THE RURAL INCOME MAINTENANCE EXPERIMENT

Summary Report by

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The Rural Income Maintenance Experiment was conducted by the Institute for Research on Poverty, University of Wisconsin, for the Office of Economic Opportunity and the Department of Health, Education, and Welfare.

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The Rural Income Maintenance Experiment was initiated in 1968 with a planning grant from the Ford Foundation. The study was carried out by the Office for Economic Opportunity through a grant to the Institute for Research on Poverty, University of Wisconsin-Madison. The Director of the study was Lee Bawden. In August 1973, the study was transferred from OEO to the Office of Income Security Policy Research in the Office of the Assistant Secretary for Planning and Evaluation, DHEW.

The contents of the complete Final Report of the Rural Income Maintenance Experiment are listed in Appendix A of this summary. Individual chapters of the Final Report and abstracts of the experimental data in the form of computer tapes are available at reproduction cost from the Poverty Institute. Requests should be addressed to the Publications Department, Institute for Research on Poverty, Social Science Building, University of Wisconsin, Madison, Wisconsin 53706. This Summary Report was written by Lee Bawden, William Harrar, and Stuart Kerachsky, with the assistance of Florence Setzer. It draws heavily on the work of the authors listed on the previous pages.

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EXECUTIVE SUMMARY

In the debate over alternatives to the current welfare system the effect of income maintenance programs on the work effort of low income people, particularly those who work and have family responsibilities, has proved a recurrent and politically significant question. Income support programs covering the so-called working poor have considerable appeal on equity grounds, but intuitive expectations and economic theory lead us to expect that they will cause recipients to decrease their work effort. To find out whether such a disincentive effect occurs, and the size of the effect, major social experiments have been conducted by the Office of Economic Opportunity and the Department of Health, Education, and Welfare.

In the recently-completed New Jersey Graduated Work Incentive Experiment the work reduction for married men as a result of income maintenance payments of a type that might be enacted proved to be less than 10 percent. The reduction resulted solely from fewer hours worked; no evidence appeared of husbands quitting entirely to live on the experimental payments. The percentage of wives in the labor force fell sharply as a result of experimental payments, but since wives worked very few hours to begin with the effect on total family labor supply was small. The experiment appeared to have little effect on the attitudes and nonwork behavior of recipients.

The New Jersey Experiment dealt exclusively with urban families, and researchers doubted that the results, or the administrative techniques, could be applied to the rural poor. The poor appear to face very different labor market opportunities in rural areas than in urban

areas, particularly since many are self-employed farmers, and attitudes toward work may differ between rural and urban settings. Many additional problems arise in the treatment of self-employment income and highly seasonal income in rural areas which do not often occur in urban low-income populations.

Since the results of the urban-based experiments might fail to apply to rural areas, and since an accurate estimate of incentive effects was necessary for estimates of program costs, the Rural Income Maintenance Experiment was carried out to measure labor supply responses and other effects of a negative income tax in rural areas. The results of this experiment are reported here.

The effects of the Rural Experiment, like those of other income maintenance experiments, were measured by comparing the behavior of members of an experimental group, who received cash payments according to one of several benefit formulas, with that of members of a control group who received no benefits. Thus what are described as changes in behavior as a result of the experiment are differences in behavior between the experimental group and the control group rather than changes over time in the behavior of the experimentals. A statistical technique was used which allowed the researchers to hold constant the effects of other characteristics such as the age or education of respondents and thus to isolate the effect of the experimental treatment.

The benefit formulas had a structure which appears in many current transfer programs and in many proposals for reform. They consisted of

a basic benefit, a minimum level of income guaranteed to families with no other income; and an implicit tax rate, the rate at which the benefit was reduced as other income increased. Five different experimental treatments were used with basic benefit levels of from 50 to 100 percent of poverty level income and implicit tax rates ranging from 30 to 70 percent. Most of the results presented here are overall differences in response between controls and experimentals in all plans.

The experiment was carried out in two locations, one in Iowa and one in North Carolina. Families were selected randomly from within the experimental sites and, if eligible, were randomly assigned to a control group or to one of the five experimental treatments. Eligibility required a family income at the beginning of the experiment of less than one and one-half times the official poverty line. Of 809 original families, 729 remained in the program for the entire three years of the experiment.

Work and income responses to the experiment were examined separately for rural families whose income derived primarily from wages and for those whose main source of income was self-employed farming. On the basis of analyses which indicated significantly different response patterns by site and race, North Carolina whites, North Carolina blacks, and Iowa families (all white) were analyzed separately. In addition, effects of the experiment on attitudes and on nonwork behavior such as family stability, various forms of consumption, and school performance of children were examined for the whole group.

Income and Work Response of Wage Earners

Experimental effects on several measures of income and work effort were examined for families whose main source of income was wages. The labor supply responses are shown in Table 1. The first three columns show responses for each of the geographic and racial groups; the fourth column shows an aggregate response weighted to represent the low-income rural nonfarm population of the eight Midwestern and Southern states which the experimental sites were chosen to represent. Responses are calculated on the basis of an average plan having a 45 percent implicit tax rate and an 80 percent basic benefit level.

For all family members combined, hours worked for wages were lower for experimental group members than for controls by a weighted average of 13 percent after holding constant nonexperimental differences. The differential was statistically significant for two of the three groups. The experiment had a similar negative effect on total family income and number of earners per family.

Labor supply responses varied greatly among family members. Hours worked by husbands moved in differing directions among the groups but on average remained essentially unchanged. No statistically significant evidence appeared in any of the groups of husbands withdrawing from the labor force in response to the experimental payments. For wives, large negative experimental effects, averaging 27 percent, appeared for hours worked, but they were statistically significant only for North Carolina blacks. Statistically significant negative effects on employment, averaging 28 percent, occurred for every group of wives. Among children

TABLE 1

EXPERIMENTAL LABOR SUPPLY RESPONSE OF FAMILIES OF RURAL WAGE EARNERS

	Control/Experimental Differential as Percent of Control Mean[a]			
	N.C. Blacks	N.C. Whites	Iowa	Eight-State[b] Aggregate
All Family Members				
Total hours worked for wages per quarter	-10	-18	- 5	-13
Husbands				
Total hours worked for wages per quarter	- 8	+ 3	- 1	- 1
Percent employed during qtr.	- 1	- 1	0	- 1
Wives				
Total hours worked for wages per quarter	-31	-23	-22	-27
Percent employed during qtr.	-25	-28	-38	-28
Dependents				
Total hours worked for wages per quarter	-16	-66	-27	-46

[a]Responses standardized to a 45 percent tax/80 percent basic benefit plan.

[b]The experimental sites were chosen to represent the low-income rural population of eight Midwestern and Southern states. See p. 37 for weighting procedure used to derive this estimate.

living at home the experimentally-induced differential in hours of work averaged a negative 46 percent, but the difference was statistically significant only for North Carolina white children.

Most of the experimental effects on work effort appeared to increase as implicit tax rates rose. The basic benefit level, however, appeared to have no significant effect on work effort.

Income and Work Responses of Farmers

For farm operators and managers experimental effects on farm profit, labor supply on and off the farm, and farm efficiency and production were examined. Profit, defined as gross revenue less cash costs, was used as a measure of farm income. Both Iowa and North Carolina experimental groups showed declines in farm profit relative to controls, but the differentials were only marginally statistically significant.

Farm work by farm operators, however, showed a positive experimental effect of 11 percent in both states. The differential was significant in North Carolina but not in Iowa. Farm hours declined over time for all groups, but at a faster rate for controls than for experimentals. Experimental wives also tended to work more hours on the farm than controls. Implicit tax rates and benefit levels appeared to have no effect on the level of farm work.

In three-fourths of the North Carolina farm families and half of the Iowa farm families one of the spouses worked for wages. Experimentally-induced declines in hours of wage work occurred in every group, and for wives the effect was large. But the only statistically significant

effect was that for North Carolina wives, which resulted from a large increase in wage work by the control group which was not matched by the experimental group. Because of the small sample sizes the results for wives must be treated with caution.

Total earnings and total hours worked, including both farm and wage work for operators and wage work for wives, fell for experimental farm families relative to controls in North Carolina but not in Iowa. But the relative decline in hours in North Carolina occurred mostly because of the estimated decline in the wage work of wives.

Efficiency of farm operations, measured by the amount of output produced with a given amount of inputs, declined for experimental farms relative to controls. In North Carolina efficiency decreased as implicit tax rates rose. Total output declined by a small amount on experimental farms relative to controls in both North Carolina and Iowa.

The decline in output appears inconsistent with the increase in farm hours. One plausible explanation is that the experiment provided an incentive either to defer sales of output until after the end of the experiment, or to engage in investment activities which have a payoff in the long run but not during the three years of the experiment. Alternatively, the implicit tax on money income might have encouraged a shift from production in the market to production for consumption at home, or to less productive activities which were more enjoyable, either of which would appear as a decline in measured efficiency. The experiment may also have caused a shift in methods of production, possibly to more risky techniques, which might have required higher labor inputs, at least during the transition period.

Other Responses to the Experiment

In addition to labor supply and income responses, the study examined the effects of experimental payments on nutrition; various forms of consumption; health and health care; geographic mobility; debt and asset holding; psychological well-being; marital dissolution and family interaction; and attitudes, delinquency, and school performance of children. Significant experimental effects were found in only a few cases, possibly because of the short duration of the experiment.

Increases in consumption of several kinds occurred as a result of the experiment. Interestingly, nutrition improved significantly as a result of the experiment among North Carolina families but not in Iowa, in part because the level of nutrition was initially much higher in Iowa. The probability of buying a house was slightly greater for experimentals than for controls, with most of the effect occurring in North Carolina, and houses were bought about three years earlier in the life cycle by experimentals than by controls. No difference was found in the price of homes bought. Expenditures on health care were unaffected by the experiment, and changes in health showed no consistent pattern.

The study examined holdings of durable goods and cars and acquisition of debt. Wage earners' stocks of consumer durables, cars, and liquid assets appeared to increase as a result of the experiment; effects on store debt and loan debt varied among the groups studied.

Experimental payments appeared not to increase the probability of leaving a job but did increase the amount of unemployment experienced by

experimental group members. Members of the experimental group appeared more likely to change residence than control group members.

The experiment had very little effect on any of several measures of psychological well-being. Slight evidence appeared, however, that the level of the basic benefit, regardless of payments actually received, was positively related to psychological well-being, presumably through providing a greater sense of security to participants.

The experimental program appeared to have no important effect on the quality of family relationships. It had no effect on the number of marital dissolutions or on satisfaction with marriage or parent-child relationships as reported by wives and teen-agers. Division of labor in the household may have been affected slightly.

The aspirations, school attitudes, and school behavior of teen-agers were not affected by the experiment. Neither was self-reported delinquent behavior by teen-agers, nor their attitudes toward delinquency.

School performance did improve for grade school children in North Carolina, both black and white, as a result of the experiment. Children in grades 2 through 8 in the experimental group performed significantly better than the control group in attendance, comportment, academic grades, and standardized test scores. Similar improvements did not occur, however, for North Carolina children in grades 9 through 12 or for Iowa children. The lack of effect for Iowa children may be explained by the fact that they experienced richer home environments and performed better prior to the experiment than North Carolina children.

Administration of a Negative Income Tax Program in Rural Areas

The experiment provided experience with the problems of administering an income-conditioned cash transfer program in a rural area. These included the treatment of income and assets for self-employed farmers and questions of comprehension of the program and accuracy of reporting by poorly-educated participants.

The experiment established rules for the definition of self-employment and developed a method of calculating income for the purposes of a cash transfer program which differed from the IRS rules in disallowing accelerated depreciation and the investment tax credit, adding the value of rent-free housing to income, and imputing to income a percentage of assets above a given level. A one-month accounting period with a twelve-month carryover provision was developed to deal with the seasonal variability of farm income. Experience in administering the program led to additional recommendations to require the accrual method of accounting rather than the cash method and to treat both realized and unrealized capital gains as income.

Participants' understanding of the experimental rules proved very poor. Only about half of the families understood the basic benefit level, implicit tax rate, and breakeven level they faced, and the understanding of these program characteristics did not improve over time despite careful instruction of participants.

Benefits were calculated on the basis of family size, assets, and income as reported by the families. Data on family size, wage income, and transfer income were reported with acceptable accuracy, but assets and farm income were seriously underreported. On the basis of these

results, in fact, underreporting by farmers could be expected to affect program costs far more than any likely response in their labor supply.

Summary of Responses

Many of the results of the Rural Income Maintenance Experiment resemble closely the results of the New Jersey Experiment. In wage earners' families, income of experimentals declined relative to that of controls somewhat more than in New Jersey, but still by a modest amount. In the Rural Experiment husbands' hours did not decline consistently as a result of the experiment, and those declines that were found tended to be even smaller, on average, than in New Jersey. As in New Jersey, husbands did not withdraw from the labor force, but the percentage of wives working fell considerably. A new result of the Rural Experiment was that wage work of dependents also fell. But since wives and dependents worked only a small number of hours initially the effect on total family work effort was small. As in New Jersey, the experiment had very little effect on various psychological and social variables.

The Rural Experiment provided considerable new information about the work response of farm families. Hours of wage work by experimental farm families declined relative to controls only for one group, and this differential appears to have been caused by large increases in hours by control wives. Hours worked in farming in North Carolina increased while profits and efficiency declined. The latter result may be explained by the incentive to shift work effort away from tasks yielding money income and toward investment or production of directly-consumable commodities.

Other interesting new results were the relative improvements in nutrition and in school performance of grade school children among North Carolina experimental families. A positive experimental effect also occurred for many forms of consumption, including purchase of cars, durable goods, and houses, and acquisition of loan debt.

The results of the experiment suggest, as did the New Jersey Experiment, that a universal income-conditioned cash assistance program would cause only a modest decline in the labor supply of families of wage workers. Husbands who worked primarily for wages would decrease their hours of work slightly or not at all and would not leave the labor force. Wives would be less likely to work than in the absence of payments, but the effect on the families' hours of work would be small since wives' hours of wage work in low-income families tend to be few. The desirability of wives' working less depends on one's view of the value of wives' time devoted to work in the market rather than work at home.

An income maintenance program would be unlikely to affect most social or psychological variables. It would be likely to have a positive effect on the school performance of elementary school children and on various forms of consumption, including adequacy of nutrition, at least in families where these variables are at low levels initially.

The results of the experiment also indicate that special care must be taken in defining administrative and reporting procedures for self-employed farmers in order to avoid serious problems of underreporting and misreporting of income and assets. Problems associated with accurate measurement of farm income and assets may be of greater importance among this population than any likely labor supply response.

I. PURPOSE AND DESIGN

The Rural Income Maintenance Experiment is the second of four major experiments which test the behavioral consequences of a universal income-conditioned cash transfer program. It follows closely in objectives and design its predecessor, the New Jersey Graduated Work Incentive Experiment. However, it is unique among the four experiments in focusing on the rural sector, comprising farmers and those in towns of less than 2500, where in 1970 over one-third of the nation's poor resided.

The Policy Setting

The inadequacies and inequities of the existing system of income support programs have received wide attention in recent years. Welfare recipients may receive more income from their welfare benefits than non-welfare families can earn by working; benefit levels vary from state to state, so that individuals in similar circumstances can receive as much as six times more in benefits in one state than in another; the system covers only half the poor people in the United States and raises only 20 percent of recipients above the poverty line; the rates at which welfare and in-kind payments are reduced as earned income rises are frequently high enough to discourage welfare recipients from supplementing their benefits by working; and the welfare system may encourage fathers in poor families to leave or may discourage remarriage in order that wives and children may receive welfare payments.

Major structural reforms proposed to correct these problems have usually had uniform national standards and would cover not only the current welfare population but also the so-called working poor, intact male-headed families with low incomes. Such programs have typically consisted of a basic benefit (the payment level for a family with no other income) and an implicit tax rate (the rate at which benefits decline as income from earnings and other sources rises). Elements of this structure are incorporated into many current welfare programs, including AFDC, SSI, and Food Stamps.

Opposition to a universal cash assistance program has focused on the belief that low-income people embrace the work ethic weakly, if at all, so that extending benefits to those able to work would cause them to reduce their work effort and thus their earnings by large amounts. If a significant decline in recipients' work effort occurred, it would greatly increase program costs and have undesired social consequences. While economic theory supported the belief that work and earnings would decline, little evidence existed concerning the magnitude of the effect when the income maintenance experiments were initiated.

To measure the work incentive effects of a comprehensive cash assistance program, as well as its effects on other forms of behavior and attitudes of recipients, a series of major social experiments was undertaken. The first, the New Jersey Graduated Work Incentive Experiment, began in 1968 with a grant from the Office of Economic Opportunity to the Institute for Research on Poverty at the University of Wisconsin.

It involved 1250 low-income families with employable male heads between the ages of 18 and 58 in urban areas of New Jersey and Pennsylvania. [1] The New Jersey Experiment was followed by the Rural Income Maintenance Experiment, and, subsequently, by similar experiments in Gary, Indiana, Seattle, Washington, and Denver, Colorado, to test the effects of income maintenance in combination with manpower training and social services.

The Need for a Rural Experiment

Because most of the self-employed poor live in rural areas, and because of the differences in alternative employment opportunities between rural and urban areas, researchers believed that work response results of the urban experiments could not be generalized to rural areas. It was believed that only a separate experiment for rural families could give the accurate estimate of the magnitude of disincentive effects which was considered crucial to estimating the cost and behavioral consequences of a nationwide program.

Rural areas also pose administrative problems which do not exist or are unimportant in urban areas. For example, a large proportion of rural residents with low incomes are operators of farms or businesses.

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[1] For more information on the New Jersey Experiment see U.S. Department of Health, Education, and Welfare, "Summary Report: New Jersey Graduated Work Incentive Experiment," December 1973.

Determination of annual income, as well as the appropriate timing of payments, are different for the self-employed than for wage earners, particularly for those farmers receiving their entire annual income at harvest time. The provisions for self-employed individuals in the New Jersey Experiment were by comparison simple and probably inadequate for a nationwide, comprehensive cash assistance program.

In the spring of 1968 the Ford Foundation made a grant to the Institute for Research on Poverty at the University of Wisconsin to plan for a rural experiment. The resulting experimental design was subsequently implemented by OEO in 1969.

Experimental Design

The Rural Experiment was patterned after the New Jersey project: it had the same basic objectives, a similar experimental design, and was of identical duration. It differed from the urban experiment in that eligibility was extended to single individuals as well as small subsamples of families headed by females and the aged.

Two locations were chosen, one in North Carolina and one in Iowa, to represent areas with differing proportions of poor persons and to permit testing of regional and ethnic differences in work incentive and other behavioral characteristics. All the Iowa families were white; about half the North Carolina families were white and half were black.

Families were selected randomly from within the experimental sites and, if eligible, were assigned randomly to a control group or to one of five experimental treatments consisting of differing basic benefit

levels and implicit tax rates. To be eligible, families had to have incomes at the beginning of the experiment of less than one and one-half times the official poverty line, adjusted for ownership of homes and other assets. Of 809 original families, 729 remained in the program for the entire period.

Payments were based on income and family size, as reported monthly by recipients. Income consisted primarily of wages and, for farmers and businessmen, cash sales minus cash expenses. Depreciation and other non-cash costs, reported annually, were also deducted. For most of the families, payments were based on income calculated from a three-month moving average; for some, income in the previous month was used. A major innovation designed to deal with the seasonality of farm income was a "carry-over" provision. Earned income in excess of the breakeven level, the income level at which payments fall to zero, was carried forward for a maximum of one year and added to income in any period in which it fell below the breakeven level. Benefit payments were calculated on the basis of the sum of current income and the carry-over assigned to that period.

In addition to the income reports, interviews were conducted quarterly with household members over age 15 to gather attitudinal and behavioral data. Information was also gathered from schools and other public organizations.

Statistical Methodology

The purpose of the analyses reported in the following sections is to determine if the experimental families (those eligible for payments) behaved differently from the control families as a result of being in the experiment. Many different areas of potential response to the experiment were investigated: income, work, purchases, geographical movement, state of health, level of nutrition, performance of children in school, psychological well being, marital dissolution, and aspirations and behavior of teenage youth. The statistical methodology in all areas of analysis was similar: in each case it involved a careful formulation of hypotheses to be tested; consideration of how to best test the hypotheses (modeling); and the use of rather sophisticated statistical tools to measure whether, and the degree to which, there was an experimental response.

As noted, the experimental and control groups were randomly selected from the same areas, had similar socio-economic-demographic characteristics, and faced similar external forces (e.g., labor markets, social mores, and community settings). Thus, one possible analytical approach would have been to ascribe any differences in behavior between the two groups during the experiment solely to the experiment. Each response measure, such as family income, would then have been compared between the control and experimental groups, with appropriate statistical tests to determine if any differences were large enough and consistent enough to have been unlikely to occur by chance.

While this is a commonly used procedure, it was not deemed accurate enough for a study of such complexity. The experimental and control groups can be similar, but they cannot be the same, no matter how much care is exercised in drawing the sample of families. For example, one group might have a slightly lower education level than the other, or slightly higher initial wage income, or have a different age distribution. Moreover, the two groups could experience a difference in certain events during the experiment, such as sickness or disability. In other words, differences in behavior between the two groups could be due to differences in pre-experimental characteristics or circumstances, or to changing conditions during the experiment.

Therefore, the analysis attempts to "control" for any such differences between the two groups, and to separate differences in response due to these factors from differences in response due to the experiment itself. The particular statistical tool employed is regression analysis, a method which permits the researcher to "control for" or "hold constant" extraneous factors in order to focus on the variable of interest--in this case, the experimental treatment. In each regression equation, the effects of the treatment variable(s) and a variety of control variables, such as age, education, family size, race, and region are estimated simultaneously in order to isolate the experimental effects as represented by the treatment variables. This summary reports only the effects of the treatment variables. The effects of the control variables are reported in the more detailed Technical Papers which are available on request.

The experimental treatment can be represented by a single variable denoting all families eligible for payments or by several variables, each representing one of the experimental plans or the elements of these plans such as the implicit tax rate and the basic benefit. In each case, the size of the relationship between the response variable being analyzed (e.g., income or hours worked) and the treatment variable(s) represents the response due to the experiment, hereafter called the experimental response.

Of equal importance to the size of the measured experimental response is its "statistical significance." This is a measure of the confidence which can be attached to the measured response, or of the probability that the response did not occur by chance. For example, to say that a particular measured response is statistically significant at the .95 level means that in only five instances out of 100 could it have occurred by chance. Thus, the higher the significance level, the more confidence can be placed in the measured response. In this report, experimental responses are considered significant (a high degree of confidence) at the .90 level, questionably significant between the .90 and the .80 levels, and insignificant (little confidence) at levels below .80. The exact level of significance for each measured response is shown in most cases so that the reader may render an independent judgment.

Validity and Interpretation of Findings

Several factors which bear on the validity, interpretation, or generalizability of the results reported below should be noted. First, when the Rural Experiment began in 1970, 26.6 percent of the U.S. population lived in rural areas (on farms and in towns of 2500 or less), and 35.5 percent of the total U. S. poverty population were rural residents. It was administratively infeasible, however, to draw a sample which properly represented the entire low-income, rural population of the United States. Instead, two sites were selected, one in the South and one in the Midwest, and samples were drawn from each site. In a statistical sense, the results reported in this summary can only be generalized to five southern states (Mississippi, Alabama, Georgia, South Carolina and North Carolina) and three midwestern states (Wisconsin, Illinois and Iowa). The results are at least partially relevant to other southern and midwestern states as well. They cannot be generalized to the entire low-income rural population of the United States, however, because rural communities and the structure of farming in the Far West, the Great Plains, and the East are somewhat different than in the South and Midwest. Also, Mexican Americans and American Indians, two ethnic populations which represent a small but important segment of the rural poor, were not contained in the sample.

A second factor to keep in mind is that the experiment lasted for only three years, a relatively short time period. The response of participants in a permanent program might be somewhat different. There

are theoretical reasons for believing that the observed work response to the basic benefit level may be understated and the observed response to the implicit tax rate may be overstated relative to what would occur in a permanent program. While these biases are offsetting for calculating overall response estimates (which are the primary ones reported in this summary), they are nevertheless of concern. More information on the extent of the bias, if any, will come from the Seattle/Denver Experiment, where variation in the length of the experiment was explicitly introduced as an experimental variable.

Third, the experiment imposed no work requirement; participants neither had to register for work nor to accept offered employment to receive payments. Reductions in work and income observed in the experiment, therefore, may be greater than those under an income maintenance program with a work requirement.

Fourth, relatively fewer families were assigned to plans at the 50 percent basic benefit level and at the 70 percent implicit tax rate than to other plans. As a consequence, generalizations about the effects of low basic benefit levels or about high implicit tax rates should be made with some caution.

Fifth, sample attrition was remarkably low for a three-year panel study. Only 9.9 percent of the families dropped out during the three-year period, a figure which includes involuntary departures. An analysis of those who dropped out concludes that there should be no appreciable bias of estimates of work response to the experiment as a result of attrition.

Finally, bias of the experimental results caused by the existence of a welfare program covering the same population--a matter of concern in analyzing data from the earlier New Jersey Experiment--is also not a problem here, since neither Iowa nor North Carolina had an AFDC program for unemployed parents (AFDC-UP).

In the next chapter income and work responses to the experiment are reported for that subgroup of the sample called wage earners--non-aged, husband-and-wife families where the primary source of income was not self-employment. This includes most of the sample families living in small towns in the two sites as well as hired agricultural workers. Chapter III reports on income and work response for the other principal subgroup of the population--families with a non-aged head whose principal occupation is farming. Response of farmers is analyzed separately because their conditions of work, flexibility of hours worked, and income streams differ so much from those of non-farmers (wage earners) as to preclude the use of the same analytical formulations. In Chapter IV, briefer summaries are presented of the various response measures other than work and income. Wage earners and farmers are in some cases analyzed together. Chapter V presents the lessons derived from the experiment concerning administration of an income-conditioned transfer program in rural areas.

II. INCOME AND WORK RESPONSE OF WAGE EARNERS

This chapter first describes briefly the sample of wage earners, then describes the measures of work and income response used. The results of the analyses are then summarized, first for the family as a unit and then for individual members of the family.

The Sample

The families and individuals whose work and income responses are reported in this section are a subset of the entire rural sample, limited to husband-wife families of constant marital status, where the husband was less than age 63, not disabled, and where the primary source of income was not self-employment activities.[1] Among rural wage earners, this is the most policy-relevant group because it is the group most commonly excluded from existing cash transfer programs.

The selection process left a sample of 264 families, 146 in the control group and 118 in the experimental group.[2] The percent distribution of the latter among the five experimental plans is shown in Table 2.

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[1] Only constant husband-wife families were selected because marriages, divorces, and remarriages are difficult to handle analytically. (Only five percent of the married couples separated during the experiment, and this did not appear to be related to experimental status). The permanently and totally disabled were eliminated for the same reason. The age limit minimized changes in work effort due to retirement. The primary source of income was judged not to be self-employment if (a) wage income exceeded gross farm and business income, or (b) wage income exceeded net farm and business income, and hours of wage work averaged 24 or more per week, or (c) gross farm and business income was zero, regardless of the level of wage income.

[2] An error components technique was used which allowed pooling of cross-section and time series observations on families. Each family was treated as a separate observation for each quarter of the experiment, so the final sample sizes were approximately twelve times those given above.

TABLE 2

PERCENTAGE DISTRIBUTION OF EXPERIMENTAL WAGE-EARNER FAMILIES AMONG EXPERIMENTAL PLANS

Basic Benefit as Percent of Poverty Line	Implicit Tax Rate		
	30%	50%	70%
50		4	
75	31	34	6
100		25	

Because the sample was not initially stratified by source of income (i.e., by farmers and wage earners), the random assignment procedure left this sample of wage earners with few families at the 70 percent implicit tax rate and 50 percent basic benefit level. Caution should be exercised, therefore, in placing reliance on the behavioral responses to implicit tax rates beyond the 30-50 percent range and to basic benefit levels below the 75-100 percent range.

Approximately one-fourth of the wage-earner sample resided in Iowa and three-fourths in North Carolina. There were no black families in the Iowa sample. In North Carolina, two-thirds were black and one-third were white; because experimental response often differed by region and by race, results are reported separately for each of the three racial/regional groups.

Average family income for this sample during the experiment was $5860 per year, over 90 percent of which was wage income. Seventy-eight percent of the wage income was contributed by the husband, 15 percent by the wife, and 7 percent by dependents. In any given quarter, over

95 percent of the husbands worked for wages, with three-fourths working all 13 weeks of the quarter. Their average wage rate was $2.08 per hour. Forty-eight percent of the wives worked in any given quarter at an average wage rate of $1.46 per hour. The mean age of the husbands was 42 years; of the wives, 39 years. Average educational attainment of husbands was 10.3 years in Iowa, 7.5 for North Carolina blacks, and 6.9 for North Carolina whites. On average, wives had a half year more education in Iowa and one and a half more years in North Carolina for both blacks and whites. These and other statistics describing the sample of wage earners are found in Appendix B.

The Response Measures Used

There is no single, clear-cut choice as to the most policy-relevant measure of experimental response. Family income is a relevant measure because it would be the basis for payments under a universal income maintenance program (though different sources of income might be implicitly taxed at different rates). It also reflects indirectly any change in work behavior due to the receipt of program payments, and provides the necessary information for calculating program costs. Total family income is, however, an imperfect measure of changes in earned income, for it includes additional elements of income. Earned income, on the other hand, is an imperfect measure of changes in work behavior because it reflects both hours and wage rates, the latter of which are hypothesized to be relatively insensitive to cash transfers.

There is also interest in whose work behavior in the family is influenced. Reduced work effort by wives with young children or by school-age teenagers has been considered a less deleterious consequence

of giving income-conditioned payments to the working poor than a commensurate reduction in work effort on the part of able-bodied husbands. And if there is a negative work response to the experiment, there is interest in whether this is due to, for example, half of the families reducing their work effort by 10 percent or one in 20 families quitting work altogether.

All of the above considerations suggest that policy makers may be interested in several response measures for both income and work effort, and by family unit or individual family members. Therefore summaries are presented of experimental response by the following 16 measures:

Families
- Total income[1]
- Earned income
- Wage income
- Hours worked for wages
- Number of earners

Husbands
- Earned income
- Wage income
- Hours worked for wages
- Whether employed
- Hourly wage rate

Wives
- Wage income
- Hours worked for wages
- Whether employed
- Hourly wage rate

Dependents
- Wage income
- Hours worked for wages

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[1]Excludes Public Assistance and General Assistance, which experimental families were ineligible to receive, as well as transfers which were conditional on the experimental payments, such as food stamps and free meals at school.

Work and Income of the Family

This analysis defines the family as the husband and wife and any dependents living with them who are unmarried and under age 21, or are married but under age 18. Other adults in the household were considered to be separate units; they reported their income separately and, if in the treatment group, received separate payments. They are not included in the analysis reported below.

Payments to the experimental families averaged $125 per month, increasing family income by about 25 percent. The average payment increased slightly over the twelve quarters of the experiment. Total family income (excluding the payments) of the experimental group also rose during the experiment, but at a slower rate than the Consumer Price Index, which was used to adjust payment levels. The incomes of the experimental group did not, however, rise as fast as those of the control group (see Figure 1), suggesting that participation in the experiment resulted in a relative reduction in total family income. These raw, unadjusted data show that this relative reduction in income of experimental families was concentrated in the first quarter, with the remainder spread throughout the duration of the experiment.

The experimental response suggested by the raw data in Figure 1 is confirmed by regression analysis. Table 3 shows the experimental response for each of the three subpopulations. The average quarterly income for control families in both North Carolina groups was around $1,400. The experimental families among North Carolina blacks had quarterly incomes (excluding experimental payments) $207 less than their control counter-

FIGURE 1

AVERAGE FAMILY TOTAL INCOME, BY QUARTER

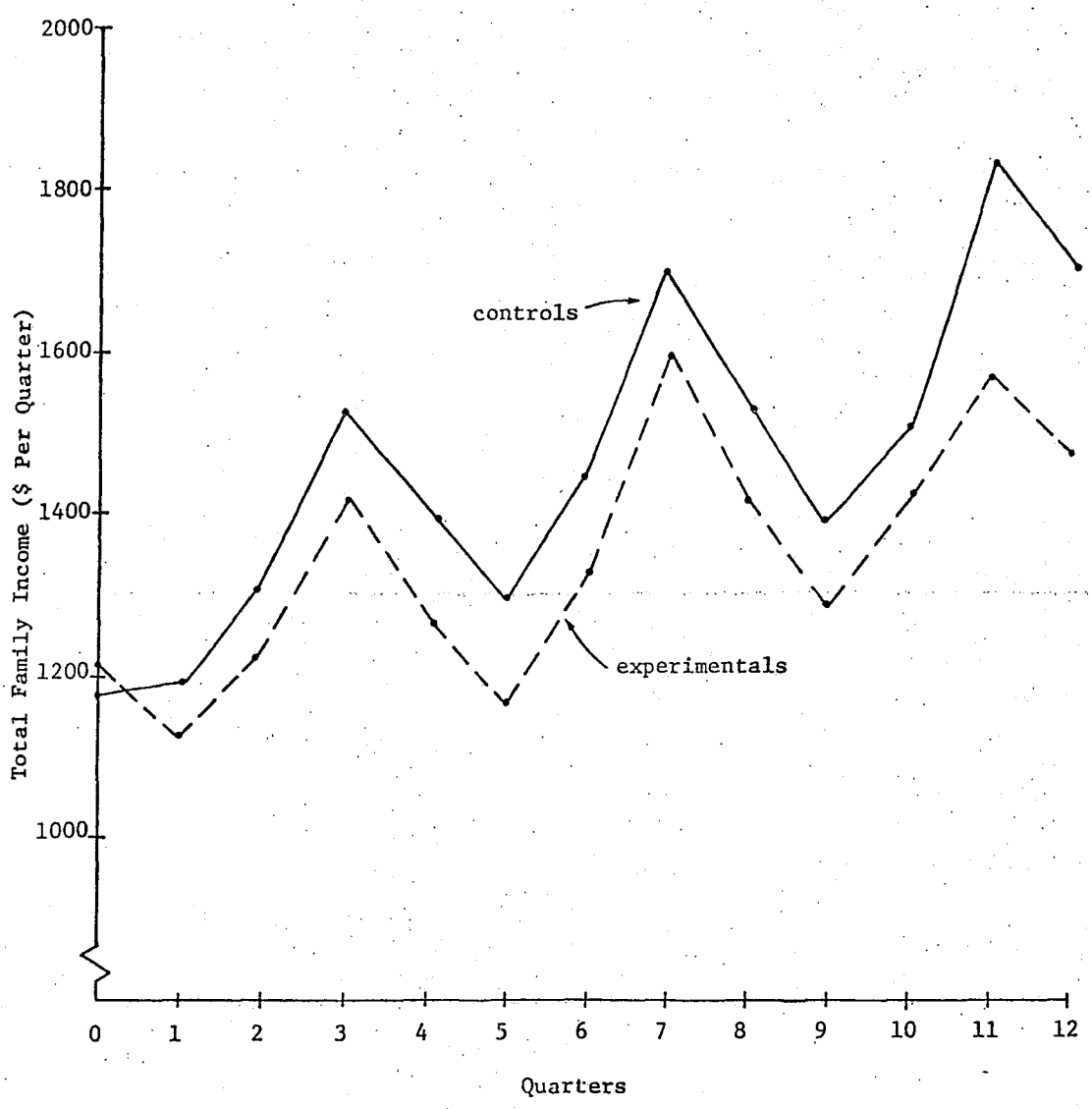

TABLE 3

FAMILIES: EXPERIMENTAL RESPONSE OF VARIOUS MEASURES OF INCOME AND WAGE WORK

	N.C. Blacks	N.C. Whites	Iowa
Total Income Per Quarter			
Control group mean	1423	1386	1841
Experimental group differential	- 207[a]	- 88	- 331[a]
Percent differential	- 14.6	- 6.4	- 18.0
Significance of differential	.99	.60	.99
Earned Income Per Quarter			
Control group mean	1382	1328	1752
Experimental group differential	- 196[a]	- 54	- 336[a]
Percent differential	- 14.2	- 4.1	- 19.2
Significance of differential	.99	.43	.99
Wage Income Per Quarter			
Control group mean	1365	1320	1642
Experimental group differential	- 205[a]	- 69	- 284[a]
Percent differential	- 15.0	- 5.2	- 17.3
Significance of differential	.99	.54	.99
Total Wage Hours Worked Per Quarter			
Control group mean	745	730	718
Experimental group differential	- 69[a]	- 126[a]	- 36
Percent differential	- 9.3	- 17.3	- 5.0
Significance of differential	.98	.98	.74
Number of Earners			
Control group mean	1.85	1.69	1.49
Experimental group differential	- .107[a]	- .278[a]	- .133[b]
Percent differential	- 5.8	- 16.5	- 8.9
Significance of differential	.97	.99	.94

NOTE: The figures shown are calcualted from regression equations, controlling for non-experimental factors relevant to the particular income or work measure. To the extent possible, then, the control and experimental group have been adjusted to be identical except for their treatment by the experiment.

[a]Significant at the .95 level (two-tailed test)
[b]Significant at the .90 level (two-tailed test)
[c]Significant at the .80 level (two-tailed test)

parts, a 14.6 percent difference attributable to being in the experiment. This difference was statistically significant. There was a smaller difference in total family income between North Carolina white experimental and control families, an average of $88 per quarter, or 6.4 percent, which was below an acceptable level of statistical significance. The largest difference in total family income occurred between Iowa controls and experimentals, with the latter having $331 less as a result of being in the experiment, 18.0 percent less than the control group's average quarterly income of $1,841. This experimental response was also statistically significant.

Patterns of response for the earned income component of family income (wages plus farm and business income) and for wage income were similar. There appeared to be a significant negative experimental response by the North Carolina black and Iowa samples of around 15 percent and 18 percent, respectively, and no statistically significant experimental response by North Carolina whites.

Work effort is more directly measured in terms of hours worked than in terms of earnings. The measure used here is hours worked for wages per quarter. Aggregates are presented for the husband, wife, and all dependents.

The pattern of work response is somewhat different using hours worked than using income measures. North Carolina blacks still show negative experimental response, but it is only nine percent, compared to 15 percent found using income measures. North Carolina whites, who had a negative but statistically insignificant family income response to the experiment, did have a large (17 percent) and significant

negative response in hours worked. On the other hand, Iowa whites show a small (five percent) negative experimental response in hours worked, which is not quite statistically significant, compared with large (17-19 percent) and highly significant responses in income.[1]

The final family measure of experimental response--number of earners in the family each quarter--reflects a statistically significant negative response by experimental families for all three subpopulations. The reduction in the number of earners per family is about six percent for North Carolina blacks, 16 percent for North Carolina whites, and nine percent for Iowa whites. As we shall see, these reductions are almost entirely attributable to declines in employment of wives and dependents.

Additional analyses introduced separate experimental variables representing the implicit tax rate and basic benefit in addition to the variable representing all experimental families. Given that the demand for leisure rises with income, economic theory predicts a larger negative experimental response in treatments with higher implicit tax rates and/or higher basic benefit levels. Implicit tax rates affected responses

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[1]These response differences in hours worked and income can occur for a variety of reasons. For example, a negative response in hours worked by wives or dependents will have less of an impact on family income than a 10 percent response in hours worked by husbands, because wives and dependents earn less per hour than do husbands. Similarly, a reduction in hours worked by low-wage husbands will have less of an impact on family income than a similar reduction in hours worked by high-wage husbands. Or, a response difference in hours and income can be due to an experimental response in wage rates--a 10 percent negative response in hours (by everyone) coupled with a 10 percent negative response in wage rates (by everyone)results in a 19 percent negative response in income. Further light will be shed on these family responses as we proceed to the analysis of experimental response by individual family members.

for two of the three subpopulations: both North Carolina blacks and whites in the experiment showed a larger negative response in income and hours worked for wages as implicit tax rates increased. The basic benefit level appeared to have little if any influence on these response measures for any of the three subpopulations.

The response of the entire family to the experiment obscures the response of individuals within the family. To the extent that society regards less favorably a reduction in work behavior of one family member over another, it is important to analyze the experimental response of individual family members. The following subsections report findings separately for husbands, wives, and dependents.

Husband's Work and Income

The raw, unadjusted data on husbands' average wage income and hours worked are graphed in Figures 2 and 3, respectively. The figures show that experimentals had slightly higher wage income and hours than controls prior to the experiment (quarter 0). This difference disappeared soon after the experiment began, and the two groups' profiles were quite similar thereafter. Pre-experimental differences and other relevant factors were controlled for in the regression analysis in order to better measure experimental/control differences arising from the experiment alone. The regression results are summarized in Table 4.

FIGURE 2

AVERAGE HUSBANDS' WAGE INCOME, BY QUARTER

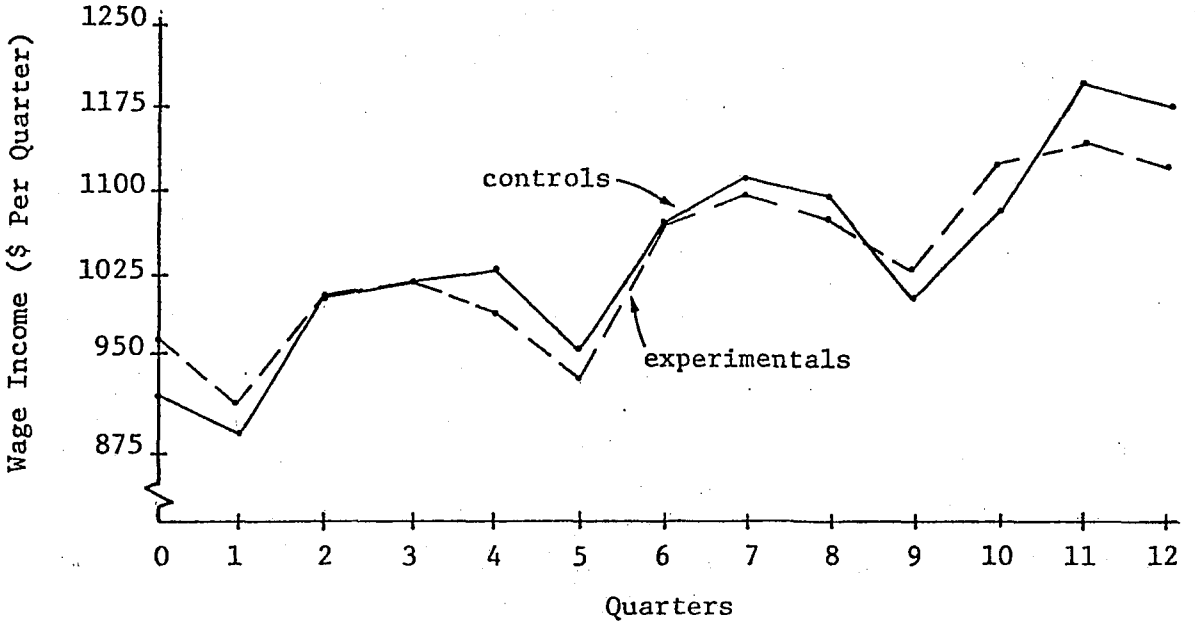

FIGURE 3

AVERAGE HUSBANDS'S WAGE HOURS, BY QUARTER

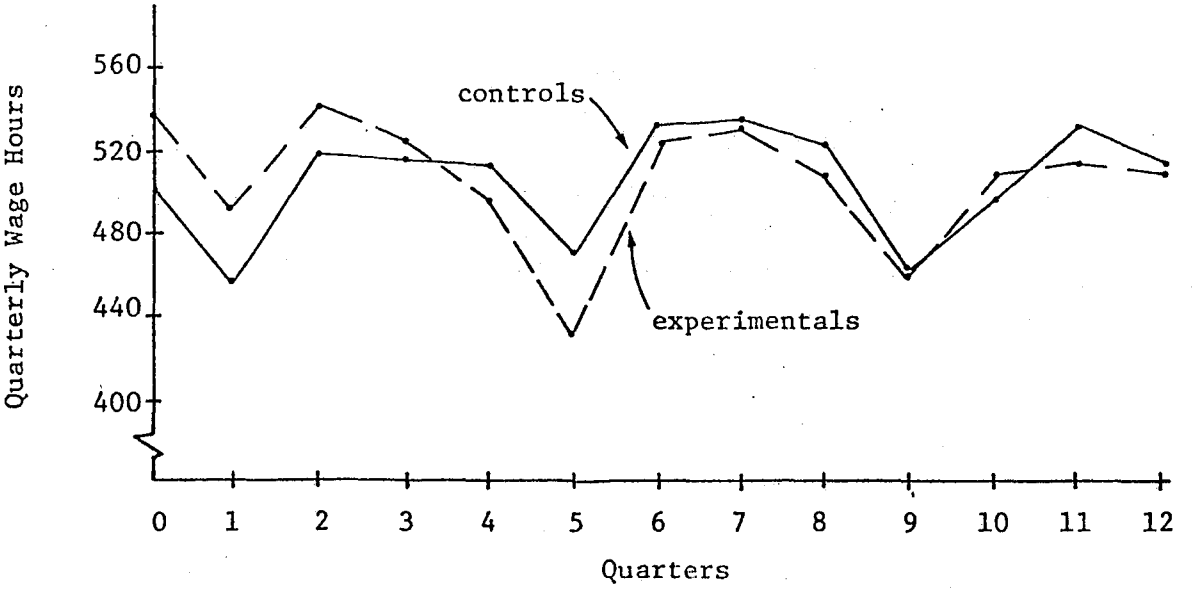

TABLE 4

HUSBANDS: EXPERIMENTAL RESPONSE OF VARIOUS MEASURES OF INCOME AND WAGE WORK

	N.C. Blacks	N.C. Whites	Iowa
Earned Income Per Quarter			
Control group mean	938	1029	1524
Experimental group differential	- 45	+ 42	+ 200[a]
Percent differential	- 4.8	+ 4.1	- 13.1
Significance of differential	.66	.44	.98
Wage Income Per Quarter			
Control group mean	924	1020	1416
Experimental group differential	- 63[c]	+ 32	- 150[a]
Percent differential	- 6.8	+ 3.1	- 10.6
Significance of differential	.85	.36	.96
Wage Hours Worked Per Quarter			
Control group mean	474	484	602
Experimental group differential	- 38[a]	+ 27	- 7
Percent differential	- 8.0	+ 5.6	- 1.2
Significance of differential	.95	.70	.19
Percent of Husbands Employed During Qtr.			
Control group mean	95.4	96.3	96.6
Experimental group differential	- .53	- .61	+ .44
Percent differential	- .6	- .6	+ .5
Significance of differential	.33	.45	.34
Average Hourly Wage Rate If Employed			
Control group mean	1.95	2.09	2.40
Experimental group differential	- .01	- .06	- .12
Percent differential	- .5	- 2.9	- 5.0
Significance of differential	.09	.45	.72

NOTE: The figures shown are calculated from regression equations, controlling for non-experimental factors relevant to the particular income or work measure. To the extent possible, then, the control and experimental group have been adjusted to be identical except for their treatment by the experiment.

[a]Significant at the .95 level (two -tailed test)
[b]Significant at the .90 level (two-tailed test)
[c]Significant at the .80 level (two-tailed test)

The experimental responses of earned income (which includes income from self-employment) and wage income are similar. This is because wage income comprised 97 percent of husbands' earned income in this sample, even with all farm income attributed to the husband (rather than divided between the husband and wife). Regressions show that Iowa husbands in the experimental group earned 11-13 percent less than their control counterparts, and these differences were statistically significant (see Table 4). North Carolina black husbands in the experimental group earned 5-7 percent less than those in the control group, but the differences were of questionable statistical significance. The small positive income response among North Carolina white husbands was not statistically significant.

Regression analysis of wage hours worked exhibits a pattern similar to that of income for the two North Carolina subpopulations. Black husbands in the experimental group worked eight percent less than those in the control group, and the difference was statistically significant. North Carolina whites exhibited a positive response in hours worked of six percent, a difference that only approaches statistical significance. Iowa husbands, on the other hand, showed almost no response in terms of hours worked, despite a sizable and statistically significant negative response to the experiment in terms of earned and wage income.

The fourth measure of experimental response, percent of husbands employed per quarter, is interesting in that it indicates (when compared to the other measures of work) whether the experimental response was due to complete withdrawal from the labor force by a few experimental husbands or to small responses by many. Regression results support the

latter interpretation: the experimental/control differences in the number of husbands working were very small, and did not approach statistical significance for any of the three subpopulations.

The final response measure--average hourly wage rate of those employed--is a constructed variable, obtained by dividing each husband's quarterly wage income by hours worked for wages. It may help to explain any difference in response between income and hours. The wage rate could be affected either positively or negatively by the experiment. For example, a reduction in overtime work by experimental husbands would lower their average wage rate, while a reduction in moonlighting might raise their average wage rate. The wage rate might also be affected to the extent that the experiment influences job search behavior.[1] The regression results show small and statistically insignificant experimental responses in the wage rates of North Carolina husbands. Iowa husbands in the experiment had a five percent lower wage rate than control husbands, the difference approaching statistical significance. This five percent difference partially explains why Iowa husbands had a larger negative experimental response in income than in hours worked.

Further analysis incorporated the implicit tax rate and basic benefit in regression equations for husbands to test whether the experimental response differed by these two basic program parameters. The

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[1]See pp. 67-68 for a discussion of experimental effects on job search. There is also a longer-run hypothesis, not testable in a three-year experiment, that a negative income tax will encourage job training and adult education and thus lead to higher-paying jobs in the long run.

experimental responses were almost never sensitive to the basic benefit level, but some did vary by the implicit tax rate. Income responses to the experiment by the two North Carolina subpopulations were larger and more negative as the implicit tax rate increased. For example, a change in the tax rate from 40 to 50 percent would, according to the analysis, result in $138 and $75 per quarter less in wage income for the North Carolina white and black experimentals, respectively. Inexplicably, the predicted response of Iowa experimentals was just the reverse: a similar change in the tax rate would result in $95 per quarter more in wage income. Hours worked appeared to be sensitive to the tax rate only for North Carolina whites.

Overall, one may conclude that (1) there is very little evidence to support the hypothesis that husbands' work behavior is influenced by the basic benefit level, and (2) while there is slightly more evidence supporting a relationship between income and the implicit tax rate, the evidence is inconsistent across subpopulations. It should be repeated, however, that because of the thinness of the sample in some plans, such generalizations are only relevant to implicit tax rates ranging from 30 to 50 percent and basic benefit levels ranging from 75 to 100 percent of the poverty line.

Analysis to attempt to associate experimental response with various characteristics of the experimental group showed no consistent differences attributable to age, education, distance from a large town (10,000 or more in population), or the pre-experimental level of income or work effort. This analysis did suggest that hours worked by hired farm workers in Iowa (some 20 percent of the Iowa subsample) showed a larger reduction

due to the experiment than hours of other wage workers. This result is suspect, however, since many Iowa farm workers are paid by the month rather than by the hour, and their income response was slightly positive (but not statistically significant). The wage hours of hired farm workers paid by the month fluctuate from day to day and week to week, and recall of hours over a three-month interval is subject to a wide margin of error; consequently, the result may be due simply to errors in reporting hours worked.

Wives' Work and Income

The raw, unadjusted data for wives' average wage income and wage hours are graphed in Figures 4 and 5, respectively. Experimentals had lower wage income and hours prior to the experiment (quarter 0), and this differential grew larger during the experiment. The average quarterly wage income and wage hours of the experimental group declined slightly (with seasonal fluctuations), while those of the control group moved upward during the three years of the experiment.

The regression results, controlling for pre-experimental differences and other relevant factors, are shown in Table 5. Of the three subpopulations, only North Carolina black wives had a significant experimental response of wage income, and it was quite large: experimentals earned $137 per quarter, or 42 percent, less than their control counterparts. In percentage terms, there was a similarly large difference between experimentals and controls among Iowa wives, but the difference was not statistically significant.

A similar pattern appears for quarterly hours worked, except that North Carolina white experimentals also showed a large negative response,

FIGURE 4

AVERAGE WIVES' WAGE INCOME, BY QUARTER

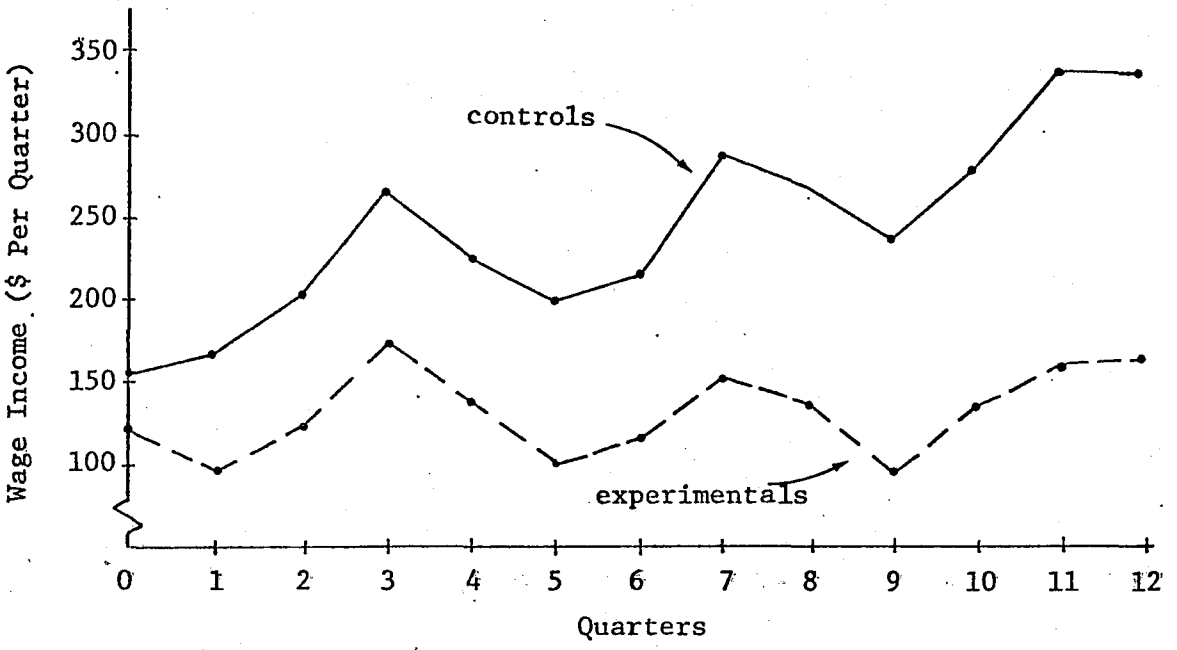


FIGURE 5

AVERAGE WIVE'S WAGE HOURS, BY QUARTER

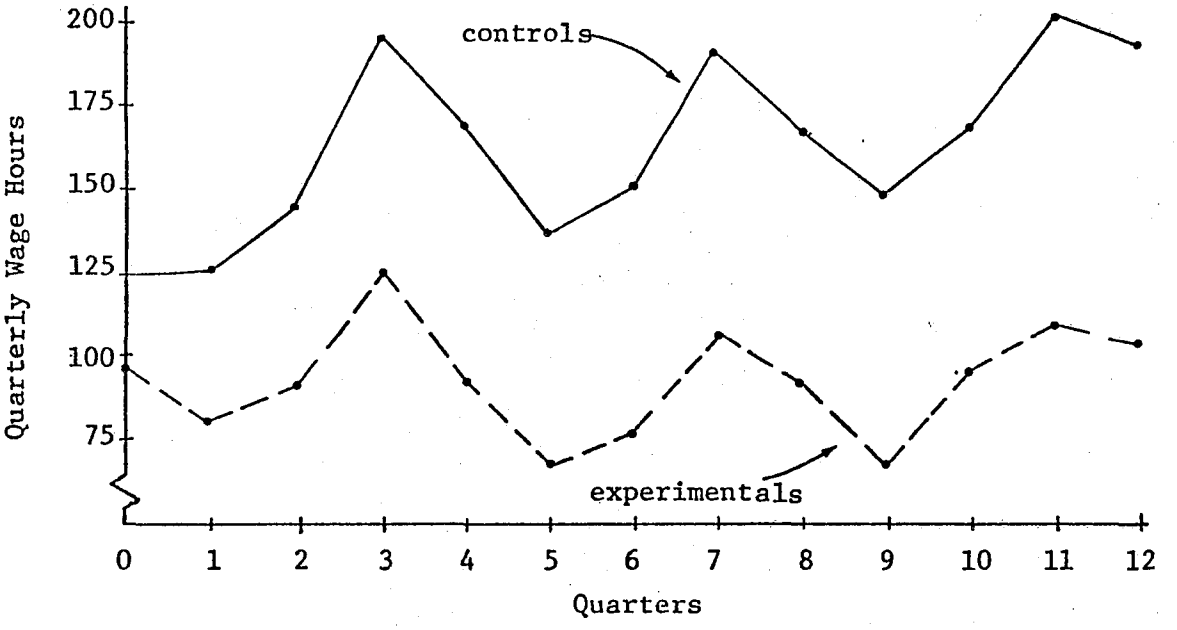


TABLE 5

WIVES: EXPERIMENTAL RESPONSE OF VARIOUS MEASURES OF INCOME AND WAGE WORK

	N.C. Blacks	N.C. Whites	Iowa
Wage Income Per Quarter			
Control group mean	329	167	114
Experimental group differential	-137[a]	+ 4	- 38
Percent differential	- 41.6	+ 2.4	- 33.3
Significance of differential	.99	.07	.61
Wage Hours Worked Per Quarter			
Control Group	214	130	79
Experimental group differential	- 67[a]	- 28	- 16
Percent differential	- 31.3	- 21.5	- 20.3
Significance of differential	.99	.74	.48
Percent of Wives Employed During Qtr.			
Control group mean	70.5	47.3	36.3
Experimental group differential	- 18.0[a]	- 13.0[a]	- 13.8[a]
Percent differential	- 25.5	- 27.5	- 38.0
Significance of differential	.99	.96	.97
Average Hourly Wage Rate If Employed			
Control group mean	1.49	1.48	1.31
Experimental group differential	- .09	+ .17	+ .17
Percent differential	- 6.0	+ 11.5	+ 13.0
Significance of differential	.76	.66	.66

NOTE: The figures shown are calculated from regression equations, controlling for nonexperimental factors relevant to the particular income or work measure. To the extent possible, then, the control and experimental groups have been adjusted to be identical except for their treatment by the experiment.

[a]Significant at the .95 level (two-tailed test)
[b]Significant at the .90 level (two-tailed test)
[c]Significant at the .80 level (two-tailed test)

working 21 percent less than their control counterparts. The difference is still not highly statistically significant, however.

Turning to the percent of wives employed each quarter, a negative experimental response appeared in all three subpopulations. Because of the experiment, 26-28 percent fewer North Carolina black and white wives worked, and 38 percent fewer Iowa wives worked. All of these differences are statistically significant. In contrast to the husbands' case, then, the relative reduction in work effort among wives is at least partially due to fewer experimental than control wives working, rather than solely to a larger number working slightly less. The differential between experimentals and controls occurs primarily because a larger number of control than experimental wives began work during the three years of the experiment.

The wage rate of working wives appeared to be slightly affected by the experiment, but the direction of response is not consistent across subpopulations, and does not approach statistical significance for any of the three groups.

Additional analysis to that reported in Table 5 revealed that the experimental response was not sensitive to the level of the basic benefit, but it was significantly influenced by the implicit tax rate in some instances. For example, for the three subpopulations combined, an increase in the implicit tax rate from 40 to 50 percent is shown to (1) reduce wage income of the experimental group by $31 per quarter (or about 13 percent of the control group's average wage income), (2) reduce hours worked for wages per quarter by 19 (about 12 percent), and (3) reduce the percent of wives working by five and a half percent (about

10 percent of the control group's average).

Other analysis to see if experimental response differed within the experimental group revealed that the experimental/control differences for all measures were larger for wives with school-age children than for wives with pre-school children. This runs counter to the hypothesis that mothers with pre-school children, because of the greater demands on their time, would exhibit a larger negative work response to the experiment than mothers with no pre-school children.

The only experimental response that varied significantly by season was the percent of wives employed, where the experimental/control difference for both North Carolina groups was largest in the winter and smallest in the summer--the latter being the peak period of employment for both control and experimental wives.

The only other factor which significantly influenced experimental response of wives was whether the family engaged in some farming activity, and then only for North Carolina black wives. Those in the experimental group had a larger negative work and income response than wives in families with no farming activity, perhaps suggesting a shift from wage work to farm work due to the experiment.

Dependent's Work and Income

As stated previously, dependents are restricted to those living at home and under age 21 if unmarried, or under age 18 if married. Figures 6 and 7 show graphs of raw, unadjusted data on dependents' wage income and wage hours worked. As expected, because of school, most of their work occurs in the summer months. Analysis by regression techniques shows that dependents of all three subpopulations in the experimental

FIGURE 6

AVERAGE DEPENDENTS' WAGE INCOME, BY QUARTER

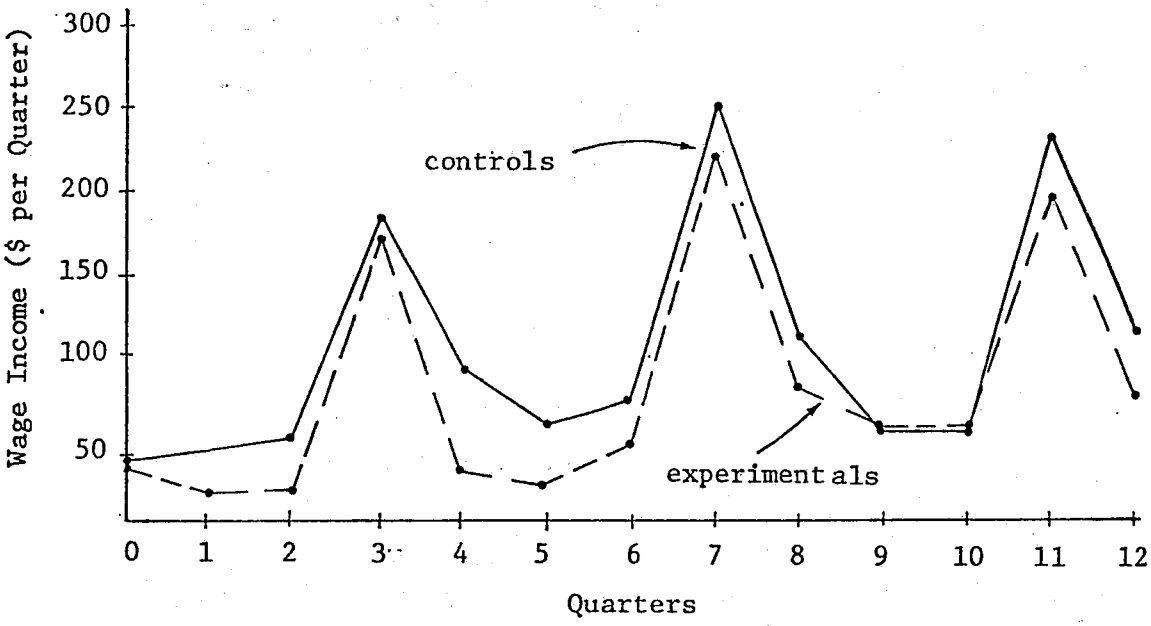
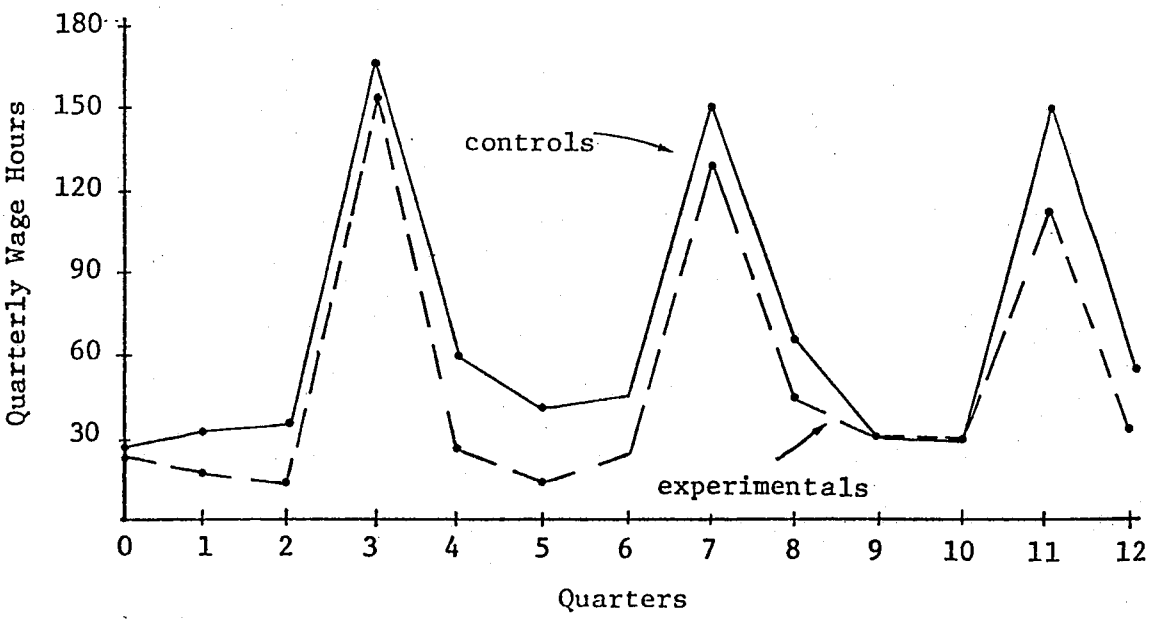


FIGURE 7

AVERAGE DEPENDENTS' WAGE HOURS, BY QUARTERS



group responded to the experiment by working and earning less than control dependents, but the response was of high statistical significance only for North Carolina white dependents (see Table 6). Among this subpopulation dependents in experimental families worked and earned about 55-65 percent less than their control counterparts as a result of being in the experiment. The degree of response appeared to be correlated with the implicit tax rate and the basic benefit level.

TABLE 6

DEPENDENTS: EXPERIMENTAL RESPONSE OF VARIOUS MEASURES OF INCOME AND WAGE WORK

	N.C. Blacks	N.C. Whites	Iowa
Wage Income Per Quarter			
Control group mean	116	128	72
Experimental group differential	- 22	- 72[a]	- 6
Percent differential	- 19.0	- 56.3	- 8.3
Significance of differential	.72	.99	.18
Wage Hours Worked Per Quarter			
Control group mean	75	88	48
Experimental group differential	- 12	- 58[a]	- 12
Percent differential	- 16.0	- 65.9	- 25.0
Significance of differential	.67	.99	.53

NOTE: The figures shown are calculated from regression equations, controlling for nonexperimental factors relevant to the particular income or work measure. To the extent possible, then, the control and experimental groups have been adjusted to be identical except for their treatment by the experiment.

[a]Significant at the .95 level (two-tailed test)
[b]Significant at the .90 level (two-tailed test)
[c]Significant at the .80 level (two-tailed test)

For all three subpopulations, the experimental response was largest for dependents age 18-20. One hypothesis that would explain this finding is that more dependents in experimental families entered post-secondary educational institutions, but this cannot be verified without further analysis.

Summary

This analysis has attempted to determine the extent to which income and work of rural wage earners would be affected by the receipt of an income-conditioned cash transfer, and whether this response would vary by the two basic program parameters of an income-conditioned transfer program--the implicit tax rate and level of basic benefit. The analysis was disaggregated by race and region because response appeared to differ somewhat among the three subpopulations and because these disaggregated figures are more useful for extrapolating to a larger low-income, rural nonfarm population of differing racial or regional composition.

Of central interest is the effect of the experiment (and its basic parameters) on total family income, for this and family size are the determinants of the level of payments in most income-conditioned cash transfer programs. The extent of response of family income is therefore important for estimating program costs. The incomes of both experimental and control families in this sample of rural wage earners rose over the three years of the experiment, but because of their being in the experiment, the total, earned, and wage incomes of experimental families rose less than those of control families. After adjusting for all non-experimental differences that could be identified, Iowa white families had incomes of 17 to 19 percent less than their control counterparts,

and North Carolina black families had incomes of 14 to 15 percent less than their control counterparts. Incomes of North Carolina white families in the experiment also rose slightly (4-6 percent) less than those of control families, but this difference could not be attributed to the experiment with a high degree of confidence.

Among the three populations, however, there was no consistency with respect to which family member's earnings contributed most to this experimental response in family income. Among North Carolina blacks the largest response was in wives' earnings; among North Carolina whites it was in dependents' earnings; and among Iowa whites, the dominant response was in husbands' earnings.

In addition to the program cost implications of an experimental response in family income, there is the concern that an income-conditioned cash transfer will induce able-bodied, so-called working poor husbands to "quit work and live off of welfare." The findings of this experiment should mitigate this concern. The percent of experimental husbands employed in any quarter was virtually the same as for control husbands, for all three subpopulations. And there was a statistically significant experimental/control difference in hours worked per quarter by husbands for only one of the three subpopulations.

There did appear to be a negative and significant experimental response for all three subpopulations in the number of wives working, accounting for most of the experimental/control difference in the hours worked by wives. Among dependents, there appeared to be a negative experimental response in wage income and hours worked for all three subpopulations, but the response was statistically significant only for

Iowa dependents.

Nearly all measures of response for all three subpopulations appeared to be uninfluenced by the level of the basic benefit. Over half of the experimental responses, however, did not appear to be sensitive to the implicit tax rate, but the results are sometimes inconsistent both across subpopulations and across response measures. Tax-rate effects of the highest statistical significance were found for family and husband income response measures for the two North Carolina subsamples, where an increase in the implicit tax rate of 10 percent (e.g., from 40 to 50 percent) resulted in increases in the experimental/control differences of 8 to 21 percent for the various income measures.

A Generalization of the Results

As stated earlier in this report, the two experimental sites were chosen to be representative of the rural nonfarm populations of groups of states, rather than of the state in which they were located. The Iowa site was representative of a three-state area--Wisconsin, Illinois, and Iowa; the North Carolina site was representative of Mississippi, Alabama, Georgia, South Carolina, and North Carolina. The results of the experiment can therefore be generalized to the rural nonfarm population of this eight-state area. In 1970 when the experiment began this area represented 28 percent of the rural non-farm population of the United States having incomes less than 150 percent of the poverty line. By race, the area represented 56 percent of the low-income, rural nonfarm black population, and 24 percent of the comparable white population in the United States. Since there were no American Indians or Mexican Americans in the sample, the results cannot be applied to these groups.

To obtain response estimates for this larger geographic area, the experimental responses of North Carolina families are first weighted by race to reflect the low-income rural nonfarm population of the five sourhern states. These totals are then aggregated with those for Iowa, weighted according to the ratio of the low-income, rural non-farm population of the three midwestern states to that of the five southern states.

In making these aggregations, all experimental responses, regardless of their statistical significance, are added together. The measured experimental response is the best estimate available of the degree of response, regardless of its significance level. For the purpose of calculating an aggregate response number, it would be inaccurate not to add zero or small (and hence insignificant) responses with larger (more significant) responses.

Finally, experimental responses of the three sample groups are standardized to a common plan for purposes of aggregation. The three-experimental-parameter regressions are used to calculate responses for a plan with a 45 percent implicit tax rate and an 80 percent basic benefit level.[1]

The weighted eight-state aggregate figures are shown in Table 7 for selected response measures, along with figures for each of the three

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[1] This is an average of the five experimental plans, weighted by the number of sample families in each plan. The estimates for each sample group used for the aggregation will differ slightly from those shown in Tables 3-6 because the "average" plan for each subsample differed slightly, and those earlier estimates are based on equations using a single experimental variable which did not adjust for this variation.

TABLE 7

WEIGHTED EXPERIMENTAL RESPONSES FOR
SELECTED MEASURES OF INCOME AND WAGE WORK

	Control/Experimental Differential as Percent of Control Mean[a]			
	N.C. Blacks	N.C. Whites	Iowa	Eight-State[b] Aggregate
Families				
Total income	-14	- 9	-18	-13
Wage income	-14	- 8	-17	-12
Wage hours	-10	-18	- 5	-13
Number of earners	- 6	-16	- 8	-11
Husbands				
Wage income	- 7	0	-10	- 4
Wage hours	- 8	+ 3	- 1	- 1
If employed	- 1	- 1	0	- 1
Wives				
Wage income	-41	- 3	-32	-25
Wage hours	-31	-23	-22	-27
If employed	-25	-28	-38	-28
Dependents				
Wage income	-19	-57	- 8	-39
Wage hours	-16	-66	-27	-46

[a]Responses standardized to a 45% tax/80% basic benefit plan.

[b]Weighted averages of the basic data from which the subsample percentages were derived, using the following weights: NC-B, .31788; NC-W, .48943; Ia., .19269.

subpopulations. The figures are the difference between control and experimental families (individuals), as a percent of the control group average. For example, -4 percent means that experimental husbands are estimated to earn four percent less than control husbands as a result of being in the experiment.

The weighted figures in Table 7 are, of course, consistent with the previously reported results; aggregation has simply removed some of the variation among the subpopulations, and the aggregates present a clearer, though more simplistic, picture. The eight-state aggregate figures show that husbands responded very little to the experiment, while wives and dependents in the experiment reduced their work effort and wage income relative to their control counterparts. Although the latter reductions were quite large in percentage terms, their absolute effect on family income was much smaller because wives and dependents together contributed only about a fourth as much to family wage income as did husbands.

As stated previously, experimental response appeared to be insensitive to the basic benefit level, but somewhat responsive to the implicit tax rate. Increasing the implicit tax rate by five points (e.g., from 45 to 50) and holding the basic benefit level constant is estimated to change the eight-state family aggregates in Table 7 to the following: total income, -18 percent; wage income -16 percent; wage hours, -15 percent; and number of earners, -12 percent.[1] Alternatively,

[1] The largest response to the implicit tax rate was found among North Carolina whites, which according to the weighting scheme make up almost half of the eight-state aggregates.

holding the tax rate constant and increasing the basic benefit level by five points (e.g., from 80 to 85 percent of the poverty line) would not change any of the numbers by more than one percentage point.[1]

As stated earlier, caution must be exercised in extrapolating these numbers to implicit tax rates outside the 30-50 percent range or to basic benefit levels outside the range of 75-100 percent of the poverty line. Also, as noted previously, the short-run nature of the experiment may result in overstated tax-rate responses and understated basic-benefit responses, relative to what would occur in a permanent program.

Conclusions

From this analysis, the following tentative conclusions can be drawn concerning the response of low-income, rural (predominantly nonfarm) wage earners to an income-conditioned cash transfer program: (1) there will be little if any quitting of work or reduction in hours of work by husbands; (2) fewer wives will work; (3) the work and earnings of dependents may also be reduced somewhat; (4) earnings and work behavior are not likely to be influenced by variations in the basic benefit within the range of 75-100 percent of the poverty line; and (5) the implicit tax rate may well be an influential variable in the response to cash transfers, suggesting that the tax rate response found

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[1] No statement on the statistical significance of any of these figures can be made because they are aggregates of separate regression equations.

in this and other studies should be given appropriate consideration if income-conditioned cash transfers are to be extended to the working poor.

III. INCOME AND WORK RESPONSE OF FARMERS

Farm operators comprise a small but significant proportion of the low-income population. Although published statistics do not give figures for operators alone, almost half a million farm operators and laborers fall into the low-income category, constituting 8.8 percent of the poverty population of the United States.[1]

Like other self-employed workers, farm operators face different labor market options and incentives than do wage workers, and may be expected to respond differently to a cash assistance program. Since farm operators control the enterprises which employ them, they can alter the demand for their own labor as well as the supply. They can also combine self-employment with wage work. This chapter first describes the sample of farmers and then discusses the effects of the experiment on the profit, work, efficiency, and output of farm families.

The Sample

The broadest definition of farm operators encompasses all workers who report at least some hours devoted to operating or managing a farm during a relevant time period. By this criterion, there were 262 farm operators enrolled in the Rural Income Maintenance Experiment sample in its initial year. There was some movement into and out of farming, and the total number of farm operators fell to 250 by the final year of the experiment.

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[1] U.S. Department of Commerce, Bureau of the Census, "Money Income and Poverty Status of Families and Persons in the United States: 1974," Current Population Reports, P-60, No. 99, July, 1975.

Some farm operators having characteristics such as negligible or discontinuous farming activities, extreme age, or nonconstant marital status were excluded from the sample because they might have obscured the pattern of experimental effects. The standards employed to exclude them depend on the problem addressed, so that the pattern of exclusions varies throughout the chapter.

Approximately 55 percent of the farm operators were in North Carolina and 45 percent in Iowa. Given the total sample size, two sites provide a good compromise between representing various types of agricultural settings and concentrating the sample in a homogeneous group to maximize its size for analytical purposes. The North Carolina site represents a southern agricultural setting with a large proportion of rural poor. The Iowa site represents the Corn Belt, in which a small proportion of the rural population, but a large absolute number of persons, can be characterized as poor.

The farm analyses that are summarized here used a special analytical technique so that each farm operator could be treated as an independent observation for each of the three years of the experiment.[1] The final sample size in each geographic region is approximately 300 observations (control plus experimental farmers), with the exact number in each analysis depending on the specific sample restrictions adopted for that analysis. The distribution of experimental families by experimental plan is presented in Table 8.

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[1] The technique used is an error components pooling technique. Quarterly observations of farming activities cannot be pooled as observations of wage earners can because farming has distinct annual cycles.

TABLE 8

PERCENTAGE DISTRIBUTION OF EXPERIMENTAL FARM FAMILIES AMONG EXPERIMENTAL PLANS NORTH CAROLINA/IOWA

Basic Benefit as Percent of Poverty Line	Implicit Tax Rate		
	30%	50%	70%
50		18/20	
75	13/27	32/26	10/9
100		27/19	

Farm Profit

Because farm operators do not receive a constant hourly monetary return, an analysis of hours worked may yield misleading conclusions regarding their economic well-being. So farm earnings must be evaluated directly. The measure used in this analysis is profit, defined as gross revenue less current (i.e., variable) costs. So defined, profit includes monetary returns to land and capital (i.e., fixed costs) and to operators' labor.

The average level of the experimental group profit relative to that of the control group is presented in Table 9. As Table 9 shows, operators' participation in the experiment generally reduced profit for a farm operation of a given size. The change in profit was a much larger percentage of total profit in North Carolina than in Iowa. The experimental/control differences bordered on an acceptable level of statistical significance.

Changes in the implicit tax rate or level of basic benefit produced no significant or consistent pattern of additional effects. Finally, there were no distinct time trends to the effects. In fact, the profit of experimentals in Iowa was actually larger than that of controls in the middle year of the experiment.

TABLE 9

AVERAGE EXPERIMENTALLY-INDUCED EFFECTS ON FARM PROFIT

	North Carolina	Iowa
Control group mean	4,758	11,895
Experimental group mean	3,568	10,904
Absolute differential	-1,190	-991
Percent differential	- 25.0[b]	- 8.3[a]

[a]Significant at the .85 level.

[b]Significant at the .80 level.

Farm Families' Labor Supply

Labor supplied to the farm cannot be considered independently of alternative employment opportunities for farm operators or even of employment opportunities for other family members. The experimentally-induced effects on wage work are of particular concern, since, in the experimental sample, as many as 58 percent of the operators in North Carolina and 33 percent of those in Iowa also worked for wages. If the labor market activities of husbands and wives are considered jointly, 78 percent of the North Carolina families and 50 percent of the Iowa families had one or more

members who worked for wages.

Farm families' labor supply responses are summarized in Table 10. As might be anticipated, hours of wage work for both spouses in the experimental group declined relative to controls as a result of the experiment. This decline was accompanied by an increase in the hours of operators'

TABLE 10

AVERAGE EXPERIMENTALLY-INDUCED EFFECTS ON FARM OPERATORS' AND WIVES' LABOR SUPPLY

	Control/Experimental Differential as Percent of Control Mean	
	North Carolina	Iowa
Farm Operators		
Hours of farm work	+10.7[a]	+10.9
Hours of wage work	-31.3[b]	-10.0[b]
Employment in wage work	- 6.0	+25.6
Total hours of work	- 2.7	+ 9.5
Wives		
Hours of wage work	-62.7[b]	-53.5[b]
Employment in wage work	- 8.2	+ 7.0
Farm Operators and Wives		
Total hours of work	-16.4[b]	+ 7.3[b]

[a]Significant at the .90 level.

[b]The method used to calculate this differential does not permit computation of the level of statistical significance.

farm work. An unexpected result is that the probability of employment in a wage job increased for both spouses in Iowa as a result of the experiment. For operators and for operators and their wives combined, total hours of work on the farm and for wages rose slightly in Iowa but fell in North Carolina. Many of these labor supply responses should be interpreted with caution because of the small sample of operators and wives who actually work in wage jobs. The following sub-sections describe the separate responses of operators' farm work, operator's wage work, and wives' wage work.

Farm Operators' Farm Work

The average experimentally-induced increases in the level of an average farm operator's farm work over the three years of the experiment are summarized in Table 11. Although the absolute size of the differential between the control and experimental group mean values was larger for Iowa, the differential as a percentage of the control group mean was approximately the same for both regions.

TABLE 11

AVERAGE EXPERIMENTALLY-INDUCED EFFECTS ON FARM OPERATORS' HOURS OF FARM WORK

	North Carolina	Iowa
Control group mean	1,331	2,511
Experimental group mean	1,473	2,785
Absolute differential	+142	+274
Percent differential	+ 10.7[a]	+ 10.9

[a]Significant at the .90 level.

The finding of a positive experimentally-induced effect for hours of farm work may seem surprising. Theoretically, a negative income tax

program should lead to a decrease in hours for workers engaged in wage work, and it is often assumed that this disincentive will be found for all types of work. However, this assumption may not be valid for farm operators for at least three reasons, all of which relate to the fact that operators' farm work is a form of self-employment.

The first reason is that, as has been discussed, the monetary gain to a worker for additional hours of labor in self-employment is not constant. Instead, it varies with the level of his work and the level of utilization of other inputs to the production process, which are often within his control. If, in his role as a farm manager as well as a farm worker, an operator responds to a negative income tax program by altering the level of utilization of production inputs other than his labor, or by altering the production process itself, the forces affecting his labor supply may become quite complicated. The direction of the net change in his level of labor supply is no longer clear. Such complicating changes should be reflected in the efficiency of the farm operation, which will be discussed later.

The second reason that a decline in farm work might not occur results from the fact that farm operators or their wives often hold wage jobs. Under reasonable assumptions it is expected that a negative income tax program would lead to a reduction in the level of wage work while leaving the level of operators' farm work unaffected. If an operator derives less displeasure from an additional hour of work on the farm than from an additional hour (by him or his wife) at the wage job, hours of farm work may in fact increase. Additional analyses were performed to determine

what proportion of the increase in farm work actually did depend on participation in wage work. While the tests were not definitive, they suggest that the increase for operators whose families did not hold wage jobs was similar in magnitude to the increase for those whose families did hold such jobs.

A final reason involves the risk associated with farm work. Operators often face the choice of altering their farm operation in ways that could increase their potential profits but would also increase the risks. Insofar as a negative income tax program helps an operator to absorb a loss, he will be more likely to take such risks. Such changes in operation often require an increase in his own labor input, at least during the transition.

These three reasons are not necessarily independent of each other, and, individually or in combination, they do not unambiguously predict an experimentally induced increase in farm work. However, they do suggest that an increase in operators' labor is a theoretically reasonable response.

One final point is worth noting about Table 11. While the average percentage differential in hours of farm work over the three years was the same size in both regions, only the differentials for North Carolina were statistically significant. The variability of the response in Iowa suggests that there may have been no experimental response at all.

The experimental response did not differ with the level of the basic benefit or the implicit tax rate. There was, however, a clear time trend

to the experimentally-induced effects, particularly in North Carolina. These results are summarized in Table 12. While experimentals exhibited an absolute decrease in hours of farm work over time, the differential in hours of farm work between experimental and control families was positive and increased over time. The trend for Iowa was neither distinct nor statistically significant. That for North Carolina was both, beginning with a negative differential which disappeared by the second year of the experiment. The positive differential evident by the end of the experiment was quite substantial.

TABLE 12

AVERAGE EXPERIMENTALLY-INDUCED EFFECTS ON FARM OPERATORS' HOURS OF FARM WORK BY YEARS

	North Carolina[a]	Iowa
1970		
Control group mean	1,730	2,656
Experimental group mean	1,583	2,885
Absolute differential	-147	+230
Percent differential	- 8.5	+ 8.7
1971		
Control group mean	1,373	2,506
Experimental group mean	1,588	2,664
Absolute differential	+215	+158
Percent differential	+ 15.7	+ 6.3
1972		
Control group mean	890	2,372
Experimental group mean	1,249	2,806
Absolute differential	+359	+434
Percent differential	+ 40.3	+ 18.3

[a]The set of differentials for North Carolina is significant at the .90 level.

It is noteworthy that farm hours among controls in both North Carolina and Iowa were declining over time. This control group trend may have been the result of such phenomena as the adoption of labor-saving capital inputs, the improvement of off-farm job opportunities which alleviated some underemployment on the farm, or changes in natural conditions such as weather. Alternatively, the trend may have been the result of changes in the pattern of timing of interviewing. Of course, these phenomena should also have affected experimentals.

The effect of a negative income tax program on operators' farm labor supply was further analyzed by characteristics of operators or their farm operations. The statistically significant findings were that, in both regions, the lower the age, the smaller the family size, and the smaller the proportion of land that was rented, the larger were the increases in hours; in North Carolina, higher levels of education and being black were also associated with larger increases; and, in Iowa, greater levels of farm work effort prior to the start of the experiment were associated with larger increases in hours. A possible interpretation of these findings is that, since the conditions of youth, a greater proportion of owned land, and more education (in North Carolina) were all associated with a larger experimentally-induced work response, the incentive effects may have been related to an investment motive. This interpretation, however, was not supported by other analyses of the farm operations in the experiment.

Farm Operators' Wage Work

Average experimentally-induced effects over the three years on the probability of employment and the level of work in the wage market are

shown in Table 13. With the exception of employment in Iowa, the results showed the expected negative response of wage work to the experiment. However, even though the percentage differentials were often large, none was statistically significant. Additional analyses failed to demonstrate that operators'wage work responses varied with changes in the level of the basic benefit or implicit tax rate or that they showed a time trend.

TABLE 13

AVERAGE EXPERIMENTALLY-INDUCED EFFECTS ON FARM OPERATORS' WAGE WORK

	North Carolina	Iowa
Percent of Operators Employed During Quarter		
Control group mean	61.4	30.9
Experimental group mean	57.7	38.8
Absolute differential	- 3.7	+ 7.9
Percent differential	- 6.0	+25.6
Hours of Wage Work for Those Employed		
Control group mean	949	588
Experimental group mean	674	420
Absolute differential	-275	-168
Percent differential	- 29.0	- 28.6
Hours of Wage Work for All Operators		
Control group mean	583	182
Experimental group mean	401	164
Absolute differential	-182	-18
Percent differential	- 31.3[a]	-10.0[a]

[a]The method used to calculate this differential does not permit computation of the level of statistical significance.

Wive's Wage Work

The average experimentally-induced effects over the three years on

wives' probability of employment and their level of work are shown in Table 14. Their direction matches the pattern exhibited by farm operators. However, sample size problems leave the results open to considerable doubt, particularly in the case of North Carolina wives. Many wives in control families in North Carolina increased their work effort from a very small or zero level in the first year to a much larger level by the last year. Since wives in experimental families demonstrated no such pattern, the differentials are large and significant.

TABLE 14

AVERAGE EXPERIMENTALLY-INDUCED EFFECTS ON WIVES' WAGE WORK

	North Carolina	Iowa
Percent of Wives Employed During Quarter		
Control group mean	64.1	29.6
Experimental group mean	58.8	31.7
Absolute differential	- 5.3	+ 2.1
Percent differential	- 8.2[b]	+ 7.0
Hours of Wage Work for Those Employed		
Control group mean	921	326
Experimental group mean	368	133
Absolute differential	-553	-193
Percent differential	- 60.0[a]	- 59.1
Hours of Wage Work for All Wives		
Control group mean	591	97
Experimental group mean	220	45
Absolute differential	-371	-52
Percent differential	- 62.7[c]	-53.5[c]

[a]Significant at the .99 level.

[b]Significant at the .80 level.

[c]The method used to calculate this differential does not permit computation of the level of statistical significance.

A statistically significant time trend appeared in the effects for wives in North Carolina. The experimentally-induced negative effects on both the probability of wage market participation and the level of work for those who did participate became larger over the three years of the experiment. No such trend was evident in Iowa.

The experimentally-induced effect on unpaid work of wives on their own farms was examined. Wives in both regions tended to work few hours on their own farms. An unexpected finding was that wives in both regions tended to increase both the probability of participation in unpaid farm work and the hours worked as a result of the experiment. Furthermore, these results were found for wives who had wage jobs as well as those who did not. The results were often statistically significant.

Farm Efficiency

The simultaneous patterns of lowered profit and increased work effort on farms of a given size suggest that the economic efficiency of farms may have changed as a result of the experimental treatments. An analysis was performed of two aspects of economic efficiency: price efficiency, which involves using the proper amount and mix of variable argricultural inputs (i.e., hired labor, fertilizer, feed, and seed) in relation to their prices and to the price of output; and technical efficiency, measured by the amount of output produced from a given bundle of variable inputs and fixed inputs such as capital goods and land.

Experimental farms proved less technically efficient than control farms during the experiment, while price efficiency seemed unaffected. The differences in technical efficiency were most pronounced in North

Carolina, where farms in all five experimental plans were less efficient than control farms and the differential increased over the three years of the experiment. Furthermore, technical efficiency decreased at higher implicit tax rates for a given level of basic benefits. No clear pattern emerged, however, with respect to differences in the level of basic benefits.

Differences in technical efficiency were not as distinct in Iowa. While experimental farms were less efficient in the first and third years, they were more efficient in the second year. Also, there was no pattern associated with differences in the implicit tax rate or the basic benefit level.

Farm Production

The best data available on farm output or production are those for sales of the main types of crop and livestock production. In Iowa, participation in an experimental plan was associated with a slightly higher value of crop output, but this was more than offset by a lower value of livestock. In North Carolina, the situation was just the reverse: participation in an experimental plan was associated with a slightly higher value of livestock output, which was more than offset by a lower value of tobacco and other crop output. The net result in both regions, therefore, was a small decrease in the total value of farm output.

An index of the labor inputs which should have been required to produce the farm's output was constructed in order to determine whether the observed increase in hours of farm work could have resulted from a change in the mix of output. An estimate of labor requirements was made

for each farm, using average labor requirements for the production of relevant crops and livestock as given in state agricultural publications. These estimates do not include overhead operations such as maintenance and repair, and do not distinguish among owner-operator labor, hired labor, and mechanical substitutes for labor.

Analysis of this index showed significantly lower labor requirements for experimental than for control group farms. The differentials did not appear to vary with the implicit tax rate or the basic benefit level, and showed no consistent pattern over time.

Conclusion

The overall pattern of experimental effects on farm families is more complicated than that for wage earners. Farm profit and production appear to have decreased in response to the experiment, while farm work effort on the part of operators increased. The decline in economic efficiency found for experimental farms relative to controls reflects these divergent patterns.

The net changes in total family hours and earnings, in both farm and wage work, are worth noting. Total family earnings declined as a result of the experiment. The average experimentally-induced effect on total family labor supply appears to be negative in North Carolina, but primarily because of the uncertain negative effect on the wage work of wives. The case in Iowa is more ambiguous: the effect was positive in only the third year, but this year dominates the negative effects in the first two years when the three are averaged together.

Why farm output declines while labor input rises remains unclear.

One possibility is that, since net income is taxed at a higher rate during the experiment than after it ends, experimental farmers are deferring sales of output until after the end of the experiment or moving expenses forward into the experimental period. Or they may be devoting time to farm improvements and other investment activities which may increase profits and production in the long run but have unfavorable short-run effects. While the limited duration of the experiment precludes a full investigation, direct studies of experimentally-induced effects on holdings of land, equipment and machinery, buildings, and livestock failed to support the investment view.

Another possibility is that, with the protection of the basic benefit, operators may become less careful in management decision-making or less concerned with the productivity of their activities. They may be spending time in activities which increase their enjoyment of farming or may be producing goods for their own consumption rather than for market. The data do not distinguish among these activities.

IV. OTHER RESPONSES TO THE EXPERIMENT

The experiment attempted to measure the effects of income-conditioned payments on recipients' attitudes and behavior as well as on labor supply response. The analyses performed to date are summarized below. Several forms of consumption effects are reported first, followed by descriptions of psychological and social effects.

Nutrition

Public policy has long sought to improve the diets of low income families. Several in-kind transfer programs, the largest of which is the Food Stamp program, have been designed for this purpose. This section examines the effectiveness of the cash payments provided by the experiment in improving the diets of low-income rural families and compares their effectiveness with the Food Stamp program. Only indirect comparisons are possible because of low Food Stamp participation rates among the sample families.

Dietary intake data were collected from 612 families during the third quarterly interview, administered in September 1970, and from 712 families at the eleventh quarter in September 1972. The family member responsible for meal planning and preparation was asked to recall, in precise amounts, all food consumed at home by the family during the previous 24 hours. In the nutrition literature this twenty-four-hour recall method is considered the best method of estimating the intake of a large, randomly selected sample. However, validation studies have shown that this method tends to understate differences between low and high dietary intake groups. Therefore the data are inclined to bias downward the estimates of program impact.

From the dietary intake data, consumption of ten indicators of dietary adequacy--energy, protein, Vitamin A, calcium, phosphorus, iron, niacin, riboflavin, thiamin and Vitamin C--was calculated as a percentage of the Recommended Daily Allowance. These percentages were truncated at an upper value of 100, thus ignoring intakes beyond 100 percent of the Recommended Daily Allowance. Data were analyzed both separately and in a combined index, the Mean Adequacy Ratio (MAR), which is an unweighted mean of all ten truncated ratios. The experimental effect was estimated by multiple regression analysis which controlled for differences between the control and experimental groups with respect to purchasing power; access to non-purchased food through in-kind transfers and home-grown food; and the nutritional efficiency of food purchasing and preparation, as reflected by age, household size, race, education and knowledge of nutrition.

No experimental effect was found in Iowa, but among North Carolina families the MAR of the experimental group was 3.8 percent higher in the third quarter and 4.5 percent higher in the eleventh quarter than the MAR of the control group. Both results were statistically significant. The greatest nutritional gains for the North Carolina families in the third quarter were in energy, riboflavin, phosphorus, iron, and niacin; in the eleventh quarter the greatest gains were in energy, riboflavin, phosphorus, iron, calcium, and Vitamin C. The absence of an experimental effect in the Iowa group may arise from its higher initial level of nutrition: in the third quarter the incidence of deficient intake (less than two-thirds of recommended amounts) was found to be twice as high in the North Carolina control group as among the Iowa controls for nearly all

ten nutrients. Sixty percent of the North Carolina families were deficient in calcium, 50 percent in Vitamin A, and 39 percent in Vitamin C.

The cost of increasing the nutritional intake for North Carolina families was somewhere between $1.50 and $3.80 per day for one percentage point in the MAR. This is in the same range of cost-effectiveness as was found for food stamps in a study in rural Pennsylvania conducted by one of the authors.

Housing Consumption

Three basic public policy approaches exist toward improving the quality of housing of low-income families: conventional public housing, conditional cash grants (e.g. housing allowances), and unconditional cash grants. The experiment permits an evaluation of the efficacy of unconditional cash grants in improving the housing quality of the rural poor.

Using multiple regression analysis to control for relevant differences between the controls and experimentals, including location, race, occupation, marital status, education, and income, estimates were made of the effects of experimental payments on the probability of buying a new home, how early in the family's life cycle the home was bought, the purchase price of the new home, and the amount of rent paid by renters who changed residence. Home improvement expenditures could not be analyzed because of a paucity of observations.

Of the 327 original non-homeowning families who remained in the experiment, had constant marital status during the experiment, and whose head was less than 58 years old at the start of the experiment, 55 bought a home. The probability that an experimental family would buy a

home was about .06 greater than that of a control family. Most of this experimental effect is attributable to North Carolina families and within North Carolina to white families and non-farmers. The impact in Iowa on experimental families was slightly negative, with a strong negative effect on non-farmers outweighing a positive effect on farmers.

White experimental families in both Iowa and North Carolina were able to buy a home two or three years earlier in their life cycle than control families. The results were significant for farmers but not, in general, for others. There was no statistically significant overall difference between controls and experimentals in the purchase price of the home.

Only 90 families were renters without interruption during the experiment, and only 41 of these changed residence. Among these 41 families no experimental effect could be detected on the amount of rent paid.

Clothing Expenditures

Clothing expenditures during the winter quarters of each year were analyzed for both wage-earning and nonwage-earning families. The sample consisted of two-parent families with constant marital status over the three years of the experiment. These families were divided into two groups, one in which the husbands had wage earnings in every year and another in which the husbands did not. Estimates were made of changes in expenditures given one-dollar changes in various sources of income.

Families of wage earners spent $.025 out of an added dollar of experimental payments on clothing. This estimate is significantly different from zero at the 90 per cent level. This is to be compared with added clothing expenditures of $.05 out of an added dollar of spouse income

and $.007 out of an added dollar of all other income. Both these estimates are significantly different from zero at the 99 percent level. The total clothing expenditures of families of non-wage earners were unaffected by the receipt of experimental payments.

Utilization of Medical Care and State of Health

The increased income afforded by an income maintenance program is expected to induce greater utilization of medical care. In the rural experiment this is particularly true since experimental families were permitted to subtract medical expenditures from income before calculation of the transfer payment. This expected increase in utilization of medical care, together with increased expenditures om food and housing, should lead to an improved state of health. Viewed as investments in human capital, health expenditures may in the long run offset short-run work disincentive effects of an income maintenance program by raising productivity.

In this study, variables representing utilization of medical care include the number of annual contacts with hospitals, clinics, private physicians, and dentists; whether a family member visited a specialist; cash expenses by the family for doctor, hospital, drug, and dental bills; and whether a family possesses medical insurance. State-of-health variables include days in bed for health reasons, days of work lost due to illness, the presence of a chronic health impairment, and whether this condition limits the amount or type of work practiced by the individual.

Except for medical expenditures, analyses are performed separately for adult males, adult females, and for children less than 17 years of age. The total sample consists of 554 families present throughout the

experiment, whose head was less than 61 years of age, and who had constant marital status. Multiple regression models control for differences in prior health care utilization and state of health, income, race, region, age, education, family size, occupation, and, where relevant, possession of health insurance or VA benefits, children's age, mother's age, and whether the mother was pregnant.

Experimental effects are found to be weak, if present at all, and often contrary to theoretical expectations. Adult males and females in the experimental group appeared slightly less inclined to contact an agency for medical care, but their children appeared more inclined to do so. The probability of incurring a medical expense for experimental families was slightly higher in the third year of the experiment, but the total amount of those expenditures was no different than those of the control group. Effects of the experiment on the state of health variables were also weak and contradictory: an early relative improvement for adult males in the experiment was dissipated by the third year, the relative health of adult females appeared to decline, and that of children underwent a slight improvement. Few of these findings are statistically significant at even the .80 level.

There are several reasons why an experimental effect may not be observed. First, expenditures on curative medical care probably are scarcely affected by changes in income, while an observable increase in expenditures for preventive care may require a higher level of transfer payments than provided by this experiment. Second, the program's tax on earnings reduced the monetary rewards to workers' improved productivity from improved health. Finally, state of health was evaluated by the

participants themselves, rather than by a trained physician. It is possible that although members of the experimental group were becoming more healthy they reported the same number of health problems, either because the program allowed them to recognize and treat real conditions they had previously ignored or because they wished to offer an excuse for working less.

Possession of Consumer Durables, Cars, Liquid Assets, and Debt

Increases in family income in the form of income maintenance payments may cause the family to alter the level of its stocks of assets and debts. Because these adjustments may require several years to complete, estimates were made of both the short-run--i.e., current year--and complete long-run adjustment of stocks to transfer payments. Separate analyses were performed for black and white families in which the husband had wage earnings, and for farmers. The estimated long-run responses of stocks of various types of assets and debts for wage-earners and farmers are shown in Table 6.

TABLE 6

LONG-RUN RESPONSE OF ASSET AND DEBT STOCKS

	Consumer durables	Cars	Store debt	Loan debt	Liquid assets
Wage-earners:					
Black:	$173	$166	$-12	$ 654	$ 42
White:	170	130	57	-1,245	187
Farmers:	122	-87	-60	-268	19

The estimation technique does not allow confident assignment of levels of statistical significance to these estimates. In general, however, it appears that the results for black wage-earners were more statistically significant than those for whites, and the estimates for the farm sample were generally not significant.

The total experimental effects for wage-earners shown in Table 6 are based on regression equations which included a binary treatment variable, denoting eligibility for experimental payments, and a measure of the amount of payments a family would receive at its "normal" income level. In some cases these two effects were offsetting. For example, for black and white wage-earners, simply being eligible for payments appeared to reduce loan debt by $2,638 and $1,540, respectively, while increases in the size of payments increased loan debt. Unfortunately, the estimation technique did not allow the analysts to distinguish between the effect of eligibility and initial differences in stocks held by the treatment and control groups. Thus, in those cases where the overall effect is dominated by a large eligibility effect--particularly the large decline in loan debt for white wage-earners--these estimates should be viewed with considerable caution, as they may at least in part reflect initial differences in holdings rather than treatment effects.

Job Change and Job Search

Because they decrease the return from working, experimental payments might be expected to cause higher rates of job departure, longer periods of unemployment, and indifference to earnings characteristics of jobs. On the other hand, support payments may provide an income cushion which permits increases in earnings through longer job search.

The study examined job departure, duration of unemployment, and job selection for male wage-earners who were employed at the beginning of the experiment. For this sample experimental payments appeared to have no overall effect on the probability of leaving a job, though significant effects were found for some sub-groups of workers. For instance, experimentals who initially had more desirable positions were less likely to leave their employers than similar controls, while experimentals with less desirable positions were more likely to leave their employers. These tendencies appeared to increase with plan generosity.

Experimentals who left their initial employer were unemployed about three weeks more than similar controls over a two-year period. The differential in unemployment duration between experimentals and similar controls was greater for those who had low wage earnings prior to the experiment, faced high implicit tax rates, or had incomes from another worker in the family. Younger and better educated experimentals were also unemployed longer.

Experimentals who changed jobs tended to obtain jobs with more desirable nonwage characteristics than similar controls if they had relatively desirable jobs to begin with, and to do worse than controls if they initially had relatively undesirable jobs. Experimental heads with secondary earners in their families were able to obtain jobs with better earnings prospects and higher status, particularly if they were on high basic benefit plans and the secondary earner had relatively high earnings.

A standard experimental plan (tax rate 50 percent, basic benefit level 75 percent of the poverty line) resulted in increases in wages in subsequent jobs, presumably through longer job search. But the increases

were not statistically significant, and the gain in earnings in one year was more than offset by the earnings lost while unemployed. Higher tax rates and basic benefit levels, however, significantly reduced wage gains, increased unemployment, and reduced earnings.

An analysis of methods of job search showed a high payoff from the use of the Public Employment Service, which significantly exceeded that of other job search methods. The infrequency of its use suggests that rural people in the study areas had inadequate access to it.

Geographic Mobility

Income supplements may enhance a family's propensity to move--to obtain better housing, to live in a more desirable neighborhood--by providing the ability to defray moving expenses or by minimizing the need to obtain full-time employment immdiately at the destination. On the other hand, if low-income families move primarily in response to wage rate differentials or unemployment, then income maintenance payments may lessen the propensity to move. Finally, it may be that transfer income, especially from a short-duration experiment, has no effect on migratory behavior.

The sample used in the study of geographic mobility is restricted to families with constant marital status and whose head was less than 62 years of age at the start of the experiment. The effect of the experiment on residence changes is estimated with regression analysis, which controls for nonexperimental differences between the control group and the experimental group with respect to variables affecting the propensity to move. Results indicate that experimental families were significantly more likely to move than controls. They had a 17 percent

higher incidence of mobility than control families as a result of the experiment. Essentially all of this experimental response is attributable to families in North Carolina.

Psychological Well-Being

Most studies of measures of psychological well-being have found them positively related to socioeconomic status, as indicated by income, education, or occupational status. One might expect, therefore, that increasing the incomes of the poor through an income maintenance program would lead to some improvement in their psychological state. On the other hand, if the income maintenance program led to a decline in work effort, the growing dependency might lead to a loss of self-esteem.

Scales were constructed to measure a variety of aspects of mental health and psychological well-being--e.g., self-esteem, psychosomatic and nervous symptoms, positive and negative emotional states, life satisfaction, a sense of powerlessness, and a sense of being cast adrift in a chaotic world (anomy). A number of single-item questions also asked about each person's worries over money, health, jobs, and other problems; his feelings about the quality of his life; his hopes and aspirations for the future; his subjective sense of general health; excessive drinking; etc.

No significant experimental effect appeared on most of the measures of psychological well-being for either adults or teen-age youths. The few significant effects were scattered and unstable over time. Variations in the effects of different experimental plans failed to form a consistent and meaningful pattern. Neither was there evidence that any

subgroups within the larger sample responded differently to the program than others.

The analysis sought to determine whether possible positive psychological effects of increased income were offset by negative psychological effects of a reduction in work effort and earned income. This did not prove to be the case. An attempt was also made to determine whether the few significant experimental effects could be attributed to the size of program payments or to other features of the program. The size of payments was rarely significantly related to the measures of psychological well-being. But there was some tendency for the basic benefit level to be positively related to the measures of well-being even when the size of payments was held constant. This suggests that a greater sense of security tended to lead to higher levels of happiness and lower symptoms of psychological distress, even apart from the actual level of payments. Overall, however, these positive effects were apparently counterbalanced by negative effects of other unidentified aspects of the experiment.

The general failure to obtain experimental effects on psychological well-being may be due to poor measures of the effects: psychological well-being is notoriously difficult to measure. Also, larger payments sustained over a longer period of time may be required to bring about a substantial change in psychological functioning. There is little evidence from this analysis, however, that an income maintenance program of the type considered here would have any social psychological effect, either positive or negative, on the rural poor.

Marital Dissolution and Family Interaction

Theoretical considerations leave uncertain the expected direction and magnitude of the effect of increased transfer income and security on marital stability, intra-family relationships, and the division of labor and patterns of decision-making among husbands and wives. Some expect that since constant financial tensions erode the quality of a family's interpersonal relations, an income maintenance program, by alleviating these tensions, might reduce the rate of marital dissolution. On the other hand, income maintenance payments increase the economic independence of the wife and decrease the importance of the husband's role as bread-winner, both of which might lead to a greater likelihood of marital dissolution. Finally, many would predict no effects from a short-term income maintenance program. Marital instability is often associated with early marriage, a variable that cannot be examined in such an experiment. It has also been argued that marital instability and family conflict are aspects of a "culture of poverty" that is transmitted from generation to generation and is relatively insensitive to short-run increases in income or transfer payments.

The impact of the experimental payments on marital dissolution rates was determined by examining the histories of 616 married couples (280 experimental and 336 control) present at the study's inception. Sixteen experimental couples and 16 control couples experienced divorce, separation, or desertion during the three years of the study. This level of family dissolution is not so high as to suggest the existence of a "culture of poverty" among the study participants. The dissolution rate was 19 per 1000 couples per year for the experimental group and 16 for

the control group. The difference between them was not statistically significant. Regression analysis, controlling for the effects of a number of other variables, showed a somewhat greater but still insignificant difference. Experimental group marital dissolutions occurred with greatest frequency among those in one of the less generous plans, but since no patterned relationship appears between payment generosity and dissolutions, this was probably a statistical fluke.

Marital adjustment and parent-child relations were examined through analysis of a series of questions asked of wives, mothers, and teen-agers. There was no significant overall experimental effect on marital happiness, various types of satisfaction in marriage, or marital disagreements as reported by the wives. Mothers in the experimental group did not differ from those in the control group in their reports of how well they got along with their children, in the extent to which they engaged in shared activities, or in the extent to which they had disagreements and arguments with their children. Similarly, teen-agers in the experimental and control groups did not differ in their reports of how close they felt to their fathers and mothers, in the degree of conflict with their parents, or in the closeness of parental supervision.

Both husbands and wives were questioned about the division of household tasks within the family and about who usually made the decisions on various types of questions. In general, there was little experimental effect on the husband-wife division of labor for most of the specific tasks examined. There was only a slightly greater effect on the relative balance of power between husband and wife--a very slight strengthening of the dominance of husbands in noneconomic areas.

In general, then, the income maintenance program appeared to have no important effect on marital stability or on the quality and nature of family relationships. Significant experimental effects were scattered and few in number, with no meaningful pattern. There was little evidence that the size of payments received or changes in the working patterns of wives and mothers had any appreciable effects on family stability or family interaction.

Aspirations, School Attitudes, and School Behavior of Teen-age Youth

At the end of the third year of the experimental program, 445 14 through 18 year olds filled out a self-administered questionnaire that focused primarily on educational and occupational aspirations, school attitudes, school behavior, and delinquency. An analysis of the responses revealed that the income maintenance program had little if any effect on the aspirations and expectations of the teen-agers or their school attitudes and behavior.

No significant overall experimental effect appeared on educational aspirations and expectations, parental and teacher encouragement to go to college, or occupational aspirations and expectations. Young people in the experimental group did show a smaller gap between occupational aspirations and expectations (due to somewhat lower aspirations but higher expectations), but even this experimental effect could not be attributed to the size of the program payments received.

No significant difference occurred between the experimental and control groups in school-related attitudes and behavior such as self-ratings of school ability, self-reports of school grades, interest in getting good grades, hours of homework, general attitudes toward school

and teachers, self-reports on rebellious behavior in school, and participation in extracurricular activities. The few significant findings within the experimental plans were scattered and inconsistent.

Perhaps the payments were not large enough or continued over a long enough period to have a major effect on aspirations and orientations toward school. The teen-agers were also aware that the additional financial help would no longer be available during those years when they would be attending college.

Delinquency of Teen-age Youth

One portion of the questionnaire filled out by 14 to 18 year olds at the end of the three-year experimental period concerned delinquent behavior and attitudes. Offical records on delinquency have severe biases that render them inappropriate when investigating the relation of socioeconomic factors to delinquency. Hence, the authors utilized the teen-agers' self-reports of illegal acts. The forms were filled out under elaborate security precautions to protect the confidentiality of the responses and to encourage frankness. The teen-agers were also asked about their ethical judgments of specific illegal acts and about a number of other matters pertaining to delinquency.

According to the self-reports, delinquency was common among the teen-agers in the study. There was, however, no significant difference between the experimental and control groups in the self-reported number of times the individual had been in trouble with the police or sheriff. Neither was there a difference in the self-reports of some twelve illegal acts, such as car theft, theft of articles worth more than $50, vandalism, and use of narcotics. An overall delinquency scale based

on these twelve acts also showed no significant difference, regardless of whether the component items were unweighted or weighted according to seriousness of offense as rated by juvenile court judges in a national survey.

There was no difference between the experimental and control groups in self-image as a "delinquent" or in various attitudes condoning the commission of offenses. Those in the experimental group were slightly more favorable in their attitudes toward local law enforcement officers, but there was no consistent or meaningful pattern by experimental plan. There was no overall experimental effects on the reports of parents' or friends' ethical judgments of various illegal acts. Those in the experimental and control groups also did not differ in the number of close friends whom they reported had been in trouble with the police or sheriff.

The analysis gives little or no support to the view that an income maintenance program of the type investigated here would bring a substantial reduction in delinquency among low-income rural youths. It tends rather to support those theories of delinquency that minimize the causal role of income in delinquency. One cannot rule out the possibility, however, that a more generous program continued over a longer period might have some effect.

School Performance

School failure is both a major cause and major consequence of poverty. If an income maintenance program could lessen the incidence of school failure, transmission of poverty from one generation to the next would be mitigated. Income maintenance payments might improve the

school performance of recipient children by increasing family expenditures on health care, nutrition, housing, and books and other goods complementary to learning; by increasing the parents' educational aspirations for their children; and by reducing the time spent by both parents and children in nonlearning labor force participation.

The analysis utilized four performance measures: attendance, comportment grades, academic grades, and scores on standardized achievement tests. The total sample consisted of 847 children who were in school at the time the experimental began and who completed at least one year of school after that. Multiple regression techniques were used to assess whether or not the experiment had any effect on these dimensions of performance.

The experiment resulted in statistically significant improvements in the performance of the North Carolina children in grades two through eight. These children showed significant improvements in each of the four dimensions of performance considered. The relative magnitudes of these differences in performance that are attributable to the experiment vary: absenteeism decreased by 30 percent; comportment grades increased by 6.7 percent; academic grades increased by 6.2 percent; and grade equivalent scores on standardized tests increased by 18.9 percent. The experiment does not seem to have significantly affected the performance of North Carolina children in grades nine through twelve or the performance of Iowa children.

The regional differences in the responses to the experiment may be explained by several factors. First, the family characteristics of children in the two regions differ: in the Iowa families the parents

were better educated, earned higher incomes, and were more likely to be transitorily rather than permanently poor. Second, the Iowa sample of children were better performers prior to the start of the experiment. Their performance on standardized achievement tests closely approximates the national norm. Finally, the quality of the school environment data obtained for Iowa schools was much lower than that obtained for North Carolina schools, resulting in less precise estimates. The difference in the effect of the experiment on younger and older children in North Carolina may be due to the greater difficulty of modifying the performance of older children. Also, the school data for the older children in North Carolina were not as detailed as those for the younger children.

Conclusions

The experiment affected positively several consumption variables, notably adequacy of nutrition among North Carolina families, and clearly improved the material lives of recipients. Other behavior was affected very little except for the increase in geographic mobility and, interestingly, the improved school performance of North Carolina grade school children. As in the New Jersey Experiment, little or no experimental affect was found on social or psychological variables, possibly because the modest level of the payments and short duration of the experiment did not cause a major change in socioeconomic status and life style.

V. ADMINISTRATION OF A NEGATIVE INCOME TAX PROGRAM IN RURAL AREAS

The Rural Income Maintenance Experiment provided experience with several of the administrative problems which would arise in a universal income maintenance program covering the working poor. Some of the most difficult involve self-employed farmers, who might comprise as much as 18 percent of all male heads eligible for assistance.[1] Equitable rules for the treatment of the self-employed had to be developed in three areas: the definition of self-employment income, the treatment of income-generating assets, and the proper accounting period to deal with seasonal fluctuations in farm income. Another problem expected to cause difficulties, particularly in the South, was the low literacy level of the rural population. Lack of education was expected to affect both the participants' understanding of the program's incentives and their ability to report information such as income and net worth which are necessary for program administration. In this chapter lessons from the experiment concerning treatment of the self-employed in an income maintenance program will be presented. Then the ability of rural low-income families to understand the rules of operation of the rural experiment and to provide accurate data will be discussed.

Definition of Self-Employment Income

The distinction between wage earning and self-employment presented a difficult problem for the Rural Experiment. Various common renting or sharing arrangements appeared to possess characteristics of both. The

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[1] According to an estimate (of farm owners only) made for the House-passed version of the Family Assistance Program of the 92nd Congress (Committee on Ways and Means, 92nd Congress 1st Sess., "Social Security Admendments of 1971: Report on H.R.1," H. Rept. No. 92-231, Washington, U. S. GPO, 1971, p. 230).

distinction is important since work expenses are deductible from income for the self-employed but not for wage earners.

For the purposes of the experiment a person was considered self-employed if some or all business assets were owned or rented and were complementary to his labor input; or if income was based solely on output rather than on labor input, and the person had control over his labor input. To be considered self-employed, an owner of resources had to make a managerial input which required time and which influenced the amount of income derived from those resources. If an owner rented out his property on a share basis, income from that property fell in the self-employment category because an owner was considered unlikely to rent on a percentage basis without any say in the operation of the business. In most share-rental arrangements, income derived from the resources was defined as self-employment for both the landlord and tenant. If resources were rented on a fixed-fee basis, only income to the tenant was self-employment income. Farm laborers working solely for a share of the output and having no control over either the resources or their own labor were not considered self-employed.

Measurement of Farm Income and Expenses

Since most of the self-employed are familiar with Internal Revenue Service measures of self-employed income, IRS guidelines provide the most convenient method of measuring self-employment income. For income maintenance purposes, however, IRS rules create several major problems.

The first problem is created by the option of using either the cash or the accrual method of accounting. Under the cash method, income is counted only when it is actually received and expenses are counted only

when actually paid. The accrual method takes into account changes in inventories and reflects sales and purchases regardless of when payment is received or made.

The cash method of accounting is the easier of the two and most farmers and small businessmen use it. But it permits the manipulation of stocks of non-perishable commodities, such as grains, so that a farmer could delay sales of his crop in order to maximize income maintenance payments. Though adjustments in reported income and expenses could be made to insure reasonable consistency from year to year, assignment of income to a period other than that in which it was received would be highly discretionary, and several years' history would have to be acquired for each farmer.[1]

Also, under the cash method of accounting a dairy farmer could add to his herd by keeping his heifer calves, and the increase in herd value would not be reported as income, though the cost of raising the calves would be a deductible expense. For income tax purposes higher future income would compensate for the understatement of current income, though it would be counted as capital gains and taxed at only one-half the regular rate. But under an income maintenance program overpayments in one period could not be recouped later if the farmer were no longer receiving benefits. These problems suggest that an accrual method of accounting, in which increases in inventories are considered as increases in income, should be required for income maintenance purposes.

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[1] The Secretary of HEW was authorized to make such adjustments in H.R.1.

A second problem in following IRS rules results from the treatment of capital gains, which are not counted as income unless assets are sold. Under these rules, a self-employed person could continue to receive income maintenance payments while at the same time markedly increasing his net worth. Since farm land has tripled in value in the last ten years, farmers are likely to enjoy considerable capital gains. For the purposes of an income maintenance program it may be preferable to treat both realized and unrealized capital gains as income, and to treat both realized and unrealized capital losses as expenses.

A third problem occurs in the treatment of depreciation. Two provisions of the tax laws, accelerated depreciation and the investment tax credit, result in distorted measures of true self-employment income during the current period. These depreciation methods probably should be disallowed for the purpose of calculating income maintenance payments.

A fourth problem results from many tenant farmers' receiving the free use of a dwelling in addition to a share of the crop. The value of this rent-free housing is not included in IRS definitions of farm income. In the Rural Experiment the value of rent-free housing, based on the family's own estimate of the current rental value of the dwelling, was added to the family's regularly reported income before determining the benefit payment.

Treatment of Assets

Because a self-employed person's capital investment is complementary to his labor, income maintenance program rules should not deny eligibility to the self-employed merely because they possess more assets than the average wage earner. But an upper limit on assets which a self-

employed person could hold and remain eligible would prevent horror cases in which an obviously wealthy person qualified for payments. A person with large assets can reduce consumption, borrow, or dissave during low-income periods.

A simple limit on the amount of net assets to be excluded creates a "notch" such that going one dollar over the asset limit causes a recipient to lose all his benefits. A more satisfactory approach would be to impute to income some percentage of assets above a specified level. This approach reduces benefits smoothly as assets increase while still treating those with large amounts of assets less generously than those with fewer assets. Imputation of a 20 percent return to assets in excess of $20,000, for example, would exclude a family that was guaranteed $5000 a year with a 67 percent tax rate if that family's net equity in business assets exceeded $57,500, regardless of its current income.

Income Accounting Period

The uneven flow of self-employment farm income necessitated a close look at the income accounting period--the length of time over which income is measured to determine eligibility and benefit levels. Current transfer programs have eligibility periods which range from one week (Unemployment Compensation) to a full year (V.A. pensions). Short accounting periods permit the income supplement program to respond rapidly to changes in the beneficiary's income level. But a short accounting period can be unfair to a steady wage earner relative to a farmer. Under a one-month accounting period, for example, a wage earner making $15,000 a year would not qualify for income maintenance payments, while a farmer who cleared $15,000 but received it all from the sale of crops during a

three-month period could be eligible for maximum benefits during the other nine months.

To permit short-term responsiveness to income changes while still ensuring equal treatment of wage earners and farmers, the Rural Experiment developed a one-month accounting period with a twelve-month carry-over procedure. Income received in excess of the breakeven level, the level of income at which benefits are reduced to zero, is carried forward and added to income in any subsequent month (up to 12 months in the future) in which the family's income falls below its breakeven level. Similarly, negative net income is carried forward and used to offset positive income in subsequent months.

Participant Understanding of the Rules of Operation

A central question in the implementation of a universal negative income tax is the ability of beneficiaries to understand the rules of operation. Understanding of the effects of earnings on benefits is essential for the equitable functioning of a program which attempts to build in work incentives, as well as for the observation of an experimental labor supply response. In the Rural Experiment education and literacy levels were low: the average educational attainment of household heads was eight years in North Carolina and eleven in Iowa. Enrollers estimated that half of the North Carolina heads either had difficulty in reading or could not read at all, and that a quarter could not write more than their names.

Conscientious efforts were made to instruct the participants. The average family received nearly two hours of instruction in the rules of operation, had immediate access to written summaries of those rules,

received with each benefit check a statement which detailed the calculations which produced the monthly payment, and was contacted on average once a year concerning a particular problem on his monthly report form.

Families were asked a short series of questions about the program's rules at seven months and again at 27 months after enrollment. In these surveys 65 and 75 percent of the families, respectively, understood the rules regarding freedom of action (to quit work, to move, to spend the payments), and those relating to the size of the monthly payment to family size. But the rules concerning the program parameters--the basic benefit level, implicit tax rate, and breakeven level--were understood by only about half of the families, and their understanding did not improve during the experiment. More than a quarter of the families thought that the program's tax on their income (which in fact ranged from 30 to 70 percent) was either zero or 100 percent. Thus despite careful instruction understanding of the program remained poor.

Accuracy of Self-Administered Reporting

Benefits in the Rural Experiment were calculated on the basis of family size, assets, and income as reported by the families. Accuracy of reporting was extremely important, as it would be in any national program, not only to permit accurate and equitable benefit calculation, but because underreporting of income and assets could result in excessively high program costs. Program costs are, of course, just as sensitive to misreporting of income as to a real reduction in labor supply or income.

Families eligible for experimental payments filed a monthly income report form on which they reported changes in address and family size, wage income of every member over 15 years of age, transfer and property

income by source, certain deductible expenses, and self-employment income and expenses. Once a year filers reported their net worth by asset category, and farm families reported depreciation and capital gains. Families were requested to mail in wage paystubs with their monthly reports,and about half of the wage earners regularly complied with this request. Every incoming monthly report was checked for completeness, reasonableness, and consistency with the prior month's report. During the latter half of the experiment, a random audit and an audit for cause were instituted.

Families showed satisfactory ability and willingness to complete the forms. On average, 90 percent of the forms were received on time each month, and less than three percent were more than two weeks late. Twenty percent of the forms had some minor error, and five percent had an error serious enough to require contact with the filer before the payment could be computed.

To estimate the accuracy of reporting, data on family size, assets, and income from the self-administered monthly reports were compared with the best data on these items available for the participant families. This included information gathered from each family member during detailed quarterly face-to-face interviews and W-2 statements and IRS tax forms voluntarily furnished by the sample families. No independent data were available to evaluate the accuracy of self-administered reporting, so consistent fraud could not be detected. The quarterly personal interviews may have inhibited the intentional misreporting of large amounts of income, and may have taught the sample members to remember and report their income better than would participants in a national program. On the other

hand, the absence of government-enforced penalties may have encouraged misreporting.

Family size changes reported to the Payments Office were nearly identical to those reported to interviewers during the regular quarterly interviews, in spite of frequent family composition changes. But since the initial family size and age composition used by the Payments Office were obtained before the families knew they were to become recipients of income maintenance payments whose size depended on family size, one cannot be be confident that a national program would enjoy comparable reporting accuracy.

Self-reported asset data gathered annually were also compared with information obtained in the quarterly interviews. In Iowa about 27 percent less equity was reported to the Payments Office than to interviewers; in North Carolina the amount was 14 percent less.

A similar comparison was made for data on income from Social Security, Veterans' Benefits, Food Stamps, Unemployment Compensation, and pensions. Such income is usually received in unvarying amounts each month, and was taxed at the same implicit tax rate as earned income. Families reported to the Payments Office about 95 percent of their transfer income as recorded by in-person interviewers. Small amounts irregularly received were seldom reported to Payments.

To construct a standard of wage income against which to compare reported wage income, a reconciliation was made of quarterly in-person interview information with W-2 withholding statements and Social Security statements, which were obtained for nearly all wage earners and farmers. Compared with this standard, about 91 percent of heads' wages were reported

to the Payments Office. The percentage is slightly higher in Iowa than in North Carolina. About 80 percent of wives' wage income was reported, as compared with this standard.

Net farm income (defined to exclude interest, depreciation, capital gains and losses, and cash rental income) was estimated from in-person interview income and expense tabulations, annual acreage, yield, and inventory reports, and/or federal income tax statements. Only 60.7 percent of this income was reported to the Payments Office. The underreporting of net farm income arose largely from the underreporting of gross farm sales, rather than from padding farm expenses.

Monthly self-reported data on family composition and transfer and wage income appear to be acceptably accurate, but farm assets and farm income were considerably underreported. Underreporting of these items, in fact, was of such a magnitude as to increase program costs much more than any likely labor supply response among farmers. Income underreporting appeared to be more serious under the less generous income maintenance plans.

Greater accuracy of asset reporting might be obtained by in-person interviews with farmers who have large asset holdings. The farmers might be required to furnish real estate tax receipts, proof of indebtedness, and depreciation schedules maintained for IRS. Accurate self-administered farm income reporting appears to require comprehensive annual, as well as monthly, reports. In addition to an itemized list of income and expenses (much like IRS Schedule F), questions on livestock inventory and on acres operated, yields, and prices by crop are useful as consistency checks on the accuracy of the income reports.

APPENDIX A

TECHNICAL PAPERS ON THE

RURAL INCOME MAINTENANCE EXPERIMENT

TECHNICAL PAPERS ON THE
RURAL INCOME MAINTENANCE EXPERIMENT

VOLUME I. OBJECTIVES, DESIGN, AND OPERATION

VOLUME II. DATA QUALITY AND ADMINISTRATIVE ISSUES

VOLUME III. INCOME AND WORK RESPONSE OF RURAL NONFARM FAMILIES

Part 1

4. INCOME AND WORK RESPONSE OF WIVES AND DEPENDENTS by D. Lee Bawden

Part 2

5. WAGE WORK RESPONSE OF FEMALE HEADS by David L. Crawford and Steven G. Garber

6. WAGE WORK RESPONSE OF ELDERLY HEADS by David L. Crawford

7. JOB SEARCH BEHAVIOR AND ITS IMPACT ON EARNINGS by Luther Tweeten

8. JOB CHANGE BEHAVIOR by Richard E. Miller

VOLUME IV. INCOME AND WORK RESPONSE OF FARM FAMILIES

1. FARM WORK RESPONSE OF FARM OPERATORS by Wendell E. Primus

2. ON FARM-OFF FARM WORK DECISIONS by Stuart H. Kerachsky

3. UNPAID FARM WORK OF FARM WIVES by W. Keith Bryant and Christine J. Hager

4. RELATIVE ECONOMIC EFFICIENCY OF FARMS by L. T. Evans

5. FARM BUSINESS DECISIONS by William E. Saupe

6. FARM FINANCIAL MANAGEMENT by William E. Saupe

VOLUME V. EXPENDITURES, HEALTH, AND NUTRITION

1. HOUSING CONSUMPTION by Aaron C. Johnson, Jr.

2. CONSUMER DURABLES, CARS, LIQUID ASSETS, AND DEBTS OF WAGE-WORKING FAMILIES by W. Keith Bryant and Christine J. Hager

3. CONSUMER DURABLES, CARS, LIQUID ASSETS, SHORT-TERM FARM CAPITAL, AND NONREAL ESTATE DEBTS OF FARM FAMILIES by W. Keith Bryant

4. CLOTHING EXPENDITURES by Christine J. Hager and W. Keith Bryant

5. STATE OF HEALTH AND THE UTILIZATION OF MEDICAL CARE by Stuart H. Kerachsky

6. NUTRITION by J. Frank O'Connor, J. Patrick Madden, and Allen M. Prindle

VOLUME VI. ATTITUDES, BEHAVIOR AND SCHOOL PERFORMANCE

Part 1

7. PSYCHOLOGICAL WELL-BEING by Russell Middleton

8. MARITAL DISSOLUTION AND FAMILY INTERACTION by Russell Middleton and Linda Haas

9. GEOGRAPHIC MOBILITY by Aaron C. Johnson, Jr.

Part 2

10. ASPIRATIONS, SCHOOL ATTITUDES, AND SCHOOL BEHAVIOR OF TEEN-AGE YOUTH by Russell Middleton, Linda Haas, and Ain Haas

11. DELINQUENCY OF TEEN-AGE YOUTH by Russell Middleton and Ain Haas

12. SCHOOL PERFORMANCE by Rebecca Maynard and David L. Crawford

13. POLITICAL BEHAVIOR by Joseph Heffernan

APPENDIX B

DESCRIPTIVE STATISTICS FOR THE WAGE EARNER SAMPLE

TABLE 15

DESCRIPTIVE STATISTICS OF WAGE EARNER SAMPLE, BY SUBPOPULATION AND EXPERIMENTAL STATUS (QUARTERLY MEANS)

Descriptive Statistics	Total Sample			North Carolina Blacks			North Carolina Whites			Iowa		
	All	Controls	Experimentals	All	Controls	Experimentals	All	Controls	Experimentals	All	Controls	Experimentals
Husbands' Age	42.0	42.0	42.0	42.9	43.3	42.1	43.2	42.3	44.4	39.1	38.1	39.9
Wives' Age	38.8	38.4	39.3	40.4	40.6	40.1	39.2	37.4	41.5	35.2	33.5	36.6
Husbands' Education	8.1	7.8	8.3	7.5	7.3	7.9	6.9	7.0	6.7	10.3	10.4	10.3
Wives' Education	9.3	9.1	9.4	9.0	9.0	9.1	8.3	8.4	8.3	10.7	10.6	10.7
% w/ Farm Income	11.6	9.7	14.1	14.3	11.0	19.9	5.9	3.9	8.3	12.2	13.4	11.3
% Farm Workers	10.1	8.5	12.3	7.4	6.5	8.8	4.5	5.6	3.3	21.1	17.7	23.8
Distance From Large Town	24	25	24	24	24	24	24	25	22	26	28	26
Number of Children	3.1	3.1	3.2	3.2	3.2	3.2	2.5	2.3	2.7	3.7	4.0	3.5
% w/ Child Age 1	4.4	4.6	4.2	4.7	5.2	4.1	3.1	2.2	4.2	5.2	6.1	4.5
% w/ Child Age 1-2	21.0	23.8	17.5	18.4	22.8	11.0	17.8	17.7	17.8	29.2	34.1	25.4
% w/ Child Age 3-5	34.4	38.6	29.0	28.0	32.5	20.4	29.6	30.6	28.5	51.5	65.9	40.5
% w/ Child Age 6-10	56.2	53.1	60.1	50.1	50.1	50.1	58.2	49.5	68.8	65.9	65.9	65.9
% w/ Child Age 11-15	51.8	49.6	54.5	54.2	50.3	60.8	48.3	47.8	49.0	50.5	50.0	50.8
% w/ Child Age 16-20	35.1	33.2	37.5	41.4	37.5	47.9	26.2	23.8	29.1	31.7	32.9	30.8
% w/ Other Adults	12.5	12.8	12.0	16.7	16.9	16.4	13.2	12.6	13.9	3.6	1.8	4.9
% Husb. w/ Health Condition	2.4	1.9	3.1	2.7	2.5	2.9	3.1	1.9	4.5	1.3	0.0	2.4
% Wives w/ Health Condition	6.3	5.1	7.7	6.6	5.4	8.7	8.7	6.8	11.0	3.3	2.4	4.0
% Husb. w/ Business Income	4.2	3.4	5.2	2.2	2.2	2.2	1.6	1.0	2.4	10.6	9.8	11.3
% Wives w/ Business Income	1.1	1.5	0.6	0.8	1.3	0.0	1.1	0.0	2.4	1.6	3.7	0.0
% Who Moved From County	4.2	2.8	6.0	0.9	1.4	0.0	4.4	1.7	7.7	10.4	7.9	12.2
Unemployment Rate in Co. (%)	4.1	4.1	4.1	4.2	4.2	4.2	4.2	4.2	4.2	3.8	3.8	3.8
% in Job Training	0.2	0.1	0.3	0.1	0.0	0.2	0.0	0.0	0.0	0.7	0.6	0.7

TABLE 16

QUARTERLY MEANS OF RESPONSE VARIABLES OF WAGE EARNER SAMPLE, BY SUBPOPULATION AND EXPERIMENTAL STATUS

Response Measures[a]		Total Sample			North Carolina Blacks			North Carolina Whites			Iowa		
		All	Controls	Experimentals	All	Controls	Experimentals	All	Controls	Experimentals	All	Controls	Experimentals
Family													
Total Income:	Q,0	1191	1180	1206	1127	1088	1191	1153	1174	1126	1348	1429	1286
	Q,1-12	1425	1484	1350	1346	1388	1275	1347	1430	1245	1654	1817	1528
Earned Income:	Q,0	1163	1157	1170	1112	1083	1160	1078	1106	1044	1339	1414	1280
	Q,1-12	1372	1435	1293	1309	1355	1231	1304	1384	1205	1562	1719	1441
Wage Income:	Q,0	1120	1116	1126	1077	1042	1134	1050	1091	998	1269	1339	1215
	Q,1-12	1337	1405	1252	1288	1344	1195	1288	1384	1171	1481	1600	1390
Hours Worked:	Q,0	657	656	660	669	656	691	608	610	606	683	712	662
	Q,1-12	702	744	648	719	758	652	673	724	610	698	731	672
No. of Earners:	Q,0	1.85	1.90	1.79	2.06	2.06	2.04	1.82	1.84	1.80	1.51	1.57	1.46
	Q,1-12	1.65	1.75	1.51	1.81	1.88	1.68	1.57	1.66	1.46	1.42	1.52	1.33
Husbands													
Earned Income:	Q,0	983	959	1014	848	818	896	953	962	941	1265	1324	1220
	Q,1-12	1078	1078	1077	921	910	940	1048	1090	996	1411	1532	1318
Wage Income:	Q,0	941	917	971	813	777	870	924	948	895	1195	1248	1154
	Q,1-12	1044	1049	1038	900	899	903	1034	1090	967	1331	1414	1267
Hours Worked:	Q,0	519	503	540	467	452	493	514	508	521	621	631	613
	Q,1-12	505	505	503	460	470	444	496	506	484	599	604	594
Percent Employed:	Q,0	99.6	99.3	100	99.2	98.7	100	100	100	100	100	100	100
	Q,1-12	95.8	96.4	95.1	95.2	95.4	94.8	96.0	97.3	94.4	96.8	97.9	96.0
Wage Rate If Empl:	Q,0	1.80	1.80	1.80	1.72	1.71	1.75	1.79	1.84	1.72	1.96	1.98	1.94
	Q,1-12	2.08	2.08	2.09	1.95	1.93	1.99	2.07	2.13	1.98	2.34	2.41	2.28
Wives													
Wage Income:	Q,0	142	158	122	215	212	220	95	117	69	53	69	41
	Q,1-12	195	246	131	276	329	186	158	167	147	77	114	49
Hours Worked:	Q,0	111	124	95	168	168	167	73	83	60	43	56	32
	Q,1-12	133	166	91	184	214	136	112	130	89	55	79	36
Percent Employed:	Q,0	63.3	67.1	58.5	81.3	81.0	81.6	64.2	62.2	66.7	29.0	36.7	23.1
	Q,1-12	48.3	57.9	36.2	62.7	70.5	49.5	42.9	47.3	37.4	26.0	36.3	18.1
Wage Rate If Empl:	Q,0	1.27	1.26	1.29	1.30	1.25	1.40	1.20	1.24	1.07	1.28	1.37	1.15
	Q,1-12	1.46	1.47	1.42	1.48	1.49	1.47	1.46	1.48	1.43	1.30	1.31	1.27
Dependents													
Wage Income:	Q,0	37	40	34	50	53	44	30	27	34	21	21	20
	Q,1-12	98	110	83	112	116	106	96	128	57	73	72	74
Hours Worked:	Q,0	27	29	25	34	36	32	21	18	25	20	24	16
	Q,1-12	64	73	53	74	75	72	65	88	37	45	48	42

[a]Q,0 represents quarterly averages for the year prior to the experiment; Q 1-12 represents quarterly averages for the 12 quarters of the experiment.

APPENDIX C

DESCRIPTIVE STATISTICS FOR THE FARM SAMPLE

TABLE 17

MEAN VALUES OF KEY VARIABLES--IOWA[a]

Variable Descriptions	Control Group		Experimental Group	
	Base Year	Average of Three Experimental Years	Base Year	Average of Three Experimental Years
Hours of farm work-operators[b]	-----	2,452.3	-----	2,327.5
Hours of wage work-operators[c]	137.5	181.8	216.4	227.4
Percent with wage jobs-operators	19.7	30.9	22.2	39.3
Hours of farm work-wives[c]	----	185.9	----	241.6
Percent with farm work-wives	----	61.2	----	74.8
Hours of wage work-wives[c]	62.8	96.6	30.4	55.5
Percent with wage work-wives	19.7	29.6	5.9	25.2
Net farm income[d]	4,184.9	5,037.7	4,622.4	4,149.7
Wage income[c]	614.0	932.2	691.0	1,040.9
Percent with wage income	45.4	69.1	41.5	67.4
Total family income[e]	5,749.2	7,757.8	5,924.7	6,528.6
Negative income tax payments	----	----	----	1,634.6
Acres of land owned	17.5	26.3	14.3	14.7
Total acres of land[f]	246.4	271.9	243.2	266.5
Total farm value	37,684.4	43,642.3	28,335.1	32,303.2
Total farm net equity	30,147.4	30,109.5	22,383.4	22,996.8
Age-operators	41.9	43.9	41.9	43.9
Education-operators	11.0	----	11.2	----
Age-wives	38.9	40.9	38.9	40.9
Education-wives	11.7	----	11.7	----
Family size	5.0	4.8	4.8	4.5

(See footnotes on page 100.)

TABLE 18

MEAN VALUES OF KEY VARIABLES--NORTH CAROLINA[a]

Variable Descriptions	Control Group		Experimental Group	
	Base Year	Average of Three Experimental Years	Base Year	Average of Three Experimental Years
Hours of farm work-operators[b]	-----	1,410.8	-----	1,598.9
Hours of wage work-operators[c]	657.8	582.6	591.4	496.9
Percent with wage jobs-operators	46.2	61.4	54.4	61.2
Hours of farm work-wives[c]	-----	344.0	-----	400.9
Percent with farm work-wives	-----	72.4	-----	76.2
Hours of wage work-wives[c]	504.0	590.5	250.1	329.8
Percent with wage work-wives	53.1	64.1	36.1	51.0
Net farm income[d]	1,142.9	2,412.1	1,614.0	2,358.8
Wage income[c]	2,439.0	3,472.3	1,720.7	2,618.5
Percent with wage income	84.1	87.6	73.5	84.4
Total family income[e]	3,921.8	6,267.4	3,605.3	5,829.4
Negative income tax payments	----	----	----	1,754.7
Acres of land owned	23.8	24.8	25.9	31.2
Total acres of land[f]	43.2	58.4	45.3	59.9
Total farm value	10,226.9	12,329.4	10,098.1	13,933.1
Total farm net equity	7,682.7	8,395.9	8,231.9	10,744.9
Age-operators	45.6	47.6	46.1	48.1
Education-operators	7.2	----	6.6	----
Age-wives	43.8	45.7	42.1	44.1
Education-wives	8.6	----	11.2	----
Family size	4.2	3.8	4.8	4.5

(See footnotes on page 100.)

FOOTNOTES TO TABLES 17 AND 18

[a]The samples differed slightly for the various analyses. Mean values shown here were derived for a representative sample.

[b]All sample members reported positive hours.

[c]Mean values include zero hours.

[d]Variable farm profit is approximately twice as large as net farm income.

[e]Total family income includes all earned and unearned income except negative income tax payments.

[f]Acres owned plus net acres rented.