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Underemployment in Tennessee

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UNDEREMPLOY-MENT IN TENNESSEE

by James G. Snell and K. Dawlaty

SUMMARY

Tennessee experienced increases in the percent of the total civilian labor force employed during the 1960-70 period. However this does not imply full human resource utilization of those employed or that the employment has provided the individuals with the income (output) that they could have received (produced) if all their productive resources were utilized. Many of the individuals could be underemployed.[1] Underemployment is a source of poverty in that individuals are earning (producing) at less than capacity. It is also a potential source of economic growth in that there exists partly unutilized resources.

The basic objective was to provide an empirical estimate of the percentage of labor underemployed in Tennessee by county for 1960 and 1970 and to compare these estimates.

The procedure used was developed by Williams & Glasgow.[2] This technique uses median income as a proxy variable measuring output per unit of employed civilian labor force in the U.S. and the county. In each county the employed labor force has an actual median income and a potential median income. The county potential median income is assumed to be the national actual median income, adjusted for four factors which affect labor productivity (output). That is, given the characteristics of a labor force in a given county, the employed labor force would have earned the potential median income if they had been paid at the same rate as individuals with the same characteristics at the national level.

The results indicate that the productive potential of both the male and female labor force in Tennessee increased during the 1960 to 1970 period. Of the two, female labor force showed a greater gain in productive potential than the male labor force. However the percentage of the male labor force underemployment decreased in 89 counties and increased in 6 counties while female labor force underemployment increased in 69 counties and decreased in 26 counties. It appears that wage rate changes has more nearly matched the potential productivity changes in the male labor force than for the female labor force.

The number of total male labor years unutilized due to underemployment dropped from 190,789 years in 1960 to 112,534 years in 1970. For females, unutilized labor years increased from 56,799 labor years in 1960 to 108,479 labor years in 1970.

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[1]See page 5 for definition of underemployment.

[2]Williams, T. T., and B. R. Glasgow, "Developing Estimates of Economic Underemployment for the Rural Labor Force of Seven Southern States," **American Journal of Agricultural Economics,** Vol. 50, no. 5, pp. 1432-6.

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James G. Snell and K. Dawlaty*

INTRODUCTION

Tennessee, as a part of the South, has lagged behind the national standard of economic growth and prosperity.[1] However, this gap has narrowed in recent years. In 1960 the per capita personal income in Tennessee was about 71% of that of the U.S. By 1975, the per capita personal income in Tennessee was approximately 82% of the U.S. per capita personal income.

One of the major sources of economic growth in Tennessee during the 1950 to 1967 period was an increase in employment and improvement of the quality of the labor force.[2] For the United States as a whole, the rate of increase in employment was 80% of the rate of population growth. Tennessee's population rose from 3.315 million to 3.927 million (18%) from 1950 to 1967 while employment rose from 1.123 million to 1.538 million for the same period. The rate of increase in employment was approximately twice as high as the rate of increase in the population. An additional source of the increase in productivity and economic growth has been the transfer of labor from agriculture to sectors in which the wage rate (marginal productivity of labor?) was higher.[3]

The above is concerned with employed vs unemployed and while the rate of employment increased during the 1950-67 period, this fact does not imply full utilization of those employed. The classification "employed" considers only those individuals who have a job;

[1]Some of the historical data on per capita wealth of the South and that of U.S., interpreted by Martin*, reveals that before the Civil War the per capita wealth of the South was higher than that of the U.S. due to counting slaves as part of the wealth. After the Civil War, the slaves became liberated and were not counted as wealth, but became part of the "free population." This historical event reversed the situation. Since then the per capita income of the South has always lagged behind that of the U.S.

*Martin, Joe A.; "Some Myths of Southern Economic Growth: A Study of Comparative Growth Rate in the Manufacturing Economy of the Southern States," Journal of Farm Economics, Vol. 38, no. 5, December 1956, pp. 1363-1374.

[2]Bieler, T. A., Sources of Growth in the Tennessee Economy, Center of Business and Economic Research, College of Business Administration, University of Tennessee, Knoxville, December 1973, pp. 1-2.

[3]Ibid. p. 27-28.

it does not exclude the possibility that the jobs may not utilize all of the individual's productive capacity. Thus, the employment may not provide the individuals with the income (output) that they could receive (produce) had all of their productive capacity been utilized. Many of these individuals could be underemployed.

In general, underemployment simply means that an individual has more productive capacity (technical skills, managerial skills, or time) than the individual's current job requires. Underemployment is similar to unemployment in that human resources are not utilized; however, underemployment can exist without being visible. Underemployment is a form of disguised unemployment of workers that are employed at less than full capacity.

Based on the dominancy of the role of labor on the economy of the state of Tennessee, underemployment of the labor force can emerge as a problem related to human poverty and possible economic growth.[4] Therefore, a periodic quantitative account of the level of underemployment of the labor force can be beneficial for economic planning and policymaking. A quantitative estimate of the level of underemployment also provides additional information with which to assess the performance of the economy in terms of efficiency and equity.

OBJECTIVE

The basic objective was to provide an empirical estimate of the percentage of underemployed labor in Tennessee by county for 1960 and 1970 and to compare these estimates.

PROCEDURE

The procedure employed to estimate underemployment by county in Tennessee was essentially the one developed by Williams & Glasgow.[5,6] This technique uses median income of those with income as a proxy variable measuring output per unit of employed civilian labor force in the U.S. and the county. In each county the

[4]It is a source of human poverty in that individuals earn (produce) at less than maximum capacity. It is a source of economic growth in that there exists a partly unutilized resource base.

[5]Williams and Glasgow, Ibid.

[6]See Appendix B for details of the procedure, an example of its use, and its limitations.

employed labor force has an actual median income and a potential median income. The county potential income is assumed to be the national median income of those with income, adjusted for four factors affecting labor productivity (output).[7] Therefore the county potential median income is an imputed potential median income. That is, given the characteristics of a labor force in a given county, the employed labor force with income would have earned the imputed potential median income if they had been paid at the national rate of all individuals with the same characteristics. If they are paid less, they are underemployed; if they are paid more they are over-employed.[8]

A USDA study in 1969 employed the Williams and Glasgow technique and estimated the underemployment by counties for the U.S. in 1960.[9] Difficulties were encountered in replication of this work using 1970 census data because of a change in census reporting. Kampe and Lindamood used median income of those **with income** as the proxy variable for output or productivity. The 1970 census did not report such an income category but reported median income for **all** male and female but this was not reported in the 1960 census. Both censuses reported median income of the **experienced labor force**, male and female; therefore, the procedure was modified to this extent in order to have comparable estimates for 1960 and 1970. In all other respects, the procedure remains unchanged from that detailed by Kampe and Lindamood.

RESULTS

Changes In Income Adjustment Factors[10]
Age-Race Factor
This factor adjusts the county's potential median income by

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[7]These factors are Age-race mix, Educational Status, Labor force participation Status, and Employment Status.

[8]There is no way to determine if the underemployment is voluntary or involuntary. Individuals may choose an occupation or location for many reasons; maximizing one's income need not be the main factor. Therefore, while underemployment may exist, it may be an overt choice for some individuals.

[9]Kampe, R. E., and W. H. Lindamood; **Underemployment Estimates by County United States**, Agr. Econ. Report, No. 166 E.R.S., USDA, Washington D. C., Oct. 1969.

[10]The change in the potential income and hence underemployment can result from either changes at the county level or changes at the national level. Therefore, every county must be evaluated individually and compared to the changes in the characteristics of the U.S. labor force. This type of analysis has been omitted for reasons of brevity and only a general analysis of the 1960 to 1970 changes in the adjustments factors is presented.

the proportion of workers in the various age groups and by race. In general, the lower and higher age groups have lower median incomes than the middle age groups. Non-whites tend to have lower median incomes than whites. Therefore, the potential median income in a given county depends on the distribution between white and non-white and the distribution of age groups in the labor force.

For a county, a negative change in any particular adjustment factor from the year 1960 to 1970, means a loss in income earning power of a certain productive characteristic of the employed civilian labor force of that county. A positive change implies the opposite case.

For the male labor force, the Age-race income adjustment factor declined in 91 counties from 1960 to 1970 with only minor increases in the remaining four counties. During the same period, the female labor force Age-race income adjustment factor has increased in 35 counties and declined in 58 counties (Table 1).

Education Factor

The change in this adjustment factor from 1960 to 1970, in any particular county is a reflection of a change in the percent distribution of the county labor force 25 years old and over, who completed various years of school. This change is relative to the same distribution of the U.S. labor force.

A decline from 1960-1970 in this adjustment factor, for both sexes of labor force, in a very large number of counties can be attributed to either one or both of the following:

a. An increase in the percentage of the labor force with low educational attainment relative to the U.S. labor force.

b. A decrease in the percentage of the labor force with high educational attainment relative to the U.S. labor force.

This adjustment factor declined in 93 and 83 counties for the male and female labor force, respectively for the period 1960-1970 (Table 1).

Labor Force Participation Factor

The labor force participation income adjustment factor reflects the percentage distribution of the population 14 years old and over in the labor force with income. The male labor force has achieved considerable gain in this adjustment factor from the year 1960 to the year 1970 in all counties. For female labor force, the labor force participation income adjustment factor has increased in 94 counties and decreased in only one county (Table 1).

The increase in this adjustment factor for the male and female labor forces in all counties of the state (see Table 1) indicates that the percent of the population 14 years old and over in the labor force, with income, and for whom the U.S. median income is high, may

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Table 1. Some statistics on the changes in the adjustment factor, economic utilization index, and percent underemployment of the employed civilian labor force in Tennessee, from the year 1960 to 1970

Adjustment factors, economic utilization index, and percent underemployment	Statistics for the changes	
	Male	Female
Age-Race Mis Adjustment Factor		
Number of counties where it declined from the year 1960 to 1970	91	58
Number of counties where it increased	4	35
Number of counties where it did not change	0	2
Educational Status Adjustment Factor		
Number of counties where it declined from 1960 to 1970	93	83
Number of counties where it increased	2	11
Number of counties where it did not change	0	1
Labor Force Participation Status Adjustment Factor		
Number of counties where it declined from 1960 to 1970	0	1
Number of counties where it increased	95	94
Number of counties where it did not change	0	0
Employment Status, Adjustment Factor		
Number of counties where it declined from 1960 to 1970	43	64
Number of counties where it increased	49	26
Number of counties where it did not change	3	5
Combined Adjustment Factors		
Number of counties where it declined from 1960 to 1970	17	0
Number of counties where it increased	78	95
Number of counties where it did not change	0	0
Labor Force Utilization Index		
Number of counties where it declined from 1960 to 1970	6	69
Number of counties where it increased	89	26
Number of counties where it did not change	0	0
Percent Underemployment		
Number of counties where it declined from 1960 to 1970	89	26
Number of counties where it increased	6	69
Number of counties where it did not change	0	0

have increased relative to the same population group in the U.S. labor force. It is possible that the increase is due to a decline in the percentage of those in the labor force of the county, where the U.S. median income is low. Or perhaps both effects were operating simultaneously to generate this change.

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Employment Status Factor

This adjustment factor is concerned with employment vs. unemployment and has declined in 43 counties for male and in 64 counties for female labor forces from year 1960 to 1970. This factor has increased in 49 counties for the male labor force, almost twice the number of counties where this adjustment factor had increased for the female labor force (Table 1).

These changes imply that in those 49 counties during this period; 1) a higher percentage of the male civilian labor force (relative to the U.S.) entered the employed male civilian labor force group where the U.S. median income is relatively high or 2) the percent of male civilian force unemployed (which has a low U.S. median income) may have decreased in the related counties. It is also possible that both types of changes may have taken place in any or all of these counties where the employment adjustment factor for male or for female labor force has increased (see Table 1).

Changes in the income adjustment factor indicate, that in the state as a whole, the male labor force has gained income earning capacity due to employment status, while the female labor force has shown a net loss.

Combined Adjustment Factor

The net effect of the changes in four labor force characteristics indicates that both the male and female labor force in Tennessee has increased in potential productive capacity relative to that of the U.S. average productive capacity.

For the male labor force, the average potential productive capacity in 1960 was 78% as great as the U.S. average. By 1970, the potential productive capacity had increased to 84% of the U.S. average, (The distribution of potential productive capacity by counties, as a percent of the U.S. average in 1960 and 1970, is shown in Figure 1.)

The change in potential productive capacity for the female labor force was even more dramatic. In 1960, the female labor force was estimated to be 78% as great as the U.S. average for females. By 1970 the Tennessee female labor force had increased its potential productive capacity to 105% of the U.S. average an increase of 28% in the 10-year period (Figure 2).

The two factors responsible for this increase in potential productive capacity was labor force participation status and employment status. In general this can be interpreted as a higher percentage of the population over 14 being employed and primarily employed in industries with relative high productivity. Therefore, the changes in potential productivity came from changes in the percent of the labor force employed rather than the basic changes in the individuals within the labor force.
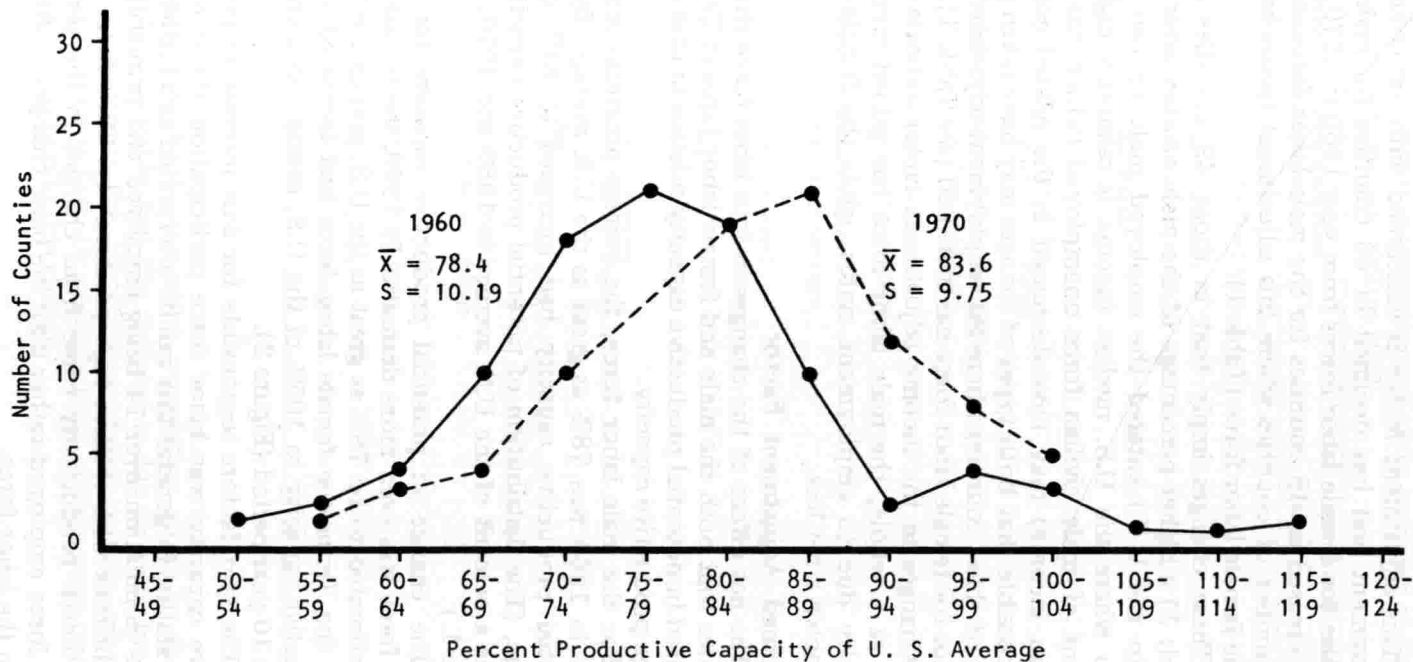
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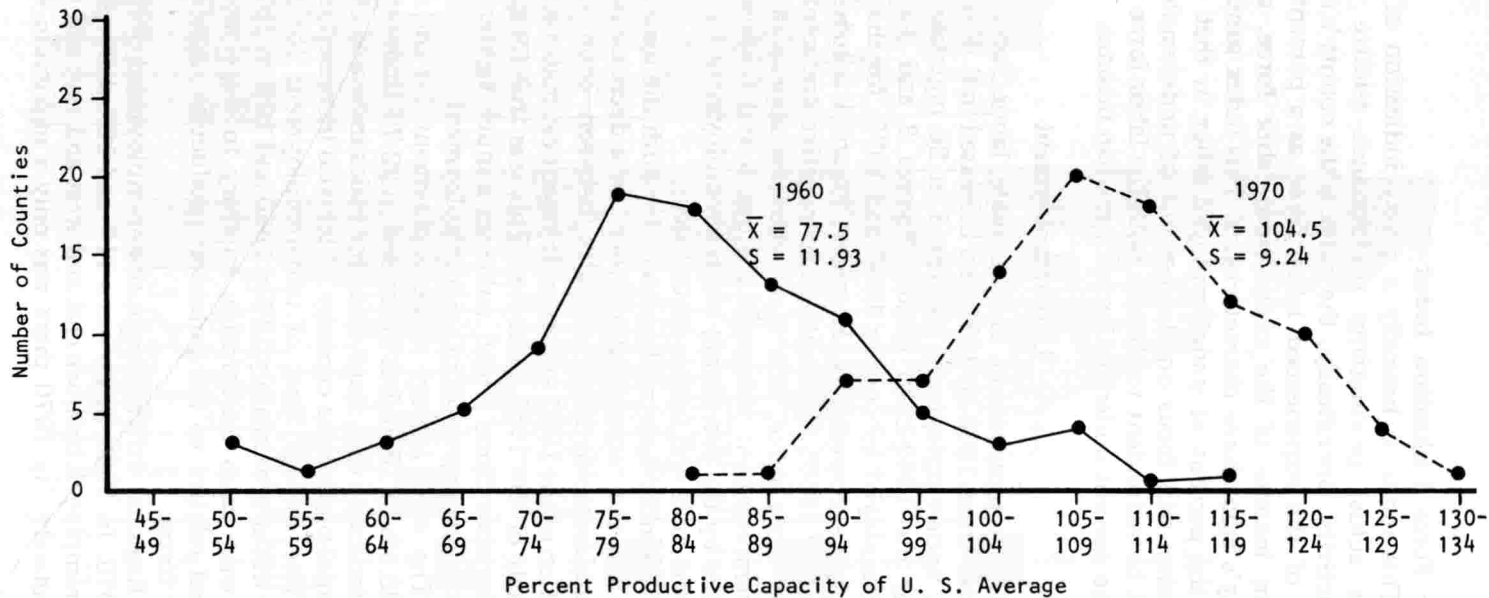Figure 1. Percent productive capacity the male labor force in Tennessee is of the U. S. average.

Figure 2. Percent productive capacity the female labor force in Tennessee is of the U. S. average.

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Labor Force Utilization Index

This index is basically a proxy indication of a county labor force's actual productivity performance relative to its potential productivity. Specifically, the index is the county's actual median income of the experienced labor force as a percentage of the U.S. median income of the experienced labor force, adjusted for the county's labor force characteristics. This index subtracted from 100 gives the percent of underemployed labor in that county. Further discussion will focus on the percent of underemployed labor as it would be redundant to discuss both the labor force utilization index and the percent underemployment median income.

Underemployment

Underemployment in the male labor force declined in 89 counties from 1960 to 1970 and increased in 6. For the female labor force, underemployment decreased in 26 counties and increased in 69 for the 1960-1970 period. Figures 3 and 4 show the percent underemployed by county 1960 and 1970, for the male and female labor force, respectively. However, Figure 4 is somewhat misleading in that in 1960, 22 counties had negative underemployment in the female labor force, but these counties appear in the 10% or less underemployment category. Figures 5 and 6 show the number of counties by the percentage of underemployment by 4 unit groups for both the male and female labor force.

The most discernible pattern for both the male and female labor force was the "squeezing together" or a decrease in the variation in the underemployment estimates between counties. The standard deviation of the 1970 underemployment estimates was approximately one half of the 1960 estimates. This was true for both the male and female labor force which indicates a much tighter grouping around the state average level of underemployment.

The state average underemployment for the male labor force was 38.5% in 1960, but decreased to 22.7% underemployed in 1970. This indicates that wage rates for males increased at faster rates than potential productive capacity which also increased for 78 counties.

The average level of underemployment for the female labor force was approximately 12% in 1960 and 19% in 1970. This indicates that wage rates for females, contrary to wage rates for males, decreased relative to the potential productive capacity of the female labor force.

Regional differences in underemployment decreased from 1960 to 1970. In 1960 there was a 11% and 12% difference in the percent underemployed between east and west and east and middle Tennessee respectively. By 1970 there was only a maximum 4% difference be-
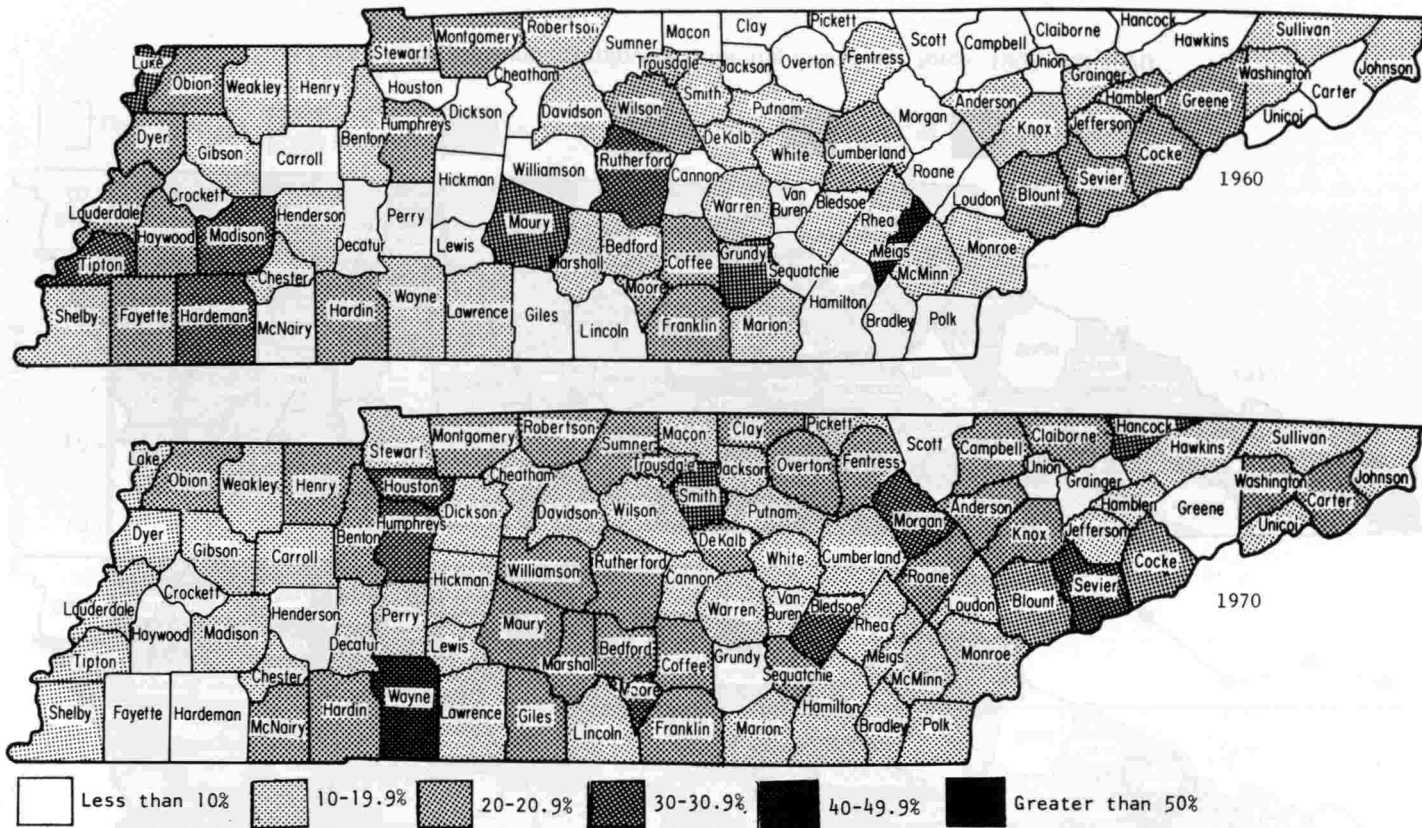
Figure 3. Percent underemployment for the female labor force, 1960 and 1970.

Legend: Less than 10% | 10-19.9% | 20-20.9% | 30-30.9% | 40-49.9% | Greater than 50%

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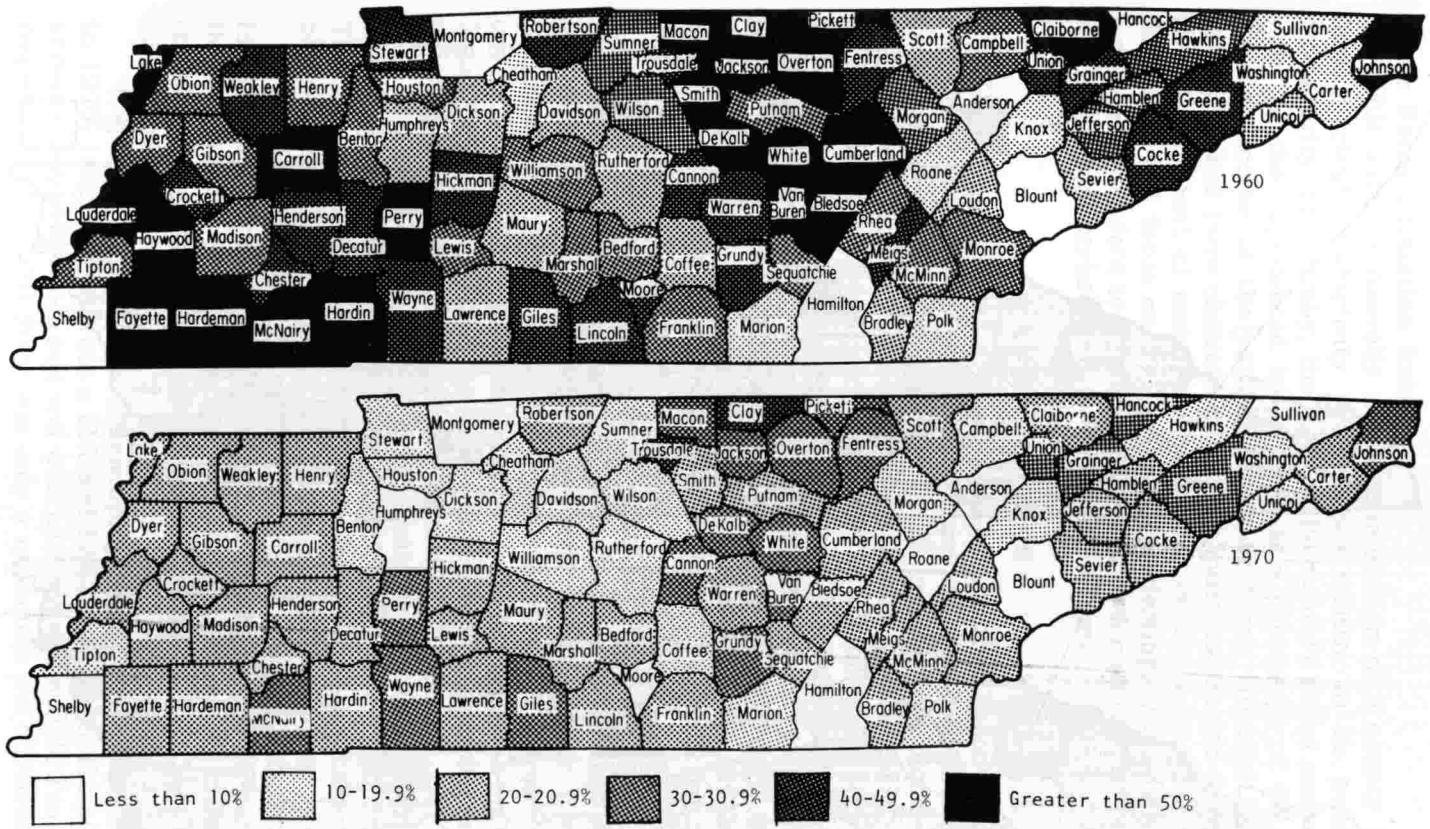
Figure 4. Percent underemployment for the male labor force, 1960 and 1970.

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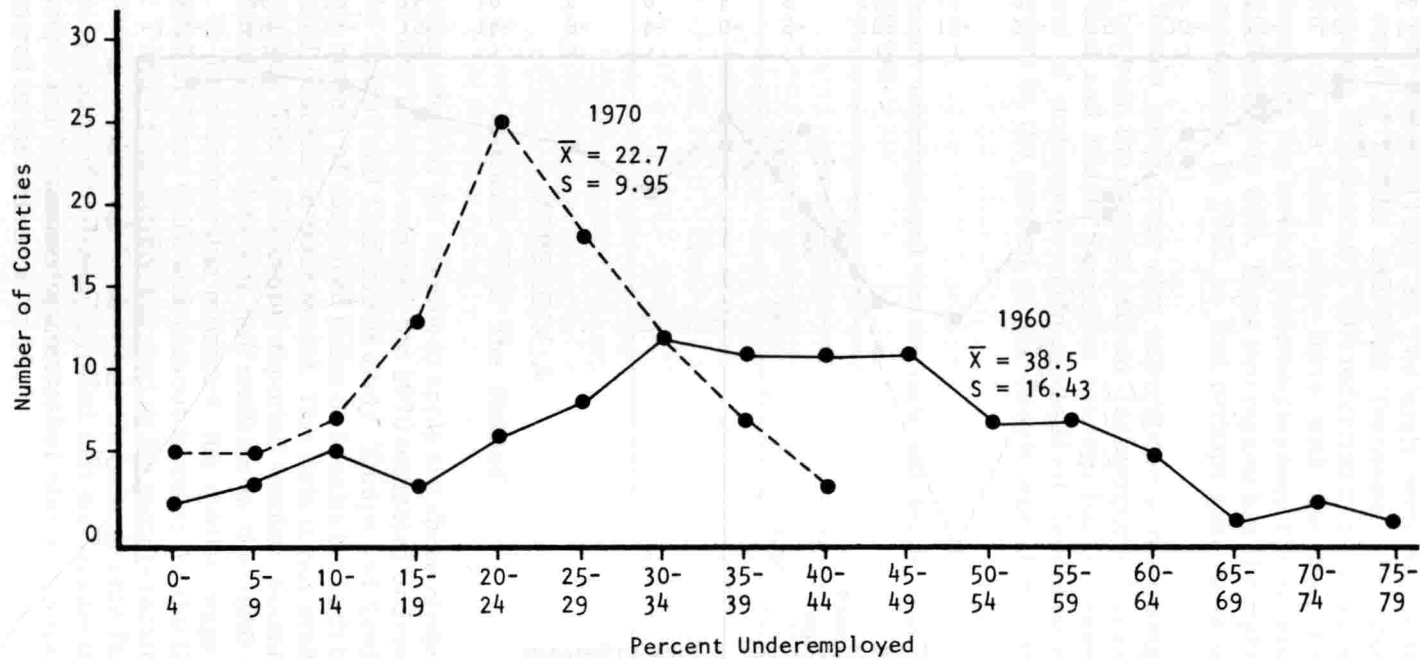
Figure 5. Percent underemployed by number of counties, male labor force in Tennessee, 1960 and 1970.
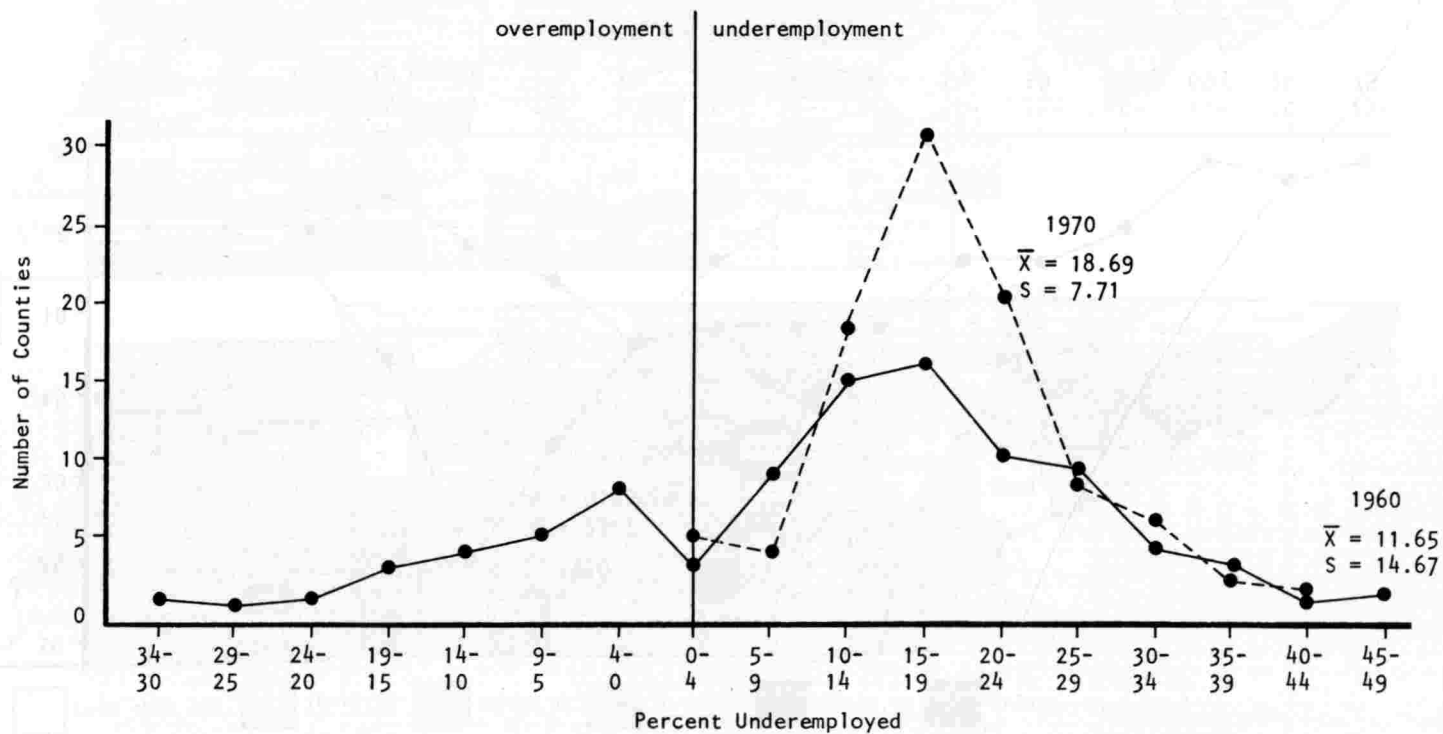
Figure 6. Percent overemployment or underemployed by number of counties, female labor force in Tennessee, 1960 and 1970.

tween any two regions (Table 2). The larger decreases in underemployment came in Middle and West Tennessee. The counties in Middle Tennessee experienced a 40% reduction in the level of underemployment for the male labor force with the West Tennessee counties decreasing the level of underemployment for the male labor force by approximately 50%. These two regions had the higher levels of underemployment in 1960 so that perhaps gains were easier to achieve.

The female labor force also experienced a narrowing of the difference between the average percent underemployed in a county. However, East and Middle Tennessee counties had increases in the average level of underemployment while West Tennessee counties had a decrease in the percent of the female labor force underemployed.

Table 2. Percent underemployed for the male and female labor force by region, 1960-1970

	Male		Female	
	Year		Year	
Region	1960	1970	1960	1970
	%	%	%	%
East	31	21	8	18
Middle	42	25	10	21
West	43	21	18	15

APPENDIX A

Problems With The Method

A problem arose in the attempt to apply the above model to the 1970 census data then, to compare the 1970 estimated underemployment to the Kampe and Lindamood study. Kampe and Lindamood used median income of employed males or females for both the U.S. and individual counties in their model. This data is not available in the 1970 census. The 1970 census reported median income of all males or females. This data was not available in the 1960 census. Therefore, to have comparable estimates, the median wage of the experienced labor force (with and without income) for the U.S. and county for Y and y respectively was used as the income factor. Using the Kampe and Lindamood D to adjust the new income factor resulted in an estimate of underemployment that was smaller than the original Kampe and Lindamood estimate, but one that could be directly compared to the estimates for 1970.

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Other theoretical problems also exist. Specifically, the technique developed by Williams and Glasgow suffers from several problems. The most obvious is the choice of the U. S. median income as the standard of comparison. Implicitly, one half the population is underemployed, and one half overemployed. If the assumption can be made that no workers are being paid more than their marginal value product, then the resulting underemployment estimate utilizing the William and Glasgow technique is some rough lower limit of underemployment. That is, ceterus paribus, at least this much underemployment exists—how much more is unknown. Another question concerning Williams and Glasgow is that the technique implicitly implies that factors used to adjust for implied productive capacity are compounded. That is, a worker with a below median education may be expected to earn 80% (hypothetical example) as much as those with the median level of education. If the same worker was non-white the earnings may be expected to be 70% (hypothetical) as much as for white workers. The Williams and Glasgow technique multiplies the adjustment factors (.8 x .7 = .56) which implies that the factors compound each other and reduces the earning capacity below that of the most limiting factor. If the assumption of compounded factors is not valid, then the Williams and Glasgow procedure underestimates the amount of underemployment. In the hypothetical example just used, the worker would only have to earn 56% as much as that median group to be considered "just employed." If the assumption is made that the productive capacity is only limited by the most limited factor, then the hypothetical worker would have to earn 70% as much as the median group to be considered "just employed."

A third area of concern is the implicit assumption that non-white workers are less productive, ceterus paribus, than white workers. While it is a generally accepted fact that non-white workers are generally paid lower wages than white workers, there is no reason to assume non-white workers have less productive capacity, ceterus paribus, and hence deserve a lower wage. Theoretically, the standard of comparison should be the individual county median income to the median income of the white workers for the U.S. Even this adjustment would cause problems in that it still uses the median income and its problems as the comparison factor. Further, the suggested change does not consider all factors simutaneously.

Finally, under the assumption of no workers being paid more than the workers MVP, a more theoretically correct technique would be to determine the outermost wage surface in N space where N is the number of variables thought to influence underemployment. Obviously, this would not be feasible to compare all workers wages to a particular standard. A more realistic approach would be to use

county median incomes and to determine the outermost county median income surface in N space and to compare any particular county's median income to that outermost surface. The difference is the length of the vector in N space between the outer surface and any given county would be the amount of underemployment for that county.

Table 1. Adjustment factor for underemployment estimates for the male labor force, 1970 by county.

County	Age-color mix	Employment status	Educa- tional status	Labor force participation status
Anderson	99.7	101.5	89.3	114.5
Bedford	95.6	102.2	83.8	115.7
Benton	96.9	101.2	78.4	113.9
Bledsoe	82.7	101.8	73.9	114.6
Blount	97.4	102.0	86.8	115.4
Bradley	98.0	102.2	83.1	115.6
Campbell	93.4	97.9	69.7	109.7
Cannon	97.0	100.9	74.6	113.5
Carroll	92.5	101.9	78.5	114.9
Carter	97.6	100.7	82.9	113.4
Cheatham	96.6	102.7	79.6	116.2
Chester	87.9	102.2	74.2	116.0
Claiborne	91.8	99.9	70.2	112.2
Clay	96.5	99.9	66.7	112.2
Cocke	98.9	100.3	72.8	113.0
Coffee	100.9	101.4	85.8	115.2
Crockett	89.0	101.5	79.4	114.3
Cumberland	95.4	100.3	73.2	112.9
Davidson	92.5	101.7	89.6	115.1
Decatur	94.4	100.2	76.1	112.6
Dekalb	98.4	102.3	76.2	115.6
Dickson	95.8	102.3	77.1	115.6
Dyer	92.1	101.9	76.1	115.1
Fayette	72.2	100.8	70.3	113.4
Fentress	92.6	99.6	67.0	111.8
Franklin	91.4	101.3	81.6	114.7
Gibson	91.5	101.9	82.3	115.0
Giles	92.1	102.5	79.4	115.8
Grainger	98.2	101.9	70.3	114.9
Greene	98.9	99.5	77.9	112.1
Grundy	93.7	101.8	70.2	114.7
Hamblen	101.7	102.2	83.3	115.5
Hamilton	94.1	102.4	89.9	115.9
Hancock	93.4	100.1	65.5	112.5
Hardeman	83.6	101.1	73.3	113.8
Hardin	95.2	101.0	76.6	113.9
Hawkins	98.5	101.7	75.5	114.7
Haywood	75.7	101.9	70.9	115.0
Henderson	94.0	101.8	74.0	115.0
Henry	91.7	101.4	88.7	114.8
Hickman	96.6	100.9	73.3	113.5
Houston	96.3	102.1	73.7	115.2
Humphreys	97.4	102.8	82.7	116.3
Jackson	94.4	100.8	65.0	113.3
Jefferson	95.3	101.9	79.8	115.0
Johnson	97.3	101.0	73.3	118.7
Knox	93.3	101.9	90.0	115.3
Lake	88.6	97.7	67.0	109.8
Lauderdale	84.1	101.3	71.9	114.0

Table 1. (continued)

County	Age-color mix	Employment status	Educational status	Labor force participation status
Lawrence	96.5	101.7	76.2	114.8
Lewis	97.1	100.4	75.4	113.1
Lincoln	95.0	101.9	80.5	115.0
Loudon	98.9	101.4	79.3	114.4
McMinn	96.1	102.4	80.5	115.7
McNairy	94.3	99.4	79.7	111.6
Macon	95.5	101.5	67.1	114.3
Madison	85.9	102.0	84.6	115.2
Marion	94.5	101.4	43.7	114.3
Marshall	94.6	102.5	82.4	115.8
Maury	92.2	101.7	82.6	114.8
Meigs	93.8	101.8	69.9	114.5
Monroe	93.4	100.4	71.7	113.0
Montgomery	79.7	80.6	87.9	114.7
Moore	95.8	103.2	79.8	116.9
Morgan	94.1	98.6	76.6	110.4
Obion	93.4	102.2	81.1	115.5
Overton	94.8	100.2	66.9	112.5
Perry	96.0	98.5	73.4	110.6
Pickett	96.9	99.0	65.2	110.9
Polk	97.8	102.3	75.5	115.5
Putnam	88.2	101.4	76.8	114.4
Rhea	93.4	101.4	77.1	114.2
Roane	97.8	100.9	81.7	113.6
Robertson	92.8	102.2	79.9	115.5
Rutherford	91.1	101.4	86.1	115.4
Scott	92.9	99.6	69.4	111.8
Sequatchie	97.4	101.7	75.6	114.6
Sevier	98.6	101.9	79.2	115.0
Shelby	84.9	97.7	89.6	114.7
Smith	96.2	100.7	76.1	113.7
Stewart	92.8	100.8	73.5	113.6
Sullivan	100.9	102.0	85.9	115.2
Sumner	98.7	102.4	83.0	115.9
Tipton	85.1	97.2	75.0	114.2
Trousdale	90.9	101.8	68.8	115.0
Unicoi	97.8	100.1	79.7	112.5
Union	97.1	101.8	71.1	114.8
Van Buren	93.2	101.5	71.6	114.4
Warren	96.7	101.7	80.6	114.7
Washington	94.7	101.7	83.5	114.9
Wayne	94.8	101.6	71.7	114.5
Weakley	86.2	102.2	79.0	115.7
White	97.1	100.9	74.9	113.6
Williamson	95.4	102.8	83.3	116.3
Wilson	96.1	102.5	83.2	116.1

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Table 2. Median wage of the experienced male labor force, required median wage. 1960 and 1970; percent underemployed 1960, 1970 and years of unutilized labor 1960, 1970 by counties

County	Median wage of the experienced male labor force				% under-employment		Years unutilized labor	
	Required	Actual	Required	Actual	1960	1970	1960	1970
	1960		1970					
	— — — — — —Dollars— — — — — —				— —Percent— —		— — —Years — —	
Anderson	5349	5247	7884	7701	1.9	2.3	262.9	335.8
Bedford	4103	2634	7207	5426	35.8	24.7	2128.0	1562.0
Benton	3740	2516	6666	5689	32.7	14.7	788.7	402.2
Bledsoe	3194	1213	5434	4241	62.0	21.9	1019.3	323.7
Blount	4411	4062	7564	7055	7.9	6.4	1055.6	1005.4
Bradley	4145	3112	7321	5862	24.9	19.9	2314.7	2559.1
Campbell	3111	2031	5319	4510	34.7	15.2	1659.7	626.4
Cannon	3685	1865	6309	4414	49.4	30.0	1105.1	590.4
Carroll	3460	1872	6469	5375	55.9	26.9	3090.7	1668.9
Carter	3892	3345	7024	5354	14.0	23.8	1215.6	2300.0
Cheatham	3465	2794	6986	6431	19.4	7.9	499.7	264.1
Chester	3194	1898	5883	4407	40.6	25.1	836.4	561.0
Claiborne	3221	1325	5494	4349	58.9	20.8	2412.5	743.4
Clay	3318	952	5487	3128	71.3	43.0	1222.8	582.2
Cocke	3511	2084	6210	4574	41.6	26.3	2231.8	1465.7
Coffee	4788	3395	7686	6289	29.1	18.2	1993.4	1443.6
Crockett	3143	1783	6223	4711	45.3	24.4	1476.8	738.8
Cumberland	4926	2072	6012	4535	57.9	24.6	2164.3	1040.3
Davidson	4567	4094	7389	7114	20.4	3.7	19643.6	4019.6
Decatur	3428	1724	6164	4618	49.7	25.1	858.3	521.8
DeKalb	3552	1425	6742	4340	59.9	35.6	1516.7	901.4
Dickson	3570	2662	6644	5619	25.4	15.4	1095.0	817.4
Dyer	3478	2337	6248	4958	32.8	20.6	2254.3	1473.7
Fayette	2376	1026	4414	3473	56.8	21.3	2769.6	889.7
Fentress	2665	1464	5251	3260	45.1	37.9	879.9	864.9
Franklin	3759	2602	6590	5110	30.8	22.5	1792.3	1411.4
Gibson	3552	2198	6720	5324	38.1	20.8	3861.1	2282.0
Giles	3598	2017	6605	4523	43.9	31.5	2416.7	1726.5
Grainger	3451	1737	6149	4188	49.7	31.9	1568.0	1078.9
Greene	4113	2277	6545	4497	44.6	31.3	4698.6	3504.7
Grundy	3359	1974	5844	3967	41.2	32.1	864.0	724.8
Hamblen	4374	3036	7610	5540	30.6	27.2	2633.1	2734.4
Hamilton	4586	4169	7648	7089	9.9	7.3	5600.5	4487.5
Hancock	3345	1015	5243	3177	69.7	39.4	1226.7	463.0
Hardeman	3171	1505	5365	4279	52.5	20.2	2209.7	824.6
Hardin	3423	1705	6377	4469	50.2	29.9	1902.1	1222.3
Hawkins	3676	2381	6598	5585	35.2	15.3	2524.5	1239.8
Haywood	2546	1270	4787	3597	50.1	24.9	2419.3	954.2
Henderson	3511	1798	6202	4539	48.8	26.8	1866.6	1079.5
Henry	3602	2462	6552	5168	31.6	21.1	1656.2	1167.3
Hickman	3662	2098	6172	4437	42.7	28.1	1289.5	791.6
Houston	3364	2087	6354	5708	38.0	10.2	408.9	139.9
Humphreys	3874	2714	7344	7126	29.9	3.0	793.2	97.6
Jackson	3474	1032	5335	3321	70.3	37.7	1619.0	643.2
Jefferson	3768	2404	6788	4765	36.2	29.8	2002.2	1776.7
Johnson	3299	1565	6240	3990	52.6	36.1	1149.8	901.8

Table 2. (continued)

County	Median wage of the experienced male labor force				% underemployment		Years unutilized labor	
	Required	Actual	Required	Actual				
	1960		1970		1960	1970	1960	1970
	— — — — — Dollars — — — — — — —				— —Percent— —		— — —Years — —	
Knox	4627	3932	7519	6649	15.0	11.6	8676.9	7380.8
Lake	2945	1157	4848	3540	60.7	27.0	1354.8	409.9
Lauderdale	3794	1320	5312	3862	52.8	27.3	2558.2	1053.8
Lawrence	3515	2784	6537	5075	22.2	22.4	1405.3	1432.0
Lewis	3593	2375	6339	5063	33.9	20.1	464.1	303.1
Lincoln	3869	2013	6819	4788	48.0	29.8	2888.6	1832.6
Loudon	3924	3046	6925	5528	22.4	20.2	1225.1	1162.9
McMinn	3855	2703	6978	5445	29.9	22.0	2364.8	1875.1
McNairy	3520	1542	6339	4226	56.2	33.3	2148.0	1272.4
Macon	3331	1208	5654	3546	63.7	37.3	2026.9	1136.2
Madison	3694	2832	6507	5637	23.3	13.4	3243.4	1938.6
Marion	3575	3084	6141	5394	13.7	12.9	591.3	589.8
Marshall	4260	2620	7047	5233	38.4	25.7	1707.9	1158.9
Maury	4062	3162	6765	5879	22.2	23.1	2369.2	2458.8
Meigs	3180	1613	5806	4528	49.3	22.0	525.0	262.7
Monroe	3419	2161	5784	4501	36.2	22.2	1853.1	1142.4
Montgomery	3166	2939	4924	5198	7.2	-5.6	703.7	-633.2
Moore	3984	2160	7016	4154	45.8	40.8	398.5	420.2
Morgan	3097	2042	5974	5038	34.1	15.7	844.3	366.0
Obion	3837	2477	6803	5406	35.4	20.5	2381.0	1519.5
Overton	3377	1293	5441	3601	61.7	33.8	1899.7	1037.0
Perry	3543	1497	5844	3807	57.7	34.9	688.9	394.0
Pickett	3308	940	5274	3442	77.6	34.7	727.9	237.8
Polk	3478	3042	6636	5654	12.5	14.8	325.0	416.2
Putnam	3359	2129	5981	4737	36.6	20.8	2373.1	1600.1
Rhea	3676	2320	6347	4928	36.9	22.4	1224.7	807.3
Roane	4117	3701	6971	6316	10.1	8.4	867.9	756.1
Robertson	3772	2244	6666	5192	40.5	22.1	2904.7	1585.0
Rutherford	3800	2838	6986	5783	25.5	17.2	2537.8	2393.6
Scott	2808	2076	5464	3865	26.1	29.3	642.8	747.2
Sequatchie	3538	2145	6529	4706	39.4	27.9	481.1	390.6
Sevier	2832	2071	6963	5066	26.9	27.2	1585.2	1884.7
Shelby	4126	3994	6484	6716	3.2	-3.6	4525.2	-5702.7
Smith	3722	1813	6377	4530	51.3	29.0	1598.0	940.5
Stewart	3299	1760	5951	4939	46.4	17.0	861.6	287.6
Sullivan	4797	4146	7755	7017	13.6	9.5	3784.9	3047.1
Sumner	3676	2452	7405	6272	33.3	15.7	3017.0	2266.3
Tipton	2945	2000	5388	4750	32.2	11.8	1944.2	650.2
Trousdale	3166	1628	5578	3161	48.6	43.3	625.0	608.8
Unicoi	4071	2890	6682	5611	29.0	16.0	944.7	538.4
Union	3295	1953	6134	4254	40.7	30.6	793.7	655.8
Van Buren	3001	1133	5905	3777	62.2	36.0	452.2	323.3
Warren	3970	2220	6925	4910	44.1	29.9	2485.5	1991.9
Washington	3846	3126	7024	5792	17.7	17.5	2560.8	3027.0
Wayne	3366	1941	6012	4192	42.0	30.3	1089.5	822.9
Weakley	3432	1959	6126	4869	42.9	20.5	2538.0	1384.8
White	3584	1628	6347	4239	54.6	33.2	1858.6	1199.5
Williamson	3694	2512	7230	6080	32.0	15.9	1980.8	1405.9
Wilson	3938	2673	7237	6081	32.2	16.0	2283.0	1495.7

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Table 3. Adjustment factor for underemployment estimates for female labor force, 1970 by county

County	Age-color mix	Employment status	Educational status	Labor force participation status
Anderson	105.6	98.4	90.5 -	133.9
Bedford	101.0	100.4	83.7	137.3
Benton	103.7	98.5	78.1	134.0
Bledsoe	102.0	100.0	74.5	136.5
Blount	103.6	98.9	85.6	134.7
Bradley	103.6	100.5	81.6	137.5
Campbell	101.4	99.6	69.1	135.8
Cannon	101.3	100.4	75.5	137.3
Carroll	98.0	99.9	78.3	136.4
Carter	103.6	98.1	80.5	133.4
Cheatham	103.4	100.6	80.2	137.6
Chester	95.0	98.9	74.8	135.3
Claiborne	102.7	99.0	70.8	134.7
Clay	101.1	99.1	66.0	135.0
Cocke	102.7	96.0	73.7	130.2
Coffee	102.3	98.9	86.3	134.8
Crockett	96.2	98.0	79.3	133.2
Cumberland	101.2	98.7	74.4	134.3
Davidson	98.6	100.4	90.6	137.3
Decatur	101.6	100.9	74.8	138.2
DeKalb	102.4	100.2	73.2	136.9
Dickson	101.7	100.4	77.8	137.3
Dyer	98.0	99.9	76.0	136.4
Fayette	83.7	97.0	72.1	131.7
Fentress	101.2	100.0	65.3	137.0
Franklin	100.8	98.5	84.3	134.0
Gibson	97.0	99.5	83.3	135.7
Giles	97.4	100.6	80.6	137.7
Grainger	103.0	97.5	71.1	132.3
Greene	103.4	94.3	80.7	127.9
Grundy	101.2	100.3	69.5	137.1
Hamblen	103.9	93.4	82.9	133.8
Hamilton	99.2	100.2	89.6	136.9
Hancock	102.9	100.1	63.5	136.7
Hardeman	92.4	98.6	74.9	134.4
Hardin	100.4	99.6	75.6	135.9
Hawkins	103.8	99.8	77.1	134.9
Haywood	84.9	97.3	73.4	132.1
Henderson	99.5	99.7	72.6	136.0
Henry	98.6	98.2	81.6	133.5
Hickman	100.8	98.5	74.6	133.9
Houston	99.3	94.8	76.3	128.3
Humphreys	102.5	100.8	81.2	138.1
Jackson	102.1	99.4	64.0	135.6
Jefferson	102.6	96.8	81.4	131.4
Johnson	103.0	100.6	71.5	137.6
Knox	100.4	100.0	89.4	136.6
Lake	93.8	99.8	70.0	136.2
Lauderdale	92.2	97.7	73.0	132.7
Lawrence	102.9	98.9	75.5	134.7
Lewis	102.0	101.1	76.9	138.5
Lincoln	100.1	97.3	82.1	132.3
Loudon	103.7	100.6	78.6	137.7
McMinn	102.4	99.8	79.7	136.2

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Table 3. (continued)

County	Age-color mix	Employment status	Educational status	Labor force participation status
McNairy	101.8	98.2	76.7	133.6
Macon	102.8	99.4	68.5	135.5
Madison	92.1	99.1	86.1	135.0
Marion	101.6	99.3	75.0	135.3
Marshall	98.9	100.3	83.7	137.2
Maury	98.7	99.5	84.5	135.8
Meigs	101.8	100.7	73.2	137.7
Monroe	101.1	98.1	71.8	133.3
Montgomery	98.3	97.6	87.8	134.1
Moore	103.1	97.6	80.1	132.8
Morgan	101.2	99.7	75.7	136.0
Obion	100.3	99.8	83.5	136.1
Overton	103.4	100.5	68.6	137.4
Perry	102.5	101.0	72.2	138.4
Pickett	99.9	101.5	69.1	139.2
Polk	103.6	100.6	73.4	137.6
Putnam	99.6	99.6	74.4	135.8
Rhea	101.4	96.3	77.7	130.7
Roane	103.2	99.5	81.6	135.6
Robertson	98.6	99.7	82.7	136.1
Rutherford	96.7	100.0	88.4	136.7
Scott	101.4	97.4	68.6	132.2
Sequatchie	102.8	97.7	77.0	132.6
Sevier	103.9	97.7	78.1	132.8
Shelby	94.4	99.1	90.4	135.4
Smith	101.0	99.4	74.3	135.5
Stewart	102.0	99.5	74.4	135.6
Sullivan	106.1	99.3	85.8	135.5
Sumner	103.6	99.7	84.9	136.0
Tipton	93.1	97.1	75.3	132.0
Trousdale	97.0	99.5	73.2	135.8
Unicoi	103.6	98.8	78.2	134.5
Union	104.5	100.0	66.9	136.5
Van Buren	101.5	101.7	70.0	139.7
Warren	101.7	99.1	79.7	135.0
Washington	101.8	98.8	85.8	134.6
Wayne	101.8	100.0	70.5	136.6
Weakley	96.3	99.0	80.0	134.9
White	103.3	99.6	74.2	135.9
Williamson	100.1	100.5	86.6	137.7
Wilson	100.8	100.1	84.6	136.8

Table 4. Median wage of the experienced female labor force, required median wage, 1960 and 1970; percent underemployed 1960, 1970 and years of unutilized labor 1960, 1970 by counties

County	Median wage of the experienced female labor force				% under-employment		Years unutilized labor	
	Required Actual		Required Actual		1960	1970	1960	1970
	1960		1970					
	– – – – – –Dollars– – – – – – –				– –Percent– –		– – –Years – –	
Anderson	3542	2190	4594	3570	13.8	22.3	807.7	1600.0
Bedford	2027	1664	4255	3264	17.9	22.7	592.7	751.6
Benton	1695	1506	3901	3049	11.1	21.8	124.2	351.9
Bledsoe	1719	1417	3784	2644	17.6	30.1	120.2	236.6
Blount	2085	1631	4309	3140	21.8	27.1	1039.9	2043.9
Bradley	1924	1971	4266	3560	-2.4	16.5	109.8	1383.5
Campbell	1594	1851	3459	2698	-16.1	22.0	-406.8	546.0
Cannon	1853	1731	3842	3240	6.6	15.7	72.7	205.2
Carroll	1646	1682	3817	3436	-2.2	10.0	-62.9	439.7
Carter	1873	1953	3985	3125	-4.3	21.6	-154.8	1102.0
Cheatham	1764	2036	4189	3456	-13.4	17.5	-118.3	271.8
Chester	1577	1297	3467	2844	17.8	18.0	201.1	268.0
Claiborne	1476	1537	3540	2757	-4.1	22.1	50.3	430.7
Clay	1525	1445	3255	2704	5.2	16.9	33.3	144.0
Cocke	1557	1097	3452	3017	29.5	12.6	464.6	344.6
Coffee	2121	1651	4288	2990	22.2	30.3	658.9	1299.0
Crockett	1334	1261	3638	3633	5.5	0.1	62.2	1.9
Cumberland	1644	1275	3642	3003	22.4	17.5	307.3	419.1
Davidson	2281	1999	4499	3669	12.4	18.4	7079.8	14053.2
Decatur	1590	1750	3868	3293	2.5	14.9	22.9	248.7
DeKalb	1766	1588	3748	2897	10.1	22.7	149.5	434.9
Dickson	1793	1832	3977	3287	-2.2	17.3	-45.2	552.9
Dyer	1492	1119	3704	3176	25.0	14.2	724.5	737.1
Fayette	1024	764	2813	2366	25.4	15.9	375.7	350.8
Fentress	1670	1386	3302	2456	17.0	25.6	233.8	418.8
Franklin	1994	1491	4091	3015	25.2	26.3	684.7	956.0
Gibson	1659	1454	3981	3453	12.4	13.3	610.8	1096.3
Giles	1713	1590	3970	2987	7.2	24.8	190.1	803.8
Grainger	1516	1279	3448	3139	15.6	9.0	131.0	118.0
Green	1967	1386	3671	3315	29.5	9.7	1173.5	583.3
Grundy	1485	900	3525	2441	39.4	3.7	271.9	42.4
Hamblen	2078	1646	4138	3450	20.8	16.6	724.3	867.0
Hamilton	2143	2007	4448	3580	6.3	19.5	1941.3	7968.3
Hancock	1095	NA	3266	2223	NA	31.9	NA	136.9
Hardeman	1360	867	3346	3302	36.2	1.3	521.3	34.7
Hardin	1773	1590	3751	2799	10.3	25.4	196.6	637.6
Hawkins	1626	1480	3901	3312	9.0	15.1	173.1	473.2
Haywood	1325	937	2926	2852	29.3	2.5	646.7	54.6
Henderson	1599	1372	3572	3326	14.2	6.9	244.2	163.5
Henry	1844	1589	3846	2928	15.8	23.9	437.8	796.6
Hickman	1601	1826	3623	3086	-14.1	14.8	0143.1	212.2
Houston	1595	1730	3364	2333	08.5	30.6	- -30.3	153.9
Humphreys	1797	1361	4226	2829	24.3	33.1	249.8	502.1
Jackson	1392	1545	3215	2768	-11.0	13.9	-78.1	135.0
Jefferson	1862	1519	3875	3214	18.4	17.1	364.1	548.6

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Table 4. (continued)

County	Median wage of the experienced female labor force				% under-employment		Years unutilized labor	
	Required	Actual	Required	Actual	1960	1970	1960	1970
	1960		1970					
	– – – – – –Dollars– – – – – – –				– – Percent –		– – –Years – –	
Johnson	1385	1206	3722	3162	12.9	15.0	69.0	232.1
Knox	2248	2004	4474	3449	10.8	22.9	3403.4	9429.3
Lake	1039	696	3255	2729	33.0	16.2	196.7	172.7
Lauderdale	1198	929	3182	2637	22.4	17.1	375.4	393.1
Lawrence	1630	1456	3777	3124	10.3	17.3	246.0	594.8
Lewis	1603	2120	4007	3509	-32.3	12.4	-177.7	123.6
Lincoln	1940	1946	3864	3212	-0.3	16.9	515.6	1020.4
Loudon	1931	1969	4120	3566	-2.0	13.4	-52.9	505.6
McMinn	1884	1624	4047	3260	13.8	19.6	515.6	1020.4
McNairy	1664	1650	3740	2989	0.8	20.1	14.4	482.0
Macon	1583	1935	3463	3115	-21.9	10.0	-290.6	193.1
Madison	1817	1235	3872	3184	32.0	17.8	2383.4	1785.9
Marion	1724	1475	3737	3040	14.4	18.6	220.5	380.0
Marshall	1958	1575	4160	3191	19.6	23.3	349.9	646.3
Maury	1900	1212	4112	2954	36.2	28.2	1545.4	17839.4
Meigs	1666	845	3769	3290	49.3	12.7	169.1	92.2
Monroe	1677	1521	3467	3081	9.3	11.1	191.3	340.4
Montgomery	1980	1483	4123	3244	25.1	21.3	1284.6	1539.4
Moore	2023	1511	3908	2489	25.3	36.3	123.5	207.3
Morgan	1443	1439	3791	3061	0.3	19.7	2.3	263.2
Obion	1838	1463	4156	3118	20.4	25.0	684.4	1165.8
Overton	1563	1573	3576	2859	-0.6	20.0	-9.4	416.0
Perry	1686	1616	3777	3241	4.1	14.2	24.0	115.9
Pickett	1699	1801	3543	3012	-6.0	15.0	-31.4	80.9
Polk	1510	1548	3842	3168	-2.5	17.5	-22.2	235.4
Putnam	1777	1566	3656	3190	11.9	12.7	396.6	660.4
Rhea	1737	1455	3623	3168	16.2	12.6	275.5	282.0
Roane	1882	2107	4145	3216	-12.0	22.4	-505.9	1300.1
Robertson	1681	1416	4039	3217	15.7	20.3	419.2	745.8
Tutherford	2232	1404	4266	3258	31.1	23.7	1677.2	2048.2
Scott	1454	1388	3270	3001	4.5	8.2	46.3	120.2
Sequatchie	1838	1846	3740	2713	-0.4	27.3	-2.6	186.7
Sevier	1728	1359	3839	2680	27.3	39.2	870.6	1486.1
Shelby	2092	1685	4174	3388	19.5	18.8	158512.0	2057.6
Smith	1655	1327	3685	2493	19.8	32.3	237.0	610.8
Stewart	1552	1191	3737	3050	23.7	18.4	125.1	138.4
Sullivan	2335	2062	4470	3693	11.7	17.4	1457.8	2989.7
Sumner	1873	1696	4353	3352	9.7	23.0	413.3	1822.3
Tipton	1334	912	3277	2833	31.6	13.5	692.7	374.8
Trousdale	1713	1226	3499	2497	28.4	28.6	176.1	256.3
Unicoi	1962	2099	3930	3350	-7.0	14.8	-101.1	258.7
Union	1673	1956	3481	3505	-16.9	-0.7	-112.6	-6.8
Van Buren	1387	1514	3685	3149	-9.2	14.5	-28.9	90.3
Warren	1942	1729	3956	3234	11.0	18.2	288.3	753.5
Washington	2141	1810	4240	3299	15.5	22.2	1037.3	2151.8
Wayne	1619	1354	3576	2147	16.6	40.0	153.1	715.6
Weakley	1771	1504	3755	3044	15.1	18.9	445.9	840.5
White	1726	1621	3784	3123	6.1	17.5	107.8	443.3
Williamson	1871	1473	4375	3459	21.3	20.9	561.9	999.2
Wilson	1924	1574	4262	3552	18.2	16.7	609.5	931.9

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