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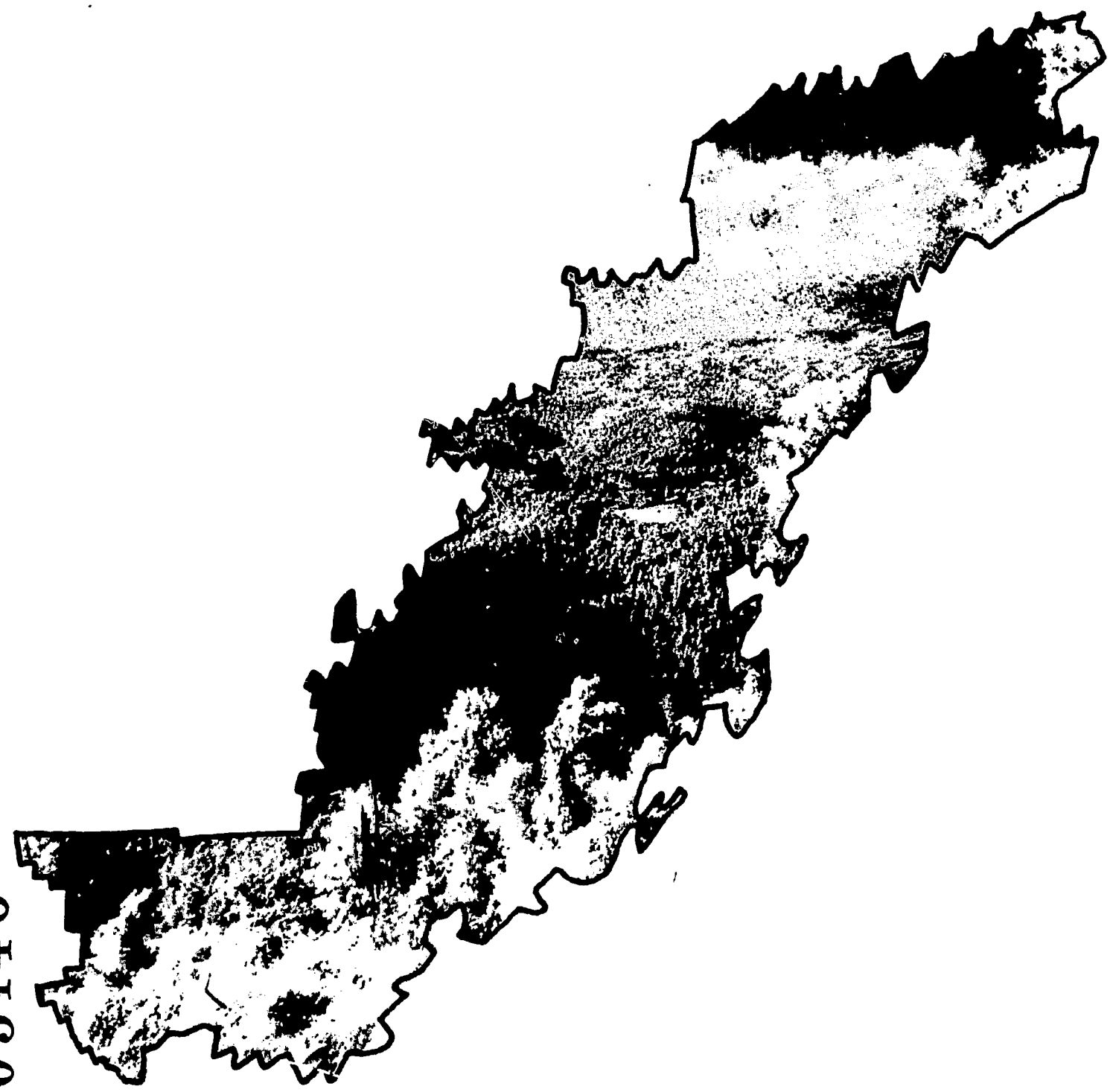
A general description is provided of the vocational education program within the secondary schools of predominately rural Appalachia, as well as an indication of where the vocational education program may be strengthened to make instructional offerings relevant to the jobs available to Appalachian secondary school students. Discussion includes data collection problems, manpower supply and demand, student enrollment, financial support and expenditures, employment opportunities, and manpower requirements by subregions for the period 1960-1975. Numerous data tables are broken down by regions, subregions, states, and vocational category. Among the conclusions are: (1) vocational education at the secondary level in Appalachia is inadequate in scope and needs strengthening by giving broader base of choice to high school students; (2) Federal funds support vocational education more outside of Appalachia than within; and (3) allocation of resources to job training should be developed and assistance provided to the states to aid in planning programs with relevance. (SW)

APPALACHIAN RESEARCH REPORT

RESEARCH REPORT NO. 10

THE STATUS OF SECONDARY VOCATIONAL EDUCATION IN APPALACHIA



EDUCATION ADVISORY COMMITTEE

The Appalachian Regional Commission

APPALACHIAN RESEARCH REPORT NO. 10

STATUS OF SECONDARY VOCATIONAL EDUCATION IN APPALACHIA

Reprint of Reports Prepared for the

Appalachian Regional Commission
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by

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THE STATUS OF VOCATIONAL EDUCATION AT THE SECONDARY SCHOOL LEVEL IN APPALACHIA

The purposes of this study are a) to provide a general description of the vocational education program within the secondary schools of Appalachia, and b) to indicate where the vocational education program may be strengthened to make the instructional offerings relevant to the jobs available to Appalachian secondary school students.

The Data Problems

The problems of securing relevant and accurate data to describe and evaluate vocational education are several, and have been encountered by many who attempt to evaluate vocational education programs. The National Advisory Council on Vocational Education points out "that we have found it impossible to determine to our full satisfaction what has occured under the (1963) Act." If this condition exists at the National level where data should be generally available, at least on a state-wide basis for national summarization, the problem is compounded many-fold in any effort to combine local school district and/or county data into State and Regional totals for Appalachia. There may be less reliable data systems for evaluating expenditures of over three-fourths of a billion dollars of Federal, State and Local funds, but if they exist, they are not obvious to an anxious observer. Despite the clear-cut responsibility of the Commissioner of Education[1] to develop an information system that can lead to a meaningful

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[1] The Bridge Between Man and His Work, Publication No. 1, Advisory Council on Vocational Education, U. S. Department of Health, Education, and Welfare, Office of Education, 1968, pp. 45-47.

reporting and evaluation system for vocational education, the system still does not exist. Further, despite the fact that the Vocational Education Act of 1963 was designed to view vocational education as a unified program instead of a number of separate programs (identified as vocational agriculture, home economics, trades and industries, distributive education, and so forth), these categories still prevail as strong and separate administrative units within the several State Departments of Education, and our data collection efforts revealed an astonishing lack of liaison and co-ordination between and among them.

But somehow life must go on: programs must be planned, manpower must be trained, resources must be allocated and decisions must be made on how to start <u>today</u> to provide vocational education experiences which will meet the manpower needs of <u>tomorrow</u>. Hopefully, the development of a data system needed to make choices wisely will be begun soon; if the present study leads to this beginning, the data frustrations experienced will have been worthwhile. For the moment, however, we have separated our data problems into two areas: manpower supply and manpower demand.

Manpower Supply

The supply of manpower with which this study is concerned is that which emerges from the secondary schools. Two appropriate supply questions are: what is being taught to the 360,000 children enrolled in vocational education courses in the secondary schools of Appalachia? Is it occupationally relevant?

Whether one approaches these questions from the traditional "vocational categories" approach, or from the more recent "target group" approach to determine what is actually being taught and its relevance for gainful employment, the questions are literally impossible to answer specifically. For example, one of the vocational categories is agriculture. Within this broad grouping one might expect to find Production Agriculture being taught, but would not, ordinarily, expect to find a course in Automobile Mechanics. However, in some cases Automobile Mechanics is found in the Agriculture category, and in others it is found in Trades and Industry. So, data reporting enrollments in any one of the several vocational categories remain vague as to what is actually being taught. The sad fact is that no hard and fast definitions are followed. Hence no totally reliable information is available to determine what the Federal, State and Local governments are teaching with the funds spent for vocational education in the Nation's secondary schools.

Nor is the "target group" approach to program reporting, instituted by the Vocational Education Act of 1963, much better. In an effort to encourage new and relevant programs, the Congress provided for the transfer of funds appropriated under the George-Barden and other previous vocational education programs, from limited program categories to other programs, such as office occupations, with the approval of the Commissioner of Education. The 1963 Act also enables funds appropriated to be spent and reported on a "target group" (i.e., secondary, post-secondary, adult, and special needs) basis. This change worsened the situation by providing no

indication of what was being taught and therefore of its occupational relevance. The support of vocational training for specific target groups in occupational areas of declining relevance for full-time employment is still present with no way of identifying the problems.

While "target groups" represent an improvement in one respect, in the concept of federal support for vocational training, it is insufficient for program evaluation. What is needed in addition to target group reporting, is data relevant to occupational skills for developing a job-relevant curriculum in a dynamic economy. Unless one uses the "category" reporting classification, however, he has no way of getting information at the regional level.

Manpower Demand

Data on the demand for manpower, suitable for curriculum planning, is likewise almost non-existent. It is true that the Bureau of the Census and the Bureau of Labor Statistics make interesting and meaningful manpower projections, but the utility of these projections for relevant curriculum planning is near zero. Projections are made by broad Industry Groups and often obscure specific jobs. More importantly, these projections are made in terms of national or large regional areas and bear little relevance to local district decisions necessary for curriculum planning. At times, specific projections are made for particular occupational groups, such as Engineering, or Health Personnel. These,

do not generally find their way to local schools. Hence, secondary school curriculum planners have had little or no feedback. They don't know, and can't find out about changes in occupations that reflect new manpower demands. The lack of information, plus the administrative structure that has developed about the "vocational categories" mentioned earlier, has tended to create great difficulties in planning vocational education curriculum. To overcome these difficulties, the Bureau of Employment Security and the Office of Education for some time have been trying to relate the broad industry and geographical employment projections made by the Bureau of the Census and the Bureau of Labor Statistics to meaningful curriculum planning. This effort has progressed far enough to be available (in draft form) for the purpose of this study. So far as can be determined, this is the first study to make use of the results of this joint Office of Education-Bureau of Employment Security (OE-BES) endeavor, and to use the result with specific employment projections. How this was done is explained in the following section.

Explanation of the Methodology for Getting Demand Projections:

The U.S. Army Corps of Engineers, Office of Appalachian Studies, submitted to the Commission, as part of a Plan for the Development of Water Resources in Appalachia, several economic data series with projections through the year 2020.[2] One of these data series was the projection of

[2] Exhibit 19 to Plan of Survey for Development of Water Resources in Appalachia. Economic Base Study Information. U.S. Army Corps of Engineers, Office of Appalachian Studies (APS), P.O. Box 1159, Cincinati, Ohio 45201. January, 1967.

employment, by major industry group, by economic sub-region, where the sub-region is a viable focus for economic activity including commuting patterns for employment.

Hence, Appalachian sub-region 33, contained wholly in Maryland, is in an employment market known as "OBE Sub-region 5". Employment projections for OBE sub-region 5 include Appalachian Maryland, which consists of the counties of Garrett, Washington, and Alleghany, and the counties of Bedford, Blair, Fulton, Huntington, Juanita, Mifflin, and Perry counties in Appalachian Pennsylvania; Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, York counties in non-Appalachian Pennsylvania; and Berkley, Grant, Hampshire, Jefferson, Mineral, and Morgan counties in West Virginia.

Employment level in 1975 for OBE-Sub-regions is a linear approximation between 1960 employment and projected employment in 1980.

Employment, OBE Subregion 5

Industry	1960	Estimated 1980	Estimated 1975
TOTAL	640,587	852,000	799,148
Agriculture	41,781	28,000	31,445
Mining	5,513	5,000	5,128
Construction	38,055	46,000	44,014
Manufacturing	216,211	272,000	258,053

Transportation	55,549	48,000	49,887
Trade	108,478	162,000	148,620
Finance	17,033	34,000	29,759
Services	111,420	178,000	161,355
Public Administ.	46,547	79,000	70,887

While these employment projections are interesting and useful for broad regional planning for economic policy, they tell us absolutely nothing about the kinds of jobs that will be available. To help answer this question we turn to a publication issued by the Bureau of Labor Statistics entitled Tomorrow's Manpower Needs.[3] The percent distribution of employment in 1960 and the projected percent distribution of employment in 1975 by job title can be found between pages 955 and 1109 in that publication. If these percentages are applied to the total employment in each industry as projected by OBE Sub-region, and as shown above, then the aggregate employment by job title in each industry can be found. We thus arrive at a projected employment for 1975 by job title.

However, job-title employment projections, while more helpful than overall industry employment projections, need to be related to curriculum planning areas. To achieve this relationship, we do two things:

(a) Consult the Bureau of Employment Security (BES) "Conversion Table",[4] where every Bureau of Labor Statistics (BLS) job title, as

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[3] U.S. Department of Labor, Bureau of Labor Statistics (Draft), no date.

[4] Conversion from BLS Occupation Group and Major Occupations to DOT Equivalent (Mimeograph) 12/28/67. Bureau of Employment Security, Department of Labor.

previously related to overall industry employment, is converted to an equivalent job title found in the Dictionary of Occupational Titles (DOT). When the DOT titles have been identified, we then:

(b) Consult the Occupational Cluster Reference Guide Conversion Table[5] which relates the DOT titles to Office of Education (OE) instructional program. This completes the relating of broad industry employment totals to vocational education curriculum categories as OE has defined the curriculum category.[6] Thus, the broad employment summations by industry, disaggregated by job titles, are then re-aggregated by curriculum categories for vocational education planners. On the average, local variations should not seriously erode the relative accuracy of the projections when they are re-aggregated in the final form of vocational education categories. Schematically, the projection technique used is as follows:

START
↓
EMPLOYMENT PROJECTIONS BY INDUSTRY
↓
APPLY PERCENT DISTRIBUTION OF EMPLOYMENT BY BLS JOB TITLE IN EACH INDUSTRY TO INDUSTRY TOTAL AND SUM FOR ALL JOB TITLES
↓
RELATE BLS JOB TITLES TO DOT JOB TITLES
↓
TRANSLATE DOT JOB TITLES TO OE INSTRUCTIONAL PROGRAMS
↓
AGGREGATE EMPLOYMENT IN EACH INSTRUCTIONAL PROGRAM--THAT IS, THE SEVEN VOCATIONAL EDUCATION CATEGORIES.

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[5] Bureau of Employment Security, Department of Labor (Mimeograph) no dates.

[6] See Standard Terminology for Instruction in Local and State School Systems, U.S. Department of Health, Education and Welfare, Office of Education, Washington, D.C., May, 1967 (Third Draft).

In the event a State does not define an instructional program as falling within the same vocational education category as the OE defines it, it is a simple matter to adjust the variations in definitions to conform to local usage. As long as the adjustment is made for both years--1960 and 1975--the patterns of curriculum change will emerge as local definitions want it to emerge and local administrative control directs. For example, if local curriculum practices give Agriculture control over Auto Mechanics as an instructional program rather than Trades & Industry as the OE defines the instructional program in Auto Mechanics training, then local authorities can respond by making the data changes in those two curriculum areas. The seven vocational education categories are defined so broadly that they fail to be mutually exclusive and are thus subject to such variation from OE definitions as local practices wish to make. For example, the Office of Education defines Agricultural Marketing as Instructional Program 04.08.01, which places this curriculum in the vocational category of Distribution; but in point of fact many local school boards turn this Instructional Program over to Agricultural Education. In a similar way one can find Quantity Food Occupations, Program 17.29, defined under the vocational category of Trades and Industry, when in reality this type of vocational preparation is done in many school systems by Home Economics personnel. The following table illustrates the data problem. The training of Ornamental Horticulturist is defined by the Office of Education as a Trades and Industry curriculum component, but at least in one State, this instruction is

provided by Vocational Agriculture. On the other hand, despite these ambiguities, the table also reveals that the dominant orientation, as measured by enrollment data, is still toward the historical mission of the "vocational categories" components - in this case Vocational Agriculture. Hence, one may surmise that, at least on the supply side of the manpower issue, the data which have been developed support a strong suspicion that the dominant instructional emphasis is still within the George-Barden meaning of the "vocational categories" terms. For his reason, as well as the quite pragmatic reason that nothing else is available, the "vocational categories" approach to grouping the supply and demand for manpower trained in the secondary school has been used.

TABLE 1

Student Enrollment in Instructional Programs under the Administrative Control of Vocational Agriculture 1965-1966

COURSE TITLE	NUMBER OF SCHOOLS (One Appalachian State)	ENROLLMENT (Number)	(Percent)
Agriculture I	484	16,534	89
Agriculture II	474	11,430	
Agriculture III	382	6,510	
Agriculture IV	308	4,610	
Ag. Construction	57	977	11
Ag. Machinery	65	1,366	
General Horticulture	31	554	
Ornamental Horticulture	28	661	
Forestry	16	450	
Crop & Soil Technology	11	149	
Livestock & Poultry	13	187	
Ag. Business	8	113	
Other Agriculture	3	34	
Total		43,575	100

Source: A State Department of Education Annual Report.

TABLE 2

Enrollments in Secondary Vocational Education Courses
by Grade level and Vocational
Category - 1965-1966

Grade Level	Total Enrollment	Enrollment in Voc. Ed.	Vocational Education Category						
			Agriculture	Distribution	Health	Home Economics	Office	Technical	Trades & Industry
	1,147,656	332,934	72,510	8,335	492	135,928	80,831	3,886	30,952
9	326,059	70,505	23,641	--	--	46,479	--	--	385
10	297,416	81,376	20,615	776	18	38,987	14,605	862	5,513
11	272,436	95,006	16,289	3,233	153	25,903	34,733	1,540	13,155
12	251,745	86,047	11,965	4,326	321	24,559	31,493	1,484	11,899

SOURCE: STATE DEPARTMENTS OF EDUCATION

Enrollments

Of the 1,147,656 students enrolled in secondary schools in grades 9 - 12 within Appalachia, only 332,934 are enrolled in vocational education courses. For all practical purposes one can say that, except for Agriculture and Home Economics, vocational education is non-existent below the 10th grade level within Appalachia. At the 10th grade level and through the 12th, the situation is better--but not much. Office Occupations which has ar enrollment of 14,605 at Grade 10, rises to 34,733 in Grade 11, and continues to maintain a relatively high enrollment at Grade 12. Enrollments in Distribution, Health Occupations, and Technical Education are obviously low. Even though enrollment in Trades & Industry tends to approach the national rate of 10 percent of all vocational enrollments, in 1975, 44 percent of all the jobs available in Appalachia will be in this category.

The reason enrollments in some vocational categories are low while they are high in others is simple: where enrollments are high, there are vocational education programs available; where enrollments are low, programs are not available. For example, enrollments in Health Occupations only average a little over one student per county. Consider the following data:

TABLE 3

Vocational Education Programs
Secondary Schools
Appalachia 1965-66

Vocational Category	Number of Programs
Agriculture	1,160
Distribution	306
Health Occupations	15
Home Economics	1,656
Office Education	1,301
Technical Education	69
Trades & Industry	913
Total	5,420

The inference is clear: where there are programs and attractive program options, students will enroll in vocational education; where there are no programs, obviously there can be no enrollments. There is no use decrying high enrollments in Agriculture and Home Economics as some tend to do. The data in Table 2, combined with that shown in Table 3 clearly show that when choices are introduced at the 10th grade level, high enrollments in Agriculture and Home Economics drop sharply. Home Economics and Agriculture dominate the vocational education picture in grades 7 - 9; however, introduction of different programs at grades 10 - 12, even though there are relatively few in number, attract an ever-increasing share of the enrollments. What seems to be needed is not a curtailment of the programs in Agriculture and Home Economics to achieve balance, but an enlargement of other programs that will give students a real vocational choice and work-training experience. The data in Table 3 gives an interesting insight into the educational opportunities available to our vocational education students in Appalachia. At best, it is meagre; at worst, it is perhaps better than nothing.

TABLE 4

Enrollments in Appalachia in Grades 9-12
by State and Vocational Category 1965-66

Appalachia	Secondary Enrollment Grades 9-12	VOCATIONAL CATEGORY								Vocational Education as Pct. of Secondary
		Agriculture	Distribution	Health	Home Econ.	Office	Technical	Trades & Industry	Total	
Total	1,143,656	72,510	8,335	492	135,928	80,831	3,886	30,952	332,934	
Percent		21.8	2.5	0.1	40.8	24.3	1.2	9.3	100.0	29.0
Alabama	135,212	13,299	807	276	19,987	3,206	70	3,457	41,102	30.4
	Percent	32.6	2.0	0.7	48.6	7.8	0.2	8.4	100.0	
Georgia	46,276	4,290	258	---	9,156	682	---	654	15,040	32.5
	Percent	28.5	1.7		60.9	4.5		4.3	100.0	
Kentucky	61,803	5,424	345	---	12,044	787	42	1,539	20,181	32.7
	Percent	26.9	1.7		59.7	3.9	0.2	7.6	100.0	
Maryland	13,271	596	86	---	774	2,701	165	884	5,206	39.2
	Percent	11.4	1.7		14.9	51.9	3.2	17.0	100.0	
Mississippi	29,336	4,428	102	---	6,694	---	29	624	11,877	40.5
	Percent	37.3	0.9		56.4		0.2	5.3	100.0	
New York	68,122	4,029	1,427	24	6,010	19,282	494	1,409	32,675	48.0
	Percent	12.3	4.3	0.1	18.4	59.0	1.5	4.3	100.0	
N. Carolina	55,597	8,784	1,466	---	12,143	---	---	2,395	24,788	44.6
	Percent	35.4	5.9		49.0			9.7	100.0	
Ohio	71,733	2,990	---	21	7,592	507	3	860	11,973	16.7
	Percent	25.0	---	0.2	63.4	4.2	0.0	7.2	100.0	
Pennsylvania	359,570	6,796	1,375	151	22,299	32,764	2,429	7,940	73,754	20.5
	Percent	9.2	1.8	0.2	30.3	44.4	3.3	10.7	100.0	
S. Carolina	39,595	4,479	528	---	5,060	1,791	75	1,580	13,513	34.1
	Percent	33.1	3.9		37.4	13.3	0.6	11.7	100.0	
Tennessee	107,740	9,178	619	---	18,287	413	211	4,630	33,338	30.9
	Percent	27.5	1.9		54.9	1.2	0.6	13.9	100.0	
Virginia	29,398	3,145	1,075	20	4,807	5,724	---	1,239	16,010	54.5
	Percent	19.6	6.7	0.1	30.0	35.8		7.7	100.0	
West Virginia	130,003	5,072	247	---	11,075	12,974	368	3,741	33,477	25.8
	Percent	15.2	0.7		33.1	38.8	1.1	11.2	100.0	

Enrollments by States

The decision points for improving vocational education at the secondary level within Appalachia rest at the State level. In Table 4 the enrollments and the percent distribution by State in grades 9 - 12 are shown by vocational education category. For the country as a whole, less Appalachia, 25.7 percent of the students in grades 9 - 12 were enrolled in vocational education in 1966; in Appalachia, the comparable figure was 29.0 percent, indicating the greater need and perhaps a larger preference for vocational education within Appalachia than without.

TABLE 5
Enrollments in Vocational Education Courses
Grades 9 - 12 in Non-Appalachia U.S.
and Appalachia, 1966

Total Enrollments N-Appl. U.S.	Appl.	Enrollments in Vocational Edu. N-Appl. U.S.	Appl.	Percent Enrollments N-Appl. U.S.	Appl.
10,547,605	1,147,656	2,715,314	332,934	25.7	29.0

The inference seems clear once more: vocational education is desired by a relatively larger share of students within the Appalachian Region than outside; but, apart from the Agriculture and Home Economics programs, their opportunities to get educational experience of this type are severely limited. Table 4 indicates a summary by State and by vocational category of the enrollments within the counties of each of the thirteen states that form the Region. It is interesting to note that the overall percentage of students enrolled in vocational education courses varies from 16.7 percent in Ohio to 54.5 percent in Virginia. The large emphasis

upon Agricultural Education and Home Economics in many States is apparent, and the rather small enrollments in other programs is equally obvious. Once again the message is clear: a greater variety of programs is needed to serve the young people of Appalachia. It is useless to lament high enrollments in Agriculture when agricultural employment is declining and other choices are scarce; and it is equally useless to look in wonderment at the high enrollment in a Home Economics curriculum oriented to "home and family life" when more and more women are working and there are few other secondary vocational education alternatives open to them. What Appalachian youngsters need is more attractive alternatives.

Enrollments by Target Group

The unusually heavy dependence of Appalachia upon the Secondary Schools for vocational education is indicated in Table 6 below. While almost three out of four vocational enrollments in Appalachia can be found in high school, less than one-half of vocational enrollments outside of Appalachia are in high school. Appalachia lags considerably behind non-Appalachia in Post-Secondary vocational enrollments - in fact, Appalachia has just about one-half of the relative enrollments at the post-secondary level as non-Appalachia has. Even in the Adult category Appalachia is almost 50 per cent behind in relative enrollments with non-Appalachia. Only in the area of Special Needs does Appalachia approach the non-Appalachian rate of enrollments. One can say that the national trend to shift vocational enrollments from secondary schools to post-secondary schools has barely made any impression in Appalachia so far. That more post-secondary schools need to be built for Appalachia appears more than obvious from Table 6.

TABLE 6

APPALACHIA AND NON-APPALACHIA U.S.
ENROLLMENTS BY TARGET GROUP
1966

TARGET GROUP	ENROLLMENTS			
	Appalachia		Non-Appalachia	
	Number	Percent	Number	Percent
Secondary Schools	332,934	70.9	2,715,314	48.5
Post-Secondary	18,273	3.9	423,824	7.6
Adult	114,641	24.4	2,416,071	43.1
Special Needs	3,805	0.8	45,197	0.8
TOTAL	469,653	100.0	5,600,406	100.0

Source: State Departments of Education

Enrollments by Vocational Category

The general distribution of enrollments among the several vocational categories is not too different for Appalachia than for non-Appalachia except for two groupings: Agriculture, a declining outlet for employment, has substantially higher relative enrollments within Appalachia than for non-Appalachia. Enrollments within Trades & Industry, where an estimated 44 percent of the employment will be concentrated within Appalachia in 1975, enrolls less than the national percent. We need to ask ourselves quite specifically why we continue high enrollments within the Agricultural Education category and have less than the national proportion in Trades & Industry. It may well be that a shift of resources as between these two categories may be desirable. An examination of Tables 7 and 8 indicates that the need to examine the allocation of resources as between Agriculture and

other categories is not local, but is a problem that exists region-wide.

TABLE 7

APPALACHIA AND NON-APPALACHIA
SECONDARY SCHOOL ENROLLMENTS
BY VOCATIONAL EDUCATION CATEGORY
1966
GRADES 9-12

Vocational Education Category	APPALACHIA		NON-APPALACHIAN U.S.	
	Number	Percent	Number	Percent
Agriculture	72,510	21.8	437,769	16.1
Distribution	8,335	2.5	93,393	3.4
Health	492	0.1	9,301	0.3
Home Economics	135,928	40.8	1,144,326	42.2
Office	80,831	24.3	717,537	26.4
Technical	3,886	1.2	24,979	0.9
Trades & Industry	30,952	9.3	288,009	10.6
TOTAL	332,934	100.0	2,715,314	100.0

TABLE 8

Secondary Enrollment - FY 1966
by Sub-Region
by Vocational Education Category

Sub-Region	Vocational Category: Agri.	Dist.	Health	Home Ec.	Office	Tech.	T&I	Total
1	3,039	1,044	28	4,673	14,720	370	1,400	25,274
2	1,792	546	14	3,969	8,428	410	945	16,104
3	965	195	21	3,167	4,652	345	1,128	10,473
4	659	133	15	2,163	3,178	236	770	7,154
5	1,601	167	9	3,212	4,773	308	1,383	11,453
6	4,686	803	92	14,524	19,618	1,512	5,266	46,501
7	407	---	7	987	36	---	161	1,598
8	1,588	31	5	3,437	209	73	443	5,786
9	874	---	5	1,843	71	3	94	2,890
10	356	---	--	329	43	---	---	728
11	1,264	46	--	2,085	844	20	359	4,618
12	3,804	212	--	11,019	11,982	189	3,674	30,880
13	2,781	158	--	5,389	242	26	446	9,042
14	673	400	--	1,436	1,436	---	145	4,090
15	3,375	781	--	5,472	348	---	1,055	11,031
16	4,391	647	20	4,909	3,897	50	1,688	15,602
17	4,238	531	--	10,998	372	117	2,022	18,278
18	1,801	---	--	2,936	32	---	342	5,111
19	1,950	283	--	2,732	---	---	642	5,607
20	3,402	466	--	3,748	---	---	711	8,327
21	4,533	314	10	9,093	469	25	2,035	16,479
22	3,651	269	71	5,751	743	75	598	11,158
23	4,517	528	--	5,292	1,791	75	1,649	13,852
24	2,947	179	--	6,275	473	---	454	10,328
25	7,323	487	182	11,437	2,344	19	2,853	24,645
26	1,465	13	13	2,358	130	4	65	4,048
27	4,428	102	--	6,694	---	29	624	11,877
	72,510	8,335	492	135,928	80,831	3,886	30,952	332,934

Financial Support of Vocational Education in Appalachia

In 1966, $45,524,676 was spent in Appalachia for operations in vocational education. Of this amount, $11,135,579 came from the Federal Government, $15,786,399 came from State Governments, and $18,602,698 came from local sources. These sums do not include construction. Compared to national levels, Appalachian operational expenditures are as follows, rounded to the nearest million, with the per $1.00 equivalency included.

TABLE 9

APPALACHIAN AND NON-APPALACHIAN U.S.
OPERATIONAL EXPENDITURES BY SOURCE OF FUNDS
PER $1.00 EQUIVALENCY

Area of Expenditure	Sources of Expenditures (Millions of Dollars)			
Non-Appalachian U.S.	Federal	State	Local	Total-All
	$161	$176	$256	$593
Amount per Federal $1.00	$1.00	$1.09	$1.59	
Amount per State $1.00	1.10	1.00	1.48	
Amount per Local $1.00	.63	.69	1.00	
Appalachian U.S.	$11	$16	$19	$46
Amount per Federal $1.00	$1.00	$1.45	$1.73	
Amount per State $1.00	.70	1.00	1.19	
Amount per Local $1.00	.58	.84	1.00	

The data presented here suggest that the Appalachian States and localities are making a greater effort to support vocational education than those in non-Appalachia U.S. In a Region that has been Congressionally designated in need of special help, it is difficult to understand why local dollars in non-Appalachia are matched by 63 cents of Federal money while local dollars in Appalachia are matched by only 58¢ of Federal money. Appalachia's ability to pay is felt to be considerably less than the rest of the nation.

The total funds available for vocational education and the amounts spent on construction in 1966 are shown in Table 10. When money for construction is added, the Federal disparity is decreased somewhat.

TABLE 10
Expenditures on Vocational
Education 1966
under P.L. 88-210
(millions rounded)

Total

	Federal	State	Local	Total
Non-Appalachian U.S.	$216	$199	$323	$738
Appalachian U.S.	17	18	27	62
Total	$233	$217	$350	$800

Construction

	Federal	State	Local	Total
Non-Appalachian U.S.	$ 56	$ 22	$ 67	$145
Appalachian U.S.	6	2	8	16
Total	$ 62	$ 24	$ 75	$161

Appalachia has over 9% of the national population, 8% of all vocational enrollments, and receives 8% of the total money available for vocational education.

In Appalachia, the States supported 29% of the total, Federal sources 27%, and local sources 44%. In non-Appalachia, Federal funds supported 29%, State funds 27%, and local funds 44% of the total outlay. Isn't the national effort to assist Appalachia deserving of as much Federal support for vocational education within the Region as without?

Where Money Went

To secure resources for vocational education within Appalachia is one thing; to apply existing and additional resources wisely is quite

another. But before the question of the wisdom of expenditures can be raised, one must first know where the money went; $46 million is not a great sum of money as educational expenditures go, but before we start spending additional money, it is well to see what this $46 million was spent for. Table 11 gives this for the Region as a whole.

TABLE 11

Expenditures on Vocational Education in Appalachia in 1966 by Source of Support

State & Source of Program Support	Total	Agriculture	Distribution	Health	Home Economics	Office	Technical	Trades and Industries
APPALACHIA	$45,524,676	$ 9,692,990	$ 1,703,739	$ 1,161,806	$ 9,307,162	$ 7,449,670	$ 3,169,162	$ 13,040,147
Federal	11,135,579	2,213,540	435,231	491,105	976,108	1,990,365	1,361,594	3,667,636
State	15,786,399	3,814,132	714,408	493,763	3,694,220	2,603,930	448,680	4,017,266
Local	18,602,698	3,665,318	554,100	176,938	4,636,834	2,855,375	1,358,888	5,355,245
ALABAMA	5,387,877	1,633,133	256,033	139,691	1,497,668	496,309	----	1,365,043
Federal	1,057,215	309,421	61,893	52,396	147,535	226,822	----	259,148
State	3,961,884	1,319,139	194,140	34,827	1,347,504	67,282		998,992
Local	368,778	4,573	---	52,468	2,629	202,205	----	106,903
GEORGIA	1,768,939	601,468	23,805	28,041	762,346	108,309	29,370	215,600
Federal	292,190	73,905	3,695	14,055	26,072	59,799	17,429	97,235
State	270,137	66,145	---	12,036	77,195	5,970	10,861	97,930
Local	1,206,612	461,418	20,110	1,950	659,079	42,540	1,080	20,435
KENTUCKY	1,767,803	601,240	40,105	---	603,125	100,271	423,062	---
Federal	303,128	42,988	1,578	---	15,947	15,865	226,750	---
State	1,362,563	526,438	37,912	---	558,914	42,987	196,312	---
Local	102,112	31,814	615	---	28,264	41,419	----	---
MARYLAND	749,850	80,975	342	---	95,999	334,719	35,121	202,694
Federal	161,330	22,674	342	---	4,998	57,282	21,477	54,557
State	307,633	32,380	---	---	51,732	142,656	6,617	74,248
Local	280,887	25,921	---	---	39,269	134,781	7,027	73,889
MISSISSIPPI	1,260,160	470,953	9,330	9,329	387,379	32,269	59,025	291,875
Federal	355,780	154,414	2,301	4,327	33,563	27,196	33,727	100,252
State	416,237	100,887	2,044	2,376	145,167	2,973	22,593	140,197
Local	488,143	215,652	4,985	2,626	208,649	2,100	2,705	51,426

TABLE 11(cont'd)

States Source of Program Support	Total	Agriculture	Distribution	Health	Home Economics	Office Education	Technical	Trades and Industries
NEW YORK	$ 7,577,357	$ 1,303,247	$ 445,248	$ 295,284	$ 228,086	$ 1,736,952	$ 17,843	$ 3,550,697
Federal	2,563,756	421,632	82,848	165,864	84,115	277,187	17,843	1,514,267
State	3,548,643	646,630	256,266	91,785	93,221	1,028,884	---	1,431,857
Local	1,464,958	234,985	106,134	37,635	50,750	430,881	---	604,573
NORTH CAROLINA	2,104,619	757,668	167,490	---	660,014	5,290	171,087	343,070
Federal	702,912	373,341	82,182	---	63,361	---	30,607	153,421
State	944,937	194,910	55,810	---	431,649	5,290	136,243	121,035
Local	456,770	189,417	29,498	---	165,004	---	4,237	68,614
OHIO	2,462,927	618,100	73,129	21,470	881,715	448,892	47,062	372,559
Federal	195,297	54,635	6,176	10,192	42,476	43,927	4,665	33,226
State	260,305	---	8,784	---	---	220,556	---	30,965
Local	2,007,325	563,465	58,169	11,278	839,239	184,409	42,397	308,368
PENNSYLVANIA	13,688,441	1,617,597	342,448	331,854	2,081,688	2,975,968	1,916,394	4,422,492
Federal	3,327,683	284,769	110,708	96,511	230,519	875,292	788,446	941,439
State	2,330,857	226,345	46,611	235,025	361,397	1,050,338	---	411,140
Local	8,029,901	1,106,483	185,129	318	1,489,772	1,050,338	1,127,948	3,069,913
SOUTH CAROLINA	1,585,062	470,867	51,412	42,782	487,804	172,328	---	359,869
Federal	423,864	97,395	14,693	25,268	83,233	86,164	---	117,111
State	493,772	215,564	7,418	16,114	140,264	---	---	114,412
Local	667,426	157,908	29,301	1,400	264,307	86,164	---	128,346
TENNESSEE	1,145,596	209,220	62,358	143,189	224,001	35,671	141,732	329,425
Federal	384,854	66,914	21,026	48,707	76,219	12,135	48,218	111,635
State	380,371	71,153	20,666	47,241	73,891	11,768	46,757	108,895
Local	380,371	71,153	20,666	47,241	73,891	11,768	46,757	108,895
VIRGINIA	2,183,722	695,270	172,537	32,383	555,912	71,035	71,355	585,230
Federal	482,164	200,055	36,434	12,630	43,929	37,191	35,050	116,875
State	1,038,085	311,614	74,700	13,142	321,820	16,628	11,393	288,788
Local	663,473	183,601	61,403	6,611	190,163	17,216	24,912	179,567
WEST VIRGINIA	3,842,323	633,252	59,502	117,783	841,425	931,657	257,111	1,001,593
Federal	885,405	111,397	11,355	61,175	124,141	271,505	137,382	168,470
State	470,976	102,927	10,057	41,217	91,466	8,598	17,904	198,807
Local	2,485,942	418,928	38,090	15,411	625,818	651,554	101,825	634,316

SOURCE: STATE DEPARTMENT OF EDUCATION

Some unusual information comes to light. While Agriculture and Home Economics programs are more than 50 percent of all vocational programs at the Secondary level, and enroll 60 percent of all vocational students within the Region, relatively fewer Federal dollars are spent on these two programs than on any other vocational category -- only 23 percent for Agriculture and 10.5 percent for Home Economics. Expenditures on Agriculture and Home Economics from all sources amount to $19 million, almost 40 percent of the total expenditure. Less than $4 million of this $19 million comes from Federal sources. Thus, within Appalachia, over $15 million or about one-third of all expenditures from all sources is spent from State and local funds on two vocational education programs. Stated another way, State and local governments within Appalachia spend about $35 million on vocational education , and 43 percent of this is on two programs; the other five get only 57 percent of the combined state and local resources.

While this general pattern emerges for the Region, there are wide State variations. Alabama State sources support 80 percent of vocational agriculture, but Ohio reports no support to vocational agriculture within Appalachia. Alabama supports 90 percent of total expenditures on Home Economics, but Georgia spends 10 percent in this category. Georgia's localities support 87 percent of the cost of Home Economics, but only 9.5 percent of the cost for Trades and Industry courses. Thus, one can find wide variations within the spending patterns of States--variations among the vocational categories and variations among the levels of government that give them support.

TABLE 12

Where expenditures went for Vocational Education within Appalachia in 1966 by State and by Vocational Category and by Source of Funds.

		Percent		
	Total	Federal	State	Local
Total	**$ 45,524,676**	**$11,135,579**	**$15,786,399**	**$18,602,698**
Agriculture	$ 9,692,990	22.8	39.3	37.8
Distributive	$ 1,703,739	25.5	41.9	32.5
Health Occupations	$ 1,161,806	42.3	42.5	15.2
Home Economics	$ 9,307,162	10.5	39.7	49.8
Office Education	$ 7,449,670	26.7	35.0	38.3
Technical	$ 3,169,162	43.0	14.2	42.9
Trades & Industry	$ 13,040,147	28.1	30.8	41.2

ALABAMA	Total	Federal	State	Local
Total	**$ 5,387,877**	**$1,057,215**	**$ 3,961,884**	**$368,778**
Agriculture	$ 1,633,133	18.9	80.8	0.3
Distributive	$ 256,033	24.2	75.8	---
Health Occupations	$ 139,691	37.5	24.9	37.6
Home Economics	$ 1,497,668	9.9	90.0	0.1
Office Education	$ 496,309	45.7	13.6	40.7
Technical	--	--	--	--
Trades & Industry	$ 1,365,043	19.0	73.2	7.8

TABLE 12(cont'd)

GEORGIA	Total	Percent Federal	State	Local
Total	$1,768,939	$292,190	$270,137	$ 1,206,612
Agriculture	$ 601,468	12.3	11.0	76.7
Distributive	$ 23,805	15.6	--	84.5
Health Occupations	$ 28,041	50.1	42.9	7.0
Home Economics	$ 762,346	3.4	10.1	86.5
Office Education	$ 108,309	55.2	5.5	39.3
Technical	$ 29,370	59.3	37.0	3.7
Trades & Industry	$ 215,600	45.1	45.4	9.5

KENTUCKY	Total	Federal	State	Local
Total	$1,767,803	$ 303,128	$1,362,563	$ 102,112
Agriculture	$ 601,240	7.1	87.6	5.3
Distributive	$ 40,105	3.9	94.5	1.5
Health Occupations	--	--	--	--
Home Economics	$ 603,125	2.6	92.7	4.7
Office Education	$ 100,271	15.8	42.9	41.3
Technical	$ 423,062	53.6	46.4	--
Trades & Industry	--	--	--	--

TABLE 12 (cont'd)

MARYLAND

	Total	Federal	State	Local
Total	$ 749,850	$ 161,330	$ 307,633	$ 280,887
Agriculture	$ 80,975	28.0	40.0	32.0
Distributive	$ 342	100.0	--	--
Health Occupations	---	--	--	--
Home Economics	$ 95,999	5.2	53.9	40.9
Office Education	$ 334,719	17.1	42.6	40.3
Technical	$ 35,121	61.2	18.8	20.0
Trades & Industry	$202,694	26.9	36.6	36.5

MISSISSIPPI

	Total	Federal	State	Local
Total	$ 1,260,160	$ 355,780	$ 416,237	$ 100,887
Agriculture	$ 470,953	32.8	21.4	45.8
Distributive	$ 9,330	24.6	21.9	53.4
Health Occupations	$ 9,329	46.4	25.5	28.1
Home Economics	$387,379	8.7	37.5	53.9
Office Education	$ 32,269	84.3	9.2	6.5
Technical	$ 59,025	57.1	38.3	4.6
Trades & Industry	$ 291,875	34.3	48.0	17.6

TABLE 12 (cont'd)

NEW YORK

	Total	Federal	State	Local
Total	$ 7,577,357	$ 2,563,756	$ 3,548,643	$ 1,464,958
Agriculture	$ 1,303,247	32.4	49.6	18.0
Distributive	$ 445,248	18.6	57.6	23.8
Health Occupations	$ 295,284	56.2	31.1	12.7
Home Economics	$ 228,086	36.8	40.9	22.2
Office Education	$ 1,736,952	16.0	59.2	24.8
Technical	$ 17,843	100.0	--	--
Trades & Industry	$ 3,550,697	42.6	40.3	17.0

NORTH CAROLINA

	Total	Federal	State	Local
Total	$ 2,104,619	$ 702,912	$ 944,937	$ 456,770
Agriculture	$ 757,668	49.3	25.7	25.0
Distributive	$ 167,490	49.1	33.3	17.6
Health Occupations	--	--	--	--
Home Economics	$ 660,014	9.6	65.4	25.0
Office Education	$ 5,290	--	100.0	--
Technical	$ 171,087	17.9	79.6	2.5
Trades & Industry	$ 343,070	44.7	35.3	20.0

TABLE 12 (cont'd)

OHIO

	Total	Federal	State	Local
Total	$ 2,462,927	$195,297	$ 260,305	$ 2,007,325
Agriculture	$ 618,100	8.8	--	91.2
Distributive	$ 73,129	8.4	12.0	79.5
Health Occupations	$ 21,470	47.5	--	52.5
Home Economics	$ 881,715	4.8	--	95.2
Office Education	$ 448,892	9.8	49.1	41.1
Technical	$ 47,062	9.9	--	90.1
Trades & Industry	$ 372,559	8.9	8.3	82.8

PENNSYLVANIA

	Total	Federal	State	Local
Total	$ 13,688,441	$ 3,327,683	$ 2,330,857	$ 8,029,901
Agriculture	$ 1,617,597	17.6	14.9	68.4
Distributive	$ 342,448	32.3	13.6	54.1
Health Occupations	$ 331,854	29.1	70.8	0.1
Home Economics	$ 2,081,688	11.1	17.4	71.6
Office Education	$ 2,975,968	29.4	35.3	35.3
Technical	$ 1,916,394	41.1	--	58.9
Trades & Industry	$ 4,422,492	21.3	9.2	69.4

Source: State Departments of Education

TABLE 12 (cont'd)

SOUTH CAROLINA

	Total	Federal	State	Local
Total	$1,585,062	$ 423,864	$ 493,772	$ 667,426
Agriculture	$ 470,867	20.7	45.8	33.5
Distributive	$ 51,412	28.6	14.4	57.0
Health Occupations	$ 42,782	59.1	37.7	3.3
Home Economics	$ 487,804	17.1	28.8	54.2
Office Education	$ 172,328	50.0	--	50.0
Technical	---	--	--	--
Trades & Industry	$ 359,869	32.5	31.8	35.7

TENNESSEE

	Total	Federal	State	Local
Total	$ 1,145,596	$ 384,854	$ 380,371	$ 380,371
Agriculture	$ 209,220	32.0	34.0	34.0
Distributive	$ 62,358	33.7	33.1	33.1
Health Occupations	$ 143,189	34.0	33.0	33.0
Home Economics	$ 224,001	34.0	33.0	33.0
Office Education	$ 35,671	34.0	33.0	33.0
Technical	$ 141,732	34.0	33.0	33.0
Trades & Industry	$ 329,425	33.9	33.1	33.1

TABLE 12(cont'd)

VIRGINIA

	Total	Federal	State	Local
Total	$ 2,183,722	$ 482,164	$ 1,038,085	$ 663,473
Agriculture	$ 695,270	28.8	44.8	26.4
Distributive	$ 172,537	21.1	43.3	35.6
Health Occupations	$ 32,383	39.0	40.6	20.4
Home Economics	$ 555,912	7.9	57.9	34.2
Office Education	$ 71,035	52.3	23.4	24.2
Technical	$ 71,355	49.1	16.0	34.9
Trades & Industry	$ 585,230	20.0	49.3	30.7

WEST VIRGINIA

	Total	Federal	State	Local
Total	$ 3,842,323	$ 885,405	$ 470,976	$ 2,485,442
Agriculture	$ 633,252	17.6	16.3	66.2
Distributive	$ 59,502	19.1	16.9	64.0
Health Occupations	$ 117,783	51.9	35.0	13.1
Home Economics	$ 841,425	14.8	10.9	74.4
Office Education	$ 931,657	29.1	0.9	69.9
Technical	$ 257,111	53.4	7.0	39.6
Trades & Industry	$ 1,001,593	16.8	19.8	63.3

That different criteria are used to allocate resources to these activities would seem obvious. Table 12 deserves a lot of thoughtful reflection.

Relevant Employment Opportunities

The purpose of vocational education must be to prepare students for meaningful employment. In this preparation, the school system tends to "be behind" industrial development. In order to keep pace, the curriculum must respond, and respond rapidly, to changing employment opportunities that have and are being developed. The most usual form of response is to increase the supply of students in areas of employment that are growing, and reduce the supply of students training for employment opportunities that are decreasing. No greater harm could be done to a young person than to train him for a job soon to become obsolete. It is, therefore, pertinent to ask: How relevant are current curriculum offerings, as reflected in the traditional vocational categories, to future employment opportunities? The table below shows what is now going on in vocational education as compared to future job opportunities.

TABLE 13
Manpower Supply for 1966
Employment in 1960 with Estimated Employment for 1975
by Vocational Categories - Appalachian Region

Vocational Category	Manpower Supply in 1966 (percent)	Employment in 1960 (percent)	Employment in 1975 (percent)
Agriculture (a)	13.9	5.7	2.9
Distribution	5.0	16.5	16.9
Health	.5	1.0	1.5
Home Economics (a)	28.5	3.0	2.4
Office	36.6	15.1	17.2
Technical	1.7	2.0	3.3
Trades & Industry	13.8	45.1	44.0

See Footnote, Table 14.

In a sense, Table 13 summarizes much of the "profile" of vocational education in Appalachia at the secondary level. Agriculture training prepares only about 3 percent of those who will be gainfully employed in 1975. There is little wonder that another study showed that only 15 percent of the vocational agriculture graduates found gainful employment using the skills for which they were trained. For the graduating classes of 1966 in Appalachia, this would mean about 2,000 were placed in Agricultural occupations and over 10,000 had to seek employment in occupations for which they were not prepared. Thus, relative equality of expenditures and enrollments are not appropriate criteria for optimizing the output of vocational education programs. What is meaningful is to equate enrollments with potential employment opportunities at some future point in time, or relate current enrollment to some inadequate supply in the current labor market, even though the cost per student may be higher.

In a more sophisticated sense, a cost-benefit analysis that would relate costs to the discounted stream of future income, balanced against the probabilities of full-time lifetime employment, would be a useful criterion to use. In a sense, too, it is possible to say more about what ought not to be allocation criteria than what should be. Thus, enrollments ought not to be encouraged, or large expenditures undertaken where there is a decline in employment -- such as Production Agriculture. Also, expenditures for Home Economics, and the encouragement of large enrollments within this category ought to be done

carefully because they do not correspond with the trend toward increasing employment of women, or a larger female labor force participation rate.

Manpower Requirements

Between 1960 and 1975, employment in Appalachia will grow by almost 3,200,000 new jobs, or at an annual rate of 212,000. For 1966, if we assume this is a typical year, the secondary schools will turn out about 86,000 vocationally trained individuals. This compares with 201,000 new job openings each year which could be filled by vocational education graduates. There are 115,000 less people available from the secondary schools per year than job openings. When one examines the twelfth grade vocational enrollments for 1966 by sub-region, almost every sub-region has more job openings, on the average, per year, than the secondary schools turn out students to fill. If we relate the output of the secondary schools to relevant employment opportunities for the Region as a whole, the picture is somewhat like than shown in Table 14.

TABLE 14

Average Graduates Per Year and Average New Job Opportunities by Vocational Category
Appalachia--Graduates for 1966, New Jobs Annual Average 1960-75

Vocational Category	Average Secondary School Output	Average Annual New Job Openings	Employment Outlook
Agriculture (a)	12,000	(decrease) 20,000	Surplus
Distribution	4,300	38,700	Shortage
Health	300	7,300	Shortage
Home Economics (a)	24,600	500	Surplus
Office	31,500	53,200	Shortage
Technical	1,500	17,600	Shortage
Trades & Indst.	11,900	83,700	Shortage

Data which show enrollments in Agriculture training for off-farm occupations, and enrollments in Home Economics oriented to gainful employment, are not available for the Region. However, applying the national rate of 12.4% of enrollments in Agriculture for off-farm occupational training, and 2.1% for enrollments in gainful employment in Home Economics, we get 1488 graduates out of 12,000 for Agriculture and 516 graduates for Home Economics. There is no information of a region-wide nature that tells what these jobs are.

Overall, Appalachia has 151,000 new job openings each year for which secondary enrollments are not furnishing relevant job-trainees. On the other hand, the secondary schools are turning out 36,500 students in a vocational curriculum which shows a decline or static job relevance each year. Of the 201,000 annual new jobs developing in Appalachia for which vocational education graduates could qualify, the secondary schools are furnishing trainees for about 50,000 less than one-fourth. The impression is rather easy to form that such unemployment and under-employment as exists in Appalachia may arise from an unskilled and underskilled work force rather than a lack of job opportunities.

One can also say that the imbalance between secondary school vocational graduates and job opportunities is a general condition over the entire Region. Tables 15, 16, and 17 indicate the secondary school 1966 enrollments and new job opportunities open by 1975 by sub-regions, and by vocational categories.

It should be emphasized that these data do not present a complete picture of supply of and demand for skilled labor.

1) The supply data is limited to the Appalachian portion of the 27 economic subregions whereas the demand data includes the non-Appalachian portions of the 27 economic subregions which are immediately adjacent to and economically linked to the Appalachian counties.

2) The supply created by post-secondary programs of various types is not included as yet.

3) The demand figures would be increased by the amount of super-annuation that occurs.

4) Out and in-migration is not included.

5) The establishment of new industrial and service occupations may increase the demand figures. For instance, the long-term effect of

ARC investment has not been established sufficiently to affect supply and demand data.

6) Technological change may cause major shifts in demand figures in unforseeable directions.

TABLE 15

MANPOWER REQUIREMENTS
by Sub-Region
1960, 1975

TOTALS (Numbers of Workers)

Sub-Region	1960	1975	Annual Change
1	315,703	385,963	4,693
2	1,109,280	1,340,834	15,440
3	340,960	383,729	2,852
4	196,310	241,798	3,033
5	640,574	799,150	10,575
6	1,330,610	1,532,647	13,471
7	1,585,388	2,046,349	30,737
8	531,502	737,361	13,725
9	984,659	1,266,159	18,770
10	103,412	136,552	2,209
11	101,038	116,740	1,047
12	414,665	461,848	3,147
13	228,184	285,775	3,841
14	244,962	307,211	4,150
15	415,062	572,500	10,498
16	192,051	245,229	3,545
17	264,965	356,467	6,100
18	411,634	462,128	3,366
19	479,031	595,147	7,743
20	113,275	144,550	2,084
21	253,090	330,261	5,145
22	174,165	270,998	6,457
23	291,088	388,568	6,499
24	654,826	930,959	18,411
25	451,836	590,022	9,213
26	272,093	328,310	3,749
27	131,505	155,831	1,622
	12,231,868	15,413,086	212,122

TABLE 16

Annual Manpower Requirements 1960-1975
and
Secondary Vocational Education Graduates for 1966
Appalachia -- by Sub-Regions

* Code
\+ = Manpower Surplus
\- = Manpower Deficit

Sub-Regions	TOTALS Annual Needs	Annual Voc-Graduates	Difference *
1	4,693	9,019	+ 4,326
2	15,440	5,676	- 9,764
3	2,852	3,928	+ 1,076
4	3,033	2,683	- 350
5	10,575	3,278	- 7,297
6	13,471	16,960	+ 3,489
7	30,737	234	- 30,503
8	13,725	1,235	- 12,490
9	18,770	416	- 18,354
10	2,209	104	- 2,105
11	1,047	813	- 234
12	3,147	6,862	+ 3,715
13	3,841	1,764	- 2,077
14	4,150	993	- 3,157
15	10,498	3,055	- 7,443
16	3,545	3,647	+ 102
17	6,100	3,409	- 2,691
18	3,366	707	- 2,659
19	7,743	1,140	- 6,603
20	2,084	2,249	+ 165
21	5,145	3,463	- 1,682
22	6,457	2,210	- 4,247
23	6,499	3,085	- 3,414
24	18,411	2,189	- 16,222
25	9,213	5,399	- 3,814
26	3,749	587	- 3,162
27	1,622	942	- 680
	212,122	86,047	- 126,075

TABLE 17

Annual Manpower Requirements 1960-1975 and Secondary School Vocational Graduates 1966 Appalachia by sub-region and Voc. Category

*Code
+ = Manpower Surplus
- = Manpower Deficit

Sub-Region	AGRICULTURE			DISTRIBUTION		
	Annual Needs	Grads.	Diff.*	Annual Needs	Grads.	Diff.*
1	- 553	899	+ 1,452	881	412	- 469
2	- 999	534	+ 1,533	2,464	82	- 2,382
3	- 236	209	+ 445	491	127	- 364
4	- 184	143	+ 327	473	87	- 386
5	- 758	320	+ 1,078	2,028	84	- 1,944
6	- 738	1,012	+ 1,750	2,388	524	- 1,864
7	- 882	86	+ 968	4,954	---	- 4,954
8	- 664	319	+ 983	2,226	31	- 2,195
9	- 1,086	139	+ 1,225	2,992	---	- 2,992
10	- 286	67	+ 353	442	---	- 442
11	- 158	265	+ 423	187	46	- 141
12	- 638	620	+ 1,258	708	203	- 505
13	- 1,433	535	+ 1,968	862	74	- 788
14	- 693	87	+ 780	879	31	- 848
15	- 786	712	+ 1,498	2,131	441	- 1,690
16	- 632	730	+ 1,362	770	135	- 635
17	- 779	540	+ 1,319	1,204	411	- 793
18	- 1,692	230	+ 1,922	785	---	- 785
19	- 786	280	+ 1,066	1,478	181	- 1,297
20	- 358	652	+ 1,010	401	319	- 82
21	- 702	691	+ 1,393	1,075	194	- 881
22	- 795	412	+ 1,207	1,263	168	- 1,095
23	- 514	421	+ 935	1,190	290	- 900
24	- 869	485	+ 1,354	3,532	115	- 3,417
25	- 964	994	+ 1,958	1,763	298	- 1,465
26	- 930	210	+ 1,140	912	8	- 904
27	- 839	373	+ 1,212	270	65	- 205
TOTAL	- 19,954	11,965	+ 31,919	38,749	4,326	- 34,423

TABLE 17 (cont'd.)

Annual Manpower Requirements 1960-1975 and Secondary School Vocational Graduates 1966 Appalachia by sub-region and Voc. Category

*Code
+ = Manpower Surplus
- = Manpower Deficit

Region	HEALTH			HOME ECONOMICS		
	Annual Needs	Grads.	Diff.*	Annual Needs	Grads.	Diff.*
1	174	27	- 147	- 41	1,739	+ 1,780
2	591	10	- 581	- 68	1,244	+ 1,312
3	132	15	- 117	- 58	964	+ 1,022
4	129	10	- 119	16	658	+ 642
5	356	6	- 350	55	666	+ 611
6	659	64	- 595	- 111	4,173	+ 4,284
7	1,012	7	- 1,005	273	106	- 167
8	426	5	- 421	138	475	+ 337
9	596	5	- 591	86	190	+ 104
10	59	-	- 59	- 6	17	+ 23
11	48	-	- 48	- 28	117	+ 145
12	216	-	- 216	- 43	1,139	+ 1,182
13	151	-	- 151	13	812	+ 799
14	160	-	- 160	23	312	+ 289
15	240	-	- 240	71	1,338	+ 1,267
16	129	20	- 109	48	780	+ 732
17	190	-	- 190	53	1,220	+ 1,167
18	153	-	- 153	- 165	275	+ 440
19	204	-	- 204	- 89	386	+ 475
20	58	-	- 58	- 16	941	+ 957
21	140	4	- 136	17	1,242	+ 1,225
22	155	26	- 129	91	868	+ 777
23	186	-	- 186	35	1,168	+ 1,133
24	538	-	- 538	182	1,219	+ 1,037
25	305	119	- 186	12	1,976	+ 1,964
26	192	3	- 189	- 28	250	+ 278
27	78	-	- 78	4	284	+ 280
TOTAL	7,277	321	- 6,956	464	24,559	+ 24,095

TABLE 17 (continued)

Annual Manpower Requirements 1960-1975 and Secondary School Vocational Graduates 1966 Appalachia by-sub-region and Vocational Category.

*Code
+ = Manpower Surplus
- = Manpower Deficit

Sub-Region	OFFICE			TECHNICAL		
	Annual Needs	Grads.	Diff.*	Annual Needs	Grads.	Diff.*
1	1,172	5,277	+ 4,105	420	156	- 264
2	3,923	3,405	- 518	1,510	124	- 1,386
3	885	2,223	+ 1,388	410	129	- 281
4	728	1,519	+ 791	281	88	- 193
5	2,733	1,618	- 1,115	990	107	- 883
6	3,888	9,276	+ 5,388	1,494	574	- 920
7	6,757	11	- 6,746	2,385	-	- 2,385
8	2,967	151	- 2,816	953	32	- 921
9	4,426	18	- 4,408	1,633	3	- 1,630
10	555	20	- 535	178	-	- 178
11	321	225	- 96	109	8	- 101
12	1,159	3,102	+ 1,943	495	84	- 411
13	1,130	124	- 1,006	328	6	- 322
14	1,057	512	- 545	318	-	- 318
15	2,379	129	- 2,250	631	-	- 631
16	911	1,270	+ 359	282	29	- 253
17	1,462	208	- 1,254	549	37	- 512
18	1,498	32	- 1,466	476	-	- 476
19	1,956	-	- 1,956	582	-	- 582
20	517	-	- 517	177	-	- 177
21	1,317	336	- 981	375	21	- 354
22	1,420	413	- 1,007	381	48	- 333
23	1,470	497	- 973	389	18	- 371
24	4,392	185	- 4,207	1,098	-	- 1,098
25	2,385	862	- 1,523	675	6	- 669
26	1,294	80	- 1,214	350	2	- 348
27	480	-	- 480	179	12	- 167
TOTAL	53,182	31,493	-21,689	17,648	1,484	-16,164

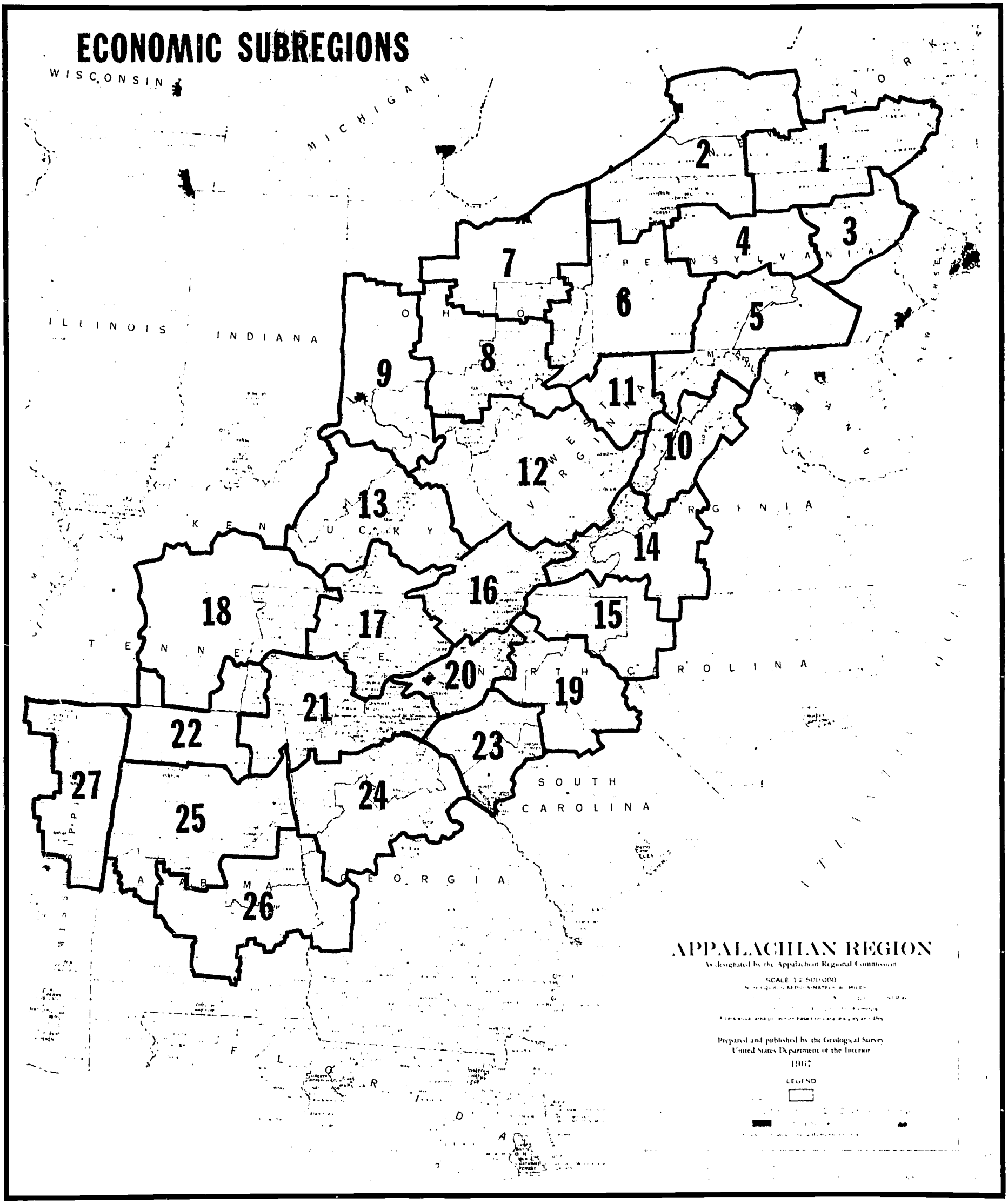
TABLE 17 (continued)

Annual Manpower Requirements 1960-1975 and Secondary School Vocational Graduates 1966 Appalachia by sub-region and Vocational Category.

*Code
+ = Manpower Surplus
- = Manpower Deficit

Sub-Region	TRADES AND INDUSTRY			OTHER		
	Annual Needs	Grads.	Diff.*	Annual Needs	Grads.	Diff.*
1	1,927	509	- 1,418	713		
2	5,790	277	- 5,513	2,229		
3	785	261	- 524	443		
4	1,102	178	- 924	488		
5	3,649	477	- 3,172	1,522		
6	3,725	1,337	- 2,388	2,166		
7	11,739	24	- 11,715	4,499		
8	5,764	222	- 5,542	1,915		
9	7,432	61	- 7,371	2,691		
10	946	-	- 946	321		
11	394	152	- 242	174		
12	642	1,714	+ 1,072	608		
13	2,110	213	- 1,897	680		
14	1,785	51	- 1,734	621		
15	4,488	435	- 4,053	1,344		
16	1,428	683	- 745	609		
17	2,519	993	- 1,526	902		
18	1,745	170	- 1,575	566		
19	3,399	293	- 3,106	999		
20	1,037	337	- 700	268		
21	2,244	975	- 1,269	679		
22	3,022	275	- 2,747	920		
23	2,898	691	- 2,207	845		
24	6,955	185	- 6,770	2,583		
25	3,712	1,144	- 2,568	1,325		
26	1,362	34	- 1,328	597		
27	1,105	208	- 897	345		
TOTAL	83,704	11,899	- 71,805	31,052		

Note:
The jobs in the"other" category are those for which vocational education provides no specific program.


ECONOMIC SUBREGIONS
WISCONSIN
MICHIGAN
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
NEW YORK
WEST VIRGINIA
VIRGINIA
KENTUCKY
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ALABAMA
MISSISSIPPI
FLORIDA
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APPALACHIAN REGION
As designated by the Appalachian Regional Commission
SCALE 1:2,500,000
Prepared and published by the Geological Survey
United States Department of the Interior
1967
LEGEND

Conclusions

The following conclusions, while they do not apply to all States and are based on some data inadequacies, seem reasonable:

(1) Vocational education at the secondary level in Appalachia is inadequate in scope and needs strengthening by giving a broader base of choice to high school students;

(2) Federal funds tend to support vocational education slightly more outside of Appalachia than within Appalachia;

(3) The bulk of vocational enrollments within Appalachian secondary schools do not correspond to current or projected job opportunities;

(4) Criteria for the appropriate allocation of resources to job training should be developed and assistance provided to the States to enable them to plan their vocational education programs with relevance.

(5) More jobs are being created by economic growth within Appalachia than the secondary schools are producing graduates to fill;

(6) Appalachian unemployment appears concentrated in the unskilled, underskilled and undereducated;

(7) Appalachia faces a shortage of skilled labor that could inhibit its economic growth.

Recommendations

The Commission should:

(1) Use such resources as it has to fund those educational projects submitted to it that offer the highest prospect for gainful employment to a student when he completes his vocational education experience;

(2) Provide assistance to the Division of Vocational Education of the several State Departments of Education, to help them to provide curriculum relevant for future employment possibilities; and

(3) At the earliest possible time, urge the Commissioner of Education to develop an adequate information reporting system that would permit an evaluation and appraisal of vocational education programs.

(4) Seek new sources of support for vocational education in Appalachia, with a re-direction of funds now being used for the development of manpower suited for relevant job openings.

APPENDIX A
ECONOMIC SUBREGIONS BY APPALACHIAN AND NONAPPALACHIAN COUNTIES, BY STATE

Subregion	Appalachian		NonAppalachian	
#1	New York			
	Chemung	Cortland		
	Schuyler	Delaware		
	Steuben	Otsego		
	Broome	Tioga		
	Chenango	Tompkins		
		Schobarie		
	Pennsylvania			
	Bradford	Susquehanna		
	Tioga			
#2	New York		New York	
	Allegany	Cattaraugus	Erie	Orleans
	Chautauqua		Genesee	Seneca
			Livingston	Wayne
	Pennsylvania		Monroe	Wyoming
	Crawford	Potter	Niagara	Yates
	Forest	Venango	Ontario	
	McKean	Warren		
	Erie			
#3	Pennsylvania			
	Carbon	Schuylkill		
	Columbia	Sullivan		
	Lackawanna	Wayne		
	Luzerne	Wyoming		
	Monroe			
	Pike			
#4	Pennsylvania			
	Cameron	Lycoming		
	Centre	Montour		
	Clearfield	Northumberland		
	Clinton	Snyder		
	Elk	Union		
	Jefferson			
#5	Pennsylvania		Pennsylvania	
	Bedford	Juniata	Adams	Lancaster
	Blair	Mifflin	Cumberland	Lebanon
	Fulton	Perry	Dauphin	York
	Huntington		Franklin	

APPENDIX A
ECONOMIC SUBREGIONS
(cont'd.)

Subregion	Appalachian		NonAppalachian	
#5	Maryland			
	Allegany	Washington		
	Garrett			
	West Virginia			
	Berkeley	Jefferson		
	Grant	Mineral		
	Hampshire	Morgan		
#6	Ohio		Ohio	
	Belmont	Jefferson	Columbiana	
	Harrison	Monroe		
	Pennsylvania			
	Alleghany	Greene		
	Armstrong	Indiana		
	Beaver	Lawrence		
	Butler	Mercer		
	Cambria	Somerset		
	Clarion	Washington		
	Fayette	Westmoreland		
	West Virginia			
	Brooke	Pleasants		
	Hancock	Tyler		
	Marshall	Wetzel		
	Ohio			
#7	Ohio		Ohio	
	Carroll	Holmes	Ashland	Mahoning
	Coshocton	Tuscarawas	Ashtabula	Medina
			Crawford	Morrow
			Cuyahoga	Portage
			Erie	Richland
			Geauga	Stark
			Huron	Summit
			Knox	Trumbull
			Lake	Wyandot
			Lorain	Wayne
#8	Ohio		Ohio	
	Athens	Noble	Delaware	Madison
	Guernsey	Perry	Fairfield	Marion
	Hocking	Pike	Franklin	Pickaway
	Jackson	Ross	Licking	Union
	Morgan	Vinton		
	Muskingum	Washington		

APPENDIX A
ECONOMIC SUBREGIONS
(cont'd.)

Subregion	Appalachian	NonAppalachian
#8	West Virginia Ritchie, Wood, Wirt	
#9	Ohio Adams, Brown, Clermont, Highland Kentucky Lewis, Fleming	Ohio Auglaize, Butler, Champaign, Clark, Clinton, Darke, Fayette, Green, Hamilton, Logan, Mercer, Miami, Montgomery, Preble, Shelby, Warren Kentucky Boone, Bracken, Campbell, Gallatin, Grant, Kenton, Mason, Pendleton, Robertson
#10	West Virginia Hardy, Pendleton Virginia Bath, Highland	Virginia Augusta, Clarke, Frederick, Page, Rappahannock, Rockbridge, Rockingham, Shenandoah, Warren Indep. Cities - Va. Buena Vista, Harrisonburg, Staunton, Winchester, Waynesboro
#11	West Virginia Barbour, Doddridge, Harrison, Lewis, Marion, Monongalia, Preston, Randolph, Taylor, Tucker, Upshur	

APPENDIX A
ECONOMIC SUBREGIONS
(cont'd.)

Subregion	Appalachian		NonAppalachian	
#12	West Virginia			
	Boone	Mason		
	Braxton	Mercer		
	Cabell	Mingo		
	Calhoun	Monroe		
	Clay	Nicholas		
	Fayette	Pocahontas		
	Gilmer	Putnam		
	Greenbrier	Raleigh		
	Jackson	Roane		
	Kanawha	Summers		
	Lincoln	Wayne		
	Logan	Webster		
	McDowell	Wyoming		
	Ohio	Kentucky		
	Gallia	Boyd		
	Lawrence	Carter		
	Meigs	Elliott		
	Scioto	Floyd		
		Greenup		
		Johnson		
		Lawrence		
		Martin		
		Pike		
		Rowan		
#13	Kentucky		Kentucky	
	Adair	Lincoln	Owen	Anderson
	Bath	Madison	Scott	Bourbon
	Breathitt	Magoffin	Taylor	Boyle
	Casey	Meniffee	Washington	Fayette
	Clark	Montgomery	Woodford	Franklin
	Clay	Morgan		Harrison
	Estill	Owsley		Jessamine
	Garrard	Perry		Marion
	Green	Powell		Mercer
	Jackson	Pulaski		Nicholas
	Knott	Rockcastle		
	Lee	Russell		
	Leslie	Wolfe		
	Letcher			

APPENDIX A
ECONOMIC SUBREGIONS
(cont'd.)

Subregion	Appalachian		NonAppalachian	
#14	Virginia		Virginia	
	Alleghany	Giles	Montgomery	Nelson
	Botetourt	Pulaski	Roanoke	Appomattox
	Craig	Wythe	Franklin	Campbell
	Floyd		Bedford	Pittsylvania
			Amherst	Halifax
	Indep. Cities - Va.		Indep. Cities - Va.	
	Covington		Danville	Radford
	Clifton Forge		Lynchburg	Roanoke
#15	North Carolina		North Carolina	
	Alleghany	Stokes	Alamance	Randolph
	Ashe	Surry	Davidson	Rockingham
	Davie	Wilkes	Guilford	
	Forsyth	Yadkin		
	Virginia		Virginia	
	Carroll	Galax	Henry	
	Indep. City -	Grayson	Patrick	
			Indep. City -	Martinsville
#16	Tennessee			
	Carter	Johnson		
	Greene	Sullivan		
	Hancock	Unicoi		
	Hawkins	Washington		
	Virginia			
	Bland	Scott		
	Buchanan	Smyth		
	Dickenson	Tazewell		
	Lee	Washington		
	Russell	Wise		
	Indep. Cities - Va.			
	Bristol	Norton		
#17	Kentucky			
	Bell	McCreary		
	Harlan	Wayne		
	Knox	Whitley		
	Laurel			

APPENDIX A
ECONOMIC SUBREGIONS
(cont'd.)

Subregion	Appalachian		Nonappalachian	
#17	Tennessee			
	Anderson	Jefferson		
	Blount	Knox		
	Campbell	Loudon		
	Claiborne	Monroe		
	Cocke	Morgan		
	Cumberland	Roane		
	Fentress	Scott		
	Grainger	Sevier		
	Hamblen	Union		
#18	Kentucky		Kentucky	
	Clinton		Allen	Metcalfe
	Cumberland		Barren	Simpson
	Monroe		Butler	Todd
			Christain	Trigg
	Tennessee		Edmonson	Warren
	Clay	Pickett	Logan	
	DeKalb	Putnam		
	Jackson	Smith	Tennessee	
	Macon	White		Maury
	Overton		Cheatham	Montgomery
	Cannon		Davidson	Perry
			Dickson	Robertson
			Giles	Rutherford
			Hickman	Stewart
			Houston	Sumner
			Humphreys	Trousdale
			Lawrence	Williamson
			Lewis	Wilson
			Marshall	
#19	North Carolina		North Carolina	
	Alexander	Rutherford	Anson	Lincoln
	Burke	Watauga	Cabarrus	Mecklenburg
	Caldwell		Catawba	Rowan
			Cleveland	Stanly
			Gaston	Union
			Iredell	
			South Carolina	
			Chester	York
			Lancaster	

APPENDIX A

ECONOMIC SUBREGIONS
(cont'd.)

Subregion	Appalachian		Nonappalachian	
#20	North Carolina			
	Avery	Madison		
	Buncombe	Mitchell		
	Haywood	Swain		
	Henderson	Transylvania		
	Jackson	Yancey		
	McDowell			
#21	Alabama			
	De Kalb	Jackson		
	Georgia			
	Chatooga	Murray		
	Catoosa	Rabun		
	Dade	Towns		
	Fannin	Union		
	Gilmer	Walker		
	Gordon	Whitfield		
	North Carolina			
	Cherokee	Graham		
	Clay	Macon		
	Tennessee			
	Bledsoe	Meigs		
	Bradley	Polk		
	Grundy	Rhea		
	Hamilton	Sequatchie		
	Marion	Van Buren		
	McMinn	Warren		
#22	Alabama			
	Colbert	Limestone		
	Franklin	Madison		
	Lauderdale	Marshall		
	Lawrence	Morgan		
	Tennessee		Tennessee	
	Coffee	Franklin	Bedford	Moore
			Lincoln	Wayne
#23	South Carolina		South Carolina	
	Anderson	Oconee	Abbeville	McCormick
	Cherokee	Pickens	Greenwood	Union
	Greenville	Spartanburg	Lawrence	
	North Carolina			
	Polk			

APPENDIX A
ECONOMIC SUBREGIONS
(cont'd.)

Subregions	Appalachian		Nonappalachian	
#24	Georgia		Georgia	
	Banks	Jackson	Butts	Morgan
	Barrow	Habersham	Clarke	Newton
	Bartow	Hall	Clayton	Oconee
	Carroll	Haralson	Cobb	Oglethorpe
	Cherokee	Lumpkin	Coweta	Pike
	Dawson	Madison	De Kalb	Rockdale
	Douglas	Paulding	Fayette	Spalding
	Floyd	Pickens	Fulton	Taliaferro
	Forsyth	Polk	Greene	Walton
	Franklin	Stephens	Henry	Harte
	Gwinnett	White	Lamar	Elbert
			Meriwether	
#25	Alabama		Alabama	
	Bibb	Jefferson	Greene	
	Blount	Marion	Hale	
	Calhoun	Shelby		
	Cherokee	St. Clair		
	Chilton	Talladega		
	Clay	Tuscaloosa		
	Cleburne	Walker		
	Cullman	Winston		
	Etowah	Pickens		
	Fayette	Lamar		
#26	Alabama		Alabama	
	Chambers		Autauga	Lowndes
	Coosa		Bullock	Macon
	Elmore		Butler	Montgomery
	Randolph		Crenshaw	Perry
	Tallapoosa		Dallas	Russell
			Lee	
	Georgia			
	Heard		Georgia	
			Harris	Talbott
			Marion	Troup
			Muscogee	Webster
			Stewart	

APPENDIX A
ECONOMIC SUBREGIONS
(cont'd.)

Subregions	Appalachian	Nonappalachian
#27	Mississippi Alcorn Benton Chickasaw Choctaw Clay Itawamba Kemper Lee Lowndes Marshall Monroe Noxubee Oktibbeha Pontotoc Prentiss Tippah Tishomingo Union Webster Winston	

APPENDIX B

Vocational Category	Some Types of Jobs Used to Define Demand
Agriculture	Farmers and Farm Workers Millers (grain, feed, flour)
Distribution	Purchasing Agents, Managers, Insurance Agents and Brokers, Sales Workers, Delivery men, Routemen, Cab Drivers
Health	Technical, Medical and Dental Workers, Hospital Attendants, Nurses Aides
Home Economics	Private Household Workers
Office	Accountants and Auditors Personnel and Labor Relations Workers Creditmen Stenographers Typists Secretaries Billing and Bookkepping Machine Operators Keypunch Operators Tabulating Machine Operators Other Office Machine Operators Accounting Clerks Bookkeepers (hand) Bank Tellers Cashiers Mail Carriers Payroll Clerks and Timekeepers Postal Clerks Shipping Clerks and Receiving Clerks Telephone Operators
Technical Education	Surveyors Technical, Electrical, and Electronic Technicians, other Firemen
Trades & Industries	Draftsmen Air Traffic Controllers Construction Craftsmen Carpenters Brickmasons, Stone, Tile Setters

APPENDIX B

Vocational Category	Some Types of Jobs Used to Define Demand
Trades & Industries (cont'd.)	Cement and Concrete Finishers
	Electricians
	Excavating, Grading and Road Machinery Operators
	Painters and Paper Hangers
	Plasterers
	Plumbers and Pipefitters
	Roofers and Slaters
	Structural Metal workers
	Machinists, all-around
	Blacksmith, Forgemen, Hammermen
	Boilermakers
	Heat Treaters, Annealers, Temperers
	Millwrights
	Molders
	Patternmakers, metal and wood
	Sheet Metal Workers
	Toolmakers, Diemakers, Setters
	Airconditioning, Heating, Refrigerator Mechanics
	Airplane Mechanics and Repairmen
	Motor Vehicle Mechanics
	Radio and TV Mechanics
	Office Machines Mechanics
	Compositors and Typesetters
	Electrotypers and Stereotypers
	Engravers
	Photoengravers and Lithographers
	Pressmen and Plate Printers
	Line and Servicemen, telephone and power
	Bakers
	Cabinetmakers
	Cranemen, Derrickmen, Hoistmen
	Glaziers
	Jewelers and Watchmakers
	Loom Fixers
	Opticians, Lens Grinders, Polishers
	Turbine Operators
	Inspectors, Log and lumber
	Upholsterers
	Assemblers, Metalworking Class A
	Assemblers, Metalworking Class B
	Machine Tool Operators Class B
	Electro Plater Helpers
	Furnacemen, Smeltermen, Pourers
	Heaters, metal

APPENDIX B

Vocational Category	Some Types of Jobs Used to Define Demand
Trades & Industries (cont'd.)	Welders and Flame-Cutters
	Power Station Operators
	Sailors and Deck Hands
	Knitters, loopers and toppers
	Spinners, textile
	Weavers, textile
	Sewers and Stitchers mfg.
	Asbestos, Insulation Workers
	Blasters and Powdermen
	Laundry and Dry Cleaning Operators
	Mine Operators
	Meat Cutters
	Policemen, Detectives
	Bartenders
	Cooks, except Private Household
	Counter and Fountain Workers
	Waiters and Waitresses
	Airline Stewards and Stewardesses
	Charwomen and Cleaners
	Janitors and Sextons
	Laborers, except Farm

APPENDIX C

Vocational Category	Some Types of Instructional Programs Used to Define Supply
Agriculture	Agricultural Production Animal Science Plant Science Farm Mechanics Farm Business Management Agricultural Supplies Agricultural Products Agricultural Mechanics Ornamental Horticulture (prod., proces., mktg., servs.) Agricultural Resources (consrv., util., servs.) Forestry (prod., proces., mngmt., mktg., servs.)
Distribution	Advertising and Sales Promotion Buying Marketing Management Marketing Research Operations Selling
Health	Dental Services Medical Services Other Health Occupation Education
Home Economics	Homemaking: Preparation for Personal, Home and Family Living Occupational Preparation
Office	Accounting and Computing Occupations Business Data Processing Systems Occupations Programmers Filing, Office Machines and General Office, Clerical Occupations Information Cummication Occupations Materials Support Occupations: transporting, storing, and recording Personnel, Training, and Related Occupations Stenographic, Secretarial, and Related Occupations Supervisory and Administrative Management Occupations Typing and Related Occupations Miscellaneous Office Occupations
Technical Education	Engineering - related Technology Agricultural - related Technology Health - related Technology Office - related Technology Other Technical Education

APPENDIX C

Vocational Category	Some Types of Instructional Programs Used to Define Supply
Trades & Industries	Air-Conditioning
	Appliance Repair
	Automotive Industries
	Blueprint Reading
	Business Machine Maintenance
	Commercial Art Occupations
	Commercial Fishery Occupations
	Commercial Photography Occupations
	Construction and Maintenance Trades
	Custodial Services
	Diesel Mechanic
	Drafting Occupations
	Electrical Occupations
	Electronics Occupations
	Fabric Maintenance Services
	Foremanship, Supervision, and Management Development
	Graphic Arts Occupations
	Metalworking
	Metallurgy
	Plastics Occupations
	Public Service Occupations
	Quantity Food Preparation
	Refrigeration
	Small Engine Repair (Internal Combust.)
	Shoe Manufacturing/Repair
	Upholstering
	Woodworking