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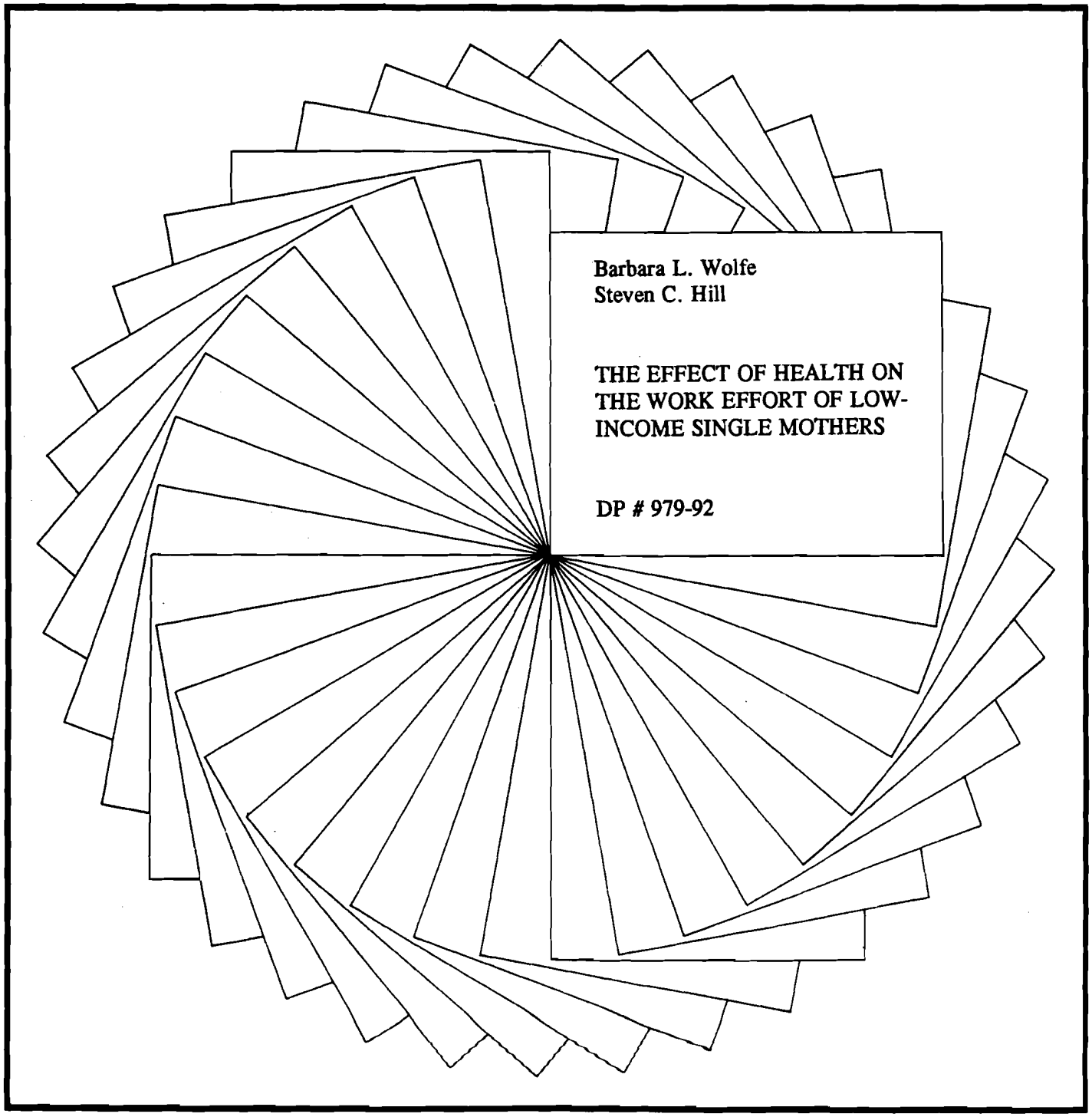

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The Effect of Health on the Work Effort of Low-Income Single Mothers

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Abstract

The authors investigate several ways in which health influences a single mother's decision whether or not to work. These include the direct effect of a woman's own health on her work effort and on her potential earnings, the impact of the health of her children on her hours available to work, and the impact of health on the value of health insurance and Medicaid which are associated with work and AFDC participation, respectively. Using data from the Survey of Income and Program Participation, they find that all of these health factors are important. Using their analysis, they simulate the impact of policies designed to foster labor force participation and/or to increase the income of single-mother families. They find that policies such as wage subsidies, child care subsidies, and increases in AFDC benefits are unlikely to increase the labor force participation of single mothers in poor health or with disabled children. These mothers face limitations on the number of hours they can work and the kinds of work they can perform that would prohibit them from earning enough to stay out of poverty. At the same time, extending health insurance coverage to all children of single mothers without respect to the mothers' AFDC status would induce a large percentage of these mothers to seek and accept employment, as would a pay-or-play insurance plan that covered all workers (and their dependents) who work fifteen or more hours a week.

The Effect of Health on the Work Effort of Low-Income Single Mothers

I. INTRODUCTION

The role of welfare (Aid to Families with Dependent Children or AFDC) on the paid labor force effort of women eligible or potentially eligible for welfare has been one of the most researched topics among labor economists in the last two decades. (See Moffitt [1992] for a recent review of this literature.) Recent studies have gone beyond AFDC to examine the role of other welfare programs such as Food Stamps and Medicaid on employment choice. In this paper, we explore the impact of a different type of factor--that of health--on the labor market choice of women eligible or potentially eligible for AFDC, Food Stamps, and/or Medicaid. We highlight the influence of health in several ways--one, the direct effect of a woman's own health on her work effort; two, the influence of her health on her potential earnings (her earnings capacity), were she to work at her capacity; three, the impact of her health on the value she places on health insurance; and four, the impact the health of her child(ren) has on her available hours to work as well as on the value she places on health insurance.

We begin with a review of the literature that focuses on the role of health in prior work. We then describe our labor supply model, which builds upon existing literature, and our data set. Next, we present simple estimates of the determinants of single mothers' labor force participation, from a probit analysis that does not take into account the health of the mother. Then, in the following section, which is the heart of this paper, we present similar estimates from a model modified to take health into account in the ways mentioned above. In the final sections, we simulate the impact that different policies and health insurance programs would have on the employment rates of single mothers, summarize our main results, and state some policy implications.

II. LITERATURE REVIEW

Several studies have examined the effects of the AFDC program on single mothers' employment status and hours of employment. In his review of these studies, Moffitt (1992) reports "the available research unequivocally shows that the AFDC program generates nontrivial work disincentives," but the magnitude of the effect is uncertain. Food Stamps has also been found to decrease labor force effort (Fraker and Moffitt, 1988). However, none of these studies contain a complete specification of the role of health.[1] Some studies of employment status (Garfinkel and Orr, 1974), hours of employment (Moffitt, 1983 and 1986) and full vs. part-time vs. no employment (Levy, 1979; Fraker and Moffitt, 1988) ignore health altogether. Of the studies that do take health into account, four (Saks, 1975; Williams, 1975; Masters and Garfinkel, 1977; Hausman, 1981) use health status as reported in the context of employment restrictions, for example, "Does health limit the amount or kind of work you can do?" Unfortunately, responses to this type of question may be endogenous to labor force participation (Wolfe, 1984) and may therefore bias the results. Nevertheless, these studies find that disability decreases labor force participation. In another study that considers health status, Barr and Hall (1981) use indicators of poor or good health and find that welfare dependency, measured as benefits divided by earnings, is substantially higher for single mothers in poor health.

Three studies consider the role of health insofar as they estimate the effect of Medicaid benefits on the employment status of single mothers. Blank (1989) measures the Medicaid insurance value as the state average insurance value for a mother based on her disability status and three children. She also takes into account whether or not the mother reports restricted activity days; whether the mother's health limits vigorous activity; and the mean health status of the mother's household on a scale of 1 (excellent) to 4 (poor). She finds that lower health status of the mother and the rest of the household reduces hours of work. It should be noted, however, that Blank includes the

Medicaid insurance value only in her AFDC participation equation and not in her hours of employment equation. In the second study, Winkler (1991) constructs three variations on the insurance value of Medicaid, but she does not include health status in the insurance values or as a separate explanatory variable. She finds that, in general, Medicaid does significantly reduce employment, but the effect on hours of employment is insignificant. In the third study, Moffitt and Wolfe (1992) construct a heterogeneity index of the values of Medicaid and private health insurance; these values are specifically tied to the health status and other characteristics of each family. They also include an indicator for whether the mother is in poor or fair health. They find that both the value of Medicaid and low health status significantly decrease the probability of employment, while the probability of being offered insurance times the value of private insurance increases it.

Other work has emphasized the importance of the health of children on the mother's employment status. Salkever (1982) finds that single mothers of children with disabilities are more likely to work, but this result is neither significant nor even consistent among white mothers. Mauldon (1992) pools single and married mothers in her estimations and finds that disabled children generally reduce hours of work, although the magnitude depends upon the children's ages. Neither Salkever nor Mauldon, however, include welfare programs in their models. In those studies that do address welfare programs, Blank's (1989) indirectly includes children's health through her variable for the mean health status of the household. Moffitt and Wolfe (1992) use the disability status of children to calculate their heterogeneity indices of private insurance and Medicaid. However, these two studies do not take into account the extra time demands on a parent that result from having a child with a disability.

Finally, even though many of the above studies control for health status in some fashion, and a limited number (Blank, 1989; Fraker and Moffitt, 1988; Garfinkel and Orr, 1974; Levy, 1979; Masters and Garfinkel, 1977; Moffitt, 1983; Moffitt and Wolfe, 1992; Williams, 1975) report the

results of policy simulations, none have considered the differential impacts of their simulations on families by health status.

III. MODEL

The framework most commonly used in the studies reviewed above is the economists' standard static labor supply model. In this model, means-tested benefits provide incentives to decrease work effort; higher potential earnings provide incentives to increase work effort. The underlying model used is one of utility maximization under constraints. In this case, posit a utility function, $U(Y,H,P)$, where Y is disposable income, H is hours of work, and P is an indicator for program participation. Utility is increasing in the first argument and decreasing in the second and third arguments. P is included to pick up the idea of stigma--and it provides a reason why a single mother who is eligible for welfare might not choose to accept it. The budget constraint is $Y = WH + N + PB$, where W is the hourly wage rate, N is the nonwage income of the woman and her family, and B is the maximum benefit the woman would receive if on welfare. Health enters the model in several ways, most directly via a time constraint. Here $H = H_t - (H_d + H_c)$, where H or hours available to work are constrained by health in two ways: (1) the time requirements of one's own health (H_d) and (2) the time requirements created by having an ill child (H_c). Second, health influences the potential wage rate W; that is $W = W(D,E,X)$, where D is disability or health, E is education and human capital more generally, and X is labor market experience. W is decreasing in the first argument and increasing in the second and third. Lastly, health also influences the value of Medicaid benefits, or M, and the value of private insurance, I, where $M = M(D,C,CD)$ and $I = I(D,C,CD)$. In these equations C is the number of children and CD is the health (disability) of one's children. M and I are increasing in all of these arguments.

Since the model is complex and full of nonlinearities, we estimate a reduced-form model rather than a structural model. Much of the literature uses this approach, hence we are able to compare our results to those of others. The model takes the following form:

$$E^* = B_0 + B_1 WH + B_2 B + B_3 M + B_4 I + B_5 Z + u$$

$$E = 1 \text{ if } E^* \geq 0;$$

$$E = 0 \text{ otherwise,}$$

where $E = 1$ if employed and 0 if not; WH is earnings capacity; B is maximum AFDC benefits; M is the family-specific value for Medicaid, a benefit tied to the receipt of welfare;[2] I is a family-specific value for private insurance, which is a combined estimate of the expected dollar value and the expected probability of being offered private coverage if the woman was to be employed; and Z is a vector of a variety of socioeconomic factors, including own health and child's health. The error term is u, which is assumed to be normally distributed with zero mean and unit variance. The signs of the coefficients of WH and I are expected to be positive while those of B and M are expected to be negative. The variables included in the Z vector are education, age, race, number of children in the family, other income of the family, region of the country and the local unemployment rate (to capture aspects of the labor market facing the woman), and the health of the woman, as well as the presence of a disabled child. The specific definitions of the variables, including versions with and without health, are found in Table 1.

IV. DATA

The data employed in this exploration are from the 1984 Panel of the Survey of Income and Program Participation (SIPP). The SIPP panel was initiated in October 1983 by the Bureau of the Census. It is a nationally representative sample of the U.S. noninstitutionalized population;

TABLE 1
Definitions and Mean Values of Variables Affecting the Likelihood of Employment among Single Mothers
(N=1647)

Variable	Description	Mean Value	Standard Deviation
Health Measures			
ADLs	Number of activities of daily living the mother has difficulty performing. The eight activities are: reading with glasses or contact lenses, hearing normal-volumed conversation, having one's speech understood, walking a quarter mile, lifting ten pounds, climbing a flight of stairs, moving without a walking aid, and getting around outside one's home.	.35	.89
Disabled Child	Any child who has either a long-lasting physical condition that limits walking, running, or playing, or a long-lasting mental or emotional problem that limits learning or schoolwork.	.09	.29
Medicaid	Expected annual value (in thousands of 1984 dollars) of Medicaid benefits to the family. (For the calculation of this heterogeneity index, see Moffitt and Wolfe, 1992.)	1.96	4.80
Private Insurance	Expected annual value (in thousands of 1984 dollars) of private insurance, incorporating the probability of receiving single, dependent, or no coverage if employed. (See Moffitt and Wolfe, 1992.)	.57	1.47
EC-Health Adjusted	Monthly income (in thousands of 1984 dollars) if one worked at one's earnings capacity hours (40 hours/week, adjusted for own health conditions), less child care costs ($1.25/hour/child) (see Wolfe and Hill, 1992).	.59	.37
EC-No Health	Monthly income (in thousands of 1984 dollars) if one worked at one's earnings capacity hours (40 hours/week, no adjustment for health conditions), less child care costs ($1.25/hour/child).	.68	.33
Mother's Characteristics			
Education	Years of schooling	11.9	2.58
Age		32.8	9.07
Age^2		1156	648
Hispanic	Indicator	.09	.29
Black	Indicator	.34	.47

(table continues)

TABLE 1 (continued)

Variable	Description	Mean Value	Standard Deviation
Family Variables			
# Kids < 6	Number of children under age 6	.58	.73
# Kids 6-17	Number of children age 6 to 17	1.19	1.10
Mother's Other Y	Mother's monthly unearned income (in thousands of 1984 dollars), less public transfers, averaged over four months, where negative values are excluded.	.46	.98
Other Family Y	Total family income (in thousands of 1984 dollars), less mother's total income, averaged over four months, where negative values are excluded.	.18	.39
Region			
Midwest	Indicator	.26	.44
South	Indicator	.36	.48
West	Indicator	.18	.39
Unemployment Rate	MSA rates for MSA residents, and state rates otherwise, averaged over four months.	7.43	2.14
AFDC Max Benefit	Maximum monthly benefit (in thousands of 1984 dollars) available based on family size and state of residence (U.S. House of Representatives, 1984).	.33	.17

Source: Survey of Income and Program Participation, 1984 Panel, Wave 3.

approximately twenty thousand households were interviewed. The interviews took place once every four months to collect detailed information on participation in transfer programs. These data are unique in that they contain detailed health information on the respondents, including, in particular, a health measure that captures aspects of work capacity; health information, though limited, on the children of the respondent; and medical care utilization and insurance coverage, along with state identifiers, program participation information, and detailed work history. The health information on respondents, which is taken from the supplementary questions in the third wave of 1984, is used to create an index of health based on Activities of Daily Living (ADLs). These ADLs encompass instrumental ADLs, and the questions include ability to read with corrective lenses, the ability to hear normal-volumed conversation, the ability to speak so that one's speech is understood, the ability to walk a quarter of a mile, and other similar questions. These ADLs seem likely to be better measures of the ability to participate in the paid labor force and of labor force productivity than simpler, more readily available measures such as self-ratings of poor, fair, good, very good, or excellent health. The child's health status measure is a simple indicator for whether or not the child is disabled. The question underlying this indicator is whether the child has a long-lasting physical condition that limits physical activities or a mental condition that limits learning or schoolwork. Both of these are likely to place additional demands in terms of time and support on the parents of the child.

In addition to data found directly on the SIPP, we use other created variables which we have merged onto our data set of single mothers. These include earnings capacity, maximum state AFDC benefits, and indices of the value of Medicaid and private insurance.

Turning first to earnings capacity, let us briefly describe the estimation lying behind it. Earnings capacity is an attempt to measure the maximum that a person could earn were they to work the maximum hours they are capable of working--up to forty hours per week. Our estimates stress the role of health in influencing earnings capacity. Both of the health measures (ADLs and a dummy

variable for poor or fair health) are used in our estimates of the potential earnings capacity of these single mothers were they to work. This measure, termed "EC-health adjusted," is the maximum monthly income a woman in the sample is expected to earn if she were to work as many hours (up to forty per week) as possible, adjusted only for her own health. The actual predicted earnings are then adjusted for child care costs using a low figure of $1.25 per hour. (This is based on the reported costs of "acceptable" child care reported in the Institute for American Values [1989].) The EC-health adjusted value is the result of a two-stage prediction in which hours are predicted first and wages are predicted second. The estimates are based on a tobit two-stage model which is similar to a probit two-stage model in which the first equation models whether the woman works at all, the second equation estimates hours of work, and the third estimates wages. In estimating our tobit model, we include a selectivity adjustment in the wage equation that controls for the decision to work at all in the labor force. (See Wolfe and Hill [1992] for more on the estimation of earnings capacity.) Health plays an important role in the earnings capacity estimation: in the hours-worked equation (a log-hours specification), the coefficient on poor-fair health is -0.9, while the coefficient on ADLs is -0.67; both are significant at the 1 percent level. The presence of a disabled child also reduces hours worked: the coefficient is -0.43, which is significant at the 10 percent level. The health variables are not statistically significant in the wage equation. (Results from the hours-worked and wage equations are reported in Wolfe and Hill [1992].)

In order to demonstrate the effects of ignoring health, we also calculated earnings capacity without any health adjustments. We estimated the two-stage tobit model as above, but we did not include any health measures as explanatory variables. Predicted wages and forty-hour weeks are used to create "EC-No Health," which is also adjusted for child care costs.

The utilization measures (inpatient and outpatient use of medical care) are used to derive an estimate of the value of insurance to the individual. This has been done for both public insurance

(Medicaid) as well as private insurance. (See Wolfe and Moffitt [1991] for more detail.) The method is designed to obtain a family-specific value for both Medicaid and private insurance. It is based on an estimate of expected medical care utilization (inpatient and ambulatory care), which depends in part on insurance coverage. These expected utilization values are then converted into the expected value of coverage by linking utilization to insurance-covered charges. More specifically, the first stage involves a multinomial logit estimate of insurance coverage to avoid endogeneity problems; the second stage involves two utilization equations which use predicted probabilities of insurance coverage, along with personal characteristics including health and state health expenditure variables, as right-hand-side variables. The third stage converts utilization into expenditures (total medical charges minus out-of-pocket payments), where utilization splines are regressed on expenditures, and variables measuring average expenditures in the geographical region are also included. The expenditure predictions are then combined across family members to get a family-specific value for Medicaid as well as for private insurance. In the latter case, an additional equation is run which predicts the probability that a woman will be offered family or private coverage if employed. The appropriate matched probabilities are used in conjunction with the mother's predicted value of private coverage and with the children's predicted values, to get an expected value of private coverage for the family.[3]

The state identifier makes it possible to match the maximum AFDC monthly benefit in the state of residence to the respondent. In fact, the state maximums by family size are matched to the respondent based on the respondent's family size. The state link also makes it possible to link the mean expenditures on medical care in the state as well as certain other public assistance parameters to the respondent and the respondent's evaluation of Medicaid (see above). The Metropolitan Statistical Area identifier along with the state identifier is used to match the appropriate unemployment rate to the individual.

As mentioned earlier, a description of the variables used in the analysis and their means and standard deviations are presented in Table 1. They are for our subsample of 1647 single mothers. Of the full 1702 single mothers in Wave 3 of the 1984 SIPP, we eliminated those with expected insurance values greater than $100,000 (outliers) and those with inconsistencies in their labor force information.

V. BASIC ESTIMATES OF LABOR FORCE PARTICIPATION

The estimation of labor force participation for single mothers uses a probit, maximum likelihood estimation technique. This is similar to that used in other research in the area. The results (without health measures) in column 1 of Table 2 contain few surprises. Women with more education appear more likely to be in the paid labor force; older women are more likely to work--the estimated maximum is at 32 years of age; women in areas of higher unemployment are less likely to be working (presumably because they have fewer opportunities to find employment); and women with additional income from other sources are less likely to work (presumably an income effect). In terms of the variable that has been the focus of interest in previous studies of this type of research, we find that women living in states with higher AFDC benefits are less likely to work (the influence is substantial and highly significant). The earnings capacity variable is significant at the 1 percent level with the expected positive sign: women who have the capacity to earn more are more likely to work. There are perhaps two surprising results. The coefficients on both variables for number of children are positive rather than negative. However, the costs of child care are already incorporated in the earnings capacity variable, suggesting that the "need" effect--that is, the need to support these children--dominates. Greater other family income, that is, income other than the mother's, is associated with a higher probability of working rather than a lower probability. This variable may be a proxy for other family characteristics, such as the presence of other adults, norms toward work, and

TABLE 2
Probit Estimates of the Effects of Selected Variables on the Likelihood that a Single Mother Will Be Employed
(N=1647)

Independent Variable	Model 1 ("No Health")	Model 2	Model 3	Model 4 ("Full Health")
Health Measures				
ADLs			-0.079	-0.12*
			(0.058)	(0.07)
Disabled Child			-0.14	-0.60***
			(0.13)	(0.15)
Medicaid				-1.11***
				(0.09)
Private Insurance				2.46***
				(0.19)
EC-Health Adjusted		1.74***	1.55***	1.45***
		(0.13)	(0.18)	(0.19)
EC-No Health	2.18***			
	(0.22)			
Mother's Characteristics				
Education	0.061***	0.077***	0.080***	0.008
	(0.017)	(0.017)	(0.017)	(0.018)
Age	0.12***	0.17***	0.18***	0.15***
	(0.03)	(0.03)	(0.03)	(0.03)
Age^2	-0.0019***	-0.0021***	-0.0022***	-0.0021***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Hispanic	-0.36***	-0.37***	-0.37***	-0.31**
	(0.13)	(0.13)	(0.13)	(0.14)
Black	-0.43***	-0.40***	-0.40***	-0.67***
	(0.08)	(0.08)	(0.08)	(0.09)
Family Variables				
# Kids <6	0.14*	-0.044	-0.077	0.39***
	(0.08)	(0.070)	(0.074)	(0.09)
# Kids 6-17	0.14**	0.018	0.002	0.42***
	(0.06)	(0.050)	(0.052)	(0.07)

(table continues)

TABLE 2 (continued)

Independent Variable	Model 1 ("No Health")	Model 2	Model 3	Model 4 ("Full Health")
Mother's Other Y	-0.38***	-0.51***	-0.50***	-0.63***
	(0.10)	(0.11)	(0.11)	(0.12)
Other Family Y	0.085**	0.054	0.054	0.11**
	(0.038)	(0.038)	(0.038)	(0.04)
Region				
Midwest	-0.02	-0.02	-0.02	-0.14
	(0.11)	(0.11)	(0.11)	(0.12)
South	0.33***	0.39***	0.38***	0.32**
	(0.12)	(0.12)	(0.12)	(0.13)
West	0.23**	0.27**	0.27**	0.15
	(0.12)	(0.12)	(0.12)	(0.13)
Unemployment Rate	-0.021	-0.023	-0.024	-0.011
	(0.017)	(0.017)	(0.017)	(0.018)
AFDC Max Benefit	-1.22***	-1.01***	-0.99***	-0.97***
	(0.33)	(0.33)	(0.33)	(0.36)
Intercept	-3.42***	-4.03***	-4.11***	-2.44***
	(0.55)	(0.55)	(0.55)	(0.59)
Log-likelihood	-863.5	-826.6	-824.9	-710.7
Correct predictions				
Employed (of 967)	798	782	779	843
Total (of 1647)	1242	1255	1249	1340

Source: Authors' computations based on the Survey of Income and Program Participation, 1984 Panel, Wave 3.
Note: Standard error in parentheses.

* Significant at the 10 percent level.
** Significant at the 5 percent level.
*** Significant at the 1 percent level.

so on. The model correctly predicts the choice of 1242 of the sample of 1647, including 798 who are employed.

VI. ESTIMATES OF LABOR FORCE PARTICIPATION USING HEALTH

We present three specifications that include the role of health: (1) one that uses health-adjusted earnings capacity, (2) one that uses both a measure of health based on ADLs and an indicator for children's disability status, along with health-adjusted earnings capacity, and (3) one that adds the values of Medicaid and private insurance to these three variables. We compare the coefficients of the health variables and the predictive accuracy of the specifications.

In the second column of Table 2 we estimate the employment probit using earnings capacity adjusted for the effects of health on hours and wages. Earnings capacity is again statistically significant at the 1 percent level; the coefficient is 1.74. The coefficients on number of children become insignificant, and the sign of the coefficient on young children changes to negative. The coefficient on the AFDC benefits remains significant at the 1 percent level. The other change is the lost significance of other family income, although the positive sign and magnitude are maintained. This specification makes better overall predictions than that in the first column, 1255 out of 1647, but the accuracy for the employed drops.

In the third column, we include the role of health in influencing earnings capacity, the mother's health, and that of the children. Interestingly, with earnings capacity adjusted for health in the model, the health variables themselves do not have statistical significance.[4] They do, however, have the expected signs. The coefficient on ADLs is -0.079, and that on the presence of a disabled child is -0.14. The coefficient on earnings capacity, 1.55, is very similar to that in the second column. The statistical fit, while marginally better in terms of log likelihood, is worse than the

specification in the second column--1249 of the sample are correctly predicted, including 779 employees.

In the last column, the family-specific values of Medicaid and private insurance benefits are added. Thus this specification includes all of four ways in which health was expected to influence labor market behavior: the direct effect, the effect through earnings capacity, the influence on the value (and probability) of insurance, and the effect of having a disabled child. The results are fully consistent with most expectations: (1) The direct effect of own health (ADLs) is to reduce labor force participation (the variable is negative and statistically significant at the 10 percent level). (2) The influence of having a disabled child is also negative. The variable is statistically significant at the 1 percent level. (3) The earnings capacity measure has the expected positive sign and is statistically significant at the 1 percent level. Since poor health and disabilities reduce earnings capacity, these results suggest that health plays an important role through its influence on potential earnings. (4) Both insurance values are significant and have the expected signs: a higher value on Medicaid appears to reduce labor force participation while a greater private insurance value increases the probability that a woman will work. Both variables are significant at the 1 percent level. The state AFDC benefits maintain their negative and significant association with employment; the presence of children within both age groups is positively associated with the employment of single mothers--consistent with the specification in the first column that included none of the health or insurance variables. (Our earnings capacity measures adjust for child care expenditures that are required in order for women to work--hours the child is not in school including vacations and after school that are included in the mother's capacity hours.) The fit of this model is clearly the best of the set estimated--1340 are correctly predicted, including 779 employees.

A comparison of these estimates highlights the important role that health plays in determining the employment status of single mothers. In column 4, each of the five health or health-related

variables is significantly associated with a single mother's employment status. These include the direct effect of own health (as measured by an index of activities of daily living); the effect through reducing the hours that a woman can work--and hence reducing her maximum earnings capacity; the influence via increasing the value of health insurance--especially Medicaid; and finally, the effect that having a disabled child has on a woman's work choices. These are modeled via the direct effect on her employment, the reduction in available hours that reduces her earnings capacity, and finally the role in increasing the value of insurance, particularly Medicaid, in influencing a mother's employment choice.

VII. INCOME-BASED POLICY SIMULATIONS

The importance of the coefficients in Table 2 is difficult to interpret since they are probit coefficients, so we calculate a number of marginal effects and present some policy simulations. These simulations show the differential effects of policies on different populations.[5]

First we calculate the marginal effects of the key variables on employment, given their coefficients in models 1 and 4 in Table 2. For simplicity, we call these models the "no health" and "full health" models. Evaluating the change in probability of employment with respect to earnings capacity at the average values of the independent variables among healthy single mothers, we find that the $\partial P/\partial EC$-*No Health* = 0.84 for the no-health model, but $\partial P/\partial EC$-*Health Adjusted* = 0.40 for the full-health model. Thus, a $100 increase in monthly earnings capacity is expected to increase the employment rate by 8.0 percent when health is ignored, but the increase is expected to be but 4.0 percent when health is included in the model, even for healthy mothers. Similarly, $\partial P/\partial AFDC$ *Max Benefit* is -0.46 in the no-health model and -0.27 in the full-health model, and so a $100 increase in monthly benefits would decrease the employment rate by 4.6 and 2.7 percent in these respective models. These differences are primarily due to the larger coefficients on both earnings capacity and

AFDC maximum benefits in the no-health model. They suggest that the elasticities of response to welfare generosity and wages are overstated in models that do not adjust for health; the elasticities calculated from specifications omitting health are likely to be incorporating other aspects: the net-of-health responses are far smaller. This degree of sensitivity to specification adds emphasis to the need for careful modeling, complete data, and suitable skepticism concerning simulations.

We perform a set of simulations of the impact on employment status of efforts to increase the income of single mothers.[6] In the first, we provide a 50 percent wage subsidy, phased out at an hourly wage of $7.00. In the second, each mother receives a child care subsidy of $1.25 per hour per child under age 6, and for children 6 to 14 subsidized after-school care at the same hourly rate, unless an older child is in the family. The third policy raises state AFDC maximum benefits by 50 percent, phased out at the poverty line. The results of these simulations are reported in Table 3 and include those for the no-health model and the full-health model.

As our discussion of the marginal effects of earnings capacity and AFDC maximum benefits in the two models foreshadowed, predictions from the two models differ not only by the health status of single mothers but also in absolute effects. This is likely to reflect several factors related to the inclusion of health in the labor force participation estimation: women with poor health tend to also have lower educations, be older, be nonwhite, and to come from families with low incomes; or, in other words, they tend to be women with low earnings capacities (Wolfe and Hill, 1992). Not including health in estimations of earnings capacity leads to the perception that these women would work if only they could earn more. It omits the role of health in limiting the potential hours they could work and hence overstates the potential elasticity of response to an increase in wages.

The wage and child care subsidies have similar aggregate effects and similar effects for each demographic group. Again they differ substantially for the simulations based on the estimates with and without health. For the child care subsidy, we expect the response to be smaller for those with

TABLE 3
Simulated Effects of Proposed Policies: Percentage-Point Change in Employment Rates of Single Mothers

Population Group	Current Percentage Employed	Proposed Policies: 50% Wage Subsidy, No-Health Model	Proposed Policies: 50% Wage Subsidy, Full-Health Model	Proposed Policies: Child Care Subsidy, No-Health Model	Proposed Policies: Child Care Subsidy, Full-Health Model	Proposed Policies: 50% AFDC Benefit Increase, No-Health Model	Proposed Policies: 50% AFDC Benefit Increase, Full-Health Model
Single mothers	58.8	28.2	8.7	23.8	7.9	-8.0	-4.7
Health status							
Healthy	65.1	25.0	9.8	23.7	9.4	-7.7	-5.1
Health compromised[a]	40.4	37.3	5.7	24.2	3.5	-8.6	-3.7
Disabled child	45.0	28.7	3.2	29.3	3.2	-6.7	-2.1
Race							
White	63.2	26.2	8.1	21.5	7.3	-7.4	-4.4
Nonwhite	51.2	31.5	9.8	27.7	9.0	-9.0	-5.3
Education							
Less than high school	36.3	37.3	13.3	27.8	11.2	-7.1	-5.2
Completed high school	68.1	24.2	6.8	22.2	6.6	-8.3	-4.5
AFDC recipiency							
Non-AFDC recipients	79.2	21.1	4.8	16.5	4.2	-9.0	-3.7
Healthy	84.3	18.8	4.6	16.1	4.3	-8.6	-3.2
Health compromised[a]	60.9	29.1	5.6	17.8	3.7	-10.5	-5.4
AFDC recipients	15.3	43.2	17.1	39.5	15.9	-5.7	-7.0
Healthy	17.1	40.5	22.7	42.7	22.2	-5.6	-9.8
Health compromised[a]	11.8	48.7	5.7	33.1	3.2	-6.0	-1.4

Source: Authors' calculations based on the Survey of Income and Program Participation, 1984 Panel, Wave 3.
[a]Those mothers with difficulty performing one or more ADLs or who report poor or fair health.

health problems--the hours they can work are limited and hence the value of the child care subsidy is smaller to them. This is only taken into account in the estimates with health included. For the AFDC benefit increases, again we expect the simulated responses to the estimates including health to be smaller. In this case the main reason is the inclusion of separate variables for Medicaid and private insurance. Moffitt and Wolfe (1992) find a similar change when including Medicaid in their labor supply estimates: the response to AFDC benefits alone appears smaller with the inclusion of another component of welfare--Medicaid; without the inclusion of Medicaid, AFDC benefits proxy for all welfare benefits, including Medicaid. In all three cases then the primary reason for the smaller response in the simulations based on the estimates including health are due to the improved specification of the more-inclusive estimates. The exception is the responsiveness of healthy AFDC recipients to increases in AFDC benefits, which is higher in the full-health simulation. Those single mothers are less constrained than those with health problems, they work more, and so they might be expected to be more responsive.

Looking at the results of the simulations (Table 3), the contrast among single mothers by health status is pronounced in the wage and child care full-health simulations. Health-compromised single mothers--that is, those who have difficulty with one or more ADLs or who report poor or fair health--are only 60 percent as responsive to the wage subsidy, and 37 percent as responsive to the child care subsidy, as healthy single mothers. Mothers of children with disabilities are even less responsive to these policies. When we look at single-mother families that receive AFDC, the difference in response is even more pronounced. The wage subsidy increases employment of healthy AFDC recipients by 22.7 percentage points, but only an additional 5.7 percent of the health-compromised obtain employment. Similarly, another 22.2 percent of the healthy and 3.2 percent of the health-compromised AFDC mothers would become employed in response to a child care subsidy.

The differences in the effects of raising AFDC benefits on the families of single mothers are

somewhat less pronounced. The full-health model shows that increasing benefits would decrease employment among healthy single mothers by 5.1 percentage points; employment among health-compromised mothers, however, would decrease by less, 3.7 percentage points, while employment among mothers of children with disabilities would decrease the least, by 2.1 percentage points. A 50 percent raise in AFDC benefits would decrease employment among healthy AFDC recipients by 9.8 percentage points, which is roughly seven times the proportion of the health-compromised who would cease employment. This difference reflects the much lower underlying employment of those with health compromises. The difference by education group reflects the initial relative employment rates of those who have and have not completed high school. Among high school graduates, the employment rate is 68.1 percent, but among those who have not graduated, the employment rate is 36.3 percent. Single mothers are less responsive to changes in AFDC benefits than to a wage subsidy.

VIII. SIMULATION OF HEALTH INSURANCE PROGRAMS

One other option afforded by the full-health simulations is an opportunity to simulate the likely influence of several "national health programs" now under discussion on the employment of single mothers.[7] We simulate two sets of policies designed to provide health insurance coverage to children without regard to their families' income--one, "Healthy-Kid," would cover all children to age 19 (see Wolfe [1992] for a fuller discussion of Healthy-Kid); the other would cover all disabled children with the full benefits currently provided under Medicaid. The other simulations are of three variations of the so-called pay-or-play plan. The first version would cover all workers who worked thirty-five or more hours a week as well as their dependents. The plan simulated is based on a 1991 CBO report which provides for a $250 deductible, a 20 percent coinsurance rate, and a maximum

payment per person of $875. Using the CBO material we estimate this as worth 85 percent of the current median policy on average.

The second pay-or-play plan simulated is one that would cover all workers (and their dependents) who worked fifteen or more hours per week. The coverage is the same as that of the plan covering only those who work thirty-five hours per week discussed above. The final plan that is simulated would cover all workers who work fifteen or more hours per week and their dependents, but only for expenses beyond $10,000 per family--a catastrophic coverage plan. All of these are based on discussions in the CBO report of 1991. Underlying all of these simulations is the assumption that these single mothers could obtain jobs for the number of hours per week for which they are able to work, that is, for which they have the capacity to work, based on the earnings capacity-full health estimates. The base from which the simulations are calculated is the coverage of all children born after 1983 (as of 1992).

Results

Overall, of these five policies, the largest increase in the employment of single mothers is simulated to be in response to Healthy-Kid--or the coverage of all children younger than 19 (see Table 4). This coverage is provided without regard to family income or employment status of the mother. Presumably the mechanism of the response is that the provision of coverage to children independent of a mother's participation in AFDC reduces that mother's incentive for AFDC participation. One can see this in the larger simulated increased employment for single mothers who are AFDC recipients compared to those who are not recipients (16.6 compared to 6.4 percentage points). The other mechanism is to cover disabled children--whose presence is likely to decrease the probability that a woman who works will be able to obtain private insurance (see Moffitt and Wolfe, 1992). This freeing of the need of insurance for a disabled child appears likely to substantially increase the probability that single mothers will work (by 22 percentage points). Overall, nearly a 10

TABLE 4

Simulated Effects of Health Insurance Plans: Percentage-Point Change in Employment Rates of Single Mothers

Population Group	Current Percentage Employed	Proposed Plans: Cover All Children through Public Health Policy ("Healthy-Kid")	Proposed Plans: Pay or Play: Cover All Those Working ≥ 35 Hours	Proposed Plans: Pay or Play: Cover All Those Working ≥ 15 Hours	Proposed Plans: Catastrophic Coverage	Proposed Plans: Cover All Children with Disabilities
Single mothers	58.8	9.7	5.8	8.9	0.0	1.0
Health status						
Healthy	65.1	6.8	7.7	7.7	0.1	0.3
Health compromised	40.4	18.2	0.0	12.3	0.0	2.9
Disabled child	45.0	22.2	8.1	14.3	0.0	10.5
Race						
White	63.2	8.9	4.1	6.5	0.1	1.0
Nonwhite	51.2	11.1	8.6	13.1	0.0	0.8
Education						
Less than high school	36.3	16.5	11.4	18.2	1.3	1.4
Completed high school	68.1	6.8	3.4	5.0	0.0	0.8
AFDC recipiency						
Non-AFDC recipients	79.2	6.4	3.1	4.5	0.0	0.5
Healthy	84.3	4.4	3.9	3.9	0.0	0.1
Health compromised	60.9	13.8	0.0	6.6	0.0	2.1
AFDC recipients	15.3	16.6	11.5	18.3	1.0	1.9
Healthy	17.1	12.8	17.3	17.3	1.0	0.8
Health compromised	11.8	24.3	0.0	20.2	1.0	4.0

Source: Authors' calculations based on the Survey of Income and Program Participation.

percentage-point increase in the employment of single mothers is predicted in response to a policy such as Healthy-Kid that would provide coverage for all children.

As one would expect, the "generous" pay-or-play plan--provided to those who work fifteen or more hours--is anticipated to provide a far larger inducement to employment than either that provided only to those who work thirty-five or more hours or that which provides only catastrophic coverage. The employment rate of single mothers would jump nearly 9 percentage points if this policy were enacted. Again, current welfare recipients are more likely to respond than nonrecipients, and those with health problems are more likely to respond than healthy single mothers. Those with little education also are rather responsive--most likely because under current conditions, they are less likely to receive coverage if employed than single mothers with at least a high school degree (Wolfe and Moffitt, 1992).

The picture changes quite a bit for the other two pay-or-play plans. The catastrophic plan gets almost no response in terms of increased employment. The exception is a small increase for single mothers with little education. For the pay-or-play plan limited to full-time workers (thirty-five or more hours), there is a substantial increase overall--nearly 6 percentage points--but no response by single mothers with health compromises. The reason for this is simple--these women do not have the capacity to work thirty-five or more hours; this policy then does not provide any inducement for them to become employed. Healthy AFDC recipients and those with limited schooling are the most likely to respond to a pay-or-play plan for full-time employees. Finally, the plan offering coverage to all children with disabilities (a small percentage) is responded to by those single mothers with a disabled child. The expected increase is more than 10 percentage points. (It is smaller than the expected increase in employment in response to Healthy-Kid for it covers only the disabled children in a family rather than all children.)

IX. CONCLUSION

We have considered four ways in which health affects the employment status of single mothers: one, the direct effect of a woman's own health on her work effort; two, the influence of her health on her potential earnings (her earnings capacity); three, the impact of her health on the value she places on health insurance; and four, the impact the health of her child(ren) has on her available hours to work and the value she places on health insurance. We estimated these effects in reduced-form probit models of employment and found that including all four effects increases the predictive power of the model. We then used these results to simulate the effect on employment status of policies designed to increase the income of single mothers, as well as a variety of plans to provide health insurance coverage independent of AFDC participation. We contrasted these results by the health status of the mothers and that of their children. These income policies included a wage subsidy, a child care subsidy, and an increase in AFDC maximum benefit levels. Our simulations found that single mothers with health problems, and those who have children with disabilities, are less likely to change their employment status in response to such policies than are healthy single mothers. These results suggest that policies designed to encourage employment among single mothers, such as the Family Support Act, which seeks to push more into training and employment, are not likely to succeed for single-mother families that have a family member with a health problem. A number of women have low earnings capacities due to their health; earnings alone will not provide sufficient income to lift them or their families out of poverty.

The simulations on health insurance coverage suggest a large employment response by single mothers to the provision of coverage to all children. Such coverage frees a mother from the incentive to remain on AFDC to ensure health insurance coverage for her children. A substantial response is also estimated for a pay-or-play insurance plan that covers all workers and dependents who work fifteen hours or more a week. A plan that covers only workers who work thirty-five or more hours a

week also has an impact--but leaves those single mothers with any health problems unaffected. Health insurance coverage independent of welfare is a way to reduce AFDC participation and increase the labor supply of single mothers. The subsequent shift of single mothers into the labor force should contribute to the ability to finance such coverage.

Notes

[1]Danziger, Haveman, and Plotnick (1981) critique other aspects of specification and estimation in this literature.

[2]Strictly speaking, Medicaid does not require participation in AFDC. First, many states have a medical indigency provision that allows a family to receive Medicaid, even though its income is too high to receive AFDC benefits. Second, Medicaid benefits are now extended for a limited period of time to those formerly on the rolls who left AFDC to join the work force. Third, as of 1991, for pregnant women and children born prior to 1983, Medicaid coverage is only to depend on family income, regardless of source or family structure. However, as of 1984, the vast majority of single mothers and children who received Medicaid coverage were covered under AFDC. As of 1989, 95 percent of all nondisabled, nonelderly households who received Medicaid benefits were on AFDC (U.S. House of Representatives, 1991, p. 1420).

[3]For children, the procedure used in creating the index is somewhat simpler--a one-stage estimate is used where expenditures (total charges minus out-of-pocket payments) are regressed on the characteristics of the child and the parent.

[4]In an estimate without earnings capacity, but with the health status variables, the coefficient on ADLs is -0.43 and is significant at the 1 percent level.

[5]The focus of this paper on the employment response does not calculate the full effect of the policies on the well-being of these families.

[6]In these simulations we ignore potential equilibrium labor demand changes.

[7]We are limited to those programs that would either reduce or increase the value and/or probability of Medicaid or private coverage, for these are the only ways the plans enter our estimated model.

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