8-1995

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August 1995

Prepared for:

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U.S. Department of Labor
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Washington, DC 20210

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This paper was prepared under U.S. Department of Labor Contract M-4647-4-00-96-30 for the Advisory Council on Unemployment Compensation (ACUC). An earlier version was presented at the ACUC conference on reforming the unemployment insurance system, August 18, 1994, Portland, Maine. Successful completion of the paper would have been impossible without the excellent research assistance of Wei-Jang Huang, Research Analyst at the W.E. Upjohn Institute for Employment Research. Valuable suggestions for improving the paper were provided by Paul Burgess, Mary Ann Wyrsch, Steve Woodbury, Laurie Bassi, Paul Thistle, Jean Kimmel, Mike Ransom, Gary Burtless, Ron Oaxaca, Ken Kline and Randy Eberts. Claire Vogelsong and Ellen Maloney provided clerical support. Remaining errors are mine alone.

1. INTRODUCTION

Since the inception of the federal-state unemployment insurance (UI) system nearly sixty years ago, there has been controversy about the adequacy of benefit payments.[1] Opinions have ranged from the view that UI does little more than subsidize leisure to the position that benefit levels grossly undercompensate for the physical and psychic hardships caused by unemployment.

The UI system was designed to be completely separate from relief programs, with eligibility determined by labor force attachment and benefit levels based on prior earnings experience. The benefit objectives of UI were recently set forth by the Advisory Council on Unemployment Compensation (1995, p. 8) in a statement of purpose for the UI system.

> The most important objective of the U.S. system of unemployment insurance is the provision of temporary, partial wage replacement as a matter of right to involuntarily unemployed individuals who have demonstrated a prior attachment to the labor force. This support should help meet the necessary expenses of these workers as they search for employment that takes advantage of their skills and experience.

In this statement the Advisory Council on Unemployment Compensation makes clear that the primary goal of UI is providing compensation for wage loss experienced as a result of involuntary unemployment. When making recommendations concerning benefit adequacy the Advisory Council on Unemployment Compensation (1995, p. 20) proposed:

> For eligible workers, each state should replace at least 50 percent of lost earnings over a six-month period, with a maximum weekly benefit amount equal to two-thirds of the state's average weekly wages.

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[1]See Becker (1960) for an early history of public sentiment on several aspects of UI, and Curtin and Ponza (1980) for a summary of some more recent attitudes.

The Council's aim was to ensure one-half wage replacement *for a large number of beneficiaries*.

The most recent major effort to investigate the adequacy of UI was done in the 1970s by Paul Burgess and Jerry Kingston (1978a, 1978b) who conducted the Arizona Benefit Adequacy Study under the sponsorship of the U.S. Department of Labor. The methodology used by Burgess and Kingston closely paralleled that of earlier researchers.[2] The typical approach is to question a sample of UI recipients about their expenditures on a class of goods and services deemed "necessary" and compare the level of UI benefits to the level of these expenses.

Surveys of the type done by Burgess and Kingston, while extremely valuable, have proven to be quite expensive.[3] The high cost of gathering data has resulted in small sample sizes, but a more fundamental problem exists with the traditional approach. These studies presume that the analyst may determine which categories of expenditure are "necessary" or which items a household may least do without.

The problems of sample size and expenditure category selection, are both addressed in the present study by using a readily available large data set, the Current Population Survey (CPS) Annual Demographic File, and an agnostic approach to measuring unemployment compensation based on the economic theory of consumer-worker behavior. The methodology relies on a natural theoretical approach to estimating the upper limit on unemployment compensation--solve for the lump sum payment, which, when given to an unemployed individual, makes her indifferent between her current lot and her pre-unemployment one.

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[2]Haber and Murray (1966) provide a summary of state studies done in the 1950s which used the same basic methodology later used by Blaustein and Mackin (1977) and Burgess and Kingston (1978a, 1978b).

[3] Becker (1961, p.23) noted that for the benefit adequacy studies done in the 1950s "[t]he time spent per interview averaged about three hours, with a range from one to fourteen hours, exclusive of the time spent in re-interviews of the more difficult cases."

Since UI is not intended to fully compensate the loss an individual experiences as a result of being unemployed, a financial inducement should remain for returning to work. Knowing the upper limit on the level of benefits is important for setting practical program guidelines.

In the next section a discussion of the accepted norms of benefit adequacy provides the framework for a review of the literature on assessing benefit adequacy. A simple theoretical approach to estimating the upper limit on unemployment compensation is given in Section 3 where explicit formulae for performing the computations are also given. In Section 4 the econometric methods to be used and the samples drawn from the 1992 CPS Annual Demographic File are discussed; basic labor supply results are also presented. Simulation results for a variety of household types, preference structures, and representative states are given in Section 6. The final section presents a summary of the new research findings, and considers program guidelines in light of the evidence presented.

2. STANDARDS OF BENEFIT ADEQUACY

In his classic monograph *The Adequacy of the Benefit Amount in Unemployment Insurance*, Father Joseph M. Becker (1961, p. 11) noted that; "A satisfactory norm of adequacy must have two elements--one positive, by which it can explain why benefits are as large as they are, and one negative, by which it can explain why they are no larger." Senator Paul Douglas (1932, p. 885) had earlier stated these principles in more substantive form. He suggested that "[t]here is a minimum of life which must be defended by the system of benefits," and that "[t]he amounts which the unemployed receive in benefits should always be appreciably less than what they would earn if employed [so that]...the temptation to shun work in order to draw the benefit will be greatly reduced" (Douglas 1932, p. 4). Douglas proposed that a balancing of these objectives might be achieved if unemployment benefits were to replace approximately one-half of lost wages for individuals who are unemployed and have demonstrated a significant attachment to the labor force.

While federal law has never specified the exact rate at which lost wages must be replaced under UI, every president since Eisenhower has reaffirmed the position that "payments to the great majority of the beneficiaries should equal at least half of regular earnings" (Becker 1980, p. 11). The Nixon administration specified that *great majority* should mean four-fifths of the nation's workforce (Becker 1980, p. 11). This criterion of benefit adequacy has come to be known as *one-half for four-fifths*.

2.1 The Wage Replacement Ratio: An Aggregate Criterion

While most states have benefit formula intended to replace approximately one-half of lost wages, the maximum on payments guarantees that many high wage workers will receive less than half their average lost earnings, and the minimum means that some low wage workers may receive more than half their average earnings. The data in Table 1 summarize the national historical experience on benefit adequacy using a very aggregate measure--the average wage replacement ratio (WRR). The national average WRR is defined by:

$$WRR = \frac{\sum_{i=1}^{n} WBA_i / n}{\sum_{j=1}^{m} WE_j / m}$$

where, WBA_i = the weekly benefit amount received by the ith UI recipient,

n = the number of UI recipients,

WE_j = the weekly earnings of the jth covered worker, and

m = the number of workers covered by UI.

In the first few years of UI, earnings of covered workers were unusually low, and the WRR was quite high. This is why there was little controversy about the adequacy of the weekly benefit amount until earnings rose rapidly after World War II. Figure 1 shows the declining trend of the WRR through the early 1950s. Since that time the WRR has ranged between thirty-two and thirty-seven percent, being approximately thirty-six percent in recent years.

Figure 1 which also shows a general upward trend in the WRR since about 1950. Controlling for the changing occupational mix of UI claimants, Hight (1980) arrived at lower bound estimates of 0.10 to 0.29 percent increase in the WRR per year over the period 1950-1977; and concluded that there has been some real gains in adequacy over the period. Table 2 lists the WRR for each state in 1994. While the national WRR was 36.05 percent in 1994, WRRs across the states ranged from a low of 26.8 percent in California to a high of 53.7 percent in Hawaii. A total of 18 states had WRRs greater than 40 percent in 1994.

Presumably the WRR is used as a rough gauge of benefit adequacy because the data needed to compute it is readily available. It is the main measure of benefit adequacy regularly reported by the U.S. Department of Labor.[4] However, the WRR as computed by the formula given above is a bit misleading. The denominator in the WRR considers wages for the entire population of covered workers, while the numerator considers only payments to

[4] It is reported by the U.S. Department of Labor quarterly in *UI Data Summary* and annually in updates to *UI Financial Data, ET Handbook No. 394.*

beneficiaries. Properly, we should examine benefit payments relative to lost earnings of beneficiaries.

Wayne Vroman (1980) who provided a comprehensive review of possible wage replacement rate computations called the series presented in Figure 1 and Tables 1 and 2 a *gross narrow wage replacement ratio* which is the one used historically. He also cited criticism that the measure underestimates the "true" replacement ratio because "unemployed workers receive lower wages than the average worker covered by the program."[5] Using unpublished micro data on the actual pre-unemployment earnings of beneficiaries from Illinois, Michigan, Pennsylvania, Texas, Washington, and Wisconsin for various periods during the 1980s, the Advisory Council on Unemployment Compensation (1995, p. 138) estimated that the gross narrow computation understates the true wage replacement rates by 25 to 30 percentage points.

The dramatic difference in wage replacement ratio estimates computed by the rather misleading gross narrow WRR formula and those produced using micro data on actual benefits and prior earnings convinced the Unemployment Compensation Advisory Council (1995, p. 21) to recommend that:

> The U.S. Department of Labor should calculate and report the actual replacement rate for individuals who receive Unemployment Insurance. This replacement rate should

[5] Vroman (1980, p. 170).

be calculated by dividing the weekly benefits paid to individuals by the average weekly earnings paid to those individuals prior to unemployment.

Vroman (1980, p. 170-72) reported that some researchers using micro data have arrived at very high net WRR figures. Feldstein (1974), who was concerned with the adverse incentive effects of UI, estimated that the net wage replacement ratio is often more than seventy percent. Munts and Garfinkel (1974) found replacement rates in Ohio in 1971-1972 to range from .38 to .89 for several distinct types of family units. Corson et al. (1977), determined the average ratio of benefits to lost wages in 1977 to be .66.

However, when broader measures of macro wage replacement which consider uncovered workers and non-compensated weeks are computed, replacement rates are much lower. For example Gramlich (1974), found that during the 1970-1971 recession for families headed by men, UI replaced only six to eight percent of lost earnings, and fourteen to eighteen percent for families headed by women. While the gross narrow WRR for 1971 was 0.363, Edgell and Wandner (1974) estimated the macro replacement rate for UI in the United States economy to be as low as 20 percent.

The wage replacement ratio estimates produced in the 1970s also varied because of differential treatment of taxes in the computations. This was a very important issue prior to the 1986 federal income tax changes which placed income received as unemployment compensation benefits in the same category for taxation as income from labor earnings.

2.2 Meeting Essential Expenditures: Support for the Standard

During the 1950s the U.S. Department of Labor financed a series of Unemployment Insurance benefit adequacy studies. The results of these studies have been summarized by Becker (1961), Lester (1962), and Haber and Murray (1966). Becker (1980), while discussing the principles which should underlie any proposal for a federal benefit standard, focused on the evidence from studies in Tampa, Fla. (1956), Anderson, S.C. (1957), Albany, N.Y. (1957), Portland, Ore. (1958), and St. Louis, Mo. (1958). These five similar studies were based on retrospective data on the income and expenditures of respondents during the period just prior to the survey date. Expenditures were divided into deferrable and non-deferrable categories. Spending on food, clothing, medical care, and housing constituted the non-deferrable group. Information was gathered on four household types. After examining these studies Becker (1980, p. 26) concluded that "[n]one of the states came close to the proposed goal of paying 80 percent of the beneficiaries half or more of their gross wage,...[and] [i]t is one of the weaknesses of the system that claimants without dependents' are treated much better than claimants with dependents." He suggested that benefit adequacy could be generally improved if benefit maximums were raised and programs for dependents allowances were expanded.

To give some examples from the 1950s studies, Table 3 presents a summary of the experience of those who fared best under the existing programs--households composed of a single beneficiary living alone. Becker (1961) found that benefits amounted to two-thirds or more of the income of unemployed single beneficiaries, more than 50 percent of family income for families with one wage earner, 40 percent for families with two wage earners and about 20 percent for families of secondary age earners. The 1950s studies demonstrated the usefulness of the one-half wage norm for assessing benefit adequacy. On the average, benefits that were half or more of the wage were sufficient to cover non-deferrable expenses for all claimant household types (Becker 1980, p. 13).

The deferrable/non-deferrable distinction used in the 1950s studies was expanded by Blaustein and Mackin (1977). They added expenditures made on a regular basis to repay outstanding debt to expenditures for food, clothing, medical care and housing, and labeled this "recurring" expenses. Using this concept as a basis for evaluating UI benefit adequacy they found that over two-thirds of the beneficiary households in South Carolina had adequate income in 1977. Nonetheless, they recommended increasing benefit maximums to improve adequacy.

Burgess and Kingston (1978a, 1978b) who conducted a detailed benefit adequacy study in Arizona, expanded the Blaustein-Mackin definition of recurring expenses to include expenditures on transportation, insurance, regular services, and regular support payments. They labeled this concept "necessary and obligated" expenses, and used it to assess benefit adequacy for seven recipient household types. The Arizona study revealed a wide disparity in terms of how closely benefits came to meeting the 10 necessary and obligated expenses for different categories of beneficiaries. As in the previous studies, the two most important factors, in addition to the weekly benefit amount, in determining the economic condition of the family during unemployment were the number of members to be supported and the number who were contributing to the support.

Burgess and Kingston found that benefits were most adequate for beneficiaries who had no other household members and lived with relatives--44 percent received a benefit equal to 100 percent or more of their share of the 10 expenses. The next most adequate category was husband and wife units in which both members worked. For 23.4 percent, the benefit amount represented 100 percent or more of expenses. Benefits were least adequate for beneficiaries in three or more person households in which the beneficiary was the only earner. For only 2.3 percent did the weekly benefit amount cover 100 percent or more of their expenses. For a majority of this category (56.1 percent), the benefit was half or less of the expenditures.

The low maximum weekly benefit amount was the principal reason for the disparity in the benefit-expense ratios among the different categories of Arizona beneficiaries studied. Sole wage earners, in households with two or more members including a spouse, generally had the highest wages and, consequently, were most often cut off by the maximum. For those beneficiaries, the weekly benefit amount--usually the $85 maximum--was less adequate than for any other category of beneficiary.

The Advisory Council on Unemployment Compensation (1995, p. 132) investigated whether states provided adequate UI benefits using data from the 1992 Consumer Expenditure Survey. Applying the narrow definition of necessary expenses used by Blaustein and Mackin (1977), the Advisory Council found that a majority of states provide UI compensation adequate to cover expenses for households with annual incomes in the $20,000 to $40,000 range. Very few state UI systems provided income replacement sufficient to meet the broader definition of Burgess and Kingston (1978).

Grossman (1973), Hamermesh (1982) and Gruber (1994a) have directly investigated how UI payments influence expenditure by unemployed workers. Grossman found that unemployed persons substitute leisure for market goods in an attempt to maintain customary consumption levels. Hamermesh concluded that UI benefits only partly help smooth consumption during periods of lost earnings due to unemployment, and that as much as half of the benefits received are spent as if "individuals were fully able to borrow or had sufficient savings to meet transitory losses of income without any disruption in their consumption spending."[6] Gruber estimated that in the absence of UI, average consumption expenditure by unemployed persons would fall by 22%, or more than three times the decline estimated in the presence of UI.[7]

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[6] Hamermesh (1982, p. 110).

[7] Gruber (1994, p. 30).

The consumer expenditure studies also raise a question about the importance of UI in maintaining necessary expenditure. Gruber (1994b) investigated this question using two sources of microeconomic consumer expenditure data. Results based on both the Panel Study of Income Dynamics (PSID) and the Consumer Expenditure Survey (CES) "suggest that UI has a significant effect on consumption of the unemployed."[8] On a finer point evidence from the two data sets differed. The PSID results indicated UI is indispensable for unemployed workers trying to maintain necessary expenditure, while the CES suggested that other forms of consumption insurance, such as savings and earnings of other household members, are at least as important as UI benefits.

2.3 Optimal Unemployment Insurance: A Theoretical Approach

Baily (1978) and Flemming (1978) originated theoretical models of optimal unemployment insurance. The models are similar in that both attempt to solve for characteristics of the UI system which would maximize the expected lifetime utility of a representative worker. The UI program choice parameters for this problem are the wage replacement rate, and the potential duration of benefits. Both Baily and Flemming assume an infinite potential duration of benefits, and each determines that optimal replacement rates are in the range of those provided by the states. Baily (1978, p. 393) finds that:

[8] Gruber (1995, p. 31).

[that if the] degree of relative risk aversion by workers [is] unity, and if workers do not prolong their duration of unemployment very much as a result of UI payments [i.e., if the elasticity of a spell of unemployment with respect to a change in the benefit amount is about 0.15] then if the benefit-wage ratio is 50% it is about right.

The elasticity of unemployment with respect to the benefit amount assumed by Baily (1978) is in line with estimates summarized in Chapter 7.

Flemming qualifies his statements with capital market considerations. He concludes that under perfect capital markets a replacement rate of 50% is too high, and "[i]f there is no lending or borrowing the optimal rates rise to about 75%."[9]

Davidson and Woodbury (1995, p. 1) examine optimal UI with "an equilibrium search and matching model calibrated using data from the reemployment bonus experiments and secondary sources." Like Baily and Flemming they find that if potential UI duration were infinite replacement rates should optimally be 50%. However, Davidson and Woodbury also estimate that if potential duration is limited to the standard 26 weeks, then the UI system should optimally replace all of lost earnings.

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[9] Flemming (1978, p. 403).

2.4 Econometric Approaches: Applying Theory

Burgess and Kingston (1980) investigated the possibility of evaluating benefit adequacy on the basis of readily available survey (Continuous Wage and Benefit History--CWBH) and claims data. They conclude, however, "that information on income and household composition must be supplemented with actual or estimated data on household expenditure patterns to predict individual benefit adequacy values with a reasonable degree of accuracy" (U.S. Department of Labor 1981, p. 43). Other writers have presented results which suggest a greater potential for econometric methods to yield reasonable estimates of adequate UI compensation.

Ashenfelter (1980), in the context of a household model where unemployment is treated as a rationing constraint, developed an approximation to a quantity which he refers to (Ashenfelter 1980, p.552) as the "lump-sum compensation required to restore the unemployed [rationed] worker's family to the welfare level of the fully employed family." This approximation is arrived at by taking a second-order Taylor Series approximation of the difference between the exogenous cost of achieving the unconstrained utility level in the presence of the ration and the cost of achieving the same level in the absence of any constraint, around the fully employed point. The result is "a conventional Harberger (1971) type triangle measure of welfare loss" (Ashenfelter 1980, p. 553), which is applied to aggregate time series data.

Hurd (1980), who examined the cost of unemployment to the unemployed, used a hybrid of approximation and direct methods to examine the experience of respondents to the 1967 Survey of Economic Opportunity. He estimated the parameters of a Taylor Series approximation of the substitution effect of a wage change on hours of work, integrated to find the compensated labor supply function, solved for the utility constant wage acceptance locus by inversion, and then determined the required lump sum compensation to constrained individuals by evaluating the area under this locus between the actual (constrained) and fully employed levels of labor supply.

O'Leary (1990) estimated the lump-sum compensation required to restore a single unemployed person with no dependents to the welfare level of a fully employed worker using a second-order Taylor Series approximation.[10] Results presented in Ashenfelter (1980), Hurd (1980), and O'Leary (1990) all suggest that the current UI practice of replacing one-half lost wages tends to overcompensate short spells of unemployment and undercompensate long spells.

2.5 A Consensus Standard

The norm of adequacy *one-half for four-fifths* is rooted in the common-sense recommendations of economists and politicians made over fifty years ago. The norm has

[10]This paper draws heavily on arguments and results presented in O'Leary (1986, 1990). Those previous studies of UI benefit adequacy focused on single workers without dependents.

been demonstrated to correspond roughly to the fundamental concern of satisfying needs of the unemployed, as well as being consistent with the fiscal integrity of the program. It is also appealing to policy makers and program managers because it is easy to apply. In the final section this norm is reviewed in light of full unemployment compensation estimates. The theoretical foundation for this exercise is laid in the next section.

3. A THEORETICAL APPROACH TO FULL UNEMPLOYMENT COMPENSATION

If the notion of a representative structure for individual preferences can be accepted, a method for directly evaluating the required compensation to an individual constrained in selling labor services is immediate. The method developed here is based on just such an assumption and is in the spirit of work by Rosen (1978), who examined the excess burden of income taxation, and Hurd and Pencavel (1981), who evaluated various wage subsidy programs.

3.1 Consumer Behavior with Employment Constraints

Satisfaction of each consumer-worker is represented as depending simply on the market resources at her command, Y, and the time available to enjoy these resources, L. It is assumed that each individual, given her exogenous non-labor income, I, and the rate at which she can transform labor services, H, into income, w, if unconstrained in the labor market, acts in a manner consistent with the problem:

$$\max_{L,Y} \{ U(L,Y);\ Y = wH + I \} = V(L(w,I),\ Y(w,I)). \tag{1}$$

She reaches an optimum where $H(w,I)$ hours of work are supplied to the market and $Y(w,I)$ goods are consumed in her residual discretionary time, $L(w,I)$. Denoting T as the endowment of discretionary time, $L(w,I) = T - H(w,I)$. In (1) $V(w,I)$ is the indirect utility function, it represents the maximum level of satisfaction for given values of w and I.

While the above exposition is stated in terms of individual behavior, the question of appropriate unemployment compensation is best seen from the household perspective. To provide this viewpoint we follow the usual approach found in the economics literature as summarized by Shelly Lundberg (1988, p. 225):

> The most common empirical specification of family labor supply treats the work hours of married men as independent of the behavior or attributes of their wives and the husband's behavior, in turn, as exogenous with respect to the wife's work decision. Husband and wife maximize utility independently, with the wife treating husband's earnings as property income. This results in an asymmetric pair of labor supply functions [as stated below] with no cross equation restrictions.

Using the above notation and denoting subscripts for married males and females as m and f respectively, the following are labor supply equations for a household with a married couple where both partners work in the market: $H_m = H_m(w_m, I)$ and $H_f = H_f(w_f, I + w_m H_m)$. Under these assumptions the analysis of unemployment compensation to individuals in a household context may proceed using the model for individual consumer-worker behavior.

In many instances, the effective choice facing a consumer-worker is between working a standard day, week, or year or not working at all; in other cases an optimal wage-hour arrangement way be upset by an unexpected layoff. The analytic techniques required to investigate the effects of labor market constraints on consumer-worker behavior are formally similar to the methods used to evaluate the response to "straight rationing." Research on the effects of rationing began during World War II (see Rothbarth 1940-41, and Kaldor 1941) and has continued since (see Tobin-Houthakker 1950-51, Pollack 1971, and Neary and Roberts 1980).

Ashenfelter (1980) developed a model of household labor supply under rationing. This model has been applied by Blundell and Walker (1982), Deaton and Muellbauer (1981), Kneisner (1976), Parsons (1977), and Ransom (1987). Ham (1982) presented results based on a model of individual labor supply under rationing.

An individual faced with a binding constraint on the hours that he may sell in the labor market at, say, $\underline{H} < H(w,I) = T - L(w,I)$, achieves a utility level less than that attainable in the absence of the labor market constraint,

$$U(T - \underline{H}, w\underline{H} + I) < U(L(w, I), Y(w, I)), \tag{2}$$

or in terms of the indirect utility function,

$$\underline{V}(\underline{H}, w\underline{H} + I) < V(w, I). \tag{3}$$

Full unemployment compensation to an individual who is constrained in selling labor services is that lump sum grant, c, which solves:

$$U(T - \underline{H}, w\underline{H} + I + c) = U(L(w,I), Y(w, I)). \tag{4}$$

Stating this condition in terms of the indirect utility function,

$$\underline{V}(\underline{H}, w\underline{H} + I + c) = V(w, I), \tag{5}$$

where c is a Hicksian equivalent variation. It is the lump sum compensation required by an individual who is constrained in the labor market to make him as well off as if he were employed at equilibrium hours without any change in relative prices. Therefore

$$c = c(w, I, \underline{H}) \tag{6}$$

is the compensation he would need to forego an opportunity to be employed at equilibrium hours.

The concept of full compensation embodied in this approach may be easily understood by referring to the indifference curve analysis of Figure 2. An unconstrained individual, with preferences as represented by the map of indifference curves on Figure 2, would reach an unconstrained optimum equilibrium on U^0 at (L^0,Y^0). If, for some reason, market opportunities allow sales of only $\underline{H} = T - L^1$ hours of labor services, a lower level of utility is reached on U^1 at (L^1,Y^1). While there is a hardship experienced as a result of the associated earnings loss $(Y^0 - Y^1)$, the utility loss is partly compensated by an increase in leisure, and the income required to fully compensate the constrained individual $(\underline{Y} - Y^1)$ is less than the earnings loss.

3.1 Explicit Formulae for Computing Full Compensation

The approach to measuring full compensation proceeds from the estimation of a representative labor supply function. To compute an exact solution for full compensation utility function parameter estimates are required. For the model presented above, when the theoretical conditions required by neoclassical economic theory are satisfied utility function parameters can be recovered from estimation of a labor supply specification.

Deriving an explicit closed form solution to (6) is not always an easy matter. Two utility functions are used in this study, they are the familiar Stone-Geary (SG) which has been used widely in employment policy research, and the somewhat less familiar utility function derived by Hausman (1980) from the linear labor supply function. To crystalize the approach, the Stone-Geary case is now worked out in detail.

3.1.1 Full Compensation when Utility is Stone-Geary

The Linear Expenditure System is derived from the Stone-Geary utility function:

$$U(L,Y) = \alpha \ln(L - \gamma_1 - \Delta) + (1 - \alpha)\ln(Y - \gamma_2); \quad 0 < \alpha < 1, \tag{7}$$

where the parameters α and $(1 - \alpha)$ are interpreted as marginal budget shares devoted to leisure and market goods, and γ_1 and γ_2 represent leisure and income origin translation parameters respectively, and $\Delta = \delta D$ with D the number of dependents and δ the effect of each dependent on the origin where leisure is defined. Maximizing (7) subject to the income, $Y = wH + I$, and time, $T = H + L$ constraints yields leisure demand,

$$L = \gamma_1 + (\alpha/w)((wT + I) - w(\gamma_1 + \Delta) - \gamma_2), \tag{8a}$$

or labor supply,

$$H = (T - \gamma_1) - (\alpha/w)(I + w(T - \gamma_1 - \Delta) - \gamma_2), \tag{8b}$$

and commodity demand,

$$Y = \gamma_2 + (1 - \alpha)((wT + I) - w(\gamma_1 + \Delta) - \gamma_2), \tag{8c}$$

functions. Given the adding up condition on neoclassical demand functions, the parameters of (8a) through (8c) can be determined by estimating the parameters of any one of the demand system equations. Denoting the estimated parameter values by the parameters themselves, substitution of (8a) and (8c) into the right-hand side of (4) yields the right-hand side of equation (5),

$$\left[T - \left[\frac{(1-\alpha)w(T-\gamma_1-\Delta)-\alpha(I-\gamma_2)}{w}\right]-\gamma_2\right] \times \left[(1-\alpha)\{w(T-\gamma_1-\Delta)+(I-\gamma_2)\}\right]^{1-\alpha} \quad (9)$$

the indirect Stone-Geary utility function. For this case the left-hand side of (5) is:

$$(T-\underline{H}-\gamma_1-\Delta)^{\alpha}\ (w\underline{H}+I+\tilde{c}-\gamma_2)^{(1-\alpha)} \quad (10)$$

Equating (9) and (10) and solving for $\tilde{c}$ yields:

$$\tilde{c} = \gamma_2-I-w\underline{H}+(1-\alpha)\left\{w(T-\gamma_1-\Delta)+(I-\gamma_2)\right\} \times \left[\frac{\alpha\{w(T-\gamma_1-\Delta)+(I-\gamma_2)\}}{w(T-\underline{H}-\gamma_1)}\right]^{\frac{\alpha}{(1-\alpha)}} \quad (11)$$

a closed form solution for full unemployment compensation when utility is Stone-Geary.

3.1.2 Full Compensation when Labor Supply is Linear

Hausman (1980) has shown that when labor supply takes the following linear form:

$$H = \alpha w + \delta I + Z\gamma, \quad (12)$$

with the variables H, w and I as defined above, Z representing socioeconomic variables such as the number of dependents and α, δ and γ being parameters to estimate, the indirect utility function satisfying neoclassical conditions is:

$$V(w, I) = e^{\delta w}\{I + (\alpha/\delta)w - (\alpha/\delta^2) + (s/\delta)\}, \quad (13)$$

where, $s = Z\gamma$, and the direct utility function consistent with the linear labor supply is:

$$U(L, Y) = e^{-[1 + \delta(Y + \check{s})(b - H)]}\{(H - b)/\delta\}, \tag{14}$$

where $b = \alpha/\delta$ and $\check{s} = (s/\delta) - (\alpha/\delta^2)$. In a different paper Hausman (1981) showed how these specifications may be used to compute exact welfare measures at the individual level. In the present case full compensation when labor supply is constrained to be $\underline{H} < H(w, I)$ is the Hicksian equivalent variation, c, which may be computed by the following formula:

$$c = \frac{\{\delta w + [1 + \delta(w\underline{H} + I + \check{s})(b - \underline{H})]\} + \ln\{(\delta I + bw\delta - b + s)/(\underline{H} - b)\}}{(-\delta(b - \underline{H}))} \tag{15}$$

4. SAMPLES, METHODS, AND BASIC ESTIMATION RESULTS

4.1 The Samples

The basic estimation was performed on samples from the 1992 Current Population Survey (CPS) Annual Demographic File. These data were collected in March of 1992, and describe respondent behavior during 1991.

This study ultimately examines what full UI compensation might be for workers in twelve different household situations. Six different categories of household member were examined in households with and without dependents. A total of 33,454 households were used for the basic estimations. This included:

11,739 households with married couples where *both* partners worked,
6,153 households with married couples where only the husband worked,
2,505 households with married couples where only the wife worked,
6,031 households with a single male working person, and
7,026 households with a single female working person.

Parameters of the preference structure were estimated for one person in each of the last four household types listed above, and for both partners among married couples where both worked. This results in workers who were in six different categories of household membership.

To arrive at this sample for analysis we eliminated households with earners aged less than 25 or more than 55 years, and examined only workers with positive earnings sometime during 1991. We also excluded households with more than two earners. Among households without a married couple we examined only those where there was one earner.

One of the most interesting aspects of household structure for our purposes is the dependents relationships. There was an average of 1.4 dependents in households with married couples where both partners worked and married couples with only the husband working. In households with a married couple and only the wife working the average was 0.9 dependents, while there was an average 0.2 dependents for single males and 0.7 dependents for single females. In addition to information on dependents, the mean values of annual hours worked, hourly wages, age, education, race, and urban residence status are presented in Table 4. Not surprisingly the samples show that workers in households with married couples and only one worker average about ten years older than households with married couples where both partners work, also the sample containing the largest fraction of black households are those where there is a single woman working.

The family non-labor income figure of $34,953, for wives in households where married spouses both work reflects the assumption that Shelly Lundberg (1988, p. 225) says is "the most common empirical specification"--labor income of husbands is regarded by working wives as part of exogenous income. The relative size of the means to the standard deviations of family non-labor income for the sub-samples indicates that for some households non-labor income is negative. This is because the CPS household non-labor income variable includes self-employment income and rental income, each of which may reasonably be negative in a given year.

Given the great diversity of American households, the sample selection restrictions are admittedly severe. However, even within the five narrowly defined household types examined there are many different dependent relationships so that the categories of household member multiply quickly. Assigning dependency relationships and non-labor income becomes quite complicated for other household structures. Not every possible combination can be examined; information yielded from examination of the household categories selected is rich and varied.

4.2 Estimation Methods

The parameter estimates which serve as the basis for compensation simulations are reported in Table 5. The equations estimated are similar in that each has a very small coefficient of determination. This is typical when estimating labor supply equations on cross-section data. While several omitted factors obviously explain the total variation in annual hours worked, every individual parameter in these equations is estimated with a high degree of statistical significance. Furthermore, these estimates are quite robust, being relatively invariant when other regressors were included. The parsimonious specifications were chosen for simplicity.

The labor supply specifications (8b) and (12) were each estimated on the six different samples of workers described above. The labor supply equations were estimated using ordinary least squares, correcting for the *division bias* problem involved in defining the hourly wage rate using the method proposed by Borjas (1980). In the labor supply regression equations the dependent variable, annual hours, is definitionally related to the important predictor, the hourly wage rate, since the latter is defined by dividing the former into annual earnings. To avoid the bias in parameter estimates which may result from division bias, first stage wage equations are run. Results of these estimations are reported in Table 6. All parameters in the wage equations were estimated with great precision, and overall the equations fit the data quite well. Wages were modeled as depending on age, education, race and urban residency status. These predictor variables were not later included in the hours equations so as to satisfy identification of the system and to avoid multicollinearity with the predicted wage.

All results in this study are based on empirical labor supply equations, which include only variables suggested by the theory which in this case includes the number of dependents. The number of dependents was incorporated into the two utility functions examined since dependency status is an important consideration in estimating UI benefit adequacy.

4.3 Basic Estimation Results

The direct utility function (14) derived by Hausman (1980) suggests no natural interpretations of the parameters estimated for the linear labor supply function and presented in Table 5. Interpretation of these results is limited to discussion of elasticities. On the other hand there are natural interpretations of the parameters of the Stone-Geary labor supply function reported in Table 7.

The budget share devoted to leisure is greatest for married males and single female workers. The complementary group of married women and single men, who have relatively lower valued market uses of time, have relatively higher minimum leisure requirements. Estimated minimum income requirements are large and negative for all groups. As mentioned earlier negative values are possible because the exogenous household income variable includes losses from self employment and rental property. The relative magnitudes of the estimated γ_2 across household types are reasonable. Working married males in one earner households have the highest subsistence income requirements, while married women in dual earner households have the lowest requirement.[11]

[11]Following the usual practice in the literature (Lundberg, 1988, p. 225) of adding husbands earnings to working wives non-labor income, as seen in Table 4, married women in dual earner households also have the greatest mean and standard deviation in exogenous non-labor income. This obviously drives the γ_2 estimate.

The labor supply equation estimates presented in Table 5 indicate that dependents increase hours of labor supplied by men, and decrease hours offered to the market by women. These results are given a finer interpretation in Table 7 where estimates for δ, the Stone-Geary utility function parameter indicating the minimum leisure required per dependent, are reported. The estimates indicate that an additional dependent reduces the minimum leisure required by a working woman with a working spouse by 119 hours per year, while increasing the minimum leisure required by married men whose spouse does not work by 123 hours per year.

Estimates of the structural Cournot (uncompensated) wage effect, income effect, substitution effect, and associated elasticities are presented in Table 8 for the Stone-Geary form and Table 9 for the Linear form. The labor supply estimation results are most easily reviewed in elasticity terms. For both the Stone-Geary and the Linear specifications, the elasticity estimates are consistent with the implication of consumer demand theory that the substitution effect on labor supply is positive. Furthermore, in each case leisure is found to be a normal good. Generally speaking, the Stone-Geary specification yields results more consistent with the received literature. The Linear form results in a relatively high labor supply elasticity for married men who are the sole earner in the household, this group is usually found to have the least elastic labor supply. Using the Stone-Geary specification, the labor supply elasticity estimate of married male sole earners falls to less than half that from the linear specification. Other estimates generated from the Stone-Geary model are also more in line with previous studies.

5. ESTIMATES OF FULL UNEMPLOYMENT COMPENSATION

In this section full compensation estimates based on the formulae (11) and (15) given in Section 3 are presented for various hypothetical degrees of labor market constraint. These figures are reported together with UI payment simulation results for four states having benefit computation provisions which span the variety of systems extant and an estimate of compensation which would result if one-half of lost wages were replaced--which is the standard norm of adequacy.

Under all state Unemployment Insurance (UI) laws, a claimant's benefit rights depend on four principal factors: "the amount of employment and wages required to qualify an individual for benefits, the period for earning such wages, the method of computing the weekly benefit amount, and the method of determining the length of time for which benefits may be paid."[12] Another factor which is an important determinant of benefits in 14 states is dependents allowances. While the level of wages and period of employment for qualification differ greatly across the states, there exist only four basic schemes for determining a UI claimant's weekly benefit amount. They are referred to as the Average-weekly-wage, High-quarter, Multi-quarter, and Annual-wage formulae.

Results of simple simulations, performed under the assumption of qualification for the maximum benefit payment period, are presented for state programs representative of each of the four benefit schemes: Michigan provisions are used to perform Average-weekly-wage simulations, Massachusetts laws provide the parameters to do High-quarter simulations, Illinois serves as an example of a Multi-quarter state, and Oregon's scheme is used to generate Annual-wage simulations. The particulars of the four categories of benefit rights provisions in each of these states are summarized in Table 10. The third section of the table highlights the distinguishing characteristics of the four different state benefit schemes. Under each scheme a formula is employed which yields a weekly benefit amount (WBA) which is equal to about one-half of lost gross wages. Under the Michigan plan seventy percent of the net AWW is paid; in Massachusetts a fraction between 1/21 and 1/26 of the HQ earnings is the WBA[13]; in Illinois 49 percent of earnings in the two highest quarters in the base period divided by 26; and in Oregon the WBA is 1.25 percent of annual income.

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[12]*Comparison of State UI Laws*, U.S. Department of Labor (1992, p. 3-1).

[13]The fraction 1/26 is used in the Massachusetts simulations because the statutory alternative of 1/52 of the highest two quarters yields the same WBA in our simulations since we use average quarterly earnings computed as annual earnings divided by four.

Tables 11-16 present simulation results for the four states, the one-half wage replacement rule, and for the two preference structures considered. Each table is divided into two parts, the left hand panel gives results for workers with no dependents, the right hand panel gives results for workers with two dependents. In each table the left most column lists the hypothetical number of weeks of unemployment (Weeks), which is allowed to range from one to thirty-one because among the simulation states the maximum entitled duration of regular benefits is 30 weeks in Massachusetts which also has a one week waiting period. The next four columns report the cumulative benefit payments which would be made to a qualified claimant in Michigan, Massachusetts, Illinois, and Oregon with the various weeks of unemployment, and sub-sample average gross hourly wages for the six categories of worker reported in Table 4. Column six reports a dollar amount which equals half of the total gross wages lost by a worker with the mean wage rate, and mean non-labor income. The seventh and eighth columns present the amount of "full" compensation implied by the closed form direct compensation formula for the Stone-Geary and Linear specifications respectively. The right panel in each table presents similar simulation results with the change that the hypothetical worker has two dependents instead of none.

In Michigan there is no waiting period before benefit payments begin. However, in Massachusetts, Illinois and Oregon the benefit payment is zero during the first full week of unemployment, with this waiting period acting as a form of coinsurance. The one-week waiting period was required in all but eleven states in 1991.[14] In all states, once benefit payments commence, total benefits increase in a linear fashion, with a fixed benefit amount being paid each week, until there is either a return to work or the claimant is no longer eligible. The one-half wage replacement rule results in a fixed benefit payment each week as well.

[14]The other ten states without a waiting week in 1991 were: Alabama, Connecticut, Delaware, Iowa, Kentucky, Maryland, Nevada, New Hampshire, Virginia, and Wisconsin.

It is assumed in the simulations performed here that the stylized claimant considered qualifies for the maximum benefit period. In the absence of economic conditions which trigger extended benefits, 26 weeks is the maximum benefit duration under most UI programs.[15] As a consequence of the waiting period and the benefit maximums, the figures in the simulation tables for Illinois and Oregon are constant for weeks of unemployment beyond twenty-seven, for Michigan there is no change after 26 weeks because Michigan has a maximum entitlement of 26 weeks and no waiting week, cumulative compensation reaches a maximum in Massachusetts after 31 weeks. Just as the UI benefit totals increase in a linear fashion, so do the totals for one-half gross wage replacement (HALF).

In the simulations the generally accepted norm of benefit adequacy--*one-half wage replacement*--is met or slightly exceeded in all four states for workers with relatively low earnings. That is for the three categories of woman worker. The mean hourly wages across the three groups of woman worker were all approximately equal to $10.50, while the mean hourly wages for men were somewhat higher. The mean wages for both categories of married men, single earner ($16.47) and dual earner ($14.89) households, were too high to allow the average worker to qualify for half wage replacement in any of the states. However, single males who had mean hourly earnings of $13.24 would be provided with approximately half wage replacement when unemployed in either Michigan or Massachusetts. Naturally, in the simulations the waiting week delays wage replacement in Massachusetts, Illinois, and Oregon, but not in Michigan.

Differentiating each compensation formula with respect to hours, H, reveals that it is in general impossible to determine *a priori* how a change in hours of work affects utility based compensation. Comparing simulation results for "full" compensation from the theoretical formulae based on Stone-Geary and integrated Linear utility, with the figures for the actual benefit payments which would be forthcoming in the various states, the

[15]The exceptions (maximum duration in weeks) are: Louisiana (28), Massachusetts (30), Pennsylvania (30), Puerto Rico (20), Utah (36), Virginia (28), Washington, D.C. (34), and West Virginia (28).

general result is that current UI programs appear to overcompensate for wage loss during the first several weeks of unemployment and undercompensate for lengthy spells of unemployment.

The Stone-Geary form yields full compensation simulation estimates which nearly coincide with the one-half wage replacement rule for long durations of unemployment, but suggests that the states and the half-wage replacement formula is too generous in early weeks of unemployment.

Results based on the Linear form of labor supply generally accentuate the tendencies of the Stone-Geary simulation suggesting that compensation should be lower than the accepted norm in early weeks. However, for long durations of unemployment the Linear form suggests that compensation may safely be much higher than one-half wage replacement.

For a few categories of worker, simulation results based on the theoretical formulae have a surprising non-monotonic shape. For working husbands with non-working wives the pattern is exhibited for both the Stone-Geary and the Linear based formulae for men both with and without other dependents. For the Stone-Geary form the pattern is also apparent for single men with two dependents, and for the Linear form the pattern appears for married women workers with a working spouse and two dependents. In all of these cases the pattern is generally the same--full compensation in the first week of unemployment should be positive though not large, with cumulative full compensation declining for additional weeks of unemployment until it reaches zero in the early weeks of a spell and then rises thereafter. These results occur because of the non-linear form of the compensation formulae and the relative magnitude of the parameter estimates. The estimates suggest that the timing of benefit payments should be closely examined. Ignoring possible *entry effects* which may be created, the results suggest that the waiting period might be placed after the first weeks of compensation.

It is surprising that results on dependents allowances from the theoretical compensation formulae are not more consistent given that the dependents variable in the labor supply equations yielded the usual results found in the literature--independent of the household structure, because of strong income effects for men dependents tend to increase hours of market work for males, and perhaps because they more significantly raise the opportunity cost of working for women; dependents decrease hours of market work for females. For the Stone-Geary form adding dependents to the household lowers required full compensation for men and raises full compensation required for women, while precisely the opposite occurs for the Linear form with dependents lowering full compensation to women workers and raising full compensation.

Naturally, the conflicting simulation results across functional forms for dependents is due to the differing treatment of demographic variables in the compensation formulae. The result highlights the extreme sensitivity of the simulation results to the specifications. Taken together, the simulation results based on the theoretical specifications tend to be in the neighborhood of the standard norm of one-half wage replacement which is approximately what states provide for beneficiaries qualifying for less than the maximum weekly benefit amount. Results based on the Stone-Geary are slightly below and those based on the Linear form are somewhat above half wage replacement. Rather than contradict the standard norm of adequacy, these results tend to support the one-half wage replacement rule. If the theoretical simulation results raise any questions, they are about the best timing of payments.

6. SUMMARY, CONCLUSIONS, AND POLICY IMPLICATIONS.

Results from estimating explicit parameterizations of labor supply have been used to compute estimates for full unemployment compensation. The estimates generated were compared to hypothetical payments which would accrue under the unemployment insurance (UI) systems of representative states. Results on compensation amounts tend to support the accepted standard of UI benefit adequacy which calls for replacement of one-half of lost wages. While one-half wage replacement over the course of an average 15 week spell of unemployment appears to yield adequate and not excessive wage replacement, return to work incentives might be improved if the fixed nature of the weekly payment is examined. There may be ways to maintain or improve benefit adequacy while speeding return to work. This might be accomplished in part by a closer examination of partial benefit rules.

The direct compensation and state program simulations imply that current UI programs overcompensate for wage loss during short spells of unemployment, and under-compensate for lengthy spells. Overall, compensation is adequate in the present UI system, but the timing of payments should be more closely examined. Particular program features to consider are the length and timing of the waiting period.

Findings in this study concerning dependents allowances were extremely cloudy. The two different theoretical specifications produced opposite results. What the results suggested was that dependents affect required compensation to men and women in exactly opposite ways regardless of the household setting where the man or woman lives. It may require Solomon to craft a benefit policy which treats men and women differently in terms of dependents, and is still politically acceptable.

For the 12 different types of representative worker considered in this study, benefit simulations were performed for four representative states: Michigan, Massachusetts, Illinois, and Oregon. Among the 48 cases examined at least one-half of lost weekly earnings would be replaced during a week of unemployment in 24 of the cases. Clearly, each of the 48 cases is not equally likely to occur in practice. The four states studied differ greatly in size, and the probabilities of unemployment for each of the twelve types of household member differ as well. In the simulations one-half wage replacement is most likely to occur for women and single men, with dependents allowances greatly increasing the chance of one-half wage replacement. In 1993 single Americans were more than twice as likely to experience unemployment than were married people, and among women those with dependents were more likely to be unemployed.[16] This suggests that unemployment is a greater risk for those more likely to be adequately compensated by the UI system.

Since the 1950s a popular standard of unemployment insurance benefit adequacy is half wage replacement for eighty percent of the insured unemployed or *one-half for four-fifths*. Given that between the minimum and maximum weekly benefit amounts approximately one-half of lost wages are replaced, an important part of benefit adequacy concerns maximum benefit amount policy. Obviously raising the maximum weekly benefit amount (WBA) would allow one-half wage replacement to extend to more beneficiaries. In Table 17 we see that for the six worker types drawn from the 1992 Current Population Survey (CPS) and examined in this paper,[17] setting the maximum WBA at two-thirds the full sample average weekly wage (AWW) would extend one-half wage replacement to 77 percent of the population. The maximum WBA would need to be at about 71 percent of the AWW to allow *one-half for four-fifths*. Among working married women with husbands not working, the standard of adequacy would be reached with the maximum WBA at fifty percent of the AWW, while for working married men with wives not working setting the maximum at seventy-five percent of the AWW would still fall short of the adequacy standard. Clearly, earnings levels are different for the various categories of earners. Table 18 states what maximum WBA combined with fifty percent wage replacement below the maximum would yield *one-half for four-fifths* for each of the six categories of worker considered in this study.

Raising the maximum WBA is not a simple matter, adjustments of this parameter should always be considered in the larger context of UI trust fund adequacy. As Vroman (1990, p. 114) points out "symmetric treatment...of taxes and benefits...helps to reduce the risk of insolvency." It is generally believed that if the maximum weekly benefit amount is

[16] Data from Table 1 in the 1993 *Geographic Profile of Employment and Unemployment* and Table 626 in the 1994 *Statistical Abstract of the United States*.

[17] There are six different worker types when the two alternative dependents possibilities are ignored.

set at two-thirds of the state average weekly wage, one-half wage replacement will be achieved for eighty percent of beneficiaries. Regarding maximum benefit amount policy Minnesota and Oklahoma should be studied as models. In Oklahoma, for example, the maximum weekly benefit amount is adjusted annually to a percentage between 60 and 67 percent of the state average weekly wage depending on the state UI trust fund balance.

While it was mentioned in this paper when reviewing earlier research but not analyzed, benefit adequacy also concerns those with low levels of prior earnings. Because "necessary and obligated" expenditures amount to a larger share of earnings for low income people, one-half wage replacement may be inadequate for this group. Programs which tie the minimum weekly benefit amount (WBA) to the maximum WBA amount should be closely examined. Kansas, where the minimum WBA is set at 25 percent of the maximum WBA, offers a useful approach to minimum WBA policy.

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Figure 1: Aggregate Average Wage Replacement Ratio (WRR) in the United States, 1938-1994.

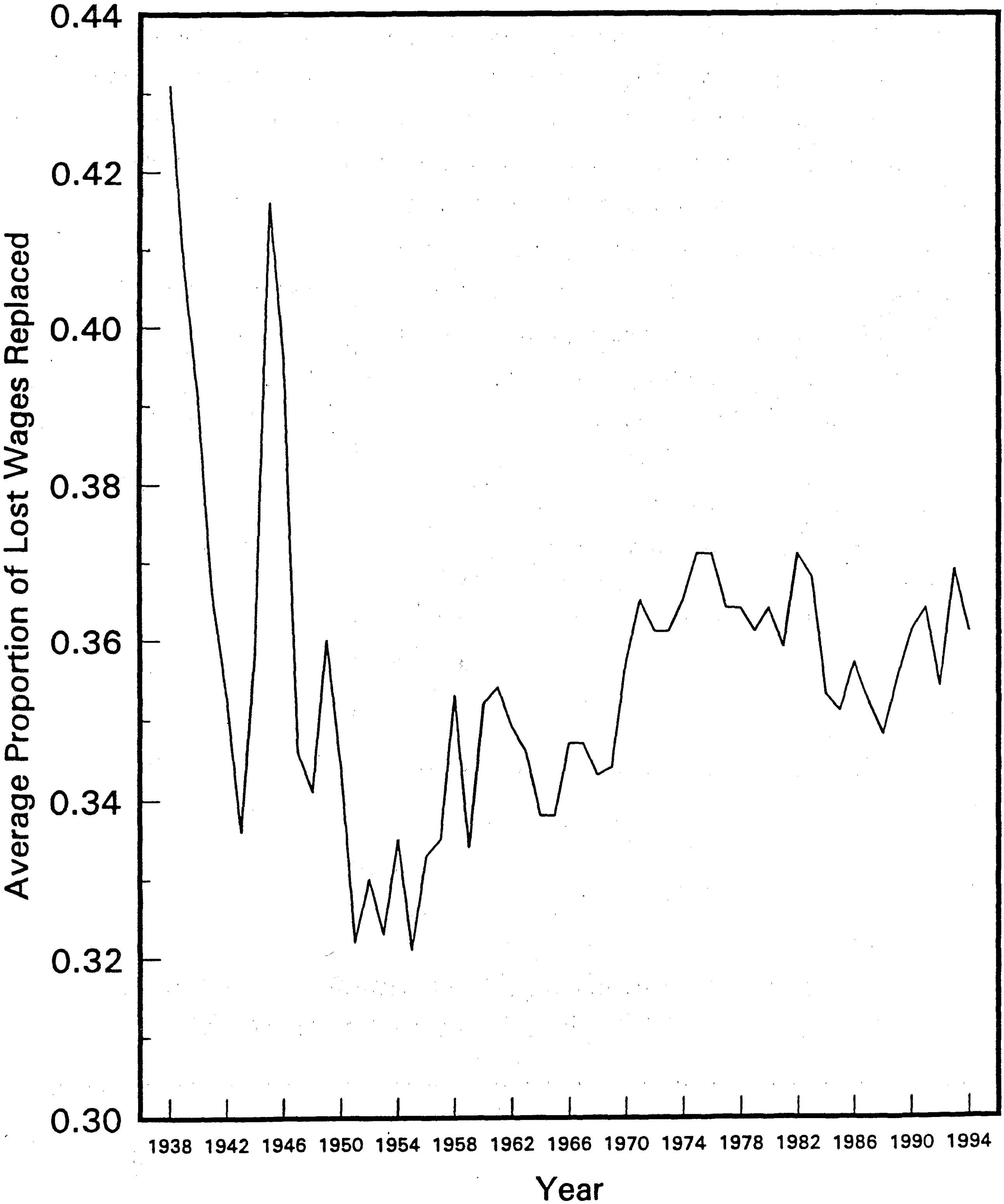

Figure 2. A graphic representation of full unemployment compensation as a Hicksian equivalent variation.

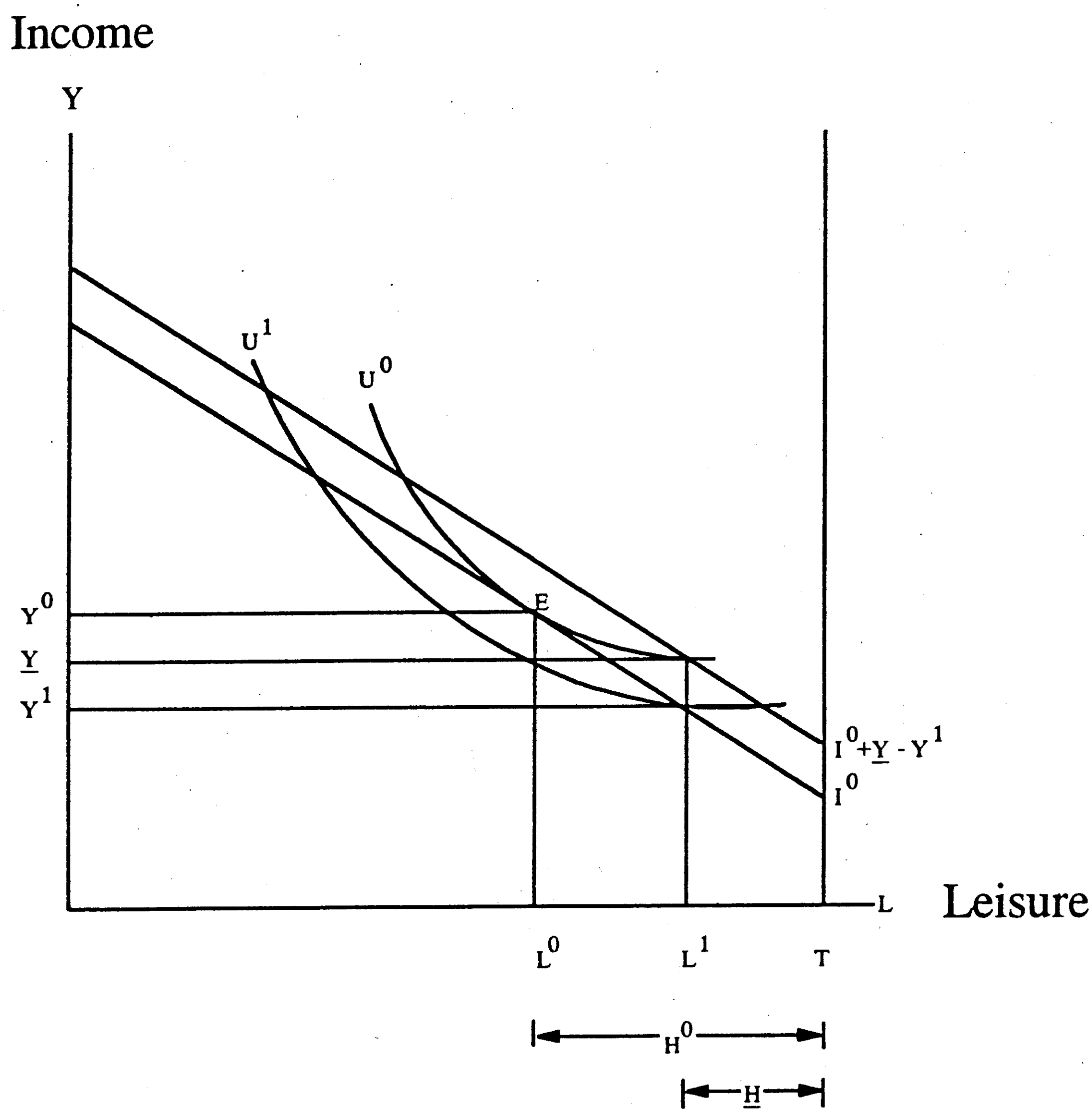

Table 1

Average UI Weekly Benefit Amount (WBA),
and Wage Replacement Ratio (WRR) in the United States, 1938-1993.[a]

Year	WBA	WRR	Year	WBA	WRR
1938	10.94	0.431	1966	39.76	0.347
1939	10.66	0.408	1967	41.25	0.347
1940	10.56	0.391	1968	43.43	0.343
1941	11.06	0.366	1969	46.17	0.344
1942	12.66	0.353	1970	50.31	0.357
1943	13.84	0.336	1971	54.35	0.365
1944	15.90	0.359	1972	55.82	0.361
1945	18.77	0.416	1973	59.00	0.361
1946	18.50	0.396	1974	64.25	0.365
1947	17.83	0.346	1975	70.23	0.371
1948	19.03	0.341	1976	75.16	0.371
1949	20.48	0.360	1977	78.71	0.364
1950	20.76	0.344	1978	83.67	0.364
1951	21.09	0.322	1979	89.68	0.361
1952	22.79	0.330	1980	98.95	0.364
1953	23.58	0.323	1981	106.61	0.359
1954	24.93	0.335	1982	119.34	0.371
1955	25.04	0.321	1983	123.59	0.368
1956	27.02	0.333	1984	123.47	0.353
1957	28.17	0.335	1985	128.23	0.351
1958	30.54	0.353	1986	135.72	0.357
1959	30.40	0.334	1987	139.74	0.352
1960	32.87	0.352	1988	144.91	0.348
1961	33.80	0.354	1989	151.76	0.355
1962	34.56	0.349	1990	161.56	0.361
1963	35.28	0.346	1991	169.88	0.364
1964	35.96	0.338	1992	173.64	0.354
1965	37.19	0.338	1993	179.69	0.369
			1994	181.53	0.361

[a] Source: UI Financial Data, ET Handbook No. 394, United States Department of Labor, Employment and Training Administration (1992). Figures for 1993 and 1994 averaged from the four quarterly issues of *UI Data Summary*, United States Department of Labor, Employment and Training Administration (1993, 1994).

Table 2

State Wage Replacement Ratio (WRR), 1994
State Maximum Weekly Benefit Amount (MWBA), Jan 1993
as a Fraction of State Average Weekly Wage (AWW), 1992
and Any Statutory Rule for MWBA as a Fraction of AWW

State	WRR	MWBA	MWBA/AWW	Statutory Rule
Alabama	0.312	165	0.394	
Alaska	0.278	212	0.370	
Arizona	0.333	185	0.423	
Arkansas	0.423	212	0.564	66 2/3
California	0.268	230	0.421	
Colorado	0.405	250	0.526	55
Connecticut	0.330	306	0.487	60
Delaware	0.339	245	0.474	
District of Columbia	0.316	335	0.500	11
Florida	0.371	250	0.576	
Georgia	0.336	185	0.393	
Hawaii	0.537	322	0.685	70
Idaho	0.414	223	0.573	60
Illinois	0.360	227	0.423	49.5
Indiana	0.360	140	0.310	
Iowa	0.447	200	0.505	53
Kansas	0.435	239	0.575	60
Kentucky	0.379	217	0.525	55
Louisiana	0.274	181	0.418	66 2/3
Maine	0.384	198	0.490	52
Maryland	0.345	223	0.445	
Massachusetts	0.410	312	0.548	57.5
Michigan	0.379	293	0.554	58
Minnesota	0.441	279	0.578	50-60%
Mississippi	0.343	165	0.453	
Missouri	0.329	175	0.390	
Montana	0.413	209	0.579	60
Nebraska	0.363	154	0.404	
Nevada	0.383	217	0.472	50
New Hampshire	0.312	188	0.395	
New Jersey	0.393	325	0.526	56 2/3
New Mexico	0.372	191	0.495	50
New York	0.321	300	0.472	
North Carolina	0.419	267	0.637	66 2/3
North Dakota	0.435	212	0.596	60
Ohio	0.389	228	0.486	
Oklahoma	0.407	229	0.559	60-66 2/3
Oregon	0.396	271	0.615	64
Pennsylvania	0.419	317	0.651	66 2/3
Puerto Rico	0.320	133	0.485	50
Rhode Island	0.465	294	0.653	67
South Carolina	0.370	191	0.474	66 2/3
South Dakota	0.397	154	0.467	50
Tennessee	0.334	170	0.393	
Texas	0.378	245	0.504	
Utah	0.438	240	0.584	60
Vermont	0.370	199	0.469	
Virginia	0.360	208	0.447	
Virgin Islands	0.484	203	0.494	50
Washington	0.412	273	0.572	70
West Virginia	0.393	270	0.643	66 2/3
Wisconsin	0.417	240	0.553	
Wyoming	0.416	200	0.500	55

Table 3

Experience of Single UI Beneficiaries
Selected from Five Benefit Adequacy Surveys, 1956-1958.[a]

Survey	PCTGW[b]	PCTNW[c]	PCTND[d]	PCTMAX[e]	WRR[f]	SWRR[g]
Tampa	28	65	95	21	.46	.31
Anderson	51	84	118	37	.56	.36
Albany	51	72	114	46	.54	.34
Portland	52	79	118	42	.58	.39
St. Louis	34	58	106	49	.48	.33

[a]Source: Becker (1980), Table 1, pp. 11-12.

[b]PCTGW: Percent of beneficiaries whose benefits were half or more of their gross wage.

[c]PCTNW: Percent of beneficiaries whose benefits were half or more of their net wage.

[d]PCTND: Average benefit as a percent of average non-deferrable expenditures.

[e]PCTMAX: Percent of beneficiaries who received the maximum benefit amount.

[f]WRR: Ratio of average weekly benefit amount in state to average weekly net wage of recipients.

[g]SWRR: Ratio of average weekly benefit amount in state to average weekly wage in state covered employment.

Table 4
Means of Characteristics of the Samples Selected from the
1992 Current Population Survey Annual Demographic File by Household Type
(standard deviations in parentheses)

	Household Type					
	Married Both Working		Married One Working		Single	
Characteristics	Husbands	Wives	Husbands	Wives	Males	Females
Annual Hours Worked	2,165 (589)	1,650 (705)	2,053 (731)	1,560 (755)	2,015 (670)	1,887 (653)
Hourly Wage	14.89 (9.12)	10.64 (10.07)	16.47 (18.67)	10.50 (12.25)	13.24 (28.65)	10.51 (6.87)
Family Non-labor Income	2,867 (7,225)	34,953 (21,730)	6,361 (13,992)	10,297 (15,881)	1,862 (7,372)	2,394 (5,521)
Number of Dependents	1.4 (1.2)	1.4 (1.2)	1.4 (1.4)	0.9 (1.1)	0.2 (0.6)	0.7 (1.0)
Age in Years	38.8 (7.7)	36.8 (7.3)	44.4 (13.6)	46.7 (12.8)	36.0 (8.1)	37.1 (8.2)
Education (Proportion in Category)						
8 years or less	0.03 (0.17)	0.02 (0.15)	0.09 (0.29)	0.05 (0.22)	0.05 (0.22)	0.03 (0.18)
9 to 12 years	0.07 (0.25)	0.06 (0.23)	0.11 (0.31)	0.10 (0.30)	0.08 (0.27)	0.08 (0.27)
High School grad	0.34 (0.47)	0.37 (0.48)	0.34 (0.47)	0.41 (0.49)	0.33 (0.47)	0.33 (0.47)
Some college	0.19 (0.39)	0.19 (0.39)	0.15 (0.36)	0.16 (0.37)	0.19 (0.39)	0.20 (0.40)
Associates degree	0.08 (0.27)	0.09 (0.29)	0.05 (0.22)	0.07 (0.26)	0.07 (0.25)	0.08 (0.28)
Bachelors degree	0.19 (0.39)	0.19 (0.40)	0.15 (0.36)	0.13 (0.34)	0.19 (0.39)	0.18 (0.39)
Advanced degree	0.11 (0.32)	0.08 (0.27)	0.11 (0.32)	0.07 (0.26)	0.09 (0.29)	0.09 (0.29)
Race (Proportion in Category)						
White	0.89 (0.31)	0.89 (0.31)	0.92 (0.28)	0.91 (0.29)	0.84 (0.36)	0.80 (0.40)
Black	0.07 (0.25)	0.07 (0.25)	0.04 (0.20)	0.06 (0.24)	0.11 (0.32)	0.17 (0.37)
Other	0.04 (0.19)	0.04 (0.20)	0.04 (0.20)	0.03 (0.18)	0.04 (0.20)	0.04 (0.19)
Urban Resident (Proportion in Category)	0.74 (0.44)	0.74 (0.44)	0.76 (0.43)	0.65 (0.48)	0.80 (0.40)	0.81 (0.39)
Sample Size	11,739	11,739	6,153	2,505	6,031	7,026

Table 5
Labor Supply Equation Regression Results by Household Type
(standard errors in parentheses)

Independent Variable	Household Type: Married Both Working — Husbands	Married Both Working — Wives	Married One Working — Husbands	Married One Working — Wives	Single — Males	Single — Females
Stone-Geary Form						
Intercept	2,503.69 (20.00)	2,132.16 (24.58)	2,105.40 (17.66)	1,887.51 (50.89)	2,360.79 (28.62)	2,343.38 (23.80)
Family Non-Labor Income / Predicted Hourly Wage ($I/\hat{w}$)	-0.14 (0.01)	-0.04 (0.00)	-0.26 (0.01)	-0.08 (0.01)	-0.13 (0.02)	-0.25 (0.02)
Reciprocal of Predicted Hourly Wage ($1/\hat{w}$)	-4,530.18 (259.08)	-1,936.67 (212.82)	-1,223.32 (160.99)	-1,932.67 (442.00)	-4,100.35 (332.10)	-3,631.54 (221.14)
Number of Dependents	9.45 (4.51)	-114.74 (5.32)	90.97 (6.65)	-44.27 (13.38)	43.09 (15.33)	-31.16 (7.60)
R^2	0.033	0.061	0.114	0.031	0.032	0.086
Linear Form						
Intercept	1,773.26 (23.18)	1,614.94 (24.68)	1,585.72 (27.65)	1,345.47 (47.85)	1,610.23 (33.19)	1,484.71 (29.00)
Predicted Hourly Wage ($\hat{w}$)	26.83 (1.43)	30.21 (2.18)	25.38 (1.47)	29.53 (4.18)	30.90 (2.42)	44.92 (2.55)
Family Non-labor Income (I)	-0.01 (0.00)	-0.004 (0.000)	-0.01 (0.00)	-0.01 (0.00)	-0.01 (0.00)	-0.02 (0.00)
Number of Dependents	8.17 (4.50)	-114.98 (5.31)	99.26 (6.62)	-39.34 (13.32)	43.59 (15.37)	-36.84 (7.63)
R^2	0.031	0.062	0.128	0.029	0.029	0.075
Sample Size	11,739	11,739	6,153	2,505	6,031	7,026

Table 6
Wage Equation Regression Results by Household Type
(standard errors in parentheses)

	Household Type					
	Married Both Working		Married One Working		Single	
Independent Variable	Husbands	Wives	Husbands	Wives	Males	Females
Intercept	-1.54 (0.61)	2.11 (0.75)	-0.72 (1.18)	2.96 (1.49)	0.62 (2.56)	-0.02 (0.57)
Age in Years	0.21 (0.01)	0.06 (0.01)	0.17 (0.02)	0.03 (0.02)	0.15 (0.05)	0.10 (0.01)
Education (Omit 8 years or less)						
9 to 12 years	2.64 (0.53)	1.06 (0.68)	2.35 (1.02)	1.45 (1.29)	2.23 (2.11)	1.38 (0.48)
High School grad	4.48 (0.45)	2.69 (0.59)	5.79 (0.84)	2.66 (1.11)	4.61 (1.78)	3.18 (0.42)
Some college	5.77 (0.47)	3.98 (0.61)	7.96 (0.95)	3.92 (1.21)	6.45 (1.86)	4.70 (0.43)
Associates degree	6.86 (0.51)	6.35 (0.64)	10.13 (1.27)	5.82 (1.38)	6.71 (2.20)	5.71 (0.48)
Bachelors degree	9.25 (0.47)	7.24 (0.61)	13.25 (0.94)	9.19 (1.24)	10.40 (1.86)	8.05 (0.44)
Advanced degree	12.15 (0.49)	11.47 (0.65)	19.08 (1.01)	12.39 (1.37)	11.63 (2.04)	10.42 (0.47)
Race (Omit White)						
Black	-1.72 (0.30)	-0.48 (0.36)	-3.40 (1.12)	-1.45 (0.99)	-1.98 (1.18)	-0.70 (0.20)
Other	-0.71 (0.40)	-0.25 (0.44)	-1.57 (1.12)	-0.44 (1.34)	-1.15 (1.83)	-0.17 (0.38)
Urban Resident	2.81 (0.18)	2.15 (0.20)	2.56 (0.53)	2.60 (0.49)	1.50 (0.93)	2.32 (0.19)
R^2	0.176	0.095	0.109	0.082	0.014	0.197
Sample Size	11,739	11,739	6,153	2,505	6,031	7,026

Table 7
Stone-Geary Utility Function Parameter Estimates by Household Type
(standard errors in parentheses)

	Household Type					
	Married Both Working		Married One Working		Single	
Parameter	Husbands	Wives	Husbands	Wives	Males	Females
α	0.139 (0.012)	0.037 (0.003)	0.262 (0.013)	0.082 (0.011)	0.133 (0.018)	0.246 (0.016)
γ_1	5,854.7 (51.2)	6,547.0 (29.2)	5,907.1 (61.9)	6,704.1 (65.0)	6,038.5 (69.1)	5,653.6 (74.1)
γ_2	-32,774.2 (3,416.9)	-53,028.0 (7,908.7)	-4,668.7 (654.7)	-23,601.0 (6,495.7)	-30,933.5 (4,796.8)	-14,786.5 (1,314.7)
δ	11.0 (5.2)	-119.1 (5.5)	123.3 (8.8)	-48.2 (14.7)	49.7 (17.7)	-41.3 (9.9)
R^2	0.033	0.052	0.114	0.031	0.032	0.086
Mean Number of Dependents	1.4	1.4	1.4	0.9	0.2	0.7
Sample Size	11,739	11,739	6,153	2,505	6,031	7,026

α - Share of full budget devoted to leisure.

γ_1 - Minimum leisure required before utility is defined.

γ_2 - Minimum income required before utility is defined.

δ - Minimum leisure required per dependent.

$\Delta = \delta D$ - Minimum leisure (non-market time) required for dependents.

Table 8
Partial Effect and Elasticity Estimates of Labor Supply Implied by the Stone-Geary Utility Function for Various Household Types
(standard errors in parentheses)

	Household Type					
	Married Both Working		Married One Working		Single	
Effect	Husbands	Wives	Husbands	Wives	Males	Females
Stone-Geary Form						
$(\partial H/\partial w)$[a]	22.222	28.380	10.652	25.187	24.788	38.228
	(1.188)	(2.059)	(0.664)	(4.055)	(1.913)	(2.026)
$(\partial H/\partial I)$[b]	-0.00[illegible]	-0.003	-0.016	-0.008	-0.010	-0.023
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
S[c]	42.321	34.041	43.306	37.358	44.953	82.332
	(2.350)	(2.322)	(1.975)	(4.627)	(3.573)	(3.697)
$(\eta_{H.w})$[d]	0.153	0.183	0.085	0.169	0.163	0.213
	(0.008)	(0.013)	(0.005)	(0.027)	(0.013)	(0.011)
$(\eta_{H.I})$[e]	-0.012	-0.073	-0.049	-0.051	-0.009	-0.030
	(0.001)	(0.006)	(0.002)	(0.007)	(0.001)	(0.002)
$(\eta^{S}_{H.w})$[f]	0.291	0.220	0.348	0.251	0.295	0.458
	(0.015)	(0.012)	(0.014)	(0.028)	(0.022)	(0.019)
$H = H(\bar{w}, \bar{I}, \hat{B})$	21,655	1,650	2,053	1,560	2,014	1,887
Mean Hourly Wage (w)	14.89	10.64	16.47	10.50	13.24	10.51
Mean Household Non-labor Income (I)	2,867	34,953	6,361	10,297	1,862	2,394
Sample Size	11,739	11,739	6,153	2,505	6,031	7,026

[a] $(\partial H/\partial w)$ = Cournot wage effect

[b] $(\partial H/\partial I)$ = pure income effect

[c] S = substitution effect = $(\partial H/\partial w) - H(\partial H/\partial I)$

[d] $(\eta_{H.w})$ = wage elasticity = $(\partial H/\partial w)(w/H)$

[e] $(\eta_{H.I})$ = income elasticity = $(\partial H/\partial I)(I/H)$

[f] $(\eta^{s}_{H.w})$ = substitution elasticity

$= (\eta_{H.w}) - (\overline{w}H/\overline{I})(\eta_{H.I})$

Table 9
Partial Effect and Elasticity Estimates of Labor Supply Implied by the Linear Labor Supply Function for Various Household Types

	Household Type					
	Married Both Working		Married One Working		Single	
Effect	Husbands	Wives	Husbands	Wives	Males	Females
			Linear Labor Supply			
$(\partial H/\partial w)^a$	26.827 (1.430)	30.205 (2.180)	25.380 (1.474)	29.532 (4.185)	30.898 (2.416)	44.923 (2.545)
$(\partial H/\partial I)^b$	-0.007 (0.001)	-0.003 (0.000)	-0.014 (0.001)	-0.006 (0.001)	-0.006 (0.001)	-0.019 (0.001)
S^c	41.418 (2.368)	36.044 (2.410)	54.040 (2.260)	38.637 (4.672)	43.938 (3.600)	80.909 (3.927)
$(\eta_{H.w})^d$	0.185 (0.010)	0.195 (0.014)	0.204 (0.012)	0.199 (0.028)	0.203 (0.016)	0.250 (0.014)
$(\eta_{H.I})^e$	-0.009 (0.001)	-0.075 (0.007)	-0.043 (0.002)	-0.039 (0.007)	-0.006 (0.001)	-0.024 (0.002)
$(\eta^S_{H.w})^f$	-0.285 (0.016)	0.233 (0.016)	0.434 (0.018)	0.260 (0.031)	0.289 (0.024)	0.451 (0.022)
$H = H(\bar{w}, \bar{I}, \hat{B})$	2,165	1,650	2,053	1,560	2,014	1,887
Mean Hourly Wage (w)	14.89	10.64	16.47	10.50	13.24	10.51
Mean Household Non-labor Income (I)	2,867	34,953	6,361	10,297	1,862	2,394
Sample Size	11,739	11,739	6,153	2,505	6,031	7,026

[a] $(\partial H/\partial w)$ = Cournot wage effect

[b] $(\partial H/\partial I)$ = pure income effect

[c] S = substitution effect = $(\partial H/\partial w) - H(\partial H/\partial I)$

[d] $(\eta_{H.w})$ = wage elasticity = $(\partial H/\partial w)(w/H)$

[e] $(\eta_{H.I})$ = income elasticity = $(\partial H/\partial I)(I/H)$

[f] $(\eta^s_{H.w})$ = substitution elasticity

$= (\eta_{H.w}) - (\overline{w}H/\overline{I})(\eta_{H.I})$

Table 10
Benefit Rights Provisions in the State UI Laws
of Michigan, Massachusetts, Illinois, and Oregon for the year 1991[a]

	Michigan Average-weekly-wage (MI)	Massachusetts High-quarter (MA)	Illinois Multi-quarter (IL)	Oregon Annual-wage (OR)
Base Period (BP)	52 weeks preceding BY	52 weeks preceding BY	1st 4 of last 5 quarters	1st 4 of last 5 quarters
Earnings to Qualify	20x30x min. wage	30x WBA	$1,600 in BP	$1,000 in BP
Employment to Qualify	20 weeks in BP	NS	NS	18 weeks in BP
Weekly Benefit Amount (WBA)	0.7 x Net AWW	1/21 to 1/26 of HQ earnings + dependant's allowance	49% of 2 highest quarters / 26	0.0125 x AWW
Min-Max WBA	$59 - $276	($14,$21) - ($282, $423)	$51 - ($206 - $270)	$57 - $247
To Qualify for Max WBA	$10,840 in BP	$7,332 in HQ	$10,881 in BP	$19,760 in BP
Entitled Benefit Duration:				
Max:				
Weeks	26	30	26	26
Dollars	$7,176	$8,460-$12,690	$5,356-$7,020	$6,422
Min:				
Weeks	15	10	26	5
Dollars	$ 825	$ 432	$1,600	$ 333
Provisions for Dependents:				
	Number of dependents is taken into account in after-tax weekly wage calculation.	$25 per dependent, up to $141.	5% of 2 highest quarters divided by 26.	NS

[a] Source: U.S. Department of Labor (1992), "Comparison of State Unemployment Insurance Laws", Manpower Administration, Unemployment Insurance Service, January.

BY: Benefit Year
WBA: Weekly Benefit Amount
BP: Base Period
NS: Not specified in the particular state law.
HQ: High Quarter

Table 11
Unemployment Compensation Simulation Estimates in Dollars for Married Men with a Working Spouse[a]

	No Dependents							Two Dependents						
Weeks	Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear	Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear
1	276	0	0	0	327	30	13	276	0	0	0	327	13	29
2	552	282	206	247	653	100	72	552	376	270	247	653	66	105
3	828	564	412	494	980	205	178	828	752	540	494	980	156	229
4	1,104	846	618	741	1,306	341	333	1,104	1,128	810	741	1,306	280	401
5	1,380	1,128	824	988	1,633	506	536	1,380	1,504	1,080	988	1,633	434	622
6	1,656	1,410	1,030	1,235	1,959	696	788	1,656	1,880	1,350	1,235	1,959	614	892
7	1,932	1,692	1,236	1,482	2,286	910	1,090	1,932	2,256	1,620	1,482	2,286	818	1,211
8	2,208	1,974	1,442	1,729	2,612	1,145	1,441	2,208	2,632	1,890	1,729	2,612	1,045	1,579
9	2,484	2,256	1,648	1,976	2,939	1,399	1,842	2,484	3,008	2,160	1,976	2,939	1,292	1,998
10	2,760	2,538	1,854	2,223	3,265	1,671	2,294	2,760	3,384	2,430	2,223	3,265	1,557	2,467
11	3,036	2,820	2,060	2,470	3,592	1,959	2,796	3,036	3,760	2,700	2,470	3,592	1,839	2,987
12	3,312	3,102	2,266	2,717	3,918	2,263	3,350	3,312	4,136	2,970	2,717	3,918	2,137	3,558
13	3,588	3,384	2,472	2,964	4,245	2,580	3,955	3,588	4,512	3,240	2,964	4,245	2,450	4,181
14	3,864	3,666	2,678	3,211	4,571	2,911	4,612	3,864	4,888	3,510	3,211	4,571	2,776	4,855
15	4,140	3,948	2,884	3,458	4,898	3,254	5,322	4,140	5,264	3,780	3,458	4,898	3,114	5,582
16	4,416	4,230	3,090	3,705	5,224	3,608	6,084	4,416	5,640	4,050	3,705	5,224	3,464	6,362
17	4,692	4,512	3,296	3,952	5,551	3,972	6,900	4,692	6,016	4,320	3,952	5,551	3,825	7,195
18	4,968	4,794	3,502	4,199	5,877	4,347	7,769	4,968	6,392	4,590	4,199	5,877	4,196	8,082
19	5,244	5,076	3,708	4,446	6,204	4,731	8,693	5,244	6,768	4,860	4,446	6,204	4,576	9,023
20	5,520	5,358	3,914	4,693	6,530	5,123	9,671	5,520	7,144	5,130	4,693	6,530	4,966	10,019
21	5,796	5,640	4,120	4,940	6,857	5,524	10,705	5,796	7,520	5,400	4,940	6,857	5,364	11,070
22	6,072	5,922	4,326	5,187	7,183	5,933	11,793	6,072	7,896	5,670	5,187	7,183	5,770	12,176
23	6,348	6,204	4,532	5,434	7,510	6,349	12,938	6,348	8,272	5,940	5,434	7,510	6,184	13,338
24	6,624	6,486	4,738	5,681	7,836	6,772	14,140	6,624	8,648	6,210	5,681	7,836	6,604	14,557
25	6,900	6,768	4,944	5,928	8,163	7,201	15,398	6,900	9,024	6,480	5,928	8,163	7,032	15,833
26	7,176	7,050	5,150	6,175	8,489	7,637	16,714	7,176	9,400	6,750	6,175	8,489	7,466	17,166
27	7,176	7,332	5,356	6,422	8,816	8,079	18,087	7,176	9,776	7,020	6,422	8,816	7,906	18,557
28	7,176	7,614	5,356	6,422	9,142	8,526	19,520	7,176	10,152	7,020	6,422	9,142	8,351	20,007
29	7,176	7,896	5,356	6,422	9,469	8,979	21,011	7,176	10,528	7,020	6,422	9,469	8,802	21,516
30	7,176	8,178	5,356	6,422	9,795	9,437	22,562	7,176	10,904	7,020	6,422	9,795	9,259	23,084
31	7,176	8,460	5,356	6,422	10,122	9,900	24,173	7,176	11,280	7,020	6,422	10,122	9,720	24,713

[a] These results were computed using mean values of the hourly wage rate (w=\$14.89) and family non-labor income (I=\$2,867) from the sample of 11,739 husbands with working wives.

Weeks = Number of weeks unemployed in the year.
Michigan = Compensation payable in Michigan, an Average Weekly Wage State.
Massachusetts = Compensation payable in Massachusetts a High-quarter State.
Illinois = Compensation payable in Illinois, a Multi-quarter State.
Oregon = Compensation payable in Oregon, an Annual Wage State.
Half = Half of lost wages.
Stone-Geary = Full compensation at the means given the Stone-Geary Utility Function.
Linear = Full compensation at the means given the Linear Labor Supply Function.

Table 13
Unemployment Compensation Simulation Estimates in Dollars for Married Men with a Non-working Spouse[a]

Weeks	No Dependents: Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear	Two Dependents: Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear
1	276	0	0	0	347	83	86	276	0	0	0	347	1,181	98
2	552	282	206	247	693	17	26	552	396	270	247	693	785	197
3	828	564	412	494	1,040	0	1	828	792	540	494	1,040	485	330
4	1,104	846	618	741	1,386	27	11	1,104	1,188	810	741	1,386	266	499
5	1,380	1,128	824	988	1,733	93	56	1,380	1,584	1,080	988	1,733	118	702
6	1,656	1,410	1,030	1,235	2,079	194	136	1,656	1,980	1,350	1,235	2,079	32	941
7	1,932	1,692	1,236	1,482	2,426	327	253	1,932	2,376	1,620	1,482	2,426	0	1,217
8	2,208	1,974	1,442	1,729	2,772	489	407	2,208	2,772	1,890	1,729	2,772	17	1,529
9	2,484	2,256	1,648	1,976	3,119	679	597	2,484	3,168	2,160	1,976	3,119	77	1,878
10	2,760	2,538	1,854	2,223	3,465	893	825	2,760	3,564	2,430	2,223	3,465	175	2,264
11	3,036	2,820	2,060	2,470	3,812	1,129	1,091	3,036	3,960	2,700	2,470	3,812	308	2,689
12	3,312	3,102	2,266	2,717	4,158	1,386	1,395	3,312	4,356	2,970	2,717	4,158	473	3,152
13	3,588	3,384	2,472	2,964	4,505	1,663	1,739	3,588	4,752	3,240	2,964	4,505	666	3,654
14	3,864	3,666	2,678	3,211	4,851	1,957	2,122	3,864	5,148	3,510	3,211	4,851	885	4,195
15	4,140	3,948	2,884	3,458	5,198	2,268	2,544	4,140	5,544	3,780	3,458	5,198	1,128	4,776
16	4,416	4,230	3,090	3,705	5,544	2,594	3,007	4,416	5,940	4,050	3,705	5,544	1,392	5,398
17	4,692	4,512	3,296	3,952	5,891	2,935	3,512	4,692	6,336	4,320	3,952	5,891	1,677	6,061
18	4,968	4,794	3,502	4,199	6,237	3,290	4,057	4,968	6,732	4,590	4,199	6,237	1,980	6,765
19	5,244	5,076	3,708	4,446	6,584	3,657	4,645	5,244	7,128	4,860	4,446	6,584	2,300	7,511
20	5,520	5,358	3,914	4,693	6,930	4,036	5,276	5,520	7,524	5,130	4,693	6,930	2,636	8,301
21	5,796	5,640	4,120	4,940	7,277	4,426	5,950	5,796	7,920	5,400	4,940	7,277	2,987	9,133
22	6,072	5,922	4,326	5,187	7,623	4,826	6,668	6,072	8,316	5,670	5,187	7,623	3,352	10,009
23	6,348	6,204	4,532	5,434	7,970	5,237	7,430	6,348	8,712	5,940	5,434	7,970	3,730	10,931
24	6,624	6,486	4,738	5,681	8,316	5,656	8,238	6,624	9,108	6,210	5,681	8,316	4,120	11,897
25	6,900	6,768	4,944	5,928	8,663	6,085	9,092	6,900	9,504	6,480	5,928	8,663	4,521	12,909
26	7,176	7,050	5,150	6,175	9,009	6,522	9,992	7,176	9,900	6,750	6,175	9,009	4,932	13,968
27	7,176	7,332	5,356	6,422	9,356	6,967	10,940	7,176	10,296	7,020	6,422	9,356	5,354	15,074
28	7,176	7,614	5,356	6,422	9,702	7,420	11,936	7,176	10,692	7,020	6,422	9,702	5,785	16,229
29	7,176	7,896	5,356	6,422	10,049	7,880	12,980	7,176	11,088	7,020	6,422	10,049	6,225	17,432
30	7,176	8,178	5,356	6,422	10,395	8,346	14,075	7,176	11,484	7,020	6,422	10,395	6,673	18,685
31	7,176	8,460	5,356	6,422	10,742	8,819	15,219	7,176	11,880	7,020	6,422	10,742	7,129	19,988

[a] These results were computed using mean values of the hourly wage rate (w=$16.47) and family non-labor income (I=$6,361) from the sample of 6,153 husbands with non-working wives.

Weeks = Number of weeks unemployed in the year.
Michigan = Compensation payable in Michigan, an Average Weekly Wage State.
Massachusetts = Compensation payable in Massachusetts a High-quarter State.
Illinois = Compensation payable in Illinois, a Multi-quarter State.
Oregon = Compensation payable in Oregon, an Annual Wage State.
Half = Half of lost wages.
Stone-Geary = Full compensation at the means given the Stone-Geary Utility Function.
Linear = Full compensation at the means given the Linear Labor Supply Function.

Table 14
Unemployment Compensation Simulation Estimates in Dollars
for Married Women with a Non-working Spouse[a]

Weeks	No Dependents: Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear	Two Dependents: Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear
1	182	0	0	0	174	108	62	193	0	0	0	173	347	1
2	364	173	170	198	347	188	138	386	223	222	198	347	468	8
3	546	346	340	396	521	286	245	579	446	444	396	521	602	45
4	728	519	510	594	694	400	383	772	669	666	594	694	748	113
5	910	692	680	792	868	528	551	965	892	888	792	868	904	212
6	1,092	865	850	990	1041	669	750	1,158	1,115	1,110	990	1,041	1,070	342
7	1,274	1,038	1,020	1,188	1,215	820	981	1,351	1,338	1,332	1,188	1,215	1,245	503
8	1,456	1,211	1,190	1,386	1,388	982	1,243	1,544	1,561	1,554	1,386	1,388	1,428	695
9	1,638	1,384	1,360	1,584	1,562	1,154	1,536	1,737	1,784	1,776	1,584	1,562	1,618	919
10	1,820	1,557	1,530	1,782	1,735	1,334	1,861	1,930	2,007	1,998	1,782	1,735	1,815	1,174
11	2,002	1,730	1,700	1,980	1,909	1,521	2,218	2,123	2,230	2,220	1,980	1,909	2,018	1,461
12	2,184	1,903	1,870	2,178	2,082	1,716	2,607	2,316	2,453	2,442	2,178	2,082	2,227	1,780
13	2,366	2,076	2,040	2,376	2,256	1,917	3,028	2,509	2,676	2,664	2,376	2,256	2,442	2,132
14	2,548	2,249	2,210	2,574	2,429	2,124	3,481	2,702	2,899	2,886	2,574	2,429	2,661	2,516
15	2,730	2,422	2,380	2,772	2,603	2,338	3,967	2,895	3,122	3,108	2,772	2,603	2,886	2,932
16	2,912	2,595	2,550	2,970	2,776	2,559	4,486	3,088	3,345	3,330	2,970	2,776	3,115	3,381
17	3,094	2,768	2,720	3,168	2,950	2,779	5,037	3,281	3,568	3,552	3,168	2,950	3,348	3,863
18	3,276	2,941	2,890	3,366	3,123	3,007	5,622	3,474	3,791	3,774	3,366	3,123	3,585	4,378
19	3,458	3,114	3,060	3,564	3,297	3,239	6,240	3,667	4,014	3,996	3,564	3,297	3,826	4,926
20	3,640	3,287	3,230	3,762	3,470	3,475	6,891	3,860	4,237	4,218	3,762	3,470	4,070	5,508
21	3,822	3,460	3,400	3,960	3,644	3,715	7,576	4,053	4,460	4,440	3,960	3,644	4,317	6,124
22	4,004	3,633	3,570	4,158	3,817	3,959	8,295	4,246	4,683	4,662	4,158	3,817	4,568	6,773
23	4,186	3,806	3,740	4,356	3,991	4,206	9,048	4,439	4,906	4,884	4,356	3,991	4,821	7,456
24	4,368	3,979	3,910	4,554	4,164	4,456	9,835	4,632	5,129	5,106	4,554	4,164	5,078	8,174
25	4,550	4,152	4,080	4,752	4,338	4,709	10,657	4,825	5,352	5,328	4,752	4,338	5,337	8,926
26	4,732	4,325	4,250	4,950	4,511	4,965	11,513	5,018	5,575	5,550	4,950	4,511	5,598	9,713
27	4,732	4,498	4,420	5,148	4,685	5,224	12,404	5,018	5,798	5,772	5,148	4,685	5,862	10,534
28	4,732	4,671	4,420	5,148	4,858	5,485	13,330	5,018	6,021	5,772	5,148	4,858	6,128	11,391
29	4,732	4,844	4,420	5,148	5,032	5,749	14,292	5,018	6,244	5,772	5,148	5,032	6,397	12,283
30	4,732	5,017	4,420	5,148	5,205	6,015	15,289	5,018	6,467	5,772	5,148	5,205	6,667	13,210
31	4,732	5,190	4,420	5,148	5,379	6,284	16,322	5,018	6,690	5,772	5,148	5,379	6,940	14,174

[a] These results were computed using mean values of the hourly wage rate (w=$10.50) and family non-labor income (I=$10,297) from the sample of 2,505 wives with non-working husbands.

Weeks = Number of weeks unemployed in the year.
Michigan = Compensation payable in Michigan, an Average Weekly Wage State.
Massachusetts = Compensation payable in Massachusetts a High-quarter State.
Illinois = Compensation payable in Illinois, a Multi-quarter State.
Oregon = Compensation payable in Oregon, an Annual Wage State.
Half = Half of lost wages.
Stone-Geary = Full compensation at the means given the Stone-Geary Utility Function.
Linear = Full compensation at the means given the Linear Labor Supply Function.

Table 15
Unemployment Compensation Simulation Estimates in Dollars for Single Men[a]

	No Dependents							Two Dependents						
Weeks	Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear	Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear
1	273	0	0	0	274	38	14	276	0	0	0	274	8	170
2	546	273	206	247	547	107	70	552	323	270	247	547	3	310
3	819	546	412	494	821	205	167	828	646	540	494	821	38	491
4	1,092	819	618	741	1,094	330	307	1,104	969	810	741	1,094	107	715
5	1,365	1,092	824	988	1,368	480	489	1,380	1,292	1,080	988	1,368	206	982
6	1,638	1,365	1,030	1,235	1,641	650	714	1,656	1,615	1,350	1,235	1,641	333	1,291
7	1,911	1,638	1,236	1,482	1,915	841	982	1,932	1,938	1,620	1,482	1,915	484	1,643
8	2,184	1,911	1,442	1,729	2,188	1,049	1,293	2,208	2,261	1,890	1,729	2,188	657	2,039
9	2,457	2,184	1,648	1,976	2,462	1,274	1,649	2,484	2,584	2,160	1,976	2,462	849	2,478
10	2,730	2,457	1,854	2,223	2,735	1,514	2,048	2,760	2,907	2,430	2,223	2,735	1,060	2,961
11	3,003	2,730	2,060	2,470	3,009	1,767	2,491	3,036	3,230	2,700	2,470	3,009	1,287	3,489
12	3,276	3,003	2,266	2,717	3,282	2,034	2,979	3,312	3,553	2,970	2,717	3,282	1,529	4,061
13	3,549	3,276	2,472	2,964	3,556	2,312	3,511	3,588	3,876	3,240	2,964	3,556	1,786	4,678
14	3,822	3,549	2,678	3,211	3,829	2,601	4,089	3,864	4,199	3,510	3,211	3,829	2,055	5,340
15	4,095	3,822	2,884	3,458	4,103	2,900	4,712	4,140	4,522	3,780	3,458	4,103	2,335	6,047
16	4,368	4,095	3,090	3,705	4,376	3,209	5,382	4,416	4,845	4,050	3,705	4,376	2,627	6,801
17	4,641	4,368	3,296	3,952	4,650	3,527	6,097	4,692	5,168	4,320	3,952	4,650	2,929	7,600
18	4,914	4,641	3,502	4,199	4,923	3,853	6,858	4,968	5,491	4,590	4,199	4,923	3,241	8,446
19	5,187	4,914	3,708	4,446	5,197	4,187	7,666	5,244	5,814	4,860	4,446	5,197	3,561	9,338
20	5,460	5,187	3,914	4,693	5,470	4,529	8,522	5,520	6,137	5,130	4,693	5,470	3,890	10,278
21	5,733	5,460	4,120	4,940	5,744	4,877	9,425	5,796	6,460	5,400	4,940	5,744	4,227	11,265
22	6,006	5,733	4,326	5,187	6,017	5,232	10,375	6,072	6,783	5,670	5,187	6,017	4,571	12,300
23	6,279	6,006	4,532	5,434	6,291	5,593	11,374	6,348	7,106	5,940	5,434	6,291	4,922	13,383
24	6,552	6,279	4,738	5,681	6,564	5,960	12,421	6,624	7,429	6,210	5,681	6,564	5,279	14,514
25	6,825	6,552	4,944	5,928	6,838	6,333	13,517	6,900	7,752	6,480	5,928	6,838	5,643	15,694
26	7,098	6,825	5,150	6,175	7,111	6,711	14,662	7,176	8,075	6,750	6,175	7,111	6,012	16,924
27	7,098	7,098	5,356	6,422	7,385	7,093	15,857	7,176	8,398	7,020	6,422	7,385	6,387	18,203
28	7,098	7,371	5,356	6,422	7,658	7,481	17,102	7,176	8,721	7,020	6,422	7,658	6,768	19,531
29	7,098	7,644	5,356	6,422	7,932	7,873	18,397	7,176	9,044	7,020	6,422	7,932	7,153	20,911
30	7,098	7,917	5,356	6,422	8,205	8,269	19,742	7,176	9,367	7,020	6,422	8,205	7,543	22,341
31	7,098	8,190	5,356	6,422	8,479	8,670	21,139	7,176	9,690	7,020	6,422	8,479	7,937	23,822

[a] These results were computed using mean values of the hourly wage rate (w=$13.24) and family non-labor income (I=$1,862) from the sample of 6,031 single males.

Weeks = Number of weeks unemployed in the year.
Michigan = Compensation payable in Michigan, an Average Weekly Wage State.
Massachusetts = Compensation payable in Massachusetts a High-quarter State.
Illinois = Compensation payable in Illinois, a Multi-quarter State.
Oregon = Compensation payable in Oregon, an Annual Wage State.
Half = Half of lost wages.
Stone-Geary = Full compensation at the means given the Stone-Geary Utility Function.
Linear = Full compensation at the means given the Linear Labor Supply Function.

Table 16
Unemployment Compensation Simulation Estimates in Dollars for Single Women[a]

	No Dependents							Two Dependents						
Weeks	Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear	Michigan	Massachusetts	Illinois	Oregon	Half	Stone-Geary	Linear
1	219	0	0	0	210	51	25	230	0	0	0	210	132	1
2	438	210	206	247	420	99	67	460	260	269	247	420	202	6
3	657	420	412	494	630	163	128	690	520	538	494	630	285	31
4	876	630	618	741	840	240	210	920	780	807	741	840	381	76
5	1,095	840	824	988	1,050	330	311	1,150	1,040	1,076	988	1,050	488	141
6	1,314	1,050	1,030	1,235	1,260	432	433	1,380	1,300	1,345	1,235	1,260	605	227
7	1,533	1,260	1,236	1,482	1,470	545	576	1,610	1,560	1,614	1,482	1,470	733	334
8	1,752	1,470	1,442	1,729	1,680	669	740	1,840	1,820	1,883	1,729	1,680	870	461
9	1,971	1,680	1,648	1,976	1,890	802	925	2,070	2,080	2,152	1,976	1,890	1,016	610
10	2,190	1,890	1,854	2,223	2,100	945	1,131	2,300	2,340	2,421	2,223	2,100	1,171	779
11	2,409	2,100	2,060	2,470	2,310	1,096	1,359	2,530	2,600	2,690	2,470	2,310	1,334	971
12	2,628	2,310	2,266	2,717	2,520	1,256	1,608	2,760	2,860	2,959	2,717	2,520	1,504	1,184
13	2,847	2,520	2,472	2,964	2,730	1,424	1,879	2,990	3,120	3,228	2,964	2,730	1,681	1,419
14	3,066	2,730	2,678	3,211	2,940	1,600	2,173	3,220	3,380	3,497	3,211	2,940	1,866	1,676
15	3,285	2,940	2,884	3,458	3,150	1,782	2,489	3,450	3,640	3,766	3,458	3,150	2,057	1,956
16	3,504	3,150	3,090	3,705	3,360	1,971	2,828	3,680	3,900	4,035	3,705	3,360	2,254	2,259
17	3,723	3,360	3,296	3,952	3,570	2,166	3,190	3,910	4,160	4,304	3,952	3,570	2,457	2,584
18	3,942	3,570	3,502	4,199	3,780	2,368	3,575	4,140	4,420	4,573	4,199	3,780	2,665	2,933
19	4,161	3,780	3,708	4,446	3,990	2,575	3,983	4,370	4,680	4,842	4,446	3,990	2,879	3,305
20	4,380	3,990	3,914	4,693	4,200	2,788	4,415	4,600	4,940	5,111	4,693	4,200	3,098	3,701
21	4,599	4,200	4,120	4,940	4,410	3,006	4,871	4,830	5,200	5,380	4,940	4,410	3,322	4,121
22	4,818	4,410	4,326	5,187	4,620	3,230	5,352	5,060	5,460	5,649	5,187	4,620	3,551	4,565
23	5,037	4,620	4,532	5,434	4,830	3,458	5,857	5,290	5,720	5,918	5,434	4,830	3,784	5,034
24	5,256	4,830	4,738	5,681	5,040	3,690	6,387	5,520	5,980	6,187	5,681	5,040	4,022	5,527
25	5,475	5,040	4,944	5,928	5,250	3,927	6,942	5,750	6,240	6,456	5,928	5,250	4,264	6,046
26	5,694	5,250	5,150	6,175	5,460	4,169	7,523	5,980	6,500	6,725	6,175	5,460	4,509	6,591
27	5,694	5,460	5,356	6,422	5,670	4,414	8,129	5,980	6,760	6,994	6,422	5,670	4,759	7,161
28	5,694	5,670	5,356	6,422	5,880	4,663	8,762	5,980	7,020	6,994	6,422	5,880	5,012	7,757
29	5,694	5,880	5,356	6,422	6,090	4,917	9,421	5,980	7,280	6,994	6,422	6,090	5,269	8,380
30	5,694	6,090	5,356	6,422	6,300	5,173	10,107	5,980	7,540	6,994	6,422	6,300	5,529	9,029
31	5,694	6,300	5,356	6,422	6,510	5,433	10,820	5,980	7,800	6,994	6,422	6,510	5,793	9,706

[a] These results were computed using mean values of the hourly wage rate (w=$10.51) and family non-labor income (I=$2,394) from the sample of 7,026 single females.

Weeks = Number of weeks unemployed in the year.
Michigan = Compensation payable in Michigan, an Average Weekly Wage State.
Massachusetts = Compensation payable in Massachusetts a High-quarter State.
Illinois = Compensation payable in Illinois, a Multi-quarter State.
Oregon = Compensation payable in Oregon, an Annual Wage State.
Half = Half of lost wages.
Stone-Geary = Full compensation at the means given the *Stone-Geary Utility Function*.
Linear = Full compensation at the means given the *Linear Labor Supply Function*.

Table 17
Proportion of Sub-sample with One-half Earnings Replaced when the Maximum Weekly Benefit Amount (WBA) is Set at Various Fractions of the Full-sample Average Weekly Wage (AWW=$519)

	Married Both Working		Married One Working		Single		
Fraction of AWW	Husbands	Wives	Husbands	Wives	Males	Females	Total
0.50	0.41	0.76	0.44	0.80	0.57	0.72	0.60
0.55	0.47	0.81	0.49	0.84	0.63	0.77	0.65
0.60	0.55	0.86	0.55	0.88	0.69	0.82	0.71
0.67	0.64	0.90	0.61	0.91	0.77	0.87	0.77
0.70	0.66	0.91	0.63	0.91	0.78	0.88	0.79
0.75	0.73	0.93	0.68	0.94	0.83	0.91	0.83
AWW (std. dev.)	653 (396)	378 (274)	693 (538)	347 (301)	547 (802)	420 (287)	519 (470)
Sample Size	11,739	11,739	6,153	2,505	6,031	7,026	45,193

Table 18
Maximum Weekly Benefit Amount (WBA) Required for Each Sub-sample to Yield *One-half for Four-Fifths*

Married Both Working		Married One Working		Single		Total
Husbands	Wives	Husbands	Wives	Males	Females	
442	279	500	260	375	302	375