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An analysis of selected agricultural factors in Tennessee, 1930-1940

Edgar Pricer Moore

To the Graduate Council:

I am submitting herewith a thesis written by Edgar Pricer Moore entitled "An analysis of selected agricultural factors in Tennessee, 1930-1940." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Economics.

E. J. Long, Major Professor

We have read this thesis and recommend its acceptance:

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August 12, 1952

To The Graduate Council:

I am submitting herewith a thesis written by Edgar Pricer Moore entitled "AN ANALYSIS OF SELECTED AGRICULTURAL FACTORS IN TENNESSEE, 1930-1940." I recommend that it be accepted for 9 quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Economics.

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We have read this thesis
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AN ANAIYSIS OF SELECTED AGRICULTURAL FACTORS IN TENNESSEE, 1930-1940

A THESIS

Submitted to
The Graduate Council
of
The University of Tennessee
in

Partial Fulfillment of the Requirements
for the degree of
Master of Science

---

by

Edgar Pricer Moore

August 1952

DEDICATION

Hoc opus, quodcumque ejus merita sint, ad majorem gloriam Dei Patris Aeterni dedicatum est, ut exinde almae benedictiones Dei fluant supra meos parentes delectissimos, meum fratrem, meam glorem et filias fratris mei.

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CHAPTER I

THE PROBLEM

Statement of Purpose

This is an historical study of Agriculture in the State of Tennessee for the decade 1930 through 1940 designed to display the efficacy of:

(1) changes in the agricultural labor force, and

(2) changes in the agricultural population as independent variables when correlated with:

(A) percent change in the number of farms,

(B) percent change in the average number of acres per farm,

(C) change in the value of all products, and

(D) percentage changes in total tenancy.

Industrialization, as against agriculture, has been injected into this quantitative analysis by two methods (as shall be apparent later) which would permit severely-qualified generalizations to be drawn from the data relating to the industrialization of an area to concomitant changes in its agriculture.

Importance of the Study And Analysis of the Problem

The principal value of this study is its isolation of the changes in the agricultural labor force and changes

in the agricultural population and testing their value, in turn, as standards of measure. Should either of these chosen factors display significant degrees of correlation with the percent change in the number of farms, percent change in the average number of acres per farm, change in the value of all products, or the percentage changes in total tenancy, then we would have devised an instrument which, with proper use, would facilitate more accurate and ready measurement of the aggregate economy and its parts for any period.

This work represents a pioneering effort, at this University, in a pronounced departure from the methodology of research endeavors somewhat similar to this. As stated before, the universe with which we contend here is composed of ninety-five counties. It is felt that only observations applicable to, and drawn from, the entire State are of immediate importance.

In the archives of the University we found two theses devoted to an analysis of the changes within agricultural labor and various other related factors. In their method they present the details of a survey of four of the ninety-five counties. To this must be added the fact that the researchers chose counties exclusively in the East Central and North Eastern portions of the State these being, in both studies: Knox, Sullivan, Anderson, and Hawkins. For our purposes, these samples are much too small and include

only one section of the state, generally speaking.

Tennessee is composed of ninety-five counties, each having its private peculiarities. These differences, in some instances, are many as, for example, we find dissimilar soil classifications existing throughout its area. This condition precludes any one specific type of agriculture, hence, we find in reality a wide range of agricultural pursuits existing within the State. We are, however, cognizant of the fact that this latter point is not attributable to any singular natural phenomenon.

The topography of the State is itself an interesting study in contrast: through the East we find a mountainous land; the Central area is with gently rolling hills and small streams; and to the West there is the alluvial area of the delta. The mighty Mississippi runs, in her various moods, the entire western borderline of the State and has given vitality to the land as well as, at other times, thorough chastening.

The social complexion of the State is also a composite of variety. It has four metropolitan areas and, in decending order, many small cities and communities. Religious denominations are many and varied as are tolerances. Political issues receive a wide array of response throughout the area. Family relationship runs the range from the closed-clan to that of the conventional unit of an urban society.

The composition of population varies from that with high agrarian proportions to that denoting advanced stages of industrialization.

In pursuit of sustenance the people apply themselves to occupations ranging from the skilled crafts to the common day-laborer. Precious silver is mined in one area of the State while the outlawed economic endeavor of whiskey production continues quite well in another sector.

That these differences are real and meaningfull is pronouncedly apparent as should be the fact that we can make no generalizations from works investigating but a fraction of the total counties which would be applicable on a state-wide basis. We here are concerned with data in its entirety: it in its environment, and that as related to all else to which it may be relevant within the prescribed area. We hope to present a state-wide investigation within this work; one which will make manifest the end stated on page one: display the efficacy of the changes in the agricultural labor force, and changes in the agricultural population as independent variables when correlated with: percent change in the number of farms, percent change in the average number of acres per farm, change in the value of all products, and percentage changes in total tenancy.

Industrialization is defined differently by different people. To some it may mean the conception of commerce within and delivered in due time from the body of agriculture; to

others it may denote factories and vast cities with little thought given to origin or its developmental stages. To all it should stand as the means by which we have been afforded an ever-improving standard of living. Its record is one of urbanizing the villages of yesteryears; providing payrolls for labor; of supplying markets with products and itself becoming a market for materials of production; by research, giving us products of the future today, etc.; this list could be extended on and on. These are but some, not all of course, of the reasons why industrialization is important to each individual. This is also what it is. We actually define it by listing its attributes.

The South has historically lagged behind the North in industrialization. During the pioneering period of this country the South was princely in, and proud of, its vast agrarian empire. While industry was early founded in and nurtured by the North the South continued its agricultural economy. The shock of utter military devastation, occasioned by the civil strife between the North and the South, with perhaps other harassments emanating therefrom, may well have aided in retarding industrialization in the South. At least this may have had some effect in slowing the economic growth that might reasonably have been expected of a region having so high an industrial potential. It was stagnated economy that held it securely to an agrarian role. Its agrarianism was fostered by, at least to some major measure, the South's

reticence and inability to change plus interference from factions and factors external to its immediate vicinity.

In more recent years the South has apparently been attempting to shed, painfully and slowly, the shackles binding it to such a past. Industrialization has definitely been visited upon it but not overnight, not overall, and not without repercussions from and within its predecessor, agriculture. Fact and fiction, truths and half-truths, postulatory-preaching run rampant in available material defining the action and complementariness of, interaction and competition between these two economic endeavors. That these are competitors, to some degree, for land and labor appears beyond question but the magnitude of the competitive proportions, at the present time, remains an eristic issue.

That such changes in and between industry and agriculture are important is indisputable. That the changes having occurred are yet to be adequately measured--we have specific reference to Tennessee here--is just as undeniable. We wish to present here the changes in agriculture attending changes in the industrialization of the area.

This study havings its origin at the State University should invite others to follow with similar or related works. Things of this sort are somewhat contagious among fertile minds. From the depths where one has fallen another may rise and carry on, more certain of his footing.

We have attempted to establish, by this time, at least two warranted observations: (1) that there is not within the archives of the University what we consider an analytical treatise measuring, or attempting to measure, changes within agriculture attending changes in industry in the State; and (2) that there should be: (a) an attempt, at least to prepare and preserve a study in which there is incorporated a sound procedure applied to an adequate sample: each county of the State, and (b) an accentuation of the need for additional studies along similiar lines to this.

In these paragraphs just concluded we have endeavored to establish both a reason for and the importance of the present project.

Methods of Procedure

The period to which our efforts have been confined is that decade of 1930-1940. The initial year was one in which the nation began to feel the effects of the severe depression into which it was entering deeply and rapidly while the terminal year saw the economy emerging from the depths of recession but not quite, yet, to the lip of the well and out into the open.

This period was chosen, not because of any near normalcy prevailing within but, rather, it was the first for which figures were available permitting the desired analysis. Too

it was for someone to begin here eventually, therefore, we fulfilled that requirement.

The soul-searing abnormality of this depression decade will adversely bear upon our present analysis. We are fully aware, as must the reader be, that any and every measurement given or indicative statement made must be interpreted as representing or describing realities existing under abnormalcy. This qualification is assumed throughout the work.

Under Labor Changes

Labor is a stratifier. Anything affecting it will be reflected elsewhere in the economy. There are many divisions of labor but for our purposes we are interested in, divide, recognize, and define two divisions into which all is parceled: total, and agricultural. We are concerned only with this division. By total we mean the entire labor force; the all inclusive category embracing labor. Agricultural labor is confined to mean all agrarian activities, these being often referred to as primary economic endeavors. This represents one major distinction we have established. The reason for this delineation is quite obvious. We have neither the time nor the intent to examine labor in any way other than that defined, at the present time. Of the total labor our major concern is with that percentage of the total which is devoted to agricultural endeavors both under total males employed,

and total employed persons. We want to know not only the proportion of the total labor force devoted to agriculture but, also, how this proportion has changed during the period. In having this data we may relate changes in other agricultural factors to these and thus provide a barometer, as it were, registering the reciprocal effects between and among all the variables of the study, if they contain any degree of reciprocity. If ever such an accurate instrument is devised it will be of incomparable value in measuring past and present economic periods, and once with this, we might more ably forecast economic eventualities.

We feel, in this most adverse economic time, that a measure of labor changes will reveal the stabilities having prevailed much more efficiently than would data on dollar-valuations, or dollar-returns to labor. We give it preeminence by attempting to relate changes within strategic agricultural factors first to changes within it.

We have four labor factors each of which, in turn, is posited as the independent variable to which other factor-changes are related. The first is the percent of male workers employed in Agriculture of 1940 as a percent of the male workers in Agriculture for 1930. It would reduce confusion were we to consider it in a fractional form:

$$\frac{\text{Percent of Male Workers in Agriculture for 1940}}{\text{Percent of Male Workers in Agriculture for 1930}}$$

What we have done here is simply to express the percent of the

total male workers (that is, of the total male labor force) who are employed in Agriculture for 1940 as a percent of that percent of the total male workers (again: of the total male labor force) who are employed in Agriculture for 1930. The end desired, prompting the formulation of this fraction, was that we wanted a measure of agricultural-labor stability for the period. But not this alone. We wanted to know what proportion of the entire labor force was devoted to agricultural endeavor. The foregoing fraction gives us both a proportion and proportionate change.

The second labor factor is the same as the first with the exception that it is the percent of total workers who are devoted to agricultural pursuits, and for both 1930 and 1940. As a fraction it would appear:

$$\frac{\text{Percent of Total Workers in Agriculture 1940}}{\text{Percent of Total Workers in Agriculture 1930}}$$

The difference between these first two classifications is that the latter includes women and children workers whereas the first does not. It may not be so significant, yet, it lends toward completeness.

The third labor factor proceeds from the first two and is: the increase or decrease, percentagewise, in the percent of total male workers who are employed in Agriculture for the period 1930-1940. As a fraction we could, for example, express it:

$$\frac{\text{(Percent of Total Male Workers In Agriculture 1940)--e.g.: .35}}{\text{(Percent of Total Male Workers In Agriculture 1930)--e.g.: .33}}$$

Increase: .02

The fourth and final factor under labor is the same as the third, just given above, except it is for the increase or decrease, percentagewise, of the total workers who are employed in Agriculture for the years of 1930 and 1940. As a fraction it is:

(Percent of Total Workers in Agriculture 1940)--e.g.: .40
(Percent of Total Workers in Agriculture 1930)--e.g.: .45
Decrease:-.05

This may appear a very clumsy manner in which to present the labor segments, however, we know of neither a more simple, nor a more pointed manner by which they could be expressed at this time.

The factors, the changes in which we have attempted to correlate with changes in labor, shall be considered in the sequence of their entry into the work. These are closely related to the agricultural labor.

The first of these is the percentage increase or decrease in the number of farms. Since our analysis centers about agriculture it appeared advantageous to begin with the basic production unit, the farm. This is the agrarian factory; here is the workshop of the farmer. Both his and those of his competitors for existing markets should be of major concern. With their sharing the same market, indeed, the number of competitive units is of importance. Then, too, every subsistence farm detracts by that amount it contributes (whether to the farmer and his family or to the market in small quantities)

from the volume in the consumer market. These are two reasons, if there were no more, why the number of farms is important to a study such as this.

Closely related to the number of farms is the next factor considered, the percentage increase or decrease in the average number of acres per farm. With the changes in labor what has been the change here? To meet a price decline perhaps farmers resorted to operations with greater magnitude in an effort to augment diminishing revenue. It may be they resorted to a more intensive type of cultivation. Too, the average number of acres per farm might well have fallen as full-time operators took work, part or full time, off the farm to obtain badly needed income in this adverse period and subsequently reduced acreage. The size of the farmer's operational unit shares in the importance given to its number.

Having the changes in these it follows that changes in the value of all products (that produced, sold, traded or used by operator's family) should be reckoned with. Having the changes in the number of productive units and their average size, it appears proper to focus attention on the products from upon these units, insofar as value is concerned. We can measure this most effectively, for our purpose and to be consistent, by considering changes in the percentage increase or decrease in the value of products. This is the operator's return, whether it be entirely consumed where grown or marketed.

The changes in agricultural labor give us an idea of its reconstitution whereas with this latter factor we will see the changes in the return to that force. This is the revenue factor and to doubt its importance here seems as unwarranted as to continue discussing reasons why it should be considered such. Our data might be challenged on the grounds of incomparability in that dollar-value fluctuations of the period did establish some disparity between 'thirty' and 'forty' price levels. That such a condition did exist, to some extent, is indisputable; however, for our purposes the inordinate amount of time required for the conversion of this factor to the value of a base period seems beyond any extraordinary benefit which would accrue from such an undertaking. Scruples, in a pure sense, would end any research project in frustration after having driven it down endless avenues leading from the main artery of pursuit.

We next examine the changes in the percent of total tenancy. In times of economic trials and tribulations it seems logical that this would most surely be inclined to rise. It is conceivable, however, that it might well have been checked, or reduced, by the intervention of governmental authorities with constructive aid of whatever character or intensity. It is important, this tenancy in its various forms, in one respect because it represents the divorce between the farmer and farm-ownership.

Has an estrangement between land-owner and land-worker increased or decreased in this adverse period as has, or with, the changes in the agricultural labor? Our concern here is with but tenancy changes, not its implications.

Once with the results yielded by the examination of the covariants we have just discussed, we turn our attention to the factor designated as the second independent variable of this project, namely, the changes in the agricultural population. The latter we subjected to a procedure quite similar to that of its predecessor, changes in agricultural labor.

Under Population Changes

In choosing to correlate changes in the agricultural population with those of the dependent variables utilized earlier we have an even more inclusive independent variable: the agricultural labor force gives us an enumeration of workers alone whereas the agricultural-population category includes workers and non-workers alike. Thus, in moving from one to the other we pass from a more particular classification to a general one, one which includes all the human factor.

The importance of the agriculture population to a study such as this seems immediately apparent. The populace is that about which all centers. This is the rational element which reacts to economic stimuli and arranges productive factors as it wills, or is coerced, to. Here we have the orderer

and the ordered, as it were. This is not entirely true as the coercion issuing from economic necessity often dictates the decision to be made, however, in the main our statement is an absolute verity.

People inhabit farms, decide acreage, are owners or renters, and receive the value of their labor to the amount possible. This, the population, is our basic decision-making level in the economy. In the decade of 1930-1940 we shall see how changes in various agricultural-population categories correlate with changes in identical dependent variables used with changes in agricultural labor, namely, percent change in the number of farms, percent change in the average number of acres per farm, change in the value of all products, and percentage changes in total tenancy.

Dr. Smith, in the initial lines of his book states: "The number of persons in the population of a given geographical unit and the manner of their distribution with respect to area and resources are the central facts of demography. The importance of a nation, state or city is largely judged in terms of these two indicators.".[1]

That an optimun distribution of the populace over available resources would be the most beneficial of possible combinations, many writers agree, but we must remember that this is

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[1]Smith, T. Lynn: Population Analysis (New York: McGraw-Hill Book Company, Inc., 1948).

an idealistic concept. In reality we find demographic patterns defining what would appear, in some areas, the inoptimum state. This holds generally true for the area of our observation.

In Tennessee we have had a consistent surplus of agricultural population. This is attributable to its comparatively low level in industrial development coexisting with high birth rates. Such a condition is historically certain to produce economic tribulations and we have no exception to the rule in Tennessee.

The Southeastern States (eleven in all of which Tennessee is one) contain forty percent of the total farm population of the United States. That it is not with adequate resources, or resources adequately developed, to sustain such a proportion seems most manifest in the varying degrees of poverty found throughout the area. Migration is quite often advanced as the single salutary remedy for such a condition as this, however, this depends on at least two conditions: first, can the migrant be assimilated advantageously in the area to which he migrates, and second, are his services of such a nature as to not be required in the region he vacates. Most certainly in a depression period migration could wreck havoc when areas to which migrants move cannot employ them and thus they must seek sustenance from relief funds available. It becomes an additional burden to those already severely tried.

Too, we must not be unmindful of laws enacted to prevent this very thing from occurring. In some states a prerequisite to relief assistance exists in the form of laws requiring a certain period of residency. Thus the migrant suffers.

We hear much of the problem of youth abandoning the South, migrating to other regions, and thereby depriving the South of its investment in and a return potentially coming from the young folks. We contend that this is, to a very great extent, a social problem with which the South could very ably cope. You can bind the contented-aged with social conventions peculiar to an area, but, not youth. It is requiring, inquiring and extremely mobile, as we have come to know. It need not change; the South must.

The birthrate, deathrate, and migration are the major factors determining the distribution of the population. We shall, however, concern ourselves with but the agricultural enumerations for the decade under surveillance. This will be sufficient for our purposes. The particulars of our procedure appear in the pages immediately ahead but, briefly stated, our interest is confined to the changes in the agricultural population as related to changes in the selected agricultural factors stated prior to this point.

Schematically the entire study may be represented as follows:

The period of
1930 - 1940
Correlating
Changes Within:
Agricultural Labor
and the
Agricultural Population
to changes within

(The Plant)----------The Farm

(Size of Plant----------Average acres per Farm

(The Return)----------Value of Products

(Plant Ownership)----------Proportion of Tenancy

The orgainzation of the work by chapters is as follows. In Chapter One we present and discuss the problem. Chapter Two studies the variances in and under labor changes. This is followed by an examination of the variances in and under population changes, which forms Chapter Three. In Chapter Four we briefly state a summary of the results issuing from the investigation and having found inclusion elsewhere in the study.

CHAPTER II

VARIANCES IN AND UNDER LABOR CHANGES

Confronted with the many figures which this project would gather and produce, a card was utilized whereby the figures for each variable for each county would be most advantageously arranged thereupon.

The coded cards, one for each county, were sorted with respect to the percent that their male labor employed in agriculture was of males under total employed workers for 1940. For this year, then, we had the counties ranked by position from the least to the greatest agriculturally inclined. It was thought that with such a sequence as this we would have the counties arranged to emphasize a type of change they would hold in common with those counties posited near them. For example, we would have expected the number of farms in the least agriculturally inclined counties to have been quite different, both in actual numbers and change in numbers for the period, from those counties classified as most agriculturally inclined. Even though this was not true, as we establish later, we believe it was a sound assumption.

Scatter Diagrams

With the counties sorted as described above, scatter

diagrams were plotted for each set of variables as follows.

Independent Variables

Figure 1: $\frac{\text{Percent Male Workers in Agriculture for year of 1940}}{\text{Percent Male Workers in Agriculture for year of 1930}}$

Figure 2: $\frac{\text{Percent Total Workers in Agriculture for year 1940}}{\text{Percent Total Workers in Agriculture for year 1930}}$

Figure 3: Percent change in Males Employed in Agriculture, 1930-1940.

Figure 4: Percent change in Total Workers Employed in Agriculture, 1930-1940.

Dependent Variables

Figure 1: (A) Percent change, number of farms 1930-1940.

Figure 2: (B) Percent change, average number of acres per farm, 1930-1940.

Figure 3: (C) Percent change, total tenancy, 1930-1940.

Figure 4: (D) Percent change, value of all products, 1930-1940.

For the first of these (see Figure 1) the stability of the percentage of males in agriculture for the period ranges, for the greatest part, from 80% to 100%. The percentage range in the number of farms falls within the area -20 to + 20. (See graphs, following pages.)

There is no tendency toward a diagonal pattern here. The data, as arranged and presented, would warrant the inference that our variables are not closely related.

Within twenty units of measure on either scale we found the majority of our counties confined. It might be said there was, conceivably, a discernible tendency indicating that as 1940 male labor approached 100 percent of that for 1930 we had the percent change in the number of farms moving, similarly, towards zero. We notice that in the percent change in the number of farms there is a counterbalancing pattern between those counties on the positive side of the base line and those to the negative side. The data does not reveal a plausible reason for this. From experience we do know, however, that the number of farms must have changed during this period for several reasons, vis.:

(1) tax foreclosures and sale;

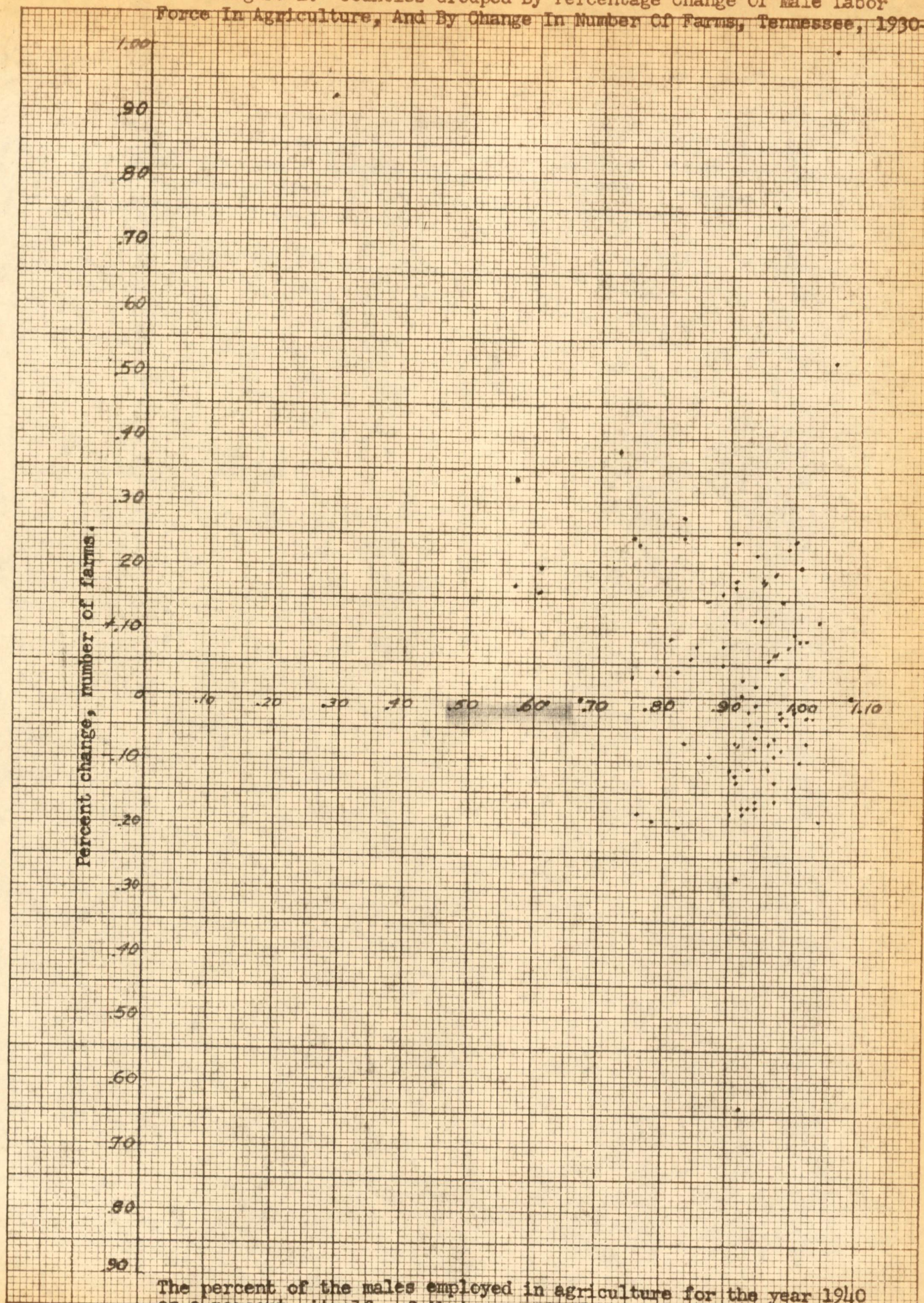
(2) mortgage foreclosures (some realty was sold, some operated by mortgagor);

(3) owner selling and vacating to another dwelling, or to another area (AAA could have influenced this).

There may be more but we know these to have been very real during this depression period. Possibly, losses under one category would have been gains under another thus counteracting one another.

Although we do not advocate subsistence farms the ideal situation here would have been to have had a greater number of farms coming into existence along with additions to the male labor force. It would have done much to alleviate human

Figure 1. Counties Grouped By Percentage Change Of Male Labor Force In Agriculture, And By Change In Number Of Farms, Tennessee, 1930-1940.



The percent of the males employed in agriculture for the year 1940 as a percent, itself, of that percent of the males employed in agriculture for the year 1930.

want while the small size of the farm necessitated by a division among so great a number would have rendered them subsistence type farms and not a threat to an already unhealthy market for agricultural products. Such a thing was really prevented by the A.A.A. in that, under this legislation, certain specifications were established as prerequisite to aid. As it was in reality, many of those on farms migrated to urban areas for this very reason: whereas they could not come under the Act they could, by being more centrally located, get employment on such projects as covered by the W.P.A. and similar organizations.

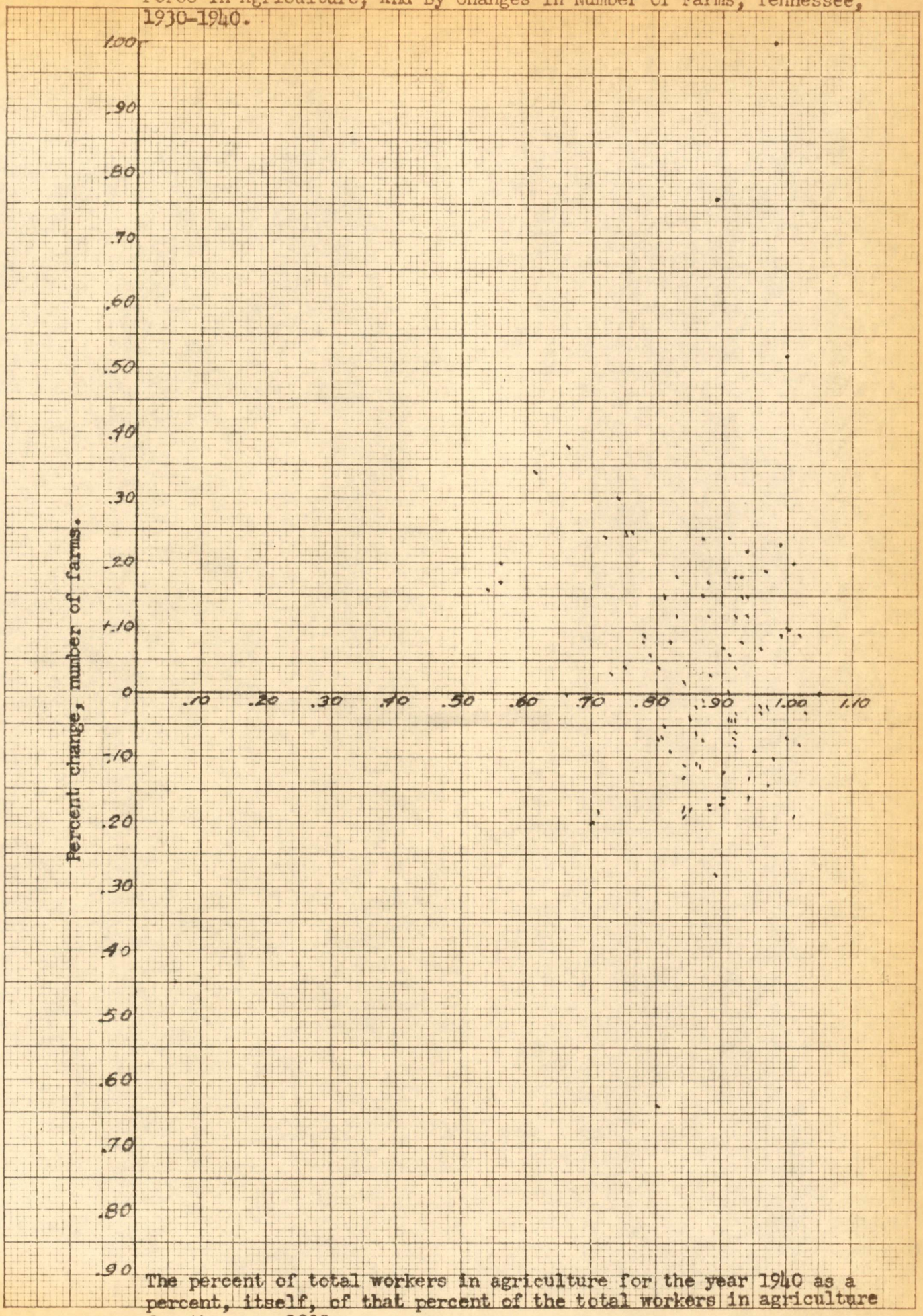
Whatever the reason, we see here that there appears little relationship between the stability of the 1940 male labor force compared to that of 1930 and the percent change in the number of farms. This was also true with the other labor categories. In that we have quite generally discussed the independent variable before, we shall not develop it here.

With the percent change in the number of farms we attempted to correlate three other divisions of labor these being:

(1) $\frac{\text{Percent Total Workers in Agriculture for year 1940}}{\text{Percent Total Workers in Agriculture for year 1930}}$

Here we have included not only the male worker, as we previously did, but also, the women and all not contained under the male workers. From the graph appearing next it is rather evident that little if any relationship exists between the variables.

Figure 2. Counties Grouped By Percentage Change Of Total Labor Force In Agriculture, And By Changes In Number Of Farms, Tennessee, 1930-1940.



The percent of total workers in agriculture for the year 1940 as a percent, itself, of that percent of the total workers in agriculture for the year 1930.

(2) Percent change in males employed in agriculture, 1930-1940.

Here we have the percent change in the number of males employed in agriculture. As is evident from the second graph following, little or no relation exists between changes in this labor factor and the percent change in the number or farms.

(3) Numerical change in the percentage of the total employed in agriculture for 1940 over or under that of 1930.

What this confusing sentence means is simply this: of the total employed in 1930 you had devoted to agriculture a certain percent: of the total employed in 1940 you had devoted to agriculture a certain percent: the difference in these percents is what we refer to here. E.g.:

1930---- %
1940---- %
+ or -

On the fourth graph following we see, again, an absence of relationship and this time between the percentage-differences in the total employed in agriculture for the years of 1930-1940, and the percent change in the number of farms.

The percent change in the number of farms has not been related to either of the four labor divisions.

In moving to another dependent variable, the percent change in the average number of acres per farm for the period, we found a somewhat similar experience as attended the percent change in the number of farms. As can be seen from Figure 5, following, there is no apparent relationship here.

Figure 3. Counties Grouped By Difference Between Percents Of Male Labor Force In Agriculture, And By Change In Number Of Farms, Tennessee, 1930-1940.

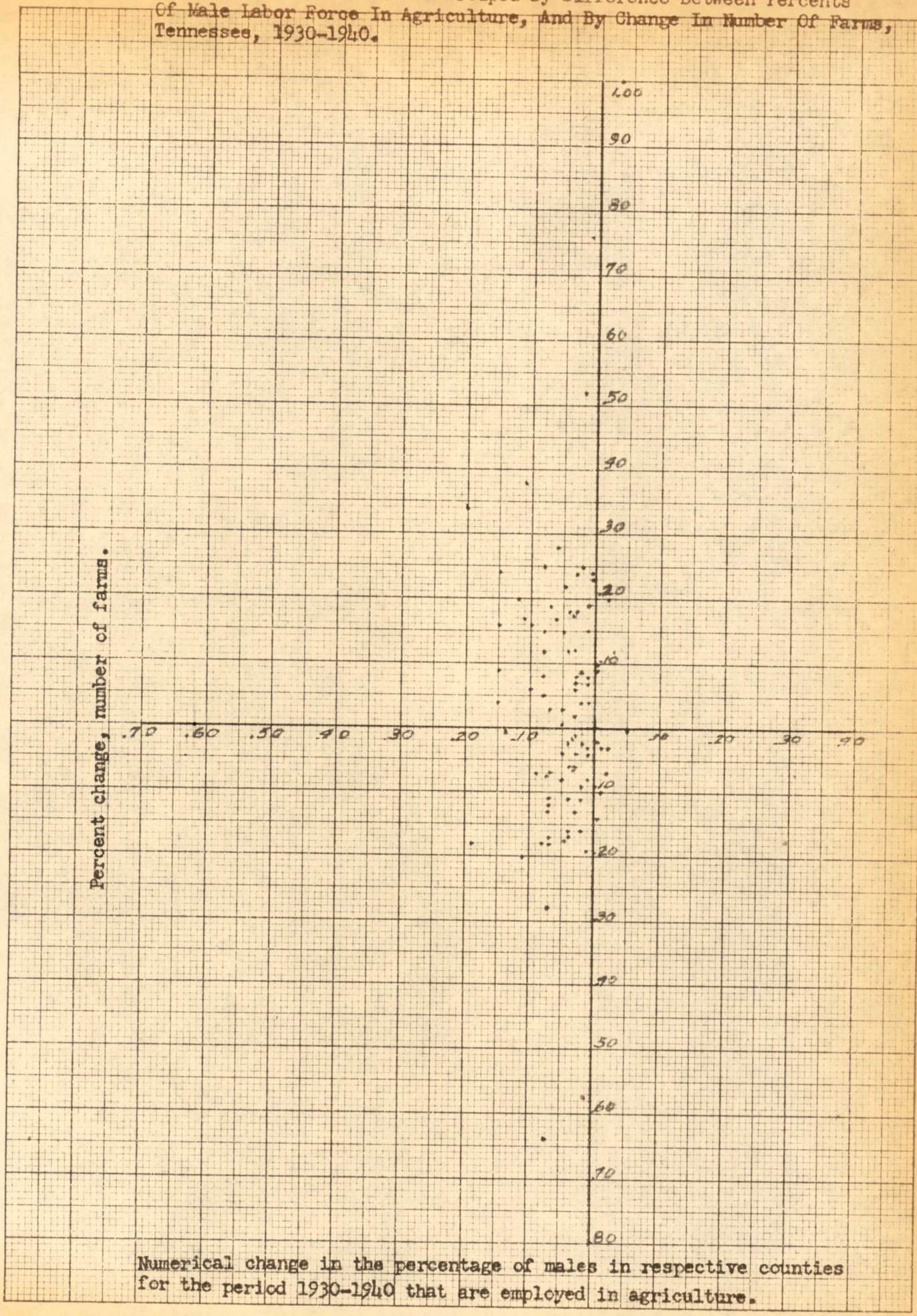
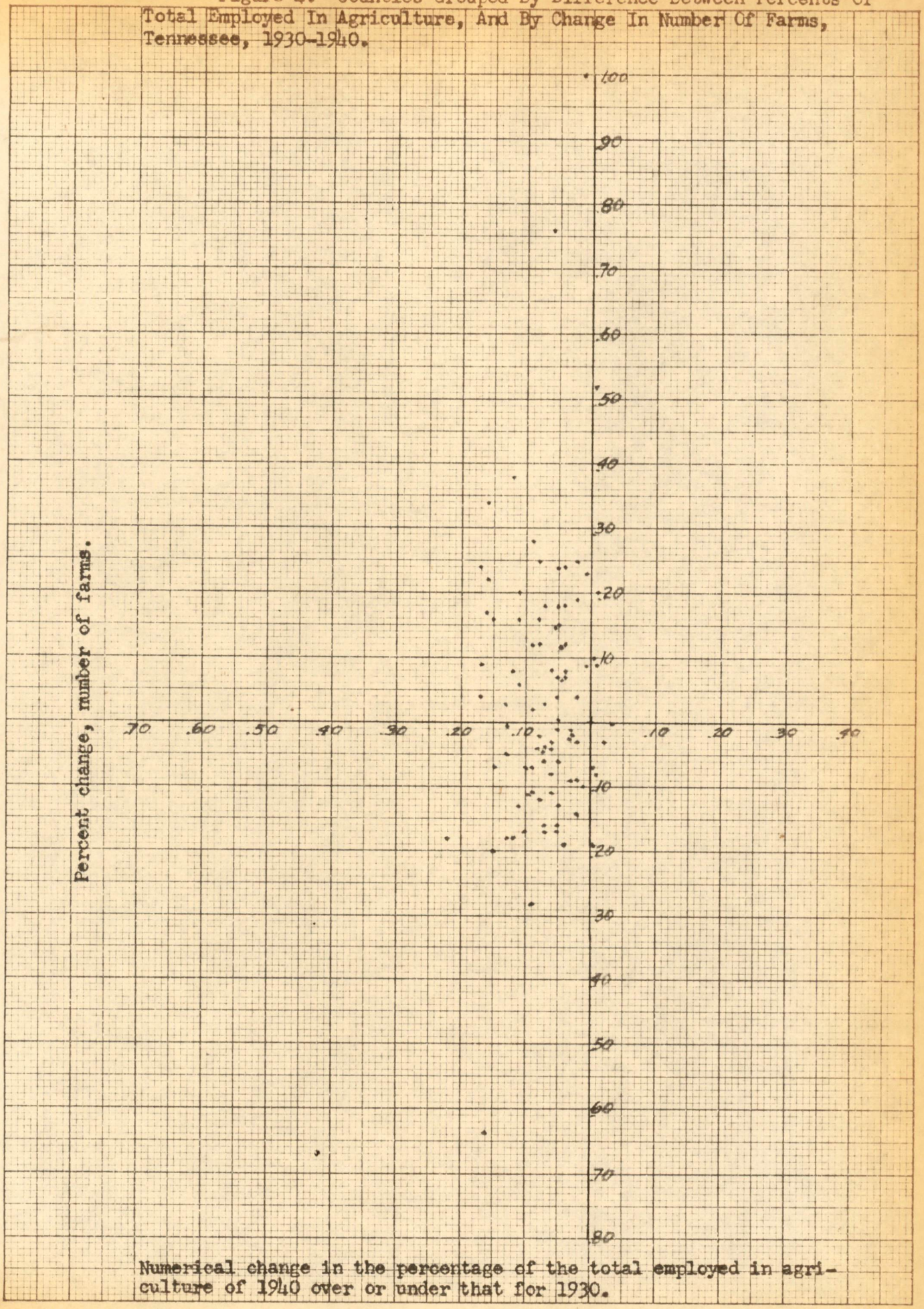


Figure 4. Counties Grouped By Difference Between Percents Of Total Employed In Agriculture, And By Change In Number Of Farms, Tennessee, 1930-1940.



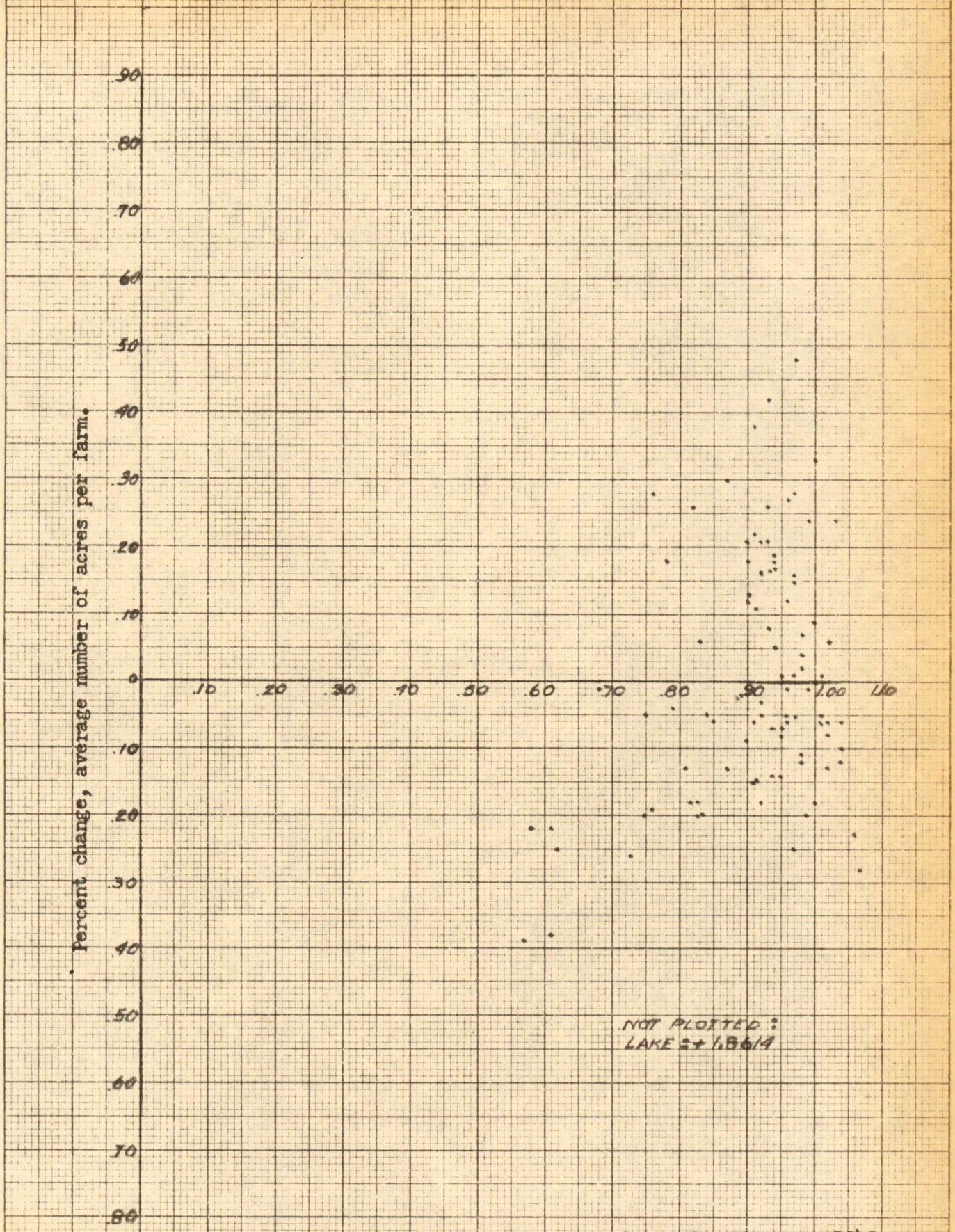
Again the counties seem to gravitate upward or downward toward one, or a unity between the male labor force in 1940 and that of 1930. Then too you may notice that, as before, one may imagine two different trends, one above and one below the base line. Although we are not aware of why this has been, we do know several factors which, undoubtedly, contributed to such a dichotomy.

On the other hand, insurance companies, for example, were heavy mortgagors of farm property. In some instances, after foreclosure and once with deed, they found themselves with a very costly asset on their hands: there was no market for it, certain up-keep was necessary to preserve their capital standing idle, and taxes are inevitable charges. In view of these things there were instances where insurance companies hired farmers to operate their holdings that the least loss would accrue to the firm. When possible adjacent farms were drawn together and operated as one unit.

Then, too, more general use of mechanical devices supplanted many men but these had to be used extensively to economically justify the cost in the light of returns. Thus, with the tractor, line fences moved to encompass greater acreage.

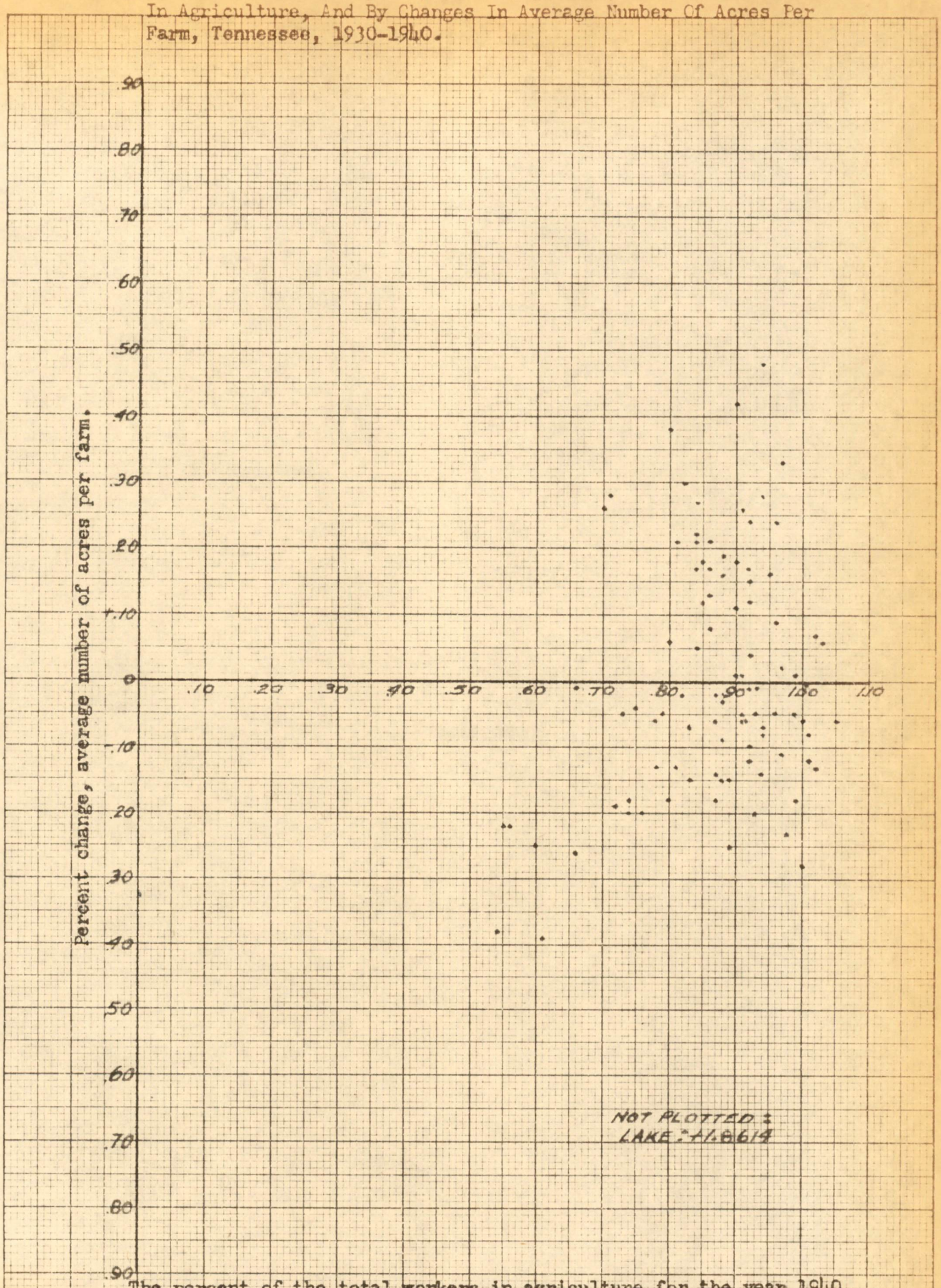
On the other hand, there were counterbalancing shifts in average acreage per farm in the form of the spreading subsistence and part-time farms. Without doubt, many moved to rural areas in a desperate effort to obtain a secure food

Figure 5. Counties Grouped By Percent Change Of Male Labor Force In Agriculture, And By Change In Average Number Of Acres Per Farm, Tennessee, 1930-1940.



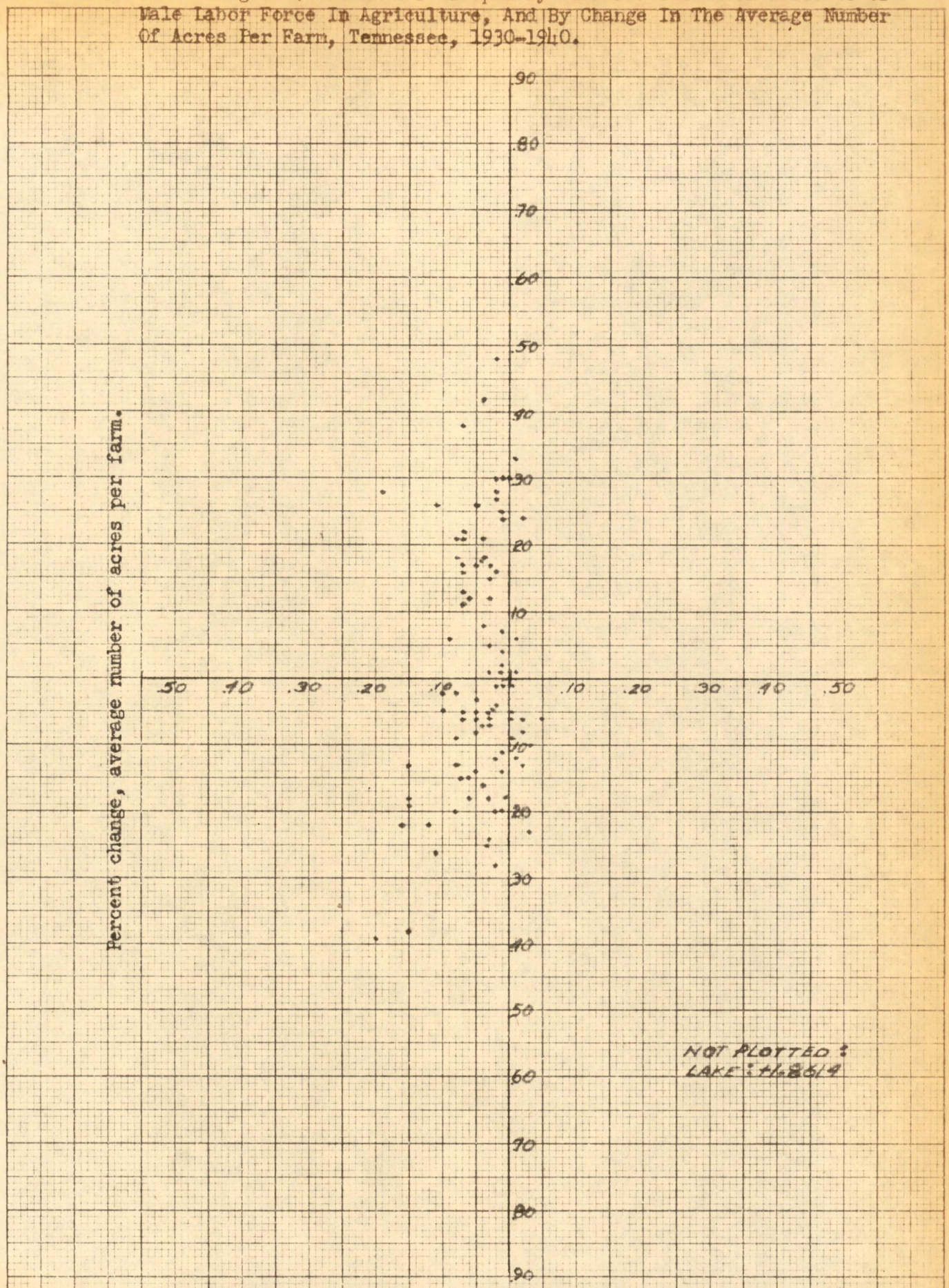
The percent of the males employed in agriculture for the year 1940 as a percent, itself, of that percent of the males employed in agriculture for the year 1930.

Figure 6. Counties Grouped By Percentage Change Of Total Labor Force In Agriculture, And By Changes In Average Number Of Acres Per Farm, Tennessee, 1930-1940.



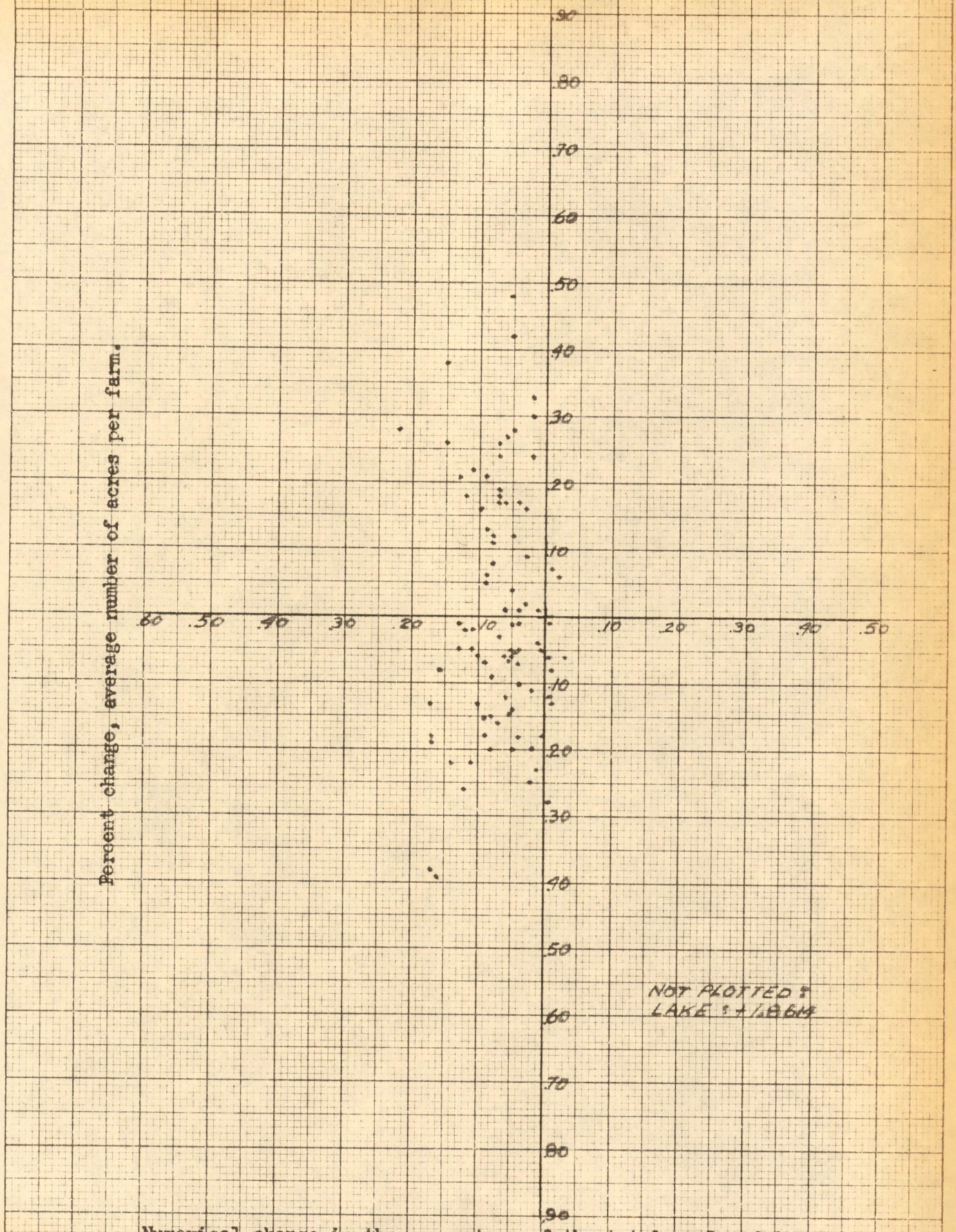
The percent of the total workers in agriculture for the year 1940 as a percent, itself, of that percent of the total workers in agriculture for the year 1930.

Figure 7. Counties Grouped By Difference Between Percents Of Male Labor Force In Agriculture, And By Change In The Average Number Of Acres Per Farm, Tennessee, 1930-1940.



Numerical change in the percentage of males in respective counties for the period 1930-1940 that are employed in agriculture.

Figure 8. Counties Grouped By Difference Between Percents Of Total Employed In Agriculture, And By Change In Average Number Of Acres Per Farm, Tennessee, 1930-1940.



supply and were, at best, gin-hand, or, subsistence farmers. Then those on farms in areas permitting did take off-farm work, of which we have already spoken, to bridge the gap between dwindling revenue and required expenditures. Either of these tend to decrease the acreage of the farm.

These situations may have prevailed to so distort, or materially aid in distorting, the percent acreage change per farm when considered with male labor changes.

One might reasonably have expected that, with a greater male agricultural labor force, the average number of acres per farm would have decreased. We might reason thus: with no great increase in land quantity, and more agricultural workers, there would have been more farms but of less average size. That this was not so seems the obvious conclusion to be drawn from the analysis here. The same general pattern and conclusion prevailed when changing the independent variable to: (see following graphs in the order given.)

Figure 6: $\frac{\text{Percent Total Workers in Agriculture for year 1940}}{\text{Percent Total Workers in Agriculture for year 1930}}$

Figure 7: Percent change in Males employed in Agriculture, 1930-1940.

Figure 8: Percent change in Total employed in Agriculture, 1930-1940.

There appears no, or little, relationship between the labor-changes of the percentage changes in the average number of acres per farm.

We turned next to correlating the percent changes in

total tenancy with the stability of males employed in agriculture as of 1940 to that of 1930.

As with the graphs preceeding this, we find (see Figure 9) the familiar pattern appearing once again. The counties hover near or tend toward labor-unity with the 1930 base. This is not surprising in that Tennessee is, after all, an agricultural state. There is here, however, a little change from the patterns noted before, this being that you find sixty-two counties showing a loss in percent of total tenancy and thirty-three having had an increase.

Considering what we have said before, this is not astounding. One might well expect tenancy to increase during economic adversity but, in the main, that has not been the case here. There may be many reasons for this, however, we shall extend but several.

With the maturity of any country land becomes more valuable as its population increases. Accompanying this we have higher capital valuation with a result that it becomes more difficult for those with less-than-average means to attain the top rung in the agricultural ladder, farm ownership. In this connection we must not be without due regard for the fact that, under more humane owners, the tenant may profit more, materially and immaterially, by tenancy than were he to be an owner, and, thus, prefers to remain a tenant.

There are, at least, three other factors which contributed to the drop in tenancy. First, especially in the South, both colored and white tenants were displaced by the AAA program. With controlled crops there were some areas experiencing restrictions in the type and extent of crops it theretofore had freely grown. With more of this there was less need for many tenants with the result that not a few were forced to leave their owner's property.

Second, chiseling on the part of the owner robbed some tenants of that which was rightfully theirs under benefit payments issuing from the AAA. To what extent this was done in Tennessee, we do not know; that it was done in many places is beyond question. This caused some unrest and tenancy changes.

Third, as mentioned before, insurance companies (and some banks) having upon their hands the many farms gained by foreclosure, did consolidate, where possible and feasible, and operated larger units with the aid of power equipment. Of course managers were hired to administer operations (in some instances these being former owners), however, it is not difficult or absurd to reason that such conduct did displace many tenants as well as owners.

The degree to which all this went, or its morality, is not a point in question here. That it did occur is certain; that it may explain some tenancy variations seems, at least, a warranted conclusion.

In the four graphs following we have attempted to find a correlation between the labor-change factors and the percent change in total tenancy. These appear in the order:

Figure 9: $\frac{\text{Percent of the Males employed in Agriculture in 1940}}{\text{Percent of the Males employed in Agriculture in 1930}}$

Figure 10: $\frac{\text{Percent Total Workers in Agriculture for 1940}}{\text{Percent Total Workers in Agriculture for 1930}}$

Figure 11: Percent change in Males employed in Agriculture, 1930-1940.

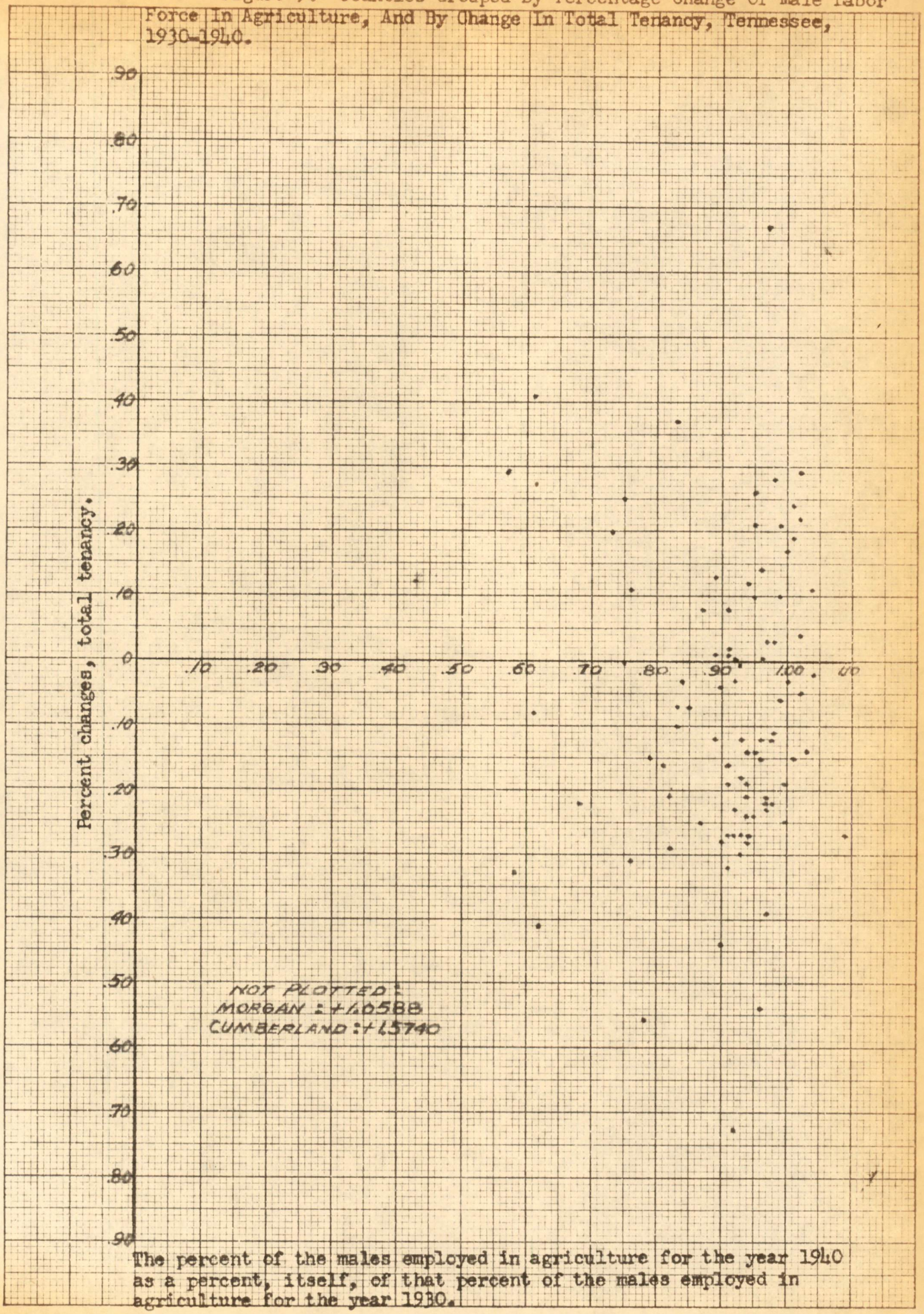
Figure 12: Percent change in Total employed in Agriculture, 1930-1940.

The lack of relation is rather apparent. The only thing these have in common is an aimless wandering across the grid.

In knowing the period under observation to be an abnormal one, plus the graphs and comments thereupon which precede the variable we have reserved until now, we might well be prepared for a purely negative trend in the value of all products when set with the changes in the male labor force of 1940 as a percent of that existing in 1930. In this we were not disappointed as in ninety-one counties we found the percent change in the value of all products decreased, that is to say: to sub-zero.

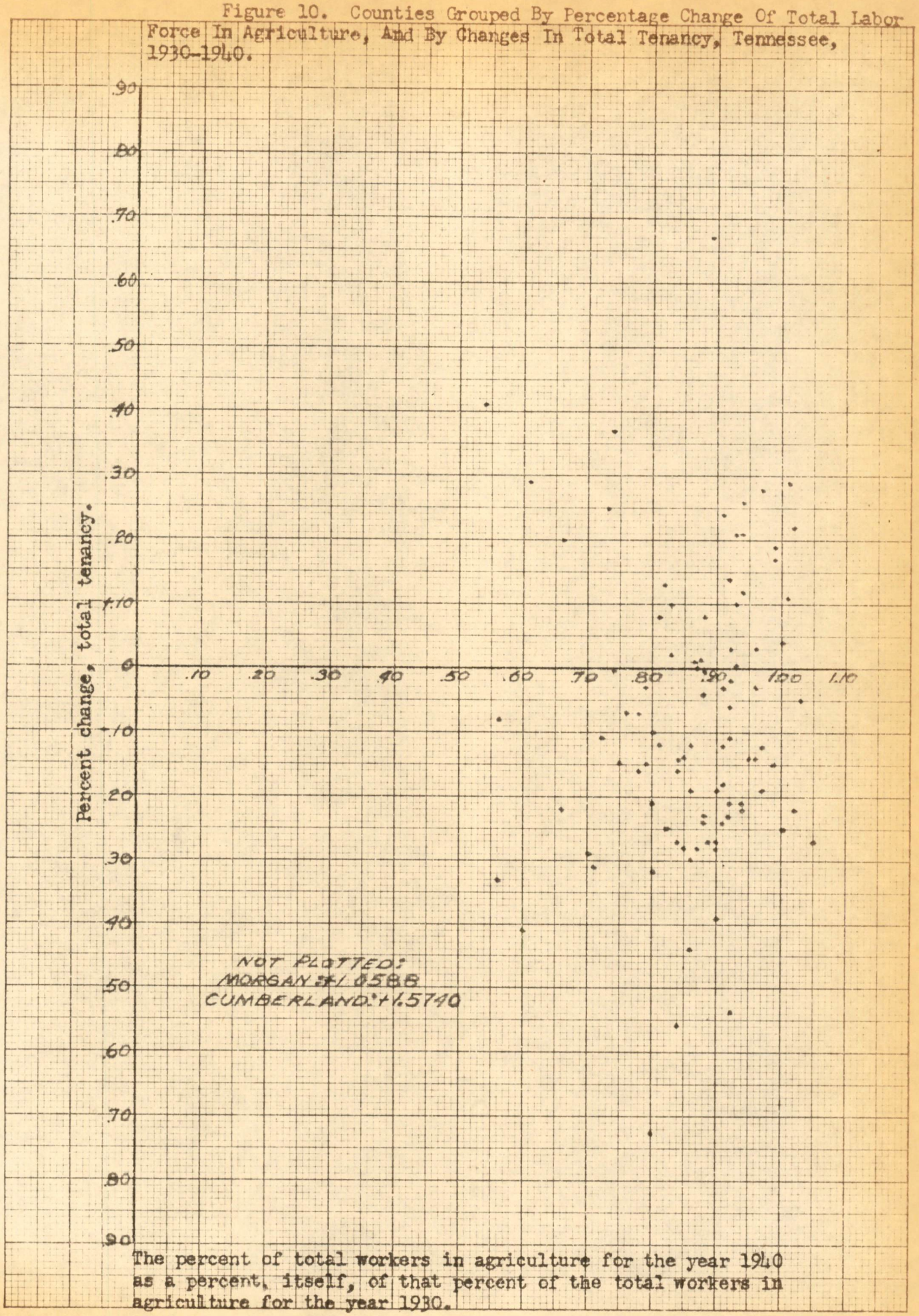
The changes we have seen in the percent changes in the number of farms, average number of acres, and tenancy would lead one to anticipate a negative percent change in the value of all products. To this we must add crop and animal control provisions of the AAA which limited marketable material. It is not strange, therefore, that we experienced a common change

Figure 9. Counties Grouped By Percentage Change Of Male Labor Force In Agriculture, And By Change In Total Tenancy, Tennessee, 1930-1940.



The percent of the males employed in agriculture for the year 1940 as a percent, itself, of that percent of the males employed in agriculture for the year 1930.

Figure 10. Counties Grouped By Percentage Change Of Total Labor Force In Agriculture, And By Changes In Total Tenancy, Tennessee, 1930-1940.



The percent of total workers in agriculture for the year 1940 as a percent, itself, of that percent of the total workers in agriculture for the year 1930.

Figure 11. Counties Grouped By Difference Between Percents Of Male Labor Force In Agriculture, And By Changes In Total Tenancy, Tennessee, 1930-1940.

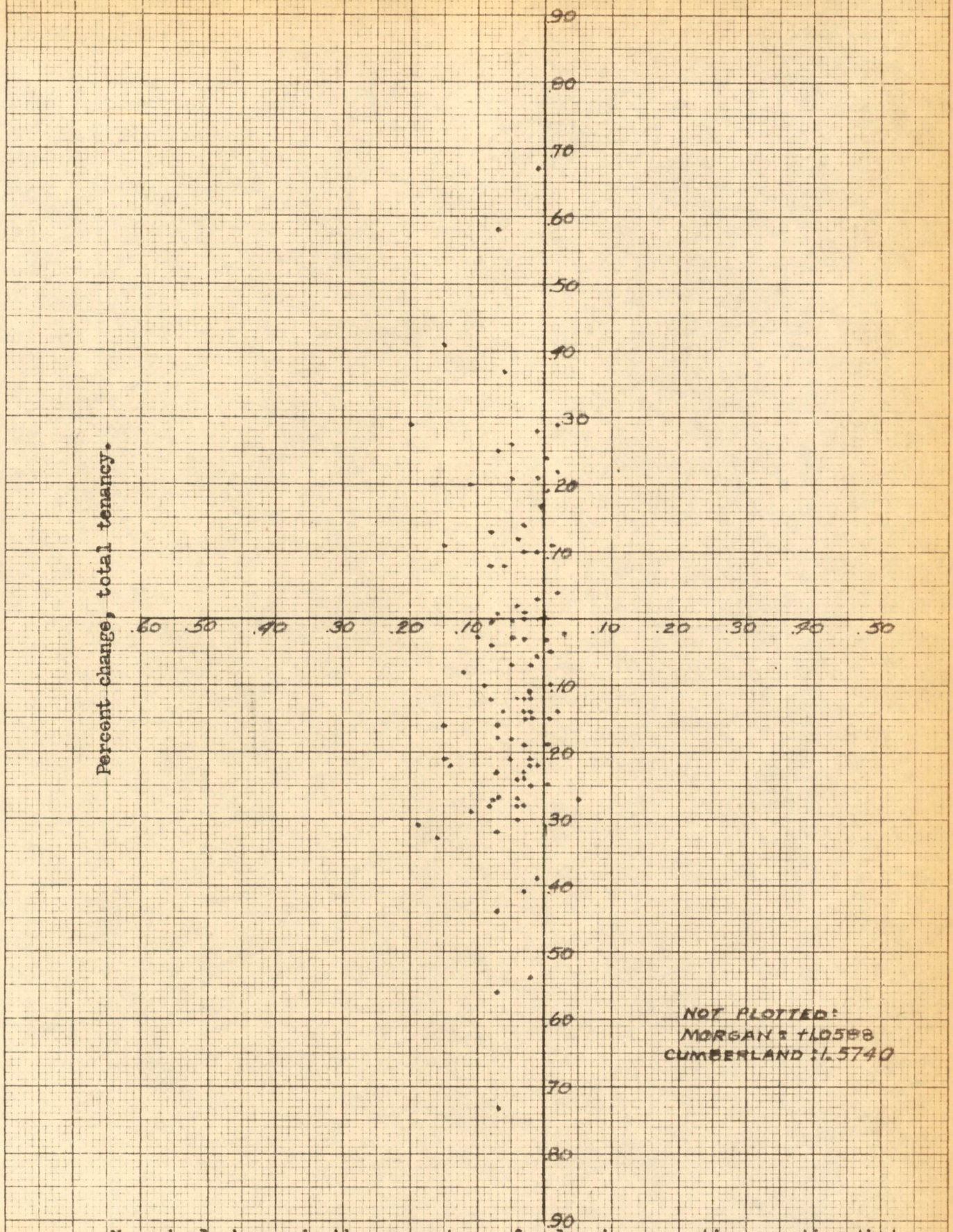
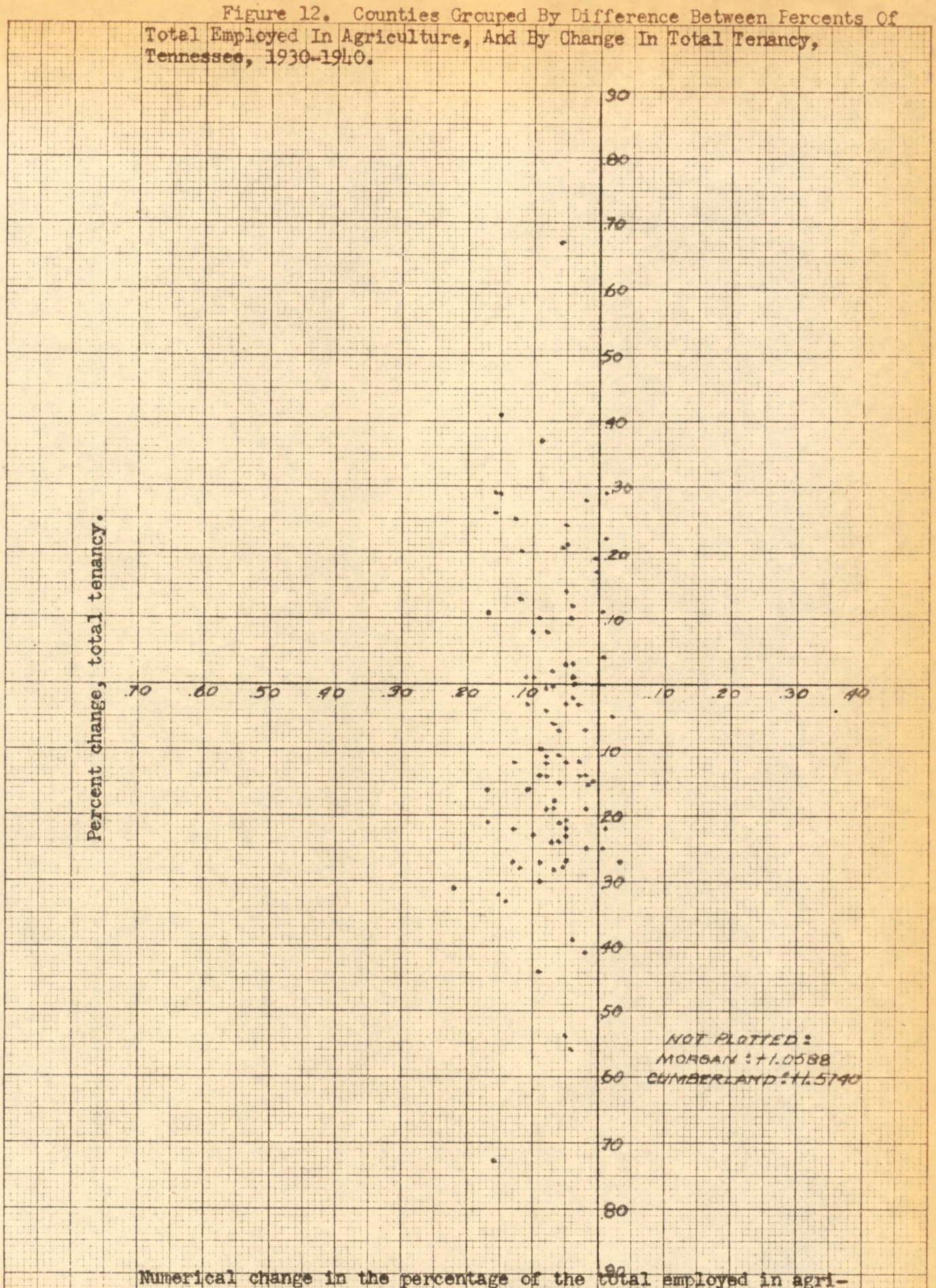


Figure 12. Counties Grouped By Difference Between Percents Of Total Employed In Agriculture, And By Change In Total Tenancy, Tennessee, 1930-1940.



in negative proportions here.

Were we to have reduced the figures to a common base period, to escape differences existing between the price-level of the two periods it would have but changed, to some degree, the composite position of the counties. Relatively, they would have been the same.

There are so many exceptions to which this variable is subjected that we present it, as it is, for whatever worth it may be to the reader. As posited here we feel safe in saying only that the majority of the counties experienced a decrease in the value of all products and that this was not closely related to the changes in our labor factors.

The four divisions of labor-changes we have used throughout this work were set with the percent change in the value of all products (see Figures 13-14-15-16). That there was a conspicuous absence of correlation is quite evident from even a casual observation.

In each of the foregoing sixteen diagrams a definite absence of pattern was displayed. From these the inference would seem warranted that there exists but little, if any, correlation between the variables plotted. This is difficult to accept especially in light of the fact that they appear to be kindred data.

It may well be that there does exist a high degree of correlation throughout the sets, yet one which is latent, or obscured by the manner in which we have handled the data. However this may be, we can say with certainty that as arranged

Figure 13. Counties Grouped By Percentage Change Of Male Labor Force In Agriculture, And By Change In The Value Of All Products, Tennessee, 1930-1940.

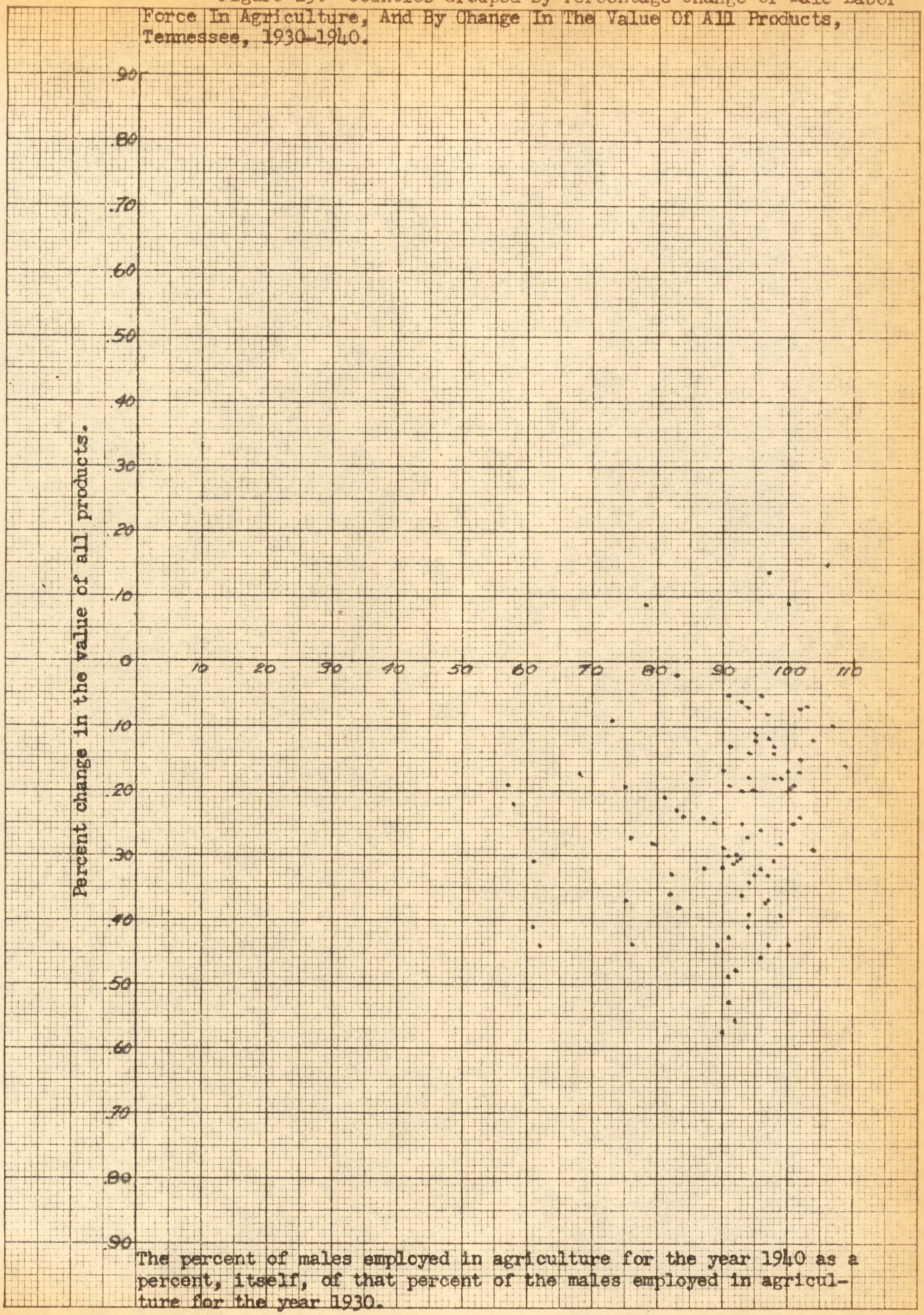


Figure 14. Counties Grouped By Percentage Change Of Total Labor Force In Agriculture, And By Changes In The Value Of All Products, Tennessee, 1930-1940.

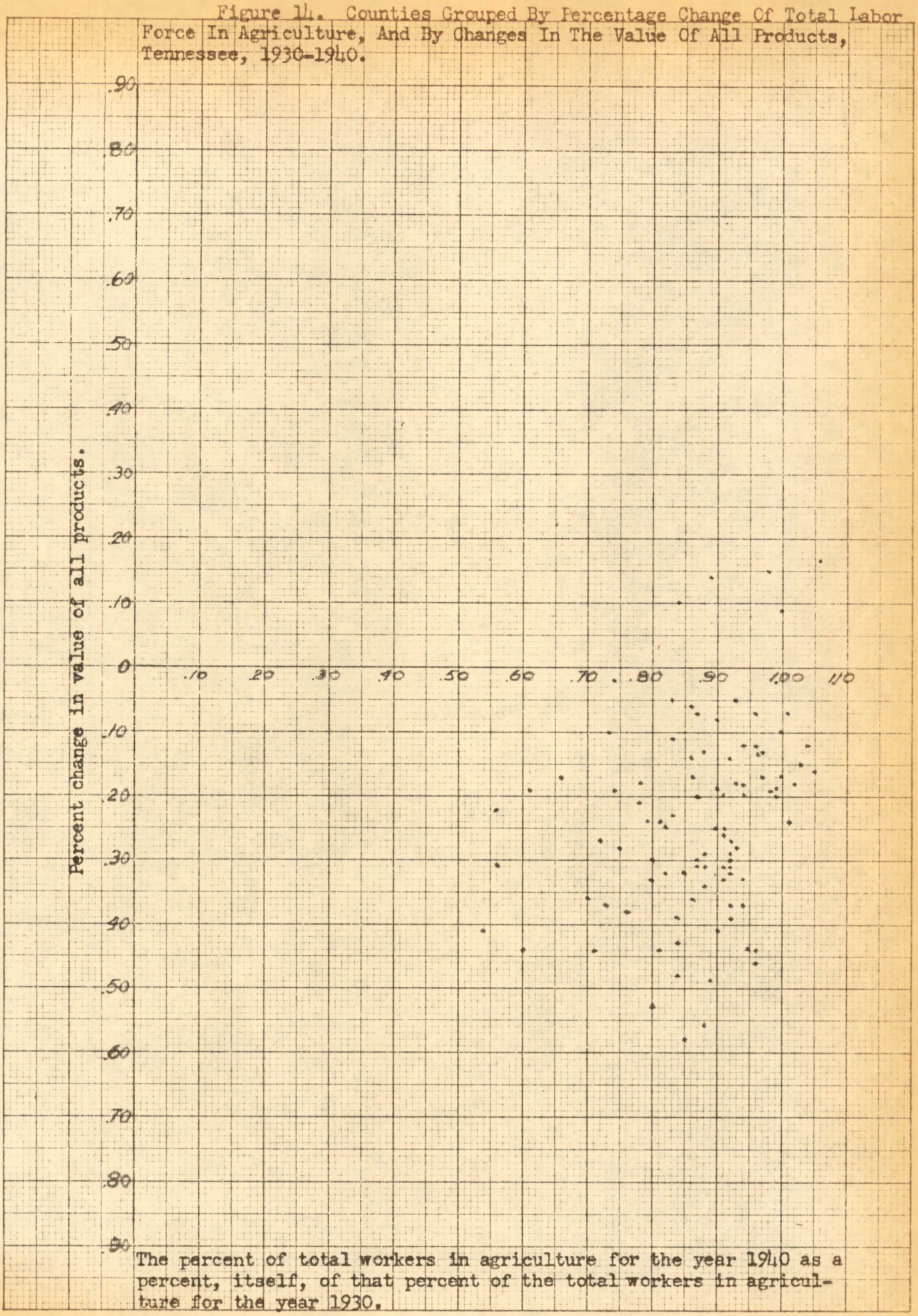


Figure 15. Counties Grouped By Difference Between Percents Of Male Labor Force In Agriculture, And By Change In The Value Of All Products, Tennessee, 1930-1940.

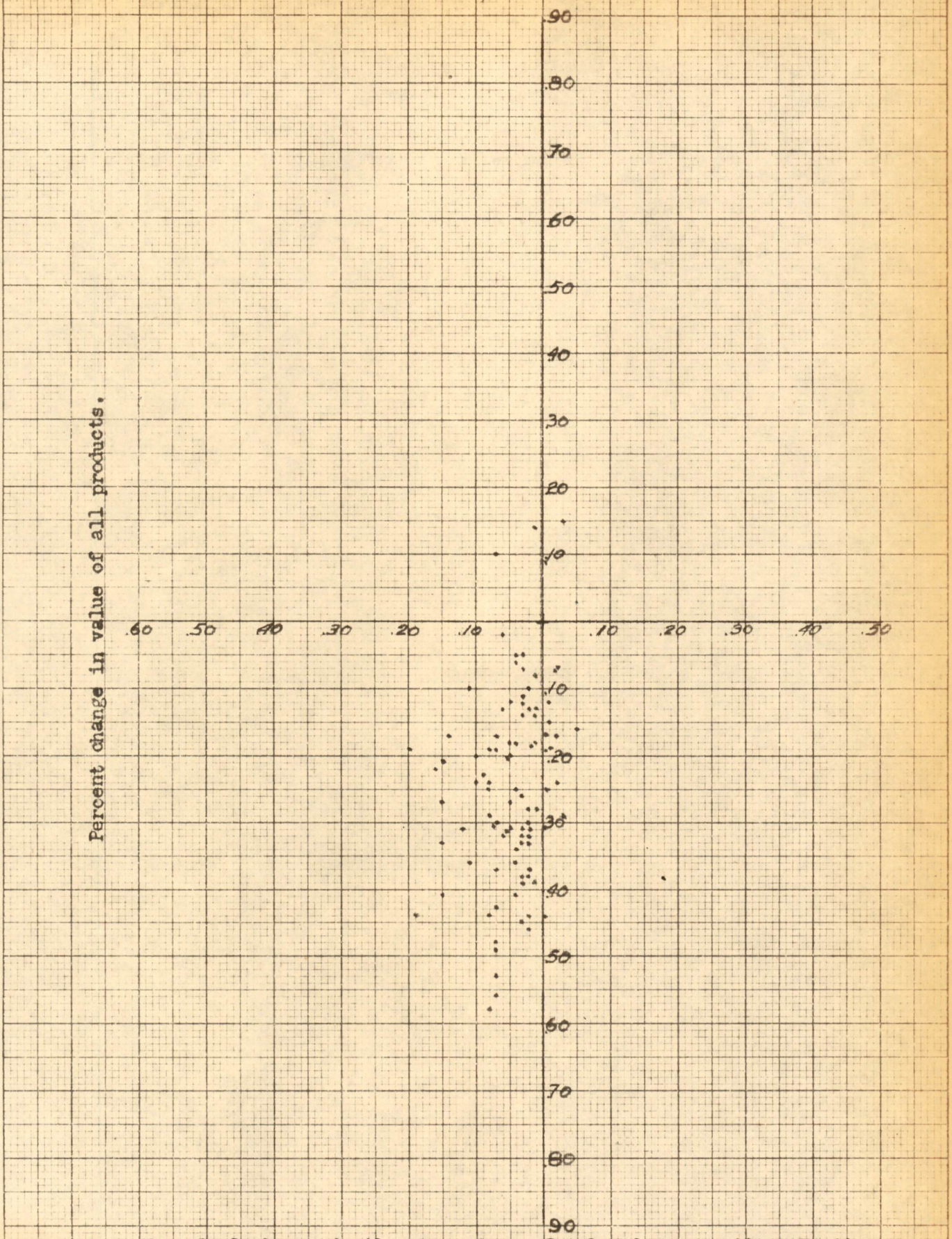
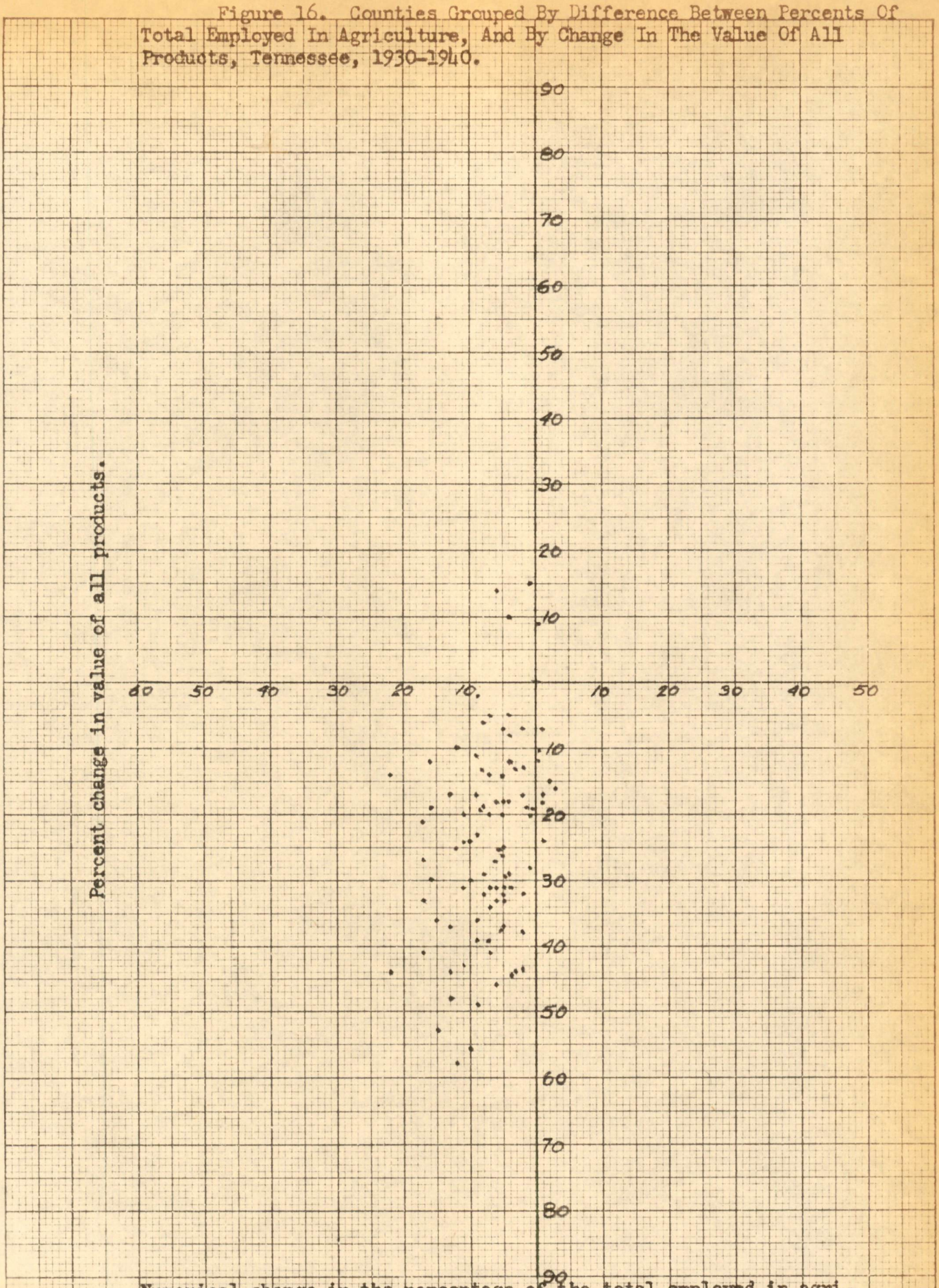


Figure 16. Counties Grouped By Difference Between Percents Of Total Employed In Agriculture, And By Change In The Value Of All Products, Tennessee, 1930-1940.



and as plotted here there is little, if any, degree of correlation among the changes in agricultural labor and changes in the number of farms, average number of acres per farm, total tenancy, and value of all products.

Correlation Analysis

To be more complete in and to augment this pronouncement we subjected the data to a simple correlation analysis. In our simple correlation analysis, a mathematical device whereby we establish the relativity of two variables, we have established and present here two coefficient, or measures, of relationship. In technical language we have computed the coefficient of correlation, and the coefficient of determination.

The coefficient of correlation is a measure of relationship between two variables (in this instance) and one which is based on an abstract number having as its base unity, or 1, or 100. It is expressed as being the square root of a percent relationship; i.e.: the square root of the percent of the change in one variable associated with or attributable to the change in another (singular here). Insofar as it is the square root of a percentage it is not a percent figure and it can be misleading. For this reason the coefficient of determination is included here.

The coefficient of determination, on the other hand, is the percent variation in the independent variable associated with change in the dependent variable. It sounds quite

confusing and often becomes so unless one bears in mind the precise relation between these two measures. To illustrate these two:

Coefficient of correlation:

$$r = \sqrt{\%}$$

Coefficient of determination:

$$r^2 = \%$$

Thus the coefficient of determination gives the percent of relativity between changes in the independent variable (labor-changes in our study) and a dependent variable (here, for example, percent change in the number of farms). It is considered by many the more reliable of the two considered here, however, we include both that the reader may have them before him to choose that which he wills.

To render the results of this procedure more readily comprehensible, we incorporated the end products of the correlation analysis within the following table. From this we see that changes in our independent variable is attributable to changes in the dependent variables to the degree shown in the last column to the right in the table. That these percentages are low seems quite apparent. We would have been concerned had any registered as high as 50 percent. As conditions stand we feel rather safe in saying that, under the qualifications necessarily permeating this work, there is little, extremely little, relationship between the variables as

TABLE I

COUNTIES' PERCENT CHANGES IN TOTAL WORKERS IN AGRICULTURE, CORRELATED WITH PERCENT CHANGES IN NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Independent Variable	Dependent Variable	Coefficient of Correlation	Coefficient of Determination
Per Cent Total Workers-1940 / Per Cent Total Workers-1930	Per Cent Change, Number of Farms, 1930 - 1940	-.07	.0049
Per Cent Total Workers-1940 / Per Cent Total Workers-1930	Per Cent change, Average Number of Acres Per Farm, 1930-1940.	.16	.0256
Per Cent Total Workers-1940 / Per Cent Total Workers-1930	Per Cent Change, Total Tenancy, 1930-1940.	.38	.1444
Per Cent Total Workers-1940 / Per Cent Total Workers-1930	Per Cent Change, Value of All Products, 1930-1940.	.25	.0625

arranged and studied.

Numerical Labor Changes

These analyses removed any remaining doubt as to the accuracy of our scatter diagrams; however, we thought that we might discern definite relationships were we to not change our independent variable but to modify it a bit. With this objective in mind we arranged the counties in order of actual total labor changes for the period. The modification, therefore, was one of shade rather than substance. We had considered labor changes as percentage entities and we resorted to, next, a numerical range. We considered just the actual numerical changes in total workers in agriculture for the period to ascertain whether distortions had been injected into the study by our utilizing percent figures. Had this yielded promising results, the other labor categories, subsequently, would have been subjected to a similar treatment.

Under this arrangement we found there were but seven counties having had increases in total agricultural workers. The other eighty-eight counties had decreases in total agricultural workers. Those having positive changes were grouped as a division. Those with negative experiences we categorized, by the hundreds, from under one to twenty-seven. Alongside this schedule of counties we placed the four variants used before: (percent change and for the period 1930-

1940) (1) number of farms, (2) average number of acres per farm, (3) total tenancy, and (4) value of all products. This resulted in a cumbersome and lengthy table from which little is immediately apparent. To avoid confusion we have prepared a more brief and refined resume of its contents below. In that it is rather self-explanatory we shall not discuss it in detail. As total labor changed:

(1) the percent changes in the number of farms changed with it;

(2) the percent change in the average number of acres per farm changed against it;

(3) the percent change in total tenancy changed with it; and

(4) the percent change in the value of all products changed with it.

There are several additional points apparent from this table which appear significant to us. Notice the division of the changes in total agricultural workers. Take the first two groups (plus through negative 700) and you find you have a majority of the ninety-five counties included (57 in all) plus the fact that averages for the variables here are either both positive or negative. Contrast this with the next two divisions (-700 through -2700) where you find the variables here of the same character, one with the other, and opposite to those in the divisions above them. The exception is

TABLE II

COUNTIES' ACTUAL CHANGES IN TOTAL AGRICULTURAL LABOR FORCE DISPLAYED WITH MEAN PERCENT CHANGES IN NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Change	No. of Counties Per Grp.	X' Counties	X' X*	T Counties	T X*	h Counties	h X*	p Counties	p X*
Plus	7	+5 -2	+.22	+2 -5	-.05	+4 -3	+.25	+2 -5	-.07
Negative To 700	50	+33 -16 (0) 1	+.08	+17 -33	-.03	+24 -25 (0) 1	+.01	+2 -48	-.18
700-1400	27	+9 -18	-.02	+13 -14	-.04	+5 -22	-.13	+0 -27	-.34
1400-2700	11	-10	-.13	-2	+.29	-11	-.27	-11	-.40
Check Totals	95	95	-	95	-	95	-	95	-

You have, with changes in total agricultural labor:

X: Reciprocal Changes

T: Inverse Changes

h: Reciprocal Changes

p: Reciprocal Changes

X': Number of Farms, percentagewize changes, 1930-1940. T: Average Number of Acres per Farm, percentage change, 1930-1940. h: Total Tenancy, percentagewise changes, 1930--1940. p: Value of All Products, percent change, 1930-1940. X: Arithmetic Mean.

under the percent change in the value of all products, however, even here you have progressively negative figures as we move through the four categories. It would certainly not be promiscuous for us to conclude that those counties having positive-and-negative-to-seven-hundred changes in their total agricultural labor force had percentage: increase in the number of farms, decrease in the average number of acres per farm, increases in total tenancy, and less severe decreases in the value of all products, whereas, with those counties having lost seven-hundred or more of their total agricultural labor force experienced percentage; losses in the number of farms, gains in the average number of acres per farm, decreases in total tenancy, and more severe decreases in the value of all products. In one group we have the opposite which is to be found in the other. Those may not be soul-stirring revelations, however, we have here the first time in this study a point where one can discern a definite relationship between changes in labor and each of the other variables. We reiterate here what has been said and assumed before, that there has been no relationship among the variables as arranged. Since we have found what appears to be a correlation, our prior fruitless efforts may be attributable to the manner in which the data has handled and presented. Too, it may be that the averages resorted to in the foregoing table might have given us a distorted representation. Whatever the condition or reasons therefor, we bring before you the results as we have found them. Another might do himself credit by

beginning with this table and continuing a study along lines designed to exhaust the inferences inherent within it.

Areal Analysis

Having met with little, if any, correlation in two prior attempts to relate changes-in-labor to our strategic variants we devised a third and final approach to the issue. Heretofore we had considered changes-in-labor and the other variables under (1) counties grouped by the percent of their male labor force devoted to agriculture, and (2) counties ranked according to the actual numerical change in their total agricultural labor force. Our thoughts turned next to devising a county sorting which would afford a more striking inter-areal comparison.

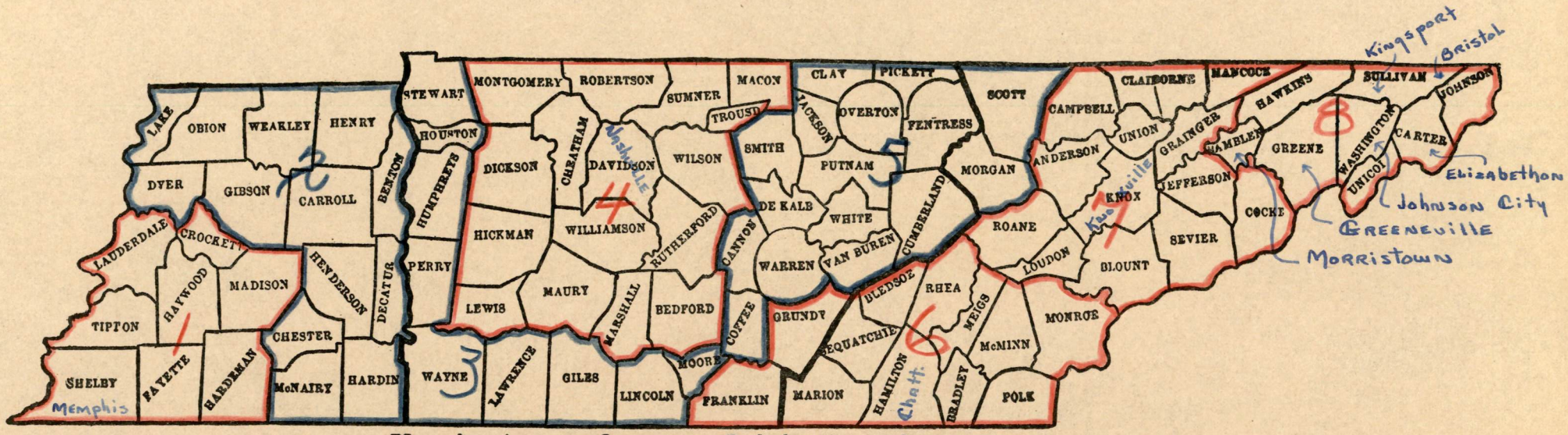
With the differences existing in the State of Tennessee from area to area it might well have been that such a division would find the counties more similarly disposed in their changes by areas. Eastern counties might have peculiarities unknown to Western counties, and vice versa, which, when included in the aggregate figures, would distort or prevent correlation of the factors. Then, too, a county and its immediate neighbors might well have much more in common than one would have with those more distant yet in the same general area. If this were true then we might find a significant degree of correlation between our independent (changes-in-labor) factor and dependent variables.

To instrument this third analysis, the State was divided into eight areas. Within this division we have designated both rural and urban areas. By urban we mean counties containing a metropolitan city and the perimeter counties thereto. The rural areas are those counties more removed from Tennessee industrial centers.

The eight areas contain five urban and three rural divisions. Area Eight contains no city of comparable size to those about which center Areas One, Four, Six, and Seven, however, within Area Eight we do have a collection of six smaller but industrially active cities. (See Figure 17 next page).

An objection may arise to this division on the grounds that the delineation is inferior to that which would have resulted were we to have divided the counties according to their number of part-time operators. This objection is unwarranted in light of a stated purpose; to present the data in such form as to permit inter areal comparisons. Too, a part-time--operator division would have prevented our doing this very thing.

From Figure 17 can be seen our division. On the two pages following this are: Table I, the division which would have resulted under the part-time-operator delineation, and Figure 18, the State as it would have appeared so divided. As is readily discernible from the latter, we would have counties having one hundred or less operators spending one hundred days or more off the farm per year (in 1939) scattered throughout the State. The division we made is not only one of



Blue denotes rural areas. Red denotes urban areas.

Figure 17. Areal Division Of Tennessee For Comparison Of Data.

greater utility for our purposes but, also, is more stable; county positions, their geographic locations, seldom, if ever, change. (We qualify the statement having in mind that perhaps a county might be divided and/or annexed to another, etc.)

Information relative to all the variables listed for each county for the two periods was first brought together on an areal base. For example, data on number of farms, (NF) average number of acres per farm, (ANAc) total tenancy (TT), and value of all products (VAP) were assembled for each area. Vis.:

Area 1	NF	ANAc	TT	VAP
Shelby	xx	xxxx	xx	xxx
Tipton	oo	oooo	oo	ooo
Madison	..	....	..	...
Etc.	..	....	..	...
MEDIAN	⊠	⊠	⊠	⊠

This resulted in eight sets of data on each variable. To further facilitate handling, we then took the median for each category under the variable-heading (see above) and brought these together on a recapitulation sheet upon which all eight areas were included. Vis.:

Area	NF	ANAc	TT	VAP
1-Urban	⊠	⊠	⊠	⊠
2-Rural	⊠	⊠	⊠	⊠
3-Etc.	⊠	⊠	⊠	⊠

Thus, we have eight sets of data for the variables (the eight areas in our division), and one recapitulation sheet (upon which the medians of each variable for each area were assembled). This procedure included each of the variables listed within this work.

TABLE III

COUNTIES GROUPED ACCORDING TO THEIR NUMBER OF PART-TIME FARMERS, BY HUNDREDS, TENNESSEE, 1939.

100 or less	Within 200	Within 300	Within 400
Meigs	Lauderdale	Lawerence	Madison
Moore	Lewis	Loudon	Montgomery
Perry	McNairy	Marshall	Obion
Cheatham	Macon	Polk	Gibson
Chester	Marion	Roane	Johnson
Crockett	Pickett	Bledsoe	
Decatur	Rhea	Bradley	
Houston	Benton	Cannon	
Humphreys	Carroll	Clay	
Lake	Fayette	Coffee	
Robertson	Grundy	DeKalb	
Trousdale	Hancock	Dickson	
Van Buren	Hardeman	Dyer	
Wayne	Haywood	Grainger	
	Henderson	Hamblen	
	Jackson	Hardin	
	Sequatchie	Henry	
	Stewart	Hickman	
	Unicoi	Jefferson	
	Union	Smith	
		Tipton	
		Weakley	
		White	

Within 500	Within 600	Within 700
Lincoln	Cumberland	Fentress
Monroe	Anderson	Morgan
Bedford	McMinn	Sevier
Claiborne	Maury	Sumner
Cocke	Overton	Williamson
Giles	Scott	Wilson
Warren		

TABLE III (Continued)

COUNTIES GROUPED ACCORDING TO THEIR NUMBER OF PART TIME FARMERS, BY HUNDREDS, TENNESSEE, 1939.

Within 800	Within 900
Campbell	Rutherford
Carter	
Greene	
Hamilton	
Hawkins	
Putman	
Washington	

1000-Over
Sullivan
Blount
Davidson
Shelby
Franklin
Knox

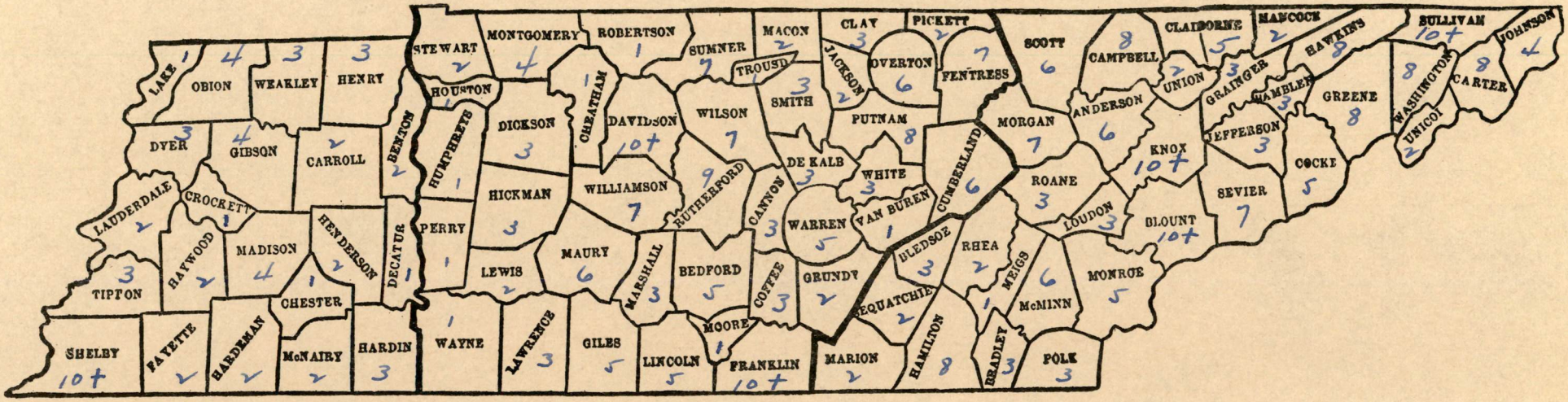


Figure 18. County Distribution Of Part-Time Farmers, In Hundreds, Tennessee, 1939.

(Part-time farmer being defined as one spending 100 days or more per year off the)
(farm. Range: 1 through plus 10. Source: U. S. Census of Agriculture, 1945, 1,)
(Statistics For Counties, Parts 17-20.)

This median is not the most perfect measure, to be sure, however, it does provide a means of measure not distorted by large numerical differences existing among numbers. It is a point of location rather than one of average size. Let us, for illustrative purposes, contrast an arithmetic mean and the median in a hypothetical case:

	Percent Increase		
County	NF	VAP	TT
X	.80	.70	.01
Y	.10	.60	.10
Z	.03	.50	.001
Totals	.93	1.80	.111
Arithmetic Mean	.31	.60	.037
Median	.10	.60	.100

Our example here is with but three counties but indicates the average-differences. The median is the middle number of an array arranged in numerical sequence. There are just as many figures below it as there are above it.

With these recapitulation sheets we can more immediately know the changes having occurred during the period. If we wish more specific information, the exact changes for each county are available upon the individual area worksheets.

The following four tables (Tables IV, V, VI, VII) show us, in short, one thing: that there is no inter-areal relationships existing among or between the variables. As arranged we see, once again, a mass of data having little or nothing in common with that near it. It is useless to belabor ourselves in an attempt to explain away the picture presented. Our concern is measure, primarily, not unlimited

explanations. We take it, as before, that there is no inter--areal relationships existing between or among the variables as here handled and presented.

TABLE IV

AREAL COMPARISON OF THE MEDIAN PERCENT CHANGES OF MALE WORKERS IN AGRICULTURE, NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930--1940.

Areas	Percent of Male Workers in Agriculture of 1940 as a Percent of the Percent of Male Workers in Agriculture of 1930. ------Median--------	Percent Change in Number of Farms Median 1930-1940	Percent Change in Average Number of Acres per Farms --Median-- 1930-1940
3-R	98.10	-.0771	⁄.1135
5-R	97.55	⁄.15385	-.09025
1-U	97.315	-.1172	⁄.2744
4-U	92.815	⁄.01155	⁄.0325
7-U	92.42	⁄.1522	-.1536
2-R	92.00	-.1561	⁄.1754
8-U	87.60	⁄.14905	-.1546
6-U	81.865	-.00415	-.1233

TABLE IV (Continued)

AREAL COMPARISON OF THE MEDIAN PERCENT CHANGES OF MALE WORKERS IN AGRICULTURE, NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930--1940.

Areas	Tenancy		Percent Change in Value of our Products -Median- 1930-1940
	Percent Change in Total -Median- 1930-1940	Percent Change in Proportion -Medians- 1930-1940	
3-R	-.1459	-.0716	-.1940
5-R	⁄.08855	-.03725	-.1443
1-U	-.17525	-.05225	-.3810
4-U	-.0723	-.09005	-.2647
7-U	-.0032	-.1941	-.1963
2-R	-.2663	-.1075	-.4087
8-U	⁄.08175	-.10085	-.2068
6-U	-.1831	-.2298	-.1724

TABLE V

AREAL COMPARISON OF THE MEDIAN PERCENT CHANGES OF TOTAL WORKERS IN AGRICULTURE, NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Area	Percent of Total Workers in Agriculture of 1940 as of a Percent of the Total Workers in Agriculture for 1930 ----Medians---- 1930-1940	Percent Change in Number of Farms Medians 1930-1940	Percent Change in Average Number of Acres Per Farm -Medians- 1930-1940
5-R	93.01	∕.15385	-.09025
1-U	92.795	-.1172	∕.2744
3-R	92.30	-.0771	∕.1135
7-U	89.24	∕.1522	-.1536
4-U	88.24	∕.01155	∕.0325
2-R	86.61	-.1561	∕.1754
8-U	83.105	∕.14905	-.1546
6-U	81.415	-.00415	-.1233

TABLE V (Continued)

AREAL COMPARISON OF THE MEDIAN PERCENT CHANGES OF TOTAL WORKERS IN AGRICULTURE, NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Area	Tenancy		Percent Change in Value of All Products --Medians-- 1930-1940
	Percent Change in Total --Medians-- 1930-1940	Percent Change in Proportion --Medians-- 1930-1940	
5-R	⁄.08855	-.03725	-.1443
1-U	-.17525	-.05225	-.3810
3-R	-.1459	-.0716	-.1940
7-U	-.0032	-.1941	-.1963
4-U	-.0723	-.09005	-.2647
2-R	-.2663	-.1075	-.4087
8-U	⁄.08175	-.10085	-.2068
6-U	-.1831	-.2298	-.1724

TABLE VI

AREAL MEDIAN DIFFERENCES BETWEEN ACTUAL PERCENTS OF MALE LABOR IN AGRICULTURE, AND PERCENT CHANGES IN NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Area	Actual Percent Change in Males Employed in Agriculture of 1930-1940 -Medians- (9 Up)	Percent Change in Number of Farms -Medians- 1930-1940	Percent Change in Average number of Acres per Farm -Medians- 1930-1940
6-U	-6.87	-.00415	-.1233
2-R	-6.64	-.1561	≠.1754
8-U	-5.545	≠.14905	-.1546
4-U	-4.675	≠.01155	≠.0325
7-U	-3.13	≠.1522	-.1536
5-R	-2.085	≠.15385	-.09025
1-U	-1.655	-.1172	≠.2744
3-R	-1.30	-.0771	≠.1135

TABLE VI (Continued)

AREAL MEDIAN DIFFERENCES BETWEEN ACTUAL PERCENTS OF MALE LABOR IN AGRICULTURE, AND PERCENT CHANGES IN NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Area	Tenancy		Percent Change in Value of All Products -Medians- 1930-1940
	Percent Change In Total -Medians- 1930-1940	Percent Change in proportion --Medians-- 1930-1940	
6-U	-.1831	-.2298	-.1724
2-R	-.2663	-.1075	-.4087
8-U	∕.08175	-.10085	-.2068
4-U	-.0723	-.09005	-.2647
7-U	-.0032	-.1941	-.1963
5-R	∕.08855	-.03725	-.1443
1-U	-.17525	-.05225	-.3810
3-R	-.1459	-.0716	-.1940

TABLE VII

AREAL MEDIAN DIFFERENCES BETWEEN ACTUAL PERCENTS OF TOTAL EMPLOYED IN AGRICULTURE, AND IN PERCENT CHANGES IN NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Area	Actual Percent Change in Total Employed in Agriculture --Medians-- 1930-1940	Percent Change in Number of Farms -Medians- 1930-1940	Percent Change in Average Number of Acres per Farm -Medians- 1930-1940
2-R	-9.51	-.1561	≠.1754
6-U	-8.295	-.00415	-.1233
8-U	-7.34	≠.14905	-.1546
4-U	-6.86	≠.01155	≠.0325
7-U	-5.45	≠.1522	-.1536
1-U	-5.04	-.1172	≠.2744
3-R	-4.99	-.0771	≠.1135
5-R	-4.87	≠.15385	-.09025

TABLE VII (Continued)

AREAL MEDIAN DIFFERENCES BETWEEN ACTUAL PERCENTS OF TOTAL EMPLOYED IN AGRICULTURE, AND IN PERCENT CHANGES IN NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL AND PROPORTION OF TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Area	Tenancy		Percent Change in Value of All Products --Medians-- 1930-1940
	Percent Change In Total -Medians- 1930-1940	Percent Change in Proportion --Medians-- 1930-1940	
2-R	-.2663	-.1075	-.4087
6-U	-.1831	-.2298	-.1724
8-U	/.08175	-.10085	-.2068
4-U	-.0723	-.09005	-.2647
7-U	-.0032	-.1941	-.1963
1-U	-.17525	-.05225	-.3810
3-R	-.1459	-.0716	-.1940
5-R	/.08855	-.03725	-.1443

CHAPTER III

VARIANCES IN AND UNDER POPULATION CHANGES

In moving to try the second independent variable of this study, changes in the agricultural population, we used the same procedure as before with labor changes, i.e.: scatter diagrams, correlation analysis, and an inter-areal analysis.

We held as the independent variable two major categories falling under Agricultural Population; that of (1) the numerical change in the Rural Farm Population, and (2) the percent change in the Total Farm Population. This excludes specific handling of figures for the Urban Farm Population; however, we have found that the latter does not constitute a numerically significant category (in many instances being zero) and, too, what there is to it finds inclusion under Total Farm Population.

It is well that we pause here to define our population categories. The definitions advanced by our source of information remained unchanged for the decennial enumerations of 1930 and 1940. By Urban Farm Population we mean "the population living on farms located in urban places". The Rural Farm Population includes the population living on farms located in rural places. Total Farm Population is defined as "all persons living on farms, without regard to

occupation".[2]

In preparing this analysis we divided the project into two divisions: plots and a correlation analysis were made with the independent variable being the numerical changes in (1) Rural Farm Population, and (2) the percent change in Total Population, for the period. The reasons for having chosen a numerical change in the first then a percent change in the second were that the homogeneity of data in the Rural Farm Population lends to its being a more significant category and one in which we should like actual changes not distorted by rates such as may prevail when using percentage figures, and the heterogeneous nature of Total Farm Population is one where we can, without risk of jeopardizing a more cardinal classification, measure a rate of change.

Scatter Diagrams

The dependent variables to be related to the numerical change in the Rural Farm Population were: (all for the period 1930-1940 unless otherwise specified)

(A) numerical changes in the percent of approximate existing land area in farms;

(B) numerical change in the number of farms;

(C) numerical change in the average number of acres

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[2] 16th Census of the United States, 1940, Population, Volume II, Characteristic of the population, Part 6, Reports by States, Pennsylvania-Texas, p. 3.

per farm;

(D) change in the proportion of tenancy; and

(E) percent change in total tenancy.

Of those above only (A) is foreign to this study at present, the others having been considered earlier. We do, however, now turn our attention to their numerical rather than their percent values, with the exception of (E), and these that they may be measured in the same terms as the independent variable in the first of the two following analyses.

The numerical changes in the percent of approximate existing land area in farms is simply the change in the percents of approximate known land area devoted to farming.

As more people inhabit an area and with it not materially gaining from a substantial net reduction in numbers from migration, and with this area predominantly agricultural, it is not absurd to think of additional land being made available for use. This could be accomplished by several methods: use of more sub-marginal land, clearing of forests, stoning fields, drainage, and so on. Although we cannot concern ourselves here with the manner by which additional land has been made available, we do desire to know the degree to which such additions have been and whether this and population changes are correlative.

Once with the data desired for the foregoing variables, the coded cards (referred to before) were sorted with respect

Diagrams	Independent Variables	Dependent Variables	
Figure 19	Increase or decrease in the Rural Farm Population, 1930-1940	(A)	Change in the percent of approximate existing land areas in farms;
Figure 20	Increase or decrease in the Rural Farm Population, 1930-1940.	(B)	Numerical change in the number of farms;
Figure 21	Increase or decrease in the Rural Farm Population, 1930-1940.	(C)	Numerical change in the average number of acres per farm;
Figure 22	Increase or decrease in the Rural Farm Population, 1930-1940.	(D)	Change in the proportion of tenancy; and
Figure 23	Increase or decrease in the Rural Farm Population, 1930-1940.	(E)	Percent changes in total tenancy.
Figure 24	Percent Change, Total Farm Population, 1930-1940.	(A)	Percent change in the number of farms;
Figure 25	Percent Change, Total Farm Population, 1930-1940.	(B)	Percent change in the average number of acres per farm;
Figure 26	Percent Change, Total Farm Population, 1930-1940.	(C)	Percent change in total tenancy; and
Figure 27	Percent change, Total Farm Population, 1930-1940.	(D)	Percent change in the value of all products.

Tables	Independent Variables		Dependent Variables
Table VIII	Increase or decrease in the Rural Farm Population, 1930-1940.	(A)	Change in the percent of approximate existing land area in farms;
	Increase or decrease in the Rural Farm Population, 1930-1940.	(B)	Numerical change in the number of farms;
	Increase or decrease in the Rural Farm Population, 1930-1940.	(C)	Numerical change in the average number of acres per farm;
	Increase or decrease in the Rural Farm Population, 1930-1940.	(D)	Change in the Proportion of tenancy; and
	Increase or decrease in the Rural Farm Population, 1930-1940.	(E)	Percent change in the number of farms;
Table IX	Percent change, Total Farm Population, 1930-1940.	(A)	Percent change in the number of farms;
	Percent change, Total Farm Population, 1930-1940.	(B)	Percent change in the average number of acres per farm;
	Percent change, Total Farm Population, 1930-1940.	(C)	Percent change in total tenancy; and
	Percent change, Total Farm Population, 1930-1940.	(D)	Percent change in the value of all products.

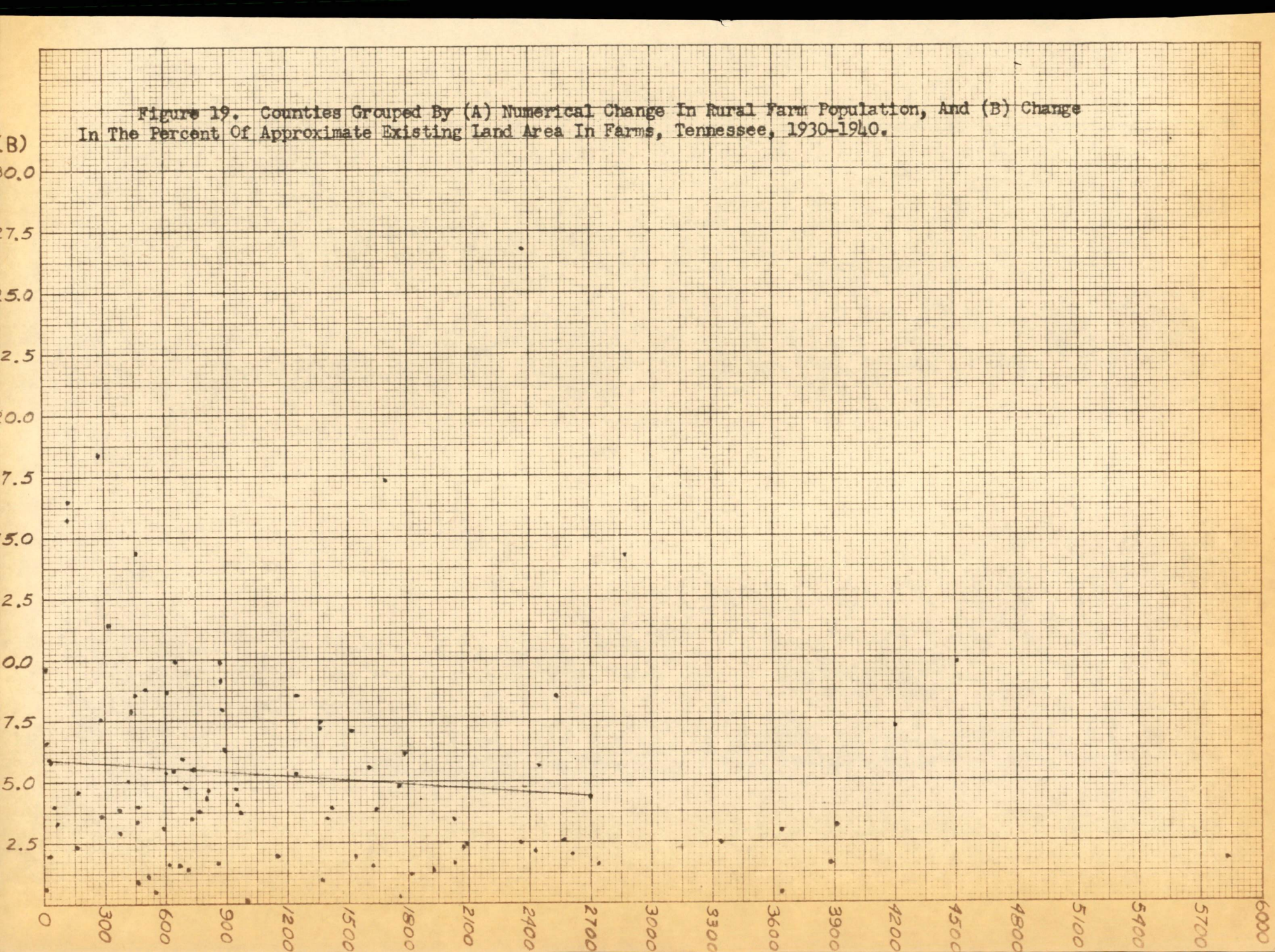


Figure 19. Counties Grouped By (A) Numerical Change In Rural Farm Population, And (B) Change In The Percent Of Approximate Existing Land Area In Farms, Tennessee, 1930-1940.

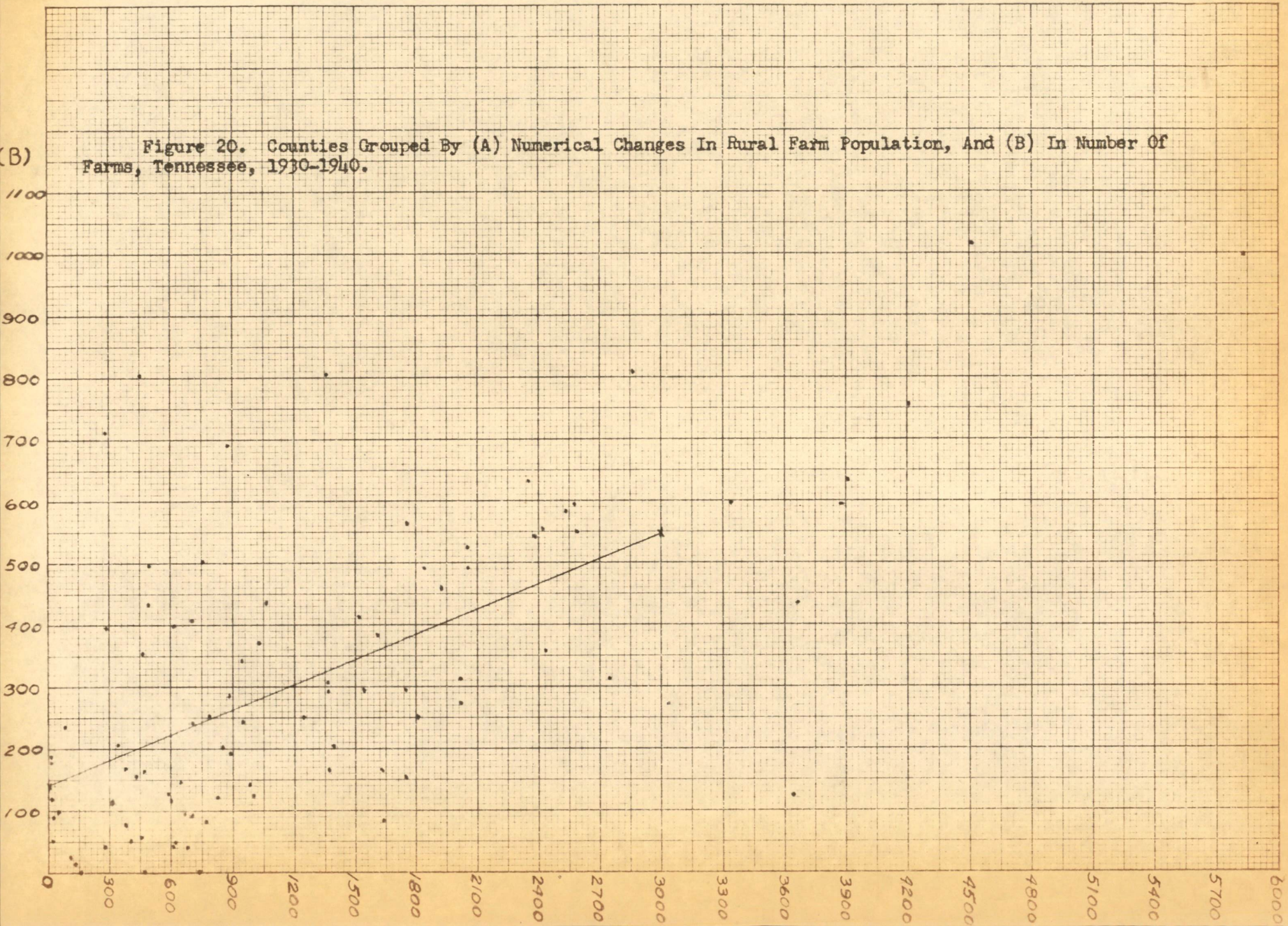


Figure 20. Counties Grouped By (A) Numerical Changes In Rural Farm Population, And (B) In Number Of Farms, Tennessee, 1930-1940.

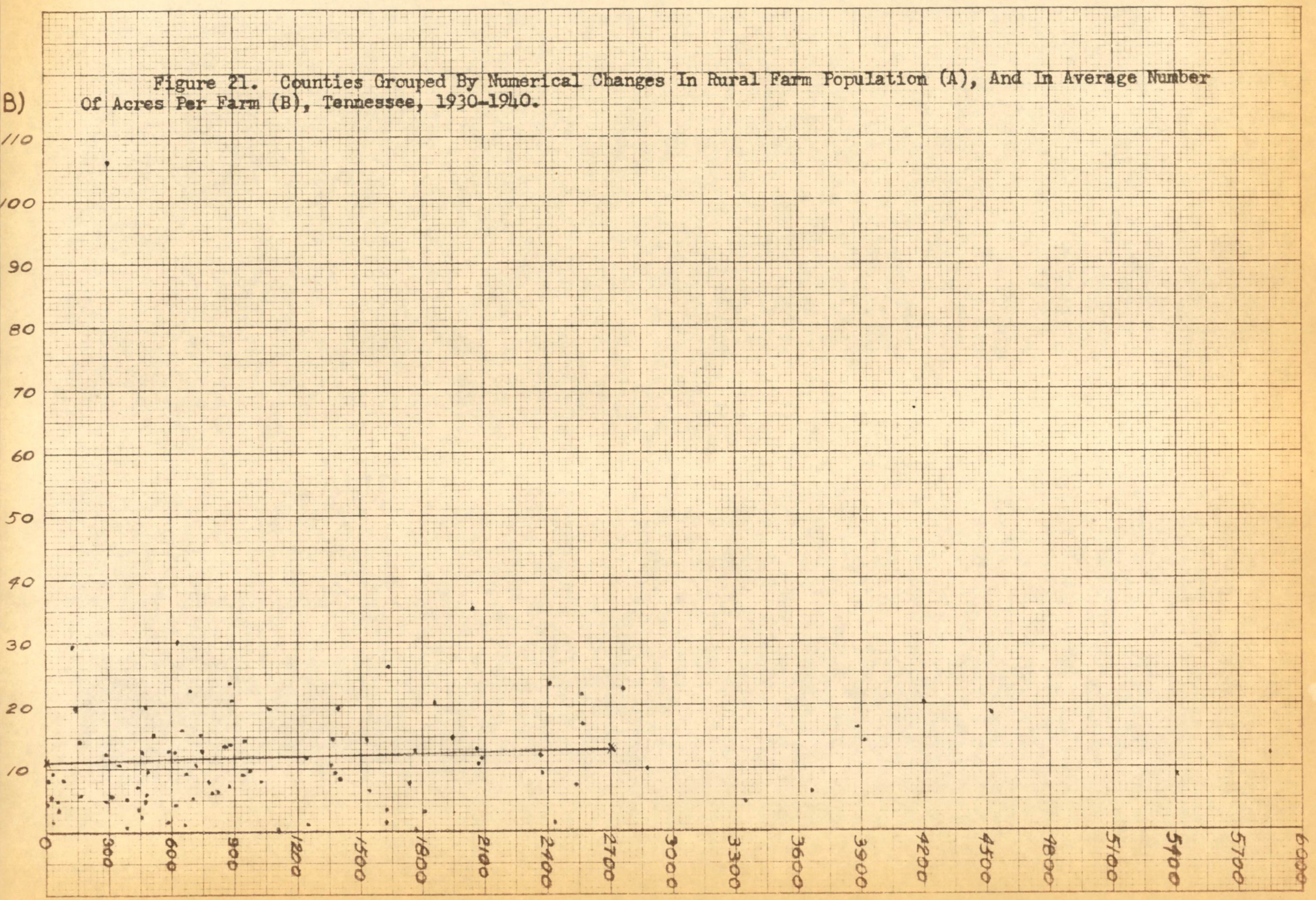


Figure 21. Counties Grouped By Numerical Changes In Rural Farm Population (A), And In Average Number Of Acres Per Farm (B), Tennessee, 1930-1940.

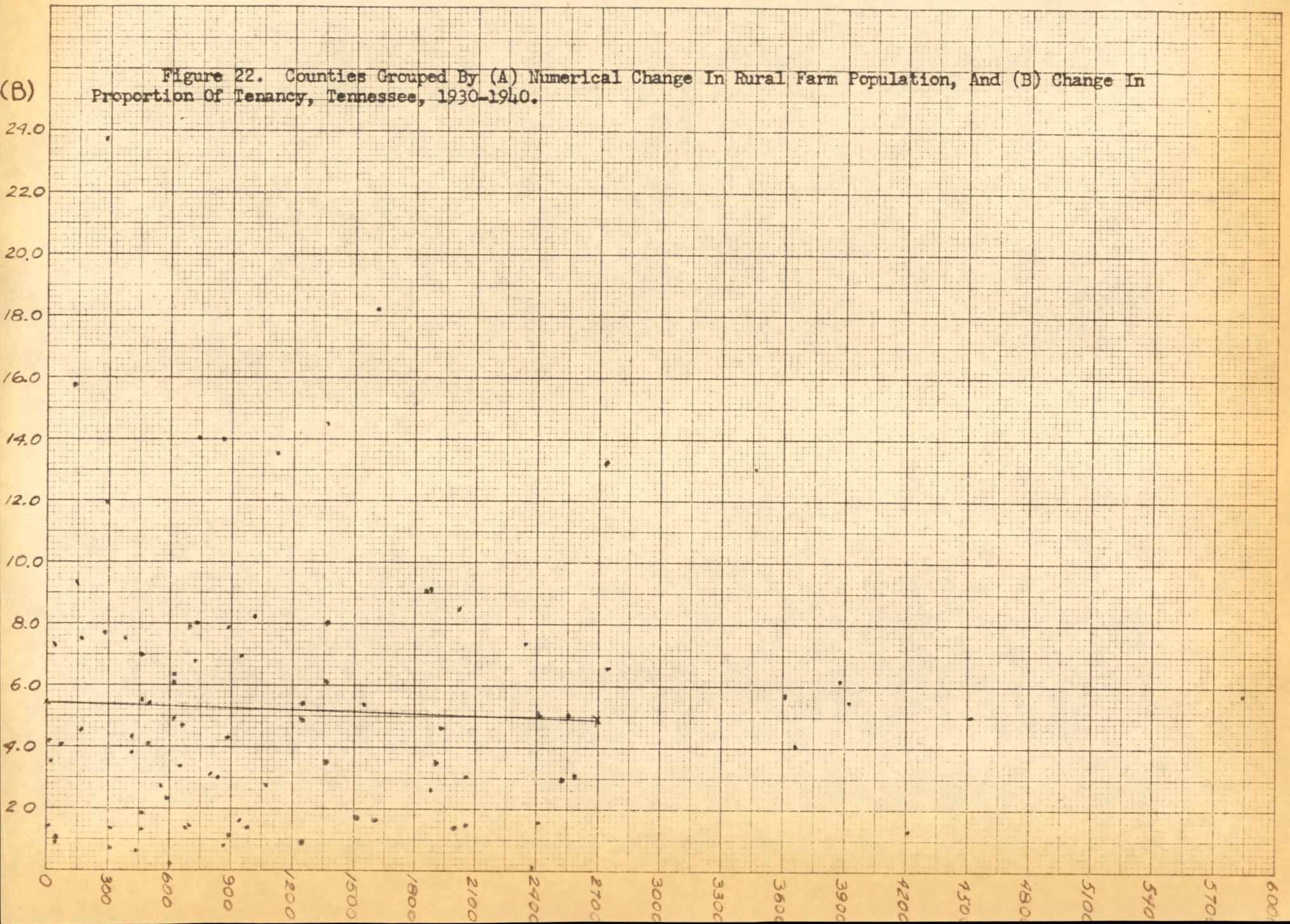


Figure 22. Counties Grouped By (A) Numerical Change In Rural Farm Population, And (B) Change In Proportion Of Tenancy, Tennessee, 1930-1940.

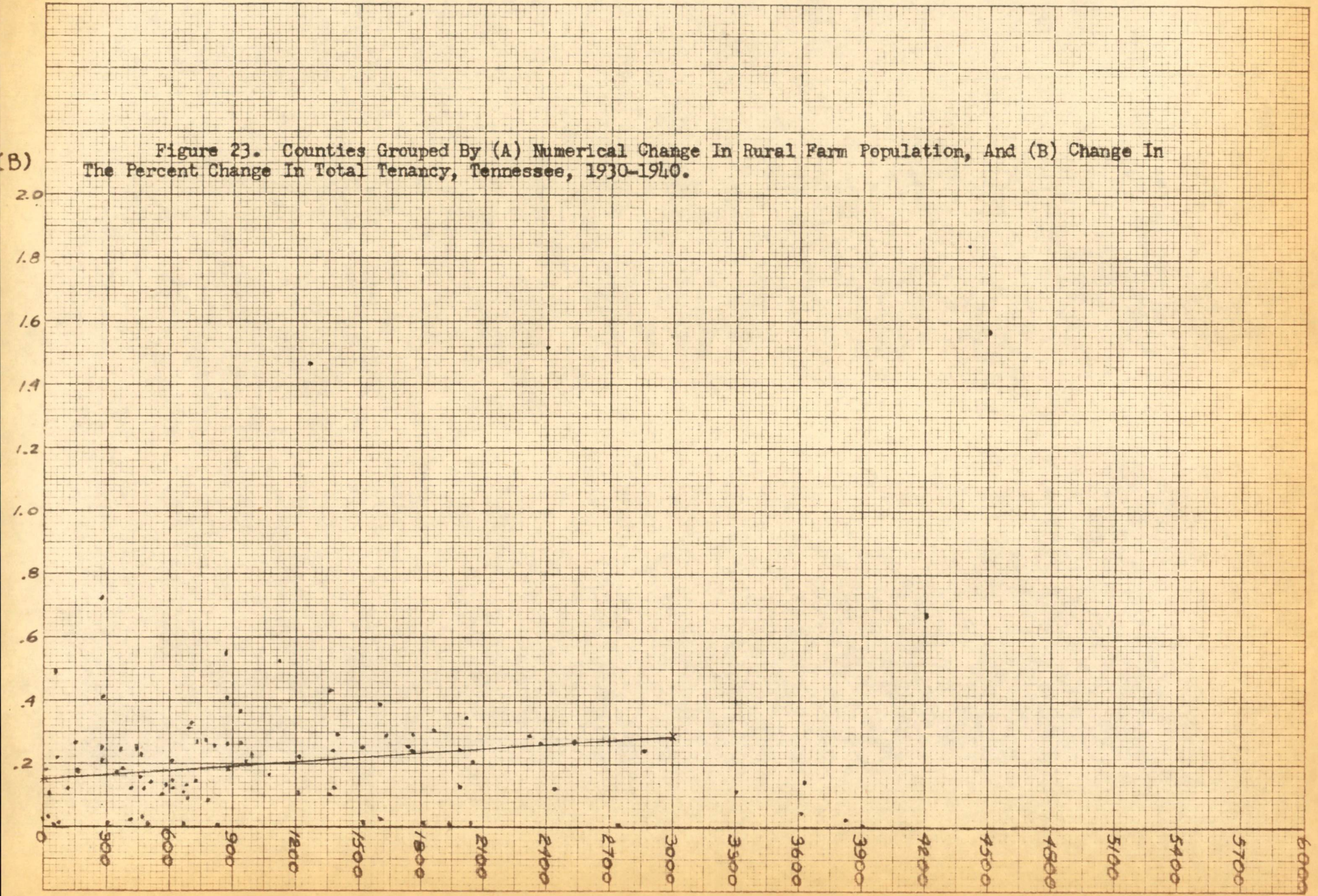


Figure 23. Counties Grouped By (A) Numerical Change In Rural Farm Population, And (B) Change In The Percent Change In Total Tenancy, Tennessee, 1930-1940.

Figure 24. Counties Grouped By (A) Percent Changes In Total Farm Population, And (B) Number Of Farms, Tennessee, 1930-1940.

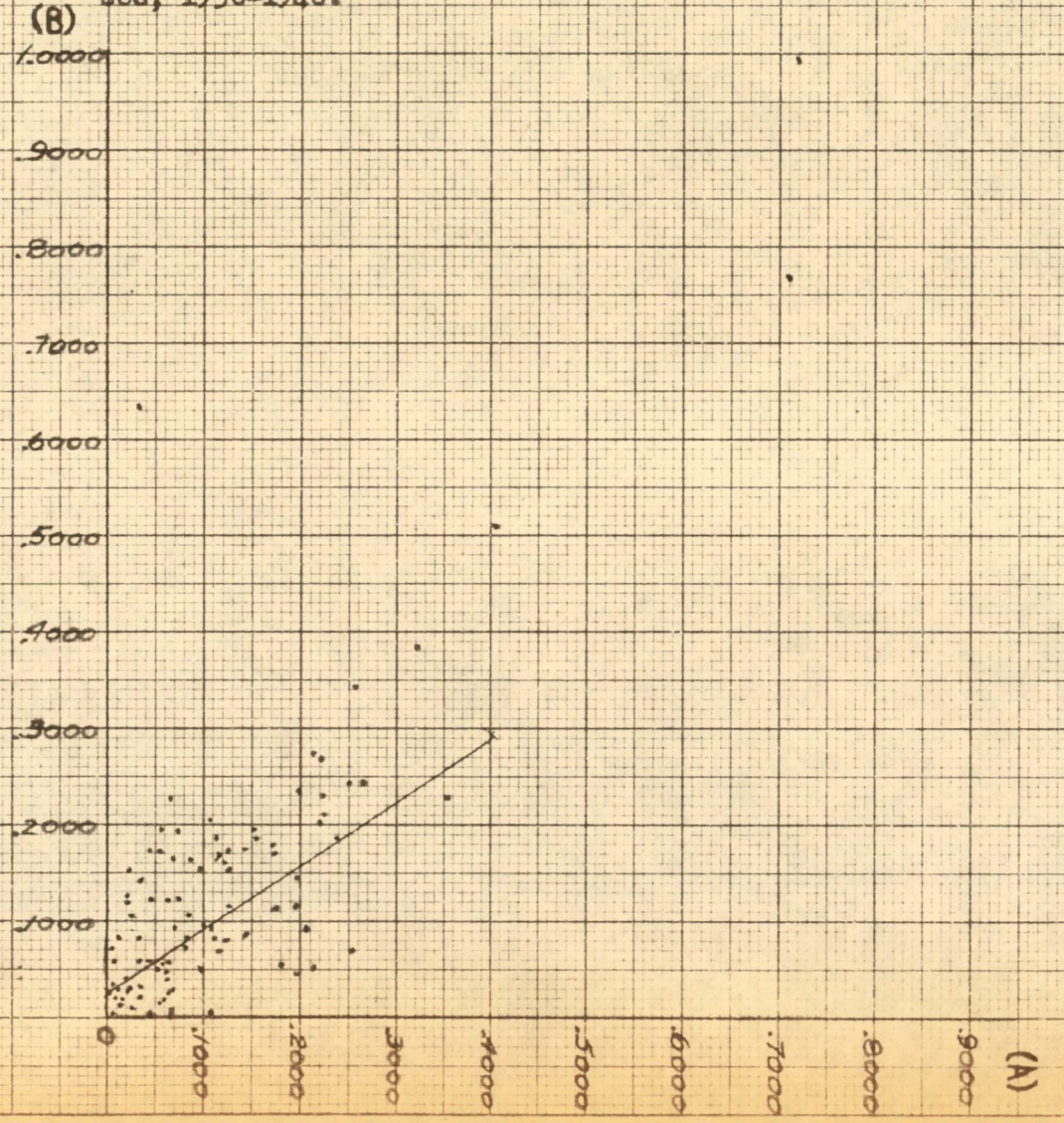


Figure 25. Counties Grouped By (A) Percent Changes In Total Farm Population, And (B) Average Number Of Acres Per Farm, Tennessee, 1930-1940.

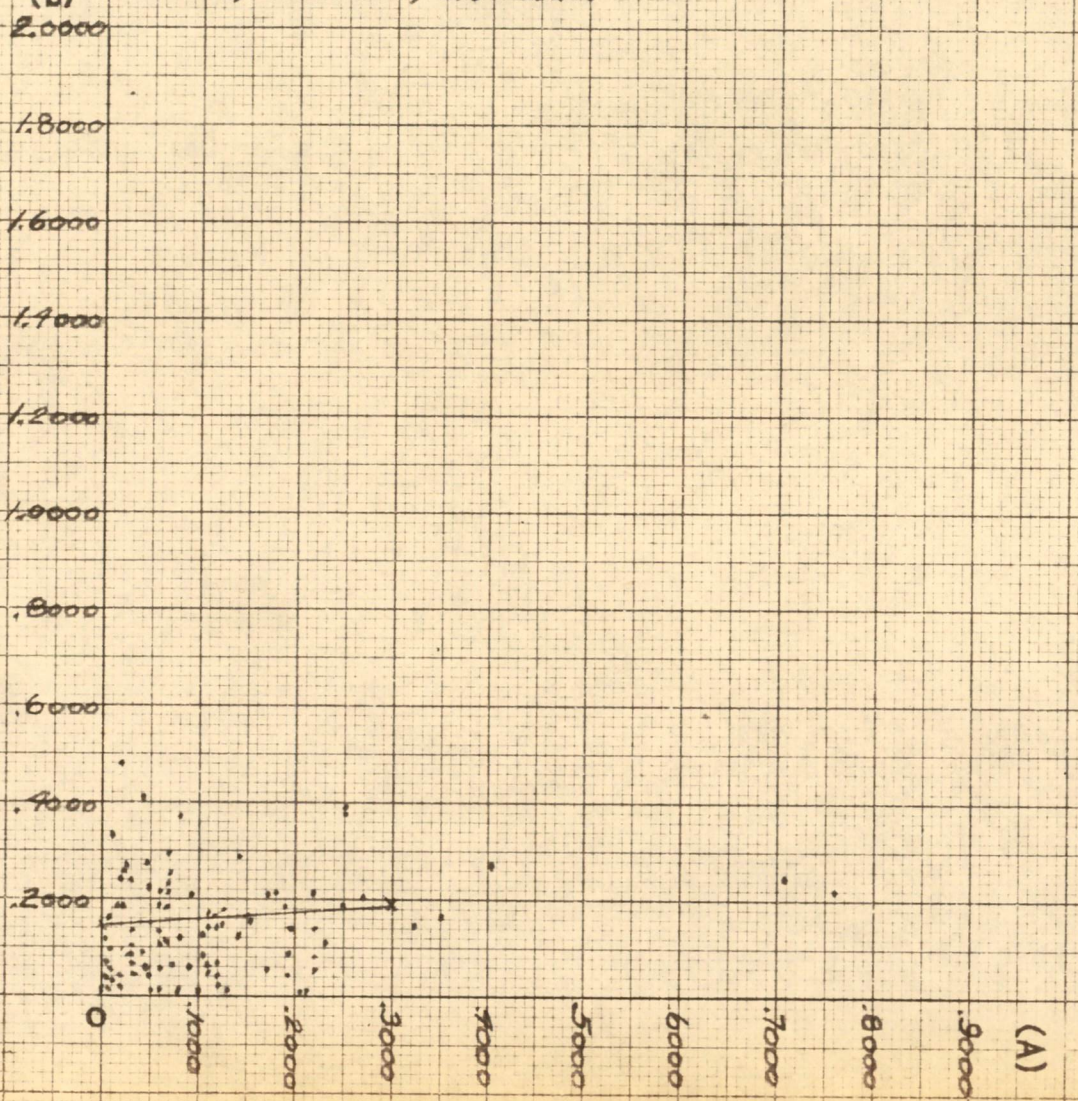


Figure 26. Counties Grouped By (A) Percent Changes In Total Farm Population, And (B) In Total Tenancy, Tennessee, 1930-1940.

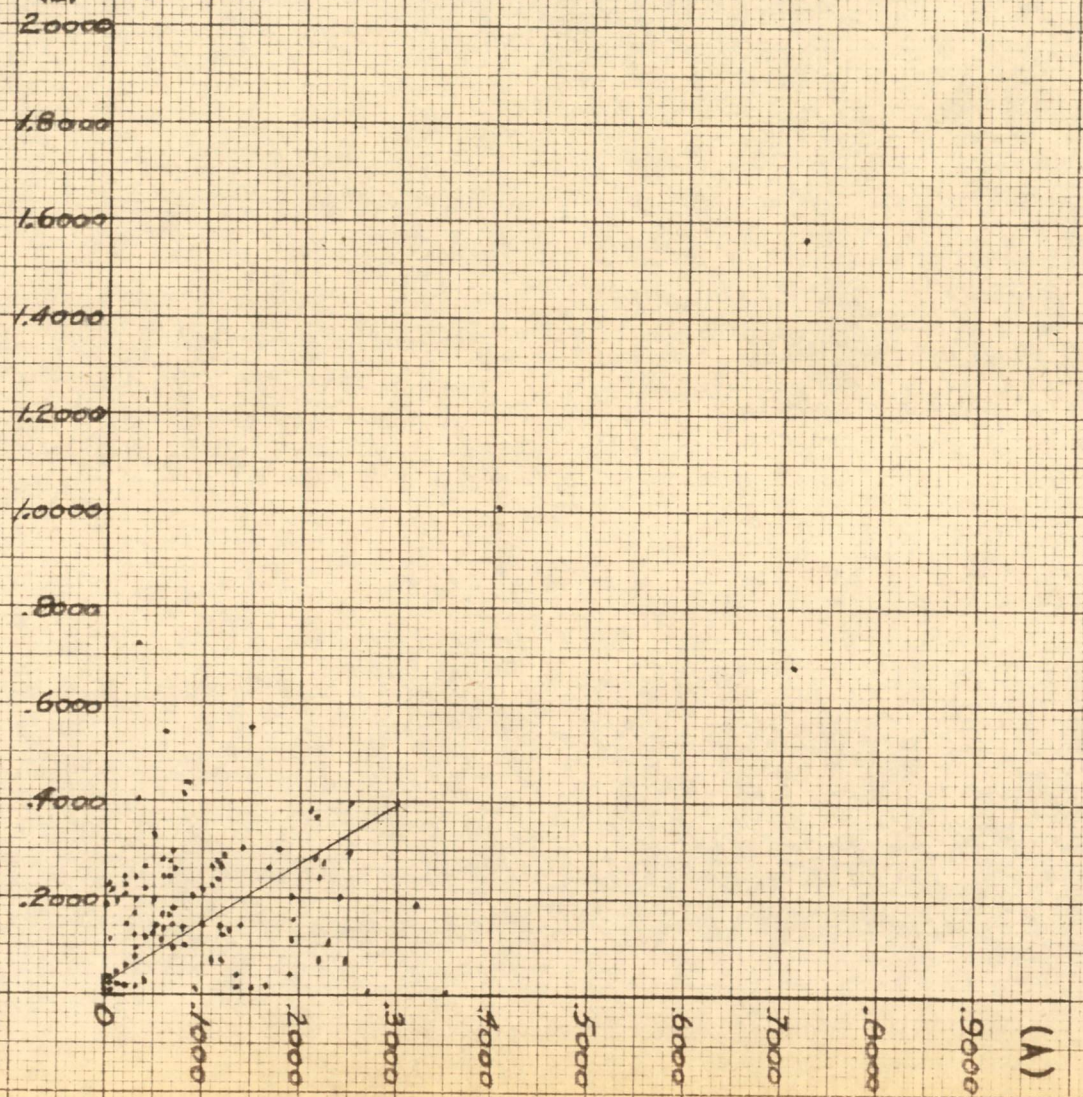
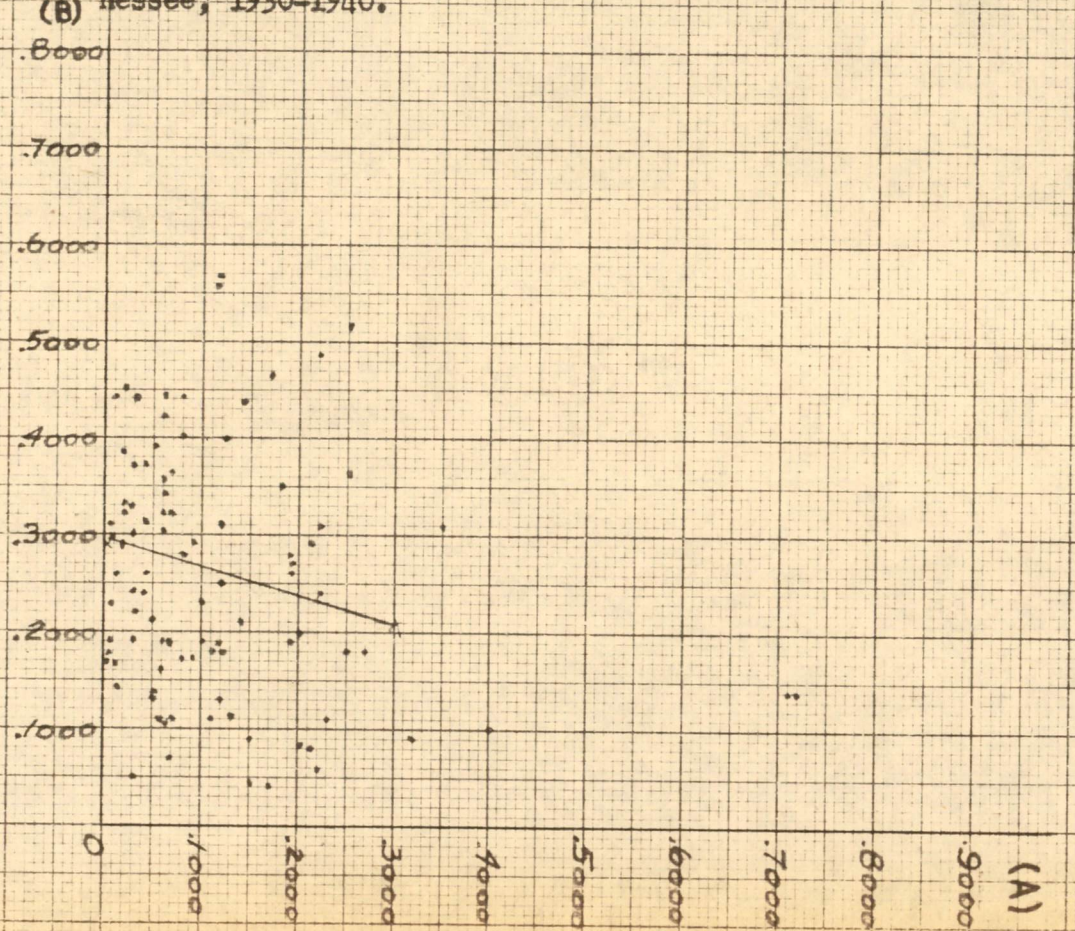


Figure 27. Counties Grouped By (A) Percent Changes In Total Farm Population, And (B) In Value Of All Products, Tennessee, 1930-1940.



to the percent that their male labor employed in agriculture was of males under total employed workers for 1940. The counties were thus ranked, by position, from the least to the greatest agriculturally inclined. In outline form the ensuing examination is as stated on pages 73 and 74. With the second independent variable above being in terms of percent, the dependent variables were also expressed as percentage figures.

Correlation Analysis

In the resulting diagrams (Figures 19 to 27, inclusively) evident trends were to be seen but to various degrees of intensity. There appeared to be some correlation between the variables and to provide some approximate measure of that we completed a simple correlation analysis, taking each in turn.

In tabular form the correlation analysis, wherein we utilized the numerical change in the rural farm population as the independent variable makes it quite apparent that, except in one instance, there is little correlation between the variables. We base this conclusion on the coefficients of determination which we must interpret, as stated at length before, as being the measure of the true percentage change in the dependent variable associated or varying with change in the dependent variable.

Here it is evident that we have a significant degree of

TABLE VIII

CORRELATION BETWEEN THE NUMERICAL CHANGES IN RURAL FARM POPULATION, AND APPROXIMATE EXISTING LAND AREA IN FARMS, NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, PERCENT CHANGE IN TOTAL TENANCY AND CHANGE IN PROPORTION OF TENANCY, TENNESSEE, 1930-1940.

Independent Variable	Dependent Variables	r	r^2
Numerical Change in Rural Farm Population 1930-1940	Numerical change in the percent of approximate existing land area in farms.	-.0443	.0019
	Numerical change in the number of farms.	.6396	.4090
	Numerical change in the average number of acres per farm.	.0482	.0023
	Percent change in total tenancy	.2338	.0546
	Change in the proportion of tenancy.	-.0561	.0031

correlation existing between the numerical change in the rural farm population, as the independent variable, and the numerical change in the number of farms, the dependent variable. In layman language we may say that forty-one percent of the changes in the number of farms is associated or varies with simultaneous changes in the rural farm population. This is no startling discovery; it may well have been assumed; however, it does present at least one major question (which we make no attempt to answer here): with a significant degree of correlation in the change in the number of farms why is there little, if any, in the average number of acres per farm? One is certainly a part of the other. Let it sufficethat we do have a measure of correlation of significant size between two of the variables considered here.

In a second tabular resume we have produced the results of a correlation analysis constructed as is evident from the headings following. Here we have a significant correlation between the percentage changes of the total farm population, and number of farms. We find that sixty-one percent of the change in the latter accompanies changes in the independent variable. This coefficient is more significant than that found in the analysis immediately preceeding this. There may be sufficient reason for this in the fact that total farm population is, of couse, an all inclusive category whereas the one we used before is more limited. Too, notice the

TABLE IX

CORRELATION BETWEEN THE PERCENT CHANGES IN TOTAL FARM POPULATION, AND NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL TENANCY, AND VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940.

Independent Variable	Dependent Variables	r	r^2
Percent Change In Total Farm Population 1930-1940	Percent change in the number of farms.	.7873	.6198
	Percent change im the average number of acres per farm.	.0410	.0016
	Percent change in total tenancy	.5586	.3120
	Percent change in the value of all products.	.1926	.0370

closer confinement of the plotted points upon the graph prepared for this correlation (see Figure 24). You do not have here the divergence we noticed prevailing before.

In summation, we have found, by diagrams and correlation analysis, that only one dependent variable is significantly correlative to (1) the numerical change in the rural farm population, and (2) percent change in the total farm population, this being in both instances the change in the number of farms. This, of course, is what we were striving to reveal and, having done so, we move to the next and final analysis.

Areal Analysis

This, then, brings us to the third analysis to be made, that of displaying areal differentiations. The procedure here is precisely that described earlier when areally arranging labor changes. The method is the same. The only difference is in the captions within the tables. Where before we had various divisions of labor, here we have the several census categories. For the inter-area data:

Area	Changes In Total Population 1930--1940		Changes In Rural Farm Population 1930--1940		Changes In Total Farm Population 1930--1940	
	Num.	%	Num.	%	Num.	%

Once with this data arranged for each variable, we transfered each area's medians to a recapitulation sheet which included all eight areas, or, the entire state.

In Tables X and XI we have arranged, as indicated thereupon, the rural farm population and the total farm population, respectively. Alongside of these appear the various medians for each of the variables with which we have concerned ourselves throughout this project.

We have here a situation into which much imagery might be injected. Our interests will be strictly confined to the general purpose underlying this particular effort: an inter-areal comparison.

Before, we had written that the urban farm population was an insignificant category. Here that contention is borne out. Notice that percentage changes in the total farm and the rural farm population run practically the same. There is a two percent difference between these two in Area 5, however, all other changes are extremely slight.

Refer to the tables and observe how the Areas do run, generally, somewhat closely together. We have Areas 1, 2, and 3, coming in as a similar group, 4, 5, and 6 another with 7 and 8 forming a third. Generally speaking, the variables within these groups run closely together.

Here, and not before, we find related groups as we pass across the State. The farm population ranged from a nine percent loss in Area 2 to a nineteen percent gain in Area 7. As we move Eastward we find the greater agricul-

tural population increase.

These changes were attended by similar changes in the number of farms. The greatest decrease here is in Area 2 where we had the greatest population decrease. The number of farms were reduced by fifteen percent. In moving Eastward the number of farms increased to that of fifteen percent in Area 7. It is of interest to note that : Area 5 and Area 7 both had increases in the number of farms to the degree of fifteen percent; Area 5 had a nine percent increase in rural farm population whereas Area 7 had nineteen percent; therefore, although with identical percentage increases in the number of farms, Area 5 had a proportionately greater change.

The changes in the average number of acres per farm were what might have been expected. From West, where there was the greatest decrease in the population and number of farms, to the East, where these increased the greatest, we find the average acres per farm just the opposite direction. Average farm size increased, practically without exception, with a decrease in the number of farms and decreased in those Areas having an increase in the number of farms. Areas 7 and 8 were practically identical in their inverse relations between these two variants.

In the percent change in total tenancy, only two Areas showed increases, those being Area 5 and 8 with both having

eight percent increases. The change in the proportion of tenancy decreased, statewide. In the aggregate, Areas 1, 2 and 3 headed the list, with Areas 4, 5, and 6 second and Areas 7 and 8 third. To sum these rates of change we may say: Where we found decreases in agricultural population we found, also, decreases in the number of farms, increases in the average sizes of farms, and great decreases in both the total and proportion of tenancy; where there were increases in the agricultural population we saw, attending, increases in the number of farms, (except Areas 3 and 6 had minor decreases) decreases in the average size of farms (except Areas 3 and 4 had increases), two sole instances of increase in total tenancy, and a decrease in the proportion of tenancy.

From Tables X and XI it is apparent that areally we have found more significance existing when using population changes as our independent variable than when using labor changes as such. This may be attributable to the more inclusiveness of the population category. We must remember, however, that these areal comparisons have as representative figures, the median extracted from the counties forming that area. Insofar as we know that just as many figures are negative above as are positive below these representatives, we must temper all conclusions with that very sobering thought.

TABLE X

AREAL MEDIAN DEIFFERENCES BETWEEN NUMERICAL CHANGES IN RURAL FARM POPULATION, AND APPROXIMATE EXISTING LAND AREA IN FARMS, NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, AND PERCENT AND PROPORTION CHANGES IN TENANCY, TENNESSEE, 1930-1940.

Areas Ranked in Decreasing Sequence in the Percent Change in the Rural Farm Population		Numerical Change in the Percent of Approximate Existing Land Area in Farms 1930-1940	Numerical Change in the Number of Farms 1930-1940
7-U	≠.1915	-2.0	≠311
8-U	≠.1238	-1.65	≠381
5-R	≠.0970	-.90	≠273.5
6-U	≠.0614	-.90	-5.5
4-U	≠.0510	≠1.25	≠28.5
3-R	≠.0234	≠3.1	-105
1-U	-.02815	≠8.75	-467
2-R	-.0987	≠2.3	-485

All entries are Medians

TABLE X (Continued)

AREAL MEDIAN DIFFERENCES BETWEEN NUMERICAL CHANGES IN RURAL FARM POPULATION AND APPROXIMATE EXISTING LAND AREA IN FARMS, NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, AND PERCENT AND PROPORTION CHANGES IN TENANCY, Tennessee, 1930-1940.

Areas Ranked in Decreasing Sequence in the Percent Change in the Rural Farm Population		Numerical Change in the Average number of acres per farm 1930-1940	Tenancy	
			Percent Change in Total 1930-1940	Change in Proportion 1930-1940
7-U	≠.1915	-11.80	-.0032	-5.20
8-U	≠.1238	-9.20	≠.08175	-2.55
5-R	≠.0970	-8.10	≠.08855	-1.35
6-U	≠.0614	-11.00	-.1831	-8.60
4-U	≠.0510	≠1.65	-.0723	-4.40
3-R	≠.0234	≠8.30	-.1459	-3.60
1-U	-.02815	≠13.30	-.17525	-3.75
2-R	-.0987	≠13.90	-.2663	-6.90

All entries are Medians

TABLE XI

AREAL MEDIAN DIFFERENCES BETWEEN PERCENT CHANGES IN TOTAL FARM POPULATION, AND NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL TENANCY, VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940

Areas Ranked in Decreasing Sequence in the Percent Change in Total Farm Population		Percent Change in Number of Farms 1930-1940	Percent Change in the Average Number of Acres per Farm 1930-1940
Area	Change		
7-U	≠.1915	≠.1522	-.1536
8-U	≠.12085	≠.14905	-.1546
5-R	≠.07125	≠.15385	-.09025
6-U	≠.0620	-.00415	-.1233
4-R	≠.05075	≠.01155	≠.0325
3-R	≠.0229	-.0771	≠.1135
1-U	-.0269	-.1172	≠.2744
2-R	-.0987	-.1561	≠.1754

All entries are Medians

TABLE XI (Continued)

AREAL MEDIAN DIFFERENCES BETWEEN PERCENT CHANGES IN TOTAL FARM POPULATION, AND NUMBER OF FARMS, AVERAGE NUMBER OF ACRES PER FARM, TOTAL TENANCY, VALUE OF ALL PRODUCTS, TENNESSEE, 1930-1940

Areas Ranked in Decreasing Sequence in The Percent Change in Total Farm Population		Tenancy Percent Change in Total 1930-1940	Percent Change in the Value of all Products 1930-1940
Area	Change		
7-U	⁄.1915	-.0032	-.1963
8-U	⁄.12085	⁄.08175	-.2068
5-R	⁄.07125	⁄.08855	-.1443
6-U	⁄.0620	-.1831	-.1724
4-U	⁄.05075	-.0723	-.2647
3-R	⁄.0229	-.1459	-.1940
1-U	-.0269	-.17525	-.3810
2-R	-.0987	-.2663	-.4087

All entries are Median

CHAPTER IV

SUMMARY OF FINDINGS

In this study we have attempted to measure and relate changes in the approximate existing land area in farming, in the number of farms, in the average number of acres per farm, in value of all products, and in tenancy to those changes having occurred in the agricultural labor force, and in the agricultural population for the State of Tennessee during the decade 1930-1940. Our manner of measuring and relating these changes has taken the forms of scatter diagrams, correlation analysis, and inter-areal comparisons. We attempt now to summarize the major results attending our efforts.

Under Labor Changes

In Chapter Two we found that the change in the number of farms, the changes in the average number of acres per farm, in total tenancy, and the value of all products, have not been related to changes in the percents of labor devoted to agriculture. These results were obtained by the use of scatter diagrams and were substantiated by a simple correlation analysis. Subsequent to this, we prepared an inter-areal analysis and found that changes in the factors above followed no intra-sectional pattern and did not possess inter-areal similarity.

We did find that with actual changes in total agri-

cultural labor:

(1) the percent changes in the number of farms changed with it;

(2) the percent change in the average number of acres per farm changed against it;

(3) the percent change in total tenancy changed with it; and

(4) the percent change in the value of all products changed with it.

Under Population Changes

In Chapter Three we studied the changes in the Agricultural population and sought to relate to these changesto those having occurred in the approximate existing land area in farms, in the number of farms, in the average number of acres per farm, in tenancy, and in the value of all products. Our scatter diagrams seemed to indicate a relationship between these factors. To provide an approximate measure of this relationship a correlation analysis was resorted to. The significant results of this examination are stated following. We have included only those correlations providing a coefficient of determination of .30 or above. From these we can see that there has been a relationship between the variables listed above.

Under the inter-areal analysis with the agricultural

population held as the independent variable we found more significance than when using labor changes. In summary: where we found decreases in agricultual population we found decreases in the number of farms, increases in the average size of farms, and great decreases in both total and proportion of tenancy; where there were increases in the agricultural we found: increases in the number of farms (except Areas 3 and 6, having minor decreases), decreases in the average size of farms (except Areas 3 and 4, each having increases), only two instances of increased total tenancy, and a decrease in the proportion of tenancy.

We must remember, however, that our areal comparisons have as representative figures the medians extracted from the counties forming that area. There are just as many figures negative above as are positive below that median.

A Final Summary Statement

As we have examined and arranged the data relative to the variables under consideration, we feel the following conclusion to be warranted: that changes in the agricultural labor force, and changes in the agricultural population are not, in the main, good standards by which or through which we may measure, and are not correlative with, data on the percent changes in the number of farms, average number of acres per farm, in total tenancy, and change in the value

Independent Variable	Dependent Variable	Coefficient of Determination
Numerical change in rural farm population	Numerical change in the number of farms	.4090
Percent change in total farm population	Percent change in the number of farms	.6198
Percent change in total farm population	Percent change in total tenancy	.3120

of all products. At least this holds true for the State of Tennessee for the period 1930-1940.

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