Child care and work-related expenses among working AFDC-R families: Determinants and uses in microsimulation

Authors: Lynn Ware, Denise DePasquale, Alan Matthews

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Lynn Ware Denise DiPasquale
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5	40404040	40404040	40404040	40404040	E2D6C3C9	C1D340E6	C5D3C6C1	D9C54
7	C5C7C9D6	D5C1D340	D9C5E2C5	C1D9C3C8	40C9D5E2	E3C9E3E4	E3C54040	40404
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1	C2D6E2E3	D6D540C3	D6D3D3C5	C7C54040	40404040	40404040	40404040	40404
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5	40404040	40404040	40404040	40404040	C4C1E3C1	40C1D5C1	D3E8E2C9	E240I
7	C2D6D9C1	E3D6D9E8	40404040	40404040	40404040	40404040	40404040	40404
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1	E2D6C3C9	C1D340E6	C5D3C6C1	D9C540D9	C5C7C9D6	D5C1D340	D9C5E2C5	C1D9(
3	40C9D5E2	E3C9E3E4	E3C54040	40404040	40404040	40404040	40404040	40404
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7	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404
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7	D6D54040	40404040	40404040	40404040	40404040	40404040	40404040	40404
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9	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404
1	C6C9D3C5	40C4D6C3	E4D4C5D5	E3C1E3C9	40404040	40404040	40404040	40404
3	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404
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7	C5C7C9D6	D5C1D340	D9C5E2C5	C1D9C3C8	40404040	40404040	40404040	40404
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7	D6D54040	40404040	40404040	40404040	40404040	40404040	40404040	40404
9	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404
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5	40404040	40404040	40404040	40404040	C2D6E2E3	D6D540C3	D6D3D3C5	C7C54
7	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404
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Figures

Introduction

This paper summarizes some general results of an econometric analysis of child care expenses and work-related expenses for female-headed families who were working and receiving AFDC assistance in March of 1975. The sample base for the analysis is the 1975 AFDC Characteristics Survey. The estimation problem we review here arose in connection with another ongoing research problem: estimating the number of eligible families in the general population who would be categorically eligible for various existing and proposed AFDC assistance programs. The results of this analysis are also directly applicable to estimation problems involved in determining AFDC participation rates among these eligible families.

The majority of female-headed families with dependent children* who receive AFDC assistance do not work, though the mother is typically required to work or train for work when her youngest child reaches school age. A husband in an intact, husband-wife family, on the other hand, is required to work, though he may not work more than 100 hours per month and remain eligible for AFDC benefits. Current AFDC regulations provide financial incentives to work and paid employment

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*Dependent children are defined throughout as children under the age of 18, or children 18 to 20 who are enrolled in school.

does not preclude the possibility that a given family will be eligible for AFDC benefits.

In addition to restrictions on the age and health of the family head and the value of assets held by the family,* an important determinant of AFDC eligibility is the amount of non-welfare income received during the month, relative to a state-set "standard of need" for basic items. If monthly income after deducting allowable disregards from earnings is less than the state standard of need, the family qualifies for assistance. Most eligible families qualify for money payments and other benefits, such as Medicaid, or possibly subsidized housing and food stamps. Other families may qualify only for non-cash benefits.

Family income countable against the need standard has two components: earned and nonearned income. All nonearned income, such as alimony, child support, interest or dividends, etc., is deducted from the need standard without any disregard. Thus a female-headed family that regularly receives $500 per month in child support would not be eligible for AFDC benefits if the monthly state standard of need was $500, even if monthly earnings were zero and the head of the family was otherwise eligible.

Monthly gross earnings, however, are reduced by allowable disregards

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*A family head who is over sixty-five or disabled would probably be eligible for Supplementary Security Income or Social Security benefits, although the children may be eligible for AFDC assistance. Limitations on assets restrict the amount a family can hold in a savings or checking account, may affect home ownership, and vary considerably from state to state (See Characteristics of State Plans for Aid to Families With Dependent Children, H.E.W., October 1976). The AFDC-Unemployed Father program adds several conditions for eligibility: the head must be a regular member of the labor force, must have been unemployed prior to application for benefits, and must remain in the labor force once accepted onto the AFDC rolls.

before being counted against the state standard of need. The current monthly earnings disregard formula is:

$$\$\text{Disregard} = \$30 + 1/3\ (\$\text{Gross Earnings} - \$30) + \text{Allowable Child Care Expenses} + \text{Allowable Work-Related Expenses.}$$

This disregard is subtracted from gross monthly earnings and the remainder, countable earnings, is added to all nonearned income; the sum is then used to determine family eligibility.

The AFDC earnings disregard contains two deductions from monthly earnings that micro-survey data (which is otherwise suitable for determining categorical eligibility) do not contain: monthly expenditures for the care of dependent children; and other work-related expenses, such as all taxes (FICA, federal and state income), transportation to and from work, lunches, and work clothing or special uniforms and tools.* To the extent that these allowable expenses are poorly estimated for working families, population estimates of AFDC eligible working families will be poorly estimated. This paper suggests one approach to close this information gap.

Section I briefly describes the population coverage of the 1975 AFDC Characteristics Survey and defines the relevant population for the estimation. Section II outlines the econometric models and summarizes the results of the estimation. Section III deals with the future research uses of these results.

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*Work Incentive Program expenses are included in work costs, as reported by the 1975 AFDC Characteristics Survey File.

Section I

The Characteristics Survey

Table 1 presents the total number of families (AFDC recipient units) for which survey data were available in the 1975 AFDC Characteristics Survey File. These families are distributed by Census division (Figure 1), the geographic unit of analysis used in the estimation process. Based on these data, 3,419,671 families were receiving AFDC benefits in March of 1975.* Of these, 333,451 families had at least one working adult and had child care and work-related expense data reported as separate budget items.** These families, defined as "working families," represent the first cut in developing a sample base.

In order to select a sample for estimation, it was necessary to classify working families according to the kind of AFDC program in which they were likely to have been participating. In this way, program-specific

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*Reported AFDC caseload in March, 1975 was 3,449,386 (NCSS, Report A-2, "Public Assistance Statistics," March, 1975). The minor difference (viz., the sum of survey sample weights minus reported NCSS caseload) is principally due to sample variability in the AFDC Characteristics Survey.

**Child care and work-related expenses could be zero, provided that total expenses (their sum) were also zero. Families were excluded from the "working" category only if total reported expenses were greater than zero, but both child care and work-related expenses were reported as zero. Further, earnings of the payee had to be less than $999 (missing data code?); the family had to reside in one of the 50 states or in the District of Columbia; and the payee had to be the parent of the youngest child in the recipient unit.

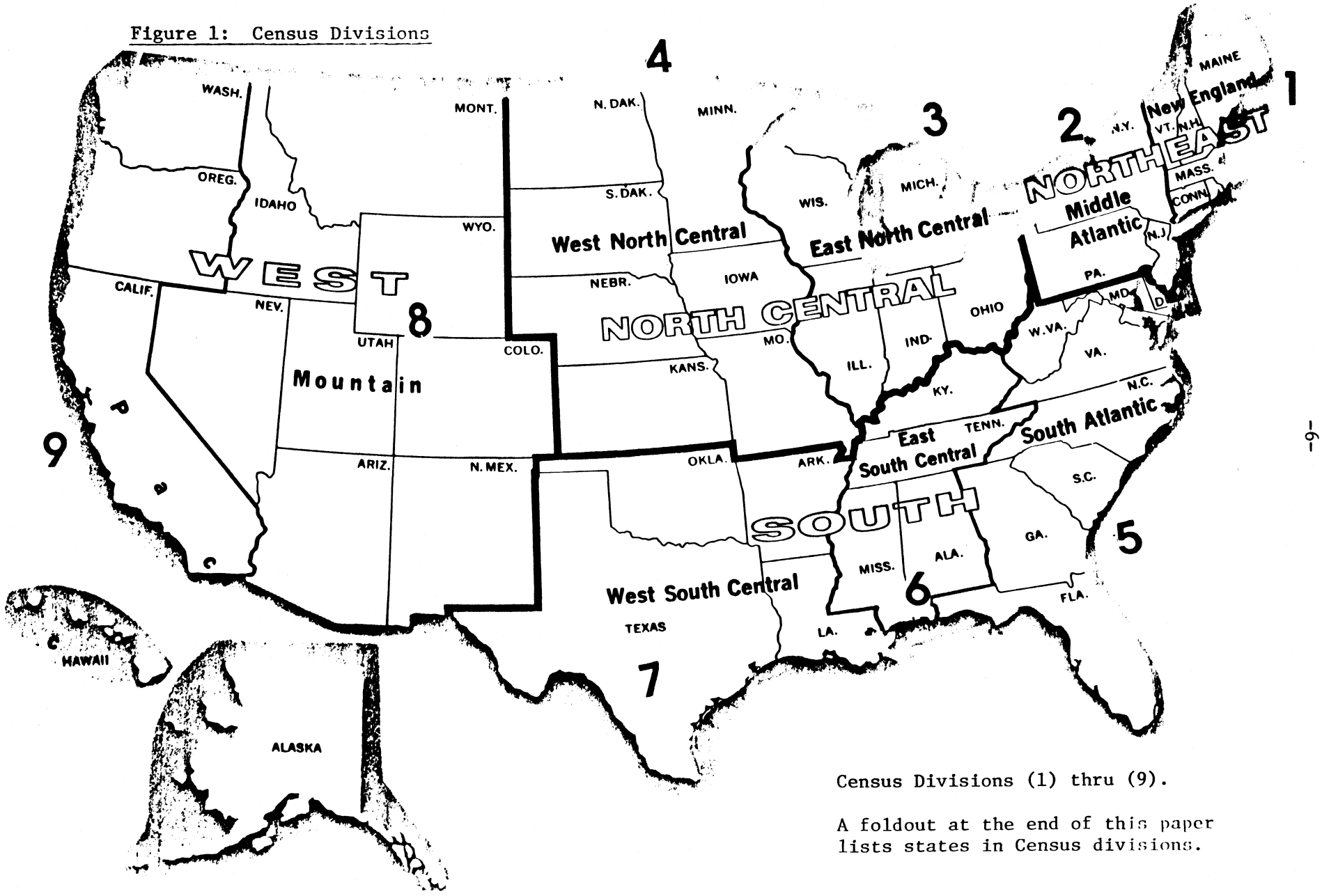
Table 1: Population Estimates Based on 1975 AFDC Characteristics Survey (Weighted Counts)

Census Divisions:	Total	Unusable*	Not Working	Working**
Division 1: New England	207,260	19,685	166,411	21,164
Division 2: Middle Atlantic	670,597	66,825	550,535	53,237
Division 3: East North Central	695,821	70,008	574,374	52,439
Division 4: West North Central	202,557	25,204	135,228	42,125
Division 5: South Atlantic	483,120	88,611	344,281	50,228
Division 6: East South Central	225,421	33,670	164,662	27,089
Division 7: West South Central	244,876	28,352	192,350	24,174
Division 8: Mountain	104,966	12,425	86,312	6,229
Division 9: Pacific	539,036	43,050	438,220	57,766
United States	3,419,671	433,847	2,652,373	333,451

*A family record was "unusable" for analysis in cases where any of the following were true: (a) the assistance payment was greater than $999; (b) employment expenses and child care expenses were not reported separately; (c) the place of residence was not one of the 50 states or the District of Columbia; or (d) the payee was not the parent of the youngest child in the AFDC assistance group.

**An assistance group is called "working" if all of the following were true: (a) the payee was currently a part-time or full-time worker; (b) the payee had earned income; and (c) the payee had separate expense data for child care and work related expenses.

Figure 1: Census Divisions



Census Divisions (1) thru (9).

A foldout at the end of this paper lists states in Census divisions.

estimating equations for child care expenses and work-related expenses could be matched with program-specific estimates of eligible families and participation rates based on micro-survey data. It is relatively safe to assume, for example, that families in which the payee was female and no spouse was present (or disabled or aged) would have participated in the AFDC-Regular program (AFDC-R). It is likewise relatively safe to assume that two-parent families in which the payee was male and not disabled or aged would be receiving benefits under the AFDC-Unemployed Father program (AFDC-UF).

Families headed by male payees in which no spouse was present, and families headed by a female payee which included a male spouse, are not explicitly classified, though they may have participated in the AFDC Basic program. These families, a relatively small portion of total caseload and survey records, are excluded from the sample bases.

The distribution of working (separate expense data) families likely to have participated in different AFDC programs is given in Table 2. This table is based on the sex and employment status of the payee, and whether the payee's spouse was present in the AFDC recipient unit. The majority of working families, as expected, were headed by a female payee whose spouse was not in the family (i.e., AFDC-R families). Relatively few families were headed by a male payee whose spouse was not in the AFDC recipient unit.

For purposes of empirical analysis, the sample base is made up of the number of physical records present on the 1975 Survey File, not the number of families represented by each record. Table 3 shows the distribution of physical records by sex, employment status, and spouse present status. In all, 3,428 records (observations) were available

Table 2: Families* by Working Status and Spouse Present Status

Payee:	Employment	Spouse Present in Assistance Group	No Spouse in Assistance Group	Row Totals
Male:	Working	6,112	2,084	8,196
	Not Working	180,260	25,703	205,703
Female:	Working	10,520	314,735	325,255
	Not Working	242,429	2,203,981	2,446,410
			Working:	333,451
			Not Working:	2,652,373

*See Note Table 1.

Table 3: Physical Records: Working Status and Spouse Present Status

Payee:	Employment	Spouse Present in Assistance Group	No Spouse in Assistance Group	Row Totals
Male:	Working	52	21	73
	Not Working	1,590	229	1,819
Female:	Working	118	3,237	3,355
	Not Working	2,507	18,891	21,398
			Working:	3,428
			Not Working	23,217

for working, separate expense data families. Of these records, 3,237 were for working families headed by single female payees (AFDC-R); fifty-two were for intact, male-headed families (AFDC-UF).

The distribution of records for working families by geographic division is given in Table 4. From this sample we eventually chose to use only families likely to have participated in the AFDC-Regular program--i.e., female-headed families. Restrictions on data availability for age and education of all dependent children, and education and occupation of the working payee, further reduced the number of observations. We now examine the statistical models and the results of the estimation.

Table 4: Physical Records Based on 1975 AFDC Characteristics Survey

	Total	Unusable*	Not Working	Working**
Division 1: New England	2064	176	1580	308
Division 2: Middle Atlantic	4171	410	3395	366
Division 3: East North Central	4257	430	3463	364
Division 4: West North Central	4355	475	2987	893
Division 5: South Atlantic	5543	938	4072	533
Division 6: East South Central	2874	410	2096	368
Division 7: West South Central	2427	263	1917	247
Division 8: Mountain	2176	288	2768	120
Division 9: Pacific	2384	216	2939	229
United States	31063	4418	23217	3428

*See Table 1 Note.

**A family is called working is all of the following were true: (a) the payee was currently a part-time or full-time worker; (b) the payee had earned income; and (c) the payee had separate expense data for child care and work-related expenses.

See Appendix A for distribution of physical records by states within Census Divisions.

Section II

The Models

This section outlines the sample bases and econometric models used to estimate prediction equations for child care and work-related expenses for families in a general population. In order to utilize the AFDC Characteristics Survey to estimate these equations we will assume that these families, if they become eligible for AFDC benefits, will have, on average, the same propensity to incur child care and work-related expenses as existing AFDC families with similar economic and demographic characteristics. Similarly, we will assume that the amount of child care and work-related expenses attributed to families in a general population will be the same, on average, as the amount received by AFDC families, again provided that the characteristics of these families are the same.

This static hypothesis is not unreasonable. Estimating the payment to an AFDC-eligible family, however, depends on a thorny, complementary issue--the so-called "labor response" question: To what extent to eligible families alter their work behavior once they begin to receive AFDC benefits; and to what extent do ineligible families "make" themselves eligible by changing their behavior? In the first instance, benefits estimated on the basis of pre-assistance characteristics may change after the family participates in an AFDC program; in the second,

benefits would in fact accrue, even though we would impute them at zero at the time of the eligibility determination.

We will not presently address the question of how families alter their demographic and income characteristics to assemble an optimal bundle of labor market earnings and welfare assistance. This will be left for later work. The research reported here integrates child care and work-related expense models into general models of program participation rates, where the labor response of eligible families is assumed to be constant.

The Estimators

The actual values of child care and work-related expenses among working families introduced an interesting statistical problem. The "dependent variables" of the expense models were either zero or some positive value. Over half the observations on child care expenses were zero; ten to twenty percent of the observations on work-related expenses were zero. While our ulitmate aim is to quantify the marginal relationships between the level of expenses and their determinants, ordinary least squares regression analysis on dependent variables of this type may be inappropriate.* For this reason, the estimation problem

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*Linear regression assumes that the unobservable, stochastic error term is uncorrelated with the explanatory variables in the estimating equation. Hence, in the equation, $Y = a + bX + e$, $corr(e,X) = 0$ must hold in order for the sample statistics to be efficient. If the dependent variable is implicitly dichotomous, the estimated value of e for observations in which the dependent variable is zero is $0 - a - bX = e$. This violates the regression assumption. As the number of zero-valued observations on the dependent variable increases, the likelihood that $corr(e,X) = 0$ rapidly diminishes. The two-step estimation procedure adopted in this study will produce a set of predicted expenses that satisfy the ordinary regression result that (average actual expense) = (average predicted expense).

was divided into two parts, involving two different estimators.*

First, the probability (likelihood) that a family incurred a positive amount of child care or work-related expense is estimated. The dependent variable in this estimator can be thought of as a dichotomous variable which takes on a value of one if some expense was incurred or zero if no expense was incurred. The probability estimator is based on the logistic function and the method is maximum likelihood.

The second step determines the expected value (level) of an expense and is conditioned on the fact that a family actually incurred an expense. The dependent variable in this estimator is always greater than zero and the method is ordinary least squares linear regression.

Combining steps one and two, the estimated value of child care or work-related expense, $\hat{Expense}$, is the product of the expected value of an expense, given the family had a positive amount of expense, times the probability of having incurred an expense. That is:

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*The rationale for the two-step estimation process can be illustrated by example. Consider a work-related expense series for eight families: $50 $0 $10 $0 $100 $0 $0 and $40. The arithmetic average of this series is $200/8 = $25. In effect, each observation on work-related expenses is given an equal weight of 1/8. This is equivalent to dividing the sample into two parts: those families who actually incurred an expense, $50 $10 $100 and $40, and those who did not, $0 $0 $0 and $0. In the first step we determine the relative importance of positive expense items in the entire sample; this is 4/8. We combine this measure of relative importance with the sample average of the positive observations on work-related expenses, $200/4, and compute an overall, weighted average of $200/4 x 4/8 = $25.

The logistic estimator determines the probability of incurring an expense based on the individual characteristics of working AFDC families. This is the relative importance of positive observations in the entire expense series. The regression estimator determines the expected value of an expense item for each individual family, given that all expenses are greater than zero. The product completes the estimation procedure.

$$\hat{\text{Expense}} = \text{Prob}(\text{Expense} > 0 | X) \times E(\text{Expense} | \text{Expense} > 0, Z).$$

Prob(Expense > 0|X) is a logistic estimator conditioned on a set of explanatory variables, X, and refers to the probability of incurring an expense item. E(Expense|Expense > 0, Z) is a regression estimator conditioned on the fact that all expenses are greater than zero and on a set of explanatory variables, Z, and refers to the expected value (level) of an expense item. The set of explanatory variables X may have many common elements with the set of explanatory variables, Z, as we now examine them in some detail.

The Determinants of Child Care and Work Related Expenses

The empirical determinants of variation in child care and work-related expenses were expected to be quite similar. A priori, the characteristics of the working mother's employment situation--level of monthly earnings and number of hours worked per week; the characteristics of her family—number of children, age distribution of children, and other adults present in the family; the family's place of residence; and other personal characteristics of the working mother--education, occupation, and race, all may affect the likelihood and level of expenses incurred. These characteristics and their hypothesized relationship to variation in each expense item are now examined.

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*The documentation for the data set used, AFDC75_ANAL1, accompanies this paper and gives exact definitions of Survey codes for various variables.

(A) Characteristics of Employment

(1) Earnings per Month: The 1975 AFDC Characteristics Survey reports gross monthly earnings, $EARN, for employed family members. Child care and work-related expenses are expected to vary positively with the level of monthly earnings of working AFDC mothers: Higher earnings (1) should increase the probability of incurring a given expense and (2) should increase the level of that expense among families who reported a positive amount of expense.

In the child care expense models the relevant measure of monthly earnings is earnings net of taxes and other work-related costs. This measure, $NETEARN, is simply gross earnings minus reported work-related expenses and is as close a measure of spendable (disposable) earnings we can obtain with the 1975 Survey.

We expect that higher net earnings will expand the possible number of fee-for-service child care alternatives for working mothers and, hence, increase both the likelihood and level of these expenses. An increase in net earnings, for example, may permit a working mother to enroll her young child(ren) in a pre-school program rather than hiring baby sitters or leaving them with older children in the family. Further, since higher net earnings are typically associated with an increase in the number of hours worked per week, all else constant, higher net earnings should also be related to an increased demand for child care services, especially during afternoon hours when most public schools do not provide any supervision for younger children.

In the work-related expense models the relevant earnings variable is gross earnings. As gross earnings rise, taxes rise, and we expect that both the likelihood and level of work-related expenses will also rise. Higher earnings are also positively related to longer hours worked, wage rates constant. Hence, we expect that increases in gross earnings will be positively related to increases in the costs of transportation (to full-time jobs) and meals among full-time working mothers.

Monthly earnings may also be expressed as earnings per child. In the child care models, $EARN/KID may be a theoretically better measure of a family's "ability to pay" for child care services, given that most all household costs rise with increases in family size. In the work-related expense models, gross earnings per child, $EARN/KID, may be a better proxy for earnings subject to taxation after individual tax exemptions for dependent children. $EARN/KID may also be a better measure of spendable earnings, family size constant, with which to purchase different kinds of transportation and meals at work.

(2) Weekly Work Schedule: The full-time/part-time work status of employed payees is also given by the 1975 Characteristics Survey. Among workers with the same level of gross earnings, full-time workers (35 hours or more per week) may incur higher expenses than part-time workers. These expenses would include afternoon care of young children, one meal per day, and possibly different, more expensive transportation routes to a full-time job. Both expense

equations were estimated with a dichotomous variable, FT, coded 1 if the mother's work schedule was full-time, 0 if part-time.

(3) Earnings/Work Schedule Interactions: Gross earnings and weekly work schedule may also have an independent interactive effect on monthly expenditures for child care and work-related costs. For example, the following partial regression equation for work-related expenses,

$$\$\text{Work Expenses} = a_1\ \$\text{EARN} + a_2\ \text{FT} + a_3\ \$\text{EARN} \times \text{FT},$$

would permit the following interpretations: Work-related expenses increase on average by $\$a_1$ for each \$1.00 increase in gross monthly earnings, independent of work schedule. But among full-time workers (FT = 1), work-related expenses would be an additional $\$a_3$ higher, due to higher marginal taxes collected while on a full-time work schedule, possibly longer transportation to work at full-time jobs, and at least one meal at work per day.

On the other hand, relative to part-time workers, full-time employees would spend an additional $\$a_2$ on work-related expenses plus an additional $\$a_3$ times gross earnings, which may represent higher tax rates on earnings associated with longer hours worked. In the interactive form, gross earnings per child, \$EARN/KID, may be substituted for \$EARN.

It is an empirical question whether the hypothesized independent effects of variations in earnings and work schedules will prove to be statistically significant in a complete interactive model. It may be that only a simpler form, including \$EARN and/or FT

will be statistically significant, given that work schedule and gross monthly earnings (or earnings per dependent child) are likely to be correlated.

(B) Characteristics of the Family

(1) Children in the Family (KIDS): Variation in family size is most likely to affect child care expenses.* The extent to which family size affects the probability or level of work-related expenses is already proxied by $EARN/KID. In the child care expense probability and regression equations, we expect a positive relationship between monthly expenditures for child care and the number of dependent children present in the recipient unit.

Within a given family, however, older children do not require child care, but they may be able to provide care for younger family members. (Other adults in the recipient household may also serve as child care providers.) Hence, it is preferable to include a measure of the age distribution of dependent children, permitting child care to vary with the number or presence of young children likely to require day supervision while the mother is working, and also the number or presence of older children who may not need any supervision but may be able to provide child care during portions of the day. The child care equations included tow different proxies for age distribution of children.

The first proxy for age distribution, DKIDS_(AGE), is made up

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*The sample bases are restricted to those working families who had complete information on all children in the recipient unit; namely, at least one child had to be present and the age and educational attainment of all dependent children had to be known.

two dichotomous variables and represents the presence of any child(ren) in two specific age groups: DKIDS_5 takes on a value of one if any children in the recipient unit were five years of age or younger, zero otherwise; and DKIDS_15+, which takes on a value of one if any children were 15 years of age or older, zero otherwise. Children in the five-or-less age group are not of public school age and would require child care while the mother works. School age children in the older age group would probably not need supervision during the day, but could provide after-school care of younger family members if the mother worked full-time. When both variables are entered in a child care equation, we expect that the likelihood or level of expenses will be positively related to the presence of young children, but negatively related to the presence of older children. Further, families with only older children (relative to children in the six to fourteen year group) would be expected to have lower child care expenses, ceteris paribus, while families with only young children would be expected to have higher expenses.

The second form of the age distribution variable, #KIDS_(AFE), has the actual number of children present in each year group. Here we expect that child care expenses would vary positively with increases in the number of young children, #KIDS_5, and negatively with the number of older children, #KIDS_15+, all other characteristics of families held constant. It is unclear a priori which form is better suited for a particular estimating equation.*

*It was empirically determined that the age groups discussed here produced the most statistically significant estimating equations.

(2) Other Adults in Recipient Unit:* Child care services may be provided by other adults in families headed by a working mother, as for example, by non-working grandparents. The other-adults-in-family variable was coded in two ways: (1) a dummy variable for the presence of any other nonworking adult, DADULTS = 1, else 0; and (2) a continuous variable #ADULTS, for the number of other nonworking adults. It was expected that the presence or increasing number of other adults would tend to decrease both the probability and level of child care expenses. It is unclear that the presence or number of nonworking adults is theoretically relevant to the work-related expense models, except that some of these nonworking adults may be dependent on the family head for support and thus reduce spendable earnings for such expenditures as transportation to work or meals at work.

(C) Characteristics of Residence

(1) Central City/Suburb: The estimation samples were divided into Census divisions in an attempt to control for gross differences between state tax rates, labor markets, transportation networks and welfare agency policies concerning what would be "allowable" as child care and employment expenses.** A pair of residence variables was introduced into each division model to try to further control

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*Technically, this variable proxies the presence of adults "probably" not working, since the Characteristics Survey does not code earnings for every adult present in the recipient unit.

**The 1975 Survey does not have sufficient data to estimate separate models for all states. We then aggregated to Census division as a next-best, consistent alternative.

for remaining differences within each division.

We defined two dichotomous variables, CC and SUBURB, such that if a family lived within the central city of an SMSA, CC took on a value of one, zero otherwise. If the family lived in an SMSA but not in a central city, SUBURB took on a value of one, zero otherwise. Non-SMSA areas was used as the reference variable when both residence variables were entered into an estimating equation.

The expected sign(s) on the residence variables may vary from one geographic division to another, depending on the characteristics of labor markets, transportation networks, social networks, and welfare services provided within SMSAs relative to non-SMSAs. In the dense urban areas of the Northeast, for example, child care "networks" among related families in central cities may lower the cost of child care among working parents relative to working parents outside of central cities where neighborhood networks may be absent. In other divisions, non-family child care in central cities may be available only at cost, other factors held constant, and that cost may be higher than in rural areas of the division.

(D) Characteristics of the Working Parent

(1) Educational Attainment: Educational attainment may serve as a discriminating variable for the kinds of jobs available to working welfare mothers and for the kinds of services available within welfare agencies. As a "credential," for example, a high school diploma may enable a working welfare mother to obtain a better job within the set of jobs typically reserved for low-educated working

women. These better jobs would include white collar and would probably exclude farm and service work. Further, these better jobs would be more likely to be covered by the Social Security System (FICA taxes), are more likely to be stable, and are more likely to offer more hours of work. They may also involve longer travel time to work and necessitate afternoon care of young children. This would tend to be associated with relatively higher probabilities and levels of both child care and work-related expenses.

Better educated welfare mothers may also be better able to express their needs to welfare service workers and thereby obtain a wider variety of benefits provided by the AFDC program. One of these benefits may be hassle-free allowances of claimed work and child care expenses. Hence, better educated working mothers may be more likely to incur expenses, knowing that they will be able to disregard them against earnings.

To test these hypotheses, a set of 0/1 dummy variables were entered into the expense equations in an attempt to quantify the education/allowable expense relationship. These variables were: ED_8, completion of eight years of education; ED_9_11, completion of nine through 11 years; and ED_12+, completion of 12 or more years. We expected that, if significant, coefficients on these dummy variables would increase arithmetically with additional years of schooling completed. Estimating equations that used educational attainment had fewer observations, since some working payees did not have educational attainment coded. The reference group, ED_0_7, was always excluded from the estimating equations.

(2) Occupation: The 1975 Survey provided twelve occupation categories, distributed within four major occupation groups: white collar, blue collar, farm, and service workers. Under current AFDC rules, clothing and equipment needed for certain kinds of employment are allowable work-related expenses. It was expected that the probability and level of work-related expenses would be relatively higher for workers in occupations such as service or blue collar, relative to farm and white collar, earnings constant.* To proxy for these possible additional work costs, dichotomous variables for occupation group were coded 1 if a working mother was in a specific group; 0 otherwise. At least one occupation group was excluded from an estimating equation as a reference variable. Equations with occupation group had fewer observations since not all working payees had this variable coded.

(3) Race of Payee: In the child care and work-related expense equations, race of payee may proxy for the kinds of jobs available to nonwhite women in the labor market, relative to jobs for whites, and also for discriminatory practices within welfare service offices in the determination of what are allowable expenses. All other variables held constant, nonwhite women are more likely to work in occupations, such as domestics and food or health service, which may have higher work-related costs. Nonwhites may also be "allowed"

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*Occupation may also proxy for social class. Workers in white collar jobs then would be more likely to incur fee-for-service child care than workers in manual and farm jobs. There was no broad-based, statistical evidence to support this hypothesis based on the 1975 Characteristics Survey.

fewer expenses than whites. We also permit the hypothesis that nonwhites may claim lower expenses, because, for example, they are more likely than whites to use extended family or neighborhood networks to care for dependent children or they are more likely to find work in industries not covered by the FICA payroll tax. Race of payee was coded 1 if the working mother was nonwhite; 0 otherwise ("white").

(4) Win Registration Status: During the time of the 1975 Survey the Work Incentive Program attempted to move "employable" welfare recipients into paid employment by the use of sanctions and added benefits. This effort involved, in particular, granting certain benefits to families who voluntarily registered in WIN. Among participating families, then, we might expect to find relatively higher probabilities and levels of allowable expenses than among families who were not registered, were mandatorily registered, or who had no WIN project in their area. Some portion of the expenses allowed by welfare service officers may, therefore, be attributable to the benefit structure of WIN. Conversely, relatively lower expenses among families not voluntarily registered may be due to the sanctions or absence of WIN. WIN was coded 1 if a family was not voluntarily registered, 0 otherwise.

The Samples

As pointed out earlier, the total number of sample records avaliable for all working (separate expense data) families had to be culled down to those which are relevant for analysis of program

eligibility among specific populations. In this paper we limited our analysis to child care expenses and work-related expenses among families probably receiving AFDC-Regular benefits at the time of the 1975 Characteristics Survey. These record counts are shown in Table 5.

Due to data limitations on two potential explanatory variables, educational attainment and occupation group, three different estimation samples were generated. Model 1 (M1), the largest and least restrictive sample, includes all AFDC-R records of working families whose survey data included age and education information on all dependent children and had reported the earnings of the payee as less than $999. Based on M1, about 37 percent of all female-headed working AFDC-R families incurred a child care expense during the survey month; about 89 percent incurred a work-related expense.

Model 2 (M2) restricts M1 by imposing the condition that educational attainment of the payee was known. This sample was used in expense equations that included education as an explanatory variable. Model 3 (M3) adds to M1 the condition that occupation of payee was available and was used to estimate expense equations including occupation group.

The sample sizes for the regression equations are smaller than the sample sizes for the probability equations, since only positive values of the dependent variables are included in these equations. Division 8, for example, had only eight observations on families who actually incurred a child care expenditure. For whatever reasons--undersampling within the Mountain states or very few families in these states actually used paid child care services--there is nothing that

Table 5: Sample Observations for Estimating Equations

Census Divisions	Working*	Probability Equations			Regression Equations**	
		M1	M2	M3	Child Care	Work-Related
(1) New England	308	270	204	226	119	257
(2) Middle Atlantic	366	334	267	316	146	298
(3) East North Central	364	338	295	322	134	275
(4) West North Central	893	804	690	785	278	763
(5) South Atlantic	533	513	451	498	185	436
(6) East South Central	368	341	318	330	129	298
(7) West South Central	247	237	205	233	84	217
(8) Mountain	120	114	94	111	8	82
(9) Pacific	229	206	141	203	101	182
United States	3428	3157	2665	3024	1184	2808

M1: Payee is female and no spouse present, has earnings greater than zero but less than $999, and has survey data for dependent children (age and education for all children under 21 years of age).

M2: M1 and educational attainment of payee was available.

M3: M1 and occupation of payee was available.

*See Table 4.

**No regression equations had either educational attainment or occupation of payee as significant explanatory variables, so only observations for a M1 model are given here. Occupation was marginally significant in one child care probability model, but it will not be reported below.

can be done with this sample for purposes of empirical estimation. Prediction equations for child care in Division 8 will have to be generated through some other process.* The work-related expense equations generated for this division may be subject to the same kind of statistical scepticism, even though there are a sufficient number of observations avaiable.

The Child Care Expense Probability Equations

Table 6 presents the final parameter estimates for the child care expense probability equations.** All variables, but one, are statistically significant at the .99 confidence level (ED_12+ is significant at .95). The predicting equation in each Census division was statistically significant at the .01 level of the χ^2 statistic.*** Each equation contains net monthly earnings of the working mother and 0/1 dummy variables for the presence of dependent children of specific ages. As hypothesized, the probability that a family would have incurred a

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*For example, child care could be estimated as twenty percent of gross earnings; or the sample average for the United States could be used as a predictor.

**Only statistically significant variables are presented in Tables 6 through 9, given that these prediction equations produced the best models. There were some other equations in some divisions that also could have been used. See sensitivity analysis, Tables 11 through 18.

***The χ^2 measures the degree to which the estimating equation as a whole produced an arithmetically greater likelihood (joint probability) of replicating the distribution of 0/1 outcomes of allowable expenses than an estimating equation which merely assigned the sample average probability to each family, regardless of its characteristics. The sample average probability is (number of families incurring an expense) / (total number of families in sample). The corresponding statistic in regression analysis is the F statistic.

Table 6: Parameter Estimates for Child Care Expense Probability Models

	Constant	Any Kids<6	Any Kids>14	Net Earnings	Central City	Non White	Full Time	Ed=12+	OBS	χ^2_{df}
Division 1:	-2.3502	1.0486	-1.7124	0.0103	-1.5320				270	103.71
	(5.23)	(3.23)	(4.34)	(6.06)	(3.83)					
Division 2:	-1.7217	0.6872	-1.8145	0.0064	-0.6551			0.5985	267	89.45
	(3.87)	(2.20)	(4.60)	(5.29)	(2.20)			(2.03)		
Division 3:	-2.2386	1.1403	-0.8096	0.0028	0.8468				338	56.43
	(5.92)	(4.38)	(2.50)	(3.36)	(3.04)					
Division 4:	-1.5692	0.9381	-1.3412	0.0031		-0.7035			804	125.41
	(6.98)	(5.25)	(5.09)	(4.69)		(3.52)				
Division 5:	-2.7066	0.8663	-1.8443	0.0089					513	161.40
	(8.47)	(3.76)	(5.71)	(8.11)						
Division 6:	-2.7572	1.4776	-1.7122	0.1179		-1.2872			341	159.44
	(5.69)	(4.53)	(4.23)	(7.16)		(3.77)				
Division 7:	-3.8796	1.9364	-1.2270	0.0090			1.1313		237	120.48
	(6.83)	(4.62)	(2.49)	(4.00)			(2.51)			
Division 8:	No equation estimated: Sample size too small.									
Division 9:	-1.7563	1.2194	-2.1183	0.0057					206	71.04
	(3.98)	(3.46)	(4.08)	(4.47)						

Asymptotic t-ratios in parentheses.

child care expense increases with its spendable (net) earnings.* The probability also increases when children under the age of six are present in the family, but decreases with the presence of children fifteen years and older.** This is consistent with the hypothesis that earnings constant, very young children require supervision while the mother works, but older children often do not. In six of the eight divisions estimated, the net impact on the probability of incurring a child care expense is negative for a family that had both young and older children, other factors held constant.*** These results suggest that high school children, when not in school, may effectively provide child care services to younger brothers and sisters and thus reduce the likelihood that a given family would incur a child care expense at all. Apparently, the presence of older children not only contributes to the mother's ability to work, but also contributes to her ability

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*The usual interpretation of parameter estimates, "change in the dependent variable per unit change in its explanatory variable, ceteris paribus," cannot be used for the logistic probability estimator. The logistic function, $P = 1 / (1 + \exp(-a_0 - a_1x_1 - a_2x_2 - \ldots - a_kx_k))$, is nonlinear and numerical methods must be used to solve for the specific impact of changes in individual explanatory variables on the probability of incurring a given expense. See Tables 11 through 27.

**By definition of a recipient unit, there must be at least one dependent child in the family. The reference group in estimating equations that include children under six and children over fourteen is, therefore, children between the ages of six and fourteen. Hence, relative to the presence of children in this age group, a family that has young children has a higher probability of incurring an expense, while a family with older children has a lower probability.

***In Division 1, for example, the net impact is 1.0486 - 1.7124 for a family with both young and older children. Families in these divisions were more likely to have children present in the fifteen year and older group and less likely to have children in the six and under age group. In the two Census divisions where the net impact was positive the age distribution of children favored the presence of younger, rather than older, children.

to work all day. However, there was no evidence that the presence or number of nonworking adults in a recipient unit had any impact on the likelihood of incurring a child care expense.*

Other variables constant, the fact that a working mother lived in a central city reduced the probability of incurring a child care expense in the two Census divisions in the Northeast. This is consistent with the hypothesis that child care services may be provided by extended families, neighborhood networks, or other cooperative arrangements within the older cities of this region. In contrast, in the only other division in which residence was independently significant, Division 3, the probability of incurring a child care expense was relatively higher for families in central cities. Nearly 70 percent of all working families in this division live in central cities; and over 70 percent of all working families are employed full-time. In this division, then, central city may serve as a proxy for work schedule, and hence for the increased likelihood of incurring a child care expense, earnings constant.

The 0/1 dummy variable FT was entered into the probability models to expressely measure the impact of full-time or part-time work schedules. It was significant only in Division 7. This was the only division in which both net earnings and work schedule were both significant. None of the more complex interaction forms of earnings and work schedule were significant.

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*Between five and 29 percent of all households included another adult across the eight Census divisions. The fewest number of households containing other adults was in Division 2; at least one-fourth of all recipient units in the South contained another adult.

Finally, in Division 2 payees with at least a high school education would have a higher probability of incurring a child care expense, other factors held constant, relative to payees with less education. This division includes New York and other large urban cities. Education may be serving as a proxy for the kinds of jobs available to working welfare mothers with different kinds of educational attainment; that is, relatively better, full-time jobs for high school graduates, part-time jobs for those with less than high school. Education may also be serving as a proxy for English speaking abilities within the many ethnic groups present in this division. There was no evidence that educational attainment had an independent impact on the likelihood of incurring a child care expense in any other division. Occupation itself was never statistically significant.

The Child Care Expense Regression Equations

In each Census division, net (spendable) earnings was an important determinant of the level of monthly child care expenses among families who actually incurred an expense (Table 7). In fact, net earnings (gross monthly earnings minus all work-related expenses) was the only statistically significant variable present in every regression equation. As expected, net earnings had a positive impact on the level of child care expenses. The coefficients on net earnings range from .10 to .28 among the Census divisions, and indicate that an additional ten to twenty-eight cents, on average, was spent on child care for each additional dollar of net earnings.

Table 7: Parameter Estimates for Linear Child Care Expense Regressions

	Constant	Net Earnings	Number Kids<6	Number Kids>14	Not White	OBS	R^2_{df}
Division 1:	21.26	.17	12.52	-11.71	36.86	119	.38
	(2.66)	(6.48)	(3.12)	(2.48)	(3.05)		
Division 2:	28.92	.18				146	.23
	(3.11)	(6.23)					
Division 3:	32.78	.15				134	.27
	(4.97)	(7.16)					
Division 4:	9.57	.19	13.99			278	.39
	(1.93)	(12.59)	(5.28)				
Division 5:	40.78	.17	10.05		-25.08	185	.29
	(4.78)	(7.35)	(3.60)		(4.25)		
Division 6:	53.72	.10			-21.24	129	.16
	(7.00)	(3.62)			(4.28)		
Division 7:	35.09	.15			-16.05	84	.25
	(3.87)	(4.69)			(2.70)		
Division 8:	No equation estimated: sample size too small					8	
Division 9:	2.89	.28				101	.51
	(0.31)	(10.24)					

T-ratios in parentheses. R^2_{df} corrected for degrees of freedom.

In Divisions 1, 4, and 5, the number of children under the age of six also had an independent impact on the level of child care expenses. The coefficients range from 10.05 to 13.99 and indicate that each child under the age of six boosts average child care expenditures by between ten and fourteen dollars per month. Only in Division 1 was the number of children over age fourteen also statistically significant. Each of these older children would, on average, reduce child care expenses by nearly $12 per month.*

The only other statistically significant variable was race of payee. In the New England division nonwhite working mothers would have incurred (been allowed) nearly $37 more child care expenses than white mothers, earnings and age distribution of children the same. In contrast, nonwhite families in the southern states would have incurred between $16 and $25 less on average per month, net earnings constant. Nonwhite families may in fact have used relatively more fee-for-service child care services in New England, but relatively fewer services in the South. What is "allowed" as a child care expense by welfare service offices must, of course, also be considered. Only six percent of working, AFDC-R mothers in New England were nonwhite; in the South, around 70 percent were nonwhite.

Educational attainment, occupation group, and work-schedule of the working parent were never statistically significant in any division. No equation was estimated for Division 8, due to the extremely small sample size for these states.

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*These estimates must, of course, be weighted by the probability of incurring a child care expense to arrive at an estimate of the overall impact of family and earnings characteristics on child care expenses.

The Work-Related Expense Probability Equations

As expected, gross monthly earnings was positively related to the probability of incurring a work-related expense. $EARN, in fact, was the only explanatory variable statistically significant in every division equation (Table 8). In six divisions, gross earnings per dependent child provided the statistically most powerful form of the gross earnings variable.* This suggests that earnings per child may indeed serve as an adequate proxy for earnings subject to income taxes after allowable exemptions have been claimed by the working parent. In the three remaining divisions, gross earnings produced the most significant predicting equation.

In Divisions 4 and 5 full-time work schedule also had a positive impact on the probability of incurring a work-related expense. Earnings constant this may be picking up the likelihood of other kinds of employment expenses associated with full-time, rather than part-time, work. Gross earnings and work schedule were not both significantly related to the probability of work-related expenses in any other division.**

Residence in a central city had a positive impact on the work-related expense probability in only two southern divisions (5 and 7). The majority of working welfare mothers in each of these divisions are in

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*That is, produced the largest sample joint probability, as measured by the χ^2 statistic.

**While statistically significant, work schedule is important only for families with relatively low earnings. At higher levels of gross earnings, gross earnings dominates the expected value of work-related expenses. See Tables 19 through 27.

Table 8: Parameter Estimates for Work-Related Expense Probability Models

	Constant	Earnings/ Child	Gross Earnings	Full Time	Central City	Not Voluntary Win Reg.	Not White	OBS	χ^2
Division 1:	2.4849 (7.16)		.0152 (4.03)					270	32.42
Division 2:	.3095 (0.92)	.0130 (4.64)						334	39.53
Division 3:	.9925 (3.10)	.0083 (4.33)				-0.9436 (2.94)		338	39.36
Division 4:	.7338 (2.62)	.0169 (4.34)		1.2438 (2.74)				804	78.72
Division 5:	-0.8719 (3.05)	.0238 (5.74)		1.0953 (3.31)	.6765 (2.27)			513	127.45
Division 6:	-1.8058 (3.61)		.0163 (6.38)				1.5717 (3.59)	341	95.46
Division 7:	-0.2760 (0.56)	.0480 (3.60)			1.1281 (1.98)			237	40.19
Division 8:	-0.7782 (1.86)		.0087 (4.16)					114	24.66
Division 9:	-0.2828 (0.50)	.0299 (4.96)				-1.6809 (2.76)		206	66.75

Asymptotic t-ratios in parentheses.

service occupations and live in central cities. Central city then may be serving as a proxy for the higher work costs associated with service occupations, especially uniforms. Central city jobs in other occupations in the southern states may also be more likely to be covered by the Social Security System, relative to farm workers and service workers. In this case, central city may be serving as a proxy for higher payroll taxes among central city workers within the two divisions. No other divisions produced a significant central city impact on the likelihood of work-related expenses.

In two divisions families who were not voluntarily registered with the WIN program* would have significantly lower probabilities of incurring allowable work-related expenses, earnings per child constant. In these states (Divisions 3 and 9), voluntary registrants may have indeed benefited from the incentives offered by WIN, in that, once employed, their work-related expenses were more likely to be counted as deductions from gross earnings. Conversely, it may be that non-voluntary WIN registrants had a more difficult time (lower probability) of claiming their work-related costs.

The race of the working parent was statistically significant in only one southern division. Within these states, gross earnings the same, nonwhites had a significantly higher probability of incurring work-related expenses. Over two-thirds of working welfare mothers in Division 6 are nonwhite and work in blue collar and service employment. As we found for central cities in the other two southern divisions,

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*Mandatory registrants, families waiting for WIN status, and families with no WIN project in their area.

these kinds of jobs may have higher work-related costs, such as clothing expenses, and race may be serving as a statistical proxy for these expenses. Occupation group was never significant. As noted earlier, the probability of incurring a child care expense is lower for nonwhites in Division 6, but they are more likely to have employment-related expenses than whites. These results suggest that nonwhites may in deed work in relatively more costly kinds of employment, and yet be more willing (or have to) put up child care costs out of take home earnings.

The Work-Related Expense Regression Equations

The only statistically significant determinant of the level of work-related expenses in each of the nine Census divisions was gross monthly earnings. This analysis is limited to families who actually incurred a work-related expense during the survey month. As shown in Table 9, the coefficients on gross earnings are stable across divisions and range from a low of .22 in Division 2 to a high of .28 in Division 9. (The .11 coefficient in Division 8 may be unusually low due to general undersampling within these Mountain states.) These results indicate that between 22 and 28 cents per additional dollar of gross earnings will be spent on work-related expenses. This coefficient combines the impact of varying tax rates on earnings among working families with all other allowable work-related costs paid out of earnings net of taxes. The overall 22 to 28 percent marginal "tax rate" seems quite reasonable, given an average family earnings between $250 and $400 per month.

Table 9: Parameter Estimates for Linear Work Expense Regressions

	Constant	Gross Earnings	OBS	R^2_{df}
Division 1:	-2.73 (0.46)	.27 (15.91)	257	.50
Division 2:	11.62 (2.42)	.22 (19.61)	298	.56
Division 3:	-7.39 (1.68)	.24 (21.78)	275	.63
Division 4:	-8.15 (3.92)	.26 (45.73)	763	.73
Division 5:	-11.48 (3.30)	.24 (22.16)	436	.53
Division 6:	-8.18 (2.12)	.25 (19.76)	298	.57
Division 7:	-4.66 (1.15)	.24 (15.60)	217	.53
Division 8:	16.23 (3.14)	.11 (6.65)	82	.35
Division 9:	-21.50 (3.09)	.28 (17.28)	182	.62

T-ratios in parentheses.

R^2 corrected for degrees of freedom (df).

Prediction Accuracy

A final set of sample statistics are given in Table 10. These statistics compare the prediction accuracy of the estimated expense models for the nine Census divisions. Actual average expense is based on reported expenses of working families who actually had a child care expense or work-related expense, as well as on families who did not. Average predicted expense is based on estimates from the probability and regression prediction equations, using actual characteristics of working families.* In prediction we assume that a given family actually incurred an expense and compute the level of that expense with the regression equation. This estimated level is then weighted by the estimated probability that the family would have incurred the expense. This product is predicted expense.

The null hypothesis tested in Table 10 is that predicted expense based on the sample average (actual expense) would not be significantly different from predicted expense based on the estimating equations. The sample test statistic is the F-statistic: the ratio of sum of squared errors of each family's actual expense from the division average expense, to the sum of squared errors of the family's actual expense from the predicted value.

$$F = \frac{\text{Sum (Actual Expense - Sample Average Expense)}^2}{\text{Sum (Actual Expense - Predicted Expense)}^2}$$

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*Regression equations using the log of expenses were also estimated. Based on sample statistics from these equations, it was clear that a linear model in expenses was preferable. The sample statistics in Table 10 also argued for the simpler linear form of the expense regressions.

Table 10: Prediction Accuracy of Expense Models

Child Care	Average Actual	Average Predicted	F	OBS
Division 1:	$33.66	$34.00	1.77	270
Division 2:	40.34	40.85	1.46	267
Division 3:	29.77	29.77	1.26	338
Division 4:	24.77	24.86	1.21	804
Division 5:	28.73	28.15	1.40	513
Division 6:	24.70	24.69	1.70	341
Division 7:	22.09	21.98	1.84	237
Division 8:	3.59	(No Model Estimated)		
Division 9:	45.46	43.71	1.77	206
Work-Related				
Division 1:	$80.63	$81.82	2.14	270
Division 2:	87.06	85.69	2.36	334
Division 3:	62.77	59.86	2.78	338
Division 4:	72.79	72.25	3.82	804
Division 5:	49.70	48.29	2.64	513
Division 6:	52.40	52.39	2.57	341
Division 7:	46.15	45.52	2.39	237
Division 8:	33.70	33.70	1.68	114
Division 9:	77.58	76.41	3.11	206

F = Sum of Squared Errors (Actual) / Sum of Squared Errors (Predicted)

All equations significant at .05 or better.

The number of observations in each summation is the same.

If the calculated value of F is greater than the critical value of F for the number of observations in the summations, the prediction equations have significantly reduced the overall prediction error, relative to a model which uses the sample average. All child care and work-related expense models reported in this study are statistically significant.

Sensitivity Analysis of Expense Models

A final series of tables illustrates the sensitivity of the expense models to changes in the characteristics of working AFDC-R families. In these tables, families are assumed to have certain characteristics and their child care and work-related expenses are estimated on the basis of these characteristics. The characteristics of these families are then changed, one by one, and the impact of these changes on predicted expenses is tabulated. We examine each model in turn.

Child Care Expense Model

The child care expense model combines the probability equation with the regression expense equation; that is,

$$\$\text{Child Care Expense} = \text{Prob}(\text{Child Care Expense} \mid \text{Family Characteristics}) \times \text{Regression Expense Level} \mid \text{Family Characteristics}.$$

Child care models for eight Census divisions are given in Tables 11 through 18. No child care model was estimated for Division 8.* In each

*Child care expenses could be estimated as: $CC = .20 x Net Earnings.

table, the number of characteristics assigned to a family depends on the number of statistically significant characteristics in the probability and regression equations. These characteristics include:* the payee's net monthly earnings ($100 or $500); the race and educational attainment of the payee; the location of the family in a central city; and the age distribution of dependent children in the family. These characteristics are represented by YES (1) or NO (0) answers to specific questions. Predicted child care expenses are presented for each set of specific characteristics. This procedure is best illustrated by example.

Table 11 displays the components of the child care model for Division 1, New England. In the first panel we assume that the payee's net monthly earnings are $100 and the payee is white. Specific questions about the age distribution of children and family residence are distributed in the rest of the panel. If, for example, a family in New England had NO children under the age of six, and NO children over the age of fourteen, and was NOt living in a central city, the probability of receiving child care expenses (P) is .21. The predicted level of family's child care expense (R) is $38.52. (R is based on a prediction equation for New England in which all families actually received child care expenses.) Estimated child care expenses for this family (CC), then, is the product of P and R, .21 x $38.52 = $8.11.** CC is predicted

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*Work schedule of payee (full time/part time) was statistically significant in Division 7. It is paired with earnings in Table 17.

**P, R, and CC (and WE) were estimated in floating point arithmetic to six significant digits. These tables report each statistic rounded to only two or three significant digits.

Table 11: Child Care Model--Division 1

NET EARNINGS: 100 RACE: WHITE

PANEL 1

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14**				ANY KIDS > 14**			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.21	.05	.05	.01	.43	.14	.12	.03
R:	38.52	38.52	26.82	26.82	51.04	51.04	39.33	39.33
CC:	8.11	2.10	1.23	.28	22.07	7.22	4.75	1.13

Sample Average Expense = $33.66

NET EARNINGS: 500 RACE: WHITE

PANEL 2

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14**				ANY KIDS > 14**			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.94	.78	.75	.39	.98	.91	.89	.64
R:	107.57	107.57	95.87	95.87	120.09	127.09	108.38	108.38
CC:	101.04	83.92	71.67	37.42	117.58	109.29	96.92	70.04

*If any children under six present, one child is assumed.

**If any children over fourteen present, one child is assumed.

Table 11: Child Care Model--Division 1, Cont.

NET EARNINGS: 100 RACE: NONWHITE

PANEL 3

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14**				ANY KIDS > 14**			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.21	.05	.05	.01	.43	.14	.12	.03
R:	75.39	75.39	63.68	63.68	87.90	87.90	76.20	76.20
CC:	15.89	4.11	2.93	.66	38.01	12.43	9.21	2.20

Sample Average Expense = $33.66

NET EARNINGS: 500 RACE: NONWHITE

PANEL 4

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14**				ANY KIDS > 14**			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.94	.78	.75	.39	.98	.91	.89	.64
R:	144.43	144.43	132.73	132.73	156.95	156.95	145.25	145.25
CC:	136.15	112.68	99.23	51.80	153.67	142.84	129.88	93.86

*If any children under six present, one child is assumed.

**If any children over fourteen present, one child is assumed.

child care expenses, given that a family with these characteristics would have an average 21 percent chance of receiving an expected (average) child care expense of $38.52.

Consider another family with these same characteristics, except that this family has one child under the age of six. The probability that this family would receive child care expenses (P) is .43; the expected level of this expense is $51.04. Because of the presence of a young child in the family, all other characteristics the same, both the probability and level of expense have risen. Predicted child care expenses are: P x R = .43 x $51.04 = $22.07. This is an increase of $13.96 a month in child care expenses, relative to a family with no young children. If this family also has a dependent child over the age of fourteen, the probability of receiving child care expenses would decrease to .12; the expected level of the expense would decrease to $39.33. Predicted child care expenses correspondingly drops to $4.75. The presence of an older child in families with these characteristics has an independent effect of reducing child care expenses by $17.32 ($22.07 - $4.75). This represents an annual reduction in child care costs of over $200, all else constant.

Panel 2 of Table 11 assumes net earnings of $500 per month. All other characteristics except race are permitted to vary as in Panel 1. It is evident that families with much higher monthly earnings also would have much higher probabilities of receiving child care expenses and higher expense levels of child care expenses. This is true regardless of place of residence and age distribution of children.

Panels 3 and 4 of Table 11 assume the payee is nonwhite. A comparison of Panel 1 and Panel 3 shows that families with net earnings of $100, the

same place of residence, and the same age distribution of children would have the same probability of incurring a child care expense. The expected level of the expense among nonwhite payees, however, could be over twice as large, depending on place of residence and ages of dependent children. Since the probability of incurring the expense is relatively small for families with only $100 of monthly net earnings, the difference in predicted child care expenses (P x R) is usually small.

A comparison of predicted expenses at net earnings of $500 indicates the same direction of difference for various family characteristics, but the relative magnitude of the differences is much smaller. Higher earnings reduces the independent effects of race, location in central city, and age distribution of children. Similar results can be found in child care models for the other Census Divisions.

Tables 12 through 18 for the remaining seven child care models are constructed in the same fashion. While the statistically significant determinants of child care expenses, other than family net earnings, vary somewhat, the same overall picture emerges: The non earnings characteristics of working welfare families are relatively important in determining variation in child care expenses among families with low monthly earnings. Differences due to race of payee, location in a central city, age distribution of children, and educational attainment, can mean differences in predicted child care expenses on the order of one-and-a-half to five. Families with higher net monthly earnings, however, would have proportionately smaller variations in predicted child care expenses. Higher monthly earnings tend to "level

Table 12: Child Care Model--Division 2

NET EARNINGS: 100 — EDUCATION: LESS THAN HIGH SCHOOL

PANEL 1

	ANY KIDS < 6 = NO				ANY KIDS < 6 = YES			
	ANY KIDS > 14 = NO		ANY KIDS > 14 = YES		ANY KIDS > 14 = NO		ANY KIDS > 14 = YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.25	.15	.05	.03	.40	.26	.10	.05
R:	46.93	46.93	46.93	46.93	46.93	46.93	46.93	46.93
CC:	11.88	7.02	2.45	1.31	18.89	12.16	4.64	2.53

Sample Average Expense = $40.34

NET EARNINGS: 500 — EDUCATION: LESS THAN HIGH SCHOOL

PANEL 2

	ANY KIDS < 6 = NO				ANY KIDS < 6 = YES			
	ANY KIDS > 14 = NO		ANY KIDS > 14 = YES		ANY KIDS > 14 = NO		ANY KIDS > 14 = YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.81	.69	.42	.27	.90	.82	.59	.42
R:	118.95	118.95	118.95	118.95	118.95	118.95	118.95	118.95
CC:	96.81	82.58	49.48	32.12	106.68	97.38	69.72	50.41

Table 12 : Child Care Model--Division 2, Cont.

PANEL 3

NET EARNINGS: 100 — EDUCATION: HIGH SCHOOL OR MORE

	ANY KIDS < 6							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.38	.24	.10	.05	.55	.39	.17	.09
R:	46.93	46.93	46.93	46.93	46.93	46.93	46.93	46.93
CC:	17.90	11.38	4.28	2.33	25.84	18.25	7.81	4.41

Sample Average Expense = $40.34

PANEL 4

NET EARNINGS: 500 — EDUCATION: HIGH SCHOOL OR MORE

	ANY KIDS < 6							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.89	.81	.56	.40	.94	.89	.72	.57
R:	118.95	118.95	118.95	118.95	118.95	118.95	118.95	118.95
CC:	105.67	95.77	67.14	47.85	111.88	106.04	85.69	68.08

Table 13: Child Care Model--Division 3

NET EARNINGS: 100

PANEL 1

	ANY KIDS < 6							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.12	.25	.06	.13	.31	.52	.16	.31
R:	47.68	47.68	47.68	47.68	47.68	47.68	47.68	47.68
CC:	5.89	11.79	2.81	6.08	14.58	24.16	7.81	14.96

Sample Average Expense = $29.77

NET EARNINGS: 500

PANEL 2

	ANY KIDS < 6							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	CENTRAL CITY		CENTRAL CITY		CENTRAL CITY		CENTRAL CITY	
	NO	YES	NO	YES	NO	YES	NO	YES
P:	.30	.50	.16	.31	.57	.76	.37	.58
R:	107.27	107.28	107.28	107.28	107.28	107.28	107.28	107.28
CC:	32.19	53.64	17.19	33.04	61.45	81.29	40.10	62.43

Table 14: Child Care Model--Division 4

NET EARNINGS: 100

PANEL 1

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	RACE		RACE		RACE		RACE	
	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE
P:	.22	.12	.07	.04	.42	.26	.16	.09
R:	28.42	28.42	28.42	28.42	42.42	42.42	42.42	42.42
CC:	6.28	3.50	1.97	1.01	17.84	11.21	6.77	3.64

Sample Average Expense = $24.77

NET EARNINGS: 500

PANEL 2

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	RACE		RACE		RACE		RACE	
	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE
P:	.50	.33	.20	.11	.72	.55	.40	.25
R:	103.86	103.86	103.86	103.86	117.86	117.86	117.86	117.86
CC:	51.51	34.01	21.26	11.73	84.32	65.34	46.75	28.93

*If any children present under age of six, one child is assumed.

Table 15: Child Care Model--Division 5

NET EARNINGS: 100

PANEL 1

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	RACE		RACE		RACE		RACE	
	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE
P:	.14	.14	.02	.02	.27	.27	.06	.06
R:	58.13	33.06	58.13	33.06	68.18	43.10	68.18	43.10
CC:	7.94	4.52	1.42	.81	18.64	11.79	3.83	2.42

Sample Average Expense = $28.73

NET EARNINGS: 500

PANEL 2

	ANY KIDS < 6*							
	NO				YES			
	ANY KIDS > 14				ANY KIDS > 14			
	NO		YES		NO		YES	
	RACE		RACE		RACE		RACE	
	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE	WHITE	NOT WHITE
P:	.83	.83	.44	.44	.92	.92	.65	.65
R:	127.55	102.48	127.55	102.48	137.60	112.52	137.60	112.52
CC:	106.28	85.39	56.30	45.24	126.92	103.79	89.81	73.44

*If any children present under age of six, one child is assumed.

Table 16: Child Care Model--Division 6

NET EARNINGS: 100 IN CENTRAL CITY

PANEL 1	ANY KIDS < 6: NO; ANY KIDS > 14: NO; RACE: WHITE	ANY KIDS < 6: NO; ANY KIDS > 14: NO; RACE: NOT WHITE	ANY KIDS < 6: NO; ANY KIDS > 14: YES; RACE: WHITE	ANY KIDS < 6: NO; ANY KIDS > 14: YES; RACE: NOT WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: NO; RACE: WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: NO; RACE: NOT WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: YES; RACE: WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: YES; RACE: NOT WHITE
P:	.29	.10	.07	.02	.65	.33	.25	.08
R:	63.51	42.27	63.51	42.27	63.51	42.27	63.51	42.27
CC:	18.65	4.35	4.43	.86	41.01	14.15	15.72	3.52

Sample Average Expense = $24.70

NET EARNINGS: 500 IN CENTRAL CITY

PANEL 2	ANY KIDS < 6: NO; ANY KIDS > 14: NO; RACE: WHITE	ANY KIDS < 6: NO; ANY KIDS > 14: NO; RACE: NOT WHITE	ANY KIDS < 6: NO; ANY KIDS > 14: YES; RACE: WHITE	ANY KIDS < 6: NO; ANY KIDS > 14: YES; RACE: NOT WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: NO; RACE: WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: NO; RACE: NOT WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: YES; RACE: WHITE	ANY KIDS < 6: YES; ANY KIDS > 14: YES; RACE: NOT WHITE
P:	.98	.93	.89	.70	.99	.98	.97	.91
R:	102.67	81.43	102.67	81.43	102.67	81.43	102.67	81.43
CC:	100.50	75.54	91.72	65.85	102.17	80.01	99.95	74.12

Table 16: Child Care Model--Division 6, cont.

NET EARNINGS: 100 — NOT IN CENTRAL CITY

PANEL 3

	ANY KIDS < 6 = NO				ANY KIDS < 6 = YES			
	ANY KIDS > 14 = NO		ANY KIDS > 14 = YES		ANY KIDS > 14 = NO		ANY KIDS > 14 = YES	
	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE
P:	.17	.05	.04	.01	.47	.20	.14	.04
R:	63.51	42.27	63.51	42.27	63.51	42.27	63.51	42.27
CC:	10.86	2.28	2.28	.43	30.15	8.44	8.91	1.82

Sample Average Expense = $24.70

NET EARNINGS: 500 — NOT IN CENTRAL CITY

PANEL 4

	ANY KIDS < 6 = NO				ANY KIDS < 6 = YES			
	ANY KIDS > 14 = NO		ANY KIDS > 14 = YES		ANY KIDS > 14 = NO		ANY KIDS > 14 = YES	
	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE
P:	.96	.86	.81	.53	.99	.97	.95	.83
R:	102.67	81.43	102.67	81.43	102.67	81.43	102.67	81.43
CC:	98.40	70.37	82.51	43.51	101.66	78.61	97.33	67.93

Table 17: Child Care Model--Division 7

PANEL 1

NET EARNINGS: 100 PART-TIME WORKERS

	ANY KIDS < 6 = NO				ANY KIDS < 6 = YES			
	ANY KIDS > 14 = NO		ANY KIDS > 14 = YES		ANY KIDS > 14 = NO		ANY KIDS > 14 = YES	
	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE
P:	.05	.05	.015	.015	.26	.26	.09	.09
R:	50.16	34.11	50.16	34.11	50.16	34.11	50.16	34.11
CC:	2.42	1.65	.73	.50	13.06	8.88	4.69	3.19

Sample Average Expense = $22.09

PANEL 2

NET EARNINGS: 500 FULL-TIME WORKERS

	ANY KIDS < 6 = NO				ANY KIDS < 6 = YES			
	ANY KIDS > 14 = NO		ANY KIDS > 14 = YES		ANY KIDS > 14 = NO		ANY KIDS > 14 = YES	
	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE	RACE = WHITE	RACE = NOT WHITE
P:	.85	.85	.63	.63	.98	.98	.92	.92
R:	110.42	94.37	110.42	94.37	110.42	94.37	110.42	94.37
CC:	94.04	80.37	69.27	59.20	107.71	92.05	101.07	86.92

Table 18 : Child Care Model--Division 9

NET EARNINGS: 100

PANEL 1

	ANY KIDS < 6*			
	NO		YES	
	ANY KIDS > 14		ANY KIDS > 14	
	NO	YES	NO	YES
P:	.23	.03	.50	.11
R:	30.40	30.40	30.40	30.40
CC:	6.94	1.04	15.21	3.26

NET EARNINGS: 500

PANEL 2

	ANY KIDS < 6*			
	NO		YES	
	ANY KIDS > 14		ANY KIDS > 14	
	NO	YES	NO	YES
P:	.72	.23	.89	.51
R:	140.45	140.45	140.45	140.45
CC:	100.88	32.95	125.87	71.53

Sample Average Expense = $45.46

out" a substantial amount of the independent effects of educational attainment, central city residence, and age distribution of children in the probability and expense level estimates. Differences in predicted child care expenses due to race of payee, however, remain relatively powerful, regardless of net earnings.*

Work-Related Expense Models

The work-related expense model for each of the nine Census Divisions combines the work-related expense probability equation (P) with the work-related expense regression level equation (R). Predicted work-related expenses for working mothers with specific characteristics are WE = P x R. These expense models are presented in Tables 19 through 27. As in the case of the child care expense models, the work related models assume certain characteristics of an AFDC family, such as payee's gross monthly earnings and earnings per child, location within a central, race, work schedule, and WIN registration status.

Each of the work-related expense models is evaluated at gross earnings equal to $100, $250, and $500. In the six Census divisions where earnings per child produced the most significant probability equation, the expense models are evaluated assuming one and two dependent children in the family. Relative to variation in other family

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*In Division 4, race of payee affects the probability of incurring child care expenses, but not the expected level; in Divisions 5 and 7, race affects the expected level, but not the probability; in Division 6, race affects both the probability and expected level. This impact of race of payee is always negative in these Divisions: nonwhite working welfare mothers have lower probabilities and/or lower expected child care expense levels. In Division 6 the combined impact of race is proportionately greater than in other Southern divisions.

Table 19: Work-Related Expense Model--Division 1

	GROSS MONTHLY EARNINGS		
	$100	$250	$500
P:	.98	1.0	1.0
R:	24.40	65.10	132.94
WE:	23.98	65.00	132.93

SAMPLE AVERAGE EXPENSE: $80.63

Table 20: Work-Related Expense Model--Division 2

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.72	.83	.87	.97	.97	.998
R:	34.07	34.07	67.75	67.75	123.87	123.87
WE:	24.63	28.38	59.17	65.86	120.42	123.74

SAMPLE AVERAGE EXPENSE: $87.06

Table 21: Work-Related Expense Model--Division 3

(1) WIN REGISTRATION STATUS: VOLUNTARY

PANEL 1	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.80	.86	.88	.96	.96	.99
R:	16.84	16.84	53.19	53.19	113.77	113.77
WE:	13.53	14.50	47.02	50.82	108.71	113.11

(2) WIN REGISTRATION STATUS: NOT VOLUNTARY

PANEL 2	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.61	.71	.75	.89	.89	.99
R:	16.84	16.84	53.19	53.19	113.77	113.77
WE:	10.34	11.90	39.77	47.51	101.63	112.09

SAMPLE AVERAGE EXPENSE: $62.77

Table 22: Work-Related Expense Model--Division 4

(1) PART TIME WORK SCHEDULE

PANEL 1

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.83	.92	.95	.99	(see full	
R:	17.97	17.97	57.15	57.15	time work	
WE:	14.90	16.51	54.02	56.75	schedule)	

(2) FULL TIME WORK SCHEDULE

PANEL 2

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	(see part		.98	.998	.998	1.0
R:	time work		57.15	57.15	122.45	122.45
WE:	schedule)		56.21	57.03	122.20	122.44

SAMPLE AVERAGE EXPENSE: $72.79

Table 23: Work-Related Expense Model--Division 5

(1) IN A CENTRAL CITY -- WORK SCHEDULE: PART-TIME

PANEL 1

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.73	.90	.94	.997	(see full	
R:	12.06	12.06	47.38	47.38	time work	
WE:	8.81	10.85	44.62	47.23	schedule)	

(2) IN A CENTRAL CITY -- WORK SCHEDULE: FULL-TIME

PANEL 2

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	(see part		.98	.999	.999	1.0
R:	time work		47.38	47.38	106.24	106.24
WE:	schedule)		46.42	46.42	106.13	106.24

SAMPLE AVERAGE EXPENSE: $49.70

Table 23: Work-Related Expense Model--Division 5, Cont.

(3) NOT IN A CENTRAL CITY -- WORK SCHEDULE: PART-TIME

PANEL 3

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.58	.82	.89	.994	(see full	
R:	12.06	12.06	47.38	47.38	time work	
WE:	6.99	9.88	42.25	47.09	schedule)	

(4) NOT IN A CENTRAL CITY -- WORK SCHEDULE: FULL-TIME

PANEL 4

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	(see part		.96	.998	.998	1.0
R:	time work		47.38	47.38	106.24	106.24
WE:	schedule)		45.53	47.28	106.02	106.24

SAMPLE AVERAGE EXPENSE: $49.70

Table 24: Work-Related Expense Model--Division 6

(1) RACE: WHITE

PANEL 1

	GROSS MONTHLY EARNINGS		
	$100	$250	$500
P:	.46	.91	.998
R:	16.57	53.70	115.58
WE:	7.56	48.67	115.37

(2) RACE: NONWHITE

PANEL 2

	GROSS MONTHLY EARNINGS		
	$100	$250	$500
P:	.80	.98	1.0
R:	16.57	53.70	115.58
WE:	13.28	52.57	115.54

SAMPLE AVERAGE EXPENSE: $52.40

Table 25: Work-Related Expense Model--Division 7

(1) WIN REGISTRATION STATUS: VOLUNTARY

PANEL 1

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.96	.996	.999	1.0	1.0	1.0
R:	19.29	19.29	55.23	55.23	115.23	115.23
WE:	18.57	19.23	55.17	55.23	115.13	115.13

(2) WIN REGISTRATION STATUS: NOT VOLUNTARY

PANEL 2

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.89	.99	.997	1.0	1.0	1.0
R:	19.29	19.29	55.23	55.23	115.13	115.13
WE:	17.23	19.09	55.05	55.23	115.13	115.13

SAMPLE AVERAGE EXPENSE: $46.15

Table 26: Work-Related Expense Model--Division 8

	GROSS MONTHLY EARNINGS		
	$100	$250	$500
P:	.52	.80	.97
R:	27.34	44.01	71.78
WE:	14.31	35.32	69.84

SAMPLE AVERAGE EXPENSE: $33.70

Table 27: Work-Related Expense Model--Division 9

(1) WIN REGISTRATION STATUS: VOLUNTARY

PANEL 1

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.77	.94	.999	.999	.999	1.0
R:	6.58	6.58	48.72	48.72	118.95	118.95
WE:	5.07	6.17	47.23	48.68	118.86	118.95

(2) WIN REGISTRATION STATUS: NOT VOLUNTARY

PANEL 2

	GROSS MONTHLY EARNINGS					
	$100		$250		$500	
	MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID		MONTHLY EARNINGS/KID	
	$50	$100	$125	$250	$250	$500
P:	.39	.74	.86	.996	.996	1.0
R:	6.58	6.58	48.72	48.72	118.95	118.95
WE:	2.54	4.85	41.67	48.53	118.48	118.95

SAMPLE AVERAGE EXPENSE: $77.58

characteristics, gross monthly earnings clearly dominates the variation in predicted work-related expenses. As gross earnings increases, both the probability and level of work-related expenses increase.

As in the child care models, variation in characteristics other than monthly earnings, such as parent's work schedule, residence in a central city, race, and WIN registration status, tend to be far more important among families with relatively low earnings. As earnings increase, the predicted level of work-related expenses (R) increases rapidly; in most division models, this increase in the expense level outweights differentials in the probability of incurring the expense (P). The net result is relatively small differences in predicted expenses (P x R), depending on characteristics other than earnings. Families with relatively high gross monthly earnings ($500) have an almost certain chance of incurring some expense, regardless of other family characteristics.

Section III

Uses In Microsimulations

Econometric models for child care and work-related expenses have two related purposes in microsimulations. First, in estimating the number of families who would be categorically eligible for an AFDC assistance program, the models provide reasonable estimates of disregardable income for working families with different family and earnings characteristics. This, in turn, enables better estimates of countable income, family eligibility, and point-in-time aggregate (state) program participation rates.

Second, since child care and work-related expenses are parameters of the AFDC assistance programs, these models play a crucial role in developing econometric models of individual family participation on AFDC. The goal of this kind of research is to estimate the likelihood that a family with given characteristics will use AFDC assistance to supplement monthly earnings. The fact that employment expenses can be incurred and yet spendable monthly earnings will not decrease is a clear incentive for AFDC participation. Better jobs which involve higher work costs can be accepted; better child care can be purchased. It is also clear that the impact of changes in the disregard structure of AFDC can be better measured if the structure itself is modeled adequately and is integrated into the decision making process on a family by family basis.

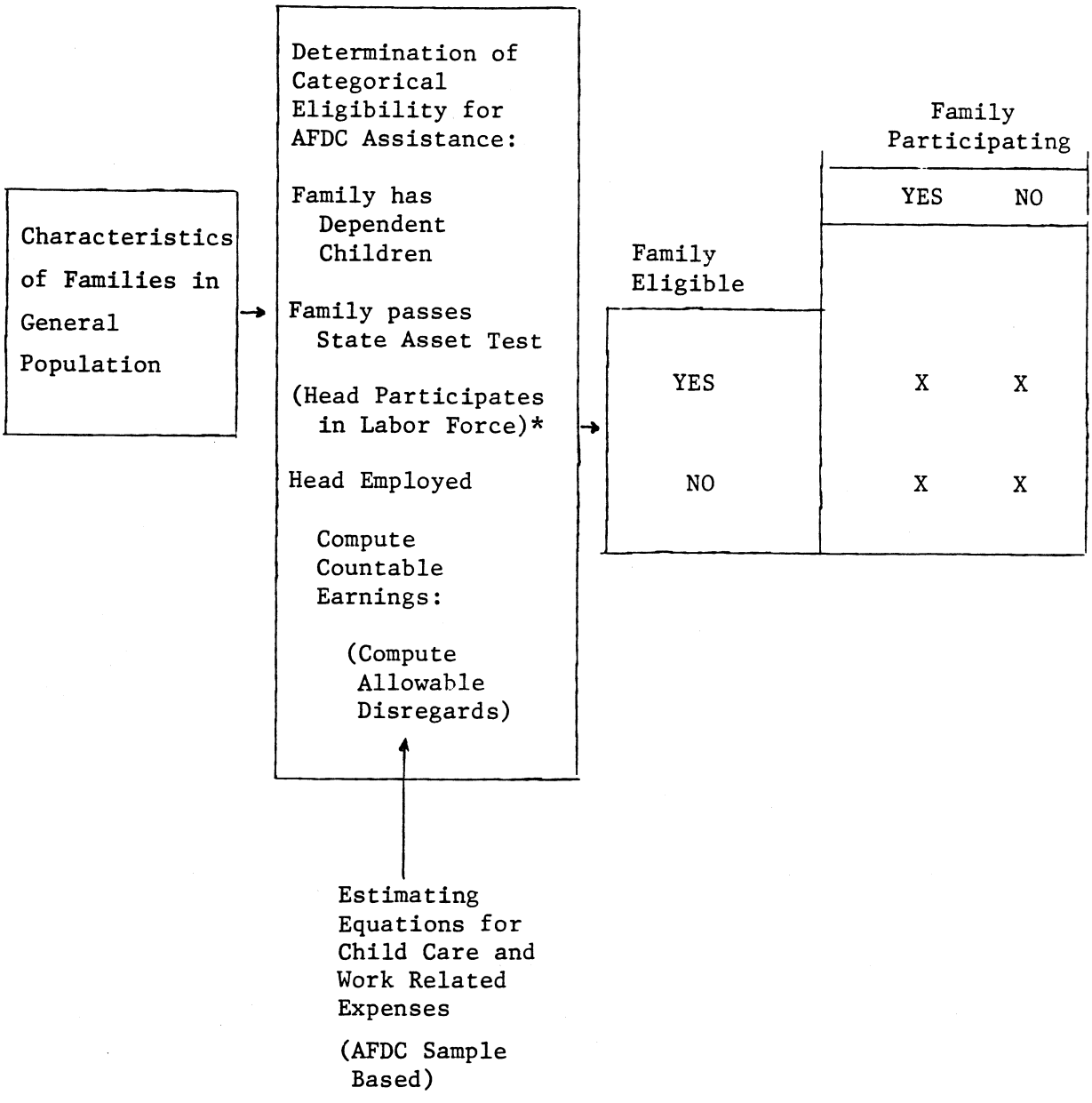
Figure 2 illustrates the use of the child care and work-related expense models in point-in-time estimation of family eligibility for AFDC. Family eligibility is conditioned on a set of AFDC program criteria, including definitions of the filing unit and limits on the value of family property (assets) when applying for benefits. Estimates of family countable income depend on the gross earnings of family members included in a potential assistance group, after allowable disregards for $30 + 1/3 and child care and work related expenses. The characteristics of working families drawn from a general micro-data survey determine the amount of child care and work-related expenses entering the disregard formula:

a) work-related expenses are estimated on the basis of gross monthly earnings, along with other family characteristics; work-related expenses are then disregarded from gross earnings.

b) estimated work-related expenses are then used to derive net monthly earnings, gross earnings - estimated work-related expenses. Net earnings then enter into the estimate of child care expenses, along with other family characteristics; child care expenses are then disregarded from gross monthly earnings.

Point-in-time estimates of participation rates are then estimated as the ratio of families actually participating on a particular AFDC state program to families categorically eligible for assistance. This static methodology assumes that families will not alter their characteristics to "become" eligible, nor will they alter their characteristics once they begin to receive AFDC benefits. The role that a model of family participation rates, determined on a family by family basis, plays in

Figure 2: Eligibility and Participation Determination



*AFDC-UF.

estimating the rate at which individual families will participate is crucial in this regard.

The Data Analysis Laboratory at SWRI has used the expense models estimated in this study to generate point-in-time estimates of family eligibility for one AFDC program, AFDC Basic, for April, 1976.* The second phase of the research goal, econometric models of individual family participation is just underway.

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*Lynn B. Ware, "Eligible Families and Participation Rates: AFDC-Basic -- April, 1976," Data Analysis Laboratory, Social Welfare Research Institute, Boston College, February, 1979.

APPENDIX A

Distribution of Sample Records, By Census Division and State

Census Division/State	Total	Unusable*	Not Working	Working**
Division 1: New England	2064	176	1580	308
(11) Maine	845	54	586	205
(12) New Hampshire	60	10	45	5
(13) Vermont	34	1	32	1
(14) Massachusetts	850	86	685	79
(15) Rhode Island	85	11	72	2
(16) Connecticut	190	14	160	16
Division 2: Mid Atlantic	4171	410	3395	366
(21) New York	1891	192	1580	119
(22) New Jersey	1372	115	1083	174
(23) Pennsylvania	908	103	732	73
Division 3: East North Central	4257	430	3463	364
(31) Ohio	982	81	884	17
(32) Indiana	836	87	610	139
(33) Illinois	1139	101	945	93
(34) Michigan	1031	119	829	83
(35) Wisconsin	269	42	195	32
Division 4: West North Central	4355	475	2987	893
(41) Minnesota	929	83	648	198
(42) Iowa	841	93	592	156
(43) Missouri	840	124	523	193
(44) North Dakota	750	54	511	185
(45) South Dakota	107	13	70	24
(46) Nebraska	72	11	50	11
(47) Kansas	816	97	593	126

APPENDIX A, CONT.

Distribution of Sample Records, By Census Division and State

Census Division/State	Total	Unusable*	Not Working	Working**
Division 5: South Atlantic	5543	938	4072	533
(51) Delaware	50	6	40	4
(52) Maryland	294	53	216	25
(53) District of Columbia	144	21	102	21
(54) Virginia	870	125	630	115
(55) West Virginia	838	70	731	37
(56) North Carolina	802	217	566	19
(57) South Carolina	845	134	638	73
(58) Georgia	835	193	545	97
(59) Florida	865	119	604	142
Division 6: East South Central	2874	410	2096	368
(61) Kentucky	857	56	714	87
(62) Tennessee	880	156	645	79
(63) Alabama	252	44	182	26
(64) Mississippi	885	154	555	176
Division 7: West South Central	2427	263	1917	247
(71) Arkansas	513	51	380	82
(72) Louisiana	909	113	725	71
(73) Oklahoma	141	29	104	8
(74) Texas	864	70	708	86

APPENDIX A, CONT.

Distribution of Sample Records, By Census Division and State

Census Division/State	Total	Unusable*	Not Working	Working**
Division 8: Mountain	2176	288	2768	120
(81) Montana	94	16	72	6
(82) Idaho	58	2	46	10
(83) Wyoming	28	6	21	1
(84) Colorado	873	132	709	32
(85) New Mexico	104	11	87	6
(86) Arizona	852	109	700	43
(87) Utah	155	12	122	21
(88) Nevada	12	0	11	1
Division 9: Pacific	2384	216	2939	229
(91) Washington	478	86	388	4
(92) Oregon	367	21	304	42
(93) California	1427	104	1159	164
(94) Alaska	39	1	30	8
(95) Hawaii	73	4	58	11
United States	31063	4418	23217	3428

Source: 1975 AFDC Characteristics Study; CPS state code in parens.

*An entire family record was "unusable" for analysis in cases where any of the following were true: (a) the assistance payment was greater than $999; (b) employment expenses and child care expenses were not reported separately; (c) the residence was not one of the fifty states or the District of Columbia; or (d) the payee was not the parent of the youngest child in the AFDC assistance group.

**An entire family is included as "working" if all of the following were true: (a) the payee was currently a part-time or full-time worker; (b) the payee had earned income; and (c) the payee had separate expense data for child care and work-related expenses.

Division (1)
New England

11 Maine
12 New Hampshire
13 Vermont
14 Massachusetts
15 Rhode Island
16 Connecticut

Division (2)
Middle Atlantic

21 New York
22 New Jersey
23 Pennsylvania

Division (3)
East North Central

31 Ohio
32 Indiana
33 Illinois
34 Michigan
35 Wisconsin

Division (4)
West North Central

41 Minnesota
42 Iowa
43 Missouri
44 North Dakota
45 South Dakota
46 Nebraska
47 Kansas

Division (5)
South Atlantic

51 Delaware
52 Maryland
53 District of Columbia
54 Virginia
55 West Virginia

Division (5) (Cont.)
South Atlantic

56 North Carolina
57 South Carolina
58 Georgia
59 Florida

Division (6)
East South Central

61 Kentucky
62 Tennessee
63 Alabama
64 Mississippi

Division (7)
West South Central

71 Arkansas
72 Louisiana
73 Oklahoma
74 Texas

Division (8)
Mountain

81 Montana
82 Idaho
83 Wyoming
84 Colorado
85 New Mexico
86 Arizona
87 Utah
88 Nevada

Division (9)
Pacific

91 Washington
92 Oregon
93 California
94 Alaska
95 Hawaii