LEGISLATIVE REFERENCE LIBRARY
HD5711 .M56x
Minnesota. Dept - A guide to employment and unemploy
3 0307 00028 4763

790996
2 copies

A Guide To EMPLOYMENT & UNEMPLOYMENT STATISTICS

LEGISLATIVE REFERENCE LIBRARY
STATE OF MINNESOTA

HD
5711
.M56x

Statistical Services Office
MINNESOTA DEPARTMENT OF ECONOMIC SECURITY

A GUIDE TO EMPLOYMENT AND UNEMPLOYMENT STATISTICS

MINNESOTA DEPARTMENT OF ECONOMIC SECURITY

Research and Statistical Services Office
390 North Robert
St. Paul, Minnesota 55101

LEGISLATIVE REFERENCE LIBRARY
STATE OF MINNESOTA

July, 1978

PREFACE

Scarcely a day goes by that the news media does not make reference to some facet of labor market conditions at the national, state, or local level. Also, policy-makers, program administrators, researchers, and the general public have a continuing interest in labor market information, of which employment and unemployment statistics are, probably, uppermost in demand. However, because of differences in data bases and concepts, those who wish or need to evaluate and interpret changes in labor market conditions find it difficult to do so. Furthermore, there is a tendency to regard the statistics as precise measures of existing conditions rather than general indicators of change in the level of manpower utilization. The purpose of this publication is to help readers evaluate and interpret the published statistics by shedding light on the different concepts and methods that are used to estimate employment and unemployment and to point out some of the problems that are involved in the production of these estimates.

The preparation of this publication involved the efforts of a number of staff whose responsibilities were more or less divided according to their interests and competencies. Responsibility for the preparation of the materials was distributed as follows: Chapters I,II, and Section 7.5 of Chapter VII, by R. Pinola; Chapter III by R. Pinola and Gary Olsen; Chapters IV, VI, Section 7.1 and 7.2 of Chapter VII, and Appendix B by Wayne Graner; Chapter V and Section 7.3 of Chapter VII by Charles Cline, and Section 7.4 of Chapter VII by Gary Olsen; appendices A,C,D, and Bibliography by Sue Hamper. Typing was shared by Sharon Danielson, Linda Froncak, Jan McAllister, Elaine Morgan, and Yvonne Wells. Any errors of commission or omission are cheerfully shared by us all.

R. Pinola
July 1978

TABLE OF CONTENTS

Outline of
A Guide to Employment and Unemployment
Statistics

		Page
INTRODUCTION		vii
CHAPTER I:	Concepts and Definitions	1
1.1	Official Concepts and Definitions	1
1.2	Some Observations on the Labor Force and Work Force Statistics	6
1.3	Alternative Measures of Unemployment and Employment	7
1.4	Summary	14
CHAPTER II:	An Overview of Statistical Programs and Methods for Producing Employment and Unemployment Estimates	16
2.1	The Current Population Survey (CPS)	16
2.2	The 70-Step Handbook Method	19
2.3	The Current Employment Statistics (CES) Program	24
2.4	The Census-Share Method	27
2.5	The Claims-Share Method	28
2.6	Covered Employment and Unemployment	29
2.7	Summary	32
CHAPTER III:	The Current Population Survey	36
3.1	Historical Background	36
3.2	Sample Design	37
3.3	Data Collection and Estimation Procedures	40
3.4	Reliability of Estimates	44
CHAPTER IV:	The 70-Step Handbook Method	46
4.1	Employment	46
4.2	Unemployment	48
4.3	Labor Disputes	57
4.4	The Unemployment Rate	57
CHAPTER V:	Data Inputs to the 70-Step Handbook Method	58
5.1	Employment Inputs	58
5.2	Unemployment Inputs	63
5.3	Adjustments to the 70-Step Handbook Method	71

			Page
CHAPTER VI:	Techniques for Small Area Estimates		73
	6.1	Census-Share Method	73
	6.2	Claims-Share Method	74
CHAPTER VII:	Special Problems in Estimation		79
	7.1	Benchmarking to the Current Population Survey	79
	7.2	Extrapolation from the CPS	80
	7.3	Forced Additivity - Introduction	82
	7.3.1	Forced Additivity Illustrated	83
	7.3.2	General Impact of Forced Additivity in Estimates.	88
	7.3.3	The Minnesota Experience Under Forced Additivity.	90
	7.3.4	Problems Due to Additivity Adjustment and Summary	99
	7.4	Seasonally Adjusting Minnesota's Labor Force Data	101
	7.4.1	CPS Area - Past Years	102
	7.4.2	CPS Areas - Current Year	107
	7.4.3	Balance-of-State Areas	110
	7.5	Credibility and Use of Estimates	115
	7.5.1	The Credibility (Reliability) of Estimates	115
	7.5.2	Use of Estimates for Program Administration	124
APPENDICES:	A.	Walking Through the 70-Step Handbook Method	130
	B.	CPS Benchmarking	140
	C.	Data Comparisons: Official and Unofficial	147
	D.	Examples of Tabulations from BLS Publications Providing National Estimates of Employment and Unemployment	152
BIBLIOGRAPHY:			160

INTRODUCTION

As stated in the preface, the public is presently more interested about information on unemployment and employment than at any previous time. And they have good reason to be, for quite aside from indicating the general health of the economy, estimates of local unemployment play an inmense role in the assignment of Federal dollars to local projects and governmental units. Put quite directly, high unemployment rates mean dollar income, and the dollar allocations can be quite large.

The estimates of employment and unemployment used to allocate dollars and to report to govenmental units are termed official Labor Force estimates. With so much depending on the value of the estimate, it is not surprising that the units and agencies responsible for computing the estimates should receive frequent questions and, less often, criticisms. Usually these are sensible, but not infrequently they are based on fundamental misunderstandings and ignorance of the problems and practice of the estimation process. Again, at times the remarks require only short, simple answers, but at other times there is need for a more complete explanation of the procedure.

It is the purpose of this guide to provide a thorough discussion of the Labor Force estimation methodology. For those who wish an overview of the contents of the guide, this summary is provided.

One problem area in employment and unemployment estimation is that of deciding who is to be counted in each category. Another issue is the basis of geographical classification -- should the person be assigned to place on the basis of residence or place of work? Finally, should employment be based on a count of workers or a count of jobs. In Chapter I the definitions currently used to determine who is counted as employed, who as unemployed, and who as neither employed or unemployed

(and thereby not in the Labor Force) are discussed. The two bases upon which these measurements are made, the Labor Force which counts employment as the number of workers by place of residence as opposed to Work Force which counts employment as the number of jobs by place of employment, are also presented. The definitions of unemployment and employment are not without their critics, and Chapter I surveys the more substantial criticisms, including alternative definitions of unemployment, and suggested alternatives. This review is especially relevant since at present the National Commission on Employment and Unemployment Statistics is considering the entire issue of employment and unemployment estimation.

Moving on from the definitions of concepts to be measured and the basis of classification under them, Chapter II discusses the data and estimation programs which provide some of the more important measures of unemployment and employment. Two programs and approaches currently in use, the Current Population Survey (CPS) and 70-Step Handbook Method, are reviewed first. The CPS is a household sample which provides monthly estimates for the Nation, the ten largest states, and one or two of the largest Standard Metropolitan Statistical Areas (SMSA), and annual average estimates for all other states and additional SMSA's. The 70-Step Handbook method is employed to provide monthly estimates for the remaining forty states and SMSA's. It is this method which is the subject of most of the remaining Chapters. In addition, Chapter II discusses the two methods used to provide estimates for smaller areas within SMSA's and counties, the Census Share method and the Claimant Share method. Finally, related statistical programs used to provide information about employment are described. The first of these is the Current Employment Statistics (CES-790), a survey program which produces estimates of wage and salary employment by industry for the State and larger SMSA's. The second is the count of Covered Employment (covered under the State and Federal unemployment

are produced from records kept for administrative purposes and from computational routines. The many data elements which provide the basis for the end result estimates of total employment and unemployment are the primary subject of Chapter V. The chapter is a structured presentation of the data inputs used in the Handbook estimation process. Series data derived from ongoing estimation and administrative data programs; parameters (or factors), the values of which are provided only intermittently; and computational routines are listed and described.

Over the past several years, program requirements have dictated the computation of estimates of townships, small towns and villages, (these called Minor Civil Political Divisions), and parts of major cities. Neither the CPS nor the 70-Step Handbook provide estimates for these smaller areas; therefore, alternative methods of estimation have been applied. They proceed by breaking out desired portions of the estimates of employment and unemployment from larger areas (core disaggregation), generally according to ratios based on other data sources. Two methods have been applied, one is the Census Share Method, and the other is the Claimant Share Method. They are described in Chapter VI.

Application of unemployment statistics to the task of allocating Federal funds has led BLS to make changes in the estimation methodology. Frequently these changes have not been based on sound statistical principles designed to produce the best possible estimates of the individual state or subarea's labor force behavior. They have instead been the result of political and bureaucratic considerations designed to mask differences and inconsistencies that occur naturally when estimates produced by different methods and for different areas are compared. Many are concerned about the effect of these modifications on the accuracy and analytical value of the estimates when applied to their area. In Chapter VII the important

adjustments, as they are called, are discussed, and their effect analyzed. The topics are: (1) Benchmarking to the CPS; (2) Extrapolation from the CPS; (3) Forced Additivity; (4) Seasonally Adjusting Minnesota's Labor Force Data; and (5) Credibility and Use of Estimates.

Four appendicies are provided. Appendix A provides a numerical illustration of one month's estimate by the 70-Step Handbook Method and extrapolation adjustment. Through it, readers can work their way through the estimation process. Attachments are provided detailing some of the side calculations which are made. From it the reader will gain an understanding of the relation of separate parts to the whole. Appendix B applies to the CPS Benchmarking procedure. This appendix describes the process and explains the reason for some of its procedures. Algebraic and numerical illustrations are again provided so that understanding of steps in the procedure can be checked. Appendix C consists of the monthly series of 1974 for the State and the Minneapolis-St. Paul SMSA, as well as for Lac Qui Parle, Olmsted, and Roseau Counties. For each area, the Work Force, unadjusted Labor Force, and official Labor Force estimates are presented. The purpose is to illustrate the difference in level and movement among the three series to the reader. Finally, Appendix D contains reproductions of published employment and unemployment information. The source for each is cited. The reader should remember that the information in Appendix D is for the Nation and that similar data are not available on a State or substate area basis.

CHAPTER I

Concepts and Definitions

Over the years, varying concepts and definitions have been formulated for measuring employment and unemployment. While the concepts and definitions that are used to produce official estimates have changed only modestly since the 1940's, numerous proposals have been advanced by various interest groups to modify the officially used definitions in order to accommodate different notions of labor market conditions and what is to be measured.1/ Although our primary purpose in producing this Guide is to provide readers with a reference manual to the concepts and methods used to produce estimates of employment at the national, state, and local level, we also feel it useful to briefly describe and evaluate some of the more widely discussed proposals for developing alternative estimates of employment and unemployment. Thus, while the official concepts are based on the notion of an active labor supply, the alternatives are oriented to either expanding the concepts to include potential supply, or restricting the definition to the employed and only selected unemployed. Even official concepts differ between nations, depending on their respective philosophies and institutional arrangements regarding unemployment and employment. In this Chapter we shall first provide the reader with the definitions and concepts that are used to produce official estimates of employment and unemployment, after which proposals for developing alternative estimates will be discussed.

1.1 Official Concepts and Definitions

The Civilian Labor Force

The Civilian Labor Force consists of a count of all persons currently

1/ Most of the changes in definition have been made to eliminate ambiguities in job search criteria used to categorize persons either into or out of the labor force. In 1967, the lower age limit was changed from 14 to 16 years for the inclusion of actively seeking work or employed.

employed and unemployed, excluding members of the Armed Forces, by place of residence. For conceptual purposes, employment and unemployment are defined as follows in order that estimates are consistently developed over time and between areas.

The Employed

Employment consists of all persons who, in a survey week, did any work at all as paid employees, in their own business, profession, or farm, or who worked 15 hours or more as unpaid workers in an enterprise operated by a member of their family, and all those who were not working but who had jobs or businesses from which they were temporarily absent because of illness, bad weather, vacation, labor-management dispute, or personal reasons, whether or not they were paid by their employers for the time off or whether or not they were seeking jobs.2/

As defined above, it is evident that the term "employed" is broad based and includes more than those persons who are actively employed at a wage or salary for an industrial establishment. Thus, those who may have worked zero hours in the survey week would be considered employed if their absence from the job were for the above noted reasons. In other words, attachment to a defined job is a sufficient condition to be considered as employed, even though no work was performed, providing the individual was not absent for economic reasons such as a lay-off due to slack demand for goods or shortages of materials. Again, persons who may have worked only one hour for pay in the survey week of the 12th of the month would be classified as employed and not unemployed. On the other hand, persons who did volunteer work for religious or charitable organizations would not be counted as

2/ For further discussion on the employed and unemployed status of persons, readers are referred to the publications cited in the Bibliography which appears in the Appendix.

employed since their work was neither for pay nor a family owned business.

It is important to recognize that under the Labor Force concept, employment represents an unduplicated count of individuals employed. As we shall momentarily observe, this is distinct from the Work Force concept of employment where multiple jobholders are counted more than once.

The Unemployed

Unemployment counts under the Labor Force definition include all those persons who did not work in the survey week, who were not attached to a job as defined under the employed, who made specific efforts to find a job within the four-week period including the survey week, and who were available for work in the survey week except for temporary illness. The count includes persons who were waiting for a call-back to a job from which they had been laid off or were waiting to report to a new wage or salaried job within 30 days.

The distinction between employed and unemployed status becomes even more clear when the question of part-time work is considered. According to the official Bureau of Labor Statistics (BLS) definition, any person who works for pay for even one hour in the survey week is counted as employed rather than unemployed for estimation purposes.3/

The Unemployment Rate

This is a proportion of the Labor Force, represented by a percentage value, that is unemployed. By illustration, if the count of unemployed is 5,000 and that of employed is 95,000, the total labor force is 100,000 and the

3/ There are some seeming anomalies in this definition. For example, a full-time student who works only weekends would be considered by definition as employed, but according to the primary criteria established by the Bureau of Labor Statistics he should be classified as not in the labor force.

unemployment rate is $\frac{5,000}{100,000}$ x 100 or 5.0 percent.

Because seasonal factors will cause employment to rise and unemployment to fall at certain times of the year or, conversely, for employment to fall and unemployment to rise at other times of the year, the actual unemployment rates are, whenever possible, adjusted to eliminate the seasonal effects that are present in the data. This makes it possible to compare, say August, against September unemployment rates to determine whether an improvement or deterioration in unemployment conditions reflect a general underlying change in labor market conditions or simply the play of seasonal factors.

At present, Minnesota labor force employment and unemployment counts are not seasonally adjusted for reasons discussed in Chapter VIII. However, national data are seasonally adjusted because the method of deriving the estimates and a sufficiently long historical data series are such as to provide reasonably good seasonal factors.

The Civilian Work Force

As noted earlier, one of the differences between the Labor Force and Work Force concepts is the manner in which employment is counted. Differences also exist in the method by which counts of unemployment are derived. These differences will become apparent as we discuss Work Force estimates of employment and unemployment. We shall also have more to say on the use of these two concepts at the conclusion of this section on Official Concepts and Definitions. Meanwhile, the reader should understand that in either case, Labor Force or Work Force concept, they are comprised of the count of employment and unemployment although the counts are differently derived and, generally, differ for reasons that we shall note.

The Employed

Under the Work Force concept, employment estimates are based on the number of jobs, by place of employment, as distinct from a count of individuals, by place of residence, as is the practice under the Labor Force concept. Consequently, the employment counts for areas where there is little or no commuting will be larger under the Work Force than the Labor Force concept because more than one job will be held by some individuals. If, in addition, a large number of persons are commuting into an area for employment, this will produce a further inflation in the employment count. By the same token, if a multiple jobholder is laid off from one job, it could, conceivably, raise the count of unemployed under the Work Force concept while leaving the unemployment count under the Labor Force concept unchanged.

The Unemployed

Conceptually, unemployment under the Work Force concept is the same as under the Labor Force concept, but in practice, differences in the methods by which data are treated and derived produce differences in estimates. One of the primary factors that produces such differences is, that under the Work Force concept, a sizeable number of those who collected unemployment insurance in the survey week and who were counted as unemployed were also part-time workers. Such a condition develops when the earnings of an individual are below the forgiveness earnings clause of the unemployment insurance law of the State. However, starting in 1978, these individuals will be excluded from the unemployment counts as a new data base system becomes operational for the unemployment insurance program.

The Unemployment Rate

The method of calculation of the unemployment rate under the Work Force concept is the same as under the Labor Force concept, i.e., unemployment/

unemployment + employment, with the fraction converted to a percentage value. For the reasons cited above, the Work Force unemployment rate will differ from that of the Labor Force concept because of differences in the counts of unemployed and employed.

1.2 Some Observations on the Labor Force and Work Force Statistics

Until 1974, State Employment Security agencies produced only Work Force statistics for the State and substate areas using the 70-Step Method that was developed in the late 1950's by the Bureau of Employment Security of The U.S. Department of Labor. The 70-Step Method basically uses internally generated data and establishment payroll reports to develop estimates of unemployment and employment. To these estimates are added counts of employment and unemployment that are derived through the use of factors that represent historical relationships between noncovered groups and those covered by the internal and establishment reporting system.

Aside of problems resulting from the use of obsolete factors for estimating employment and unemployment of noncovered groups, the problems noted earlier made it imperative that some new method be developed to produce data which were comparable, on a nationwide basis, to those produced by the CPS. In addition, passage of the Comprehensive Employment and Training Act by Congress in 1973 directed the Secretary of Labor to produce labor market statistics that could be used to equitably allocate manpower revenue sharing funds and to effectively administer other programs. The result was that in late 1973, the Bureau of Labor Statistics (BLS) mandated a new methodology which was to be employed by the State Employment Security agencies for producing State and area estimates of employment and unemployment based on the Labor Force concept. Therefore, effective with January 1974, most States ceased producing Work Force estimates for all practical

purposes. Also, in the intervening period the States have been required to backdate their Labor Force estimates to January 1970.

Some of the problems that have developed in the use of the new methodology, together with a short discussion on the alleged superiority of labor force estimates for program administration are treated in Chapter VII. While current practice has pretty much rendered obsolete the development of Work Force estimates, it would be improper to state that the old data series is no longer of value or that the concept should be abandoned for program administration. As we shall point out in Chapter VII, there is a definite danger that too much haste may lead to "throwing out the baby with the bath water", so to speak. It should also be emphasized that the 70-Step Method is still the cornerstone upon which the new labor force estimates are prepared and that the modifications introduced have been largely limited to the introduction of new factors for noncovered groups and for converting multiple jobholding and place of work to unduplicated counts of employment by place of residence.

1.3 Alternative Measures of Unemployment and Employment

Over the years, there has been a fairly steady flow of criticism of the official measures of unemployment and employment. These criticisms have ranged from charges that the counts or estimates either grossly understate or overstate the unemployment problem. There is a tendency for the criticism to occur more frequently when labor market conditions are less bouyant and to wane when the unemployment rate is low. Also, the nature of the criticism often springs out of whatever concerns in social and economic policy are current or in vogue. Thus, as the War on Poverty became a national issue, increased attention was focused on unemployment and the manner in which it was measured. It is not the purpose of this Guide to

review all or most of the alternatives that have been proposed for revising the estimates, but to give the reader a frame of reference with which to interpret or evaluate the official data and some of the proposals that have been offered. Hence, we shall limit our discussion to those proposals which have received the most attention and which highlight the differences of opinion that prevail in measuring unemployment.

The Liberal Alternatives

The more liberal alternatives have a common attribute in that they involve relaxing the official criteria upon which estimates of unemployment are prepared. In this respect, they would expand or enlarge the count of unemployment by making the definition more inclusive in order to accommodate additional groups into the official estimates. Specifically, these proposals take on the following form.

Adjusting for Part-Time Employment

It is argued that a considerable portion of part-time employment is due to economic conditions and, that, the difference between part and full-time employment in such cases should be treated as involuntary unemployment. Philosophically, the proposal is attractive and appears reasonable, but it raises a serious question with regard to the proper measurement of such unemployment. All sorts of reasons exist for part-time employment, such as lack of skills, unavailability to work prescribed hours, reluctance to move, and unacceptable wage rates and working conditions; all of which may be exceedingly difficult to isolate and can be confused or treated as involuntary unemployment. It is debatable whether a respondent's answers to a set of questions, such as posed in the Current Population Survey, can provide an accurate basis on which to separate out involuntary from

voluntary unemployment.4/ Moreover, there is a real possibility for a conscious bias to be introduced into the estimates. From a practical view, it also poses the question as to whether full-time employment would be accepted by all part-time workers who are counted as involuntarily unemployed.

Adjustments for Underemployment

The problems discussed above with respect to part-time employment are essentially similar, but even more susceptible to measurement error in estimating underemployment. Underemployment is a highly subjective condition and involves some very heroic assumptions for proper identification and measurement. It is easy, for example, to categorize a person as underemployed who is trained as a Mechanical Engineer, but working as a Draftsman. It may well be, however, that such a person does not possess the requisite competencies to perform the jobs that are available in the labor market. Thus, one may have a condition where 100 job openings for a Mechanical Engineer exists in a given labor market even when 50 Mechanical Engineers are employed as Draftsmen and, yet, those who are employed as Draftsmen are not qualified or be able to perform the duties of a Mechanical Engineer as defined by the vacancies that exist. Also, the same type of reasons for underemployment may exist as were cited earlier under adjustments for part-time employment. All of this suggests that before any realistic appraisal or measurement of involuntary unemployment attributable to underemployment can be made, a truly heroic information system is necessary. Clearly, such a system does

4/ This problem already exists in the Current Population Survey for obtaining official counts of unemployed because, usually, one member of the household responds to survey questions for others. The fact that the mother in the household often responds for the husband and other members of the household makes a scientific measurement of the causes or even the status of unemployment subject to sizeable response errors. Moreover, the questions leave much to the imagination regarding the true employability status of a person. This is due to the fact that the employability status of a person is a highly individualistic notion and that considerable variation in the responses to questions can produce inaccuracy in the estimates.

not now exist and it is questionable whether it will exist for a long time. Nevertheless, this is not meant to imply that underemployment is not real nor that it is insignificant.

Adjustments for Discouraged Workers

Anyone who has participated in a search for a job knows full well that, after many rejections for employment, discouragement mounts, and withdrawal from the labor force is likely to follow. Also, we know that when labor market conditions are favorable, the number of discouraged workers declines. Here, again, while the notion of including the discouraged worker as part of the official count of unemployed seems reasonable and admirable, the problem of measurement tends to obviate against it. It would require redefining participation in the labor force to extend beyond active job search and, once one has crossed this threshold, the path is strewn with all sorts of side forays or excursions which exacerbate the problem of definition and measurement. Moreover, there are time constraints that need to be addressed such as: how long a person needsto have ceased searching for a job before he (she) is considered no longer classified as available for work or in the labor force?

In some ways, the unemployment problem of the discouraged worker is more severe than that of the part-time or underemployed workers, but it is probably best treated if it is separately measured rather than buried in the official count. There is the additional danger that the inclusion of the discouraged, along with the part-time and underemployed, in the official counts will produce unemployment estimates that are susceptible to larger sampling and response errors. Thus, instead of regarding a 7.0 percent estimate for October unemployment as a reasonably good statistic in that there is a high (95 percent) probability that the true rate falls somewhere between 6.8 and

7.2 percent, we would be confronted with a 95 percent confidence limit of a 6.5 to 7.5 percent unemployment rate instead.

Conservative Alternatives

In contrast to the liberal alternatives, conservative proposals for measuring unemployment would tend to reduce the count of unemployed from the currently used official estimates. By limiting the count in relation to the relative impact on categorical groups, these proposals represent an attempt to either measure the net cost of unemployment or to focus attention on selected groups among the jobless. In the case of the former, an attempt to resolve the problem is through the assignment of different weights to categorical groups of the jobless, while in the case of the latter, the problem is solved by calculating separate unemployment rates for each group. The former scheme obviously requires a highly subjective value judgement in assigning weights to different categorical groups among the jobless and, therefore, makes it more suspect as a good measure of the unemployment problem.

Structuring of Weights to Categorical Groups

As noted above, subjective value judgements are involved in assigning weights to counts of categorical groups who are currently suffering a spell of unemployment. Obviously, many different weighting systems can be formulated depending on one's penchant for experimentation. However, a system that uses the relative contribution of an unemployed member to family or household income can serve as a basis for the assigning of weights and could provide a form of objective economic criteria as a justification for its use. Furthermore, it seems amenable to application, albeit with difficulty. We might call such a system the "Relative Shares Method" of calculating unemployment counts. A highly simplistic example will illustrate how it could be used.

Suppose that family income studies showed that, on average, heads of households contributed 60 percent, while employed spouses and employed children contributed 30 percent and 10 percent, respectively, to total family income in households where both parents worked. Assume, further, that the current official counts of unemployment for each of these three categorical groups were three, two, and one millions respectively. Setting the head of household on a scale of 1.0, and unemployed spouses and unemployed children (16 years of age and over) on the same relative scale as their contribution to family income, we would have a new unemployment count of 4,170,000 as opposed to the current official count of 6,000,000.5/

From the above illustration it should be clear that in order to effect such a scheme would require not only detailed family income data, but a fairly complex cross-tabulation of unemployment counts for categorical groups. It also follows from the nature of the method that the orientation toward interpreting the resultant unemployment estimates will need to undergo change. This problem, however, should be easily surmounted since, in some ways, it is no different than interpreting the behavior of the Consumer Price Index in which six major, and a battery of subcomponents, enter into its derivation. In fact, the end result could, conceivably, make more sense than the data now developed.

Different Rates for Different Groups

The logic behind the provision of different rates for different groups is somewhat akin to that of the weighting system described above. In this case, however, no subjective valuation of weights is involved. The essential

5/ Setting 60 percent at a scale of 1.0, unemployed spouses and unemployed children 16 years of age and over would carry weights of 30/60 = .50 and 10/60 = .17 respectively, once decimals are rounded.

purpose of this proposal is to direct attention to the severity (or lack of severity) of the incidence of unemployment that is visited upon different groups. The choice of actual groups for whom rates should be developed depends on one's view of the unemployment problem. There are those who feel that the unemployment problem is really not that significant to those who suffer only short spells of joblessness and that much of the short duration unemployment is frictional and necessary to facilitate labor mobility and the efficient use of resources. Those who argue thusly would restrict the unemployment count or estimates to long-term duration, generally cited as 15 weeks or more for a given spell of involuntary joblessness. Others would include with the long-term unemployed those who are heads of households or who are the primary source of household income. A whole spectrum of variations can easily be developed so that some limitation on categorical groups for which rates would be calculated is essential. The difficulty with this problem is that, like the others discussed before, not everyone, or even a significant majority, would probably be happy with the results. Whatever system is developed there will be interest groups that feel the estimates and rates do not properly reflect the unemployment problem as it impacts on a particular segment of the population.

Screening Out Persons Without Strong Attachment to the Labor Force

Many critics of the official unemployment estimates argue that the concepts used for counting the unemployed are too inclusive. Rather than assign some weighting system as described above, or develop separate rates for categorical groups, they would have the Bureau of Census and the Bureau of Labor Statistics develop improved survey procedures for identifying unemployed persons who are not employable, as well as those who are only nominally attached to the labor force. Such persons would be excluded from the official estimates.

Of all the conservative proposals, this would probably be the most difficult to implement since it would require judgmental decisions by interviewers to classify unemployed individuals as not in the labor force if the responses to survey questions suggested that the person was not employable or not earnestly seeking work. It would require interviewers to all be like-thinking in order to have a consistent determination made across the Nation. While it is conceivable to narrow the error factor through a well constructed series of questions, it raises questions of social policy in the classification of individuals as unemployed.

1.4 Summary

In this brief introductory chapter we have reviewed the basic concepts and definitions that are used in the development of employment and unemployment estimates. We have also directed attention to some of the proposals that have been advanced to shed more light on the unemployment problem. It should be evident that, perhaps, one of the primary reasons why there is so much debate over measuring unemployment is that each of us have our individual ideas and biases as to what is important. Furthermore, even if we had 6, 20, or 100 different measures of unemployment, it is problematical whether we could agree as to their meaning and use.

To illustrate, some would use the unemployment rate as a predictor of future economic activity, while others would use the rate, along with employment growth or the ratio of employment to the population 16 years of age and over, to gauge the performance of the economy. Still others would use differential rates of unemployment to measure the welfare of particular groups in our society. On the other hand, the practicing economist would not only treat the estimates in all three of these contexts, but require additional data on unemployment for other uses such as evaluating potential labor supply and

productivity or the possible growth in output to be gained from further utilization of manpower resources. In all of this, one of the very important considerations to be kept in mind is whether the data reliably represents that which it purports to show and can be used for the ends for which it was meant. It is in reference to this question that this and the succeeding chapters should be read.

As a concluding note, readers should be mindful of the fact that, while it is difficult, if not impossible, to secure a tidy measure of frictional, structural, and demand-deficient unemployment, the official estimates include all three types of joblessness.6/ Although they cannot be neatly separated from the total, social and economic policy cannot afford to ignore the nature of the problems that each of these three types of unemployment engender.

6/ Frictional unemployment is that which is voluntary and usually of short duration. It is that level of unemployment which is consistent with full employment and, generally, represents a mismatch between workers and jobs which is attributable to inadequate or poor information. It is also unemployment which is essential to the effective functioning of any economic system by providing the needed mobility of manpower to satisfy the constant shifts in the demand for goods and services. Structural unemployment results when the worker's reservation or asking wage is unrealistic, or his skills are not required by the market. Thus, a skilled buggy maker who refuses to learn another skill, or accept a lower wage rate for jobs for which he could qualify, would be structurally unemployed. Structural unemployment also tends to be pernicious because it is not readily susceptible to treatment through policy measures that are geared to expand output and employment. Demand deficient unemployment is involuntary, and exists when the aggregate demand for goods and services falls short of what the economy is capable of producing. One way of measuring it is to translate the difference between actual and potential Gross National Product into a jobs equivalency. As we noted earlier, any tidy measure of the three types of unemployment is difficult to develop. One might, for example, declare the often expressed full employment level of unemployment (4.0 percent) as frictional, and the remainder as a combination of structural and demand deficient. However, unless the latter can be nicely delineated or measured, policies directed to eliminating demand deficient unemployment could be overly expansionist. Furthermore, most expansionist policies, if pursued alone, may actually raise the level of structural unemployment by raising the reservation wage.

CHAPTER II

An Overview of Statistical Programs and Methods for Producing Employment and Unemployment Estimates

Before proceeding with a description of the programs and methods currently used to produce employment and unemployment estimates, we wish to note that, while all of these programs enter into the development of estimates that are in conformance with the labor force concept, there are sharp distinctions in the manner in which the data are gathered and in their use as inputs. Thus, in the case of the Current Population Survey (CPS), the data are derived from a sampling of households and are used as direct inputs for producing national estimates. On the other hand, data for producing State and area estimates by the Handbook Method are obtained from a variety of sources, of which the two primary ones are establishment surveys of nonagricultural wage and salary employment and the operations of the State unemployment insurance system. These distinctions will become more clear as the various key programs are described. In addition, a chart showing the flow of data is provided at the conclusion of this chapter to reinforce the reader's comprehension of the role of the various data systems.

2.1 The Current Population Survey (CPS)

General Description and History of Development

This is a monthly survey of a national sample of households which is conducted by the Census Bureau for the Bureau of Labor Statistics for the purpose of developing current estimates of employment and unemployment for the Nation. Through special supplementation, the survey also provides annualized estimates of employment and unemployment for states and major metropolitan areas.

Although the labor force concepts of employment and unemployment were developed in the 1930's, the Survey was not begun until 1940 under the Works Progress Administration (WPA). The Survey was taken over by the Census

Bureau in 1942 and the sample was modified to make it more representative of the Nation. Revisions in the Survey Questionnaire, the Sample, Methods of Tabulation, and the Concepts of Employment and Unemployment have been made periodically to improve the estimates and to expand their coverage.

Mode of Derivation of Estimates

Each month, the Census Bureau samples approximately 56,000 households (over 100,000 persons) in 461 sampling areas covering 923 counties in the United States.1/ Although every State and the District of Columbia is represented in the sample, representation is not uniform by State. Rather the sample is constructed to provide representation of the different socio-economic and urban-rural configurations that make up the population of the Nation.

From this sample, each eligible household is interviewed, usually by telephone, by Census Bureau enumerators who request specific information of all members of the household, but particularly on those 16 years of age and over. The interviews are conducted during the week of the 19th of each month to track activity for the week of the 12th in order to assure good recall. The use of only one reference week in the month to represent labor market behavior for the month is predicated on the assumption that, given the size of the sample, interweek variations in labor market activity of individuals will average out, thereby providing a good profile of activity for the population for the

1/ Prior to January 1978, the national sample was comprised of 56,000 occupied household units, of which 47,000 were used to prepare national estimates, and the additional 9,000 household units comprised the supplementation introduced in 1975 to permit annual statistics to be generated for all 50 States and the District of Columbia to be used as controls for benchmarking State estimates prepared by the Handbook Method. More recently, additional supplementation has been introduced to permit CPS based monthly estimates of employment and unemployment to be made for selected large States and SMSA's.

entire month.2/

In order to avoid a bias from developing in the estimates due to the aging of the sample, a certain portion of the sample is replaced at periodic intervals. Also, a given fraction of sample households are excluded from the survey in order to avoid a response bias from creeping into the interviewing process when continuous sampling of households takes place. Finally, the sampling frame itself is periodically checked and revisions made to conform with changes taking place in the structure and location of the population.

Dissemination and Use of Estimates

Sample data are used to produce universe or population estimates of employment and unemployment, as well as estimates of the population 16 years of age and over that is not in the labor force. Additionally, data are developed on the characteristics of the employed, the unemployed, and those not in the labor force. Each month, the Bureau of Labor Statistics disseminates estimates of employment and unemployment for the Nation by age, sex, race, occupational status, duration of unemployment, and a host of other characteristics. An illustration of the type of tabulations that are regularly provided appears in the Appendix.

In addition to the monthly estimates, annualized data are developed on income and earnings from a supplementation of the regular CPS in March of each year. This data, together with more detailed information from the monthly surveys, is published by the Census Bureau and the Bureau of Labor Statistics in the

2/ Although the assumption generally holds true, Mother Nature sometimes plays tricks on even the best laid plans. For example, in January 1977, the reference week (9th through the 15th) preceded most of the economic problems that developed in the ensuing weeks due to the severe weather which was experienced in the Nation in the last half of January and the first half of February. As a result, unemployment and short work-week estimates were probably understated for the month.

form of special reports. Bibliographical listings of these reports can be obtained from either the Census Bureau or the Bureau of Labor Statistics.

Users of national estimates of employment and unemployment run the gamut from the President and Congress to program administrators, labor market researchers, unions and employer groups, and the general public. The CPS also provides annualized data for the States and major metropolitan areas that are used for benchmarking State and area estimates of employment and unemployment which are produced by research units in the respective State Employment Security agencies.

2.2 The 70-Step Handbook Method

General Description and History of Development

The 70-Step Handbook Method is one that is employed by research units of all State Employment Security agencies to produce State estimates of employment and unemployment on a monthly basis. A more abbreviated version of the 70-Step Method, called the 36-Step Method, is used to develop county and major sub-State estimates. Data for these estimates come from various sources, but the two key sources are the establishment surveys of nonagricultural wage and salary employment (called the BLS-790 or Current Employment Statistics Program) and the operations of the State unemployment insurance system.

The development of unemployment estimates at less than the national level was first instituted by the War Manpower commission during World War II in order to identify pockets of labor supply/demand imbalances in selected labor market areas. After World War II, emphasis was placed on identifying labor surplus areas and classifying them according to the severity of unemployment. The presumption was that through Federal development and assistance policies and programs, a melioration of economic distress could be achieved.

In 1950, the Bureau of Employment Security of the U.S. Department of Labor first produced a handbook on "Techniques for Estimating Unemployment" which laid out the procedures that State and area labor market analysts could use in developing data for identifying surplus labor areas. Improvements in the methodology continued to be made, but in the late 1950's, a concerted effort, under the direction of Vladimar Chavrid of the Bureau of Employment Security, was launched to produce a comprehensive manual that would enable research units and labor market analysts in the State Employment Security agencies to develop monthly estimates of employment and unemployment that were consistent over time and between substate areas. The result was the 70-Step Handbook Method for State estimates, and a later abbreviated version (the 36-Step Method) to produce county and major substate labor market estimates.

Although periodic revisions have been made for calculating some of the components that make up the total estimates, the 70-Step Handbook Method still remains the basic tool for estimating State and area employment and unemployment. Since 1974, these estimates have been adjusted to conform to Bureau of Labor Statistics standards and definitions of labor force status and to make them more compatible with the CPS-derived national data. The nature of these adjustments are more fully discussed in Chapter IV, while some of the problems resulting from these adjustments are treated in Chapter VII.

Mode of Derivation of Estimates

Chapters IV and V provide a detailed explanation of the 70-Step Method and the data inputs that are used for producing employment and unemployment estimates at the State level. However, for quick comparison with the CPS (which was described in 2.1), a terse description of the 70-Step Method is

here provided. Also, it offers a convenient transition to, and understanding of, the Current Employment Statistics program which is described in 2.3.

Employment estimates for the 70-Step Method are based primarily on nonagricultural wage and salary data secured through establishment surveys under the Current Employment Statistics (CES) program which individual States administer in cooperation with the Bureau of Labor Statistics. In Minnesota, approximately 3,000 establishments provide monthly reports on wage and salary employment to the Research and Statistical Services Office of the Department of Economic Security. These reports cover payroll employment for the week of the 12th of the month, a reference period which is the same as for the CPS. The reported employment of these sampled establishments are tabulated by industry and subsequently inflated to produce universe estimates of nonagricultural wage and salary employment for the State.

To the estimates of total nonagricultural wage and salary employment described above are added estimates of Domestics, Self-Employed, Unpaid Family, and Agricultural workers. These estimates are developed by using historical relationships between the Census, the CPS, the Current Employment Statistics, and the Unemployment Insurance statistical programs. Agricultural employment is provided by the U.S. Crop and Livestock Reporting Service, while employment for small, selected components, such as that of nonprofit organizations, is derived from a combination of sources.

Unemployment estimates are prepared using the building block 70-Step Method, which starts with weeks of unemployment claimed by claimants filing for benefits under the Unemployment Insurance program for the reference week of the 12th of the month.3/ To this base are added estimated counts of persons

3/ Improvements in the U.I. data base now make possible unduplicated counts of claimants with no earnings in place of the previously used weeks claimed count. This improvement insures better conformity with the labor force concept of unemployment.

who exhausted their benefits, those who either delayed filing or never filed for benefits, noncovered unemployed State and local government workers, noncovered unemployed private sector workers, and, finally, new and re-entrants to the labor force. Factors based on historical relationships, or developed through special studies, are used to estimate the unemployed who are not covered by the Unemployment Insurance law, together with the new and re-entrants to the labor force and the delayed and never filers.

As noted under the section, General Description and Historical Development, these independently derived estimates of employment and unemployment are adjusted to conform to the standards and definitions of the Bureau of Labor Statistics on labor force status and to make the estimates compatible in a conceptual sense to national estimates prepared from the CPS. These adjustments are primarily in the form of transforming employment estimates from place of work to place of residence, and the elimination of multiple job counts that are inherent in the establishment data of the Current Employment Statistics program.

At the less than the State level, a final adjustment to county and major substate labor markets is made so that the sum of county/SMSA estimates are equal to the independently derived State estimates. This is called the "Forced Additivity" adjustment which is more fully described in Chapter VII.

Dissemination and Use of Estimates

The Handbook estimates, when adjusted to meet Bureau of Labor Statistics conceptual and definitional standards, are used to classify labor market areas as labor surplus areas eligible for Federal aids under various economic and manpower development programs. On a national basis, over $16 billion of

Manpower Revenue Sharing, Public Works, and other Federal funds are allocated to States and areas on the basis of unemployment estimates developed through the Handbook estimates. In addition, the estimates serve as a basis for providing special Federal assistance to business and industry. For example, the eligibility of businesses for rural industrial development loans that are administered by the Farm Home Loan Administration are often evaluated in the context of area unemployment rates. Also, preferential bidding on Federal government contracts under the Buy American Act and Defense Manpower Policy No. 4, is available to businesses that are located in, or hire persons from,areas which are classified as labor surplus areas on the basis of the unemployment estimates prepared by the State Employment Security agency.

Myriad other uses are made of the State and area employment and unemployment estimates by public and private groups or individuals. For instance, over the past five years, county allocations of funds under the State Summer Youth Employment Act have been made in Minnesota using a formula developed by the Research Office of the Department of Economic Security which incorporates county unemployment rates for the months of June, July, and August for the three most recent years.

State and area estimates of employment and unemployment are disseminated by both the U.S. Department of Labor and the individual State Employment Security agencies through news releases and established publications. At the national level, the publication, Employment and Earnings, is issued monthly and provides comprehensive data from both the CPS (national estimates) and the 70-Step Handbook Method (State and major labor market estimates). Additional data on establishment employment, earnings, and hours worked are also found in this publication. Meanwhile, all 50 State

Employment Security agencies generally publish a monthly bulletin which provides employment and unemployment estimates, together with other labor market information, for their respective State.

2.3 The Current Employment Statistics (CES) Program

General Description and History of Development

As noted in 2.2 above, this program is the primary source of nonagricultural wage and salary employment estimates for the State. It also provides similar estimates for metropolitan areas (called Standard Metropolitan Statistical Areas). Because, at the State level, nonagricultural wage and salary employment constitutes the bulk of total employment, the data from the Current Employment Statistics program is the key to estimating total employment.4/ Thus, it is not surprising that the 70-Step Method utilizes this program as the cornerstone for employment estimation.

The history of the Current Employment Statistics program actually antedates both the CPS and the 70-Step Handbook Method. A limited program for collecting current employment statistics was inaugurated on a national basis shortly before United States entry into World War I to provide information for allocating manpower in critical areas of the Nation. Prior to World War II, a number of piecemeal efforts were made to develop a continuing and comprehensive program for collecting current employment statistics, but it was not until full development of the Standard Industrial Classification (SIC) system in the early 1940's that a systematic categorization of employment by industry became possible.

During the war years, the Bureau of Labor Statistics directed its efforts

4/ At the less than State level, data from the Current Employment Statistics program is only available for large metropolitan areas. Hence, nonagricultural wage and salary employment estimates are developed through linkages with employment data from the unemployment insurance program reporting system.

to the development of a national system of industry employment estimates, but after World War II, plans were quickly expanded to include the collection of data on a State and SMSA basis. Since 1947, the Current Employment Statistics program has been one of the most successful Federal-State cooperative efforts in the collection and development of socio-economic statistics. Not only has the program produced monthly estimates of nonagricultural wage and salary employment, but its extension to include hours and earnings data and labor turnover rates for selected industries has added to its value.

Mode of Derivation of Estimates

Each month, the Research and Statistical Services Office of the Minnesota Department of Economic Security gathers data on employment, earnings, and hours from a sample of approximately 3,000 employers (establishments). This information is collected on an industry basis and subsequently translated into industry and total nonagricultural wage and salary employment estimates using inflation factors based on survey sampling fractions for each industry.5/ As new data becomes available from delinquent reporters, revisions of preliminary estimates are made and published.

Once each year, the estimates are reviewed against benchmarked employment from the unemployment insurance program and a variety of other sources such as the Railroad Retirement Board and the Social Security records. Any revisions that are made are carried back to the monthly series through a wedging process that smooths out the discontinuity that would otherwise develop in the series. Also, a re-examination of the industry coding of establishments is made on a periodic basis to prevent carrying the same firm in a given industry when the nature of the product or service produced

5/ A similar data collection and estimation program exists in all 50 States, with the research arm of the State Employment Security agency responsible for administering the program in cooperation with the Bureau of Labor Statistics.

by the firm has changed. Additionally, the sample itself is subjected to review on a continuing basis to avoid industry under-representation when firms either drop out of the sample, change locations, or change the nature of their business.

Dissemination of the monthly employment, earnings, and hours estimates that are produced under the Current Employment Statistics program are made by the Research and Statistical Services Office through its quarterly publication, Review of Labor and Economic Conditions, and a monthly supplement, Current Minnesota Labor Market Conditions.6/ Annually, the Research Office also issues a publication entitled, Minnesota Work Force Data, which provides an up-to-date historical series on industry employment for the State. A similar publication policy normally exists in all 50 States, with monthly data disseminated as part of a total package of labor market information.

Use of Estimates

As noted earlier, the estimates are a direct and indispensable input to the 70-Step Handbook Method for estimating employment. Considerable use is also made of the employment, earnings, and hours estimates at the industry level for studying the impact of structural and the business cycle changes in the economy on specific industries. Overall, the data which is generated out of the Current Employment Statistics program is used by government, labor, industry, and researchers to track the performance of the economy. It is also one of the most reliable sources of trends in industry employment for the Nation and the States, and the only reliable source for monitoring current industry employment behavior at the national and State level.

6/ In Minnesota, six Regional Labor Market Information centers also publish quarterly and monthly bulletins that provide employment and unemployment data, together with other pertinent information on an area basis.

2.4 The Census-Share Method

General Description and History of Development

This method uses relationships that existed in the 1970 Census to allocate employment and unemployment from the county or metropolitan area (SMSA) to sub-labor markets, usually cities, of a given size. The method was officially introduced in 1971 to develop small area estimates for administering the Emergency Employment Act. Its use was further extended under the Comprehensive Employment and Training Act of 1973 and the Public Works Employment Act of 1976 to allocate funds to municipalities or consortiums of minor civil political divisions.

Mode of Derivation of Estimates

Ratios based upon data from the 1970 Census of Population are developed and used for distributing employment and unemployment from the county or SMSA to sub-labor markets. All prorated estimates in Minnesota are developed by the Research and Statistical Services Office of the Department of Economic Security using the abbreviated 36-Step Handbook Method estimates of county employment and unemployment as the base for applying the Census-Share ratios.

Dissemination and Use of Estimates

Primary use of the estimates is by the U.S. Department of Labor for allocating Manpower Revenue Sharing funds under the Comprehensive Employment and Training Act of 1973 to prime sponsors. Additionally, estimates have been produced for the Economic Development Administration of the U.S. Department of Commerce for establishing the eligibility of municipal governments for funding capital works under the Public Works Employment Act of 1976. All estimates are reviewed by the Bureau of Labor Statistics as to the fidelity with which the methodology is used for their derivation.

Dissemination of estimates for prime sponsor areas is made through official channels, but are also published for selected areas where the labor market is of sufficient size as to provide credibility of results. The Research and Statistical Services Office does not vouch for the credibility of Census-Share estimates and develops them only in response to a mandate from the U.S. Department of Labor.

2.5 Claims-Share Method

General Description and History of Development

The claims-share method uses a combination of unemployment insurance claims data, the 1970 Census, and more recent population estimates to develop estimates of employment and unemployment for selected counties and less than county civil political divisions. Population estimates are used to allocate county employment, whereas claims data are employed to allocate county unemployment to the specified minor civil political division (See Chapter VI for a complete description of this method). The method was officially broached by the BLS in December 1975 in a memorandum to State agency Research Chiefs as an alternative to the Census-Share method for disaggregating labor force estimates for a county or independent city within a labor market area. There was some experimentation with a procedure using claims data by some States in conjunction with the allocation of funds under the Public Works Act of 1976, but a fully developed procedure was not issued by the BLS until late 1977. Beginning in 1978, States with an improved U.I. data base were to begin using the Claims-Share method for disaggregating labor force estimates for counties and independent cities within labor market areas in accordance with the Prime Sponsor delineations prescribed under the Comprehensive Employment and Training Act (CETA) of 1973.

Mode of Derivation of Estimates

Employment estimates are derived by essentially the same procedure as under the Census-Share method, except that the most recent population estimates are used. The derivation of unemployment estimates involves a four step procedure which is oriented to separating out the experienced unemployed using the claims data, while using 1970 Census population data to disaggregate the new and reentrant unemployed. The final disaggregated unemployment estimate is the sum of the disaggregated experienced and the disaggregated new and reentrant unemployed.

Dissemination and Use of Estimates

As with the disaggregated estimates based on the Census-Share method, the results of the Claims-Share method are used by the U.S. Department of Labor for allocating funds under the Comprehensive Employment and Training Act of 1973, and by the Economic Development Administration for establishing eligibility for funding capital works under the Public Works Employment Act of 1976. The dissemination of estimates is made through official channels.

At present, the Research and Statistical Services Office uses the Claims-Share wherever possible. Problems still exist in the use of the Claims-Share method for disaggregating labor force estimates for interstate SMSA's because some States are unable to provide commuter claims data which are needed for the disaggregation procedure.

2.6 Covered Employment and Unemployment

General Description and History of Development

Covered employment is a term that is used to denote the employment which is covered by the unemployment insurance law of the State. On the other hand, covered unemployment is a count of persons who have established eligibility

for unemployment insurance and who have filed a claim for benefits.7/ Historically, data on covered employment dates from passage of the State's unemployment insurance law. Most State laws were enacted in the late 1930's as companion legislation to the Social Security Act of 1935. In the case of Minnesota, the law was passed in 1936 and benefits were first paid in 1938. Coverage of the law has, over the years, been extended and, it was estimated that, in 1977, in excess of 95 percent of all wage and salaried workers in Minnesota came under the law. Similar historical development in coverage has taken place in the other States.

Mode of Derivation of Estimates

Each quarter, employers who are liable for taxes under the unemployment insurance law must file a report indicating, for each month of the quarter, their payroll employment and total payroll. These reports are the basis on which the Research and Statistical Services Office develops total and industry counts of covered employment. The industry data is organized by four digits of the Standard Industrial Classification (SIC) code, except where insufficient product or activity detail makes such classification impossible.

Counts of unemployment are derived from the claims records of persons who filed for benefits.8/ Because the unemployment insurance claims statistics enter into the derivation of State and area unemployment estimates, it is essential that the weeks claimed counts be in accord with the reference

7/ It also includes persons who have exhausted their benefits, as well as those who for one reason or another did not file for benefits even if eligible to receive them.

8/ See footnote 3/ which refers to improvements made in the U.I. data base.

period that is used in the development of all official estimates of employment and unemployment. For this reason, the claims record for the week of the 12th of the month is used as the basis for determining the count of unemployed who have filed for and established eligibility.

Dissemination and Use of the Data

The statistics on covered employment are used for many purposes, but their use for estimating State and area employment is two-faceted. First, the data, when organized on an industry basis, is used for the design and selection of a sample of establishments under the Current Employment Statistics program which we described earlier. Secondly, the data are used, in conjunction with information from other sources, to benchmark the current employment estimates that have been prepared under the Current Employment Statistics program. This benchmarking takes place once a year and normally uses data for the first quarter.9/ In addition to its use in the current employment estimation program, covered employment statistics and wages are used by the U.S. Department of Commerce for compiling estimates of earnings and personal income, by source, for the Nation and the individual States. The data are also used to study industrial activity trends for less than State geographical areas.

As explained earlier (See 2.2), the unemployment insurance claims statistics are a direct input into the 70-Step Handbook Method for estimating unemployment. Claims data are also used for policy and administrative analysis, as

9/ The reader may legitimately wonder why the covered employment data is not directly used to estimate current monthly employment. The primary reason is, that under the best of circumstances, there is a time lapse of six months from the date when the employment occurred to the time when reports processing is completed. Therefore, it is essential to have a system, such as the Current Employment Statistics program, which, through the use of statistical sampling, can generate an estimate of employment within 30 days from the time the reports are received from employers.

well as for research on income maintenance and the impact of business cycles on various industry and occupational groups in the labor force.

Both covered employment and insured unemployment data are disseminated through various channels of communication. Summary information is provided either through press releases or regularly published periodicals issued by the State Employment Security agency. More detailed statistics are provided through special reports which often give information on an area basis as well. The research unit in each State Employment Security agency is the usual repository of covered employment and insured unemployment data and, through special arrangements, provides users with custom-tailored tabulations. Inasmuch as all State agencies operate under disclosure rules, any data that would lead to the identification of a firm or claimant cannot, of course, be publicly disseminated.

2.7 Summary

In this Chapter we have sought to provide the reader with a quick orientation to the major statistical programs that are the basis for producing National, State, and area estimates of employment and unemployment. It was noted that the Current Population Survey (CPS) is the source for national estimates of employment and unemployment based on the labor force concept, whereas the 70-Step Handbook Method, with BLS mandated adjustments, is employed by the State Employment Security agencies to produce State and area estimates that are compatible with national standards and concepts. We also showed that the Current Employment Statistics (CES) program and the operations of the unemployment insurance system are the primary sources of data for the 70-Step Handbook Method, but that other data sources or proxies for data must be utilized to fully cover the labor market activity of the population at the State and area level.

One of the side benefits of the Current Employment Statistical program is that it provides a current and reliable source of estimates of industrial wage and salary employment for both the Nation and the individual States which is not available elsewhere. Thus, the program is twice blessed; providing input to the 70-Step Handbook Method, and generating very useful information which can be used, in and of itself, for economic and labor market analysis. In somewhat similar fashion, we saw that covered employment and insured unemployment serve a dual purpose; e.g., for benchmarking nonagricultural wage and salary employment estimates, and as an input to the 70-Step Handbook Method.

To give the reader yet another perspective from which to view the major statistical programs for estimating employment and unemployment, the accompanying chart has been constructed to show the primary data flows of each program.

Outline of Major Statistical Programs for Labor Force Estimation

Program	Source of Data	Manipulation of Data	Controls for Estimate	Geographic Area Covered
Current Population Survey				
1. Employment	Nat'l. Stratified Random Sample of 56,000 Households	Estimates for Population Prepared From Sample	1970 Census of Population and Housing Special Housing Surveys	Nation, Largest States, and Major SMSA's on Monthly Basis. State and Selected SMSA's on Annual Basis.
2. Unemployment	Same as Above	Same as Above	Same as Above	Same as Above
70-Step Handbook Method				
1. Employment				
A. Nonagricultural Wage and Salary	Current Employment Statistics (CES-790) Monthly Survey of Establishments	CES-790 x .95411 to Convert Estimates From Number of Jobs by Place of Work to Number of Persons by Place of Residence	Annual 70-Step Estimates Forced to CPS. Annual Average for the State. Monthly Extrapolated From Previous December CPS Adjusted Level Through Multiplicative Model.	State County and Major Area Estimates Developed by Modified 36-Step Method.
B. Domestics & Nonag. Self-Employed and Unpaid Family	BLS Estimating Procedure	None. Procedure Provides Residence Based Estimate		
C. Agriculture	USDA Crop & Livestock Quarterly Reports, Adjusted by BLS Procedures	Same as Above		

Continued - Outline of Major Statistical Programs for Labor Force Estimation

Program	Source of Data	Manipulation of Data	Controls for Estimate	Geographic Area Covered
2. Unemployment				
A. Insured Unemployt.	From Internal Record	None: Count is by Place of Residence	Annual Same as Employment Monthly Extrapolated From Previous December CPS	State County and Major Area Estimated Developed by Modified 36-Step Method
B. Exhaustees	BLS Estimating Procedure	Same as Above	Adjusted Level Through Multiplicative Model	
C. Delayed and Never Filers	BLS Estimating Procedure	Same as Above		
D. Federal Unemployt.	From Internal Records	Same as Above		
E. Railroad Unemployt.	R.R. Retirement Board	Same as Above		
F. Noncovered Unemployment	BLS Estimating Procedures	Same as Above		
G. New & Reentrants to Labor Force	BLS Estimating Procedures	Same as Above		

CHAPTER III

The Current Population Survey

3.1 Historical Background

In the 1930's, while unemployment was a critical problem, there was no satisfactory way of measuring its level. During the closing years of the decade, a large amount of work was done in order to develop an adequate tool for its measurement. As a result, in March 1940, the Works Progress Administration (WPA) began a sample survey to measure unemployment at the national level. It is this survey that eventually developed into what is now called the Current Population Survey (CPS).

The Works Progress Administration administered the sample survey from March 1940 until August 1942, at which time the responsibility was transferred to the Bureau of the Census. By October 1943, the Bureau of the Census had thoroughly revised the survey utilizing the principles of probability sampling. The new sample, more representative than that developed by the WPA, was drawn from 68 geographic areas comprising 125 counties and independent cities in the Nation. By 1945, there were approximately 25,000 households in the sample, of which about 21,000 were interviewed.

Since 1943 the CPS has undergone many changes in the way the data is collected and processed, together with repeated increases in sample size.1/ Beyond the normal updating of the sample, which was done after the 1960 and 1970 Censuses, the CPS sample has been expanded four times; in February 1954, May 1956, January 1967, and July 1975. The July 1975 expansion was

1/ In 1954, a major revision in sample design was made when the number of Primary Sampling Units (PSU's) was expanded from 68 to 230 in order to provide more area coverage. The number of household units in the sample remained unchanged at 25,000, but the estimating procedure was revised to improve the reliability of the estimates.

prompted by the labor force data requirements of the Comprehensive Employment and Training Act of 1973, and the need to provide annual average estimates of employment and unemployment for all 50 States for use in benchmarking labor force estimates that were produced by the 70-Step Handbook Method. Future expansions of the sample are currently planned to facilitate the production of more reliable State and major labor market estimates.2/

3.2 Sample Design

The CPS is a multi-stage stratified random sample of two independent national samples, called A and C design, of the U.S. population, and is used not only to develop national labor force estimates, but other socio-economic data.3/ The present sample is primarily based on the size and distribution of the Nation's population as of the 1970 Census. After the 1970 Census, the entire United States was divided into approximately 1,924 primary sampling units (PSU's). Each PSU consists of a geographic unit, usually an SMSA, county, or group of contiguous counties as a configuration representing a given demographic-economic profile of the Nation's population. The counties were grouped so as to be as heterogeneous as possible. In other words, the PSU was designed to be as diverse as possible within certain size constraints in order to provide as good a representation of a geographic area as possible.

Once the PSU's had been defined, they were grouped into 376 strata, with 156 PSU's comprising a strata by themselves, out of which 146 constituted the

2/ It is doubtful that the CPS will completely replace the 70-Step Handbook Method in the forseeable future. The planned further sample expansions will, in most cases, simply enhance the quality of data for benchmarking the 70-Step estimates. By 1976, the sample consisted of 56,000 household units, of which approximately 47,000 were sampled each month to produce national estimates, while 9,000 represented the supplementation required to produce annualized State estimates. For a more detailed discussion of this supplementation see, "Expansion of CPS to Provide Reliable State Estimates of Unemployment", by Cathryn Dippo, an unpublished Bureau of Census paper. Readers interested in a comprehensive review of the CPS should refer to, The Current Population Survey: Design and Methodology, a Bureau of Census publication issued in January 1978.

3/ The CPS is a multi-stage sample because the C design sample represents a subsampling from within the A design sample.

largest SMSA's.4/ The remaining 220 strata consisted of several PSU's each and were grouped so as to be as homogeneous as possible and approximately equal in terms of 1970 population. This stratification was done within each of the four Census regions using the following characteristics: SMSA-non-SMSA; percent of population living in urban area; proportion of population that is non-white; per capita retail sales; rate of population change from 1960 to 1970; percent of population in manufacturing; and principal industries.

Selection of PSU's

For each of the 156 strata with only one PSU, the PSU is in the sample with certainty. Since, in these cases, the PSU and strata are coterminous, the PSU represents only itself and is thus called a Self-Representing PSU (SR-PSU). The remaining 220 strata with more than one nonself-representing PSU were combined into 110 homogeneous pairs. From each of the paired strata, one stratum was then randomly picked, each with equal probability. In turn, from each of these randomly picked strata, one PSU was selected to be in the sample with a probability proportionate to its population. From the remaining 110 strata, two PSU's were randomly selected, again with a probability proportionate to their population. However, since the two PSU's were selected independently and with replacement, it is possible that one PSU would be selected twice. This happened in 25 cases out of the 110 strata. The selected PSU's each represent a group of PSU's (a stratum) in the sample and are, thus nonself-representing (NSR-PSU's). In summary, the selection process yields 156 self-representing PSU's, of which 146 are the largest SMSA's and 305 nonself-representing PSU's, for a total of 461 PSU's for the Nation. In short, the

4/ All PSU's with 250,000 or more population in 1970 were made self-representing PSU's. In general, while PSU's were defined so as to be as heterogeneous as possible, each stratum consisted of PSU's as much alike as possible. Thus, you might have 10 PSU's, each defined as heterogeneous as possible with respect to population characteristics, industry, growth, etc., but when combining these PSU's into strata, more PSU's which were as nearly alike as possible would be allocated to a given strata.

461 PSU's provide a sampling representation of the 1,924 PSU's into which the United States was divided after the 1970 Census.

Selection of Households

The number of households selected from each PSU is determined by the overall sampling fraction. In 1975, the overall sampling fraction was approximately 1 in 1,968 for the A design sample and 1 in 3,936 for the C design sample. That is, in each stratum approximately 1 in 1,968 households in the A design and 1 in 3,936 households in the C design should be in the sample. The actual rates will change over time since the sample size is kept constant even when the population grows. Also, adjustments to the sampling fractions are necessary to accommodate different rates of growth (or loss) in population between PSU's. Thus, the number of households to be sampled from a given PSU can be determined by multiplying the inverse of the probability of that PSU being selected by the overall sampling fraction since the probability of any PSU being selected is proportionate to its population. This process yields a self-weighting sample since the probability of any household being selected is equal to that of every other household.

For each PSU, a geographically arranged list of Census Enumeration Districts (ED's) is developed and a random selection of ED's is made so that the sample ED's are spread out over the entire PSU area.5/ Additionally, a list of housing units within each ED is compiled which is subsequently used in the choice of household units to be sampled. Once the ED's have been selected for sampling, a cluster of four households is selected from each ED such that they are as geographically contiguous as possible. Where new housing units have been constructed since the Census of 1970, building permit records are used to augment the sampling and provide a supplementation of households to be interviewed.

5/ In 1970, the Census defined approximately 229,000 enumeration districts for the Nation. Each ED is defined to include roughly 350 housing units, on average.

Rotation of the Sample

One cannot expect a household to remain in the sample indefinitely because of reasons cited in Chapter II.6/ Therefore, a rotation process has been designed into the sample. Once selected, a household is included in the sample for four months. This systematic rotation provides that 1/8 of the sample each month is being included for the first time, that 3/4 of the sample was included in the sample the previous month, and that 1/2 of the sample was included in the sample for the same month of the previous year. This overlap of the sample is utilized in the estimation procedure to reduce discontinuities in the series and to avoid an excess reporting burden on sampled households. Also, it was felt that repeated continuous reporting would introduce bias into the estimates.

3.3 Data Collection and Estimation Procedures

The relevant time period for the CPS is the calendar week, Sunday through the following Saturday, containing the 12th day of the month. A calendar week was chosen so as to ease the problem of respondent recall as well as to minimize the disruptive effects of holidays or accidental occurrences. CPS interviewers then conduct their interview the week following the reference week (the calendar week including the 19th day of the month).

Each month interviewers collect information from a responsible member of each selected household. The first, second, and fifth month's interviews must be conducted in person. In the other five months, the respondent may be interviewed by telephone. At each monthly interview the interviewer asks a series of standard questions which are used to determine the labor force status of each member of the household who is of working age. Information is also

6/ See, 2.1 of Chapter II regarding the aging of the sample and response bias from repeated interviews.

secured on all other members of the household in order to provide data on family characteristics of those who are employed and unemployed. The responses are used to classify each person as either employed, unemployed, or not in the labor force. When, for various reasons, interviewers are unable to conduct an interview at the designated household, a special report is prepared for such households and the noninterviews are then classified into different types for analysis.

Estimation Procedure

Each month, after the interviews have been completed, the questionnaires are sent to Jeffersonville, Indiana to be tabulated and the results placed on computer tapes to be sent to Washington for further processing. The first step in the estimation process is to adjust for nonresponse. In a given month a certain number of selected households are not interviewed (usually 3 to 5 percent) because of vacations, bad weather, refusals, or other reasons. For purposes of the nonresponse adjustments, the interview results are grouped by PSU and each group of PSU's is further divided into various race-residence groups. The weight for each of these race-residence groups is then adjusted in accordance with the proportion of nonresponse in that group. This is an attempt to eliminate the bias that might result from a greater tendency for nonresponse to occur among certain groups.

Once the sample data has been adjusted for nonresponse, there is a two-stage ratio estimation process which is employed to develop the labor force estimates that are correlated as nearly as possible to the population.7/ The first stage

7/ Since the sample population may differ from that of the Nation in terms of those characteristics that affect labor force status, it is essential that the sample components be adjusted, by weighting, to make it as representative of the population as possible. This is the purpose of the two-stage ratio estimates.

ratio estimate is applied only to the nonself-representing PSU's. The purpose of this adjustment is to bring the distribution of the population that is estimated from the sample PSU's into agreement with the distribution of the total population of the four major regions of the Nation. This permits the proper weighting of sample households from nonself-representing PSU's in a region by the population ratio of the appropriate race-residence group in that region. A separate first-stage ratio adjustment factor is developed for each race-residence group within each of the four Census regions. These factors are developed by comparing estimates for each race-residence group within each Census region obtained by inflating the latest Census population data for the sample NSR-PSU's with the actual Census population data for that entire Census region, less any SR-PSU's for those same race-residence groups.

Once the data from all NSR-PSU's have been adjusted by the first-stage ratio factors, the data from all sample PSU's is inputed into the second-stage ratio estimates in order to control CPS estimates to the independent population estimates for the Nation that are prepared by adjusting the most recent Census data for aging, mortality, and international migration. The CPS sample data, after adjustment for nonresponse and first-stage ratio adjustment, is then used only to develop percent distributions of the Nation's population within each age-race-sex group by labor force status and other economic characteristics. These percent distributions are then applied to the independent estimates of the population for the appropriate age-race-sex groups to give actual estimates of the number of people in each category. The numbers of employed and unemployed are then aggregated across all age-race-sex groups to produce estimates of total employment and total unemployment for the Nation.

The last step in the preparation of the national labor force estimates is the composite estimate. The composite estimate is the weighted average of two

estimates for the current month. The first estimate is the second-stage ratio estimate which has just been described. The second estimate is the composite estimate for the previous month, plus an estimate of the change from that month to the current month, based on the sample which is common to both months (approximately 75 percent or six of the eight rotation groups). Each estimate is given a weight of 1/2 and the resulting average is the official labor force estimate.

CPS Estimates for Minnesota

Primarily as a result of the Comprehensive Employment and Training Act of 1973 (CETA), the Bureau of Labor Statistics (BLS) requested the Census Bureau to provide annual average labor force estimates for all 50 States. The BLS requested that these estimates be reliable enough so that the Coefficient of Variation for the annual average estimate of the number of unemployed persons be ten percent or less assuming an unemployment rate of six percent.8/ Since the CPS had been designed only to produce national estimates, the BLS request resulted in an expansion of the CPS sample in July 1975. Previous to this expansion, the Bureau of the Census had produced annual average labor force estimates for only some States. However, even after changing the way the State estimates were produced, only 23 States met the reliability criteria established by the BLS. The CPS sample was, therefore, increased in each of the other 27 States. Minnesota was one of the 27 to receive such supplementation.

The expansion of the CPS sample was done to maximize the use of the national sample selected from Minnesota, as well as to improve the sample for selected other States. All PSU's were defined exactly as they had been for the national

8/ To those familiar with elementary statistics, the Coefficient of Variation is the ratio of the Standard Deviation to the Arithmetic Mean of a data series. Thus, it is a measure of the relative dispersion that exists in the data series.

sample. Any PSU selected for the national sample from Minnesota was also in the State sample. However, for purposes of the State sample, those PSU's selected for the national sample only represent that portion of the national strata that is in Minnesota. All PSU's within Minnesota that are in a strata represented by PSU's from other States were then regrouped into strata within Minnesota. Selection of the additional PSU's and households then proceeded in a manner similar to the selection of the national sample. This expansion resulted in the selection of four new PSU's and the addition of approximately 200 households, raising the total number of sampled households in Minnesota to approximately 1,240.

Beginning with the 1976 annual average estimates, the expanded sample was used to produce labor force estimates for Minnesota in a manner similar to that used to produce national estimates with the following differences: the first-stage ratio adjustment factors were calculated on a State basis rather than a regional basis; the second-stage population controls were also developed on a State basis; and only the annual average estimates are considered reliable enough for publication and use in benchmarking. In 1978, the Bureau of Labor Statistics introduced the use of a six-month moving average of CPS estimates for benchmarking Handbook estimates produced by States such as Minnesota. Ten of the largest States and two SMSA's are currently being directly estimated from the CPS, but there have been some problems with the use and reliability of these estimates.

3.4 Reliability of Estimates

National labor force estimates are usually highly reliable on a monthly basis, while State estimates are subject to sizeable error even on an annual average basis. Estimates of standard errors for national labor force estimates are published in Employment and Earnings, while estimates of standard errors for

State estimates are published in Geographic Profiles of Employment and Unemployment, both publications produced by the U.S. Department of Labor. In order to increase the reliability of the State labor force estimates significantly, it would seem logical that each State should be stratified independently, without regard for the regional strata used in the national sample design. However, it appears that, for the present time, BLS has abandoned this idea. Further supplementation since 1975 has been introduced into the CPS to permit monthly estimates of the labor force for the largest States and SMSA commencing with 1978. At present, both the concepts and methods for labor force estimation, both national and for State and local labor markets, are under study by the National Commission on Employment and Unemployment Statistics. The Commission is scheduled to publish a report on its findings sometime in late 1979 or early 1980. Undoubtedly, the CPS and the 70-Step Handbook Method will be subjected to careful review. Certainly, changes can be expected, but the CPS is not likely to be abandoned.

CHAPTER IV

The 70-Step Handbook Method

The so-called 70-Step Method, or Handbook Method refers to a methodology outlined in a U.S. Department of Labor publication, BES No. R-185, dated March, 1960, and entitled Handbook on Estimating Unemployment. This publication updated a 1950 Handbook, Techniques for Estimating Unemployment, and incorporated the experience gained over the decade. The 1960 Handbook, along with some modifications, is still being used by all State Employment Security Agencies (SESA's) and is the foundation for developing labor force estimates in States and areas within States. Hereafter, Handbook will be used synonymously with the 70-Step Method as described in the 1960 publication.

The Handbook Method is a building block procedure which categorically accounts for employment and unemployment in a given State or area. It is the intended purpose of this chapter to explain these categories and their relative importance, 1/ especially with respect to Minnesota. The author's format will generally follow the 70-Step Worksheet which delineates employment first.

4.1 Employment

All employment is either "covered" or "noncovered" in the Handbook Method.

1/ The percentages for various Handbook components were calculated on the basis of Minnesota 1976 annual average data and could vary from State to State, and over time for a particular State.

A. Covered Employment

In Minnesota, roughly 80 percent of all jobs are "covered" or "insured" by some form of unemployment compensation: State, Federal or Railroad.2/

1. Private Wage and Salary Employment

Over sixty-five percent of all Minnesota jobs are located in private firms, the largest single block of employment.

2. Federal Government

The bureaucracy extends to every State, and Federal jobs constitute nearly 2 percent of aggregate employment in Minnesota.

3. State and Local Government

State and Local Governments are large employers throughout the Nation. Almost 12 percent of total workers in Minnesota work for either State or Local Governments.

4. Railroads

Railroad employment has declined in most States over the past quarter century. About 1 percent of Minnesota jobholders work for railroad companies.

B. Noncovered Employment

The proportion of noncovered employment varies considerably among States because of differences in coverage of their unemployment insurance laws. Approximately 20 percent of Minnesota's workers do not have the benefit of unemployment insurance (U.I.).

2/ Another type of unemployment compensation is based upon service in the U.S. Armed Forces and called UCX. UCX is administered by the individual 50 States and claims activity statistics are recorded. However, Ex-Servicemen claims counts are not used in the Handbook Method because returning military personnel are accounted for under "entrants".

1. Agriculture

   Although farming is an important facet of Minnesota's economy, only 8 percent of all jobs in the State are in agriculture.

2. Self-employed and Unpaid Family (S.E. & U.F.)

   Over 7 percent of Minnesota's employment positions are held by people who have their own businesses and unpaid family members.

3. Domestics

   Employees in private households (i.e., maids and gardeners) account for a bit over 1 percent of total Minnesota employment.

4. State and Local Government Noncovered

   A small number (under 2 percent of all employment) of State/Local Government workers, such as elected officials, are excluded from U.I. coverage in Minnesota.

5. Nonprofit Noncovered

   Some nonprofit firms employ workers for only a few weeks each year. In these instances the employers are not "covered" by Minnesota law. They are less than 1 percent of aggregate employment in the State.

6. Small Firms

   At one time Minnesota excluded from coverage establishments that hired less than a statute-specified number of employees, but this is no longer the case.

4.2 Unemployment

In the Handbook Method there are three major, identifiable clusters of unemployment.

A. Unemployment Related to Covered Employment

Within this cluster, we have unemployed persons who were separated from jobs covered by some form of insured employment (State, Federal, Railroad).

1. Continued Claimants

This is an unduplicated count of State U.I. claimants 3/ who filed for benefits during the reference week, the calendar week including the twelfth of the month. Those claimants who performed any work for pay that week are eliminated from the count in accordance with U.S. Department of Labor definitions of unemployment. Continued Claimants without earnings constitute over 40 percent of total unemployment in Minnesota.

2. Unemployed Exhaustees (Exhaustees)

Some people, for manifold reasons, do not find a job during the life of their unemployment insurance. If they are still out of work after depleting their benefits, they are considered "Exhaustees". Although we know the number of individuals who receive final payments, we are obviously unable to "track" them after they leave the U.I. system. 4/

3/ State U.I. claims are based upon work with private wage and salary firms, State/Local Government, or any combination of these employers.

4/ In recent years there have been a host of "extended benefits programs". Under these programs people who exhaust their regular entitlement may file for additional compensation in an extended program. Statistics on continued claims in extended programs are maintained when these programs are in effect. This permits the tracking of people after they exhaust regular U.I. benefits. Eventually, claimants exhaust extensions, or the programs terminate, and the recipients leave the system.

Therefore, an estimate of the size of this group is prepared by use of a Bureau of Labor Statistics (BLS)5/ procedure which, euphamistically, "survives" Exhaustees. Survival in this sense means that most people who exhaust their U.I. benefits will not immediately find a job, nor will they quickly become discouraged and leave the labor force. They survive in that they are unemployed, but still in the labor force. In any given week, 95.2 percent 6/ of the claimants receiving final payments will join the "pool" of exhaustees from previous weeks. On the other hand 4.8 percent (100.0 minus 95.2 = 4.8) of the pool members will drop out of the labor force, or return to work each week. The net level of the pool can rise or fall depending upon the volume of final payments and the survival rate. Exhaustees account for nearly 22 percent of aggregate unemployment in Minnesota.

3. Delayed and Never Filers (D & NF's)

There are individuals who are eligible for U.I., but do not file claims immediately upon losing their jobs, while others may never apply for compensation. Perhaps, they feel that they will not be out of work for long, or some may consider it demeaning to accept what they feel is a "dole".

5/ Within the U.S. Department of Labor, the Bureau of Employment Services (BES) was succeeded by the Employment and Training Administration (ETA). Until the early 1970's, ETA was responsible for unemployment estimating in States and areas. As noted in Chapter II, the Secretary of Labor assigned this function to BLS when the Comprehensive Employment and Training Act of 1973 was passed. Supposedly, BLS has greater technical resources than ETA to perform this responsibility.

6/ The survival ratio (currently .952) may be updated as economic conditions change. BLS calculates this ratio on the basis of data from the CPS.

Whatever their reasons, a small number of jobless people (about 2.5 percent of total unemployment in Minnesota) are in this group.

Chavrid, et al, found an inverse relationship between the unemployment rate and the number of D & NF's. As the unemployment rate increases, the proportion of Delayed and Never Filers decrease (relative to those who actually file and do so promptly). Presumably, people recognize that their chances of finding a job diminish as unemployment grows. Field studies were conducted on this aspect of unemployment which have been used to develop a formula for estimating Delayed and Never Filers. 7/

4. Disqualified Nonmonetary

Claimants may be denied benefits for nonmonetary reasons, i.e., reasons other than insufficient earnings in covered employment. Examples of this type of denial are: people who are fired for misconduct, voluntary quits without good cause, or failure on the part of claimants to accept offers of suitable employment. Those who receive nonmonetary disqualifications are ineligible to collect benefits during the spell of unemployment following the incident which triggered the disqualification.

7/ The formula incorporates a time lapse ratio, and the insured plus exhaustee unemployment rate (a calculation in the Handbook Method) to arrive at a factor which is then applied to a count of the initial claims from the reference week to estimate the number of Delayed and Never Filers. Readers who wish more detailed information are referred to the U.S. Department of Labor publication, BES No. R-185, pages 53-54.

In other words, the disqualification can only be cleared by subsequent work as specified by law.

In Minnesota, prior to July, 1977, nonmonetary disqualifications were not of indefinite duration. Rather, penalties, ranging from 3 to 7 weeks, could be cleared for those concerned by reporting on claims and meeting all of the able and available criteria. Their affidavits were counted as continued claims even though the claimants were not receiving checks for the disqualification period. In July, the Minnesota U.I. law was changed and indefinite duration disqualifications were introduced.

Commencing in the second half of 1978 we will have sufficient data which will enable us to prepare estimates of the number of unemployed disqualified. The methodology for doing so will be similar to that used for determining Exhaustees. With respect to nonmonetary disqualifications, the procedure has a conceptual weakness in that it considers only those people who file claims and are denied benefits. It ignores those who elect not to file claims because they know that they could not collect benefits. However, some data has been gathered on nonmonetary disqualifications, and it appears that the group (those that are accounted for by filing claims) will be small,8/ so that the number of people who will not show up in the system may be insignificant in terms of the total volume of unemployment.

8/ Around 500 per month.

5. Federal Unemployed

United States Government workers, contrary to popular opinion, occasionally lose their jobs. Federal Continued Claims is a count derived from U.I. operations. This figure is inflated 9/ to include Exhaustees and Delayed and Never Filers. Federal unemployment is miniscule (0.7 percent of total unemployment in Minnesota), which lends credibility to the belief that National Government only grows larger.

6. Railroad Unemployment

The Railroad Retirement Board (RRB) administers jobless pay for railroad employees and provides the required statistics on payments to SESA's. The figures received from RRB's are expanded 10/ in a manner similar to Federal Continued Claims. Railroads account for about 0.8 percent of annual Minnesota unemployment.

B. Unemployment Related to Noncovered Employment

Chavrid, et al., analyzed data from the 1957, 1958, and 1959 Monthly Report of the Labor Force (MRLF) 11/ to develop methods for estimating noncovered unemployment. They found definite relationships between the State covered unemployment rate 12/ and the rates for various categories of noncovered unemployment, with one exception.

9/ Federal Continued Claims are inflated in the same proportion that State U.I. Continued Claims plus Exhaustees plus D & NF's is greater than State U.I. Continued Claims.

10/ The RR blow up factor is always slightly less than its Federal counterpart. This is in consideration of the differences in the two systems, such as, the normally longer duration of RR benefits.

11/ The MRLF was the predecessor of the Current Population Survey.

12/ The State covered rate is calculated for the labor force under the umbrella of State U.I., as distinct from Federal and RR unemployment insurance.

Moreover, their studies indicated that these correlations remained fairly stable over time. This permitted expressing noncovered rates in terms of the covered rate. In Minnesota, unemployment related to noncovered employment constitutes less than 6.5 percent of total State joblessness.

1. Small Firms

   All Minnesota employers who hire one or more persons have been included under State U.I. since 1972. Consequently, workers separated from jobs with small firms do not have to be considered separately. In those States where small establishments are excluded from coverage, their unemployment rate is regarded as equal to the State covered rate.

2. Noncovered Nonprofit

   This is the exception referred to above. Nonprofit employment is quite flat, apparently immune from seasonal swings and not subject to large cyclical changes.

   For this category, the unemployment rate is assumed to be a constant 2.0 percent. In Minnesota, Noncovered Nonprofit unemployment amounts to only 0.5 percent of total unemployment.

3. Domestic Unemployment

   Domestic household workers have been estimated as having an unemployment rate which is three-fourths of the State covered rate. Those domestics without jobs make up 0.8 percent of all unemployment in Minnesota.

4. Nonagricultural Self-Employed and Unpaid Family

This group constitutes 1.2 percent of total unemployment in Minnesota. Their rate of joblessness is estimated at only one-fifth of the State covered rate.

5. Agricultural Unemployment

Agricultural unemployment is, not surprisingly, much more seasonal than State covered unemployment. To account for this variation, BLS has developed monthly seasonal weights which are used to adjust the relationship of the agricultural rate to the State covered rate. However, on an annual average basis, the agricultural rate is a bit over one-half the State covered rate. Agricultural unemployment is about 3.4 percent of total unemployment in Minnesota.

6. Noncovered State and Local Government

In terms of volume, this group is very small, about 550 per month, or under 0.5 percent of Minnesota's aggregate unemployment. Uninsured government workers are estimated to have a jobless rate which is one-third of the State covered rate.

C. Unemployed Entrants

This is the third cluster of unemployed. Theoretically, it consists of people who want a job and have never been employed (new entrants), and those who were once employed but subsequently dropped out of the labor force (re-entrants). In practice, the distinction between a new entrant and a re-entrant is not always clear, and for unemployment estimating purposes not important. Therefore, they are simply lumped together and called Entrants.

The Handbook Method for estimating this large block of unemployed (over 27 percent of annual unemployment in Minnesota) is based upon four variables: 1) the size of the labor force, excluding Entrants, 2) the level of unemployment, less Entrants, 3) the age distribution of the population, and 4) the month of the year.

Again, Chavrid, et al., relied on the MRLF data to study the influence of the above variables on the magnitude of Entrants. From their studies, two factors, "A" and "B" were formulated to reflect the underlying relationships. The "A" factor quantifies the influence of the labor force less entrants, while the "B" factor relates to the importance of the unemployment volume without Entrants as determinants of unemployed Entrants to the labor force.

The annual values of the "A" and "B" factors are based upon the age distribution of the population. The greater the number of 14 thru 19 year olds, in relation to the 20 years of age and over population, the higher are the "A" and "B" annual values. Seasonal weights13/ are then applied to the annual "A" and "B" values to arrive at monthly factors.

The monthly "A" factor is then multiplied times the labor force less Entrants, while the "B" factor is applied to unemployment excluding Entrants. The sum of these two steps is the total estimate of Entrants.

13/ Seasonal weights are revised by BLS, on the basis of CPS data, each year and supplied to SESA's.

4.3 Labor Disputes

People involved in strikes or lockouts are, by CPS definitions, considered employed. If they were at work any day during the reference week they would be included in Covered Employment under 1.A. It is only those people who were away from their jobs the entire week that must be accounted for here. This is done by consulting internal records 14/ and adding the figure to employment.

4.4 The Unemployment Rate

The sum of employment and unemployment is the labor force. The unemployment rate is simply unemployment divided by the labor force and expressed as a percent. Thus, the generation of the "unofficial" labor force and unemployment rate is complete.

14/ By Federal mandate, monthly reports on labor disputes are prepared by SESA's and submitted to the U.S. DOL.

CHAPTER V

Data Inputs to the 70-Step Handbook Method

The 70-Step Handbook estimation process is one that is based on records which exist for purposes other than labor force estimation. These data sources are estimates from other programs, administrative records, and Census data. These data, both separately and when combined, provide elements to the components (often called building blocks) which make up each of total employment and total unemployment.

Separate charts are provided to show the data inputs for employment and unemployment. A third chart lists the data inputs required to provide adjustments to the basic 70-Step Handbook estimates (and related 36-Step Handbook estimates) in order to make the Handbook estimate for the State conform with that obtained from the Current Population Survey (CPS), and to make the sum of substate areas equal that of the State. Each chart contains three columns. The first column lists the 70-Step (and usually the 36-Step) Handbook element. The second lists the data source(s) used to estimate that element. The final, or third column contains ancillary remarks: definitions of Handbook elements, descriptions of data input sources, or less frequently, computational procedures.

5.1 Employment Inputs

There are thirteen entries in the Handbook estimate of employment, one of these being total employment itself. The others are the components of employment in nonagricultural wage and salary jobs, broken into those covered by some form of unemployment insurance and those jobs not so covered, and "other" employment, such as domestics, self employed, and agricultural.

CHART I

Input Items and Data Sources for Employment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
E.	Employment		Definition: All persons who received any compensation for pay status activities during the week of the 12th of the month (the reference week), and all those who worked 15 hours or more in unpaid family businesses. Location is based on employee residence.
E.1	Noncovered Employment		Employment at employer locations where employees are NOT covered by one of three unemployment compensation systems: (1) the system established and maintained under State legislation, in Minnesota, as the Employment Services law; (2) the system under Federal legislation which insures employees of the Federal government; (3) the system under Federal legislation which insures employees of the railroads.
E.1.1	Noncovered State and Local Government Employment	Monthly Current Employment Statistics (CES-790) Survey estimates of employment positions in State and Local Government.	Estimates are for production and non-supervisory position by industry. Data is derived from a sample and is based on the payroll records of responding firms. Therefore, the count is one of position, or jobs, not employees and classifies employment on the basis of employer location. Value calculated is the product of the CES estimate times the labor force conversion factor times the appropriate noncovered share factor.
E.1.1.1		Labor Force Conversion Factor.	This factor transforms the count of jobs by place of employment into the desired form, persons by place of their residence. At present the factor is the ratio of Census data to CES data. Census data is a count of persons (not jobs) by their residence. CES data is a count of jobs by place of employment location. Currently, the value of this factor is 0.95411. This adjusts for workers who are employed in Minnesota but live in another State, and for multiple job holdings.
E.1.1.2		Noncovered Share Factor for State Employment. Value of Noncovered Factor for State Government is 0.20.	Not all employment in State Government is covered employment. For example, elected officials (State or Local) are not. This factor is developed after analyzing counts of covered employment and Census counts of total employment in State government.
E.1.1.3		Noncovered Share Factor for Local Employment. The value of the Noncovered Factor for Local Government is 0.10.	Similar to E.1.1.2 but for Local Government employment.
E.1.2	Small Firm	No data.	No longer applicable in Minnesota. Firms with less than four employees were not covered in an earlier period, but current legislation covers these people, so they are now included among total covered employment.
E.1.3	Nonprofit Noncovered	Constant figure of 30,000 derived from 202 Covered Employment data, CES-790 and Census data.	Not all nonprofit employment is covered. For example, employment in religious institutions is not. Value entered is the product of 30,000 times the labor force conversion factor (E.1.1.1).

CHART I (cont.)

Input Items and Data Sources for Employment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
E.2	Total Nonagricultural Wage and Salary (Nonag W & S) Employment	Monthly CES-790 Survey estimates of Nonagricultural Wage and Salary employment for all industries.	Value entered is the product of the CES estimate times the labor force conversion factor (E.1.1.1).
E.3	Covered Employment		Employment positions in firms whose employees are covered by one of the three kinds of unemployment compensations referred to in E.1.
E.3.1	Total Covered Employment	None. Computed as a residual.	Value is the residual when the sum of Noncovered State and Local Government employment, Small Firm employment, and Nonprofit Noncovered employment is subtracted from Total Nonagricultural Wage and Salary employment.
E.3.2	Federal Government Covered Employment.	CES-790 estimates of Federal Government employment in the State.	The value entered is the product of the CES-790 estimate times the labor force conversion factor (E.1.1.1).
E.3.3	Covered State and Local Government Employment	Monthly CES-790 estimates of employment for each of Local and State Government.	Value to be entered is the sum of two products: (1) the product of the CES-790 estimate for State Government employment times the conversion share factor for Covered State Government times the labor force conversion factor (E.1.1.1); (2) the product of the CES-790 estimate for Local Government employment times the conversion share factor for Covered Local Government employment times the labor force conversion factor (E.1.1.1).
E.3.3.1		Conversion Share Factor for Covered State Government employment. Current value is 0.80. (See also E.1.1.2).	
E.3.3.2		Conversion Share Factor for Covered Local Government employment. Current value is 0.90. (See also E.1.1.3).	
E.3.4	Railroad Covered Employment	CES-790 Survey estimate of employment in the railroad industry.	The number to be entered is the product of the CES-790 estimate times the labor force conversion factor (E.1.1.1).
E.3.5	State U.I. Covered Private Employment	None. Computed as a residual.	Employment in those private wage and salary positions covered under the Minnesota Employment Services Act. Value to be entered equals total Covered Employment (E.3) minus the sum of Federal Government employment, State and Covered Local Government employment, and Railroad employment.
E.4	All Other Nonagricultural Employment: 1. Domestics (E.4.1)	National Ratio of Relative Change (NRRC), or 1970 Census Table 186. No. 1, Part 25, Industry or Employed Persons by Class of Workers, Race and Sex.	The NRRC is defined as the result obtained when the ratio of current "All Other" employment for the Nation to the March/April 1970 average "All Other" employment for the Nation, both from the CPS, is divided by the ratio of current Wage and Salary employment for the Nation to the March/April 1970 average Wage and Salary employment, both from the CES-790 Program.

CHART I (cont.)

Input Items and Data Sources for Employment Estimates

HANDBOOK CATEGORIES	INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
2. Nonagricultural Self-employment and Unpaid Family Workers. (Nonag SE & UF) or (E. 4.2).	1970 March/April average Employment estimate from CES-790. Current CES-790 Employment Estimate. "Magic Factor", from Bureau of Labor Statistics (BLS) - supplied each month: Ratio of change "All Other Nonagriculture" employment March/ April 1970 to current month from CPS to CES-790 employment March/ April 1970 to current month.	To determine each of Domestic and of Self-Employed and Unpaid Family workers proceed as follows: A. Determine 1970 Census total Wage and Salary employment in Private Households and as Self-Employed and Unpaid Family workers: 1. From Census Table 186, Volume L Part 25, (Minnesota) a. Compute: Total Self-Employed Workers less Self-Employed in Agriculture for males and females and add. b. Compute: Total Unpaid Family Workers less Unpaid Family Workers in Agriculture for males and females and add. c. Compute: Sum of male Private Wage and Salary workers in Private Households and female Private Wage and Salary Workers in Private Households. 2. Sum Steps "a", "b", and "c" in "1." above. 3. Multiply the sum in Step A.1.C (above) by the value, 1.41, to adjust for the Census undercount in Minnesota. B. Compute: Ratio of "c" in Step A.1 above to the sum in step "A.2" Express to four decimals. Call this R_d C. Compute: Subtract R_d in Step B from 1.000. Call this R_{seur}. D. Compute 1970 CES-790 March/April State average Nonagricultural Wage and Salary employment. E. Determine Estimates as follows: 1. Enter current CES-790 Nonagricultural Wage and Salary employment. 2. Divide the current value in step E.1 by the March/April 1970 average from step D above. 3. Multiply the quotient arrived at in step E.2 by the NRRC. 4. Multiply the product arrived at in step E.3 by the product obtained in step A.3. This is the current estimate of All Other Employment. 5. Compute Domestic employment (E.4.1) by multiplying the value obtained in "E.4" by the value R_d obtained in step B.

CHART I (cont.)

Input Items and Data Sources for Employment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
			6. Compute Self-Employed and Unpaid Family Worker employment (E.4.2) by multiplying the value obtained in "E.4" by the value, R_{seur}, obtained in step C.
E.5	Agricultural Employment	Agricultural Crop and Livestock Survey (CRS) estimates of Agricultural employment. Provided quarterly in January, April, July, and October. Survey conducted by U.S. Department of Agriculture. Monthly State change factor from one month to the next month for each month supplied by BLS. Census estimates of Agricultural employment.	Preliminary estimate for each month is obtained by multiplying the estimate for the previous month times the BLS change factor for the current month. Preliminary estimates are revised using Agricultural Crop and Livestock Survey (CRS) estimates as these are supplied (January, April, July, and October). Revisions are called benchmarked and wedged estimates. Benchmarked estimates are based directly on Crop and Livestock Survey Estimates and are made for January, April, July, and October. The benchmarked estimate for any of these months is the product of the current (e.g. October) CRS estimate of the previous one (e.g. July) times the labor force estimates of Agricultural employment for the earlier month. Intervening months (e.g. August, September) are wedged. The difference between the benchmarked value and the preliminary estimate for the most recent benchmarked month is expressed as a ratio to the preliminary value. For the first intervening month between the two most recent benchmarked months, the ratio derived is multiplied by 1/3 of the preliminary estimate for that month and added to the preliminary estimate; for the second intervening month, the ratio just derived is multiplied by 2/3 of the preliminary estimate for that month and added to its preliminary estimate. After July, 1974, reprojected estimates for months subsequent to the most recent benchmarked estimates have been used for current estimates. Reprojected estimates are produced by multiplying the most recent benchmarked estimate by the change factor for the following months (the first after the benchmarked). The second and succeeding (if neccessary month is estimated by multiplying the change factor for that month by the estimate for the previous month.
E.6	Current Employment.	No new input required.	Sum of Total Nonag. W & S Employment, Domestics, SE & UF, and Agricultural Employment.

5.2 Unemployment Inputs

As discussed in the preceding chapter, unemployment is composed, by definition, of those who have received no compensation1/ for any pay-status activity during the reference week of the estimation month, together with those who have worked less than fifteen hours as unpaid workers in a family business. The unemployed are: (1) those workers receiving full benefits from one of the unemployment insurance systems but no pay for any work (it is possible to receive full unemployment insurance benefits but to also receive some pay for pay status activities so long as that pay is less than a specified "forgiveness" level); (2) those who once received benefits as described in (1) but who have exhausted them (the Exhaustees); (3) those who could claim full benefits as described in (1) for the reference week but, while without pay for status activity do not claim, either delaying making claims or never filing at all (the Delayed and Never Filers); (4) those who are presently unemployed and whose most recent employment was in jobs not covered by any of the unemployment insurance systems; and finally, (5) those seeking work without prior employment, either because they are seeking employment for the first time or are doing so after an extended period of not being employed and not actively seeking work (the New and Reentrants to the labor market). For many of these, no current relevant administrative records exist; the data inputs consist of pre-existing data describing behavior for which administrative records do exist and computational factors, or parameters, which when combined in formulas result in an estimate of the desired unemployment component. The formulas are the result of special studies conducted in the past by ETA and BLS. We now turn to the inputs for 70-Step Handbook unemployment estimates.

1/ Compensation would include wages for work, but may also include that for vacation, sick and holiday leave.

CHART II

Input Items and Data Sources for Unemployment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
U	Unemployment		All of those who have either received no pay at all for pay-status activity or have worked less than 15 hours as unpaid workers in a family business and who are actively seeking employment.
U.1.0	Claims Data		Administrative data pertaining to the number of persons receiving benefits under any of the unemployment insurance systems.
U.1.1.	Continued Claimants	Report R 131 U.I. Benefit Statistics, a report that is internal to the Research and Statistical Services Office.	This is an unduplicated count of claimants (not claims) for the week including the 12th of the month.
U.1.2	Continued Claimants Without Earnings	Same as above, Report R 131.	Claimants can receive full benefits even though they earn a small income. This count includes only those with no earnings and, hence, is closer to the labor force definition of unemployment.
U.1.3.	Initial Claims	E.S. 210 Wire	Initial claims are indicated as item "IC" in the wire. Initial claims is the sum of new claims (requests for determination of insured status for purposes of establishing a new benefit year) and additional claims (notice filed upon commencement of the second or subsequent claim during a previously established benefit year).
U.1.4.	Federal Claimants		
U.1.4.1	Federal Civilian Claimants	Report R 131.	Same as Continued Claimants and Continued Claimants Without Earnings, but with respect to workers who are insured due to Federal Government employment.
U.1.4.2	Federal Claimants Without Earnings	Report R 131.	See U.1.4.1 above.
U. 1.5	Railroad Claims	Obtained by telephone from the Railroad Retirement Board. Duluth is contacted for the Northern half of the State and Minneapolis for the Southern half of the State.	

CHART II (cont.)

Input Items and Data Sources for Unemployment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
U.1.6	"UCX", or Unemployment Claims Ex-servicemen	R. 131.	Same as Continued Claimants and Continued Claimants Without Earnings. Not currently used in the 70-Step Handbook Method.
U.1.7	Σ (E.3.3, E.3.5, U.1.2)	No new data.	The sum of Private Wage and Salary employment insured under the State U.I. law, State and Local Covered Government employment, and Continued Claimants Without Earnings (U.1.2). This sum can be considered to be that portion of the labor force eligible to collect unemployment benefits under State U.I.
U.1.8	Insured Less Partial Rate	No new data.	Continued Claimants Without Earnings divided by the sum of employment insured under the State U.I. Law (Private Nonagricultural Wage and Salary-State U.I., State and Local Covered employment) plus Continued Claimants Without Earnings (U.1.2 divided by U.1.7). This rate can be understood as the unemployment rate among that part of the labor force covered by State U.I.
U.2.1	Unemployed Exhaustees	Actual Final Payments (or Exhausted Payments) from the State and Area Office Unemployment Compensation Activities report.	Those unemployed who received their final unemployment compensation payment to which they were entitled under the terms specified by State Legislation.
U.2.1.1		Survival Rate from BLS, currently 0.952.	The survival rate is an estimate of the proportion of those for any week who have exhausted their benefits who will continue to be unemployed in the next week. Those who do not continue as unemployed will either have found a job or have dropped out of the labor force by ceasing to actively search for work.
U.2.1.2		Extended Benefits.	Those who comprised the pool of people receiving Extended Benefits as of July 30, 1977.
U.2.1.3		Federal Supplemental Benefits.	Those who comprised the pool of people receiving Federal Supplemental Benefits as of July 30, 1977.
U.2.1.4		Computational routine specified in Handbook methodology as amended.	The exact estimation procedure has changed from time to time. Most often the changes have been due to changes in administration of federal benefits or to changing economic circumstances which have activated or deactivated the federal benefits. Regardless, the basic feature of this estimation method is to assume that each period's number of exhaustees will be equal to a proportion of the exhaustees from the past period who continue as unemployed, plus the number of persons who exhausted their benefits in the current period (new exhaustees). The proportion that remain unemployed from the preceding period is termed the survival rate (See U.2.1.1).

CHART II (cont.)

Input Items and Data Sources for Unemployment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
			At the present time two "pools" are considered. The first is that source of exhaustees from the State U.I. system. The second is a group of persons drawing Extended Benefits (EB) and Federal Supplemental Benefits (FSB) at the time that these two programs were terminated due to improved economic conditions. The current exhaustees from the second pool is simply the previous weeks exhaustees multiplied by the survival rate of 0.952, or $(0.952)^t$ times the initial week's EB and FSB recipients, where "t" is the number of weeks which have elapsed since. This is a constantly diminishing group which will be reduced to zero in approximately four years from July 30, 1977. The exhaustees from the first pool, or from the State U.I. system are determined as follows: Each week that week's number of Final Payments are recorded. These are the new persons exhausting their State U.I. unemployment insurance benefits. Then, the number of Final Payments from the previous week are added to the number of those exhaustees, also from the previous week, who have been exhaustees in the week before the preceding week. This sum is multiplied by 0.952 and becomes the current week's exhaustees due to the State U.I. System. The final estimate of exhaustees entered in the 70-Step Handbook worksheet is the sum of exhaustees from these two pools.
U.2.2	Insured Unemployed plus Exhaustees Σ (U.1.2, U.2.1)	No new data sources.	Those unemployed who are presently receiving State U.I. benefits plus those who received them earlier in their current period of unemployment.
U.2.3	Σ (U.1.7, U.2.1)	No new data sources.	That part of the labor force made up of those who are employed in positions covered under State U.I. and those who are unemployed and who either are presently receiving State U.I. benefits or are not presently receiving them due to exhausting their entitlement to them.
U.2.4	Insured plus Exhaustee Rate U.2.2 ÷ U.2.3	No new data sources.	The unemployment rate among those defined in U.2.3.

CHART II (cont.)

Input Items and Data Sources for Unemployment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
U.3	Delayed and Never Filers	Insured plus Exhaustee Rate (U.2.4).	The estimate, D, is that of the number of persons presently unemployed who are qualified to receive State U.I. benefits, but who either do not file for these benefits at all or who file for them later.
U.3.1		Initial Claims (U.1.3).	
U.3.2		Computational Routine specified in Handbook methodology as amended.	The computational routine uses a formula where D = Number of Delayed & Never Filers, U = Insured Less Partials + Exhaustees Rate,(U, 2, 4), I = Number of Initial Claims. The formula is: D = (7.5) (I) for U less than 0.006688 D = $(\frac{0.0525 - .35U}{U})$ (I) for U greater than or equal to 0.006688 or U less than or equal to 0.1296. D = (0.055) (I) for U greater than 0.1296.
U.4.1	Covered Unemployment Σ (U.2.2, U.3.)	No new data sources.	The number of unemployed among all those who are or were, during their current period of unemployment, covered by State U.I.
U.4.2	Covered Labor Force Σ (U.2.3, U.3.)	No new data sources.	The number of employed who are covered by the State U.I. system and of unemployed who presently receive benefits, who would qualify to receive benefits, or who have exhausted their benefits during their current period of unemployment under State U.I.
U.4.3	Covered Unemployment Rate	No new data sources.	The percentage rate of unemployment among those defined in U.4.2, or $\frac{U.4.1}{U.4.2} \times 100\%$.
U.5.1	Ratio: Covered Unemployment divided by all Continued Claimants	No new data sources.	Ratio = Covered Unemployment (as in U.4.1) divided by Insured Unemployment (as in U.1.1).
U.5.2	Ratio: Covered Unemployment divided by Continued Claimants Without Earnings		Ratio = Covered Unemployment (as in U.4.1) divided by Continued Claimants Without Earnings (as in U.1.2).

CHART II (cont.)

Inputs Items and Data Sources for Unemployment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
U.6.1	Federal Covered Unemployment	BLS Computational Routine.	Federal Claimants Without Earnings (U.1.4.2) times Ratio U.5.2.
U.6.2	Railroad Covered Unemployment	BLS Computational Routine.	Railroad Claims (U.1.5) times the sum of ratio, U.5.2, plus 1, all multiplied by 0.5.
U.7	Total Covered Unemployment	No new data sources.	Covered Unemployment (U.4.1) plus Federal Covered Unemployment (U.6.1) plus Railroad Covered Unemployment (U.6.2).
U.8.1	Small firm Unemployment	No new data sources.	No longer applicable in Minnesota. See E.1.2.
U.8.2	Nonprofit Unemployment	BLS Computational Routine.	Nonprofit Noncovered Employment (E.1.3) x 0.02.
U.8.3	Domestics Unemployment	BLS Specified Routine and Parameter Values.	(0.75) times covered unemployment rate (as in U.4.3), divided by all of the quantity equal to one minus 0.75 times the covered Unemployment Rate (U.4.3), or $\frac{(0.75)rc}{1-(0.75)rc}$ where "rc" is the Covered Unemployment Rate, this all multiplied by Domestic Employment, (E.4.1).
U.8.4	Nonagricultural Self-Employed and Unpaid Family Worker Unemployment	BLS Specified Routine and Parameter Values.	(0.2) times the Covered Unemployment Rate (U.4.3), divided by all of the quantity equal to one minus 0.2 times the Covered Unemployment Rate (U.4.3), or $\frac{(0.2)rc}{1-(0.2)rc}$ (where rc is the Covered Unemployment Rate as in U.4.3). This is all multiplied by Nonag. SE & UF Employment (E.4.2).
U.8.5	Agricultural Unemployment	BLS Specified Routine.	Agricultural employment (as in E.5) multiplied by the following: Factor Value "w" times the Covered Unemployment Rate (as in U.4.3), all divided by 1 minus factor value "w" times the Covered Unemployment Rate (as in U.4.3), or $\frac{(w)(rc)}{1-(w)(rc)}$, (where "w" is the "seasonal factor" and "rc" is the Covered Unemployment Rate). The factor, "w", indicates the monthly relation of Agricultural Unemployment to Covered employment at points in time when past studies were completed. It varies from month to month throughout the year.
U.8.6.	Noncovered State & Local Government Unemployment	BLS Specified Routine.	Noncovered State and Local Government employment times the following: 0.333 times the Covered Unemployment Rate (U.4.3) all divided by the value, 1 minus the product of 0.333 times the Covered Unemployment Rate, or $\frac{(0.333)(rc)}{1-(0.333)(rc)}$, (where rc is the Covered Unemployment rate).

CHART II (cont.)

Input Items and Data Sources for Unemployment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
U.9	Noncovered Unemployment	No new data sources.	Total estimated unemployment among those not covered by any U.I. system. Sum of U.8.1 + U.8.2 + U.8.3 + U.8.4 + U.8.5 + U.8.6.
U.10	Unemployment Less Entrants	No new data sources.	Sum of Noncovered Unemployment (U.9) and Covered Unemployment (U.5). Not included are those unemployed who have just newly entered or reentered, after a period of absence, the labor market.
U.11	Unemployed New and Reentrants		Unemployment among those newly entering the labor force or reentering it after some period of absence.
U.11.1	"B" Factor	Youth Population Ratio (YPR) from Current Population Survey (CPS) supplied by BLS.	The number of unemployed among new and reentrants has been found to be influenced by the size of the labor force and the number of unemployed. The strength of their influence varies with the time of the year. The value of the factor giving the influence of the number of unemployed is the "B" factor.
		"B" Factor Table, supplied by BLS.	For each YPR value the table gives the "B" Factor to be used when the YPR takes on that value.
		Monthly seasonal weight supplied by BLS.	
		Computational routine specified by BLS.	Proceed as follows: 1. Using Youth Population Ratio for current year as supplied by BLS, select the corresponding "B" Factor from the "B" Factor Table. (If the unemployment rate as calculated by the 70-Step Handbook rises to or above a 12 month moving average of 6.5 percent when formerly below 6.5 percent, then an alternate "B" Factor is used. Its use is continued until the 12 month moving average unemployment rate falls to 6.0 percent. The alternate factor simply establishes a limit beyond which the "B" Factor cannot rise.) 2. Multiply the "B" Factor by the seasonal weight for the current month.
U.11.2	New and Reentrants Due to Unemployment Level	No new data sources.	Unemployment less Entrants (U.10) multiplied by the result of Step 2 above from U.11.1.

CHART II (cont.)

Input Items and Data Sources for Unemployment Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
U.11.3	Employment plus Unemployment Less Entrants, or (E. 6) + (U.10)	No new data sources.	Labor force with exclusion of entrants.
U.11.4	"A" Factor	YPR	
		"A" Factor Table associating YPR values with "A" Factor. Monthly seasonal weights.	The value of the factor gives the influence of the size of the labor force on the number of reentrants. The value of the "A" Factor corresponding to the Youth Population Ratio is selected. It is multiplied by the seasonal weight for the current month.
U.11.5	New and Reentrants Due to Size of Labor Force	No new data sources.	Employment plus Unemployment less Entrants (U.11.3) times the "A" Factor from "A" Factor Table times the Second Weight (U.11.4).
U.11.6	Unemployed Entrants and Reentrants	No new data sources.	Sum of U.11.2 and U.11.5.
U.12.1	Total Unemployment	No new data sources.	Sum of U.10 and U.11.6.
U.12.2	Total Employment	No new data sources.	Reentry of Employment: E.6.
U.12.3	Labor Disputes	ES-228 Reports.	The number of workers not working due to their direct participation in a strike.
U.12.4	Labor Force	No new data sources.	Sum of U.12.1, U.12.2, U.12.3.
U.12.5	Unemployment Rate	No new data sources.	Total Unemployment (U.12.1) divided by Labor Force (U.12.4).

5.3 Adjustments to the 70-Step Handbook Method

Once the 70-Step estimates of employment and unemployment have been completed, BLS requires that several adjustments be made to them in order to produce "official" estimates. The adjustments are of three kinds. The first is CPS Benchmarking. In this the twelve monthly Handbook estimates for the past complete year are adjusted so that their average is equal to the annual average derived by the CPS sample survey of households. The second adjustment is one of two that are made to the monthly Handbook estimates of the current year. Termed the Extrapolation Procedure, it is in fact a preliminary CPS Benchmark adjustment, the purpose of which is to reduce the extent of adjustment between the current Handbook estimate and the Benchmark adjustment to be made at the close of the year. The third and final adjustment is the second made to the current monthly estimates of employment and unemployment for all areas below the State level to assure that their sum equals that for the State. 2/ It is the Forced Additivity Procedure. The inputs for these adjustments are given in Chart III following.

2/ In the past certain areas were excluded from this third and last adjustment. At one time or another, Clay County (the Minnesota portion of the Fargo-Moorhead SMSA), the City of Duluth, and the Minneapolis-St. Paul SMSA were not adjusted. Over a period of time the exemption from the adjustment process has been gradually reduced, so that first Duluth and Clay County and, later, the Minneapolis-St. Paul SMSA estimates were included in the adjustment process.

CHART III

Input Items and Data Sources for Adjustments to Handbook Estimates

HANDBOOK CATEGORIES		INPUT ITEMS AND DATA SOURCES	REMARKS: DEFINITIONS AND DESCRIPTIONS
Ad.1	Benchmarking	CPS estimate of annual average labor force employment and unemployment for the area. Data needed for the three most current past years. Monthly 70-Step Handbook estimates.	This is the process by which the monthly 70-Step Handbook estimates for the past calendar year are adjusted so that the annual average of the twelve monthly estimates equals the single annual average estimate for the area produced by the Current Population Survey (CPS) sample of households. The procedure includes steps which smooth out discontinuities between one year and the next. (See Chapter VII and Appendix B.)
Ad.2	Extrapolation	1. CPS monthly estimates for State employment and unemployment for the current month and the previous five months. 2. 70-Step Handbook estimates for employment and unemployment for the current month and the previous five months.	This is the process by which the monthly 70-Step Handbook estimates for the current year are adjusted in anticipation of the Benchmark adjustment at the close of the year. The extrapolated adjustment simply adjusts the current month's 70-Step Handbook employment and unemployment estimates by multiplying each by the ratio of two six month moving averages, the most recent CPS monthly estimates and the most recent 70-Step Handbook estimates.
Ad.3	Forced Additivity	CPS extrapolated estimates of employment and unemployment for the State. Handbook estimate for all counties or county-like areas for which estimates are computed, for example. Handbook estimates for the Minneapolis/St. Paul SMSA.	This is the process by which all areas below the State level are adjusted so that the sum of all substate employment estimates equals that for the benchmarked or extrapolated employment estimate for the State, and so that the sum of all substate unemployment estimates equals that for the benchmarked unemployment estimate for the State. For each of employment and unemployment, the State CPS Benchmarked estimate is divided by the sum of estimates for all of the State's mutually exclusive and exhaustive subareas. The resulting ratio is then multiplied by each subarea estimate. The result is the official county or SMSA estimate. The official unemployment rate is the percentage ratio of the unemployment estimate to the sum of unemployment and employment, all after forcing to insure additivity.

CHAPTER VI

Techniques for Small Area Estimates

It would be impractical, if not impossible, to calculate monthly labor force estimates for every census tract, village or community in each State. Consequently, the smallest geographic area for which independent estimates are routinely prepared is the county.

In recent years, however, Federal funding of several programs (i.e., CETA and Revenue Sharing), designed for local area conditions, has created a need for small community statistics.

Through 1977, Census-Share was the only method used in Minnesota to develop labor force estimates beneath the county level, but starting in 1978, an alternative procedure called Claims-Share became madatory for disaggregating estimates wherever possible.

6.1 Census-Share Method

As the name implies, Census-Share relies upon data from the latest decennial census (1970). Very simply, one calculates employment in a small area (for which a current estimate does not exist) as a percent of employment in a large area (which contains the small area and for which a current estimate is available) at the time of the Census. The percent of unemployment in the small area, in relation to the large area, is computed in the same fashion. These percentages are then applied to current data for the large area to obtain estimates for the small area. An example follows.

Step 1. Partitioning Census Employment and Unemployment to Develop Ratios

A January,1978,estimate is needed for Austin City.

Mower County contains the City of Austin.

Mower County employment in 1970 = 16,144 = 100.00%
of the total area.

Austin City employment in 1970 = 9,509 = 58.90%
of Mower County employment.

Mower County unemployment in 1970 = 765 = 100.00%
of the total area.

Austin City unemployment in 1970 = 473 = 61.83%
of Mower County unemployment.

Step 2. Applying the Ratios to Official Data

Current official data in January 1978:

Mower County: Employment = 16,610; Unemployment = 1,047

City of Austin:

Employment	= 16,610 x .5890	=	9,783
Unemployment	= 1,047 x .6183	=	647
Labor Force		=	10,430
Unemployment Rate		=	6.2%

The Census-Share Method has the advantage of being easy to calculate and providing census based estimates for very tiny areas. Its greatest weakness lies in the assumed fixed relationships between areas for the entire ten years between Censuses.

6.2 Claims-Share Method

The Claims-Share methodology utilizes U.I. claims data by place of residence together with 1970 census population and recent population estimates produced by the Bureau of Census.1/ The estimating procedure for employment essentially follows that of the Census-Share Method, but the procedure for deriving unemployment estimates is more complex. It is also more realistic in terms of underlying assumptions.

1/ Recent population estimates are published in P-26 (estimates for counties) and P-25 (counties and minor civil divisions down to the township level).

Disaggregating Employment

BLS research has shown that recent total population estimates are a better basis for disaggregating current employment than either counts of the labor force or employment from the 1970 Census. Therefore, population projections are used to allocate employment from a large area to smaller areas. An example follows:

Mower County total population in 1975 = 43,852 of the total area.	=	100.00%
Austin City total population in 1975 = 24,683 of Mower County population.	=	56.29%
January, 1978, Mower County "Official" estimate: (Handbook estimate [16,336] x Additivity Ratio [1.0149] = "Official" estimate)	=	16,610
Official Mower County employment x Austin City percent of total Mower County population = Austin City employment, i.e., 16,610 x .5629	=	9,350

Disaggregating Unemployment

Under the Claims-Share procedure only the experienced unemployed are disaggregated on the basis of claims data. It is felt that U.I. claims do not adequately reflect the distribution of new and reentrants. Rather, entrant behavior is more closely related to the age distribution of the population. Therefore, the Claims-Share process, with respect to unemployment, is quite complicated.

The first step in disaggregating unemployment is to form a percent distribution of the Handbook unemployed (for the area to be disaggregated) into: 1) experienced unemployed, 2) entrants related to the level of experienced unemployed ("B" factor unemployment), and 3) entrants related to the level

of the labor force ("A" factor unemployment). 2/ This percent distribution is then applied to the "Official" estimate of unemployment for the area to be disaggregated.

Step 1. Estimating the Experienced Unemployed for Mower County

In January,1978,the Mower County estimate by the Handbook Method was as follows:

Experienced Unemployed	=	833	= 72.62%
"A" Factor Unemployed	=	179	= 15.61%
"B" Factor Unemployed	=	135	= 11.77%
Total Handbook Unemployed	=	1,147	= 100.00%

In January,1978, the Mower County "Official" estimate was as follows: (Handbook Estimate x Additivity Ratio = Official Estimate), i.e.,

1147 x .9128 = 1,047 = Official Estimate

Experienced Unemployed	= 1,047 x .7262	= 760
"A" Factor Unemployed	= 1,047 x .1561	= 164
"B" Factor Unemployed	= 1,047 x .1177	= 123
Total Official Unemployment Estimate	=	1,047

Step 2. Estimating the Experienced Unemployed for the City of Austin

The second step is to disaggregate the experienced unemployed on the basis of the claims data percent distribution. Step 2 illustrated below.

In January, 1978, Mower County claims of total area.	=	503	= 100.00%
In January, 1978, Austin City claims of Mower County claims.	=	273	= 54.27%

2/ See Chapter IV for discussion of the "A" and "B" factors in the 70-Step Handbook Method.

Official Mower County experienced unemployed
x Austin City percent of Mower County Claims =
Austin City experienced unemployed, i.e., 760 x 5427 = 412

Step 3. Developing the "A" Factor Unemployed for the City of Austin

In the third step the 1970 Census is used to construct a percent distribution for the 14-19 year old population. This distribution is then used to allocate the "A" factor unemployed. Step 3 is illustrated below.

Mower County 14-19 year olds in 1970 = 5735 = 100.00%
of total area.

Austin City 14-19 year olds in 1970 = 3320 = 57.89%
of Mower County 14-19 year olds.

Official Mower County "A" factor unemployed
x Austin City percent of Mower County 14-19
year olds = Austin City "A" factor unemployed,
i.e.,164 x .5789 = 95

Step 4. Developing the "B" Factor Unemployed for the City of Austin

The next step is similar to the third, but uses the percent distribution of the 20 and over population to distribute "B" factor unemployed. Step 4 is illustrated below.

Mower County 20+ population in 1970 = 25,928 = 100.00%
of total area.

Austin City 20+ population in 1970 = 15,176 = 58.53%
of Mower County 20+ population.

Official Mower County "B" factor unemployed
x Austin City percent of Mower County 20+
population = Austin City "B" factor unemployed, i.e., 123 x .5853 = 72

Summarizing Claims-Share Method

We may now summarize the labor force estimates for Austin City as follows:

Step 2 = Experienced Unemployed = 412

Step 3 = "A" Factor Unemployed = 95

Step 4 = "B" Factor Uneployed = 72

Σ Step 2, 3, 4, = Total Unemployed	=	579
Total Employment	=	9,350
Labor Force	=	9,929
Unemployment Rate	=	5.8%

The main advantage of Claims-Share over the Census-Share method is that recent data are used to distribute the employed and experienced unemployed. On the negative side, it has several failings. First, population estimates (which are subject to error) are used.3/ Secondly, it assumes that the labor force participation rates are the same for all areas within the area being disaggregated.

3/ Population estimates more recent than 1970 do not contain age breakouts. Additionally, the 1970 census data are used to distribute entrants, a sizeable proportion of total unemployment. Yet another problem is the possibility of a town or area with an atypical distribution of population by age. For example, consider a city of 20,000 population in 1970 where a college of 8,000 enrollment was located. Since the Census counted the college students in the City's population, it is easy to see that the 14-19 year olds would form a disproportionate part of the total population. Consequently, "A" factor unemployment subsequently would be very high. If college students truly had high unemployment rates this would be fine, but it is widely known that college students have low unemployment rates and low labor force participation rates.

CHAPTER VII

Special Problems in Estimation

In the preceding chapters numerous references have been made to "Handbook" and "Official" estimates. In this chapter we shall attempt to explain CPS Benchmarking, Extrapolation from the CPS, and Forced Additivity, the mechanisms which transform Handbook numbers into official figures. Also included is a discussion of the effects and attendant problems of the transformation process. Lastly, we discuss the alleged superiority of the labor force (as opposed to work force) estimates in the context of reliability and use of the estimates.

7.1 Benchmarking to the Current Population Survey (CPS)

As we have noted in previous chapters, the CPS is a household survey which is conducted each month to determine the size and characteristics of the United States labor force.

Although it was designed as a National survey, some of the sample households are located in every State and major SMSA. Consequently, BLS has CPS data which they could use to produce monthly estimates for each State and many SMSA's. However, the sample is too small in most States (including Minnesota) to yield reliable estimates for any period less than annual.1/ It is the CPS annual average for a particular State to which its annual average Handbook estimates are controlled. This process is called CPS Benchmarking and it is done at the end of each calendar year.

1/ There are 10 States and 2 SMSA's which became direct use areas in 1978. BLS has increased the sample size in all areas recently and feels confident that monthly data for the above areas are reliable. These estimates are "Official" and are not subject to major adjustment or revision.

The mechanics of benchmarking involve manipulating, or fudging, the monthly Handbook estimates so that the annual average of the Handbook estimates is equal to the CPS annual average. The following example is an oversimplification of current practice.2/

Given: 1977 Minnesota CPS AA unemployment = 98,000
1977 Minnesota Handbook AA = 106,299

Then: $\frac{\text{CPS AA}}{\text{Handbook AA}} = \frac{98,000}{106,299}$ = .92192777 = Adjustment Ratio

And if: 1977 December Handbook unemployment estimate = 105,310

Then: 105,310 x .92192777 = 97,088 = Official unemployment estimate for December, 1977

It can be readily seen that multipying each monthly Handbook estimate by the adjustment ratio would produce an annual average of the Handbook estimates equal to the CPS.

7.2 Extrapolation from the CPS

The monthly CPS data for most States are not sufficiently reliable to use directly. Therefore, it is necessary, on a current basis to have a control which serves as a sort of proxy for the CPS AA (before it becomes available). This control procedure is called extrapolating from the CPS and yields official estimates. Effective with the January 1978 estimates, BLS introduced an extrapolation model for employment and unemployment based upon a ratio between the six month moving average of the CPS to the Handbook estimates. The following table illustrates the procedure for determining current unemployment:

2/ The oversimplification is in adjusting each of the 12 months by using the same ratio. This would cause large December to January changes in a time series if the adjustment ratio changed significantly from year-to-year, which it does. The benchmarking procedure also treats the first year, mid-year(s), and final year in a time series differently. The reader is referred to Appendix B for complete details. Although unemployment is used in the illustration, employment is treated identically.

Table I. Illustrating CPS Extrapolation

Year	Month	(1) Handbook Estimate	(2) Handbook 6 Mo. Moving Average	(3) CPS Estimate	(4) CPS 6 Mo. Moving Average	(5) Ratio Col. (4) ÷ Col. (2)	(6) Current Estimate Col. (5) x Col. (1)
1977*	Aug.	88209		90100			
	Sept.	80934		85100			
	Oct.	78393		94200			
	Nov.	89074		69400			
	Dec.	98339		66100			
1978	Jan.	109789	90790	90000	82483	.90850314	99744
	Feb.	103313	93307	106300	85183	.91293258	94318
	Mar.	96055	95827	103200	88200	.92040865	88410

* Some readers may notice that the 1977 Handbook estimates above do not agree with the December 1977 Handbook figure presented in Section 7.1 nor do they agree with the data for Year 8 (1977) in Appendix B. The estimates presented in Table I were developed by using an improved U.I. data base which became mandatory in 1978. Although we had improved U.I. data in 1977, we were not allowed to use it at the time. However, BLS recommended that the August through December estimates be recalculated at the end of the year with the improved data. The *raison d'etre* being to provide a continuous series for extrapolation purposes only.

BLS has also tested extrapolation models using 3-month and 12-month moving averages. They found that a 3-month model produced small annual revisions, but the extrapolated monthly estimates were suspect due to the unreliability of the CPS over such a short time frame. On the other hand, a 12-month model produced more realistic monthly estimates at the expense of larger annual revisions. In the end, they decided on a six month moving average model as a compromise.

In Minnesota, we are skeptical of the BLS's choice of models at this time. It appears to us that the CPS may lack the reliability necessary to justify a six month moving average. If a trade-off between reliable monthly estimates and sizeable annual revisions must be made, it might be well to opt for the best possible current estimate. This would be especially true

when the economy is entering or recovering from a recession and the unemployment rate, as an economic indicator, is given great weight in making policy decisions.

7.3 Forced Additivity - Introduction

Additivity is a characteristic of numerical process meaning, simply, that things add up.3/ In labor force estimation, the estimation process would be additive if the result of adding the estimates for each of the parts is equal to the estimate for the total area. Put another way, the property of additivity would be satisfied in an estimation process if the sum of all Minnesota County estimates were equal to the estimate for the State.

Monthly labor force estimates for Minnesota and its counties are not additive. For example, in March of 1974 the State unemployment estimate on a non-CPS4/ adjusted basis was 114,746 while the sum of non-CPS adjusted estimates for the nine county Minneapolis/St. Paul SMSA and each of the remaining counties outside the SMSA was 126,191. In September, 1970, the State estimate for unemployment was 68,914; the sum of estimates for the SMSA and counties was 59,891. Similarly, non-CPS

3/ Additivity is a populatized synonym for the property of linearity in alegebraic systems. In the mathematical notion a process is linear if; (1) the same result is achieved regardless of whether the process is applied separately to each of two elements and then the results of the process summed to whether the two elements are summed and the process applied to their sum, and (2) the same result is obtained regardless of whether the process is applied to some element and the result multiplied by a real number or the element is multiplied by the real number and the process applied to their product.

4/ CPS is the Current Population Survey. See Chapter III for a discussion of it. Handbook estimates are adjusted to equal the results of the CPS estimates on an annual average basis. Non-CPS estimates are the same as Handbook estimates.

adjusted State employment was estimated at 1,754,146 in November of 1976 while the separate estimates for the SMSA and remaining counties added to 1,725,671. For October 1975, State employment was 1,736,378, while the sum of subarea estimates was 1,749,619. We can see that, left to itself, the Handbook estimation process is not additive.

While additivity is a property, or characteristic, which a numerical process may or may not have, Forced Additivity is a procedure applied to the original estimates (which are not additive) in order to increase or decrease the separate small area estimates so that, added together, the forced estimates will equal the larger, or total, estimate. Put quite tersely, in the language of engineers, the original estimates are "fudged" in order to produce the desired effect. Applied to labor force estimation, Forced Additivity means that the labor force estimates for some or all of the substate areas are changed so that the total of all substate estimates is equal to the estimate for the State. Hypothetical illustrations are presented below.

7.3.1 Forced Additivity Illustrated

The following examples illustrate three of several ways in which Forced Additivity may be put into operation. In each case we consider a State composed of one multi county SMSA (M-1) and three counties (C-1, C-2, and C-3). Also in each case, the original estimates are as shown on the following page in Table II.

Table II. Original Unemployment Estimates

Area	Unemployment Estimates	
State		66,052
Subareas		75,266
M-1	25,044	
C-1	20,111	
C-2	16,000	
C-3	14,111	

Case I: Application of Additivity Adjustment to All Subareas.

In this case the objective of the Forced Additivity procedure is to change all substate area estimates so that they sum to the State estimate; that is to change the sum of subarea estimates from 75,266 to 66,052. This is done by forming the following Additivity Adjustment ratio:

$$R_a = \frac{\text{State Unemployment Estimate}}{\text{Sum of Estimates for Substate Areas}} = \frac{66,052}{75,266}, \text{ or}$$

$$R_a = 0.87758.$$

The Forced Additivity adjusted estimates are obtained by multiplying each substate estimate by the adjustment ratio. This process is shown in Table III.

Table III. Calculation of Additivity Adjusted Estimates Applied to All Areas (Case I)

Area	Original Estimate	Adjustment Ratio	Forced Additivity Adjusted Estimate
State	66,052		66,052
Subareas	75,266		66,052
M-1	25,044	0.87758	21,978
C-1	20,111	0.87758	17,649
C-2	16,000	0.87758	14,041
C-3	14,111	0.87758	12,384

Case II: Additivity Adjustment Applied to Only Some Subareas.

This case differs from the preceding one in that the forcing procedure is applied to only some of the substate areas. For example, until January, 1978, it was the practice to exclude the Minneapolis/St. Paul SMSA from the Additivity Adjustment. This would correspond to excluding M-1, found in Table I, from adjustment.

In this case, a different adjustment ratio is formed as follows:

$$R_a^* = \frac{\text{State Estimate - (M-1) Estimate}}{\text{Sum of Estimates for Remaining Substate Areas}}$$

$$= \frac{66{,}052 - 25{,}044}{20{,}111 + 16{,}000 + 14{,}111} = \frac{41{,}008}{50{,}222}, \text{ or}$$

$$R_a^* = 0.81653.$$

Again the areas to be adjusted are multiplied by the adjustment ratio. In this case, the areas will be (C-1), (C-2), and (C-3). Table IV shows the process. Note that the estimate for M-1 is unchanged.

Table IV. Calculation of Additivity Adjusted Estimates When Applied to All Substate Areas Except M-1 (Case II.)

Area	Original Estimate	Adjustment Ratio	Balance of State Adjusted Estimates
State	66,052		66,052
Subareas	75,266		66,052
M-1	25,044		25,044
C-1	20,111	0.81653	16,421
C-2	16,000	0.81653	13,065
C-3	14,111	0.81653	11,522

Note also that the exclusion of one subarea from the forcing procedure results in a more severe adjustment for the remaining areas to be adjusted. For example, the C-1 adjusted estimate is 16,421 under Case II, compared to 17,649 under Case I.

Case III. Additivity Adjustment Applied After CPS Adjustment to Some Areas.

In this case the State estimate and metropolitan SMSA estimate (M-1) are both adjusted to some other value before the forced additivity adjustment. Table V gives the illustrative estimates.

Table V. Original Handbook Unemployment Estimates and CPS Adjusted Estimates

Area	Original Unemployment Estimate	Unemployment Estimate Adjusted to the CPS
State	66,052	62,373
Subarea	75,266	77,137
M-1	20,044	26,915
C-1	20,111	20,111
C-2	16,000	16,000
C-3	14,111	14,111

Note that the State and Metropolitan, or SMSA (M-1) estimates are adjusted to Current Population Survey (CPS) estimates but that those for the non-metropolitan counties are not.

In this case we will make the Additivity Adjustment as in Case II. The value of the adjustment ratio when the CPS adjusted values are used is:

$$R_a^* = \frac{\text{State Estimate - Estimate for M-1}}{\text{Sum of Estimates of Substate Areas}} = \frac{35,468}{50,222}$$

$$= 0.70603.$$

Note that the effect of the CPS adjustments is to lower the State unemployment estimate (from 66,052 to 62,373) and to raise the unemployment estimate for the metropolitan SMSA, M-1 (from 20,044 to 26,915). The result is that the value of the numerator, or the difference obtained when the estimate for M-1 is subtracted from that for the State, is reduced. Since the county area (C-1, C-2, and C-3) unemployment estimates are not affected directly by the CPS adjustments, they are unchanged. Thus, there is a smaller numerator than before, but an unchanged denominator. The adjustment ratio is, therefore, smaller resulting in yet more severely changed estimates once Forced Additivity adjustment is applied. Table VI shows the result. Whether a reduction in unemployment will be the result depends on the effect of CPS adjustments in the State and M-1. If they result in a smaller remainder when CPS-adjusted M-1 estimate is subtracted from the CPS-adjusted State estimate, the result will be as here. If the result is a larger difference, the Forced Additivity Adjustments will be less severe (a larger

Table VI. Calculation of Forced Additivity Adjusted Estimates When Applied to All Non-SMSA subareas (using CPS Estimate) - Case III

Area	CPS Estimate	Adjustment Ratio	Additivity Adjusted Estimate
State	62,373		62,373
Subarea	77,137		62,373
M-1	26,915	0.70603	26,915
C-1	20,111	0.70603	14,199
C-2	16,000	0.70603	11,296
C-3	14,111	0.70603	9,963

adjustment ratio will be used) with the CPS adjustment than without them. Of course, if the State (M-1) difference is unchanged the CPS plays no role in the Additivity Adjustment process.

7.3.2 General Impact of Forced Additivity in Estimates

We remind the reader that our illustration has dealt with unemployment estimates, and that the official employment estimates are also derived after application of the Forced Additivity treatment. We can see how the combined effect of Forced Additivity upon unemployment and employment affects the unemployment rate from the following stepwise procedure.

(1) Original Unemployment Rate $= r = \frac{u}{u + e}$, where

(2) u = Handbook unemployment,

(3) e = Handbook employment.

Also,

(4) Forced Additivity Unemployment Rate $= r(a) = \frac{u(R_1^*)}{u(R_1^*) + e(R_1^*)}$, where

(5) R_1^* = Additivity Adjustment Ratio for unemployment,

(6) R_2^* = Additivity Adjustment Ratio for employment.

Put in another form, we define

(7) $R^* = R_2^*/R_1^*$, then

(8) $r(a) = \frac{u}{u + e(R^*)}$, or $\frac{1}{1 + \frac{e}{u}(R^*)}$.

The extent of the Forced Additivity adjustment can be seen by looking at the ratio of the adjusted to the unadjusted unemployment rate.

(9) $g = \frac{r(a)}{r} = \frac{u}{u + e(R^*)} \times \frac{u + e}{u}$

$$= \frac{u + e}{u + e(R^*)}, \quad \text{or} \quad \frac{1 + \frac{e}{u}}{1 + \frac{e}{u}(R^*)}.$$

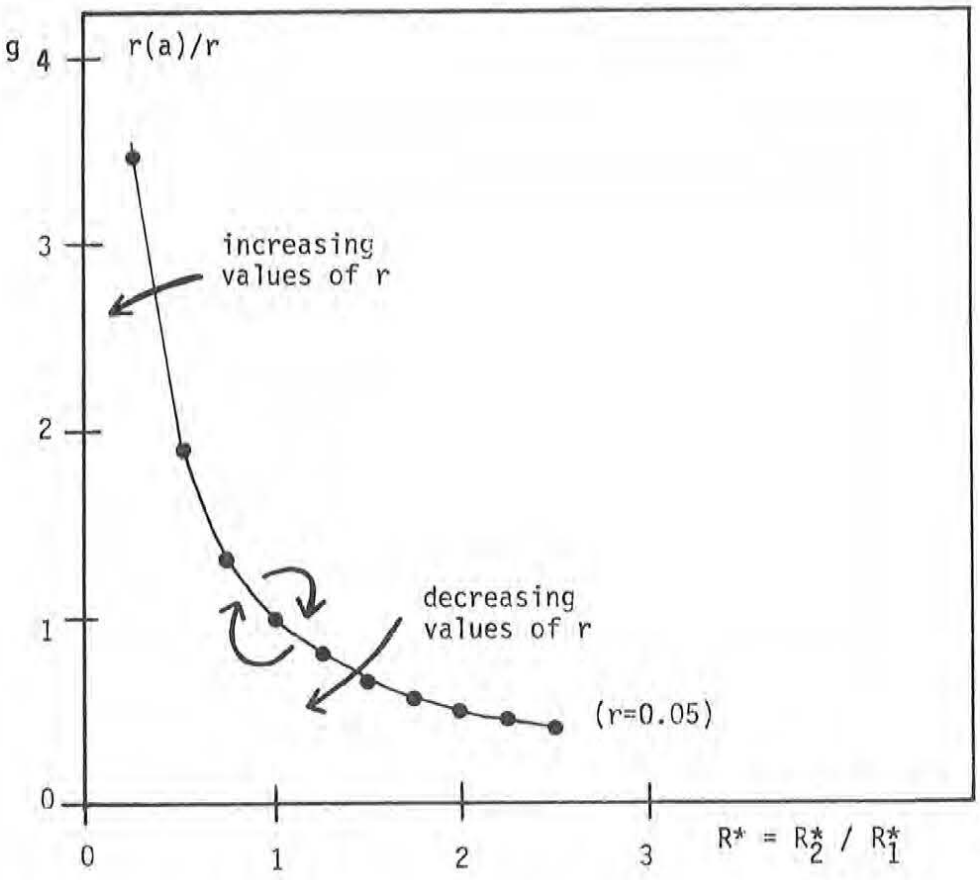
From this it is clear that the effect of the Forced Additivity adjustment upon the rate of unemployment will depend on the ratio of the employment adjustment to the unemployment adjustment ratio, or R*.

If the adjustment ratio applied to unemployment is the same as the adjustment ratio applied to employment, then Forced Additivity will not affect the unemployment rate (R* = 1). If the employment adjustment ratio (R_2*) is larger than that for unemployment (R_1*), the value of the ratio, R* will be larger than one and the effect of the adjustment process will be a reduction in the unemployment rate. If the ratio for employment is smaller than that for unemployment, the ratio, R*, will be less than one, and the rate will be raised by the adjustment process. Chart I below shows the relation of the extent of relative change in the unemployment rate, indicated by g = r(a)/a, to the ratio of adjustment ratio, R*, when the original unemployment rate is 0.05 as noted in the parenthesis assigned to the line in the chart.

The chart shows that as the value R* (the ratio of the Employment Adjustment Ratio to the Unemployment Adjustment Ratio) becomes larger the unemployment rate after the additivity adjustment will become <u>increasingly smaller</u> than the Handbook unemployment rate estimate. It also shows that as the Handbook unemployment rate increases, the line in the diagram rotates counterclockwise about the point (R*) = 1, g = 1. What this says is that for a given value of (R*), which is greater than one, the diminishing effect of the adjustment upon the unemployment rate will be more severe for those subareas with low unemployment rates.

However the effect of this is small. For example, for a ratio of 1.5 ($R^* = 1.5$), a Handbook estimate of 2.5 percent will be reduced by 33 percent, while a Handbook estimate of 12.5 percent will be reduced by 30 percent, or a difference of 3 percentage points.

Chart I. Graph of Relative Distortion in Unemployment Rate as a Function of The Ratio of Employment to Unemployment Adjustment Factors



7.3.3 The Minnesota Experience Under Forced Additivity

As applied in Minnesota after January 1, 1978, the Forced Additivity adjustment is applied to all counties and SMSA's in Minnesota. Case I illustrates such a procedure. However, the current practice follows

several previous schemes for applying the procedure. Labor force estimates began for the State in 1974 and for counties in 1975. In the beginning no Forced Additivity adjustment was applied when first instituted. The procedure was applied only to areas outside the Minneapolis-St. Paul SMSA, Clay County (the Minnesota portion of the Fargo-Moorhead SMSA), and the City of Duluth. After some time the practice was changed so that the City of Duluth and Clay County were included in the area adjusted to the Forced Additivity ratios. Only the Minneapolis-St. Paul SMSA was exempted, presumably because it had its own separate CPS sample and, therefore, independent control. Case III illustrates the effect of that practice. Then, as noted previously, the exception of the Minneapolis-St. Paul SMSA was removed on January 1, 1978, as part of a general revision of the methodology by BLS so that all substate areas are adjusted.

Thus, one aspect of the Minnesota experience is that the Forced Additivity procedure has been constantly changed. Each time the area subjected to additivity adjustment has been changed, the entire historical series also had to be changed. Thus, there have been <u>three</u> official versions of county and SMSA unemployment history for the period commencing with 1970 produced over the past four years. With each new series the picture of economic relationships among areas in Minnesota has been altered.

Of these, the most dramatic is that which occurred due to a shift to the current practice. Before January 1, 1978, the official statistics showed the Minneapolis-St. Paul SMSA with an unemployment rate that

Table VII. Value of R* (the Ratio of the Forced Additivity Adjustment Factor for Employment to that for Unemployment) by Month for the Period 1970-1976

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1970	1.2199	1.1428	1.1348	1.1028	1.1183	1.0840	1.0406	1.0459	0.9510	1.0512	1.0209	1.1500
1971	1.2202	1.3663	1.2835	1.3205	1.4339	1.3463	1.3235	1.2589	1.2680	1.2432	1.2437	1.3223
1972	1.2529	1.2761	1.2430	1.2184	1.2598	1.3136	1.2968	1.2105	1.1707	1.1540	1.1222	1.0741
1973	1.0731	1.0946	1.0647	1.0588	1.0344	1.0597	0.9945	1.0784	1.0037	1.0179	1.0496	1.1029
1974	1.1923	1.1823	1.3576	1.3419	1.4322	1.3395	1.3337	1.2491	1.2155	1.2426	1.1196	1.1421
1975	1.1967	1.2786	1.2682	1.2440	1.2760	1.2521	1.2392	1.1427	1.0639	1.0570	1.0665	1.0518
1976	1.0309	1.0762	1.0485	1.0454	1.0498	1.0592	1.0037	1.0022	1.0094	1.0056	1.0201	1.0534

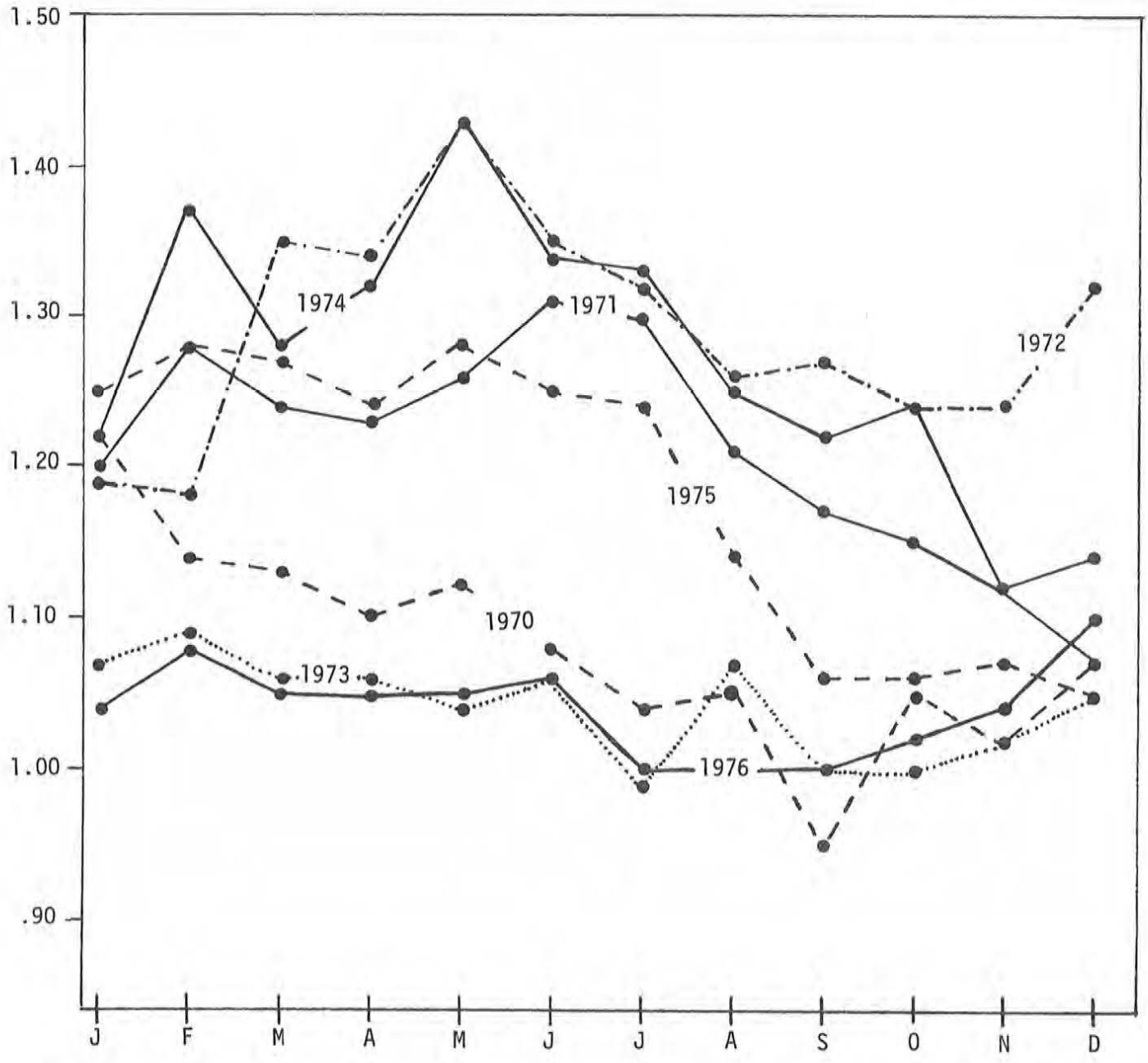
was higher than the State as a whole. Following the change which includes the Minneapolis-St. Paul SMSA in the additivity adjustment area, the relationship reversed. Minneapolis-St. Paul now had a lower relative rate. We must also point out that during the period in which no additivity adjustment was made (prior to 1974), areas outside the SMSA also displayed high unemployment rates relative to the SMSA when compared to the result under the first two additivity procedures. Hence, the relative unemployment rates for the Minneapolis-St. Paul SMSA and the balance of state counties and areas have flipped twice.

What is said here about the Minneapolis-St. Paul SMSA relative to the rest of the State can also be said about other areas as they have been moved from the area excluded from adjustment to the area included in adjustment. Thus, when Duluth was included in the area affected by the additivity adjustment, its unemployment rate, both absolutely and in comparison to the rest of Minnesota, decreased considerably.

As we pointed out in our general discussion of section 7.3.2, the ratio of the additivity adjusted estimate to the estimated Handbook employment rate for subareas depends on the ratio $R^* = R_2^*/R_1^*$, (See 7.3.2.(9)). Similarly, the adjusted unemployment rate, r(a), itself takes the form shown in 7.3.2(8) as, $r(a) = \frac{u}{u + e(R^*)}$, or $\frac{1}{1 + \frac{e}{u}(R^*)}$.

Table VII gives the value of the crucial ratio, R*, for the period of 1970-1976. An examination of the table shows considerable variation in the value of R* over the seven years, with a low value of 0.95 in September of 1970 and a high value of 1.43 in May of 1971 and 1974. These values are plotted in Chart II in a manner which compares

Chart II. Values of R* by Month for Each of Years, 1970-1976



performance over the 12 month period. The chart clearly demonstrates the variation that exists in R* and, thereby, the relative degree of change in adjustment from month to month. The chart can also be expected to reveal any tendency toward seasonal behavior in R*. However, when the patterns of movement over each of the years are compared, little similarity of pattern is apparent.

Table VIII and IX show percentage change in R* from one month to the next. Table VIII is based on the current definition of areas to be Forced Additivity adjusted while Table IX is based on the preexisting definition which excluded Minneapolis-St. Paul from the area to which the adjustment process applied.

Since the adjusted unemployment rate, r(a), depends on R*, the percentage change in the adjusted rate <u>for constant employment and unemployment</u> will also depend on the percent change in R*. The expression takes the form,

7.3.3 (1)

$$\text{Percent change in adjusted value} = -\left(\frac{e/uR^*}{1 + e/u\ (R^*)}\right) \times \left(\text{Percent change in } R^*\right).$$

When this relationship is examined, the value of the term,

$$-\frac{(e/u)R^*}{1 + (e/u)R^*},$$

varies from 0.80 to 0.99 depending on the unemployment rate. (In our examination the 0.80 value occurred at an unemployment rate of 10.0 percent which is unlikely to occur under most circumstances in Minnesota.) Therefore, the percentage change in the additivity adjusted unemployment rate, under conditions of no change in unadjusted rate, varies between 0.99 and 0.80 of the percentage change in the ratio, R*, of adjustment factors.

Table VIII. Percentage Change in R* by Month for Period 1970-1976, All Substate Areas in Forced Additivity Adjustment Area.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1970		-6.32	-0.70	-2.82	1.40	-3.07	-4.01	0.51	-9.07	10.53	-2.88	12.64
1971	6.11	11.98	-6.06	2.89	8.56	-6.11	-1.69	-4.88	0.72	-1.96	0.04	6.32
1972	-5.24	1.85	-2.59	-1.98	3.40	4.27	1.28	-6.65	-3.29	-1.42	-2.75	-4.29
1973	-0.10	2.01	-2.74	-0.55	-2.30	2.45	-6.16	8.43	-6.93	1.42	3.10	5.08
1974	8.10	-0.84	14.82	-1.16	6.74	-6.47	-0.44	-6.34	-2.69	2.23	-9.89	2.00
1975	4.78	6.85	-0.81	-1.91	2.57	-1.87	-1.03	-7.79	-3.18	-4.46	0.90	-1.37
1976	-1.99	4.39	-2.57	-0.30	0.42	0.90	-5.25	-0.15	0.72	-0.37	1.44	3.26

Table IX. Percentage Change in R* by Month for Period 1970-1976, All Substate Areas Except Minneapolis-St. Paul SMSA in Forced Adjustment Area.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1970		-9.52	-0.75	-3.79	4.72	-3.76	-7.81	3.39	18.85	24.24	9.76	7.41
1971	9.66	25.79	-15.50	11.83	29.10	-14.75	0.00	-11.06	10.27	-5.88	-3.65	8.11
1972	-19.50	3.73	-3.59	-1.24	12.58	18.99	-2.35	-9.13	-5.29	-6.70	-11.98	-12.93
1973	0.00	3.13	-3.79	-3.15	-3.44	8.33	-11.54	19.13	-13.14	0.84	4.17	9.60
1974	5.84	-1.38	25.17	0.00	11.73	-7.50	-1.62	-9.89	-3.05	23.27	-32.65	0.75
1975	9.02	16.55	0.00	-4.73	13.04	-5.49	0.00	-15.70	-2.76	-9.93	3.94	-3.79
1976	-5.51	10.83	-2.26	5.38	5.83	1.38	-11.56	0.00	8.46	-4.25	0.00	0.00

Unemployment rates are usually expressed in terms of a tenth of one percent. Therefore, a change of 1.5 percent in R* is almost certain to produce a change in the official rate at an unemployment rate of 5.0 percent even when the Handbook calculation shows no change. (At higher unemployment rates, a smaller percent change in R* would produce a change in the offical rate; at lower rates a percent change larger than 1.5 would be required.) Changes of that magnitude took place in at least 60 of the 83 monthly periods shown in Table VIII.

In practice, the Handbook unemployment rate is changing from one month to the next. What then happens is that the additivity adjustment distorts the pattern of change over time, either cancelling out, reversing, or intensifying, the Handbook estimate. This would be true even if the change in R* were constant or predictable. It is even more so when, as can be seen in Chart II or Table VIII, the change in R* is erratic.

Table IX is presented for comparative purposes. Note that under the preexisitng application of the additivity adjustment ratios, the percent changes in R* were larger than at present.

An investigation into the importance of the effect of the additivity adjustment was performed when the procedure giving rise to the data in Table IX was in effect. A labor force analyst conducted an analysis of variance to determine whether the additivity adjustment ratios or the Count of Weeks Claimed (under U.I.) less partials were more important in determining the official rate. Weeks Claimed was the largest

component of direct data used in the Handbook unemployment rate computation at that time. Despite this, it was found that the additivity adjustments were the most important determinants of the official rate. What this means is that Weeks Claimed (less Partials) for unemployment compensation could be increasing, along with the Handbook estimate, while the official rate of unemployment would be decreasing.

In 7.3.2 (8) we noted that the relative degree of adjustment was expressed by

$$\frac{r(a)}{r} = \frac{u + e}{u + e\,(R^*)} + \frac{1 + \frac{e}{u}}{1 + \frac{e}{u}\,(R^*)} .$$

Given present practice, for any two areas at the same time the value of R* will be the same. However the value of e/u depends on the unemployment rate since

$$\frac{e}{u} = \frac{1-r}{r} .$$

Thus when the Handbook unemployment rate differs among areas, the relative degree of adjustment between areas will also vary. Obviously, unemployment rates do differ among substate areas and, therefore, the relative capacity of the additivity adjustment to distort underlying changes will be unequal between areas. Thus, conclusions as to the comparative direction of change in unemployment rates between several counties may depend on whether Handbook or official estimates are used.

Forced Additivity, therefore, has the potential to change the pattern of change in unemployment rates for a particular county over time as well as the relative rates between counties at the same time. This complicates matters for those responsible for the intertemporal and

interarea analysis of changes in economic behavior. The next section (7.4) of this chapter refers especially to the impact of Forced Additivity upon seasonal analysis.

7.3.4 Problems Due to Additivity Adjustment and Summary

As stated earlier the current method for producing official BLS sanctioned estimates uses the CPS estimates as the point of reference. BLS feels that CPS estimates for the State are superior to the Handbook estimates. That may or may not be true at the State level.5/ However, since the CPS adjustment is transmitted to the counties and SMSA's through the Forced Additivity Adjustment and significantly affects estimates of unemployment at the county level, local government officials have frequently reacted to this procedure with concern.

Independent of the issue of the accuracy of the estimates on an annual average basis, at any point in time and for any given area, there is the issue of consistency of the series over the historical time period and its comparability between areas. It is often the case that planners and analysts are at least as much interested in whether the local economy is improving or not (over time or in comparison with others) as they are in the exact present condition. It is here that the additivity adjustment process causes the greatest problems.

We have indicated that when one consults Table VII one will notice significant changes in the ratio, R*, both from one month to another for the same year and from one year to another for the same month. If quarterly values are calculated the same characteristic is present.

5/ The issue largely depends on the adequancy of the CPS sample as a mechanism for providing State as opposed to National estimates.

This variability is so great that the direction of change in unemployment behavior between time periods frequently differs depending on whether the Handbook or the official series is used. In fact an earlier analysis of variance applied to labor force estimates for several selected counties showed that the additivity ratio is the single greatest explanatory variable in determining the direction of change in rates over time. It exceeded that for the most important administrative data input to the Handbook procedure, Insured less Partial Covered Unemployment, used at the time. The effect is magnified when one moves from the entire additivity adjusted area to the particular counties within it. It has been the experience of analysts that a count of the number of counties with increasing unemployment rates, decreasing rates, and no change are drastically different depending on whether the Handbook or official series is used. For example, in one case the official estimates showed 19 out of 75 counties with increasing unemployment rates over a three month period while the Handbook series showed almost double that number.

It is the conclusion of this section that when analyzing economic conditions over time, the analyst might well consider the unadjusted Handbook estimates. This applies to casual over-the-quarter and over-the-year comparisons, as well as to more ambitious seasonal adjustment procedures.

Finally, we must state that the definition of the area to be included in the additivity adjustment area has been subjected to constant change. Originally the area was all of Minnesota minus the Minneapolis/St. Paul SMSA, the City of Duluth, and the Clay County, Minnesota, portion of

the Fargo/Moorhead SMSA. Later that was changed to the State minus the Minneapolis/St. Paul SMSA. At this writing, BLS requires that all areas in the State be additivity adjusted. This has made analysis dependent upon almost annual revisions of entire time series and is additional reason to consult unadjusted Handbook estimates when seeking to understand the economic behavior of Minnesota counties and subareas.

7.4 Seasonally Adjusting Minnesota's Labor Force Data[6/]

Many of the data series currently being used to track the performance of the economy are seasonally adjusted. In order to normalize the data series and permit one to determine whether economic conditions are improving or deteriorating, adjustments are made to eliminate seasonal effects as much as possible. For example, because retail sales are highly seasonal, indexes are computed and used to remove the seasonal effects from monthly and quarterly data. In a similar manner, indexes are developed to adjust monthly and quarterly labor force estimates. However, before such adjustments can properly be made, the data itself should accurately reflect the seasonality that is inherent in the series. Otherwise, seasonal adjustment merely exacerbates the problem of measuring change between two time periods.

This section looks at the problem of seasonally adjusting the labor force data currently being produced in Minnesota in accordance with the official

---

6/ This section was written before the January 1978 revision in the BLS methodology. At that time, the additive model for extrapolating unemployment estimates was replaced with a multiplicative model. Additionally, the BLS ceased to provide independent CPS estimates for the Minneapolis-St. Paul SMSA and required that the Forced Additivity rule be applied to the Handbook estimates for the area. Preliminary review of the revised series suggests that the data are still deficient for developing reliable seasonal adjustment factors.

methodology of the Bureau of Labor Statistics (BLS). It specifically focuses on the various adjustments to the 70-Step Handbook estimates and how these adjustments affect the seasonal adjustment process. In order to determine the effects of these adjustments on the seasonal adjustment process, both data series (i.e., Handbook estimates and the official BLS estimates) for Minnesota and several sub-state areas were seasonally adjusted. The seasonal indexes were constructed using a ratio to moving average methodology and then were applied to the estimates of unemployment for the years 1970 through 1976.7/

7.4.1 CPS Area - Past Years

Once each year the BLS provides the Minnesota Department of Economic Security (MDES) with annual average estimates of employment and unemployment for Minnesota and the Minneapolis-St. Paul SMSA for the CPS. During the year, MDES, produces monthly and annual average estimates of employment and unemployment utilizing the 70-Step Handbook method. The BLS requires that these Handbook estimates be benchmarked to the CPS, usually at the end of the year, for the previous twelve months. This means that the monthly estimates are adjusted so as to yield an annual average estimate equal to that provided by the CPS. This benchmarking process for a single year could be accomplished by multiplying each month's Handbook estimate by the ratio of the CPS annual average to the Handbook Annual Average, $\left(\frac{\text{CPS Annual Average}}{\text{Handbook Annual Average}} = \text{Ratio}\right)$. However, when one begins to construct a time series of estimates a serious problem develops if the ratio of the two annual averages is not consistent between years,

---

7/ It was not considered necessary to carry out this exercise for employment because the CPS and benchmarking adjustments to the Handbook estimates are very small when compared to those made to the estimates of unemployed and would not likely affect the seasonal adjustment process.

i.e., the December to January change will be altered and a discontinuity in the series occurs.

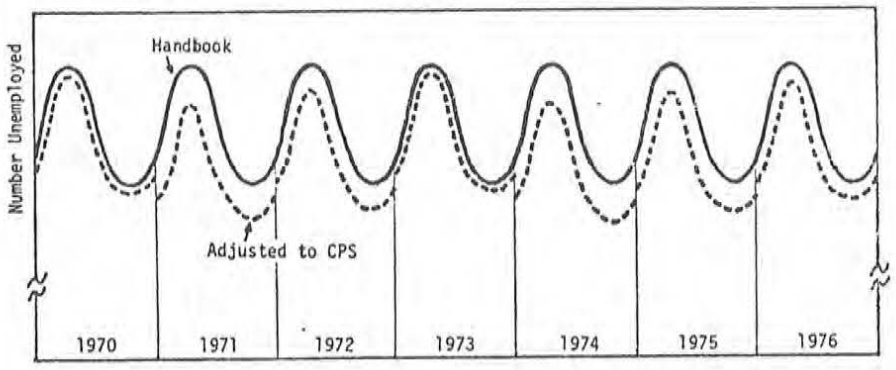
As can be seen from Table X below, the ratio of the two annual averages has not been consistent, which contributes to the discontinuity in the series.

Table X. - Minnesota Annual Average Unemployment

Year	CPS Estimate	Handbook Estimate	Ratio CPS to Handbook
1970	68,000	73,299	.9277
1971	73,000	92,949	.7854
1972	73,000	90,251	.8089
1973	80,000	82,855	.9655
1974	77,000	96,521	.7978
1975	107,000	127,868	.8268
1976	110,000	119,951	.9170

Thus, if the December, 1970, Handbook estimate of unemployment were multiplied by .9277 and the January, 1971, estimate multiplied by .7854, it would result in a distorted relationship between December and January estimates. This becomes a serious problem when trying to construct a time series. The following chart illustrates the type of distortion that would result by simply adjusting each month's Handbook estimate by the appropriate yearly ratio. Note the discontinuity in the adjusted series as represented by the dashed line in Chart III.

Chart III. Minnesota Unemployment



In order to form a time series which is both consistent with CPS annual averages and contiguous, an additional adjustment is required. To accomplish this, the CPS to Handbook ratios for two consecutive years are wedged out over an eight month period, September through April. This is done by giving the two ratios a series of different weights to wedge one year's ratio out and another year's ratio in.8/ In this wedging process December and January are weighted equally so that the percent change between months is unaltered and the continuity of the series is "preserved". This wedged data must then be adjusted by another ratio to bring it back into conformance with the CPS.

Given these adjustments, what is the effect on the seasonal adjustment process? There are three ways in which the seasonally adjusted series could be affected. First, the wedging process could modify the seasonal component producing different estimates of the seasonal pattern. Second, it could affect the trend-cycle component, resulting in different estimates of seasonally adjusted unemployment. Third, it is possible that both the seasonal and trend-cycle components could be affected by the benchmarking process.

Comparison of the seasonal indexes for the Handbook series and the CPS benchmarked series show that the benchmarking process did not drastically alter the seasonal pattern. When comparing the two data series for Minnesota on a month by month basis, the largest difference in seasonal

---

8/ To illustrate, the following method was used to wedge out the difference in the CPS to Handbook ratio for 1970 and 1971: September = 7/8 x .9277 + 1/8 x .7854, October = 6/8 x .9277 + 2/8 x .7854, November = 5/8 x .9277 + 3/8 x .7854, December = 4/8 x .9277 + 4/8 x .7854, January = 4/8 x .9277 + 4/8 x .7854, February = 3/8 x .9277 + 5/8 x .7854, March = 2/8 x .9277 + 6/8 x .7854, and April = 1/8 x .9277 + 7/8 x .7854. These new ratios are then used to adjust the monthly Handbook estimates.

indexes was 1.4 index points in January. Assuming an unemployment level of 125,000 and a seasonally adjusted labor force of 1,850,000, this difference would only alter the seasonally adjusted unemployment by approximately 1,200 persons and the seasonally adjusted unemployment rate by 0.1 percentage point. When comparing the two data series for the Minneapolis-St. Paul SMSA, the largest difference was 0.6 percentage points. The seasonal indexes of the Handbook and CPS benchmarked series for Minnesota and the Minneapolis-St. Paul SMSA are presented in Table XI. The reader may experiment with the differential effects by hypothesizing various levels of unemployment for seasonal adjustment using the two sets of indexes.

Table XI. Seasonal Indexes of Unemployment

Minnesota

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
Handbook	121.5	123.7	123.7	112.5	92.0	105.5	93.2	84.8	78.6	77.5	85.9	101.1
CPS Benchmarked	120.1	124.6	123.3	111.8	92.4	104.8	93.5	85.0	79.3	77.9	86.4	101.0

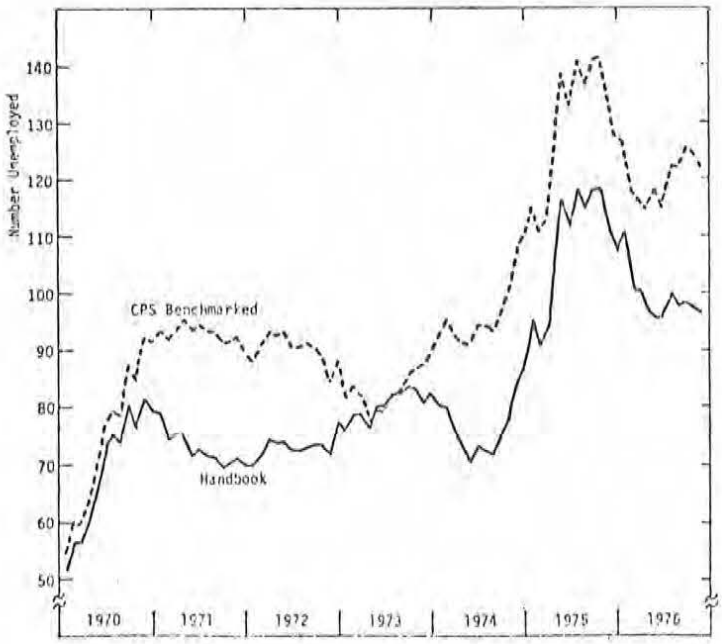
Minneapolis-St. Paul SMSA

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
Handbook	111.5	114.1	112.4	105.6	91.6	110.3	99.7	91.5	88.3	86.2	88.6	100.1
CPS Benchmarked	111.5	113.9	112.1	105.0	91.6	110.2	100.2	91.8	88.7	86.6	88.6	99.7

It appears that because of the relatively long period of time over which the wedging process takes place (8 months), the effect on each individual month is relatively small, and thus the seasonal pattern is left relatively unaltered. Therefore, if one is trying merely to describe the seasonal pattern of unemployment in Minnesota or the Minneapolis-St. Paul SMSA, CPS benchmarking does not create a serious problem. If, however, one is interested in producing a seasonally adjusted unemployment series, the analysis must also look at the trend-cycle component. How do the Handbook and CPS benchmarked estimates of unemployment compare after being

seasonally adjusted? To gain perspective on this problem, Chart IV was constructed.

Chart IV. Minnesota Unemployment-Seasonally Adjusted



Examination of Chart IV clearly indicates that the two data series describe different trends. If they described the same trend, but merely differed in level, one would find two nearly parallel lines. Such is not the case. The lines diverge as 1970 ends, converge in mid-1973, and diverge again as 1973 ends. To explain this behavior we must again look at the CPS benchmarking process since it is the source of the difference between the two data series.

Referral to Table X provides an explanation of the convergence and divergence of the two series. From the Table it can be seen that the ratio of the CPS to Handbook annual average in 1970 was 0.9277, whereas in 1971 it was .7854. This is a relatively sizeable discrepancy to wedge out.

Similarly, the ratio of the annual averages for 1972 and 1974, 0.8089 and 0.7978, respectively, are very different from the 0.9655 ratio of 1973. This would result in large discrepancies being wedged at both the beginning and the end of 1973. The convergence and divergence of the two data series can thus be explained by the inconsistency of the ratio of the CPS to Handbook annual average and the resultant wedging process which is used to "preserve" the continuity of the CPS benchmarked series.

Although it has been shown that the seasonal pattern was not seriously altered by the benchmarking process, the same cannot be said for the trend-cycle component. For example, if one were to look at seasonally adjusted unemployment for the period from late 1973 through early 1974, one draws a different conclusion depending upon which data series is used. Using the Handbook series one concludes that unemployment was increasing during the period, whereas the official, CPS benchmarked data leads one to the opposite conclusion. Similarly, from mid-1972 to mid-1973 the CPS benchmarked series shows a modest rise in unemployment, whereas the Handbook series shows a pronounced decline in keeping with the bouyant labor market and economic conditions in the State. The problem is obvious, but which series is correct?

7.4.2 CPS Areas - Current Year

The BLS requires that the current year estimates of employment and unemployment also be adjusted to the CPS. However, since one cannot have an annual average until year's end, this adjustment must take a different form than that used to benchmark previous years. An additive extrapolation model is used to adjust current year estimates of unemployment to

the CPS. This model utilizes the relationship of the December Handbook and CPS benchmarked estimates of unemployed for the most recent year for which a CPS annual average estimate is available (currently 1976). The absolute difference between these figures is then used to adjust the current monthly Handbook estimates to the CPS. For example, if the December 1976 Handbook and CPS benchmarked estimates of unemployed are 118,000 and 108,000 respectively; then to adjust a monthly estimate for 1977 to the CPS, one would subtract 10,000 from the Handbook estimate. This constant difference is used to adjust the monthly Handbook estimates throughout the year until the CPS annual average estimate is available about February of the following year. At that time the estimates are revised using the ratio of the annual averages as discussed earlier. What is the effect of this new adjustment on the seasonal adjustment process?

We have seen that the problem with seasonally adjusting unemployment estimates for the past years is the wedging process used to "preserve" the continuity of the series, but that cannot be a problem for current year estimates since no wedging is required. However, as we have seen, there is a significant difference between the adjustment processes for past years and the current year. For past years the unemployment series is benchmarked to the CPS by a multiplicative model utilizing a ratio of annual averages, but during the current year the series is adjusted by an additive model utilizing an absolute difference. It is the effect of the difference between an additive and a multiplicative model that must be explored in order to evaluate the possibility of seasonally adjusting current year estimates for CPS areas.

Let us hypothesize an unemployment series for Minnesota with December and annual average Handbook estimates of 100,000 and CPS benchmarked estimates of 80,000. Let us further hypothesize, that during the following year each monthly Handbook estimate was equal to 100,000 times the seasonal index for that month (as shown in Table XI). This would yield seasonally adjusted estimates of 100,000 for each month of that year. The original estimates can be adjusted to the CPS by either the additive or the multiplicative model. The additive model would decrease each Handbook estimate by 20,000 persons while the multiplicative model would decrease each estimate by 20 percent. Each series could then be seasonally adjusted. The results are shown in Chart V.

Chart V. Seasonally Adjusted Unemployment

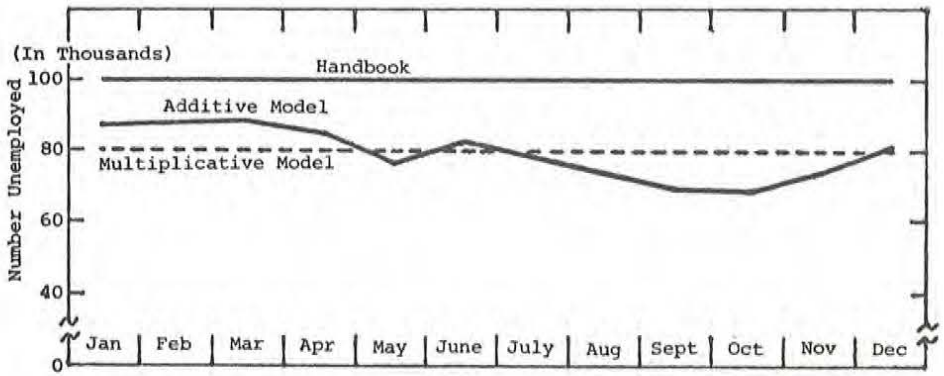


Chart V shows that while the multiplicative model leaves the trend-cycle component unaltered and the estimates adjusted by this method differ from the Handbook only in level, the additive model produces swings in the data series which are foreign to the Handbook estimates. These swings result because leaving the absolute change from one month to the next unaltered results in a distortion of the percent change between

months. Thus, changes in seasonally adjusted unemployment could be either increased or decreased depending upon whether the actual change coincided with or ran contrary to the swings caused by the use of the additive model.

7.4.3 Balance-of-State Areas

The Balance-of-State is defined as the State minus any sub-State areas benchmarked directly to the CPS, i.e., any area for which a CPS annual average is produced. For Minnesota this is the State less the nine county Minneapolis-St. Paul SMSA. There are approximately 75 areas within the Balance-of-State, and independent Handbook estimates of employment and unemployment are prepared for each. These Handbook estimates must also be adjusted, but by yet a different method, called Balance-of-State or Forced Additivity process.

The Balance-of-State process serves two purposes. One, it insures that the sum of all sub-State areas will equal the independently derived State estimate. Second, it indirectly adjusts the area's employment and unemployment estimates to CPS levels. This process uses two additivity ratios, one for employment and another for unemployment. The numerator of the additivity ratio for unemployment is the estimate of unemployment in the Balance-of-State obtained by subtraction, that is, the number unemployed in the State minus the number unemployed in the Minneapolis-St. Paul SMSA after each has been adjusted to the CPS. The denominator is the estimate of unemployment obtained by addition, that is, the sum of the independent Handbook estimates of unemployment for all areas exclusive of the Minneapolis-St. Paul SMSA. The Handbook estimate of unemployment for each area within the Balance-of-State

is then multiplied by the additivity ratio to produce the official additive set of unemployment estimates. Similarly, an additivity ratio is constructed for employment, and the Handbook estimate of employment for each area is multiplied by that ratio. Given yet another adjustment method, what is its effect on the seasonal adjustment process?

We have seen that when adjustments are made using a multiplicative model it is important that the adjustment ratio is stable over time. If it is not, there will be distortions in the time series and resultant distortions in the seasonal index and/or seasonally adjusted series. The monthly additivity ratios used to adjust employment estimates for the Balance-of-State areas have been very stable and approximately equal to one. On the other hand, the additivity ratios used to adjust the estimates of unemployment are widely dispersed as shown in Table XII.

Table XII. Additivity Ratios for Unemployment

	1970	1971	1972	1973	1974	1975	1976
January	0.69	0.66	0.57	0.79	0.67	0.66	0.81
February	0.79	0.52	0.55	0.78	0.69	0.58	0.73
March	0.78	0.60	0.60	0.82	0.54	0.58	0.75
April	0.82	0.54	0.59	0.83	0.53	0.59	0.73
May	0.78	0.40	0.52	0.85	0.46	0.50	0.68
June	0.81	0.48	0.42	0.78	0.50	0.59	0.66
July	0.87	0.47	0.43	0.88	0.51	0.55	0.75
August	0.84	0.53	0.47	0.74	0.57	0.64	0.76
September	1.06	0.47	0.51	0.85	0.59	0.67	0.72
October	0.83	0.51	0.55	0.84	0.52	0.74	0.73
November	0.76	0.54	0.65	0.82	0.73	0.71	0.75
December	1.02	0.48	0.75	0.75	0.72	0.71	0.74

It can be seen from Table XII that the additivity ratio for unemployment has not been stable. The additivity ratio ranges from a low of 0.40 in May 1971, to a high of 1.06 in September 1970. The effects of this large variation in the additivity ratio make comparisons over time difficult, if not impossible. For example, if one merely compares the current

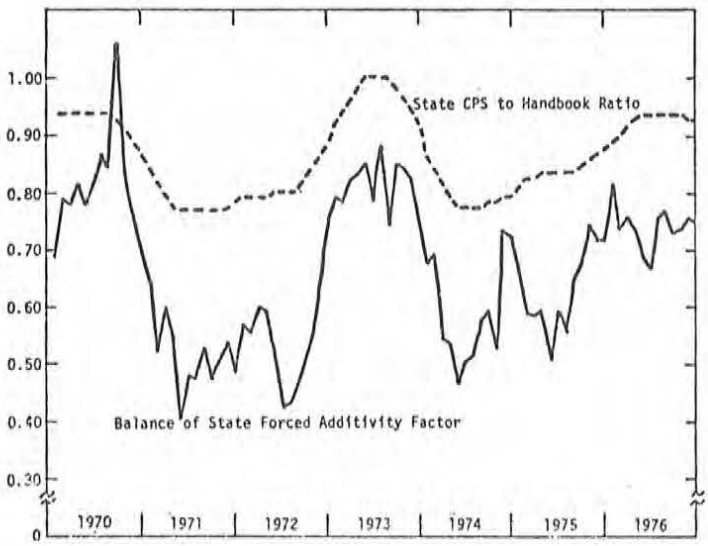
month with the previous month and the same month one year ago using December 1975 as the current month, one would have little problem because the additivity ratios for the three months are 0.71, 0.71, and 0.72. However, if one were to use July 1973 as the base month the relevant additivity ratios would bounce from 0.88 to 0.78 and then to 0.43, and the changes over time are seriously distorted.

In order to determine the effects of these distortions on the seasonal adjustment process, the unemployment estimates, both Handbook and Official, of our Balance-of-State counties were seasonally adjusted. The seasonal indexes and the seasonally adjusted unemployment of the two series for each county were then compared. Unlike the CPS areas, the seasonal indexes for the Balance-of-State areas of the two series differed greatly. The largest difference in the seasonal indexes, when comparing Handbook and official series on a month by month basis, ranged from a low of 9.0 in one county to a high of 14.0 in another. This poses a much greater problem than the 1.4 and 0.6 percentage point differences found in the Minnesota and Minneapolis-St. Paul SMSA seasonal indexes. The differences in seasonal indexes in the Balance-of-State areas would significantly affect estimates of seasonally adjusted unemployment and the resultant seasonally adjusted unemployment rates. One can conclude that the seasonal pattern has been altered by the Balance-of-State adjustment process.

If one compares the monthly additivity ratios for the Balance-of-State to the monthly CPS to Handbook ratio for Minnesota, one can see why the seasonal pattern of unemployment in the Balance-of-State is altered while that of the State is not. The additivity ratio has a mean ($\bar{X}$) of 0.67 and a standard deviation(s) of 0.14. The monthly ratio of

CPS to Handbook unemployment for Minnesota has a mean ($\overline{X}$) of 0.86 and a standard deviation(s) of 0.07. The coefficients of variation ($V=\frac{s}{\overline{X}}$) for the respective adjustment ratios are 0.21 and 0.08. Therefore, when the standard deviations are adjusted for the difference in the level of the means, the variation in the additivity ratio for the Balance-of-State is 2 1/2 times as great as that of the State monthly CPS to Handbook ratio. The additivity factor is allowed to fluctuate freely to whatever level is necessary, while the monthly CPS to Handbook ratio is controlled to minimize the month to month change. This can be seen in Chart VI.

Chart VI. Comparison of Monthly Adjustment Factors



As can be observed from Chart VI the additivity ratio is much less stable than the State CPS to Handbook ratio, and seriously affects the estimates of the seasonal pattern. Given the difference in the original series and the seasonal patterns, how do the Handbook and Official unemployment series compare after they are seasonally adjusted?

When graphed, the seasonally adjusted unemployment, both Handbook and Official, for each of the four counties tested is very similar in appearance to Chart VI. The two data series for each county converge and diverge at approximately the same time as the State data. Thus, the Balance-of-State process provides double trouble for the analyst wishing to seasonally adjust unemployment: two estimates of the seasonal pattern and two estimates of trend cycle component.

7.4.4 Conclusions

We have seen that each of the three adjustment processes which we examine affects the seasonal adjustment process differently. For past years of data, the seasonal pattern of a CPS area is not seriously altered by the benchmarking process. The difference in trends of Minnesota's two unemployment series (Handbook and CPS adjusted), is a reflection of the fact that the Handbook and CPS annual averages differ not only in level, but in trend as well. In this case the problem is not with the seasonal adjustment process, but rather, the question of which method yields a better estimate of changes in unemployment.

The problem of seasonal adjusting current data for a CPS area is quite different. During the current year we have only one estimate of trend, the Handbook estimate. The problem here is mathematical. As we have seen the combined use of an additive extrapolation model and a multiplicative seasonal adjustment model produce swings in the data series. Under these circumstances one would again have two trends. However, in this case we have only one source, the Handbook. Seasonal adjustment in this case would be suspect.

In the Balance-of-State area the problems become even worse. The additivity ratio is so volatile that one cannot make rhyme nor reason of changes over time. In fact, changes in the number of unemployed, as measured by the official series, can many times be better explained by changes in the additivity ratio than by changes in actual economic conditions. We have seen that estimates of both trend and seasonal pattern have been altered by this process whereby all areas are adjusted equally to insure that the sum of the parts equals the whole. Under these circumstances it is questionable whether the official data can even be considered a continuous time series, and without a time series how can one seasonally adjust.

There are certainly many other factors which could affect the seasonal adjustment process. Among these are the length of the time series and the absence of sudden dramatic changes. Minnesota's labor force series is short, only seven complete years, and has twice been rocked by recessions, one being the most severe since the Great Depression. Given the evidence, it would appear that although seasonal adjustment is a useful analytical tool, it cannot be meaningfully applied to Minnesota's labor force series at this time.

7.5 Credibility and Use of Estimates

7.5.1 The Credibility (Reliabilty) of Estimates

Much has been written about the deficiencies in the old work force estimates and the superiority of the new labor force estimates for

measuring employment and unemployment at the State and area level.9/ However, careful examination of the estimating procedures indicates that the "Official" labor force estimates may be no more, and are, possibly, less reliable than the work force estimates. We hasten to add that one should not confuse differences in concepts with differences in reliability. As we shall see later, there is every indication that this, in fact, has led to a profusion of rhetoric on the alleged superiority of the new labor force estimates.

It should be noted that both the old work force and new labor force estimates at the State and area level are based on the 70-Step Handbook Method (hereinafter referred to as the Handbook Method) which was developed in the late 1950's and published in 1960 by the Program Review and Analysis Division in the Burea of Employment Security, U.S. Department of Labor. As we have shown in the preceding pages, the Handbook Method utilizes two basic data sources on which to build estimates of employment and unemployment. These two sources are:

9/ Restricting our analysis to State and area estimates does not mean that we regard national estimates to be devoid of large estimation errors. As we noted in Chapter I, there is a potential in the Current Population Survey (CPS) for significant nonresponse and response errors to creep into the national estimates. While the Census Bureau makes every effort to minimize these errors, the control mechanisms are not adequate to prevent sizeable errors from developing from nonresponse or poor response. While the size of the sampling error, which is based on a probability sample of a given size, can be determined with reasonable accuracy, the same cannot be said of the size of the response or nonresponse error. Consequently, total error in the CPS national and State labor force estimates are not as susceptible to measurement as would at first be presumed. Since the area estimates are not based on a probability sample, there can be no measure of sampling error. This applies to both labor force and work force estimates. Furthermore, comparisons of State and area estimates with the Census or the CPS is largely meaningless since Census estimates for many areas represent sizeable undercounts of the relevant population or categorical groups, whereas the State CPS values often suffer from large sampling errors in addition to response and nonresponse errors.

the Current Employment Statistics (CES) program for employment estimation, and the unemployment insurance claims record for unemployment estimation. The CES program provides exactly the same basic data input for the new labor force estimates as for work force estimates. Although the unemployment insurance claims records have been improved to better meet official conceptual and definitional standards, the improved data base serves both the work force and labor force estimation procedures equally well.10/ It can be further argued that the improvement in the unemployment insurance data base would have occurred whether or not the labor force concept has replaced the work force concept in the estimation methodology. Therefore, the reliability of neither the basic employment or unemployment data inputs can honestly be said to have been enhanced as a result of adopting the new methodology and the labor force concept.

The next area where improvements in the reliability of estimates could occur are in the secondary sources of data and the factors that are used to obtain estimates of employment and unemployment for those categorical groups not covered by either the CES program or the unemployment insurance claims record. Without extending the evaluation to an item by item enumeration of secondary sources and factors, it can be briefly stated that the gains have likely been offset by telling losses in the reliability of estimates of individual components that are not covered by the CES program and the claims record. For example, the new

10/ It should be recognized, however, that even with the improvements, the claims records will still reflect the legal and administrative differences that exist with respect to State unemployment insurance Laws. Thus, one State may have a more liberal law and liberal interpretation for benefit eligibility than another, which difference cannot be eliminated under present estimation procedures.

estimates of agricultural employment for Minnesota are regarded by all fair-minded analysts as less reliable than those obtained using the older procedure. First, the U. S. Crop and Livestock Reporting Service generates only quarterly, rather than the monthly estimates that were previously available. Moreover, since the availability of quarterly estimates usually lag by one quarter, the extrapolating method and seasonal factors that are provided by the BLS for estimation leave much to be desired. On several occasions, the resultant estimates have defied common sense and experience.

Another area where neither the new or old methodology made any sense is in the derivation of the Youth Population Ratios (YPR's) for less than State labor market areas (basically counties). Not only are the mortality rates that are used for surviving the age distribution of the the area (county) population based on national rather than State or area data, but there is no adjustment for either in-migration or out-migration of the youth population.11/ With regard to the latter, it is obvious to anyone familiar with youth migration from rural to urban counties that the derived YPR's and their use cannot possibly provide reliable estimates of entrant unemployment for Minnesota

11/ The use of national mortality rates for Minnesota and Minnesota counties is, obviously, highly questionable to anyone familar with differences in mortality rates for different racial and ethnic groups. Also, differences due to climate and environmental conditions suggest that national mortality rates are unlikely to be evidenced in the State. The only area where any potential improvement has taken place is in the provision of monthly seasonal weights to the annual "A" and "B" factors which are derived from the YPR's. Since even these monthly seasonal weights are based on the CPS, it makes the monthly "A" and "B" factors that are used to obtain estimates for the new and re-entrant unemployment suspect. Thus, it is questionable whether this change has produced more or less reliable estimates.

counties. Yet, such YPR's are developed and used to estimate the new and reentrant unemployment, which represents a substantial portion of estimated total unemployment.

Similar shortcomings in the new methodology apply to the estimation of those who have exhausted their eligibility for unemployment insurance benefits but remain unemployed. Without State or area tracking of such exhaustees, use of the Current Population Survey (CPS) and single point studies do not provide reliable estimates of the exhaustee counts. The same deficiency applies to delayed and never filers, together with the unemployment rate estimators for the self-employed and non-covered government workers. Clearly, many of the relationships and factors that are used in estimating various components of employment require continuous research that is oriented to State and area labor markets, rather than derived from national data. Thus, although the BLS has introduced updates for some of the factors, and thereby secured some improvement in estimating selected components of employment and unemployment, the end result is probably little or no better because of the deficiencies outlined above. Lack of good benchmark data prevents validation of results.12/

With the introduction of the new methodology in 1974, a number of additional wrinkles were added to the estimating procedures which have made the labor force estimates suspect. The first of these relates to the use of the factor for transforming work force to labor force estimates.

12/ It is interesting to note that the authors of the 1960 edition of the Handbook recommended periodic special surveys on a State and area level to validate the procedures for and the results of estimating selected components of employment and unemployment. Very few surveys of the type have been conducted since 1970, and a three-State survey which was proposed in 1975 by us for a design sample of counties was turned down by the BLS with the admonition that little or nothing could be learned from it.

This factor is based on a comparison of 1970 Census to 1970 CES program wage and salary employment, which is used to eliminate double counting of multiple jobholders and to transform place of work to place of residence employment. Experience indicates that it falls short of adequately performing the task. In fact, because of deficiencies in the Census data and the peculiarities inherent in the State CES estimates, the use of the transformation factor leaves the labor force employment estimates no better than the work force estimates. This is true for Minnesota and many other States where the CES program yields underestimates of employment in recovery periods and/or overestimates in recessionary periods. Since the CES estimate comprises roughly 85 percent of the total employment estimate, it follows that the total employment will also be either understated or overstated and that the use of the transformation factor will not improve the resultant labor force estimate. A simple illustration will make this clear.

Suppose that for the reasons noted above, the true, but unknown, count of jobs is 105,000 for the month of April while the CES based work force is estimated at 100,000 jobs. Assume, further, that the derived transformation factor based on April-March 1970 data to bring the multiple jobholder work force count to an unduplicated labor force count is .95 and that there is no net commuting.13/ Had the true job count of 105,000 been known, the application of the transformation factor would yield an unduplicated labor force employment count of 99,750, i.e., 105,000 x .95. However, since the true count is not known, the CES based job count of 100,000 is transformed into a labor force estimate of employment of 95,000, i. e., 100,000 x .95, which is 4,750 lower than the true count.

13/ For convenience, it is also assumed that this transformation is a true representation of the relationship between the unduplicated count of employed under the labor force concept and the jobs count under the work force concept.

In short, we see that use of the transformation factor does nothing to provide a more reliable estimate of employment. All it does is transform work force employment to labor force employment. Moreover, if the transformation factor is incorrect (as it is likely to be for the State and counties), it leads to more mischief. A little experimentation with a true transformation factor of .98 (compared to the .95 factor used above) will demonstrate that the problem is further complicated.

Another wrinkle in the new estimation methodology stems from the benchmarking of estimates obtained through use of the Handbook Method to the CPS estimates of employment and unemployment. As described in Chapter IV, this involves setting the annual average estimates of employment and unemployment derived from the Handbook Method to the CPS derived annual average estimates. This, of course, presumes that the CPS is a reliable estimate and usable as a control value. Given the weakness of the CPS sample for the State of Minnesota, this involves a heroic assumption and one which is based more on naive faith than knowledge and logic. Borrowing from the preceding paragraphs, if the transformed labor force estimates are already too low by 5 percent, and the combination of sampling and nonsampling errors produce a CPS value for the State that is in error by 10 to 15 percent, the adjusted or benchmarked CPS labor force estimates are likely to show greater departure from the true value than the work force estimates.

The discussion in Section 7.3 of this Chapter has already identified some of the problems that have resulted from the introduction of the Forced Additivity procedure to area labor force estimates. We need only to show how the latest revision (January 1978) in the BLS methodology makes the estimates even more suspect.

Prior to January 1978, CPS estimates of annual average employment and unemployment for the Minneapolis-St. Paul SMSA (hereinafter noted MSP-SMSA) were used for benchmarking and adjusting the Handbook estimates. This made good sense because the CPS for the MSP-SMSA could be regarded as providing more reliable estimates of unemployment than the CPS sample for the Balance-of-State area.14/ Moreover, the CPS estimates for the MSP-SMSA tracked fairly well with the Handbook estimates, whereas the same was not true for the Balance-of-State area. With the extension of the Forced Additivity procedure to the MSP-SMSA estimates in January 1978, the resultant changes in the unemployment count and rate were not only dramatic, but raised a serious question with respect to their accuracy. Thus, the application of the Forced Additivity procedure to Calendar Year 1975 estimates produced an unemployment rate of 5.5 percent compared with a CPS estimate of 6.8 percent, a difference which would be significant at even the three standard error level. Much the same condition applies to the 1976 estimates; an indication that the estimates resulting from application of the Forced Additivity procedure are not in accord with the standards that BLS has itself used to judge the reliability of estimates.15/

14/ The MSP-SMSA is a more homogeneous area and, therefore, sampling errors could be expected to be smaller. In fact, for Calendar Year 1976, the standard error of estimate for an SMSA having a labor force of 900,000 and an unemployment rate of 6.35 percent was .273 percentage points, as compared to a standard error of .41 percentage points for the same unemployment rate for the State of Minnesota. (See, Geographic Profile of Employment and Unemployment, 1976, Report 504, U.S. Department of Labor, Bureau of Labor Statistics).

15/ With regard to the whole question of forced additivity, much as been made of the fact that the Handbook Method does not provide county estimates that add up to the independently derived State estimates. This admonition has been proffered in many BLS issued papers and articles in the Monthly Labor Review. However, it is perfectly understandable and scientifically valid not to have the independently derived county estimates sum up to the independently derived State estimates. Precisely the same condition would exist even under any system of independently derived estimates. In short, the admonition suffers from faulty logic and is devoid of good statistical theory. One can add that the same condition applies with respect to the CPS. Therefore, forced additivity is really inconsistent with statistical theory.

Another aspect of the revised methodology which casts doubt on the labor force estimates is the adoption of a six-month moving average in the place of annual averages from the CPS for benchmarking and adjusting the Handbook estimates. Clearly, a six-month moving average can be expected to evidence a larger sampling error than an annual average. Moreover, an inspection of the monthly behavior of Statewide CPS estimates for the six-month period, August 1977 to January 1978, shows a complete inconsistency with the seasonal pattern of unemployment in Minnesota. While both the Handbook estimates and the unemployment insurance claims record showed October to be the low and December to be the high months of unemployment in 1977, the CPS estimates exhibited exactly the reverse condition. For example, while both the claims record and the Handbook estimates were 19,000 smaller, respectively, in October than in December, the CPS estimates showed the unemployment count to be over 28,000 larger in October than in December.

In considering the January 1978 revision to the methodology, it seems that the BLS, in attempting to deal with the problems created by the sharp discontinuities or breaks that arose from annual benchmarking, together with the evidenced depressant effects on the Balance-of-State unemployment rates due to the Forced Additivity procedure, has sacrificed a set of reasonably reliable MSP-SMSA estimates for a set of unreliable estimates. The end result is that one is hard pressed to exhibit any confidence in the State and area labor force estimates when the methodology for their production cannot be supported by sound statistical logic or experience.

In summary, the argument that the labor force estimates are more reliable than the work force estimates leaves the knowledgeable analyst unconvinced. The fact that the State and county labor force estimates do not adequately exhibit well observed seasonal movements in employment and unemployment,

whereas the old work force series does, is a further indication of the unreliability of the labor force estimates. Finally, it should be noted that those who argue the case for reliability of labor force estimates by referring to the anachronism that exists in the work force estimate (because employment is counted by place of work and unemployment by place of residence), are relying on a misplaced argument. Correct evaluation requires asking the question whether employment and unemployment counts within the context of the work force concept are better or worse when compared to employment and unemployment counts within the context of the labor force concept. To put it another way, we should be comparing apples to apples and oranges to oranges, not apples to oranges. Failure to evaluate the reliability of estimates within each individual conceptual framework is mixing apples and oranges and, therefore, an invalid exercise.

7.5.2 Use of Estimates for Program Administration

In the previous section we examined whether the labor force estimates produced under the new methodology were any more reliable than those based on the work force concept, and concluded that it was highly debatable that any net increase in accuracy had been attained. We now turn to the issue of the alleged superiority of the new estimates for policy use and program administration. In this context, the evaluation is restricted to the use of area unemployment estimates in the administration of Federal economic development and manpower services programs. To be more specific, the evaluation deals with the use of unemployment estimates in conjunction with the Public Works and Economic Development Act (PWEDA) of 1965, the Comprehensive Employment and Training Act (CETA) of 1973, and the Public Works Employment Act (PWEA) of 1976. These three major legislative programs rely heavily on unemployment estimates to trigger Federal assistance to local areas and also

generate considerable debate regarding the basis on which substantial funds are allocated.

In directing our focus on the above noted legislative programs, it should be remembered that their main objectives are: 1) to promote the development of job opportunities in areas where such opportunities do not now exist, and 2) to provide training and job-relating services to categorical groups to enhance their employability. Given these objectives, the question becomes one of evaluating the appropriateness of the criteria for dispensing Federal funds toward these ends. Admittedly, the unemployment rate provides a measure of the relative economic distress and lack of job opportunities between different areas, but whether one measure of unemployment is more germane than another depends on the nature of the problem at hand. What follows is an attempt to put things in proper perspective.

Over the past five years, the U.S. Department of Labor (and particularly the Bureau of Labor Statistics), has repeatedly proclaimed the superiority of labor force estimates for allocating Federal funds for economic development and manpower training programs. It has been argued that unemployment estimates based on the labor force concept provide a more reliable, rational, and equitable basis on which to allocate Federal funds than estimates based on the work force concept.16/ To reinforce its argument for the use of labor force estimates, the BLS has reverted to some heroic examples, one of which appears as Table XIII on the following page, to show the advantage of residence based labor force estimates for allocating CETA funds to local areas.17/

16/ The reliability issue was discussed in the preceding sections.

17/ Table I has been lifted verbatim from page 7 of New Procedures for Estimating Unemployment in State and Local Areas, Report #432, U.S. Department of Labor, Bureau of Labor Statistics, 1974.

Table XIII. Illustration of Unemployment Rates Derived Under Old and New Estimating Methods for Local Areas

(Numbers in Thousands)

Item	Old Place-of-Work Concept		New Place-of-Residence Concept	
	Community A	Community B	Community A	Community B
Population	225	225	225	225
Labor Force	110	190	150	150
Employment	99	179	139	139
Unemployed	11	11	11	11
Unemployment Rate	10.0	5.8	7.3	7.3

In the above illustration, it can be observed that use of the old place-of-work (work force) concept leaves only Community A eligible for CETA funds under the 6.5 percent or higher unemployment rate criteria, whereas the use of the new place-of-residence (labor force) concept makes both communities eligible for CETA funds.18/ Obviously, the above example was developed by BLS to show the preference for using labor force estimates for program administration, but one can just as well demonstrate that work force (place-of-work) estimates are better. Table XIV has been prepared to show the preferability of using work force estimates for CETA program administration under the 6.5 percent unemployment rate rule. It can be observed from Table XIV that the use of the new place-of-residence (labor force) concept would actually lead to the ineligibility of both communities for CETA funds, whereas use of the place-of-work (work force) concept leaves Community "A" eligible for Federal program assistance. Other tables, using more realistic data than that of Table XIII & XIV, could be constructed to show that the case for using labor force estimates for CETA fund allocations would lead to a worse rather than better situation.

18/ The BLS did not remind its readers, however, that with a fixed appropriation (budget), the more who share in the allocation, the less each receives. Hence, it is important to recognize that increasing the number of eligibles simply reduces the amount each receives.

Table XIV. Demonstrating Unemployment Rates Derived Under Old and New Estimating Methods for Local Areas

(Numbers in Thousands, except rates)

Item	Old Place-of-Work Concept		New Place-of-Residence Concept	
	Community A	Community B	Community A	Community B
Population	225	225	225	225
Labor Force	120	210	165	165
Employment	110	200	155	155
Unemployment	10	10	10	10
Unemployment Rate	8.3	4.8	6.1	6.1

An important consideration in evaluating the estimates illustrated in Tables XIII & XIV is the amount of commuting that takes place from Community A to Community B because of inadequate job opportunities in A. This is evidenced by the fact that employment in Community A is much lower when measured by place-of-work than by place-of-residence. At the same time we can see that Community B is blessed with more jobs than its resident labor force can fill. Simply stated, we can say that Community A is poor in jobs which requires residents to commute elsewhere for employment, while Community B enjoys an excellent employment base. Even if one were to use the data from Table XIII it could be argued that the use of labor force estimates to provide CETA funds to both communities would constitute misdirected public policy and that work force estimates would serve a better purpose.

The root of many of our manpower and unemployment problems are based on conditions such as those illustrated in Tables XIII & XIV, i.e., lack of job opportunities in local areas which necessitate commuting long distances to obtain gainful employment. Such a condition is particularly telling in rural communities and counties which are located 50, 60, or even 70 miles from urban growth centers where employment opportunities are more plentiful. In this context, it should be clear that economic development and manpower programs would be best directed to those areas where job opportunities are

poor and incomes are low. For this type of condition, the work force estimates provide a better measure of economic distress and the need for Federal assistance than do labor force estimates.

It would be unfair to argue that, in all cases, the work force concept is a better tool for program administration. There are situations where suburban bedroom communities exist which do not want or need industry, and where the use of work force estimates would produce a misdirection of public funds for economic development and manpower programs. In such cases, labor force estimates serve a better purpose. However, it should be emphasized that before abandoning the work force concept in favor of the labor force concept for developing data for program administration, a careful review of the economic base and the job market of a given area or region should be made. Even in some metropolitan areas, first appearances can be deceiving and pockets of the suburban fringe may be worse off than the central city. Where that is the case, the labor force estimates will give the illusion that all is well in the suburbs although some of the communities on the fringe may evidence poor job opportunities, low incomes, and considerable commuting for limited jobs elsewhere. Moreover, there is evidence that, in some cases, sizeable commuting takes place out of the central city to selected suburbs where belt-line highway systems have promoted rapid industrial growth. Here, again, work force estimates would prove more useful for measuring the paucity of employment opportunities in the central city and the need to channel Federal funds for economic development and manpower programs.

In conclusion, an objective evaluation of the usefulness of work force and labor force estimates is needed so that program administration and the allocation of Federal funds based on unemployment rates are rationalized in the context of the primary objectives of major manpower and economic development

legislation. We feel that abandoning the use of work force estimates for measuring job market conditions in local areas is not justified by existing circumstances and that, in many instances, they provide a better basis on which to formulate policy and direct the flow of Federal funds.

APPENDIXES

APPENDIX A

Walking Through the 70-Step

Handbook Method

(Sample Worksheet for Estimating Employment and Unemployment)

The 70-Step Handbook Method is a building block procedure which accounts for employment and unemployment. The building block requires estimates of covered and noncovered employment in order to develop ratios for the derivation of unemployment estimates. As can be observed, the procedure requires deriving estimates of covered employment, noncovered employment, unemployment related to covered employment, and unemployment related to noncovered employment in that order. It will be evident to the reader that many of the components depend on factors that are assumed to be valid. That this is not always the case is discussed in section 7.5 of Chapter 7.

1. CURRENT EMPLOYMENT	SAMPLE MONTH
A. Covered Employment (Data derived from Current Employment Statistics Program)	
1. State U.I. Covered (private wage & salary) x .95411 1/	1,211,296
2. Federal Government x .95411	28,976
3. State and Local Government x .95411	216,520
4. Railroad x .95411	14,263
5. Total Covered Employment (Sum of Lines 1,2,3,4)	1,471,055
B. Noncovered Employment	
6. State and Local Noncovered Government x .95411	31,427
7. Nonprofit Institutions x .95411	28,623

1/ .95411 is a conversion factor applied to transform employment estimates from place of work to place of residence and eliminate multiple job holder counts that are inherent in the establishment survey (Current Employment Statistics Program).

		SAMPLE MONTH
8.	Domestics 2/	24,215
9.	Nonagricultural Self-Employed and Unpaid Family 2/	135,198
10.	Agriculture 2/	98,355
11.	Total Noncovered Employment (Sum of Lines 6,7,8,9,10)	317,818
12.	Total Current Employment (Sum of lines 5,11)	1,788,873

II. UNEMPLOYMENT

A. Unemployment Related to Covered Employment

13.	Continued Claimants - State Unemployment Insurance Program	52,082
14.	Continued Claimants Without Earnings - State Unemployment Insurance Program	49,058
15.	Initial Claims	5,620
16.	Disqualified Nonmonetary - Not included at present	—
17.	Continued Claimants - UCFE (Unemployment Compensation for Federal Employees)	353
18.	Continued Claimants - UCFE Without Earnings	326
19.	Railroad Claims	1,105
20.	UCX Claims (Unemployment Compensation for Ex-Servicemen)	1,105
21.	Sum of Lines 1,3,14 (i.e., State U.I. covered employment plus State and Local Government covered employment plus Continued Claims Without Earnings)	1,476,874
22.	Insured Less Partials Unemployment Rate (Line 14 ÷ Line 21)	.0332

2/ For detailed explanation of method used to derive Domestics, Nonagricultural Self-Employed and Unpaid Family, and Agricultural employment, the reader may refer to Chapter V.

		SAMPLE MONTH
23.	Unemployed Exhaustees (See Attachment A for methodology used to estimate number of Unemployed Exhaustees)	15,640
24.	Sum of Lines 14,23 (i.e., Continued Claimants Without Earnings plus Unemployed Exhaustees)	64,698
25.	Sum of Lines 21,23	1,492,514
26.	Insured Less Partials plus Exhaustee Unemployment Rate (Line 24 ÷ Line 25)	.0433
27.	Unemployed Disqualified - not included at present	—
28.	Delayed plus Never Filers (See Attachment B for methodology used to estimate number of Delayed and Never Filers)	4,841
29.	Covered Unemployment (Sum of Lines 24,28)	69,539
30.	Covered Labor Force (Sum of Lines 25,28)	1,497,355
31.	State Covered Unemployment Rate (Line 29 ÷ Line 30) (Basic rate used in estimating unemployment rate in noncovered activities)	.0464
32.	Ratio: State Covered Unemployment to Continued Claimants (State Insured Unemployment) (Line 29 ÷ Line 13)	1.3352
33.	Ratio: State Covered Unemployment to Continued Claimants Without Earnings (State Insured Unemployment) (Line 29 ÷ Line 14)	1.4175
34.	Federal Covered Unemployment (Line 33 x Line 18)	462
35.	Railroad Covered Unemployment (Line 19 x 1/2 [1.00 + Line 32])	1,290
36.	Total Covered Unemployment (Sum of Lines 29,34,35)	71,291
B.	Unemployment Related to Noncovered Employment	
37.	Nonprofit Unemployment (Line 7 x .02)	572
38.	Domestic Unemployment (Unemployment rate of approximately 3/4 of that for State covered workers)	867
39.	Nonagricultural Self-Employed plus Unpaid Family Unemployment (Unemployment rate of approximately 1/5 of that for State covered workers)	1,244

		SAMPLE MONTH
40.	Agricultural Unemployment (See Attachment C for methodology used to estimate agricultural unemployment)	3,315
41.	Noncovered State plus Local Government Unemployment (Unemployment rate of approximately 1/3 of that for State covered workers)	487
42.	Total Noncovered Unemployment (Sum of Lines 37, 38,39,40,41)	6,485
C.	New Entrant and Reentrant Unemployment	
43.	Unemployed, Excluding Entrants (Sum of Lines 36,42)	77,776
44.	Entrant "B" Factor 3/	.162
45.	Line 43 x 44	12,600
46.	Employed plus Unemployed, excluding Entrants (Sum of Lines 12,43)	1,866,649
47.	Entrant "A" Factor 3/	.01040
48.	Line 46 x 47	19,413
49.	Unemployed Entrants plus Reentrants (Sum of Lines 45,48)	32,013

3/ The entrant "B" Factor is multiplied by the number of unemployed excluding entrants to obtain an estimate of entrants related to the level of unemployment. The entrant "A" Factor is multiplied by the number of employed plus unemployed, excluding entrants. This gives an estimate of the number of unemployed entrants related to the level of the labor force. Annual "A" and "B" Factors are determined by the age distribution of the State utilizing youth population ratios supplied by BLS on the basis of CPS data. Monthly "A" and "B" Factors are then obtained by applying seasonal weights to the annual factors. The seasonal weights are also supplied by BLS on the basis of CPS data.

	SAMPLE MONTH
III. TOTAL LABOR FORCE	
50. Total Unemployment (Sum of Lines 43,49)	109,789
51. Total Employment (Line 12)	1,788,873
52. Labor Disputes	181
53. Labor Force (Sum of Lines 50,51,52)	1,898,843
54. Unemployment Rate (Line 50 ÷ 53)	5.8

This completes the 70-Step Handbook Method for estimating employment and unemployment for the State. To obtain the official labor force estimate, the Handbook estimates of employment and unemployment are adjusted to 6-month moving average CPS levels. The extrapolation methodology applied to employment and unemployment is illustrated in the following sample worksheet.

Sample - Monthly Worksheet for Extrapolating Employment

	Col. I	Col. II	Col. III	Col. IV	Col. V	Col. VI
	Handbook		Current Population Survey		Ratio	Extrapolated Employment Estimate
Month	Number	6-Month Average	Number	6-Month Average	Col. IV ÷ Col. II	Col. V X Col. I
1977						
Aug.	1,870,351		1,899,000			
Sept.	1,862,032		1,858,000			
Oct.	1,878,920		1,873,300			
Nov.	1,863,004		1,880,000			
Dec.	1,831,891		1,842,300			
1978						
Jan.	1,789,054	1,849,209	1,813,000	1,860,933	1.00634001	1,800,397

Employment in a given month is extrapolated by multiplying the ratio of the six-month average of CPS total employment to that of Handbook total employment ending in the current month to the estimate month's Handbook total employment figure. Thus, in order to develop the January 1978 estimate, the August-January average of CPS employment (Col. IV) is divided by the August-January average of Handbook employment (Col. II) and the quotient is posted in Col. V. The extrapolated estimate is obtained by applying the Col. V ratio for January to the January Handbook estimate in Col. I.

Sample - Monthly Worksheet for Extrapolating Unemployment

	Col. I	Col. II	Col. III	Col. IV	Col. V	Col. VI
	Handbook		Current Population Survey		Ratio	Extrapolated Employment Estimate
Month	Number	6-Month Average	Number	6-Month Average	Col. IV ÷ Col. II	Col. V X Col. I
1977						
Aug.	88,209		90,100			
Sept.	80,934		85,100			
Oct.	78,393		94,200			
Nov.	89,074		69,400			
Dec.	98,339		66,100			
1978						
Jan.	109,789	90,790	90,000	82,483	.90850314	99,744

Unemployment in a given month is extrapolated by multiplying the ratio of the six-month average of CPS total unemployment to that of Handbook total unemployment ending in the current month to the current month's Handbook total unemployment figure. Therefore, in order to develop the January estimate, the August-January average of CPS unemployment (Col. IV) is divided by the August-January average of Handbook unemployment (Col. II) and the quotient is posted in Col. V. The extrapolated estimate is obtained by applying the Col. V ratio for January to the January Handbook estimate in Col. I.

After Handbook estimates of employment and unemployment have been adjusted to CPS level, the official unemployment rate is calculated as follows:

Employment	1,800,397
Unemployment	99,744
Labor Force (Sum of Employment + Unemployment)	1,900,141

Unemployment Rate - proportion of Labor Force which is unemployed, represented by a percentage value, i.e.,

$$\frac{99{,}744 \text{ (Unemployment)}}{1{,}900{,}141 \text{ (Labor Force)}} \times 100 = 5.2$$

Attachment A - Sample Worksheet for Estimating Number of Unemployed Exhaustees

Week Ending	STATE U.I. (1) Actual Final Payments	STATE U.I. (2) Col. (1) Previous Wk. + Col. (3) Previous Wk.	STATE U.I. (3) Regular Program Survived Claimants Col. (2) x .952	EXTENDED BENEFITS (4) Survived Claimants b/	FEDERAL SUPPLEMENTAL BENEFITS (5) Survived Claimants b/	TOTAL UNEMPLOYED EXHAUSTEES Sum of Survived Claimants from Benefit Programs (i.e., Sum of 3,4,5)
Dec. 24	825	10,259	9,767	5,602	215	
Dec. 31	771	10,592	10,084	5,333	205	
Jan. 7	822	10,855	10,334	5,077	195	
Jan. 14 a/	743	11,156	10,621	4,833	186	15,640

a/ Reference Week (i.e., Week that includes the 12th of the month)

b/ To arrive at figure for current week, figure for previous week is multiplied by .952.

Attachment B - BLS Methodology for Estimating Number of Delayed and Never Filers, where:

D = Number of Delayed and Never Filers
U = Insured Less Partials plus Exhaustee Unemployment Rate a/
I = Number of Initial Claims b/

$$D = \frac{(.0525 - .35U)\ I}{U}$$

$$= \frac{(.0525 - .35 \times .0433)\ 5620}{.0433}$$

$$= \frac{(.0525 - .0152)\ 5620}{.0433}$$

$$= \frac{209.6260}{.0433}$$

$$= 4841$$

---

a/ Insured Less Partials plus Exhaustee Unemployment Rate is on Line 26 of 70-Step Handbook Method Sample Worksheet.

b/ Number of Initial Claims is on Line 15 of 70-Step Handbook Method Sample Worksheet.

It is to be noted that the factors .0525 and .35 are given by BLS and are based on studies of historical relationships.

Attachment C - Sample Worksheet for Estimating Agricultural Unemployment

Month	"W"a/	(1) $\frac{1}{\text{"W"}}$	(2) Covered Rate b/	(3) Col. (1) - Col. (2)	(4) Col. (2) ÷ Col. (3)	(5) Col. (4) x Agricultural Employment c/
Jan.	.702	1.4245	.0464	1.3781	.0337	3,315
Feb.	.729	1.3717				
Mar.	.569	1.7575				
Apr.	.416	2.4038				
May	.406	2.4631				
June	.436	2.2936				
July	.451	2.2173				
Aug.	.437	2.2883				
Sept.	.412	2.4272				
Oct.	.408	2.4510				
Nov.	.576	1.7361				
Dec.	.738	1.3550				

a/ "W" are seasonal weights supplied by BLS. These monthly factors are based on seasonal behavior of agricultural unemployment as developed from BLS data and relationships that are reflected in variations of CPS unemployment rates in the respective month.

b/ The covered rate (for January .0464) was derived from the 70-Step Walking Through exercise (Line 31); the covered rate is used to link the monthly unemployment rates in covered employment to the agricultural sector using a ratio method.

c/ Agricultural Employment is Line 10 from the 70-Step Walking Through exercise.

APPENDIX B

CPS Benchmarking

The BLS methodology for benchmarking to the CPS is a compromise procedure. It involves wedging the 12 monthly Handbook estimates for a particular year in a fashion which will result in the adjusted Handbook estimates having an Annual Average (AA) equal to the CPS AA. If only a single year of Handbook estimates needed to be benchmarked there would not be any problem. That is, each month could be adjusted by the CPS AA to Handbook AA ratio, and the adjusted monthly estimates would reflect the same relative seasonal pattern as the original estimates - only the level of the estimates and the absolute month to month changes would be altered. However, in a time series, several years of estimates must be adjusted, and this can distort the over the month change from December of one year to January of the following year if the adjustments are made solely on the CPS AA to Handbook AA ratio for each respective year. The possibility of an artifically large, or small, December to January change arises because the CPS AA to Handbook AA ratio varies considerably from year to year, especially in the case of unemployment. To alleviate this problem, BLS uses a two stage adjustment procedure designed to minimize the difference in percent by which the December and January Handbook estimates are altered.

The first stage adjustment is performed on the basis of CPS AA to Handbook AA ratios and is shown in columns (1) through (3) of the following tables. In year 1 of a series, as illustrated by Table I, columns (1) through (3), the first 8 months of Handbook data are simply adjusted by the ratio of the CPS AA to the Handbook AA ratio for year 1. Starting in September of year 1, 7/8 of the year 1 CPS AA/Handbook AA ratio plus 1/8 of the year 2 CPS AA/Handbook AA ratio is applied to the September 70 Step estimate. In other words, the year 1 CPS AA/Handbook AA ratio is beginning to be wedged out, while the year 2 CPS AA/Handbook

AA ratio is being wedged in. By December of year 1, 4/8 of the year 1 CPS AA/Handbook AA ratio plus 4/8 of the year 2 CPS AA/Handbook AA ratio is used in the initial adjustment of the December Handbook estimate. As columns (1) through (3) of Table II demonstrate, the same adjustment ratio is then used in January of year 2. By April of year 2, 1/8 of the year 1 CPS AA/Handbook AA ratio plus 7/8 of the year 2 CPS AA/Handbook AA ratio is used in the stage one adjustment. The middle four months of year 2 are adjusted by the year 2 CPS AA/Handbook AA ratio. In September of year 2, the process of wedging out the year 2 CPS AA/Handbook AA ratio and wedging in the year 3 CPS AA/Handbook AA ratio is begun. This cycle is repeated through April of the final year in a series. The last 8 months of a final year are adjusted by the final year CPS AA/Handbook ratio. The treatment in the final year can be seen in Table III, again columns(1) through (3).

The second stage adjustment "cleans up" the results of the stage one procedure. Columns (4) and (5) of the tables display the process. It simply forces the AA results of stage one to equal the CPS AA. For all years except the last in a series (See Table I and Table II), this is accomplished by multiplying the monthly stage one results by the ratio of the CPS AA to the stage one results AA.

As can be seen in Column (4) and (5) of Table III, the last year in a series is treated uniquely in stage two in that forcing to the CPS AA is done over 11 months and the December stage one adjusted estimate stands until another complete year is added to the series. The monthly stage one results are summed while the CPS AA is multiplied by 12 (to yield a value which can be compared to the sum of stage one results). The absolute difference in these two values is then distributed, by 27ths,over the first 11 months of the stage one results. January and November each receive 1/27th of the absolute difference, while both February and October are adjusted by 2/27ths of the difference. The remaining 21/27ths are distributed equally from March through September (3/27ths each month).

BLS probably chose this way of dealing with the last year in a series as a matter of convenience and practicality.

Normally, BLS performs the CPS Benchmarking procedure on its computer as a service to states. This service takes time and BLS seldom returns official estimates to the states until sometime in March. The states, however, need the December final year data about mid-February, when the January estimates are prepared, for month ago comparisons and publication purposes. The final year benchmarking procedure makes it easy for states to quickly determine their official December estimates and thus meet schedules. Once the CPS AA for a particular state is known, that state can calculate its December CPS Benchmarked estimate by multiplying the Handbook estimate times the ratio of the CPS AA to the Handbook AA.

As noted above, the following tables illustrate the benchmarking process for the initial, an intermediate, and the final year of the labor force series. The tables also illustrate certain fundamental calculations. The symbols below are used in them and are defined below.

i = month where $i = 1, \ldots, 12$

j = year

h_{ij} = Handbook estimate for month i in year j

P_{ij} = Preliminary CPS adjusted estimate for month i in year j

C_j = CPS annual average for year j

$H_j = \dfrac{\sum_{i=1}^{12} h_{ij}}{12}$ = Handbook annual average by year j.

$R_j = \dfrac{C_j}{H_j}$ = Ratio of CPS annual average for year j to Handbook annual average for year j

$r_j = \dfrac{C_j}{\frac{\sum_{i=1}^{12} P_{ij}}{12}}$ = Ratio of CPS annual average for year j to the preliminary CPS adjusted annual average for year j

$$d = [12 \times C_j] - \sum_{i=1}^{12} P_{ij}$$ = CPS total annual unemployment for the last year in a series minus the sum of the 12 monthly preliminary CPS adjusted estimates for the last year in a series.

Table I. Year 1 (1970, First in series)

C_1 = 68,000 = 1970 CPS AA

C_2 = 73,000 = 1971 CPS AA

H_1 = 73,299 = 1970 Handbook AA

H_2 = 92,949 = 1971 Handbook AA

$R_1 = \frac{68,000}{73,299} = .92770706$

$R_2 = \frac{73,000}{92,949} = .78537693$

$r_1 = \frac{68,000}{66,805} = 1.01788788$

	FIRST STAGE			SECOND STAGE	
Month	(1) Original Handbook Estimate h_{i1}	(2) Preliminary Adjustment Ratio	(3) Preliminary CPS Adjustment Col. (1) X Col. (2) P_{i1}	(4) Final Adjustment Ratio r_1	(5) Official Estimate Col. (3) X Col. (4)
Jan.	66,052	R_1 = .92770706	61,277	1.01788788	62,373
Feb.	74,857	R_1 = .92770706	69,445	1.01788788	70,687
Mar.	73,923	R_1 = .92770706	68,579	1.01788788	69,806
April	71,880	R_1 = .92770706	66,684	1.01788788	67,877
May	64,805	R_1 = .92770706	60,120	1.01788788	61,195
June	81,505	R_1 = .92770706	75,613	1,01788788	76,966
July	74,461	R_1 = .92770706	69,078	1.01788788	70,314
Aug.	66,496	R_1 = .92770706	61,689	1.01788788	62,792
Sept.	68,914	7/8 R_1 + 1/8 R_2 = .90991580	62,706	1.01788788	63,828
Oct.	65,399	6/8 R_1 + 2/8 R_2 = .89212453	58,344	1.01788788	59,388
Nov.	79,389	5/8 R_1 + 3/8 R_2 = .87433326	69,412	1.01788788	70,654
Dec.	91,902	4/8 R_1 + 4/8 R_2 = .85654200	78,718	1.01788788	80,126
AA	73,299		66,805		68,000

Table II. Year 2 (1971, an illustrative mid year in series)

C_1 = 68,000 = 1970 CPS AA

C_2 = 73,000 = 1971 CPS AA

C_3 = 73,000 = 1972 CPS AA

H_1 = 73,299 = 1970 Handbook AA

H_2 = 92,949 = 1971 Handbook AA

H_3 = 90,251 = 1972 Handbook AA

$R_1 = \frac{68,000}{73,299} = .92770706$ $\quad R_3 = \frac{73,000}{90,251} = .80885530$

$R_2 = \frac{73,000}{92,949} = .78537693$ $\quad r_2 = \frac{73,000}{74,879} = .97490618$

	FIRST STAGE			SECOND STAGE	
Month	(1) Original Handbook Estimate h_{i2}	(2) Preliminary Adjustment Ratio	(3) Preliminary CPS Adjustment Col. (1) X Col. (2) P_{i2}	(4) Final Adjustment Ratio r_2	(5) Official Estimate Col. (3) X Col. (4)
Jan.	113,499	4/8 R_1 + 4/8 R_2 = .85654200	97,217	.97490618	94,777
Feb.	113,523	3/8 R_1 + 5/8 R_2 = .38875073	95,217	.97490618	92,828
Mar.	115,702	2/8 R_1 + 6/8 R_2 = .82095947	94,987	.97490618	92,603
April	107,449	1/8 R_1 + 7/8 R_2 = .80216819	86,300	.97490618	84,134
May	86,226	R_2 = .78537693	67,720	.97490618	66,021
June	99,915	R_2 = .78537693	78,471	.97490618	76,502
July	87,399	R_2 = .78537693	68,641	.97490618	66,919
Aug.	79,127	R_2 = .78537693	62,145	.97490618	60,586
Sept.	71,740	7/8 R_2 + 1/8 R_3 = .78831172	56,553	.97490618	55,134
Oct.	70,786	6/8 R_2 + 2/8 R_3 = .79124654	56,009	.97490618	54,604
Nov.	79,394	5/8 R_2 + 3/8 R_3 = .79418133	63,053	.97490618	61,471
Dec.	90,626	4/8 R_2 + 4/8 R_3 = .79711612	72,239	.97490618	70,426
AA	92,949		74,879		73,000

Table III. Year 8 (1977, final complete year in series)

C_7 = 110,000 = 1976 CPS AA

C_8 = 98,000 = 1977 CPS AA

H_7 = 119,892 = 1976 Handbook AA

H_8 = 106,299 = 1977 Handbook AA

$R_7 = \frac{110,000}{119,892} = .91749241$

$R_8 = \frac{98,000}{106,299} = .92192777$

d = 1,726,000 - 1,175,279 = 721 = 1977 CPS total annual Unemployment minus the sum of the 12 monthly Preliminary CPS Adjusted Estimates

	FIRST STAGE			SECOND STAGE	
Month	(1) Original Handbook Estimate h_{i8}	(2) Preliminary Adjustment Ratio	(3) Preliminary CPS Adjustment Col. (1) X Col. (2) P_{i8}	(4) Final Adjustment d	(5) Official Estimate Col. (3) + Col. (4)
Jan.	132,710	4/8 R_7 + 4/8 R_8 = .91971010	122,055	1/27 d=27	122,082
Feb.	133,221	3/8 R_7 + 5/8 R_8 = .92026450	122,599	2/27 d=53	122,652
Mar.	127,383	2/8 R_7 + 6/8 R_8 = .92081892	117,297	3/27 d=80	117,377
Apr.	113,035	1/8 R_7 + 7/8 R_8 = .92137334	104,147	3/27 d=80	104,227
May	98,009	R_8 = .92192777	90,357	3/27 d=80	90,437
June	110,129	R_8 = .92192777	101,531	3/27 d=80	101,611
July	103,775	R_8 = .92192777	95,673	3/27 d=80	95,753
Aug.	93,774	R_8 = .92192777	86,453	3/27 d=80	86,533
Sept.	85,535	R_8 = .92192777	78,857	3/27 d=80	78,937
Oct.	81,690	R_8 = .92192777	75,312	2/27 d=53	75,365
Nov.	91,016	R_8 = .92192777	83,910	1/27 d=27	83,937
Dec.	105,310	R_8 = .92192777	97,088	XXXXXXXXX	97,088
AA	106,299				98,000

APPENDIX C

Data Comparisons: Official and Unofficial

STATE OF MINNESOTA - 1974
(Numbers in Thousands)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AA
Work Force													
Civ Work Force	1772.8	1787.5	1798.6	1845.1	1890.1	1948.9	1941.1	1917.2	1888.8	1874.8	1864.8	1841.4	1864.3
Employment	1669.8	1676.4	1691.4	1743.1	1797.5	1834.6	1847.4	1831.6	1812.2	1802.6	1770.0	1734.5	1767.6
Unemployment	103.0	111.0	107.3	102.1	92.5	114.4	93.8	85.6	76.7	72.1	94.9	106.9	96.7
Unemployment Rate	5.8	6.2	6.0	5.5	4.9	5.9	4.8	4.5	4.1	3.8	5.1	5.8	5.2
Labor Force - Unofficial (Unadjusted)													
Civ Labor Force	1717.1	1730.6	1740.0	1779.0	1813.3	1865.0	1866.2	1841.1	1819.2	1811.1	1793.3	1776.9	1796.1
Employment	1604.4	1610.9	1625.3	1676.3	1729.3	1765.3	1778.3	1762.1	1742.7	1733.1	1700.8	1665.9	1699.5
Unemployment	112.7	119.6	114.7	102.7	84.0	99.7	87.8	78.9	76.5	77.9	92.5	111.0	96.5
Unemployment Rate	6.6	6.9	6.6	5.8	4.6	5.3	4.7	4.3	4.2	4.3	5.2	6.2	5.4
Labor Force - Official													
Civ Labor Force	1711.2	1717.8	1722.4	1758.1	1790.9	1839.0	1842.8	1819.8	1798.8	1790.6	1770.2	1750.3	1776.0
Employment	1614.8	1617.9	1628.9	1676.5	1725.9	1761.8	1774.8	1758.7	1739.2	1729.6	1697.3	1662.4	1699.0
Unemployment	96.4	99.9	93.5	81.6	65.0	77.2	68.0	61.1	59.6	61.0	72.8	87.9	77.0
Unemployment Rate	5.6	5.8	5.4	4.6	3.6	4.2	3.7	3.4	3.3	3.4	4.1	5.0	4.3

Note: Unofficial Labor Force rates are obtained from the 70-Step Handbook Method.
Official rates are the result of adjusting the 70-Step Handbook estimates to CPS data.

MINNEAPOLIS / ST. PAUL SMSA - 1974

(Numbers in Thousands)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AA
Work Force													
Civ Work Force	988.3	995.3	1000.7	1010.1	1029.0	1043.5	1032.9	1028.4	1028.8	1040.7	1037.4	1036.7	1022.6
Employment	941.8	945.3	953.3	965.5	991.1	994.9	991.1	989.6	990.0	998.7	991.8	985.7	978.2
Unemployment	46.5	50.0	47.4	44.6	38.0	48.6	41.8	38.8	38.8	42.0	45.6	50.9	44.4
Unemployment Rate	4.7	5.0	4.7	4.4	3.7	4.7	4.0	3.8	3.8	4.0	4.4	4.9	4.3
Labor Force - Unofficial (Unadjusted)													
Civ Labor Force	919.3	926.0	931.0	939.9	957.5	970.5	961.0	956.5	956.4	967.4	964.4	964.2	951.2
Employment	873.8	877.1	884.6	896.1	920.4	923.7	920.5	918.9	918.9	926.8	920.2	914.4	907.9
Unemployment	45.5	48.9	46.4	43.7	37.1	46.8	40.5	37.6	37.5	40.6	44.2	49.8	43.2
Unemployment Rate	5.0	5.3	5.0	4.7	3.9	4.8	4.2	3.9	3.9	4.2	4.6	5.2	4.5
Labor Force - Official (Old Methodology)													
Civ Labor Force	930.5	935.4	938.3	945.2	960.9	973.9	964.4	959.9	959.5	970.3	967.0	966.6	957.0
Employment	881.6	883.8	890.2	900.7	923.9	927.2	924.0	922.4	922.0	929.5	922.4	916.2	912.0
Unemployment	48.9	51.5	48.1	44.5	37.0	46.7	40.4	37.5	37.6	40.8	44.6	50.4	44.0
Unemployment Rate	5.3	5.5	5.1	4.7	3.8	4.8	4.2	3.9	3.9	4.2	4.6	5.2	4.7
Labor Force - Official (New Methodology Effective 1/78)													
Civ Labor Force	922.9	928.4	926.0	933.7	945.2	957.5	948.3	945.7	945.9	957.1	959.5	959.0	944.1
Employment	884.3	886.6	891.5	900.9	919.4	922.6	918.0	915.6	915.1	924.5	920.0	915.4	909.5
Unemployment	38.6	41.8	34.5	32.8	25.8	34.9	30.3	30.0	30.7	32.6	39.5	43.6	34.6
Unemployment Rate	4.2	4.5	3.7	3.5	2.7	3.6	3.2	3.2	3.2	3.4	4.1	4.6	3.7

Note: Official Labor Force method includes adjustment to assure that the sum of substate areas equals the separately estimated State total. Under the old methodology the adjustment was applied to all areas except Minneapolis/St. Paul SMSA. Under the new methodology (commencing January 1978) the adjustment is applied to all SMSA areas and counties. Unofficial rates do not receive adjustment.

LAC QUI PARLE COUNTY - 1974

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AA
Work Force													
Civ Work Force	4012	4056	4195	4583	4656	4820	4844	4537	4510	4329	4251	4213	4417
Employment	3744	3771	3858	4292	4398	4553	4553	4367	4363	4189	4050	3962	4175
Unemployment	268	285	337	291	258	267	291	170	147	140	201	251	242
Unemployment Rate	6.7	7.0	8.0	6.3	5.5	5.5	6.0	3.7	3.3	3.2	4.7	6.0	5.5
Labor Force - Unofficial (Unadjusted)													
Civ Labor Force	4705	4734	4811	5240	5391	5727	5830	5423	5205	5004	4869	4616	5130
Employment	4361	4377	4437	4939	5143	5462	5544	5245	5048	4839	4637	4325	4863
Unemployment	344	357	374	301	248	265	286	178	157	165	232	291	267
Unemployment Rate	7.3	7.5	7.8	5.7	4.6	4.6	4.9	3.3	3.0	3.3	4.8	6.3	5.2
Labor Force - Official (Old Methodology)													
Civ Labor Force	4701	4726	4724	5174	5271	5599	5680	5326	5127	4929	4834	4574	5055
Employment	4461	4472	4511	5002	5147	5456	5523	5218	5028	4835	5658	4357	4889
Unemployment	240	254	213	172	124	143	157	108	99	94	176	217	166
Unemployment Rate	5.1	5.4	4.5	3.3	2.4	2.6	2.8	2.0	1.9	1.9	3.6	4.7	3.3
Labor Force - Official (New Methodology Effective 1/78)													
Civ Labor Force	4705	4729	4750	5191	5310	5654	5743	5369	5157	4959	4843	4584	5083
Employment	4413	4424	4472	4965	5137	5456	5529	5227	5028	4827	4636	4329	4870
Unemployment	292	305	278	226	173	198	214	142	129	132	207	255	213
Unemployment Rate	6.2	6.4	5.9	4.4	3.3	3.5	3.7	2.6	2.5	2.7	4.3	5.6	4.2

OLMSTED COUNTY - 1974
(Rochester SMSA)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AA
Work Force													
Civ Work Force	43908	44053	45066	46857	47524	48032	46682	46299	46589	45275	45715	45446	45954
Employment	42106	42349	42944	45046	45918	46149	45071	44994	45374	44225	44446	43860	44374
Unemployment	1802	1704	2122	1811	1606	1883	1611	1305	1215	1050	1269	1586	1580
Unemployment Rate	4.1	3.9	4.7	3.9	3.4	3.9	3.5	2.8	2.6	2.3	2.8	3.5	3.4
Labor Force - Unofficial (Unadjusted)													
Civ Labor Force	40638	40645	41268	42203	42837	44101	44377	43947	43473	43148	42764	42453	42655
Employment	38744	38878	39210	40552	41475	42494	42922	42735	42232	41843	41420	40716	41102
Unemployment	1894	1767	2058	1651	1362	1607	1455	1212	1241	1305	1344	1737	1553
Unemployment Rate	4.7	4.3	5.0	3.9	3.2	3.6	3.3	2.8	2.9	3.0	3.1	4.1	3.6
Labor Force - Official (Old Methodology)													
Civ Labor Force	40956	40978	41034	42010	42188	43318	43559	43253	42846	42557	42627	42310	42303
Employment	39626	39719	39863	41069	41505	42450	42757	42515	42065	41811	41604	41014	41334
Unemployment	1320	1259	1171	941	683	868	802	738	781	746	1023	1296	969
Unemployment Rate	3.2	3.1	2.9	2.2	1.6	2.0	1.8	1.7	1.8	1.8	2.4	3.1	2.3
Labor Force - Official (New Methodology Effective 1/78)													
Civ Labor Force	40816	40808	41047	42006	42377	43642	43894	43552	43078	42787	42614	42279	42409
Employment	39208	39297	39519	40769	41427	42444	42806	42585	42061	41739	41414	40757	41169
Unemployment	1608	1511	1528	1237	950	1198	1088	967	1017	1048	1200	1522	1240
Unemployment Rate	3.9	3.7	3.7	2.9	2.2	2.7	2.5	2.2	2.4	2.4	2.8	3.6	2.9

ROSEAU COUNTY - 1974

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	AA
Work Force													
Civ Work Force	5387	5347	6172	6322	6432	6409	6154	5789	5626	5005	4909	5012	5307
Employment	4145	4094	4297	4934	5125	5321	5277	5169	5148	4752	4500	4785	4603
Unemployment	1242	1253	1875	1388	1307	1088	877	620	478	253	409	227	704
Unemployment Rate	23.1	23.4	30.4	22.0	20.3	17.0	14.3	10.7	8.5	5.1	8.3	4.5	13.3
Labor Force - Unofficial (Unadjusted)													
Civ Labor Force	5124	5125	5670	5511	5568	5698	5552	5178	4890	4820	4790	4707	5220
Employment	3821	3854	3920	4255	4679	4816	4885	4752	4640	4621	4479	4087	4401
Unemployment	1303	1271	1750	1256	889	882	667	426	250	199	311	620	819
Unemployment Rate	25.4	24.8	30.9	22.8	16.0	15.5	12.0	8.2	5.1	4.1	6.5	13.2	15.7
Labor Force - Official (Old Methodology)													
Civ Labor Force	4817	4843	4981	5025	5128	5288	5233	4987	4779	4731	4735	4580	4928
Employment	3909	3937	3985	4309	4682	4811	4866	4728	4622	4617	4499	4117	4424
Unemployment	908	906	996	716	448	477	367	259	157	114	236	463	504
Unemployment Rate	18.8	18.7	20.0	14.2	8.7	9.0	7.0	5.2	3.3	2.4	5.0	10.1	10.2
Labor Force - Official (New Methodology Effective 1/78)													
Civ Labor Force	4973	4983	5250	5219	5294	5468	5371	5075	4826	4770	4756	4634	5052
Employment	3867	3896	3951	4278	4674	4810	4872	4735	4621	4610	4478	4091	4407
Unemployment	1106	1087	1299	941	620	658	499	340	205	160	278	543	645
Unemployment Rate	22.2	21.8	24.7	18.0	11.7	12.0	9.3	6.7	4.2	3.4	5.8	11.7	12.8

APPENDIX D

Examples of Tabulations From BLS Publications Providing National Estimates of Employment and Unemployment

1. Employment status of the noninstitutional population, 16 years and over, selected years, 1950–77
(Numbers in thousands)

Year	Total noninstitutional population	Total labor force		Civilian labor force						Not in labor force
		Number	Percent of population	Total	Employed			Unemployed		
					Total	Agriculture	Nonagricultural industries	Number	Percent of labor force	
1950	106,645	63,858	59.9	62,208	58,920	7,160	51,760	3,288	5.3	42,787
1955	112,732	68,072	60.4	65,023	62,171	6,449	55,724	2,852	4.4	44,660
1960	119,759	72,142	60.2	69,628	65,778	5,458	60,318	3,852	5.5	47,617
1964	127,224	75,830	59.6	73,091	69,306	4,523	64,782	3,786	5.2	51,394
1965	129,235	77,178	59.7	74,455	71,088	4,361	66,726	3,366	4.5	52,058
1966	131,180	78,893	60.1	75,770	72,895	3,979	68,915	2,875	3.8	52,289
1967	133,319	80,733	60.6	77,347	74,372	3,844	70,527	2,975	3.8	52,587
1968	135,562	82,272	60.7	78,737	75,920	3,817	72,103	2,817	3.6	53,291
1969	137,841	84,239	61.1	80,733	77,902	3,696	74,206	2,831	3.5	53,602
1970	140,182	85,903	61.3	82,715	78,627	3,462	75,165	4,089	4.9	54,280
1971	142,596	86,929	61.0	84,113	79,120	3,387	75,732	4,993	5.9	55,666
1972	145,775	88,991	61.0	86,542	81,702	3,472	78,230	4,840	5.6	56,785
1973	148,263	91,040	61.4	88,714	84,402	3,452	80,957	4,304	4.9	57,222
1974	150,827	93,240	61.8	91,011	85,936	3,492	82,443	5,076	5.6	57,587
1975	153,449	94,793	61.8	92,613	84,783	3,369	81,403	7,830	8.5	58,655
1976	156,048	96,917	62.1	94,773	87,485	3,297	84,188	7,288	7.7	59,130
1977	158,559	99,534	62.8	97,401	90,546	3,244	87,302	6,855	7.0	59,025

Source: Monthly Labor Review, Bureau of Labor Statistics, United States Department of Labor, April, 1978.

5. Unemployment rates, by sex and age, seasonally adjusted

Sex and age	Annual average		1977											1978	
	1976	1977	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Total, 16 years and over	7.7	7.0	7.6	7.4	7.1	7.1	7.1	6.9	7.0	6.8	6.8	6.7	6.4	6.3	6.1
16 to 19 years	19.0	17.7	18.6	18.7	18.2	18.1	18.0	17.3	17.3	16.3	17.3	17.2	15.6	16.0	17.4
16 to 17 years	21.1	19.9	20.0	21.9	19.7	20.6	21.2	19.8	20.1	19.8	18.8	19.0	17.8	18.2	20.8
18 to 19 years	17.4	16.2	17.6	16.5	16.8	16.4	16.3	15.7	15.5	16.7	16.2	15.9	13.7	14.5	15.0
20 to 24 years	12.0	10.9	11.9	11.4	11.0	10.9	10.7	10.7	11.2	10.7	10.4	10.4	10.2	10.5	10.1
25 years and over	5.5	4.9	5.2	5.1	5.0	4.9	5.0	4.9	4.9	4.7	4.9	4.7	4.4	4.2	3.9
25 to 54 years	5.7	5.1	5.4	5.4	5.2	5.2	5.2	5.1	5.2	4.8	5.1	4.8	4.6	4.3	4.1
55 years and over	4.6	4.1	4.6	4.2	4.1	4.1	3.8	3.9	3.9	4.1	4.2	4.1	4.0	3.5	3.3
Men, 16 years and over	7.0	6.2	7.0	6.7	6.3	6.4	6.2	6.1	6.1	5.9	6.0	5.8	5.5	5.6	5.6
16 to 19 years	19.2	17.3	18.6	18.6	17.5	17.4	17.5	16.9	17.4	17.7	16.7	16.4	15.3	14.9	17.2
16 to 17 years	21.4	19.5	19.6	22.3	18.5	19.2	22.4	20.0	20.8	19.2	18.6	18.2	16.7	17.2	21.1
18 to 19 years	17.6	15.6	18.0	16.1	16.1	16.1	15.3	14.8	14.9	15.8	15.1	15.0	13.9	13.4	14.3
20 to 24 years	12.0	10.7	12.0	11.2	10.8	10.8	10.3	10.6	11.4	10.4	9.9	9.8	9.8	10.5	10.3
25 years and over	4.8	4.2	4.7	4.6	4.4	4.3	4.3	4.1	4.2	4.1	3.9	4.3	3.8	3.6	3.4
25 to 54 years	4.9	4.3	4.7	4.5	4.4	4.4	4.3	4.3	4.3	3.8	4.3	3.9	3.6	3.6	3.4
55 years and over	4.4	3.9	4.5	4.2	3.8	3.9	3.3	3.7	3.5	3.9	4.1	3.7	3.7	3.2	3.2
Women, 16 years and over	8.6	8.2	8.4	8.4	8.3	8.2	8.4	8.1	8.2	8.2	8.0	8.1	7.6	7.3	6.9
16 to 19 years	18.7	18.3	18.6	18.8	18.9	19.0	18.5	17.8	17.2	18.9	18.0	18.1	16.1	17.4	17.7
16 to 17 years	20.7	20.4	20.6	21.5	22.1	22.2	19.8	19.6	19.3	20.6	19.1	20.1	19.2	19.5	20.4
18 to 19 years	17.3	16.8	17.1	17.0	17.7	16.8	17.5	16.6	16.2	17.7	17.4	16.8	13.5	15.8	15.7
20 to 24 years	11.9	11.2	11.7	11.6	11.3	11.1	11.2	10.9	11.0	11.0	11.0	11.1	10.8	10.5	9.8
25 years and over	6.4	6.0	6.1	6.2	6.1	5.9	6.2	6.2	6.2	6.0	5.8	6.0	5.7	5.2	4.7
25 to 54 years	6.8	6.4	6.4	6.7	6.5	6.2	6.6	6.4	6.5	6.4	6.2	6.3	6.0	5.5	5.1
55 years and over	4.9	4.5	4.8	4.4	4.5	4.4	4.5	4.4	4.5	4.5	4.5	4.8	4.4	3.8	3.3

6. Unemployed persons, by reason for unemployment, seasonally adjusted

[Numbers in thousands]

Reason for unemployment	1977											1978	
	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
NUMBER OF UNEMPLOYED													
Lost last job	3,425	3,212	3,043	3,080	2,972	3,042	3,197	3,055	3,035	2,969	2,748	2,608	2,540
On layoff	999	836	793	803	822	879	963	847	840	780	687	768	709
Other job losers	2,426	2,376	2,250	2,277	2,150	2,163	2,234	2,208	2,195	2,189	2,061	1,930	1,831
Left last job	881	916	858	913	938	842	891	869	876	881	877	856	898
Reentered labor force	1,972	2,000	1,993	1,961	1,917	1,860	1,872	1,879	1,906	1,891	1,866	1,821	1,796
Seeking first job	942	999	985	890	1,087	973	947	935	857	901	820	914	868
PERCENT DISTRIBUTION													
Total unemployed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Job losers	47.4	45.1	44.2	45.0	43.0	45.3	46.3	45.3	45.5	44.7	43.4	42.9	41.6
On layoff	13.8	12.6	11.5	11.7	11.9	13.1	13.9	12.6	12.6	11.7	10.9	12.2	11.6
Other job losers	33.6	32.5	32.7	33.3	31.1	32.2	32.3	32.8	32.9	33.0	32.6	30.7	30.0
Job leavers	12.2	12.9	12.6	13.3	13.6	12.5	12.9	12.9	13.1	13.3	13.9	13.6	14.7
Reentrants	27.3	28.1	28.9	28.7	27.7	27.7	27.1	27.9	28.6	28.5	29.8	29.0	29.4
New entrants	13.0	14.0	14.3	13.0	15.7	14.5	13.7	13.9	12.8	13.6	13.0	14.5	14.2
UNEMPLOYED AS A PERCENT OF THE CIVILIAN LABOR FORCE													
Job losers	3.6	3.3	3.1	3.2	3.0	3.1	3.3	3.1	3.1	3.0	2.8	2.7	2.6
Job leavers	.9	.9	.9	.9	1.0	.9	.9	.9	.9	.9	.9	.9	.9
Reentrants	2.0	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8
New entrants	1.0	1.0	1.0	.9	1.1	1.0	1.0	1.0	.9	.9	.8	.9	.9

7. Duration of unemployment, seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1977											1978	
	1976	1977	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Less than 5 weeks	2,780	2,856	2,860	2,944	3,041	2,789	3,076	2,820	2,885	2,784	2,904	2,851	2,608	2,700	2,586
5 to 14 weeks	2,159	2,049	2,142	2,143	1,899	2,179	2,050	2,030	2,037	2,152	2,117	2,037	1,937	1,851	1,820
15 weeks and over	2,339	1,911	2,104	2,008	1,823	1,853	1,728	1,824	1,830	1,814	1,848	1,829	1,797	1,668	1,568
15 to 26 weeks	1,003	896	959	859	770	812	826	891	933	968	970	936	941	864	897
27 weeks and over	1,336	1,015	1,203	1,149	1,108	1,057	962	943	867	926	878	893	856	824	671
Average (mean) duration, in weeks	15.8	14.3	14.7	14.4	14.4	14.9	14.3	14.1	13.7	14.0	13.8	13.7	13.8	13.1	12.5

Source: Monthly Labor Review, Bureau of Labor Statistics, United States Department of Labor, April, 1978.

A-3. Employment status of the noninstitutional population by sex, age, and race

[Numbers in thousands]

Sex, age, and race	February 1978										
	Total labor force		Civilian labor force				Not in labor force				
					Unemployed						
	Number	Percent of population	Total	Employed	Number	Percent of labor force	Total	Keeping house	Going to school	Unable to work	Other reasons
MALES											
16 years and over	59,260	77.2	57,253	53,466	3,788	6.6	17,466	327	4,956	1,685	10,499
16 to 21 years	8,212	64.4	7,514	6,182	1,333	17.7	4,535	20	4,080	38	397
16 to 19 years	4,864	57.3	4,541	3,660	881	19.4	3,622	12	3,337	15	258
16 to 17 years	1,913	45.1	1,880	1,426	453	24.1	2,326	2	2,220	2	105
18 to 19 years	2,950	69.5	2,661	2,234	427	16.1	1,294	10	1,117	14	153
20 to 64 years	52,547	89.2	50,864	48,046	2,817	5.5	6,371	145	1,619	1,226	3,380
20 to 24 years	8,494	84.4	7,749	6,778	970	12.5	1,564	19	1,210	43	292
25 to 54 years	37,026	94.3	36,089	34,519	1,569	4.3	2,234	62	408	658	1,107
25 to 29 years	8,309	94.5	7,937	7,422	515	6.5	486	3	247	65	170
30 to 34 years	7,395	96.2	7,153	6,821	332	4.6	292	10	91	50	141
35 to 39 years	5,952	96.4	5,760	5,568	193	3.3	222	12	26	69	116
40 to 44 years	5,171	95.0	5,080	4,909	170	3.4	271	4	23	101	142
45 to 49 years	5,148	93.3	5,116	4,938	178	3.5	368	23	13	150	183
50 to 54 years	5,050	89.5	5,043	4,862	182	3.6	594	11	6	223	354
55 to 64 years	7,028	73.2	7,026	6,769	277	3.9	2,573	64	2	526	1,981
55 to 59 years	4,354	82.8	4,353	4,171	182	4.2	908	30	--	273	604
60 to 64 years	2,673	61.6	2,673	2,578	95	3.6	1,665	34	2	253	1,377
65 years and over	1,849	19.8	1,849	1,759	90	4.9	7,472	170	--	443	6,861
65 to 69 years	1,058	28.6	1,058	1,002	56	5.3	2,646	44	--	162	2,441
70 years and over	791	14.1	791	757	34	4.3	4,826	126	--	280	4,421
White											
16 years and over	52,785	77.9	51,144	48,125	3,019	5.9	14,938	278	4,017	1,362	9,280
16 to 21 years	7,213	66.4	6,648	5,610	1,039	15.6	3,652	16	3,313	28	295
16 to 19 years	4,303	59.7	4,040	3,347	692	17.1	2,907	10	2,696	8	193
16 to 17 years	1,732	48.3	1,705	1,336	368	21.6	1,856	3	1,771	1	81
18 to 19 years	2,571	71.0	2,335	2,011	324	13.9	1,051	7	925	6	112
20 to 64 years	46,813	89.8	45,435	43,187	2,247	4.9	5,298	115	1,321	987	2,876
20 to 24 years	7,410	85.4	6,818	6,063	755	11.1	1,270	15	1,003	37	215
25 to 54 years	32,979	94.9	32,194	30,925	1,269	3.9	1,759	53	316	501	888
25 to 34 years	13,921	95.9	13,412	12,753	659	4.9	598	14	265	90	228
35 to 44 years	9,899	96.3	9,659	9,354	305	3.2	376	10	36	130	200
45 to 54 years	9,159	92.1	9,124	8,819	305	3.3	784	29	14	281	460
55 to 64 years	6,424	73.9	6,423	6,199	224	3.5	2,270	46	2	448	1,773
55 to 59 years	3,967	83.5	3,966	3,824	142	3.6	782	21	--	236	525
60 to 64 years	2,457	62.3	2,457	2,375	81	3.3	1,487	25	2	212	1,248
65 years and over	1,669	19.9	1,669	1,591	79	4.7	6,712	153	--	368	6,211
Black and other											
16 years and over	6,475	71.9	6,110	5,341	769	12.6	2,528	48	939	322	1,218
16 to 21 years	999	53.1	866	572	294	34.0	883	4	767	9	102
16 to 19 years	561	44.0	501	313	188	37.6	715	2	641	8	64
16 to 17 years	181	27.7	175	90	85	48.6	442	--	449	--	24
18 to 19 years	380	61.0	326	223	103	31.6	243	3	192	7	41
20 to 64 years	5,734	84.2	5,429	4,859	570	10.5	1,073	31	298	240	504
20 to 24 years	1,083	78.6	931	716	215	23.1	295	4	208	6	77
25 to 54 years	4,047	89.5	3,894	3,593	301	7.7	475	9	91	157	218
25 to 34 years	1,783	90.8	1,678	1,490	188	11.2	163	--	73	25	83
35 to 44 years	1,225	91.3	1,181	1,123	58	4.9	117	5	13	40	59
45 to 54 years	1,039	85.3	1,045	980	55	5.3	179	4	5	92	77
55 to 64 years	694	66.6	604	550	53	8.9	303	18	--	77	208
55 to 59 years	387	75.5	387	348	39	10.2	126	9	--	37	80
60 to 64 years	217	54.9	217	202	15	6.6	178	9	--	40	129
65 years and over	180	19.6	180	169	11	6.3	760	16	--	75	650

Source: Employment and Earnings, Bureau of Labor Statistics, U.S. Department of Labor, March, 1978.

A-3. Employment status of the noninstitutional population by sex, age, and race—Continued

[Numbers in thousands]

Sex, age, and race	February 1978										
	Total labor force		Civilian labor force				Not in labor force				
	Number	Percent of population	Total	Employed	Unemployed		Total	Keeping house	Going to school	Unable to work	Other reasons
					Number	Percent of labor force					
FEMALES											
16 years and over	40,788	48.9	40,671	37,719	2,952	7.3	42,615	32,987	4,833	1,044	3,751
16 to 21 years	6,593	52.8	6,545	5,556	989	15.1	5,895	1,644	4,105	23	123
16 to 19 years	3,956	47.6	3,938	3,249	689	17.5	4,352	673	3,638	8	233
16 to 17 years	1,586	38.6	1,585	1,267	318	20.0	2,523	186	2,334	4	101
18 to 19 years	2,370	56.4	2,353	1,981	371	15.8	1,829	489	1,304	5	131
20 to 64 years	35,730	57.8	35,631	33,409	2,222	6.2	26,088	22,657	1,382	453	1,596
20 to 24 years	6,651	66.2	6,587	5,888	699	10.6	3,393	2,186	977	33	196
25 to 54 years	24,619	60.0	24,586	23,228	1,356	5.5	16,422	14,980	389	234	819
25 to 29 years	5,619	62.7	5,594	5,225	370	6.6	3,348	2,976	187	26	159
30 to 34 years	4,714	59.7	4,708	4,409	299	6.4	3,177	2,922	80	33	142
35 to 39 years	3,927	60.4	3,925	3,687	238	6.1	2,575	2,392	50	33	99
40 to 44 years	3,587	62.4	3,586	3,433	152	4.2	2,164	1,970	40	34	119
45 to 49 years	3,490	59.9	3,490	3,328	162	4.6	2,333	2,143	22	42	127
50 to 54 years	3,282	53.7	3,281	3,146	135	4.1	2,825	2,576	10	66	173
55 to 64 years	4,460	41.6	4,460	4,293	167	3.8	6,273	5,492	15	185	580
55 to 59 years	2,812	48.6	2,812	2,710	102	3.6	2,972	2,623	9	95	244
60 to 64 years	1,648	33.3	1,648	1,583	66	4.0	3,301	2,869	6	90	336
65 years and over	1,102	8.3	1,102	1,061	40	3.7	12,175	9,657	13	582	1,923
65 to 69 years	677	14.5	677	643	34	5.1	3,993	3,344	4	100	545
70 years and over	424	4.9	424	419	6	1.3	8,182	6,312	9	483	1,378
White											
16 years and over	35,296	48.5	35,201	32,936	2,265	6.4	37,552	29,640	3,889	800	3,223
16 to 21 years	5,858	55.5	5,818	5,056	762	13.1	4,694	1,138	3,277	11	267
16 to 19 years	3,552	50.7	3,537	3,005	532	15.0	3,454	528	2,732	7	186
16 to 17 years	1,451	42.0	1,450	1,188	262	18.1	2,004	148	1,769	3	84
18 to 19 years	2,102	59.2	2,087	1,817	270	13.0	1,449	380	964	3	102
20 to 64 years	30,770	57.2	30,690	28,992	1,698	5.5	23,024	20,175	1,144	329	1,375
20 to 24 years	5,740	67.3	5,689	5,167	521	9.2	2,790	1,778	808	22	162
25 to 54 years	21,010	59.0	20,982	19,954	1,028	4.9	14,590	13,397	324	167	703
25 to 34 years	8,726	60.2	8,702	8,239	463	5.3	5,775	5,268	214	49	244
35 to 44 years	6,386	60.3	6,383	6,072	310	4.9	4,208	3,869	81	45	192
45 to 54 years	5,899	56.1	5,898	5,643	255	4.3	4,607	4,239	28	73	267
55 to 64 years	4,019	41.6	4,019	3,871	148	3.7	5,644	4,981	12	140	510
55 to 59 years	2,540	48.9	2,540	2,449	91	3.6	2,650	2,374	6	67	202
60 to 64 years	1,479	33.1	1,479	1,422	57	3.9	2,994	2,607	6	73	308
65 years and over	974	8.1	974	939	35	3.6	11,074	8,936	13	464	1,662
Black and other											
16 years and over	5,492	52.0	5,470	4,784	686	12.5	5,063	3,347	944	244	528
16 to 21 years	735	38.0	727	500	227	31.2	1,201	306	828	12	56
16 to 19 years	404	31.0	401	244	157	39.1	898	144	705	1	47
16 to 17 years	136	20.7	136	80	56	41.3	518	36	465	--	18
18 to 19 years	269	41.4	266	165	101	38.0	379	109	240	1	29
20 to 64 years	4,961	61.8	4,942	4,417	524	10.6	3,064	2,482	238	123	221
20 to 24 years	911	60.2	898	721	178	19.8	603	369	169	11	54
25 to 54 years	3,688	66.3	3,682	3,374	327	9.1	1,892	1,582	66	67	117
25 to 34 years	1,607	68.2	1,601	1,395	206	12.9	750	650	53	10	57
35 to 44 years	1,128	68.0	1,128	1,048	80	7.1	531	473	9	22	27
45 to 54 years	873	61.3	873	832	41	4.7	551	479	4	35	33
55 to 64 years	441	41.2	441	422	19	4.4	629	511	3	45	70
55 to 59 years	272	45.9	272	261	11	4.2	321	249	3	28	42
60 to 64 years	169	35.5	169	161	8	6.8	308	262	--	17	28
65 years and over	127	10.4	127	122	5	3.9	1,101	721	--	119	261

Source: Employment and Earnings, Bureau of Labor Statistics, U.S. Department of Labor, March, 1978.

A-4. Labor force by sex, age, and race

Sex, age, and race	Total labor force				Civilian labor force			
	Thousands of persons		Participation rates		Thousands of persons		Participation rates	
	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978
MALES								
16 years and over	58,357	59,260	77.3	77.2	56,331	57,253	76.6	76.6
16 to 19 years	4,734	4,864	55.7	57.3	4,391	4,541	53.9	55.6
16 to 17 years	1,764	1,913	41.6	45.1	1,733	1,880	41.2	44.7
18 to 19 years	2,970	2,950	69.8	69.5	2,659	2,661	67.4	67.3
20 to 24 years	8,448	8,494	85.6	84.4	7,705	7,749	84.5	83.2
25 to 54 years	36,378	37,026	94.3	94.3	35,439	36,089	94.2	94.2
25 to 34 years	15,314	15,704	95.5	95.3	14,702	15,090	95.3	95.1
35 to 44 years	10,802	11,123	95.8	95.8	10,514	10,840	95.6	95.6
45 to 54 years	10,261	10,198	91.1	91.4	10,223	10,159	91.1	91.3
55 to 64 years	6,999	7,028	74.0	73.2	6,997	7,026	74.0	73.2
55 to 59 years	4,287	4,354	83.2	82.8	4,286	4,353	83.2	82.7
60 to 64 years	2,711	2,673	62.9	61.6	2,711	2,673	62.9	61.6
65 years and over	1,799	1,849	19.7	19.8	1,799	1,849	19.7	19.8
White								
16 years and over	52,108	52,785	78.0	77.9	50,434	51,144	77.5	77.4
16 to 19 years	4,253	4,303	58.8	59.7	3,968	4,040	57.1	58.2
16 to 17 years	1,625	1,732	45.2	48.3	1,598	1,705	44.8	47.9
18 to 19 years	2,628	2,571	72.1	71.0	2,370	2,335	70.0	69.0
20 to 24 years	7,385	7,410	86.5	85.4	6,790	6,818	85.5	84.3
25 to 54 years	32,451	32,979	94.9	94.9	31,659	32,194	94.8	94.8
25 to 34 years	13,602	13,921	96.1	95.9	13,089	13,412	95.9	95.7
35 to 44 years	9,602	9,899	96.3	96.3	9,357	9,658	96.2	96.2
45 to 54 years	9,248	9,159	92.0	92.1	9,213	9,124	91.9	92.1
55 to 64 years	6,395	6,424	74.6	73.9	6,394	6,423	74.6	73.9
55 to 59 years	3,913	3,967	83.9	83.5	3,911	3,966	83.9	83.5
60 to 64 years	2,483	2,457	63.4	62.3	2,483	2,457	63.4	62.3
65 years and over	1,622	1,669	19.7	19.9	1,622	1,669	19.7	19.9
Black and other								
16 years and over	6,250	6,475	71.4	71.9	5,898	6,110	70.2	70.7
16 to 19 years	481	561	38.3	44.0	423	501	35.3	41.2
16 to 17 years	139	181	21.6	27.7	135	175	21.0	27.0
18 to 19 years	342	380	55.7	61.0	288	326	51.5	57.3
20 to 24 years	1,062	1,083	80.2	78.6	914	931	77.7	76.0
25 to 54 years	3,926	4,047	89.4	89.5	3,780	3,894	89.0	89.1
25 to 34 years	1,713	1,783	91.1	90.8	1,613	1,678	90.6	90.3
35 to 44 years	1,200	1,225	91.8	91.3	1,157	1,181	91.6	91.0
45 to 54 years	1,014	1,039	84.2	85.3	1,010	1,035	84.1	85.3
55 to 64 years	603	604	68.1	66.6	603	604	68.1	66.6
55 to 59 years	375	387	76.2	75.5	375	387	76.2	75.5
60 to 64 years	229	217	58.0	54.9	229	217	58.0	54.9
65 years and over	176	180	19.7	19.6	176	180	19.7	19.6

Source: Employment and Earnings, Bureau of Labor Statistics, U.S. Department of Labor, March, 1978.

A-10 Unemployed persons by marital status, sex, age, and race

Marital status, sex, age, and race	Males				Females			
	Thousands of persons		Unemployment rates		Thousands of persons		Unemployment rates	
	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978
Total, 16 years and over	4,673	3,788	8.3	6.6	3,437	2,952	8.8	7.3
Married, spouse present	2,096	1,484	5.3	3.8	1,626	1,298	7.3	5.7
Widowed, divorced, or separated	487	358	11.8	8.2	636	563	8.8	7.3
Single (never married)	2,100	1,945	16.8	14.6	1,174	1,091	12.3	10.9
White, 16 years and over	3,854	3,019	7.6	5.9	2,720	2,265	8.0	6.4
Married, spouse present	1,815	1,278	5.0	3.6	1,394	1,059	7.0	5.2
Widowed, divorced, or separated	386	261	11.4	7.4	444	416	7.7	6.8
Single (never married)	1,653	1,480	15.2	12.7	883	790	10.8	9.2
Black and other, 16 years and over	819	769	13.9	12.6	716	686	14.1	12.5
Married, spouse present	270	206	7.7	5.8	233	238	10.0	9.8
Widowed, divorced, or separated	101	97	13.2	11.9	192	146	13.4	9.4
Single (never married)	447	465	27.7	26.7	291	302	22.0	20.4
Total, 20 to 64 years of age	3,615	2,817	7.2	5.5	2,669	2,222	7.8	6.2
Married, spouse present	1,950	1,399	5.1	3.7	1,520	1,222	7.1	5.5
Widowed, divorced, or separated	451	329	11.5	8.0	568	523	8.7	7.5
Single (never married)	1,214	1,089	14.7	12.2	581	478	9.6	7.4
White, 20 to 64 years of age	2,993	2,247	6.7	4.9	2,073	1,698	7.0	5.5
Married, spouse present	1,694	1,198	4.9	3.5	1,292	997	6.7	5.0
Widowed, divorced, or separated	361	237	11.3	7.1	389	383	7.5	7.0
Single (never married)	939	813	13.3	10.5	393	318	7.8	6.0
Black and other, 20 to 64 years of age	622	570	11.7	10.5	594	524	12.9	10.6
Married, spouse present	256	202	7.5	5.9	228	224	10.1	9.5
Widowed, divorced, or separated	90	92	12.5	11.9	178	139	13.5	9.5
Single (never married)	275	276	23.2	22.2	188	160	18.4	14.3

Source: Employment and Earnings, Bureau of Labor Statistics, U.S. Department of Labor, March, 1978.

A-14. Unemployed persons by reason for unemployment, duration, sex, and age

Reason, sex, and age	February 1978						
	Total unemployed		Duration of unemployment				
	Thousands of persons	Percent	Less than 5 weeks	5 to 14 weeks	15 weeks and over	15 to 26 weeks	27 weeks and over
Total, 16 years and over	6,739	100.0	38.4	35.7	25.9	15.8	10.1
Job losers	3,241	100.0	31.2	39.7	29.1	17.9	11.2
On layoff	1,047	100.0	37.8	46.3	16.0	11.1	4.9
Other job losers	2,194	100.0	28.0	36.6	35.4	21.2	14.2
Job leavers	805	100.0	43.6	32.8	23.6	15.7	7.9
Reentrants	1,898	100.0	46.0	31.3	22.7	14.3	8.4
New entrants	795	100.0	45.2	32.7	22.1	10.2	11.9
Males, 20 years and over	2,907	100.0	30.0	41.1	28.9	17.6	11.3
Job losers	1,931	100.0	27.0	43.5	29.5	18.9	11.5
On layoff	661	100.0	33.7	51.6	14.7	11.2	3.5
Other job losers	1,270	100.0	23.4	39.3	37.3	21.6	15.7
Job leavers	362	100.0	36.7	35.1	28.1	19.3	8.8
Reentrants	540	100.0	35.6	35.9	28.5	16.3	12.2
New entrants	74	100.0	(1)	(1)	(1)	(1)	(1)
Females, 20 years and over ..	2,262	100.0	42.4	32.4	25.2	14.6	10.6
Job losers	923	100.0	35.1	32.5	32.4	18.9	13.5
On layoff	292	100.0	42.7	39.6	17.8	9.6	8.2
Other job losers	630	100.0	31.4	29.2	39.3	23.3	16.0
Job leavers	371	100.0	41.6	34.6	23.8	14.6	9.2
Reentrants	849	100.0	50.2	30.6	19.2	11.5	7.7
New entrants	120	100.0	45.0	38.3	16.7	4.2	12.5
Both sexes, 16 to 19 years ...	1,570	100.0	48.5	30.4	21.1	13.9	7.2
Job losers	387	100.0	42.8	37.9	19.4	15.5	3.9
On layoff	94	100.0	51.6	29.0	19.4	15.1	4.3
Other job losers	293	100.0	39.8	40.8	19.3	15.6	3.7
Job leavers	152	100.0	65.4	22.2	12.4	9.8	2.6
Reentrants	459	100.0	50.7	27.3	22.0	16.8	5.2
New entrants	571	100.0	46.3	29.7	23.9	11.7	12.2

Source: Employment and Earnings, Bureau of Labor Statistics, U.S. Department of Labor, March, 1978.

A-21. Employed persons by occupation, sex, and age

(In thousands)

Occupation	Total		Males, 20 years and over		Females, 20 years and over		Males, 16-19 years		Females, 16-19 years	
	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978	Feb. 1977	Feb. 1978
TOTAL	87,231	91,185	48,192	49,805	32,434	34,470	3,467	3,660	3,138	3,249
White collar workers	44,443	46,475	21,028	21,689	21,197	22,524	647	613	1,571	1,649
Professional and technical	13,690	14,254	7,688	7,984	5,837	6,037	70	93	95	89
Health workers	2,350	2,544	838	856	1,504	1,672	--	1	10	15
Teachers, except college	3,323	3,145	989	905	2,293	2,221	7	4	34	16
Other professional and technical	8,017	8,565	5,861	6,223	2,040	2,194	63	88	51	58
Managers and administrators, except farm	9,350	9,962	7,224	7,640	2,052	2,256	57	38	16	29
Salaried workers	7,663	8,152	5,923	6,258	1,676	1,833	48	34	16	28
Self-employed workers in retail trade	835	906	577	618	254	283	4	5	--	1
Self-employed workers, except retail trade	852	903	724	764	123	139	5	--	--	--
Sales workers	5,646	5,666	3,013	2,864	2,012	2,211	260	223	361	368
Retail trade	3,073	2,985	976	867	1,530	1,604	183	160	334	354
Other industries	2,574	2,681	2,037	1,997	432	607	77	62	27	14
Clerical workers	15,757	16,594	3,102	3,202	11,295	11,969	260	260	1,099	1,163
Stenographers, typists, and secretaries	4,425	4,727	55	47	4,044	4,342	1	7	324	332
Other clerical workers	11,332	11,867	3,047	3,155	7,251	7,627	259	253	775	831
Blue-collar workers	28,549	29,796	21,554	22,433	4,880	5,042	1,801	1,945	313	377
Craft and kindred workers	11,236	11,780	10,301	10,761	555	610	351	376	28	33
Carpenters	980	1,136	919	1,066	8	14	53	53	--	3
Construction craft, except carpenters	2,141	2,234	2,067	2,126	13	31	60	74	1	2
Mechanics and repairers	3,002	3,223	2,841	3,051	37	31	122	140	2	1
Metal craft	1,241	1,113	1,164	1,053	42	30	34	30	3	--
Blue-collar worker supervisors, not elsewhere classified	1,540	1,696	1,392	1,542	135	141	10	9	3	4
All other	2,331	2,377	1,919	1,923	321	363	72	69	20	22
Operatives, except transport	10,030	10,405	5,478	5,676	3,756	3,844	585	638	210	247
Durable goods manufacturing	4,407	4,708	2,769	2,973	1,424	1,449	157	194	57	93
Nondurable goods manufacturing	3,336	3,355	1,304	1,296	1,824	1,835	104	118	107	107
Other industries	2,284	2,342	1,404	1,407	508	560	324	326	46	47
Transport equipment operatives	3,355	3,548	2,967	3,115	234	249	140	170	14	13
Drivers, motor vehicles	2,838	3,031	2,491	2,633	221	235	112	149	14	13
All other	517	517	476	482	13	14	28	21	1	1
Nonfarm laborers	3,929	4,064	2,809	2,881	335	339	725	760	60	83
Construction	587	612	466	512	5	10	111	85	4	5
Manufacturing	1,018	1,059	778	830	135	121	105	94	--	14
Other industries	2,324	2,393	1,564	1,539	194	208	510	581	56	65
Service workers	11,925	12,557	3,788	3,837	6,075	6,596	833	930	1,228	1,194
Private household workers	1,150	1,185	26	18	838	925	8	16	278	227
Service workers, except private household	10,775	11,372	3,762	3,819	5,238	5,671	826	914	950	968
Food service workers	3,861	4,101	743	734	1,975	2,130	501	552	641	685
Protective service workers	1,303	1,339	1,160	1,207	90	108	30	21	3	3
All other	5,611	5,932	1,859	1,878	3,173	3,433	295	341	306	280
Farm workers	2,315	2,356	1,821	1,847	283	308	185	172	26	29
Farmers and farm managers	1,345	1,393	1,269	1,233	69	98	7	22	--	--
Farm laborers and supervisors	970	1,003	552	614	214	210	179	150	26	29
Paid workers	762	812	518	597	93	87	150	111	21	16
Unpaid family workers	208	191	34	17	120	123	49	37	5	13

Source: Employment and Earnings, Bureau of Labor Statistics, U.S. Department of Labor, March, 1978.

BIBLIOGRAPHY

BIBLIOGRAPHY

Bregger, John. "The Gordon Committee 10 Years Later," Statistical Reporter, pp. 17-19. Statistical Policy Division, Office of Management and Budget, No. 75-2. Washington, DC.: Government Printing Office, August, 1974.

Dippo, Cathryn. Expansion of CPS to Provide Reliable State Estimates of Unemployment, unpublished paper. United States Bureau of the Census, 1976.

Gellner, Christopher G. "A 25-Year Look at Employment as Measured by Two Surveys," Monthly Labor Review, pp. 14-23. Bureau of Labor Statistics, U.S. Department of Labor, Vol. 96, No. 7. Washington, DC.: Government Printing Office, July, 1973.

Green, Gloria. "Comparing Employment Estimates from Household and Payroll Surveys," Monthly Labor Review, pp. 9-20. Bureau of Labor Statistics, U.S. Department of Labor, Vol. 92, No. 12. Washington, DC.: Government Printing Office, December, 1969.

Norwood, Janet L. "Reshaping a Statistical Program to Meet Legislative Priorities," Monthly Labor Review, pp. 6-11. Bureau of Labor Statistics, U.S. Department of Labor, Vol. 100, No. 11. Washington, DC.: Government Printing Office, November, 1977.

Ziegler, Martin. "Efforts to Improve Estimates of State and Local Unemployment," Monthly Labor Review, pp. 12-18. Bureau of Labor Statistics, U.S. Department of Labor Vol. 100, No. 11. Washington, DC.: Government Printing Office, November, 1977.

U.S. Department of Labor. Concepts and Methods Used in Labor Force Statistics Derived from the Current Population Survey, Report No. 463. Bureau of Labor Statistics, Washington, DC., October, 1976.

_____. New Procedures for Estimating Unemployment in States and Local Areas, Report No. 432. Bureau of Labor Statistics. Washington, DC., 1974.

_____. Alternative Methods for Disaggregating Labor Area Estimates of Employment and Unemployment, Memorandum No. SP 75-13. Bureau of Labor Statistics. Washington, DC., December 14, 1975.

_____. Changes in Procedure for Estimating Labor Force and Unemployment in States and Local Areas, Commissioner's Memorandum, Bureau of Labor Statistics. Washington, DC., February 3, 1978.

_____. Handbook for Estimating Unemployment, Bureau of Employment Security. Washington, DC., 1961.

_____. How the Government Measures Unemployment, Report No. 505. Bureau of Labor Statistics. Washington, DC., 1977.

_____. Technical Instructions for Revised State and Area Unemployment Estimating System, Program Memorandum No. SP 77-35. Bureau of Labor Statistics. Washington, DC., November 11, 1977.

_____. Employment and Earnings. Bureau of Labor Statistics, Vol. 25, No. 6. Washington, DC.: Government Printing Office, June, 1978.

"CPS Population Controls Derived from Inflation - Deflation Method of Estimation," Employment and Earnings, p. 7. Bureau of Labor Statistics, U.S. Department of Labor, Washington, DC.: Government Printing Office, February, 1974.