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# A Study of the Relationship between Unemployment in Indiana and the United States

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A STUDY OF THE RELATIONSHIP BETWEEN UNEMPLOYMENT IN INDIANA

AND THE UNITED STATES

by

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A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Science in Economics

College of Business Administration

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## ACKNOWLEDGMENTS

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PART I


DEFINING THE RELATIONSHIP BETWEEN

UNITED STATES AND INDIANA UNEMPLOYMENT

# CHAPTER 1: INTRODUCTION

Each state or region within the United States has certain unique and distinct characteristics that cause its economic performance to vary from that of the nation as a whole. Unemployment rates, as summary measures of unutilized manpower resources, frequently serve as a gauge of the general economic situation and social well-being. It is a well documented fact that unemployment is not evenly distributed throughout the nation. For example, although 54% of the labor force is concentrated in the northeast and north central regions, they account for only 46% of the unemployment in recent years.[1] This thesis focuses on the measurement and behavior of unemployment in Indiana, with particular attention devoted to contrasting performance by the State's economy with that of the nation as a whole.

A determination will be made concerning the extent and the manner in which the unemployment rate in Indiana has differed from the United States rate from July 1954 to December 1970. A quantitative measure of these differences will be developed by a statistical comparison of the distributions comprised by monthly total unemployment figures for Indiana and the United States.

This requires a thorough examination of the differing techniques used to estimate unemployment rates for Indiana and the

[1] Paul M. Schwab, "Unemployment by Region and in the 10 Largest States", Monthly Labor Review, January, 1970, p. 3.

United States. In order to supplement and verify the comparability of total unemployment rates, the same statistical calculations will be performed on the State and national insured unemployment rates.

Once the differences in unemployment behavior in the two labor markets have been clearly established, the analysis will be carried further by drawing conclusions or inferences as to the causal factors for differences indicated by the analysis.

The ultimate justification for such an inquiry should be the potential future benefits to be reaped through redirection of economic forces as a result of the knowledge gained. Deeper understanding of past relationships should increase the predictability of Indiana's labor market and serve as a guide to policies aimed at improving future performance.

CHAPTER 2:  THE CONCEPT OF UNEMPLOYMENT

In any measure of unemployment, definitions and adjustments are of critical importance.  Pursuant to evaluating the comparability of unemployment rates determined by differing procedures, the following factors should be considered:

1.  The methods used to obtain the statistical information on which the rate is based.

2.  The definitions of employment and unemployment used to establish labor force status.

3.  Adjustments performed to reduce the statistical bias introduced as a result of a particular approach to unemployment measurement.

Since this study is concerned with total unemployment rates for Indiana and the United States and with insured unemployment rates, separate attention will be given to the definitions and adjustments outlined for measuring unemployment in each of these cases.

## Total United States Unemployment Rate

The United States unemployment rate most commonly published and cited by economists is the one computed each month by the Bureau of Labor Statistics.  It is a measure of the percentage of the total labor force that is unemployed and heretofore will be referred to as the "total United States unemployment rate".

The household survey of unemployment is conducted each month during the week which includes the 12th of the month by the U. S. Census Bureau.  The information collected is then used by the Bureau of Labor Statistics of the Department of Labor to

determine the total monthly unemployment rate for the United States.

The survey encompasses 50,000 households each month[1], but information is supplied by an average of only 39,250. Approximately 20% do not respond for assorted reasons such as refusal to be interviewed, occupants not found at home, occupants have moved, or the interviewer is unable to reach an address because of bad weather. The interviewer makes inquiry concerning the employment activities of all civilian household personnel of age sixteen or beyond during the survey week.[2]

The household survey considers the civilian labor force status of persons sixteen years old and older to include the unemployed plus all employed wage and salary personnel, domestic and service employees, and the self employed. This concept includes aliens as well as United States citizens provided the alien does not reside in a foreign embassy.[3]

The essence of the household survey definition of unemployment is that of an individual who is currently available for employment and who has actively searched for employment within the period four weeks prior to the survey date. In addition, members of the labor force who are laid off and waiting to be called back to work, but not currently working at another job, are considered unemployed.[4]

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1 U. S. Dept. of Labor, Bureau of Labor Statistics, Employment and Earnings, September, 1971, p. 138.

2 Ibid, p. 138.

3 Ibid, p. 138.

4 Ibid, p. 139.

All persons employed in full-time jobs (40 hours or more per week) are considered employed as one might surmise. In addition, workers absent from work during the survey week for reasons such as vacation, voluntary leave of absence, strike, or illness, are counted as employed. Even workers holding part-time jobs are considered employed no matter how few hours per week they work. The part-time job rule also applies even if the worker receives no pay in the case where the worker is a family member working for a family owned business at least 15 hours per week.[1] Therefore, even if a part-time worker is seeking full-time employment due to the inadequacy of a part-time job, such an individual is not considered unemployed. Thus, the basic definition of employment describes a person who is working either part or full-time during the survey week or who is absent from work for some voluntary and legitimate reason other than job resignation for the purpose of seeking another job.

The sample included in the household survey does not perfectly represent the population of the United States nor its labor force as determined by the Census Bureau. Therefore, in order to minimize bias introduced by deviations in the sample data with respect to distribution by age, race, sex, occupation and other important characteristics, statistical corrections are made by the Bureau of Labor Statistics in determining the total United States unemployment rate from sample data. The only other adjustment is for seasonal variation.

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1  Department of Labor, Bureau of Labor Statistics, _Employment and Earnings_, September, 1971, p. 138.

## United States and Indiana Insured Unemployment Rates

Insured unemployment rates are determined each month for every state. A national insured unemployment rate is then determined by compiling the statistics from all fifty states.

The insured unemployment rate is a measure supplementary to the total unemployment rate and is a reliable indicator of the level of unemployment among persons covered by the unemployment insurance program (i. e., the insured work force). Although the insured unemployment rate does not encompass the total work force, the insured unemployment rate generally follows a pattern quite similar to the total unemployment rate.[1] (See Appendix A)

Obtaining the basic data to determine the insured unemployment rate is relatively straightfoward. The Indiana Employment Security Division has information concerning the number of claims paid weekly as well as information from establishment payroll records concerning the number of employees covered by unemployment insurance. This information is necessarily available as a result of administering the State unemployment insurance program.

The monthly Indiana insured unemployment rate is determined by dividing the number of persons currently covered by (eligible for) unemployment insurance benefits into the number of persons who received full benefits during the week which includes the 19th of the month. All other states use similar methods of computation. State programs vary in coverage. All states

[1] Indiana Employment Security Division, Research and Statistics Section, Manpower Trends in Indiana, "Table 5", Oct., 1971.

require reporting of insurance information by covered employers of 4 or more persons. A group of 21 states which does not include Indiana requires reporting by employers of 1 or more persons. Self-employed persons, domestics, farm and rail workers, and government workers are usually not covered by this unemployment insurance program. The Employment Security Amendments Bill, passed on November 13, 1969, expanded coverage to 4.5 million more workers. These are large employers of farm workers, miscellaneous service workers, employees of non-profit organizations, and state hospital and university employees.[1]

In addition to small firms with fewer than four employees, Indiana unemployment insurance does not cover state, local, or federal employees, railroad employees, domestics, agricultural workers, self-employed or unpaid family workers, nor employees of non-profit institutions.

The United States insured unemployment rate is a percentage of the average covered employment in all states. Although coverage is not identical in all states, the insured unemployment rate is a reasonably sound indicator of the level of demand for labor in the various states. Minor differences in procedures among states are of little significance since all state rates are based on essentially the same definitions and procedures for determining eligibility of covered employees.

1 Michael E. Borus, "Using UI Wage Reports as a Data Source", Monthly Labor Review, July, 1970, U. S. Department of Labor, Bureau of Labor Statistics, p. 66-68.

The insured labor force is limited to persons who are eligible for federal-state unemployment insurance which comprises about 60% of the total United States civilian labor force as defined by the household survey. This also amounts to an estimated 75% of all wage and salary workers.[1]

An unemployed person for insurance purposes is one who has filed a claim and is receiving full benefits under the State unemployment insurance program. In order to qualify for such benefits an individual must have been unemployed from a job with an employer who is covered by the State program for at least one week, and must be currently seeking and available for employment.[2]

Insured unemployment rates are based on complete information and not on statistical sampling so the rates are adjusted only for seasonal variation. It should be mentioned that in a small number of cases certain part-time workers may be classified as employed by the household survey yet they are considered unemployed by the State because they are receiving full unemployment benefits. An example of this would be the case where a part-time worker earns below a certain minimum and is seeking a second or alternative job thus making him eligible for full insurance benefits.[3]

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1   U. S. Department of Labor, Bureau of Employment Security, Estimating Unemployment, March, 1960, p. 8.

2   Ibid, p. 8.

3   U. S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, September, 1971, p. 138.

The net effect of State and federal insured unemployment rates in relation to this thesis is that United States and Indiana insured unemployment rates are based on estimating procedures which are essentially the same. Therefore, an implicit comparability in definitions and procedures exists between United States and Indiana insured unemployment rates.

## Total Indiana Unemployment Rate

The insured unemployment rate takes on added significance when it is related to the total Indiana unemployment rate because it provides a foundation for the State to estimate the level of total unemployment using a seventy-step adjustment method.[1]

The Indiana Employment Security Division publishes a total unemployment rate for the State which is meant to be statistically comparable to the total United States rate although United States and Indiana total unemployment rates are determined by completely different methods. A comparison of these two rates by statistical analysis of their historical relationship will be used as the primary basis for concluding to what degree and in what manner unemployment in Indiana is a function of United States unemployment.

To achieve the same accuracy as the national household survey, each state would have to survey approximately 50,000 households itself to determine a state unemployment rate. The cost of such a technique would certainly far exceed the expense of calculating total Indiana unemployment by the seventy-step

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1 U. S. Department of Labor, Bureau of Employment Security, Estimating Unemployment, March, 1960, p. 23.

method.[1] The confirmation of the reliability of this cost saving procedure is one of the objectives of this inquiry. The seventy-step method is a technique completely independent of the household survey. It enables Indiana to make statistical estimates of unemployment in the portions of the State work force not covered by federal-state unemployment insurance.[2]

As previously discussed, the Indiana Employment Security Division, as a part of its function of administering the State unemployment insurance program, has readily available the number of claims currently being paid as well as information concerning the number of persons covered by the program. This is used as a foundation for estimating total employment and unemployment by the seventy-step method. Establishment payroll records and census data are used to determine adjustment factors used in adjusting the insured unemployment rate for sectors of the total Indiana work force not included in the insured rate. The seventy-step work sheet shown in appendix B describes in detail this technique for determining total Indiana unemployment.

Since the State's total unemployment rate is based on insured unemployment, the core definition of unemployment corresponds to an individual who is without earnings, has filed an insurance claim, and is actively seeking and available for employment.[3]

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1 U. S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, September, 1971, p. 138.

2 U. S. Department of Labor, Bureau of Employment Security, Estimating Unemployment, March, 1960, p. 23.

3 Ibid, p. 8.

Persons eligible for only partial claims are not considered unemployed. Using the insured rate as a base, the seventy-step method adjusts the insured rate with estimates of unemployment rates among work force participants not covered by State unemployment insurance. These work force participants generally fall into the following categories:

1. Unemployed persons who have exhausted their unemployment insurance benefits.

2. Unemployed persons who have delayed filing or who have not filed insurance claims even though eligible.

3. Unemployed persons who have filed claims, but were not eligible to receive benefits.

4. Those unemployed who are covered by Federal or Railroad unemployment benefits.

5. Persons ineligible as a result of certain circumstances of their previous employment resulting in their not being covered by unemployment insurance such as:
   A. small firm worker.
   B. non-profit institution worker.
   C. domestic worker.
   D. non-agricultural self-employed or unpaid family worker.
   E. agricultural self-employed or unpaid family worker.
   F. state or local government worker.
   G. a new entrant or re-entrant to the labor force.

Indiana uses the concept of work force instead of labor force since the work force technically consists of persons employed by employers within the borders of the State while all employees do not necessarily reside within Indiana. Conversely some persons who reside in Indiana may be employed in border states, and consequently excluded from Indiana's work force. The work force concept lends itself much more readily to the use of establishment payroll records for information.

Seasonal adjustment of the total Indiana unemployment rate is also done by a ratio to moving average technique.[1] The total Indiana unemployment rate is supposedly representative for Indiana of the same measure of unemployment which is indicated by the total United States unemployment rate.

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1 Note - The Indiana Employment Security Division supplied seasonally adjusted insured unemployment rates for 1961 - 1970 and seasonally adjusted total unemployment rates for 1960 - 1970. The remainder of the monthly unemployment rates were seasonally adjusted using adjustment factors computed by Professor Wilson.

CHAPTER 3: STATISTICAL ANALYSIS OF THE UNEMPLOYMENT DATA

The seasonally adjusted monthly unemployment rates for the United States (household survey) were obtained from Employment and Earnings.[1] The seasonally adjusted insured unemployment rates for the United States were compiled from Business Conditions Digest.[2]

The data for Indiana were obtained through the cooperation of the Indiana Employment Security Division. Monthly total unemployment rates for 1960 through 1970 were seasonally adjusted as received from the State agency, but rates for 1954 through 1959 had to be adjusted in addition to the 1954 through 1960 insured data. Adjustment factors were provided by the Indiana Employment Security Division for insured unemployment rates, but the factors had to be computed for the remainder of the total unemployment data (1954-59). The period used in the analysis was selected because statistics for Indiana unemployment were available only back through the year 1954. The data are listed in Appendix A.

## Average Unemployment Rates and Their Variability

The mean rates of unemployment for the period, and the standard deviations of the distributions were calculated with the following standard statistical equations:

$$\bar{X} = \frac{\sum X}{n}$$
(equation 1)

1 U. S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, February, 1971, p. 169.

2 U. S. Department of Commerce, Business Conditions Digest, October 1969, p. 104.

$$S^2 = \frac{\sum (\overline{X} - x)^2}{n-1} \qquad \text{(equation 2)}$$

$$S = (S^2)^{1/2} \qquad \text{(equation 3)}$$

Where:    $\overline{X}$ = mean

         $s^2$ = variance

         s = standard deviation

         n = number of observations of x in the distribution (198)

The following table outlines the results of the calculations for each distribution of unemployment rates:

TABLE 1:    Means and Standard Deviations of Indiana and United States Unemployment Rates, 1954-70

| Unemployment Rate | $\overline{X}$ | $s^2$ | s |
|---|---|---|---|
| total U. S. unemployment rate | 4.9% | 1.11 | 1.05 |
| total Ind. unemployment rate | 4.5% | 2.62 | 1.62 |
| insured U. S. unemployment rate | 3.8% | 1.57 | 1.25 |
| insured Ind. unemployment rate | 2.8% | 2.10 | 1.45 |

The means were rounded to one decimal place because all monthly rates used were rounded to one decimal place.

In each case the mean rate of unemployment for the period was higher for the United States than for Indiana, but the difference is somewhat less for the total unemployment than for insured unemployment. Conversely, the Indiana rates had a greater standard deviation than the United States unemployment rates

for both sets of data, but the difference was the greater for total unemployment. This implies that the Indiana labor market, while exhibiting a lower average rate of unemployment over the period studied, showed a greater degree of cyclical variability in its unemployment patterns than did the United States labor market.

Although the absolute differences in $\bar{X}$ and $s^2$ statistics indicate that the United States shows a higher average unemployment rate with a smaller standard deviation for both sets of data, hypothesis testing is required to determine if these differences are statistically significant.

The distribution from which each set of statistics was taken is assumed to be normal. The Z statistic for each pair of means was computed to determine if the means and standard deviations of each pair of distributions were significantly different at the 5 percent level of significance ($\alpha = 5\%$). The following format was used to test the indicated hypotheses:

null hypothesis: $\bar{X}_{ind} \geq \bar{X}_{us}$

alternative hypothesis: $\bar{X}_{ind} < \bar{X}_{us}$

$$ Z = \frac{\bar{X}_{us} - \bar{X}_{ind}}{\hat{\sigma}_{\bar{X}_{us} - \bar{X}_{ind}}} \qquad \text{(equation 4)} $$

$$ \hat{\sigma}_{\bar{X}_{us} \bar{X}_{ind}} = \left( \frac{m(S^2_{us} - S^2_{ind})}{2m - 2} \right)^{1/2} \left( \frac{2m}{m^2} \right)^{1/2} \qquad \text{(equation 5)} $$

null hypothesis: $s^2_{us} \geq s^2_{ind}$

alternative hypothesis: $s^2_{us} < s^2_{ind}$

$$F = \frac{\hat{\sigma}^2_{ind}}{\hat{\sigma}^2_{us}} = \frac{(n\, s^2_{ind})/(m-1)}{(n\, s^2_{us})/(m-1)} \qquad \text{(equation 6)}$$

The results of the calculations are summarized in the table shown below:

| TABLE 2: Hypothesis Testing | | | | | |
|---|---|---|---|---|---|
| distribution pair | $\hat{\sigma}_{\bar{X}_{us}-\bar{X}_{ind}}$ | Z | Z for $\alpha = .05$ and n = 198 | F | F for $\alpha = .05$ and n = 198 |
| total unemployment | .14 | 2.6 | 1.645 | 2.36 | 1.30 |
| insured unemployment | .14 | 7.1 | 1.645 | 1.34 | 1.30 |

Thus it is established that both distribution pairs show means that differ significantly -- that is we reject the null hypothesis and accept the alternative hypothesis in each case -- at an alpha level of .05. The variances also differ quite significantly according to the F test since an F value greater than 1.3 is significant at alpha equal .05 when n is 198.

A comparison of Tables 1 and 2 reveals that the differences in Z and F values for the two sets of data correspond to the actual differences in mean and standard deviation shown in Table 1. That is to say that the differences in means for the total unemployment comparison is 0.4 percentage point (4.9-4.5) while the difference for insured unemployment rates is 1 percentage point (3.8-2.8); similarly, the respective Z values were 2.6 and 7.1.

## Association Analysis

On the basis of these analyses, it appears that for the period examined the unemployment rate in Indiana was lower than for the nation as a whole but it varied more widely. In addition, the similarity of results for the two sets of data suggest comparability between the total United States unemployment rate and its counterpart for Indiana (total Indiana unemployment rate). To further demonstrate that adequate comparability exists between household survey unemployment rates and rates obtained by the seventy-step method it is useful to consider association analysis of both total and insured unemployment rates. It is assumed that there is a direct relationship between United States and Indiana unemployment rates which may be approximated by a linear regression equation derived from the data obtained (see appendix A and graph 2). The regression equation is of the form:

$$U_{ind} = U_{us} \cdot b + a \qquad \text{(equation 7)}$$

Where:  $U =$ the unemployment rate (%)

$b =$ the slope coefficient

$a =$ a constant

The values of b and a are calcualted in the following manner:

$$b = \frac{\sum U_{us} U_{ind}}{\sum U_{us}^2} \qquad \text{(equation 8)}$$

$$a = \overline{X}_{ind} - b \cdot \overline{X}_{us} \qquad \text{(equation 9)}$$

where:
$$\sum \mu_{us}\mu_{ind} = \sum X_{ind} \cdot X_{us} - m(\bar{X}_{ind})(\bar{X}_{us}) \quad \text{(equation 10)}$$

$$\sum \mu_{us}^2 = \sum X_{us}^2 - m(\bar{X}_{us})^2 \quad \text{(equation 11)}$$

The resultant regression equations were as follows:

Total unemployment regression equation

$$U_{ind} = 1.68\ U_{us} - 3.73$$

Insured unemployment regression equation

$$U_{ind} = 1.10\ U_{us} - 1.38$$

Graph 1 shows a strong positive association between United States and Indiana unemployment patterns. The intersection of a 45° line at 5.5% with the total unemployment regression line indicates that United States and Indiana rates would be approximately equal at that rate. However, an increase or decrease in United States unemployment along the 45° line would indicate a more rapid move for the Indiana rate in the same direction.

Correlation is used to show quantitative measures of the strength of the relationship between the two variables of the regression equation where +1 is the maximum positive correlation, 0 indicates no correlation and -1 is the maximum negative correlation. The correlation coefficient (r) is the square root of the coefficient of determination ($r^2$) which is computed as follows:

$$b' = \frac{\sum \mu_{us}\mu_{ind}}{\sum \mu_{ind}^2} \quad \text{(equation 12)}$$

$$r^2 = b \cdot b' \quad \text{(equation 13)}$$

$$r = (r^2)^{1/2} \quad \text{(equation 14)}$$

graph 1

LINEAR REGRESSION EQUATIONS

total

insured

INDIANA UNEMPLOYMENT

9
8
7
6
5
4
3
2
1

1  2  3  4  5  6  7  8  9
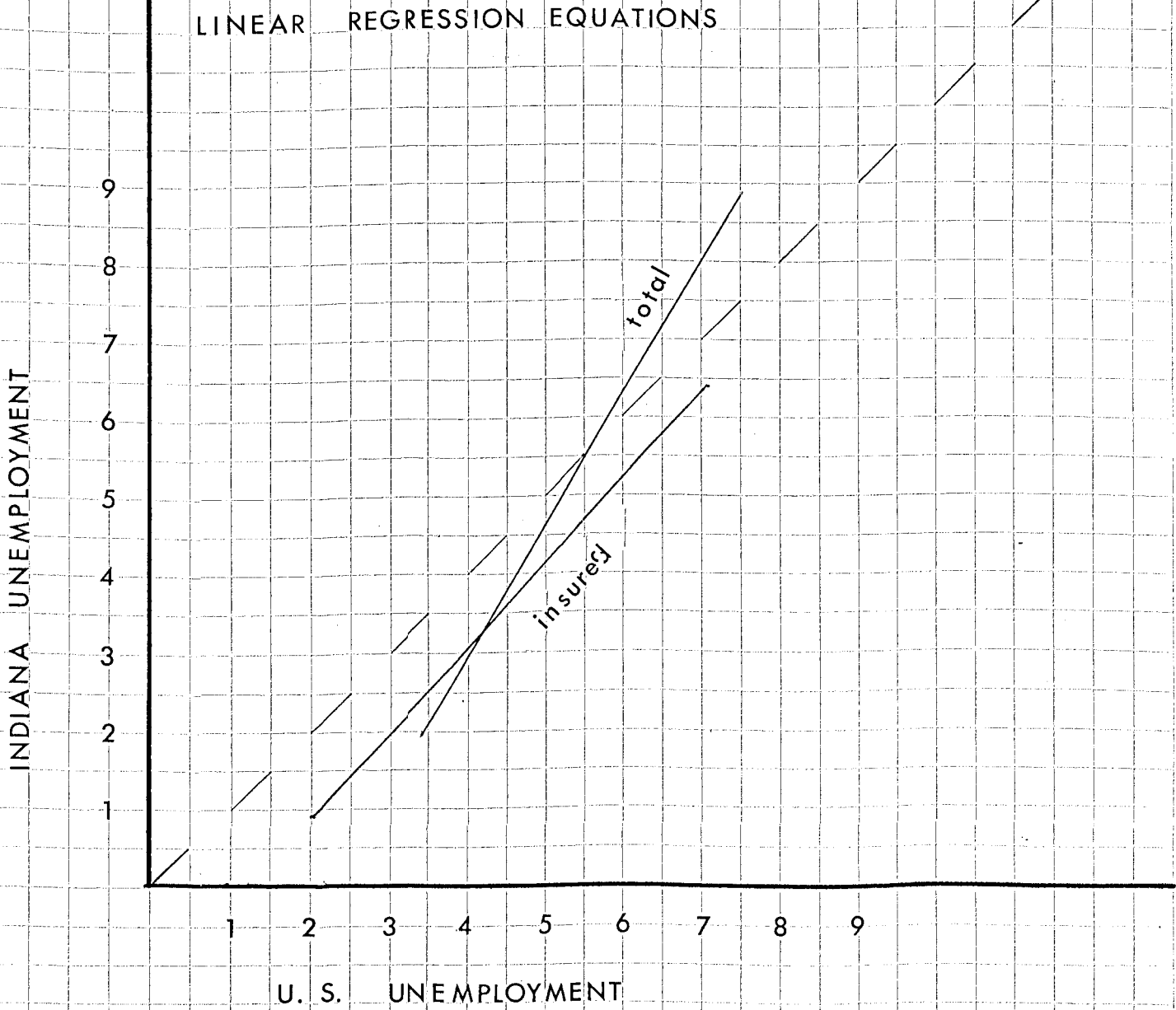
U. S. UNEMPLOYMENT

Table 3 outlines the results of calculations performed on total and insured unemployment data:

| distribution pair | b' | b | $r^2$ | r |
|---|---|---|---|---|
| total unemployment | 0.58 | 1.68 | 0.97 | 0.98 |
| insured unemployment | 0.78 | 1.10 | 0.86 | 0.93 |

TABLE 3: Coefficients of Determination and Correlation Coefficients

The degree of positive correlation as also shown by graph 1 is quite high in each case and indicates that unemployment in the State, whether insured or total, will vary directly with national unemployment trends.

An analysis of variance is computed to give a measure of the total sum of squares and its components (i.e., SSR and SSE). The sums of squares were calculated as follows:[1]

SST (total sum of squares) $= s^2_{ind} \cdot n$     (equation 15)

SSR (regression sum of squares) $= a \cdot \sum u_{ns} u_{ind}$ (equation 16)

SSE (error sum of squares) $=$ SST $-$ SSR     (equation 17)

SE (standard error) $= \left( \dfrac{SSE}{n-2} \right)^{1/2}$     (equation 18)

Table 4 indicates the quantitative results of the calculations performed for both sets of data:

---

1  C. T. Clark and L. L. Schkade, Statistical Methods for Business Decisions, South-Western Publishing Co., 1969, p. 470-480.

| distribution pair | SSR | SSE | SST | SE |
|---|---|---|---|---|
| TABLE 4: Analysis of Variance | | | | |
| total unemployment | 461.61 | 58.10 | 519.71 | 0.54 |
| insured unemployment | 358.48 | 57.68 | 416.16 | 0.54 |

The relatively small SSE and standard error in each case further supports the comparability of the Indiana and United States total unemployment statistical distributions.

# CHAPTER 4: DISCUSSION OF STATISTICAL FINDINGS

The statistical relationship between insured United States and Indiana unemployment rates parallels that of the United States and Indiana total unemployment rates in virtually every respect. Based on this evidence it is reasonable to conclude that total United States and total Indiana unemployment rates are highly comparable even though they are determined in totally different ways.

The most striking differences in the analysis are the facts that Indiana has exhibited a lower average unemployment over the period, but has a greater standard deviation. This is also readily evident in the total unemployment graph shown on the next page. It indicates a much wider fluctuation in unemployment for Indiana than for the United States.

These wide fluctuations are further amplified on the high unemployment side by unaccounted for "discouraged workers". These are labor force participants who according to the discouraged worker hypothesis tend to drop completely out of the labor force (i.e., cease seeking employment) when the labor market is depressed. A recent paper dealing with the cyclical sensitivity of Indiana's labor market concluded, "Indiana's work force is exceedingly sensitive to cyclical fluctuations in economic activity, such that high unemployment substantially underestimates the number of persons who would be willing, able, and seeking to work if job prospects were not so dismal. A reported unemployment rate of five

graph 2



TOTAL UNEMPLOYMENT RATE

PERCENT UNEMPLOYMENT

U.S.

Indiana

YEAR and MONTH

1954 July 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 Dec.

10 9 8 7 6 5 4 3 2 1
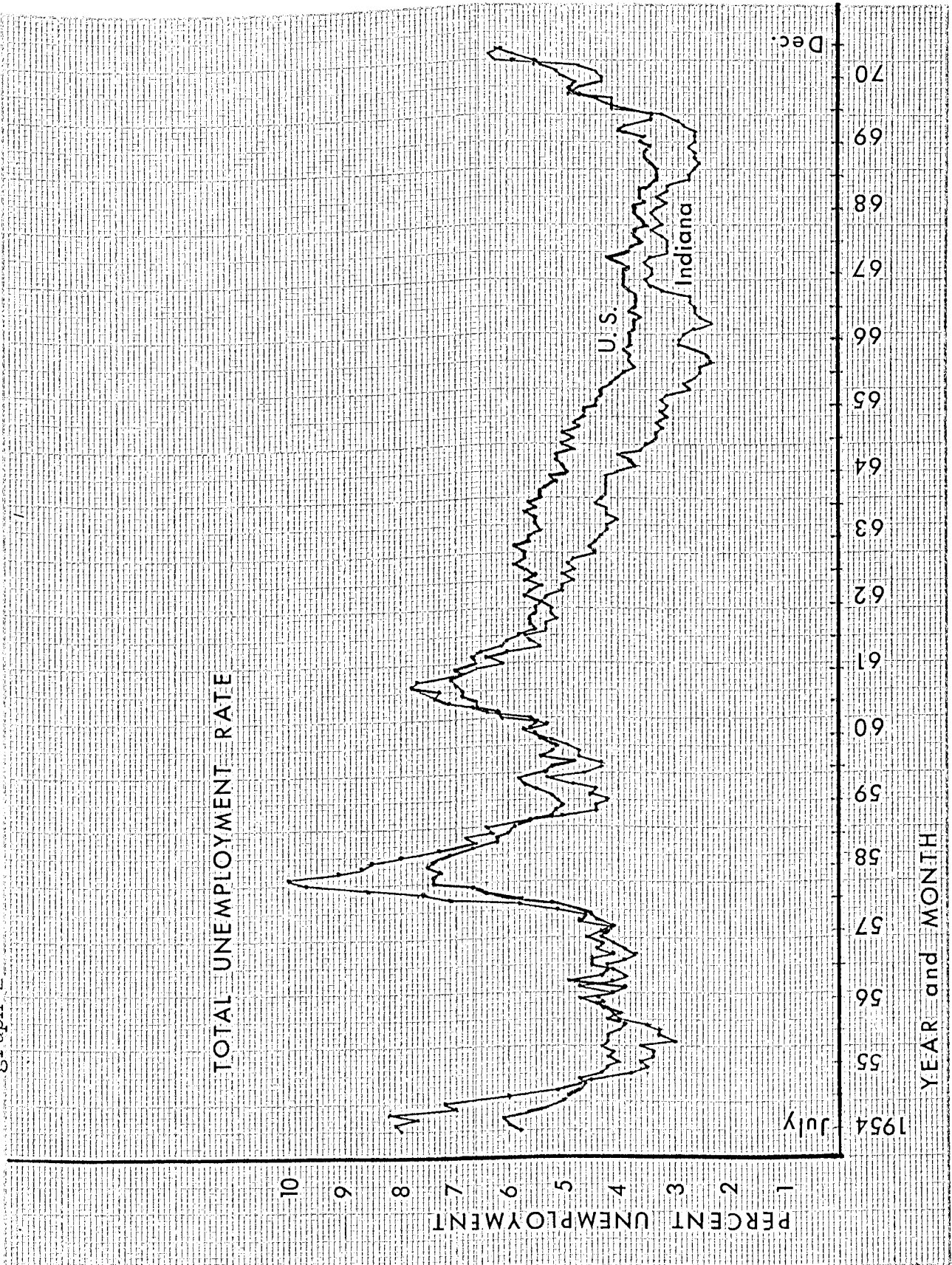
to six percent, for example, might understate the seriousness of the problem by about two percentage points."[1]

The linear regression equation (graph 1) shows that Indiana and United States unemployment rates are about equal at approximately 5.5% unemployment. As the United States rate rises above 5.5% the Indiana rate will rise more rapidly than the United States rate, but as the United States rate falls below the 5.5% figure, the Indiana rate will also fall more rapidly. Since the United States average was substantially less than 5.5% at 4.9% it is to be expected that the Indiana average would be still lower, as it was.

There appears to be no appreciable lead or lag in the cyclical peaks and troughs for the Indiana and United States unemployment rates. Graph 2 also further substantiates the regression equation in that the disparity between the United States and Indiana peaks increases with increasing height or depth of the fluctuations.

The degree of association and mutual variation of unemployment between the United States and Indiana is quite high as one would expect since Indiana is a part of the United States and their economies are strongly interrelated, though we would not necessarily expect greater variability in Indiana's rate.

It is significant that the correlation coefficient for the total unemployment rates was even higher than that for the insured unemployment rates. This would further suggest a high degree of comparability for the total Indiana rate with the total United States rate. This implies that the seventy-step

1  Thomas F. Wilson, "Cyclical Responsiveness of Work Force Participation in Indiana", Meeting of the Indiana Academy of Social Sciences, October 28, 1971, p. 15.

method does an excellent job of adjusting for unemployment in the portion of the labor force not encompassed by the insured unemployment rate, but covered in the household survey. On the other hand, there are significant differences among state unemployment insurance programs, but both insured and total unemployment data exhibit high degrees of correlation.

PART II


CONTRASTING FACTORS IN THE UNITED STATES

AND INDIANA LABOR MARKETS

CHAPTER 5:  A THEORETICAL DISCUSSION OF UNEMPLOYMENT

The differences in mean and standard deviation and the
behavior of the regression equation of the United States and
Indiana unemployment relationship can be explained by an
analysis of the forces operating in the labor markets in Indiana
and the United States as a whole in a manner which parallels
the preceding analysis of the unemployment data.

The demand side of a labor market is made up of certain
types of business and various educational, governmental, and other
non-profit institutions.  Each of these establishments has pe-
culiar personnel requirements such that the level of unemploy-
ment at any one time is then determined by the interaction of
the labor supply with these demand elements of the market.
One might say that an unemployment rate of zero in any sector
of the United States economy as large as a state would certainly
be a miracle.  Ideal allocation of labor implies that the labor
force would have to consist of exactly the right number and kind
of people all willing to work at the wage, salary, commission,
etc., that the enterprises making up the labor market were willing
to pay to obtain the services of the labor force. After consider-
ing this highly ideal world of zero unemployment, it is not
at all surprising that at least a small percentage of the pop-
ulation should be unemployed at any given time. In addition to over-

supply

of workers in certain areas of the labor market, a small amount of unemployment is always present as a result of intervals between voluntary job changes or 'frictional unemployment'.

It may be said that the equilibrium forces in a free market should tend to keep unemployment at a relatively low level as the labor force and labor market interact. Numerous changes in the labor market are constantly occurring as the elements which supply and those which demand labor interact. For example, a business will not continue to exist for long if it is not willing to pay the market wage for the labor it demands, or if the talents it requires are not available in the labor force. Alternatively, a member of the labor force may be unemployed if he is unwilling to accept the level of compensation available for the skills he is able to supply or if fewer positions for which he is qualified are available than there are members of the labor force to fill the positions. Indeed many persons leave the labor force temporarily or postpone their entry into it in order to gain added skills for which demand is greater than for those that they currently possess.

It is possible to gain a degree of insight into the reasons for the differences in the United States and Indiana unemployment statistics by comparing the composition of the two labor forces and the mix of demand in the labor markets, thereby assessing the degree to which supply and

demand match in each case.

Characteristically, there are certain groups of population in the labor force which tend to have higher than average unemployment rates. A large portion of these persons are members of minority groups or are relatively young, thus tending to lack the training or education needed to satisfy the requirements of employers.

Similarly, there are certain industries that inherently have a more cyclical demand for labor than others. This results in a wider fluctuation in employment and unemployment for these industries. These are usually industries which manufacture consumer and producer durables such as autos and major appliances or their suppliers such as producers of primary and fabricated metals or machinery and equipment.

Considering these effects on labor supply and demand, a logical hypothesis based on the findings presented would be that Indiana has a particular combination of these factors operating in its labor market which result in an unemployment rate which often differs from that experienced in the nation as a whole. These factors would likely involve a greater percentage of the Indiana labor force being employed in durable goods manufacturing than the United States average. Furthermore, the labor force or population composition in Indiana probably has lower proportions of persons classified into the traditionally higher unemployment groups than exists in the United States labor market. A thorough analysis of these factors requires a quantitative comparison of the two labor markets based on the available data.

CHAPTER 6:   A CONTRAST BETWEEN THE INDUSTRIAL COMPOSITION OF

THE UNITED STATES AND INDIANA

In examining the industrial make up of the labor markets in the United States and Indiana, the sectors of the market exhibiting the highest degree of cyclical fluctuation must be identified.  In order to determine this, the percentage changes in employment were calculated for the six periods of economic expansion and contraction in overall economic activity between 1954 and 1970 as identified by the National Bureau of Economic Research.[1]

In addition to total employment, non-agricultural employment, employment in manufacturing and employment in durable goods manufacturing as a percentage of total employ- ment were considered.  Table 5 shows that manufacturing and durable goods manufacturing, which is a substantial portion of total manufacturing employment, show a much greater degree of cyclical fluctuation than total or non-agricultural employment.

The period of most severe contraction was period 2 (1957-58) while that of the greatest total expansion was period 5 (1961-69).  These two periods are pointed out be- cause they amplify what is shown in every other period of contraction and expansion as well as the average positive and negative changes indicated at the bottom of table 5. During periods of economic expansion, employment generally increased more in Indiana than in the United States and the

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1  U.S. Dept. of Commerce, Business Conditions Digest, September, 1971, p 108.

## TABLE 5 - PERCENTAGE CHANGES IN EMPLOYMENT BY CYCLICAL PERIODS*

| period | | unemployment rate trough and peak years | | change in total employment | | change in non-ag. employment | | change in mfg. employment | | chg. in durable goods employment | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Indiana[1] | U.S.[2] | Indiana[1] | U.S.[2] | Indiana[1] | U.S.[3] | Indiana[1] | U.S.[2] |
| 1 T# | U.S. | 5.7% | 4.3% | 4.14 | 6.60 | 6.70 | 7.90 | 4.60 | 5.30 | 5.75 | 7.96 |
| | Ind. | 7.7% | 4.6% | | | | | | | | |
| 2 P | U.S. | 4.3% | 6.8% | -4.50 | -1.60 | -5.35 | -2.90 | -11.20 | -7.20 | -13.20 | -10.40 |
| | Ind. | 4.6% | 8.2% | | | | | | | | |
| 3 T | U.S. | 6.8% | 5.5% | 6.29 | 4.35 | 7.50 | 5.60 | 8.40 | 5.30 | 10.10 | 7.12 |
| | Ind. | 8.2% | 5.3% | | | | | | | | |
| 4 P | U.S. | 5.5% | 6.7% | -1.93 | -.49 | -1.60 | -.35 | -4.30 | -2.80 | -5.46 | -4.11 |
| | Ind. | 5.3% | 6.7% | | | | | | | | |
| 5 T | U.S. | 6.7% | 3.5% | 23.60 | 18.50 | 33.50 | 30.00 | 32.40 | 23.50 | 39.30 | 31.02 |
| | Ind. | 6.7% | 2.7% | | | | | | | | |
| 6 P | U.S. | 3.5% | 5.0% | -1.73 | .93 | -1.80 | .55 | -5.30 | -3.80 | -5.90 | -6.43 |
| | Ind. | 2.7% | 4.9% | | | | | | | | |
| Average positive change (periods 1, 3, and 5) | | | | 11.34 | 9.82 | 15.90 | 14.50 | 15.13 | 11.37 | 18.38 | 15.37 |
| Average negative change (periods 2, 4, and 6) | | | | -2.72 | -.39 | -2.92 | -.90 | -6.93 | -4.60 | -8.19 | -6.98 |

period 1   August 1954 to July 1957
period 2   July 1957 to August 1958
period 3   August 1958 to May 1960
period 4   May 1960 to February 1961
period 5   February 1961 to November 1969
period 6   November 1969 to November 1970

[1] Indiana Employment Security Division supplied data from which values were calculated

[2] U. S. Department of Labor, Bureau of Labor Statistics, 1970 Handbook of Labor Statistics, Table 36.

[3] U. S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, August, 1971 p. 21 and p. 49.

\# T = trough and P = peak to designate whether the beginning of a period is a trough year or a peak year.

*Note: percent change calculations are based on average employment levels for the years in which the peak and trough months occurred. Unemployment rates listed are the average rates for the years in which peak and trough months occurred.

magnitude of the increase in employment generally becomes greater as one views the table from left to right. That is manufacturing and especially durable goods employment experienced the greatest relative increase during a period of expanding economic activity. The reverse held true during periods of economic contraction. Manufacturing and durable goods also showed the greatest shrinkage in employment during these periods with Indiana generally exhibiting a greater decline in employment than the United States.

Such behavior provides strong evidence that the categories shown in Table 5 become increasingly sensitive to cyclical changes in economic activity as one views the table from left to right. In addition, the evidence points to the fact that Indiana has a generally more cyclically sensitive labor market than the United States.

Table 6 accounts for the proportion of the United States and Indiana employment committed to these above mentioned categories of employment outlined in Table 5. It is evident that Indiana has substantially more of its manpower resources devoted to the more cyclical types of employment.

The greatest disparity in employment composition between the United States and Indiana is in durable goods manufacturing which is also the most cyclical category of employment. Therefore it is not surprising that unemployment has been significantly more cyclical in Indiana than in the United States. The percentage of the Indiana labor force employed in durable goods manufacturing is almost twice that for the

TABLE 6 - COMPOSITION OF EMPLOYMENT IN PEAK AND TROUGH YEARS
(as a percentage of total employment)

| year | non agricultural employment | | manufacturing employment | | durable goods employment | |
|---|---|---|---|---|---|---|
| | Indiana[1] | U. S.[2] | Indiana[1] | U.S.[3] | Indiana[1] | U. S.[2] |
| 1954 | 80.6 | 81.5 | 33.4 | 27.1 | 24.7 | 15.2 |
| 1957 | 82.6 | 82.5 | 34.5 | 26.8 | 25.8 | 15.4 |
| 1958 | 81.9 | 81.5 | 30.9 | 25.3 | 22.5 | 14.0 |
| 1960 | 82.7 | 82.5 | 34.3 | 25.5 | 25.4 | 14.4 |
| 1961 | 82.4 | 82.2 | 33.5 | 28.4 | 24.5 | 13.8 |
| 1969 | 90.0 | 90.2 | 35.9 | 25.9 | 28.5 | 15.3 |
| 1970 | 89.6 | 89.9 | 34.6 | 24.7 | 26.5 | 14.1 |

[1]Indiana Employment Security Division supplied data from which values were calculated

[2]U. S. Dept. of Labor, Bureau of Labor Statistics, 1970 Handbook of Labor Statistics, Table 36.

[3]U. S. Dept. of Labor, Bureau of Labor Statistics, Employment and Earnings, August, 1971, p. 21 and p. 49.

national labor force and a substantially greater percentage
of the Indiana labor force is engaged in all types of manu-
facturing.

It is also noteworthy that while non-agricultural
employment has risen somewhat for both Indiana and the United
States, the percentage of employment in manufacturing and
durable goods is not only higher in Indiana, but it has
risen slightly for the State in contrast to a slight decline
for the United States over the 1954 to 1970 period.

The relatively large and increasing proportion of
Indiana employment committed to particularly durable goods
manufacturing activities is undoubtedly a major factor in the
differences seen between the United States and Indiana labor
markets.

CHAPTER 7:  A CONTRAST BETWEEN THE POPULATION MAKE UP OF THE
UNITED STATES AND INDIANA LABOR FORCES

The high proportion of manufacturing and durable goods
industrial employment composition of the Indiana labor market
as compared to the United States average has been linked to
the comparatively high cyclical sensitivity of unemployment
and employment in the Indiana labor market.

Ideally, one would wish to compare the compositions of
the two labor market populations in order to fathom the supply
side of the labor market.  Since data are not available for
the Indiana work force according to age, race, and sex,
general population characteristics from the 1960 census
have been used to show a comparison between the make up
of the Indiana and United States populations according to
age, race, and sex.

Before contrasting the two populations, those population
categories with the highest unemployment rates should be
identified.  Table 7 serves this purpose.  It outlines recent
information on unemployment rates among labor force members
classified according to age, race and sex.  Inspection of
the table reveals that unemployment rates for both sexes
from 16 to 19 years old and for both sexes of non-white
labor force members are much higher than the average for
the total labor force.  Whites have a lower than average
rate, but members of both racial and sex groups over age 20
generally show much less deviation from the average rate
than the 16 to 19 year old group.  Therefore, we shall consider

non-white and younger categories of the population with special emphasis since it is apparent from Table 7 that these groups contribute most substantially to high unemployment rates.

Table 8 shows Indiana to have a small percentage of families with very low incomes. This gives an added verification of Indiana's lower unemployment rate even though Indiana also has slightly fewer families with incomes over 10,000 dollars annually. This income pattern indicates that the proportion of traditionally high unemployment groups is probably lower in Indiana than in the United States. Table 8 alludes to the logical conclusion that Indiana has a lower proportion of minority and young labor force members than the United States because these people tend not only to have a much higher than average rate of unemployment but also tend when employed, to occupy the lower paying positions, again as a result of their lack of training and experience and/or discrimination.

Because it is not possible to produce actual labor force statistics by age, race and sex for Indiana for purposes of comparing labor force composition, Table 9 has been inserted to help indicate the relative significance of population statistics as they relate to labor force composition. When the United States labor force composition statistics in Table 9 are compared to the United States population composition figures shown in Table 10, there is evidence of a much lower participation rate for women in comparison to

TABLE 7 - U.S. UNEMPLOYMENT RATES ACCORDING TO

AGE GROUP, RACE, AND SEX[1]

(July, 1970)

|  | males 20 and over | females 20 and over | both sexes ages 16-19 | total labor force |
|---|---|---|---|---|
| Total labor force | 3.5% | 5.0% | 15.5% | 5.3% |
| White labor force | 3.2% | 4.6% | 13.5% | 4.8% |
| Non-white labor force | 5.9% | 7.5% | 30.0% | 9.3% |

TABLE 8 - FAMILIES WITH LESS THAN $1000 ANNUAL

INCOME COMPARED TO THOSE WITH MORE

THAN $10,000 INCOME

|  | Less than $1,000 | More than $10,000 |
|---|---|---|
| United States[2] | 5.6% | 15.1% |
| Indiana[3] | 4.35% | 14.06% |

[1] U. S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, September, 1971, Table A-6, "Employment Status of the Non-Institutional Population 16 and over by Age, Race, Sex" p. 27.

[2] U.S. Census Bureau, 1960 Census of Population, Part I Population Characteristics, Table 96, p. 1-226.

[3] U.S. Census Bureau, 1960 Census of Population, State Economic Areas, p. 148.

TABLE 9 – COMPOSITION OF THE U.S. LABOR FORCE

ACCORDING TO AGE GROUP, RACE, AND SEX[1]
(1960 Census)

| | male | female | total |
|---|---|---|---|
| total labor force<br>% of total | 47,468,000<br>67.9% | 22,410,000<br>32.1% | 69,878,000<br>100% |
| white labor force<br>% of total | 42,940,000<br>61.4% | 19,538,000<br>28.0% | 62,478,000<br>89.4% |
| non-white labor force<br>% of total | 4,528,000<br>6.47% | 2,872,000<br>4.11% | 7,400,000<br>10.6% |
| age 14-19 labor force<br>% of total | 3,088,000<br>4.42% | 1,891,000<br>2.71% | 4,979,000<br>7.12% |
| white, age 14-19<br>% of total | 2,779,000<br>3.97% | 1,719,000<br>2.46% | 4,498,000<br>6.43% |
| non-white, age 14-19<br>% of total | 309,000<br>.44% | 172,000<br>.25% | 481,000<br>.69% |

[1]U.S. Census Bureau, 1960 Census of Population, Part I, U.S. Population Characteristics, U.S. Summary, Table 196, p. 1-501.

their United States population percentage. The opposite
relationship exists for men. Youth of both sexes account
for a significantly higher percentage of the United States
labor force than the proportion of population they represent.
Based on this information, somewhat more weight should be
given to percentages of males and youth while less weight
should be accorded to female portions of the population
in relating the population figures in Table 10 to the
actual labor force make up.

Table 10 readily confirms the hypothesis that the lower
average unemployment rate in Indiana is linked with a
significantly lower proportion of traditionally high un-
employment population groups in Indiana when compared with
the United States population. Both minority and youth elements
of both sexes are significantly less prevalent in Indiana than
in the United States. For example, the highest unemploy-
ment group of all shown in Table 7 (young non-whites) is
over 15 times more prevalent in the United States than in
Indiana. Total youth and total non-white populations are
significantly greater percentages of the United States pop-
ulation. Ratios shown in Table 10 indicate the smallest
percentages for Indiana in the categories which show the
highest unemployment rates in Table 7.

To say that the population and labor force composition
in Indiana is the sole cause for Indiana having a lower
average unemployment rate than the United States, would be
an oversimplification. The industrial composition and labor

TABLE 10: COMPOSITIONS OF U. S. AND INDIANA POPULATIONS

ACCORDING TO AGE GROUP, RACE, AND SEX*

(1960 Census)

| | male | | | female | | | total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ind.[1] | U.S.[2] | Ratio# | Ind.[1] | U.S.[2] | Ratio# | Ind.[1] | U.S.[2] | Ratio# |
| Total population | 49.3 | 48.6 | 1.01 | 50.7 | 51.4 | .99 | 100 | 100 | 1 |
| White population | 46.4 | 43.6 | 1.06 | 47.7 | 46.0 | 1.04 | 94.1 | 89.6 | 1.05 |
| Non-white population | 2.85 | 4.97 | .57 | 3.01 | 5.44 | .57 | 6.94 | 10.42 | .67 |
| Age 14-19 population | 1.77 | 6.42 | .28 | 1.11 | 6.28 | .18 | 7.88 | 12.70 | .62 |
| White, age 14-19 population | 1.70 | 5.85 | .29 | 1.17 | 5.50 | .21 | 2.79 | 11.35 | .25 |
| Non-white age 14-19 population | .06 | .78 | .077 | .04 | .79 | .051 | .10 | 1.56 | .064 |

* composition is given by percent of total labor force for all groups

# Ratio is Indiana
United States

[1] U.S. Census Bureau, 1960 U.S. Census of Population, State Economic Areas, p. 210-214.

[2] U.S. Census Bureau, 1960 U.S. Census of Population, Part I, Population Characteristics, U.S. Summary, Table 196, p. 1-501.

force make up of a particular labor market are interrelated since both jobs and workers are mobile, but the differences in Indiana and United States population compositions shown by Table 10 are undeniably significant and do account for differences in the characteristics of the two labor markets.

CHAPTER 8:   OTHER INDICATIONS OF MANPOWER TRENDS AND

EMPLOYMENT PROJECTIONS FOR INDIANA RELATIVE

TO THE UNITED STATES

All available library sources were searched to determine whether any other studies similar to the one presented here have been conducted.  No research which exactly parallels what is presented here was found, but some pertinent studies have been published by State governmental agencies concerning the relationship between Indiana and United States labor markets.  All of the pertinent documents studied tend to confirm or supplement what has been presented herein.

For example, a recent forecast published by the Indiana Department of Commerce bears out previously noted differences in labor market composition between the State and nation.  It recognized that more than 40% of non-agricultural employment in Indiana is employed in manufacturing as compared to less than 30% of the national labor force.  This is significant because employment in manufacturing varies more widely with swings in economic activity.[1]

The forecast generally confirms the findings of this study in its predictions.  It states that in July of 1969 Indiana unemployment was a full percent below the United States rate at 2.6% of the work force.  A modest reduction in economic activity with unemployment held to 4.0% to 4.5% would reduce the difference in unemployment rates.    . Were the economic growth rate to continue sluggish beyond the first half of 1970,

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[1]  Indiana Department of Commerce, Indiana Economic Report and Forecast, 1970 & 71, Office of Indiana Lt. Governor R. E. Foltz, 1969, p. 26.

the report continues, Indiana would likely experience greater than average reductions in production and employment and a sharper increase in unemployment.  Only the most extreme pessimists forsee a recession of the magnitude required to push Indiana unemployment above the United States unemployment rate.  Even during the 1961 dip the Indiana unemployment rate surpassed the national rate for only a few months.[1]

In retrospect it seems that the most extreme pessimists have been correct as shown by graph 2 and more recent unemployment conditions.  It is in such forecasts that the special benefits of this study can be of great value.  A quantitative projection based on the relationship shown in the total unemployment regression equation gives forecasters something much more concrete than mere speculation or intuition upon which to base predictions.

The regression equation and labor market analysis obtained herein accurately predict an acceleration of the Indiana unemployment rate relative to the United States rate as the two rates climb.  It also predicts that the Indiana unemployment rate will begin to surpass the United States rate as the United  States rate begins to exceed approximately 5.5%. The increased use of such quantitative predictions based on statistical analysis will no doubt be a key to increasing the value and accuracy of future forecasts.

The report further states that Indiana is experiencing a greater than average negative impact on its employment picture

[1]   Indiana Department of Commerce, Indiana Economic Report and Forecast, 1970 and 71, Office of Indiana Lt. Governor R. E. Foltz, 1969, p. 27.

as a result of the winding down of the Vietnam War because its defense oriented employment is principally in non-sophisticated products such as ammunition, vehicles, and replacement parts. Such items are expended rapidly in armed conflict but are held in large stockpiles. A drop in defense production would have no great impact on the labor market during a period of vigorous economic growth but definitely contributes to unemployment problems during a period of slow growth.[1]

Manufacturing is clearly a more important contributor to personal income in Indiana than in the nation. Although fluctuations in personal income for Indiana usually coincide with national economic movements, Indiana's changes tend to be more volatile than the United States shifts as a result of Indiana's reliance on manufacturing employment.[2]

Information also concerned projections as to the make up and size of the Indiana labor force through the first half of the 1970's. The projected growth in the Indiana labor market is dependent upon its unique industry mix in comparison with the United States and other states. In addition to its relatively high percentage of manufacturing employment, Indiana has only 10.8% of its labor force employed in services as opposed to 15.2% of the U.S. labor force.[3]

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1. Indiana Department of Commerce, Indiana Economic Report and Forecast, 1970 and 71, Office of Lt. Governor R.E. Foltz, 1969, p. 28.

2. Ibid, p. 35.

3 Martin W. Heller, Indiana Manpower Projections 1967-75, Indiana Employment Security Division, Research and Statistics Section, Nov., 1969, p. 4.

This is but a reflection of the already mentioned
high proportion of manufacturing employment
attributed to Indiana since a higher than average commitment
to employment in one sector must show up as a lower than
average commitment to employment in some other sectors of the
labor market.

Wages in Indiana are also higher than average as might
be expected from its strong emphasis on manufacturing. The
average weekly earnings of a production worker in Indiana
is $151.13 compared to a national average of $135.43.
Indiana ranks 8th in the nation on this scale. However,
Indiana ranks 39th in average monthly salary for state
governmental workers at $103 below the national average of
$655.00 per month.[1]

Projections for the 1967 to 1975 period indicate that
employment in Indiana will increase by about 12%. A total of
250,000 new jobs will become available during this period and
460,000 other jobs will become available as a result of deaths,
retirements, and female separations. About 89,000 jobs will
need to be filled each year during the first half of the
1970's.[2]

Employment in non-farm industries is expected to increase
by about 14% over this period while other non-farm employment
will remain about the same and agricultural employment will
decline by 29% over the 1967-75 period. Manufacturing

1   Indiana Employment Security Division, Manpower Trends in
    Indiana, "Indiana State Government and Indiana Wages Compared
    With Other States", July, 1971.
2   Martin W. Heller, Indiana Manpower Projections 1967-75, Indiana
    Employment Security Div., Research and Statistics Section, Nov.,
    1969, p. 1.

employment is expected to increase by 6% and non-manufacturing industrial employment will rise by 20%.[1]

Projections were made by using the export base multiplier concept in conjunction with certain assumptions about the State's relationship to the national economy.[2]

Export base industries are manufacturing, farming, and mining. Regional market oriented industries include construction, trans-portation, communications, public utilities, finance, trade, services, government, and all other non-agricultural sources of employment.[3] Employment in a state industry was computed using a projected ratio of state to national employment in combination with the national projected employment for that industry adding all industries to obtain a base industry total.[4] Some of the assumptions were:

1. State industry growth would be in line with national trends although the relationship may be modified slightly due to a changing share of national employment for the state.[5]
2. A total United States labor force of 94.1 million by 1975.[6]
3. An unemployment rate of 3% in 1975.[7]

[1] Martin W. Heller, Indiana Manpower Projections 1967-75, Indiana Employment Security Division, Research and Statistics Section, November, 1969, p. 1.

[2] Martin W. Heller, Indiana Regional Employment Projections 1967-75, Indiana Employment Security Division, Research and Statistics Section, May, 1970, p. 1.

[3] Ibid, p. 1.

[4] Martin W. Heller, Indiana Manpower Projections 1967-75, Indiana Employment Security Division, Research and Statistics Section, November, 1969, p. 5.

[5] Martin W. Heller, Indiana Regional Employment Projections 1967-75, Indiana Employment Security Division, Research and Statistics Section, May, 1970, p. 8.

[6] Martin W. Heller, Indiana Manpower Projections 1967-75, Indiana Employment Security Division, Research and Statistics Section, November, 1969, p. 6.

[7] Ibid, p. 6.

The first two assumptions are essentially demographic in nature, but the third assumption is based on a forecast of economic performance. It is assumed that the 3.0% unemployment rate applies to Indiana rather than the United States, thereby implying a United States rate of 4.0% via the regression equation.

Instead of making the assumption of 3.0% unemployment which at present appears somewhat dubious, the total unemployment regression equation could be used in conjunction with export base multiplier projections. This approach could be used to estimate the number of jobs which would become available in future years assuming various levels of unemployment and predicting Indiana unemployment rates from national unemployment forecasts by use of the regression equation developed herein.

Also important to future economic development will be the increasing percentage of young labor force members on both the national and State levels. Increasing job complexity will demand ever greater skill and training of labor force participants. This further increases the importance of assessing manpower needs and the relationship between the State and national economies to achieve increased efficiency in the allocation of the labor force.

It is only through quantitative knowledge of market relationships obtained by such techniques as the export base multiplier concept or the use of association analysis that forecasts and economic information of the greatest accuracy and validity can be generated. This is the most useful type of market information needed by business and government to arrive at policy decisions which will assure maximum economic performance in the years to come.

# CHAPTER 9: CONCLUSION

The comparison of Indiana and United States total unemployment rates was shown to be statistically valid by the parallel relationships demonstrated for the insured unemployment rates for the United States and Indiana.

The relationship between Indiana and United States unemployment as indicated by statistics and equations previously shown, is one of comparatively greater cyclical fluctuation for Indiana than for United States unemployment rates. The rates tend to be about equal at 5.5% but, as the United States rate either rises or drops from 5.5%, Indiana unemployment will change in the same direction approximately 1.68 times faster at approximately the same time. Authorities at the Indiana Employment Security Division believe the Indiana rate to be somewhat of a leading indicator to changes in the national rate, but no significant lead was detected by this study.

The average United States unemployment rate over the period examined has been less than 5.5% at 4.9% and so the average Indiana rate has been lower still at 4.5%. The lower average unemployment rate and greater cyclical sensitivity in Indiana than in the United States may be attributed to differences in the supply and demand aspects of the two labor markets. These supply and demand elements are chiefly reflected by the industrial and institutional make up of job sources and by the composition of the labor force and of the population from which the labor force is drawn.

Labor market comparisons indicate that Indiana has a significantly higher proportion of cyclically sensitive industry and a significantly lower proportion of traditionally higher than average unemployment groups in its population when compared to the United States. These two differences explain the two chief features of the functional relationships between Indiana and United States unemployment. Supply and demand factors are so interrelated that neither side of the market is the sole causative agent for either the greater cyclical amplitude or the lower average unemployment rate of the Indiana labor market.

The fact that United States and Indiana rates tend to be about equal at 5.5% is especially significant since 4% is usually held to be a "reasonable" rate of total unemployment for the nation. Great effort is exerted by the Federal government to increase employment when the rate rises to about 5.0% or greater, so as long as total United States unemployment is held to less than 5.5% on the average, Indiana stands to reap more than its share of benefits from Federal efforts aimed at achieving low unemployment.

On the other side of the coin, Indiana is assuming the risk of having a relatively more severely depressed labor market than the nation as a whole in the event of severe unemployment nationwide because of its heavy dependence on manufacturing employment.

For this reason the trend toward an increasing proportion of manufacturing employment in Indiana may not be entirely desirable. An increase in the non-manufacturing or service sector of the State's economy would tend to add to the stability of State employment patterns and may be more effective in lowering

unemployment rates among persons who are poorly trained or lack work experience and who usually experience much higher than average unemployment rates as a group.

Increasing automation in manufacturing may eventually help to lower the fraction of the Indiana labor force employed directly by manufacturing yet maintain an essentially manufacturing based economy in Indiana. Such an occurrance might prove to promote a trend toward maintaining Indiana's position of having a generally lower unemployment rate than the average United States rate while permitting a decrease in the degree of cyclical fluctuation.

If the State economy merely shifts from its present composition to one bearing a greater similarity to the national labor market, it would only be trading away some of its ability to gain a lower rate of unemployment in favorable economic conditions, for a reduced risk of a higher rate than the United States due to instability during recessions. This speculation assumes that the work force would become more like that of the nation as a whole at the same time the industrial make up of Indiana gained in similarity to the United States average. If a lower percentage of manufacturing employment were to come about in Indiana with no change in work force composition, the primary force behind cyclical instability would be reduced yet the characteristics of the work force would continue to dictate a lower than average unemployment rate for Indiana. It must be brought out, however, that the State government has a great deal of control over the type of business and industry which may operate in the State and almost no direct control over the composition of the work force which chooses to locate in Indiana.

Therefore it is somewhat unlikely that the industrial composition of the State's economy could change significantly without some accompanying change in the Indiana work force.

It is hoped that the future holds the development of social and economic progress which will result in increasing the ability of the United States to maintain efficient use of its human resources through the cooperative efforts of government, industry, and labor. This should bring about substantial improvement in the Indiana labor market beyond the overall improvements in the national economy if the goals of growth, stability, and full employment can be simultaneously met with increasing success in future years.

# APPENDIX A

## TOTAL UNEMPLOYMENT STATISTICS

Column Code Designations

A- year and month

B- monthly unemployment rate for Indiana ($U_i$)

C- average less monthly rate squared for Indiana $(\overline{U}_i - U_i)^2$

D- monthly unemployment rate for the United States ($U_{us}$)

E- average less monthly rate squared for the U. S. $(\overline{U}_{us} - U_{us})^2$

F- monthly rate for Indiana times monthly rate for U. S. ($U_i \times U_{us}$)

G- monthly rate for Indiana squared $(U_i)^2$

H- monthly rate for the U. S. squared $(U_{us})^2$

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| **1954** | | | | | | | |
| July | 8.0 | 12.25 | 5.8 | .81 | 46.40 | 64. | 33.64 |
| A | 8.1 | 12.96 | 6.0 | 1.21 | 48.60 | 65.61 | 36. |
| S | 7.7 | 10.24 | 6.1 | 1.44 | 46.97 | 59.29 | 37.21 |
| O | 8.2 | 13.69 | 5.7 | .64 | 46.74 | 67.24 | 32.49 |
| N | 7.0 | 6.25 | 5.3 | .16 | 37.10 | 49. | 28.09 |
| D | 7.2 | 7.29 | 5.0 | .01 | 36. | 51.84 | 25. |
| **1955** | | | | | | | |
| J | 6.0 | 2.25 | 4.9 | -- | 29.40 | 36. | 24.01 |
| F | 5.1 | .36 | 4.7 | .04 | 23.97 | 26.01 | 22.09 |
| M | 4.7 | .04 | 4.6 | .09 | 21.62 | 22.09 | 21.16 |
| A | 4.5 | -- | 4.7 | .04 | 21.15 | 20.25 | 22.09 |
| M | 3.8 | .49 | 4.3 | .36 | 16.34 | 14.44 | 18.49 |
| J | 3.5 | 1.00 | 4.2 | .49 | 14.70 | 12.25 | 17.64 |
| J | 3.6 | .81 | 4.0 | .81 | 14.40 | 12.96 | 16. |
| A | 3.4 | 1.21 | 4.2 | .49 | 14.28 | 11.56 | 17.64 |
| S | 3.4 | 1.21 | 4.1 | .64 | 13.94 | 11.56 | 16.81 |
| O | 3.6 | .81 | 4.3 | .36 | 15.48 | 12.96 | 18.49 |
| N | 3.0 | 2.25 | 4.2 | .49 | 12.60 | 9. | 17.64 |
| D | 3.3 | 1.44 | 4.2 | .49 | 13.86 | 10.89 | 17.64 |
| **1956** | | | | | | | |
| J | 3.3 | 1.44 | 4.0 | .81 | 13.20 | 10.89 | 16. |
| F | 3.5 | 1.00 | 3.9 | 1.00 | 13.65 | 12.25 | 15.21 |
| M | 4.0 | .25 | 4.2 | .49 | 16.80 | 16. | 17.64 |
| A | 4.1 | .16 | 4.0 | .81 | 16.40 | 16.81 | 16. |
| M | 4.2 | .09 | 4.3 | .36 | 18.06 | 17.64 | 18.49 |
| J | 4.4 | .01 | 4.3 | .36 | 18.92 | 19.36 | 18.49 |
| J | 4.7 | .04 | 4.4 | .25 | 20.68 | 22.09 | 19.36 |
| A | 4.1 | .16 | 4.1 | .64 | 16.81 | 16.81 | 16.81 |
| S | 4.7 | .04 | 3.9 | 1.00 | 18.33 | 22.09 | 15.21 |
| O | 4.1 | .16 | 4.9 | -- | 20.09 | 16.81 | 24.01 |
| N | 3.9 | .36 | 4.3 | .36 | 16.77 | 15.21 | 18.49 |
| D | 4.1 | .16 | 4.2 | .49 | 17.22 | 16.81 | 17.64 |

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1957 | | | | | | | |
| J | 4.5 | -- | 4.2 | .49 | 18.90 | 20.25 | 17.64 |
| F | 4.5 | -- | 3.9 | 1.00 | 17.55 | 20.25 | 15.21 |
| M | 4.1 | .16 | 3.7 | 1.44 | 15.17 | 16.81 | 13.69 |
| A | 4.4 | .01 | 3.9 | 1.00 | 17.16 | 19.36 | 15.21 |
| M | 4.3 | .04 | 4.1 | .64 | 17.63 | 18.49 | 16.81 |
| J | 4.6 | .01 | 4.3 | .36 | 19.78 | 21.16 | 18.49 |
| J | 4.3 | .04 | 4.2 | .49 | 18.06 | 18.49 | 17.64 |
| A | 4.1 | .16 | 4.1 | .64 | 16.81 | 16.81 | 16.81 |
| S | 4.7 | .04 | 4.4 | .25 | 20.68 | 22.09 | 19.36 |
| O | 4.6 | .01 | 4.5 | .16 | 20.70 | 21.16 | 20.25 |
| N | 5.1 | .36 | 5.1 | .04 | 26.01 | 26.01 | 26.01 |
| D | 5.8 | .64 | 5.2 | .09 | 30.16 | 33.64 | 27.04 |
| 1958 | | | | | | | |
| J | 7.1 | 6.76 | 5.8 | .81 | 41.18 | 50.41 | 33.64 |
| F | 7.6 | 9.61 | 6.4 | 2.25 | 48.64 | 57.76 | 40.96 |
| M | 8.6 | 16.81 | 6.7 | 3.24 | 57.62 | 73.96 | 44.89 |
| A | 9.7 | 27.04 | 7.4 | 6.25 | 71.78 | 94.09 | 54.76 |
| M | 10.0 | 30.25 | 7.4 | 6.25 | 74. | 100. | 54.76 |
| J | 9.1 | 21.16 | 7.3 | 5.76 | 66.43 | 82.81 | 53.29 |
| J | 8.7 | 17.64 | 7.5 | 6.76 | 65.25 | 75.69 | 56.25 |
| A | 8.5 | 16. | 7.4 | 6.25 | 62.90 | 72.25 | 54.76 |
| S | 8.0 | 12.25 | 7.1 | 4.84 | 56.80 | 64. | 50.41 |
| O | 7.3 | 7.84 | 6.7 | 3.24 | 48.91 | 53.29 | 44.89 |
| N | 6.6 | 4.41 | 6.2 | 1.69 | 40.92 | 43.56 | 38.44 |
| D | 6.8 | 5.29 | 6.2 | 1.69 | 42.16 | 46.24 | 38.44 |
| 1959 | | | | | | | |
| J | 6.3 | 3.24 | 6.0 | 1.21 | 37.80 | 39.69 | 36. |
| F | 6.4 | 3.61 | 5.9 | 1.00 | 37.76 | 40.96 | 34.81 |
| M | 5.6 | 1.21 | 5.6 | .49 | 31.36 | 31.36 | 31.36 |
| A | 5.0 | .25 | 5.2 | .09 | 26. | 25. | 27.04 |
| M | 4.4 | .01 | 5.1 | .04 | 22.44 | 19.36 | 26.01 |
| J | 4.4 | .01 | 5.0 | .01 | 22. | 19.36 | 25. |
| J | 4.2 | .09 | 5.1 | .04 | 21.42 | 17.64 | 26.01 |
| A | 4.5 | -- | 5.2 | .09 | 23.40 | 20.25 | 27.04 |
| S | 4.4 | .01 | 5.5 | .36 | 24.20 | 19.36 | 30.25 |
| O | 4.8 | .09 | 5.7 | .64 | 27.36 | 23.04 | 32.49 |
| N | 5.3 | .64 | 5.8 | .81 | 30.74 | 28.09 | 33.64 |
| D | 4.6 | .01 | 5.3 | .16 | 24.38 | 21.16 | 28.09 |
| 1960 | | | | | | | |
| J | 4.3 | .04 | 5.2 | .09 | 22.36 | 18.49 | 27.04 |
| F | 4.3 | .04 | 4.8 | .01 | 20.64 | 18.49 | 23.04 |
| M | 4.7 | .04 | 5.4 | .25 | 25.38 | 22.09 | 29.16 |
| A | 4.7 | .04 | 5.2 | .09 | 24.44 | 22.09 | 27.04 |
| M | 4.9 | .16 | 5.1 | .04 | 24.99 | 24.01 | 26.01 |
| J | 5.2 | .49 | 5.4 | .25 | 28.08 | 27.04 | 29.16 |
| J | 5.5 | 1.00 | 5.5 | .36 | 30.25 | 30.25 | 30.25 |
| A | 5.7 | 1.44 | 5.6 | .49 | 31.92 | 32.49 | 31.36 |
| S | 5.3 | .64 | 5.5 | .36 | 29.15 | 28.09 | 30.25 |
| O | 5.6 | 1.21 | 6.1 | 1.44 | 34.16 | 31.36 | 37.21 |
| N | 6.4 | 3.61 | 6.2 | 1.69 | 39.68 | 40.96 | 38.44 |
| D | 6.7 | 4.84 | 6.6 | 2.89 | 44.22 | 44.89 | 43.56 |

a

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1961 | | | | | | | |
| J | 7.1 | 6.76 | 6.6 | 2.89 | 46.84 | 50.41 | 43.56 |
| F | 7.4 | 8.41 | 6.9 | 4.00 | 51.06 | 54.76 | 47.61 |
| M | 7.3 | 7.84 | 6.9 | 4.00 | 50.37 | 53.29 | 47.61 |
| A | 7.8 | 10.89 | 7.0 | 4.41 | 54.60 | 60.84 | 49. |
| M | 7.7 | 10.24 | 7.1 | 4.84 | 54.67 | 59.29 | 50.41 |
| J | 6.9 | 5.76 | 6.9 | 4.00 | 47.61 | 47.61 | 47.61 |
| J | 6.6 | 4.41 | 7.0 | 4.41 | 46.20 | 43.56 | 49. |
| A | 6.1 | 2.56 | 6.6 | 2189 | 40.26 | 37.21 | 43.56 |
| S | 6.4 | 3.61 | 6.7 | 3.24 | 42.88 | 40.96 | 44.89 |
| O | 6.0 | 2.25 | 6.5 | 2.56 | 39. | 36. | 42.25 |
| N | 5.4 | .81 | 6.1 | 1.44 | 32.94 | 29.16 | 37.21 |
| D | 5.6 | 1.21 | 6.0 | 1.21 | 33.60 | 31.36 | 36. |
| 1962 | | | | | | | |
| J | 5.7 | 1.44 | 5.8 | .81 | 33.06 | 32.49 | 33.64 |
| F | 5.3 | .64 | 5.5 | .36 | 29.15 | 28.09 | 30.25 |
| M | 5.3 | .64 | 5.6 | .49 | 29.68 | 28.09 | 31.36 |
| A | 5.1 | .36 | 5.6 | .49 | 28.56 | 26.01 | 31.36 |
| M | 5.2 | .49 | 5.5 | .36 | 28.60 | 27.04 | 30.25 |
| J | 5.2 | .49 | 5.5 | .36 | 28.60 | 27.04 | 30.25 |
| J | 5.4 | .81 | 5.4 | .25 | 29.16 | 29.16 | 29.16 |
| A | 5.3 | .64 | 5.7 | .64 | 30.21 | 28.09 | 32.49 |
| S | 5.0 | .25 | 5.6 | .49 | 28. | 25. | 31.36 |
| O | 5.0 | .25 | 5.4 | .25 | 27. | 25. | 29.16 |
| N | 4.8 | .09 | 5.7 | .64 | 27.36 | 23.04 | 32.49 |
| D | 5.0 | .25 | 5.5 | .36 | 27.50 | 25. | 30.25 |
| 1963 | | | | | | | |
| J | 4.8 | .09 | 5.7 | .64 | 27.36 | 23.04 | 32.49 |
| F | 4.9 | .16 | 5.9 | 1.00 | 28.91 | 24.01 | 34.81 |
| M | 4.8 | .09 | 5.7 | .64 | 27.36 | 23.04 | 32.49 |
| A | 4.4 | .01 | 5.7 | .64 | 28.16 | 19.36 | 32.49 |
| M | 4.5 | -- | 5.9 | 1.00 | 26.55 | 20.25 | 34.80 |
| J | 4.4 | .01 | 5.6 | .49 | 24.64 | 19.36 | 31.36 |
| J | 4.3 | .04 | 5.6 | .49 | 24.08 | 18.49 | 31.36 |
| A | 4.2 | .09 | 5.4 | .25 | 22.68 | 17.64 | 29.16 |
| S | 4.2 | .09 | 5.5 | .36 | 23.10 | 17.64 | 30.25 |
| O | 4.0 | .25 | 5.5 | .36 | 22. | 16. | 30.25 |
| N | 4.2 | .04 | 5.7 | .64 | 24.51 | 18.49 | 32.49 |
| D | 4.2 | .09 | 5.5 | .36 | 23.10 | 17.64 | 30.25 |
| 1964 | | | | | | | |
| J | 4.4 | .01 | 5.6 | .49 | 24.64 | 19.36 | 31.36 |
| F | 4.3 | .04 | 5.4 | .25 | 23.22 | 18.49 | 29.16 |
| M | 4.2 | .09 | 5.4 | .25 | 22.68 | 17.64 | 29.16 |
| A | 4.2 | .09 | 5.3 | .16 | 22.26 | 17.64 | 28.09 |
| M | 4.2 | .09 | 5.1 | .04 | 21.42 | 17.64 | 26.01 |
| J | 4.2 | .09 | 5.2 | .09 | 21.84 | 17.64 | 27.04 |
| J | 4.0 | .25 | 4.9 | -- | 19.60 | 16. | 24.01 |
| A | 3.7 | .64 | 5.0 | .01 | 18.50 | 13.69 | 25. |
| S | 3.8 | .49 | 5.1 | .04 | 19.38 | 14.44 | 26.01 |
| O | 4.0 | .25 | 5.1 | .04 | 20.40 | 16. | 26.01 |
| N | 3.6 | .81 | 4.8 | .01 | 17.28 | 12.96 | 23.04 |
| D | 3.5 | 1.00 | 5.0 | .01 | 17.50 | 12.25 | 25. |

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1965 | | | | | | | |
| J | 3.3 | 1.44 | 4.8 | .01 | 15.84 | 10.89 | 23.04 |
| F | 3.3 | 1.44 | 5.0 | .01 | 16.50 | 10.89 | 25. |
| M | 3.2 | 1.69 | 4.7 | .04 | 15.04 | 10.24 | 22.09 |
| A | 3.3 | 1.44 | 4.8 | .01 | 15.84 | 10.89 | 23.04 |
| M | 3.1 | 1.96 | 4.6 | .09 | 14.26 | 9.61 | 21.16 |
| J | 3.2 | 1.69 | 4.6 | .09 | 14.72 | 10.24 | 21.16 |
| J | 3.1 | 1.96 | 4.4 | .25 | 13.64 | 9.61 | 19.36 |
| A | 3.2 | 1.69 | 4.4 | .25 | 14.08 | 10.24 | 19.36 |
| S | 3.1 | 1.96 | 4.3 | .36 | 13.33 | 9.61 | 18.49 |
| O | 2.7 | 3.24 | 4.3 | .36 | 11.61 | 7.29 | 18.49 |
| N | 2.8 | 2.89 | 4.1 | .64 | 11.48 | 7.84 | 16.81 |
| D | 2.6 | 3.61 | 4.0 | .81 | 10.40 | 6.76 | 16. |
| 1966 | | | | | | | |
| J | 2.5 | 4.00 | 3.9 | 1.00 | 9.75 | 6.25 | 15.21 |
| F | 2.5 | 4.00 | 3.7 | 1.44 | 9.25 | 6.25 | 13.69 |
| M | 2.3 | 4.84 | 3.8 | 1.21 | 8.74 | 5.29 | 14.44 |
| A | 2.4 | 4.41 | 3.8 | 1.21 | 9.12 | 5.76 | 14.44 |
| M | 2.6 | 3.61 | 3.9 | 1.00 | 10.14 | 6.76 | 15.21 |
| J | 2.9 | 2.56 | 3.8 | 1.21 | 11.02 | 8.41 | 14.44 |
| J | 2.9 | 2.56 | 3.8 | 1.21 | 11.02 | 8.41 | 14.44 |
| A | 2.8 | 2.89 | 3.8 | 1.21 | 10.64 | 7.84 | 14.44 |
| S | 2.6 | 3.61 | 3.7 | 1.44 | 9.62 | 6.76 | 13.69 |
| O | 2.3 | 4.84 | 3.7 | 1.44 | 8.51 | 5.29 | 13.69 |
| N | 2.5 | 4.00 | 3.6 | 1.69 | 9. | 6.25 | 12.96 |
| D | 2.6 | 3.61 | 3.8 | 1.21 | 9.88 | 6176 | 14.44 |
| 1967 | | | | | | | |
| J | 2.6 | 3.61 | 3.7 | 1.44 | 9.62 | 6.76 | 13.69 |
| F | 2.7 | 3.24 | 3.7 | 1.44 | 9.99 | 7.29 | 13.69 |
| M | 2.7 | 3.29 | 3.7 | 1.44 | 9.99 | 7.29 | 13.69 |
| A | 3.2 | 1.69 | 3.8 | 1.21 | 12.16 | 10.24 | 14.44 |
| M | 3.4 | 1.21 | 3.9 | 1.00 | 13.26 | 11.56 | 15.21 |
| J | 3.5 | 1.00 | 3.9 | 1.00 | 13.65 | 12.25 | 15.21 |
| J | 3.4 | 1.21 | 3.9 | 1.00 | 13.26 | 11.56 | 15.21 |
| A | 3.4 | 1.21 | 3.8 | 1.21 | 12.92 | 11.56 | 14.44 |
| S | 3.5 | 1.00 | 4.0 | .81 | 14. | 12.25 | 16. |
| O | 3.4 | 1.21 | 4.2 | .49 | 14.28 | 11.56 | 17.64 |
| N | 3.1 | 1.96 | 3.8 | 1.21 | 11.78 | 9.61 | 14.44 |
| D | 3.1 | 1.96 | 3.7 | 1.44 | 11.47 | 9.61 | 13.69 |
| 1968 | | | | | | | |
| J | 3.1 | 1.96 | 3.6 | 1.69 | 11.16 | 9.61 | 12.96 |
| F | 3.2 | 1.69 | 3.7 | 1.44 | 11.84 | 10.24 | 13.69 |
| M | 3.4 | 1.21 | 3.7 | 1.44 | 12.58 | 11.56 | 13.69 |
| A | 3.2 | 1.69 | 3.5 | 1.96 | 11.20 | 10.24 | 12.25 |
| M | 3.3 | 1.44 | 3.6 | 1.69 | 11.88 | 10.89 | 12.96 |
| J | 3.4 | 1.21 | 3.7 | 1.44 | 12.58 | 11.56 | 13.69 |
| J | 3.3 | 1.44 | 3.7 | 1.44 | 12.21 | 10.89 | 13.69 |
| A | 3.1 | 1.96 | 3.5 | 1.96 | 10.85 | 9.61 | 12.25 |
| S | 3.3 | 1.44 | 3.6 | 1.69 | 11.88 | 10.89 | 12.96 |
| O | 3.1 | 1.96 | 3.6 | 1.69 | 11.16 | 9.61 | 12.96 |
| N | 3.1 | 1.96 | 3.4 | 2.25 | 10.54 | 9.61 | 11.56 |
| D | 2.7 | 3.24 | 3.3 | 2.56 | 8.91 | 7.29 | 10.89 |

| A | B | C | D | E | F | G | H | a |
|---|---|---|---|---|---|---|---|---|
| 1969 | | | | | | | | |
| J | 2.7 | 3.24 | 3.3 | 2.56 | 8.91 | 7.29 | 10.89 | |
| F | 2.6 | 3.61 | 3.3 | 2.56 | 8.58 | 6.76 | 10.89 | |
| M | 2.5 | 4.00 | 3.4 | 2.25 | 8.50 | 6.25 | 11.56 | |
| A | 2.6 | 3.61 | 3.5 | 1.96 | 9.10 | 6.76 | 12.25 | |
| M | 2.6 | 3.61 | 3.5 | 1.96 | 9.10 | 6.76 | 12.25 | |
| J | 2.7 | 3.24 | 3.4 | 2.25 | 9.18 | 7.29 | 11.56 | |
| J | 2.6 | 3.61 | 3.6 | 1.69 | 9.36 | 6.76 | 12.96 | |
| A | 2.6 | 3.61 | 3.5 | 1.96 | 9.10 | 6.76 | 12.25 | |
| S | 2.6 | 3.61 | 4.0 | .81 | 10.40 | 6.76 | 16. | |
| O | 2.8 | 2.89 | 3.9 | 1.00 | 10.92 | 7.84 | 15.21 | |
| N | 2.9 | 2.56 | 3.4 | 2.25 | 9.86 | 8.41 | 11.56 | |
| D | 3.2 | 1.69 | 3.4 | 2.25 | 10.88 | 10.24 | 11.56 | |
| 1970 | | | | | | | | |
| J | 4.1 | .16 | 3.9 | 1.00 | 15.99 | 16.81 | 15.21 | |
| F | 4.1 | .16 | 4.2 | .49 | 17.22 | 16.81 | 17.64 | |
| M | 4.1 | .16 | 4.4 | .25 | 18.04 | 16.81 | 19.36 | |
| A | 4.9 | .16 | 4.7 | .04 | 23.03 | 24.01 | 22.09 | |
| M | 4.7 | .04 | 4.9 | -- | 23.03 | 22.09 | 24.01 | |
| J | 4.3 | .04 | 4.8 | .01 | 20.64 | 18.49 | 23.04 | |
| J | 4.3 | .04 | 5.0 | .01 | 21.50 | 18.49 | 25. | |
| A | 4.4 | .01 | 5.1 | .04 | 22.44 | 19.36 | 26.01 | |
| S | 4.7 | .04 | 5.4 | .25 | 25.38 | 22.09 | 29.16 | |
| O | 6.2 | 2.89 | 5.5 | .36 | 34.10 | 38.44 | 30.25 | |
| N | 6.3 | 3.24 | 5.9 | 1.00 | 37.17 | 39.69 | 34.81 | |
| D | 6.1 | 2.56 | 6.2 | 1.69 | 37.82 | 37.21 | 38.44 | |
| TOTAL | 897.71 | 517.09 | 968.71 | 219.09 | 4667.46 | 4547.05 | 4903.81 | |

# INSURED UNEMPLOYMENT STATISTICS

Column Code Designations

A- year and month

B- monthly insured unemployment rate for Indiana $(U_{i\iota})$

C- average less monthly rate squared for Indiana $(\overline{U}_{i\iota}-U_{i\iota})^2$

D- monthly insured unemployment rate for the U. S. $(U_{us\iota})$

E- average less monthly rate squared for the U.S. $(\overline{U}_{us\iota}-U_{us\iota})^2$

F- insured monthly rate for Indiana times insured monthly rate for U. S. $(U_{i\iota} \times U_{us\iota})$

G- monthly insured rate for Indiana squared $(U_{i\iota})^2$

H- monthly insured rate for U. S. squared $(U_{us\iota})^2$

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1954 |  |  |  |  |  |  |  |
| July | 5.2 | 5.76 | 5.3 | 2.25 | 27.56 | 27.04 | 28.08 |
| A | 5.5 | 7.29 | 5.4 | 2.56 | 29.70 | 30.25 | 29.16 |
| S | 4.9 | 4.41 | 5.6 | 3.24 | 27.44 | 24.01 | 31.36 |
| O | 4.7 | 3.61 | 5.6 | 3.24 | 26.32 | 22.09 | 31.36 |
| N | 4.6 | 3.29 | 5.0 | 1.44 | 23. | 21.16 | 25. |
| D | 4.3 | 2.25 | 4.5 | .49 | 19.35 | 18.49 | 20.25 |
| 1955 |  |  |  |  |  |  |  |
| J | 3.0 | .04 | 4.2 | .16 | 12.60 | 9. | 17.64 |
| F | 2.4 | .16 | 4.1 | .09 | 9.84 | 5.76 | 16.81 |
| M | 2.4 | .16 | 3.8 | -- | 9.12 | 5.76 | 14.44 |
| A | 2.5 | .09 | 3.6 | .04 | 9. | 6.25 | 12.96 |
| M | 2.4 | .16 | 3.4 | .16 | 8.16 | 5.76 | 11.56 |
| J | 2.2 | .36 | 3.3 | .25 | 7.26 | 4.84 | 10.89 |
| J | 2.3 | .25 | 3.3 | .25 | 7.59 | 5.29 | 10.89 |
| A | 2.1 | .49 | 3.3 | .25 | 6.93 | 4.41 | 10.89 |
| S | 2.4 | .16 | 3.2 | .36 | 7.68 | 5.76 | 10.24 |
| O | 2.5 | .09 | 3.1 | .49 | 7.75 | 6.25 | 9.61 |
| N | 1.9 | .81 | 3.1 | .49 | 5.89 | 3.61 | 9.61 |
| D | 2.2 | .36 | 3.2 | .36 | 7.04 | 4.84 | 10.24 |
| 1956 |  |  |  |  |  |  |  |
| J | 2.0 | .64 | 3.2 | .36 | 6.40 | 4. | 10.24 |
| F | 2.2 | .36 | 3.3 | .25 | 7.26 | 4.84 | 10.89 |
| M | 2.9 | .01 | 3.3 | .25 | 9.57 | 8.41 | 10.89 |
| A | 3.2 | .16 | 3.2 | .36 | 10.24 | 10.24 | 10.24 |
| M | 3.8 | 1.00 | 3.3 | .25 | 12.54 | 14.44 | 10.89 |
| J | 4.0 | 1.44 | 3.4 | .16 | 13.60 | 16. | 11.56 |
| J | 3.9 | 1.21 | 3.5 | .09 | 13.65 | 15.21 | 12.25 |
| A | 3.4 | .36 | 3.5 | .09 | 11.90 | 11.56 | 12.25 |

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1956 cont'd | | | | | | | |
| S | 4.2 | 1.96 | 3.5 | .09 | 14.70 | 17.26 | 12.25 |
| O | 3.0 | .04 | 3.3 | .25 | 9.90 | 9. | 10.89 |
| N | 2.8 | -- | 3.4 | .16 | 9.52 | 7.84 | 11.56 |
| D | 2.8 | -- | 3.4 | .16 | 9.52 | 7.84 | 11.56 |
| 1957 | | | | | | | |
| J | 2.7 | .01 | 3.5 | .09 | 9.45 | 7.29 | 12.25 |
| F | 2.7 | .01 | 3.5 | .09 | 9.45 | 7.29 | 12.25 |
| M | 2.4 | .16 | 3.4 | .16 | 8.16 | 5.76 | 11.56 |
| A | 3.2 | .16 | 3.3 | .25 | 10.56 | 10.24 | 10.89 |
| M | 3.4 | .36 | 3.3 | .25 | 11.22 | 11.56 | 10.89 |
| J | 3.3 | .25 | 3.4 | .16 | 11.22 | 10.89 | 11.56 |
| J | 2.7 | .01 | 3.5 | .09 | 9.45 | 7.20 | 12.25 |
| A | 2.7 | .01 | 3.5 | .09 | 9.45 | 7.29 | 12.25 |
| S | 3.4 | .36 | 3.9 | .01 | 13.26 | 11.56 | 15.21 |
| O | 3.1 | .09 | 4.3 | .25 | 13.33 | 9.61 | 19.49 |
| N | 3.8 | 1.00 | 4.8 | 1.00 | 18.24 | 14.44 | 23.04 |
| D | 4.0 | 1.44 | 5.3 | 2.25 | 21.20 | 16. | 28.09 |
| 1958 | | | | | | | |
| J | 4.6 | 3.24 | 5.5 | 2.89 | 25.30 | 21.16 | 30.25 |
| F | 5.0 | 4.84 | 6.0 | 4.84 | 30. | 25. | 36. |
| M | 6.2 | 11.56 | 6.6 | 7.84 | 40.92 | 38.44 | 43.56 |
| A | 7.9 | 26.01 | 7.1 | 10.89 | 56.09 | 62.41 | 50.41 |
| M | 9.0 | 38.44 | 7.0 | 10.24 | 63. | 81. | 49. |
| J | 8.1 | 28.09 | 6.9 | 9.61 | 55.89 | 65.61 | 47.61 |
| J | 6.3 | 12.25 | 6.7 | 8.41 | 42.21 | 39.69 | 44.89 |
| A | 5.8 | 9.00 | 6.7 | 8.41 | 38.86 | 33.64 | 44.89 |
| S | 5.6 | 7.84 | 6.2 | 5.76 | 34.72 | 31.36 | 38.44 |
| O | 4.4 | 2.56 | 6.0 | 4.84 | 26.40 | 19.36 | 36. |
| N | 3.8 | 1.00 | 5.6 | 3.24 | 21.28 | 14.44 | 31.36 |
| D | 3.8 | 1.00 | 5.3 | 2.25 | 20.14 | 14.44 | 28.09 |
| 1959 | | | | | | | |
| J | 3.2 | .16 | 4.9 | 1.21 | 15.68 | 10.24 | 24.01 |
| F | 3.3 | .25 | 4.7 | .81 | 15.51 | 10.89 | 22.09 |
| M | 2.8 | -- | 4.3 | .25 | 12.04 | 7.84 | 18.49 |
| A | 2.8 | -- | 4.0 | .04 | 11.20 | 7.84 | 16. |
| M | 2.8 | -- | 3.6 | .04 | 10.08 | 7.84 | 12.96 |
| J | 2.6 | .04 | 3.5 | .09 | 9.10 | 6.76 | 12.25 |
| J | 2.3 | .25 | 3.7 | .01 | 8.31 | 10.89 | 13.69 |
| A | 3.3 | .25 | 3.7 | .01 | 13.53 | 5.29 | 16.81 |
| S | 2.9 | .01 | 4.2 | .16 | 12.81 | 8.41 | 17.64 |
| O | 3.5 | .49 | 4.8 | 1.00 | 16.80 | 12.25 | 23.04 |
| N | 4.6 | 3.24 | 5.5 | 2.89 | 25.30 | 21.16 | 30.25 |
| D | 3.4 | .36 | 4.8 | 1.00 | 16.32 | 11.56 | 23.04 |
| 1960 | | | | | | | |
| J | 2.8 | -- | 4.3 | .25 | 12.04 | 7.84 | 18.49 |
| F | 2.7 | .01 | 4.2 | .16 | 11.34 | 7.29 | 17.64 |
| M | 3.2 | .16 | 4.5 | .49 | 14.40 | 10.24 | 20.25 |
| A | 3.5 | .49 | 4.3 | .25 | 15.05 | 12.25 | 18.49 |
| M | 3.8 | 1.00 | 4.2 | .16 | 15.96 | 14.44 | 17.64 |
| J | 3.9 | 1.21 | 4.4 | .36 | 17.16 | 15.21 | 19.36 |
| J | 4.1 | 1.69 | 4.7 | .81 | 19.27 | 16.81 | 22.09 |
| A | 4.8 | 4.00 | 5.1 | 1.69 | 24.48 | 23.04 | 26.01 |
| S | 4.3 | 2.25 | 5.4 | 2.56 | 23.22 | 18.49 | 29.16 |
| O | 4.8 | 4.00 | 5.7 | 3.61 | 24.51 | 23.04 | 32.49 |
| N | 5.5 | 7.29 | 6.3 | 6.25 | 34.65 | 30.25 | 39.69 |

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| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| **1960 cont'd** | | | | | | | |
| D | 5.6 | 7.84 | 6.3 | 6.25 | 35.28 | 31.36 | 39.69 |
| **1961** | | | | | | | |
| J | 5.1 | 5.29 | 6.2 | 5.76 | 31.62 | 26.01 | 38.44 |
| F | 5.1 | 5.29 | 6.3 | 6.25 | 32.13 | 26.01 | 39.69 |
| M | 5.0 | 4.84 | 6.3 | 6.25 | 31.50 | 25. | 39.69 |
| A | 5.7 | 8.41 | 5.9 | 4.41 | 33.63 | 32.49 | 34.81 |
| M | 5.9 | 9.61 | 5.6 | 3.24 | 33.04 | 34.81 | 31.36 |
| J | 4.9 | 4.41 | 5.3 | 2.25 | 25.97 | 25.01 | 28.09 |
| J | 4.3 | 2.25 | 5.3 | 2.25 | 22.79 | 18.49 | 28.09 |
| A | 3.9 | 1.21 | 5.2 | 1.96 | 20.28 | 15.21 | 27.04 |
| S | 3.9 | 1.21 | 5.1 | 1.69 | 19.89 | 15.21 | 26.01 |
| O | 3.7 | .81 | 5.0 | 1.44 | 18.50 | 13.69 | 25. |
| N | 3.3 | .25 | 5.1 | 1.69 | 16.83 | 10.89 | 26.01 |
| D | 3.2 | .16 | 4.8 | 1.00 | 15.36 | 10.24 | 23.04 |
| **1962** | | | | | | | |
| J | 3.0 | .04 | 4.7 | .81 | 14.10 | 9. | 22.09 |
| F | 3.0 | .04 | 4.5 | .49 | 13.50 | 9. | 20.25 |
| M | 3.0 | .04 | 4.4 | .36 | 13.20 | 9. | 19.36 |
| A | 3.0 | .04 | 3.9 | .01 | 11.70 | 9. | 15.21 |
| M | 3.2 | .16 | 3.8 | -- | 12.16 | 10.24 | 14.44 |
| J | 3.1 | .09 | 4.0 | .04 | 12.40 | 9.61 | 16. |
| J | 3.5 | .49 | 4.2 | .16 | 14.70 | 12.25 | 17.64 |
| A | 3.6 | .64 | 4.4 | .36 | 15.84 | 12.96 | 19.36 |
| S | 3.1 | .09 | 4.4 | .36 | 13.64 | 9.61 | 19.36 |
| O | 3.2 | .16 | 4.5 | .49 | 14.40 | 10.24 | 20.25 |
| N | 3.1 | .09 | 4.6 | .64 | 14.26 | 9.61 | 21.16 |
| D | 3.2 | .16 | 4.7 | .81 | 15.04 | 10.24 | 22.09 |
| **1963** | | | | | | | |
| J | 3.0 | .04 | 4.8 | 1.00 | 14.40 | 9. | 23.04 |
| F | 3.0 | .04 | 4.6 | .64 | 13.80 | 9. | 21.16 |
| M | 3.0 | .04 | 4.4 | .36 | 13.20 | 9. | 19.36 |
| A | 2.5 | .09 | 4.2 | .16 | 10.50 | 6.25 | 17.64 |
| M | 2.7 | .01 | 4.2 | .16 | 11.34 | 7.29 | 17.64 |
| J | 2.5 | .09 | 4.1 | .09 | 10.25 | 6.25 | 16.81 |
| J | 2.4 | .16 | 4.2 | .16 | 10.08 | 5.76 | 17.64 |
| A | 2.3 | .25 | 4.2 | .16 | 9.66 | 5.29 | 17.64 |
| S | 2.4 | .16 | 4.1 | .09 | 9.84 | 5.76 | 16.81 |
| O | 2.3 | .25 | 4.1 | .09 | 9.43 | 5.29 | 16.81 |
| N | 2.6 | .04 | 4.1 | .09 | 10.66 | 6.76 | 16.81 |
| D | 2.4 | .16 | 4.1 | .09 | 9.84 | 5.76 | 16.81 |
| **1964** | | | | | | | |
| J | 2.9 | .01 | 4.0 | .04 | 11.60 | 8.41 | 16. |
| F | 2.5 | .09 | 3.9 | .01 | 9.75 | 6.25 | 15.21 |
| M | 2.5 | .09 | 3.9 | .01 | 9.75 | 6.25 | 15.21 |
| A | 2.5 | .09 | 3.8 | -- | 9.50 | 6.25 | 14.44 |
| M | 2.4 | .16 | 3.8 | -- | 9.12 | 5.76 | 14.44 |
| J | 2.3 | .25 | 3.7 | .01 | 8.51 | 5.29 | 13.69 |
| J | 2.2 | .36 | 3.6 | .04 | 7.92 | 4.84 | 12.96 |
| A | 1.8 | 1.00 | 3.5 | .09 | 6.30 | 3.24 | 12.25 |
| S | 2.0 | .64 | 3.4 | .16 | 6.80 | 4. | 11.56 |
| O | 2.4 | .16 | 3.4 | .16 | 8.16 | 5.76 | 11.56 |
| N | 1.9 | .81 | 3.4 | .16 | 6.46 | 3.61 | 11.56 |
| D | 1.9 | .81 | 3.4 | .16 | 6.46 | 3.61 | 11.56 |

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1965 | | | | | | | |
| J | 1.8 | 1.00 | 3.3 | .25 | 5.49 | 3.24 | 10.89 |
| F | 1.8 | 1.00 | 3.3 | .25 | 5.49 | 3.24 | 10.89 |
| M | 1.7 | 1.21 | 3.2 | .36 | 5.44 | 2.89 | 10.24 |
| A | 1.8 | 1.00 | 3.1 | .49 | 5.58 | 3.24 | 9.61 |
| M | 1.5 | 1.69 | 3.0 | .64 | 4.50 | 2.25 | 9. |
| J | 1.4 | 1.96 | 2.9 | .81 | 4.06 | 1.96 | 8.41 |
| J | 1.5 | 1.69 | 3.0 | .64 | 4.50 | 2.25 | 9. |
| A | 1.6 | 1.44 | 3.0 | .64 | 4.80 | 2.56 | 9. |
| S | 1.5 | 1.69 | 2.9 | .81 | 4.35 | 2.25 | 8.41 |
| O | 1.4 | 1.96 | 2.7 | 1.21 | 3.78 | 1.96 | 7.29 |
| N | 1.4 | 1.96 | 2.6 | 1.44 | 3.64 | 1.96 | 6.76 |
| D | 1.3 | 2.25 | 2.6 | 1.44 | 3.38 | 1.69 | 6.76 |
| 1966 | | | | | | | |
| J | 1.3 | 2.25 | 2.6 | 1.44 | 3.38 | 1.69 | 6.76 |
| F | 1.3 | 2.25 | 2.6 | 1.44 | 3.38 | 1.69 | 6.76 |
| M | 1.1 | 2.89 | 2.3 | 2.25 | 2.53 | 1.21 | 5.29 |
| A | 1.0 | 3.24 | 2.1 | 2.89 | 2.10 | 1. | 4.41 |
| M | 1.0 | 3.24 | 2.1 | 2.89 | 2.10 | 1. | 4.41 |
| J | 1.0 | 3.24 | 2.2 | 2.56 | 2.20 | 1. | 4.84 |
| J | 1.2 | 2.56 | 2.4 | 1.96 | 2.88 | 1.44 | 5.76 |
| A | 1.1 | 2.89 | 2.4 | 1.96 | 2.64 | 1.21 | 5.76 |
| S | 1.0 | 3.24 | 2.1 | 2.89 | 2.10 | 1. | 4.41 |
| O | .9 | 3.61 | 2.0 | 3.24 | 1.80 | .81 | 4.00 |
| N | 1.0 | 3.24 | 2.1 | 2.89 | 2.10 | 1. | 4.41 |
| D | 1.2 | 2.56 | 2.3 | 2.25 | 2.76 | 1.44 | 5.29 |
| 1967 | | | | | | | |
| J | 1.2 | 2.56 | 2.3 | 2.25 | 2.76 | 1.44 | 5.29 |
| F | 1.3 | 2.25 | 2.4 | 1.96 | 3.12 | 1.69 | 5.76 |
| M | 1.4 | 1.96 | 2.6 | 1.44 | 3.64 | 1.96 | 6.76 |
| A | 1.7 | 1.21 | 2.6 | 1.44 | 4.42 | 2.89 | 6.76 |
| M | 1.8 | 1.00 | 2.7 | 1.21 | 4.86 | 3.24 | 7.29 |
| J | 1.7 | 1.21 | 2.6 | 1.44 | 4.42 | 2.89 | 6.76 |
| J | 1.8 | 1.00 | 2.8 | 1.00 | 5.04 | 3.24 | 7.84 |
| A | 1.7 | 1.21 | 2.6 | 1.44 | 4.42 | 2.89 | 6.76 |
| S | 1.6 | 1.44 | 2.4 | 1.96 | 3.84 | 2.56 | 5.76 |
| O | 1.6 | 1.44 | 2.3 | 2.25 | 3.68 | 2.56 | 5.29 |
| N | 1.5 | 1.69 | 2.3 | 2.25 | 3.45 | 2.25 | 5.29 |
| D | 1.5 | 1.69 | 2.2 | 2.56 | 3.30 | 2.25 | 4.84 |
| 1968 | | | | | | | |
| J | 1.4 | 1.96 | 2.3 | 2.25 | 3.22 | 1.96 | 5.29 |
| F | 1.4 | 1.96 | 2.3 | 2.25 | 3.22 | 1.96 | 5.29 |
| M | 1.7 | 1.21 | 2.2 | 2.56 | 3.74 | 2.89 | 4.84 |
| A | 1.4 | 1.96 | 2.1 | 2.89 | 2.94 | 1.96 | 4.41 |
| M | 1.4 | 1.96 | 2.2 | 2.56 | 3.08 | 1.96 | 4.84 |
| J | 1.3 | 2.25 | 2.2 | 2.56 | 2.86 | 1.69 | 4.84 |
| J | 1.3 | 2.25 | 2.3 | 2.25 | 2.99 | 1.69 | 5.29 |
| A | 1.3 | 2.25 | 2.3 | 2.25 | 2.99 | 1.69 | 5.29 |
| S | 1.4 | 1.96 | 2.1 | 2.89 | 2.94 | 1.96 | 4.41 |
| O | 1.3 | 2.25 | 2.0 | 3.24 | 2.60 | 1.69 | 4. |
| N | 1.2 | 2.56 | 2.0 | 3.24 | 2.40 | 1.44 | 4. |
| D | 1.1 | 2.89 | 2.0 | 3.24 | 2.20 | 1.21 | 4. |

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| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1969 | | | | | | | |
| J | 1.1 | 2.89 | 2.1 | 2.89 | 2.31 | 1.21 | 4.41 |
| F | 1.0 | 3.24 | 2.1 | 2.89 | 2.10 | 1. | 4.41 |
| M | 1.0 | 3.24 | 2.0 | 3.24 | 2. | 1. | 4. |
| A | .9 | 3.61 | 2.0 | 3.24 | 1.80 | .81 | 4. |
| M | 1.0 | 3.24 | 2.0 | 3.24 | 2. | 1. | 4. |
| J | 1.1 | 2.89 | 2.1 | 2.89 | 2.31 | 1.21 | 4.41 |
| J | 1.1 | 2.89 | 2.2 | 2.56 | 2.42 | 1.21 | 4.84 |
| A | 1.1 | 2.89 | 2.1 | 2.89 | 2.31 | 1.21 | 4.41 |
| S | 1.1 | 2.89 | 2.2 | 2.56 | 2.42 | 1.21 | 4.84 |
| O | 1.1 | 2.89 | 2.2 | 2.56 | 2.42 | 1.21 | 4.84 |
| N | 1.4 | 1.96 | 2.3 | 2.25 | 3.22 | 1.96 | 5.29 |
| D | 1.6 | 1.44 | 2.3 | 2.25 | 3.68 | 2.56 | 5.29 |
| 1970 | | | | | | | |
| J | 1.9 | .81 | 2.5 | 1.69 | 4.75 | 3.61 | 6.25 |
| F | 1.9 | .81 | 2.6 | 1.44 | 4.94 | 3.61 | 6.76 |
| M | 2.0 | .64 | 2.7 | 1.21 | 5.40 | 4. | 7.29 |
| A | 2.6 | .04 | 3.1 | .49 | 8.06 | 6.76 | 9.61 |
| M | 2.5 | .09 | 3.6 | .04 | 9. | 6.25 | 12.96 |
| J | 2.4 | .16 | 3.7 | .01 | 8.88 | 5.76 | 13.69 |
| J | 2.3 | .25 | 3.5 | .09 | 8.05 | 5.29 | 12.25 |
| A | 2.2 | .36 | 3.7 | .01 | 8.41 | 4.84 | 13.69 |
| S | 2.6 | .04 | 4.1 | .09 | 10.66 | 6.76 | 16.81 |
| O | 4.1 | 1.69 | 4.4 | .36 | 14.76 | 16.81 | 19.36 |
| N | 4.6 | 3.24 | 4.4 | .36 | 20.24 | 21.16 | 19.36 |
| D | 3.7 | .81 | 4.4 | .36 | 16.28 | 13.69 | 19.36 |
| TOTAL | 553.60 | 414.06 | 746.00 | 310.21 | 2410.41 | 1963.16 | 3104.64 |

Summary Worksheet for Estimating Unemployment 24

| | | | |
|---|---|---|---|
| 1 | I. BASIC DATA | December | 1 |
| 2 | A. Current Employment | | 2 |
| 3 | State UI-covered (private wage and salary). . . | 385,040 | 3 |
| 4 | Federal Government. . . . . . . . . . . . . . . | 25,020 | 4 |
| 5 | Railroad. . . . . . . . . . . . . . . . . . . . | 9,510 | 5 |
| 6 | Total Covered Employment (sum of lines 3,4,&5). | 419,570 | 6 |
| 7 | Small firms (private wage and salary) . . . . . | 19,130 | 7 |
| 8 | Nonprifit institutions (private wage & salary). | 17,950 | 8 |
| 9 | Domestics . . . . . . . . . . . . . . . . . . . | 24,060 | 9 |
| 10 | Nonagricultural self-employed & unpaid family . | 67,900 | 10 |
| 11 | Agricultural wage and salary. . . . . . . . . . | 13,630 | 11 |
| 12 | Foreign workers. . . . . . . . . . . . . . . . . | (1,000) | 12 |
| 13 | Agricultural self-employed & unpaid family. . . | 35,070 | 13 |
| 14 | State and local government. . . . . . . . . . . | 58,410 | 14 |
| 15 | Noncovered Employment (sum of lines 7,8,9,10,11, 13, and 14). . . . . . . . . . . . . . . . . . | 236,150 | 15 |
| 16 | Current Employment (sum of lines 6 and 15). . . | 655,720 | 16 |
| | | | |
| 17 | B. Claims Data: State UI | | 17 |
| 18 | Insured unemployment. . . . . . . . . . . . . . | 19,896 | 18 |
| 19 | Insured less partials . . . . . . . . . . . . . | 18,264 | 19 |
| 20 | Initial claims. . . . . . . . . . . . . . . . . | 4,114 | 20 |
| 21 | TIME LAPSE RATIO. . . . . . . . . . . . . . . . | .11 | 21 |
| 22 | Disqualified nonmonetary (Number in status per supplement no. 2). . . . . . . . . . . . . . | 390 | 22 |
| | | | |
| 23 | C. Claims Data: Other programs (Insured Unemployment) | | 23 |
| 24 | Federal civilian. . . . . . . . . . . . . . . . | 333 | 24 |
| 25 | Railroad. . . . . . . . . . . . . . . . . . . . | 1,240 | 25 |
| 26 | UCV and UCX . . . . . . . . . . . . . . . . . . | 695 | 26 |
| 27 | Temporary extended duration . . . . . . . . . . | 4,014 | 27 |
| | | | |
| 28 | II. COMPUTATION OF TOTAL UNEMPLOYMENT ESTIMATE | | 28 |
| 29 | A. Unemployment Related to Covered Employment | | 29 |
| 30 | Insured less partials (Repost from line 19) . . | 18,264 | 30 |
| 31 | (Sum of lines 3 and 30) . . . . . . . . . . . . | 403,304 | 31 |
| 32 | INSURED LESS PARTIALS UNEMPLOYMENT RATE (Line 30/Line 31). . . . . . . . . . . . . . . . . | .045 | 32 |
| 33 | Unemployed Exhaustees (see supplement No. 4) . | 7,111 | 33 |
| 34 | (Sum of lines 30 and 33). . . . . . . . . . . . | 25,375 | 34 |
| 35 | (Sum of lines 3 and 34) . . . . . . . . . . . . | 410,415 | 35 |
| 36 | INSURED PLUS EXHAUSTEE UNEMPLOYMENT RATE (Line 34 / Line 35). . . . . . . . . . . . . . . . | .062 | 36 |
| 37 | Unemployed disqualified (see supplement NO.2) . | 312 | 37 |
| 38 | Delayed filers and never filers (see supplement No. 5) . . . . . . . . . . . . . . . . . . . | 1,991 | 38 |
| 39 | Unemployment Related to State Covered Employment (Sum of lines 30,33, 37,&38). . | 27,678 | 39 |
| 40 | (Sum of lines 3 and 39) . . . . . . . . . . . . | 412,718 | 40 |
| 41 | STATE COVERED UNEMPLOYMENT RATE (Line 39 / Line 40) . . . . . . . . . . . . . . . . . . . | .067 | 41 |
| 42 | RATIO STATE COVERED TO STATE INSURED (Line 39/ Line 18) . . . . . . . . . . . . . . . . . . | 1.39 | 42 |

| | | |
|---|---|---|
| 43 | Federal Covered Unemployment (Line 24 times Line 42) . . . . . . . . . . . . . . . | 463 | 43 |
| 44 | (Sum of lines 4 and 43) . . . . . . . . . . . . . | 25,483 | 44 |
| 45 | FEDERAL COVERED UNEMPLOYMENT RATE (Line 43 / Line 44) . . . . . . . . . . . . . | .021 | 45 |
| 46 | Railroad covered unemployment (Line 25 times ½(1.0 plus line 42)) . . . . . . . . . | 1,488 | 46 |
| 47 | Total Other Covered Unemployment (Sum of lines 43 and 46) . . . . . . . . . . . . | 1,951 | 47 |
| 48 | TOTAL COVERED UNEMPLOYMENT (Sum of lines 39&47) | 29,629 | 48 |

| 49 | B. Unemployment Related to Noncovered Employment | | 49 |
|---|---|---|---|
| 50 | Small firms(Line 7 and a rate the same as line 41 - See supplement No. 3) . . . . . . | 1,377 | 50 |
| 51 | Nonprofit institutions (Line 8 times a .02 rate - See supplement No. 3) . . . . . . | 359 | 51 |
| 52 | Domestics (Line 9 and a 3/4 rate of line 41; see supplement NO. 3). . . . . . . . . | 1,275 | 52 |
| 53 | Nonagricultural self-employed and unpaid family (Line 10 and a 1/5 rate of line 41; see Supplement No. 3) . . . . . . . . . . | 923 | 53 |
| 54 | Agricultural (wage and salary) (Line 11 and a 1; 1.5; or 2 rate of line 41; see supplement No. 3) . . . . . . . . . . | 2,116 | 54 |
| 55 | Agricultural self-employed and unpaid family (Line 13 and a 1/10 rate of line 41; see supplement No. 3). . . . . . . . . | 235 | 55 |
| 56 | State and local government (Line 14 and a 1/3 rate of line 41 or a 3/4 rate of line 45; see Supplement No. 3). . . . . . . . | 923 | 56 |
| 57 | UNEMPLOYMENT RELATED TO NONCOVERED EMPLOYMENT (Sum of lines 50 through 56) . . . . . . | 7,208 | 57 |

| 58 | C. New Entrant and Reentrant Unemployment | | 58 |
|---|---|---|---|
| 59 | Unemployed, excluding entrants (Sum of lines 48 and 57) . . . . . . . . . . . . | 36,837 | 59 |
| 60 | Entrant "B" factor from Supplement No. 6 . . . | .060 | 60 |
| 61 | (Line 59 times Line 60) . . . . . . . . . . | 2,210 | 61 |
| 62 | Employed plus unemployed, excluding entrants (Sum of lines 16 and 59) . . . . . . | 692,557 | 62 |
| 63 | Entrant "A" factor from Supplement No. 6. . . . | .0045 | 63 |
| 64 | (Line 62 times line 63) . . . . . . . . . . | 3,116 | 64 |
| 65 | Unemployed New Entrants and Reentrants (Sum of lines 61 and 64) . . . . . . . . . . | 5,326 | 65 |

| 66 | D. Total Work Force | | 66 |
|---|---|---|---|
| 67 | Employment (Line 16 plus line 12) . . . . . . | 656,720 | 67 |
| 68 | Total Unemployment (Sum of lines 59 and 65) . . | 42,163 | 68 |
| 69 | Work Force (Sum of lines 67 and 68) . . . . . | 698,883 | 69 |
| 70 | TOTAL UNEMPLOYMENT RATE (Line 68 / line 69) . . | .060 | 70 |

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