAS	2.93	1,038	1,439
43.	TENNESSEE	2.53	830	1,773
44.	GEORGIA	2.52	785	1,306
45.	LOUISIANA	2.41	1,139	1,855
46.	MISSISSIPPI	2.34	650	1,216
47.	SOUTH CAROLINA	1.80	795	1,385
48.	ALABAMA	1.42	896	1,244
49.	NORTH CAROLINA	1.39	724	1,703
	UNITED STATES	9.58	1,950	2,918

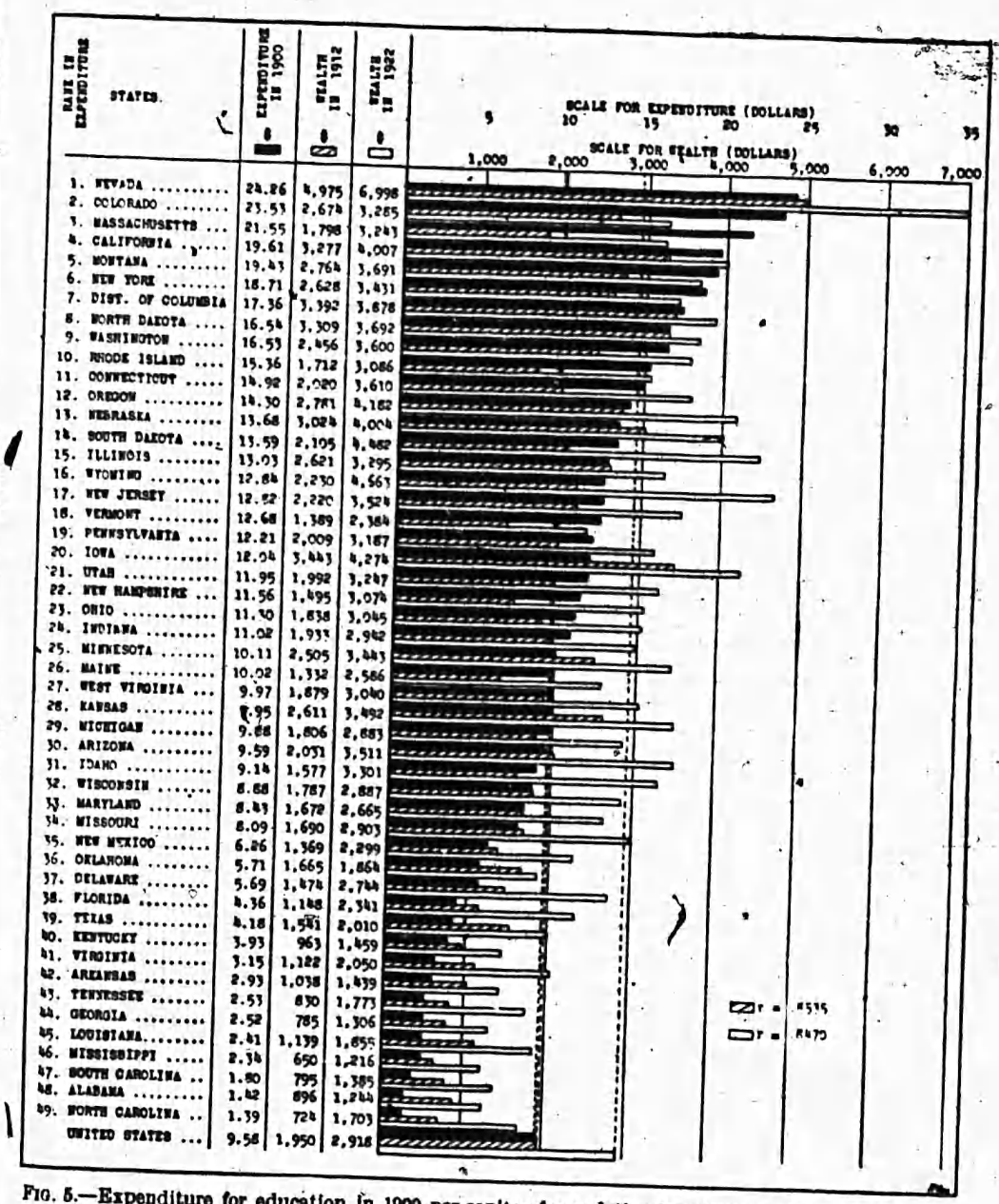


FIG. 5.—Expenditure for education in 1900 per capita of population 5 to 17 years of age; accumulated wealth in 1912 per capita of total population; and accumulated wealth in 1922 per capita of total population

TABLE 5.—*Number of illiterates*

States	Total population 10 years of age and over			Number of illiterates 10 years of age and over			Per cent of illiterates in total population, 10 years and over			Rank in total population			Rank in total number illiterates			Rank in percentage of illiteracy		
	1900	1910	1920	1900	1910	1920	1900	1910	1920	1900	1910	1920	1900	1910	1920	1900	1910	1920
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Continental United States	57,949,824	71,580,270	82,739,315	6,180,069	5,516,163	4,931,905	10.66	7.71	5.96									
Alabama	1,304,703	1,541,573	1,730,421	443,590	352,710	278,082	34.00	22.88	16.07	19	19	20	2	4	6	47	47	46
Arizona	94,147	157,659	255,461	27,307	32,963	39,131	29.01	20.90	15.32	47	47	46	34	31	29	43	45	44
Arkansas	934,332	1,134,087	1,302,905	190,655	142,954	121,837	20.41	12.61	9.35	25	25	25	13	14	17	38	38	38
California	1,222,111	2,007,698	2,870,855	58,959	74,902	95,592	4.82	3.73	3.33	20	11	8	26	20	18	16	17	22
Colorado	425,424	640,846	747,485	17,779	23,780	24,208	4.18	3.71	3.24	32	32	33	38	35	32	10	16	20
Connecticut	730,454	901,026	1,087,797	42,973	53,665	67,265	5.88	5.96	6.18	28	31	29	29	27	23	23	30	33
Delaware	145,500	163,080	178,930	17,531	13,240	10,508	12.05	8.12	5.87	44	46	47	39	41	40	33	34	31
District of Columbia	231,837	279,088	377,295	20,028	13,812	10,509	8.64	4.95	2.79	40	42	40	36	40	39	30	24	15
Florida	385,490	564,722	751,787	84,285	77,816	71,811	21.86	13.78	9.55	34	34	32	21	19	21	40	40	39
Georgia	1,577,334	1,885,111	2,150,230	480,420	389,775	328,838	30.46	20.68	15.29	12	12	12	1	2	2	44	44	43
Idaho	119,837	249,018	326,051	5,505	5,453	4,924	4.59	2.19	1.51	46	44	43	47	47	47	13	5	4
Illinois	3,727,745	4,493,734	5,184,943	157,958	168,294	173,987	4.24	3.75	3.36	3	3	3	14	13	12	11	19	23
Indiana	1,968,215	2,160,405	2,356,214	90,539	66,213	52,034	4.60	3.07	2.21	8	9	11	19	25	26	14	10	12
Iowa	1,711,789	1,760,286	1,913,155	40,172	29,889	20,680	2.35	1.70	1.08	10	14	14	30	32	34	2	1	1
Kansas	1,126,033	1,321,562	1,396,725	32,513	28,968	22,821	2.89	2.19	1.63	21	21	22	31	33	33	3	6	5
Kentucky	1,589,685	1,722,644	1,837,434	262,954	208,084	155,014	16.54	12.08	8.44	11	15	17	12	12	13	37	37	37
Louisiana	990,364	1,213,576	1,366,666	381,145	352,179	299,092	38.49	29.02	21.89	23	23	23	4	5	4	49	49	49
Maine	565,440	603,893	621,233	29,060	24,554	20,240	5.14	4.07	3.26	30	33	35	32	34	35	18	20	21
Maryland	920,715	1,023,950	1,158,953	101,947	73,397	64,434	11.07	7.17	5.56	26	27	27	18	23	24	31	32	30
Massachusetts	2,267,048	2,742,684	3,106,769	134,043	141,541	146,607	5.91	5.16	4.72	6	6	6	16	15	14	24	25	27
Michigan	1,896,265	2,236,252	2,895,606	80,482	74,800	88,046	4.24	3.36	3.04	9	8	7	22	22	19	12	15	18
Minnesota	1,305,657	1,628,635	1,877,132	52,946	49,336	34,487	4.06	3.03	1.84	18	16	15	27	28	30	9	9	8
Mississippi	1,098,891	1,293,180	1,538,612	351,461	290,235	229,734	31.98	22.44	17.16	22	22	24	5	7	8	45	46	47
Missouri	2,371,865	2,594,600	2,737,771	152,844	111,116	83,403	6.44	4.28	3.05	5	7	9	15	18	20	28	21	19
Montana	191,596	303,551	421,443	11,675	14,457	9,544	6.09	4.76	2.27	43	40	39	44	39	42	25	23	13
Nebraska	799,755	924,032	1,012,552	17,997	18,009	13,784	2.26	1.95	1.36	27	29	31	37	37	38	1	3	2
Nevada	34,959	69,822	63,905	4,645	4,702	3,802	13.29	6.73	5.95	49	49	49	48	48	48	35	31	32

New Hampshire	337,803	354,118	361,930	21,075	16,386	13,788	6.24	4.63	4.36	36	39	41	35	38	37	27	22	25
New Jersey	1,480,498	2,027,946	2,494,246	86,658	113,502	127,661	5.85	5.60	5.12	13	10	10	20	17	16	22	27	29
New Mexico	141,282	240,990	267,595	46,971	48,697	41,637	33.25	20.21	15.56	45	45	45	28	29	28	46	43	45
New York	5,801,682	7,410,819	8,402,786	318,100	406,020	425,022	5.48	5.48	5.06	1	1	1	7	1	1	19	26	28
North Carolina	1,346,734	1,578,595	1,844,673	386,251	291,497	241,603	28.68	18.47	13.10	17	18	16	3	6	7	42	42	42
North Dakota	229,161	424,730	470,210	12,719	13,070	9,937	5.55	3.08	2.11	41	38	38	43	42	41	20	11	11
Ohio	3,289,921	3,848,747	4,624,456	131,541	124,774	131,006	4.00	3.24	2.83	4	4	4	17	16	15	8	13	16
Oklahoma	561,379	1,197,476	1,513,951	67,826	67,567	56,864	12.08	5.63	3.76	31	24	21	25	24	25	34	28	24
Oregon	328,799	555,631	638,987	10,686	10,504	9,317	3.25	1.89	1.46	37	35	34	45	45	43	6	2	3
Pennsylvania	4,885,379	6,007,750	6,769,322	299,376	354,290	312,699	6.13	5.90	4.62	2	2	2	11	3	3	26	29	26
Rhode Island	344,824	440,065	483,788	29,004	33,854	31,312	8.41	7.69	6.47	35	37	36	33	30	31	29	33	35
South Carolina	942,402	1,078,161	1,219,316	338,659	276,980	220,667	35.94	25.69	18.10	24	26	26	6	9	9	48	48	48
South Dakota	294,704	443,466	482,195	14,832	12,750	8,109	5.04	2.88	1.68	38	36	37	41	43	45	17	8	7
Tennessee	1,480,948	1,621,179	1,770,762	306,930	221,071	182,629	20.73	13.64	10.31	14	17	18	10	11	11	39	39	40
Texas	2,163,913	2,848,904	3,556,614	314,018	282,904	295,844	14.51	9.93	8.32	7	5	5	8	5	5	36	36	36
Utah	196,769	274,778	331,530	6,141	6,821	6,264	3.12	2.48	1.89	42	43	42	46	46	46	5	7	9
Vermont	278,943	289,128	284,472	16,247	10,806	8,488	5.83	3.74	2.98	39	41	44	40	44	44	21	18	17
Virginia	1,364,501	1,536,297	1,748,868	312,120	232,911	195,159	22.87	15.16	11.16	16	20	19	9	10	10	41	41	41
Washington	408,437	933,556	1,101,929	12,740	18,416	18,526	3.12	1.97	1.68	33	[illegible]	28	42	36	36	4	4	6
West Virginia	701,646	903,822	1,083,395	80,105	74,866	69,413	11.42	8.28	6.41	29	30	30	23	21	22	32	35	34
Wisconsin	1,561,156	1,829,811	2,069,567	73,779	57,769	50,397	4.73	3.16	2.44	13	13	13	24	26	27	15	12	14
Wyoming	72,062	117,585	150,993	2,878	3,874	3,149	3.99	3.30	2.09	48	48	48	49	49	49	7	14	10

That these illiteracy figures are conservative is indicated by the results of the mental tests given men at the Army training camps.

Of the 1,566,011 men 25.3 per cent were unable to "read and understand newspapers and write letters home," and were given the beta examination for illiterates. An additional 5.7 per cent, after failing the alpha examination for illiterates, also were given the beta examination. It is estimated that more than half of this 31 per cent were native-born Americans.[8]

As given by the Bureau of the Census, the percentage of illiteracy was 8.42 per cent in 1910 and 6.98 per cent in 1920 for males 21 years of age and over, this lower percentage being, at least partially, due to the lower standards as compared to those of the Army draft examinations.

Expenditures for education and illiteracy

Correlation of rank in per cent of illiteracy in 1900 with—		
Expenditure for education per capita of total population	1900	0.7158
Do	1910	.7103
Do	1920	.6835
Expenditure for education per capita of population 5–17, inclusive	1900	.6010
Do	1910	.6041
Do	1920	.5932
Correlation of rank in per cent of illiteracy in 1910 with—		
Expenditure for education per capita of total population	1900	.7509
Do	1910	.6741
Do	1920	.7773
Expenditure for education per capita of population 5–17, inclusive	1900	.6807
Do	1910	.6764
Do	1920	.6729
Correlation of rank in per cent of illiteracy in 1920 with—		
Expenditure for education per capita of total population	1900	.7043
Do	1910	.7368
Do	1920	.7381
Expenditure for education per capita of population 5–17, inclusive	1900	.7003
Do	1910	.7015
Do	1920	.7347

The correlations between the rankings of the States in expenditure for education and the ranking in per cent of illiteracy are given here. The rankings for percentage of illiteracy are so arranged that the State with the lowest per cent of illiterates ranks first and the State with the largest per cent ranks forty-ninth.

Because of the reversal of the rankings in per cent of illiteracy, the foregoing correlations are really inverse and show the tendency toward a general reduction in percentage of illiteracy from decade to decade, as well as pointing out that the States spending more for education have a lower percentage of illiteracy. It is more easy to understand the correlations if they are considered as between expenditure for education and percentage of literacy in the State.

[8] Memoirs of the National Academy of Sciences, vol. 15, p. 100.

There was a decrease in per cent of illiterates in the whole United States of 27.74 per cent from 1900 to 1910 and of 32.04 per cent from 1910 to 1920; thus bearing out the indications of the correlations.

The "cycle effect" is apparent in the study of illiteracy as well as in the study of the per capita wealth and income, showing that people who have received some education are inclined to improve the quality and quantity of instruction available.

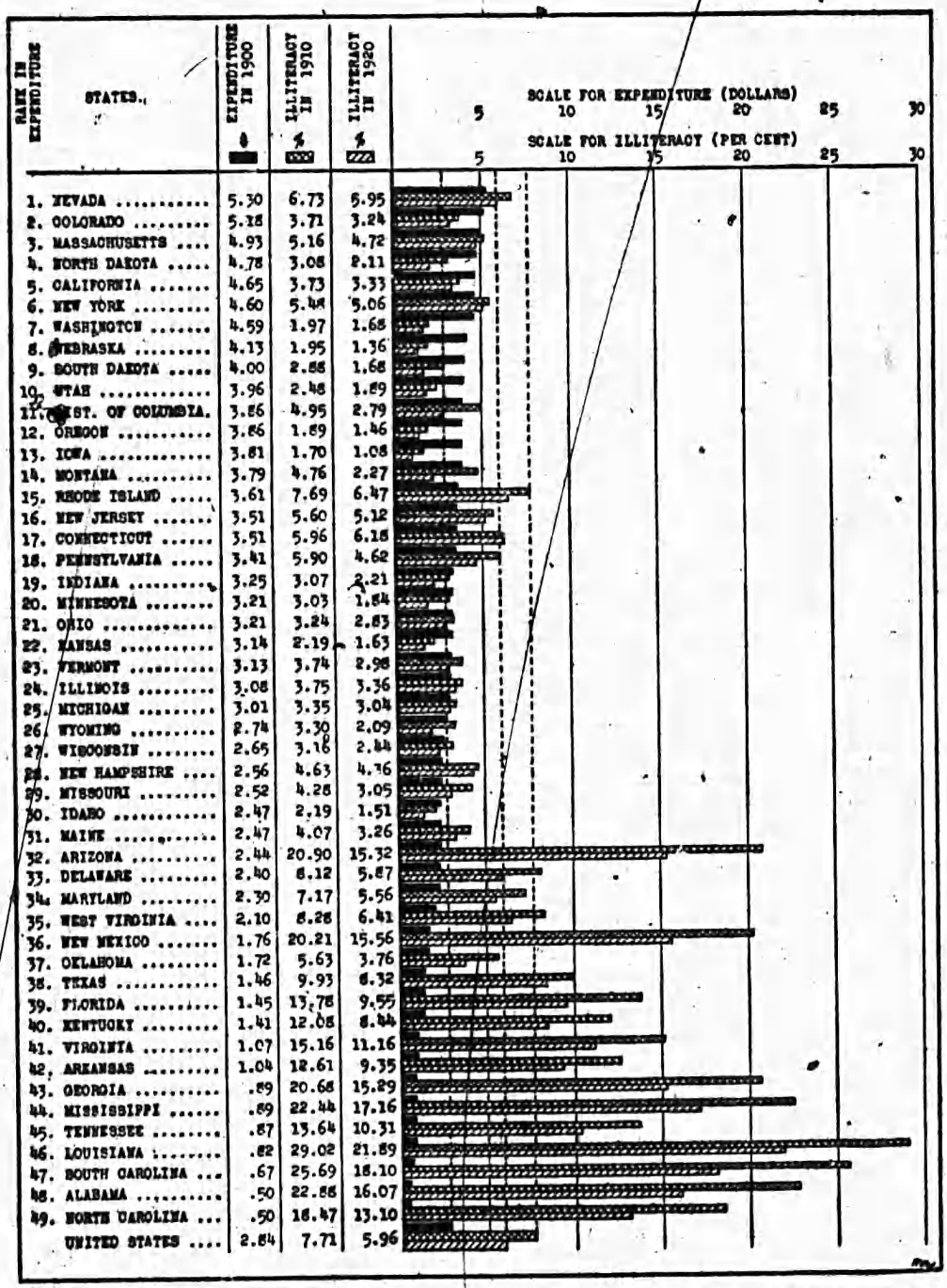
Of the 4,931,905 illiterates 10 years of age and over in 1920, there were 3,084,733 (62.5 per cent) native-born who have been entitled to school privileges. Add to these the foreign-born white illiterates (1,763,740), and consider also that many of these, in the 21 years of age and over group, probably arrived in this country while of school age. Without including the 61,730 illiterate Indians, it is a safe estimate that probably 3,250,000 of the illiterate population, or more than three-fifths, have been included in the school population. The new immigration laws will tend to reduce the incoming supply of foreign-born illiterates, but the illiterates already here must be educated by the schools in the United States if educated at all.

Figure 6 shows the relationship between the expenditure for education in 1900 and percentage of illiteracy in 1910 and 1920. The average for the 25 States spending more than the mean for education is $3.81. The mean per cent of illiteracy for this same group is 4.23 in 1910 and 3.60 in 1920. The average expenditure for the 24 States below the mean is $1.41, while the mean of illiteracy is 13.29 per cent in 1910 and 9.83 per cent in 1920. This demonstrates very clearly the general relationship between the educational expenditure and illiteracy.

The relationship between expenditures for education in 1910 and illiteracy has already been discussed in the introductory chapter of this bulletin.

The illiterate individual finds that many jobs are closed to him because they require ability to read and write; consequently he is restricted to low-paid labor, frequently unskilled, a low standard of living, and few advantages. In hard times the low-paid man is usually laid off first because he is most easily replaced when good times return.

The community as a whole is seriously interested in the amount of illiteracy. The mere fact that a man may not be a citizen is not sufficient to justify the failure to give him education in this land of free schools. Low earning capacity, low standards of living, and low average wealth all go hand in hand with illiteracy; thus the State is probably more concerned with the economic aspect of illiteracy than with the personal inconvenience of the illiterate. As a purely business proposition expenditures properly applied to the reduction of illiteracy are profitable to the State as a whole and thus to most of its population as individuals.



RANK IN EXPENDITURE	STATES	EXPENDITURE IN 1900 $	ILLITERACY IN 1910 %	ILLITERACY IN 1920 %
1.	NEVADA	5.30	6.73	5.95
2.	COLORADO	5.18	3.71	3.24
3.	MASSACHUSETTS	4.93	5.16	4.72
4.	NORTH DAKOTA	4.78	3.08	2.11
5.	CALIFORNIA	4.65	3.73	3.33
6.	NEW YORK	4.60	5.44	5.06
7.	WASHINGTON	4.59	1.97	1.68
8.	NEBRASKA	4.13	1.95	1.36
9.	SOUTH DAKOTA	4.00	2.88	1.68
10.	UTAH	3.96	2.48	1.89
11.	DIST. OF COLUMBIA.	3.86	4.95	2.79
12.	OREGON	3.86	1.89	1.46
13.	IOWA	3.81	1.70	1.08
14.	MONTANA	3.79	4.76	2.27
15.	RHODE ISLAND	3.61	7.69	6.47
16.	NEW JERSEY	3.51	5.60	5.12
17.	CONNECTICUT	3.51	5.96	6.18
18.	PENNSYLVANIA	3.41	5.90	4.62
19.	INDIANA	3.25	3.07	2.21
20.	MINNESOTA	3.21	3.03	1.84
21.	OHIO	3.21	3.24	2.83
22.	KANSAS	3.14	2.19	1.63
23.	VERMONT	3.13	3.74	2.98
24.	ILLINOIS	3.08	3.75	3.36
25.	MICHIGAN	3.01	3.35	3.04
26.	WYOMING	2.74	3.30	2.09
27.	WISCONSIN	2.65	3.16	2.44
28.	NEW HAMPSHIRE	2.56	4.63	4.76
29.	MISSOURI	2.52	4.28	3.05
30.	IDAHO	2.47	2.19	1.51
31.	MAINE	2.47	4.07	3.26
32.	ARIZONA	2.44	20.90	15.32
33.	DELAWARE	2.40	8.12	5.87
34.	MARYLAND	2.30	7.17	5.56
35.	WEST VIRGINIA	2.10	8.28	6.41
36.	NEW MEXICO	1.76	20.21	15.56
37.	OKLAHOMA	1.72	5.63	3.76
38.	TEXAS	1.46	9.93	6.32
39.	FLORIDA	1.45	13.78	9.55
40.	KENTUCKY	1.41	12.08	8.44
41.	VIRGINIA	1.07	15.16	11.16
42.	ARKANSAS	1.04	12.61	9.35
43.	GEORGIA	.89	20.68	15.29
44.	MISSISSIPPI	.89	22.44	17.16
45.	TENNESSEE	.87	13.64	10.31
46.	LOUISIANA	.82	29.02	21.89
47.	SOUTH CAROLINA	.67	25.69	18.10
48.	ALABAMA	.50	22.88	16.07
49.	NORTH CAROLINA	.50	18.47	13.10
	UNITED STATES	2.84	7.71	5.96

FIG. 6.—Expenditure for education in 1900 per capita of total population; per cent of illiteracy in 1910 in population 10 years of age or more; and per cent of illiteracy in 1920 in population 10 years of age or more

A low standard of living in one branch of industry tends to bring down the standard of living in all other branches. Organized labor recognizes the value of education and the free public school; the American Federation of Labor is very definite in its declaration "that organized labor has always been the avowed enemy of illiteracy, whether among immigrants or our own people."[1]

There are many of low intelligence among the illiterate population, but it does not follow that a man or woman is illiterate because he or she is mentally incapable of learning. Lack of education is more often a lack of opportunity than lack of capability. If opportunity and environment are largely responsible for the development of native ability and capacity, then it would appear that the duty of the State is to supply, in so far as possible, greater opportunity for development.

More than half the total number of illiterates in 1920 in each of 25 States were foreign-born white illiterates; in each of 11 States, negroes; and in each of 7 States more than half were native-born white illiterates.

A comparison of illiteracy with wealth gives correlations between the ranking in illiteracy in 1900 and wealth in 1902 of 0.5356, with wealth in 1912 of 0.6943, and with wealth in 1922 of 0.6886. The actual figures show that the States below the average in percentage of illiteracy in 1900 were usually higher in wealth later on; to this statement there were 7 exceptions in 1902, 11 in 1912, and 5 in 1922. Of the States having more than the average percentage of illiteracy, Nevada and Arizona are above the average for the three periods, and New Mexico above for the first two; all other States are below the mean of per capita wealth for the United States.

Figure 7 makes the comparisons for percentage of illiteracy in 1910 with wealth per capita in 1912 and 1922. In 1912 there were 11 States below average wealth, and in 1922 6 of the group having less than average wealth had below average in percentage of illiteracy in 1910. Of the high percentage illiteracy group, only Arizona had more than the average wealth in 1912, while Rhode Island and West Virginia were also above the mean in 1922. All other States in this illiteracy group were below the mean for both periods.

Although a State may have a low percentage of illiteracy and still not be among the highest in financial standing, those States which have a large percentage of illiteracy are usually the States with lower incomes and less wealth per capita than the others. A low percentage of illiteracy may not of itself cause the State to rank high financially, but illiteracy usually is a contributing cause in keeping down the income and wealth of the State and its people by reducing earning power.

[1] "Education for all," American Federation of Labor, Washington, D. C., Apr., 1922.

RANK IN ILLITERACY	STATES.	ILLITERACY IN 1910 %	WEALTH IN 1912 $	WEALTH IN 1922 $
1.	IOWA	1.70	3,443	4,274
2.	OREGON	1.89	2,781	4,162
3.	NEBRASKA	1.95	3,024	4,004
4.	WASHINGTON	1.97	2,456	3,600
5.	IDAHO	2.19	1,577	3,301
6.	KANSAS	2.19	2,611	3,492
7.	UTAH	2.48	1,992	3,247
8.	SOUTH DAKOTA	2.68	2,105	4,482
9.	MINNESOTA	3.03	2,505	3,443
10.	INDIANA	3.07	1,933	2,942
11.	NORTH DAKOTA	3.08	3,309	3,692
12.	WISCONSIN	3.16	1,787	2,887
13.	OHIO	3.24	1,838	3,045
14.	WYOMING	3.30	2,230	4,663
15.	MICHIGAN	3.35	1,806	2,883
16.	COLORADO	3.71	2,674	3,285
17.	CALIFORNIA	3.73	3,277	4,007
18.	VERMONT	3.74	1,389	2,384
19.	ILLINOIS	3.75	2,627	3,295
20.	MAINE	4.07	1,332	2,586
21.	MISSOURI	4.28	1,690	2,903
22.	NEW HAMPSHIRE	4.63	1,495	3,074
23.	MONTANA	4.76	2,764	3,691
24.	DIST. OF COLUMBIA.	4.95	3,392	3,878
25.	MASSACHUSETTS	5.16	1,798	3,243
26.	NEW YORK	5.08	2,628	3,431
27.	NEW JERSEY	5.60	2,220	3,524
28.	OKLAHOMA	5.63	1,665	1,864
29.	PENNSYLVANIA	5.90	2,009	3,187
30.	CONNECTICUT	5.96	2,020	3,610
31.	NEVADA	6.73	4,975	6,998
32.	MARYLAND	7.17	1,672	2,665
33.	RHODE ISLAND	7.69	1,712	3,086
34.	DELAWARE	8.12	1,474	2,744
35.	WEST VIRGINIA	8.28	1,879	3,040
36.	TEXAS	9.93	1,541	2,010
37.	KENTUCKY	12.08	963	1,459
38.	ARKANSAS	12.61	1,038	1,439
39.	TENNESSEE	13.64	830	1,773
40.	FLORIDA	13.78	1,148	2,341
41.	VIRGINIA	15.18	1,122	2,050
42.	NORTH CAROLINA	18.47	724	1,703
43.	NEW MEXICO	20.21	1,369	2,299
44.	GEORGIA	20.68	785	1,306
45.	ARIZONA	20.90	2,031	3,511
46.	MISSISSIPPI	22.44	650	1,216
47.	ALABAMA	22.68	896	1,244
48.	SOUTH CAROLINA	25.69	795	1,385
49.	LOUISIANA	29.02	1,139	1,855
	UNITED STATES	7.71	1,950	2,918

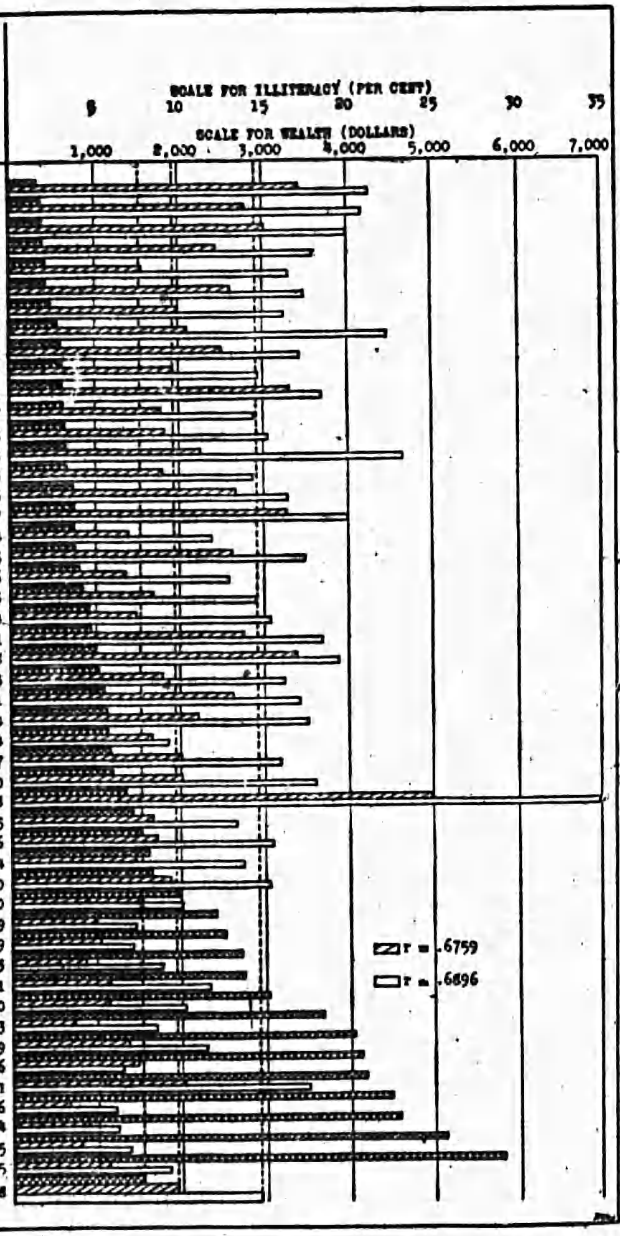


FIG. 7.—Per cent of illiteracy in 1910 in the population 10 years of age or more; accumulated wealth in 1912 per capita of total population; and accumulated wealth in 1922 per capita of total population

Chapter V

SUMMARY

This study is not an attempt to prove that it does or does not pay to spend money for education, but is rather an attempt to find out if it does pay.

Although the study is based on money value, no effort is made to fix a definite "dollar value" on the returns. All figures are comparative and calculations are made for groups and averages.

Examination of figures for educational expenditure and income per capita shows that, in general, those States having the highest per capita incomes are the ones which spent most per capita for education 10 or 20 years before. Evidently this previous educational expenditure had some effect upon the per capita income.

State wealth does not respond so quickly to the influence of education; neither is the effect so pronounced as in income. Nevertheless, the correlations of rankings and comparisons of actual figures show the same general result as with income—the States which have been spending most for education are the ones which show the largest per capita wealth later. The converse is also marked by few exceptions; States spending less for education were lower in per capita wealth 12 and 22 years later.

Illiteracy is decreasing in the United States, although in 18 States the native born still furnish more than half of the illiterates within the State; in 7 of these the majority of the illiterates are native white.

States with higher expenditures per capita for education usually have less illiteracy, and States with lower per capita expenditure for education have higher percentages of illiteracy.

Higher per capita income and wealth are usually found in States with the lower percentages of illiteracy.

Education does not supply natural ability, but merely develops it. The educated man or woman has a wider field of opportunity and has a better chance than the untrained individual of equal ability. More people with education achieve success than do those without such training.

CONCLUSION

Notwithstanding obvious difficulties of proving such matters statistically, it seems clear that properly applied expenditure for education is profitable to the State, because it tends to increase income and wealth, aids in the decrease of illiteracy, and gives to the individual better opportunities for self-development and achievement, as well as a higher standard of living.

○