INSTITUTE FOR RESEARCH ON POVERTY DISCUSSION PAPERS

98-71

MID-EXPERIMENT REPORT ON BASIC LABOR-SUPPLY RESPONSE

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The research reported here was supported by funds granted to the Institute for Research on Poverty at the University of Wisconsin by the Office of Economic Opportunity pursuant to the provisions of the Economic Opportunity Act of 1964. The conclusions are the sole responsibility of the author.

May 1971

ABSTRACT

This paper reports basic descriptive summaries of the New Jersey/ Pennsylvania Graduated Work Incentives Experiment at the point where the full sample data for the first year of operation could be processed. Because of lags in enrollment, it is also possible to report here data for the first year and a half for the "half sample," i.e., Trenton, Paterson, and Passaic. Improvements in the data base enable the present report to concentrate on means and regression results instead of on the cruder tabular analysis of discrete change categories.

In summary, the results indicate a continuation of the earlier findings on earnings change i.e., no significant difference between control and experimental families. There are significant differences, however, in two alternative indicators of labor supply: (1) persons employed per family, and (2) hours worked per family. These differences indicate fewer workers or hours for the experimental families as static labor-supply theory would predict. There is also a differential in average hourly earnings tht reconciles the different indications given by earnings and hours. At this point there have appeared no obvious patterns within the experimental group but that question has not yet been sufficiently explored to warrant rejection of any hypothesis.

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Mid-experiment Report on Basic Labor-Supply Response

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The data in this progress report represent the first descriptive summaries obtained from system-produced longitudinal extracts of the basic (core) segment of the data file. A bibliography listing papers describing the experiment's origin, purpose, and basic design is provided in Appendix I.

Last spring the first results, covering less than a year's experience for only the first half of the sample (sites were phased in over a one-year period) were released. It is now possible to go beyond that to cover the entire sample for the first experimental year, and that same half for the first 18 months. In addition to the increased coverage we can say the data are more complete (more variables and all intervening quarterly values) and more thoroughly checked, edited, and "cleaned."

This improvement in the data base has enabled us to begin to use mean values and regressions (used primarily as descriptive devices for

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*I cannot acknowledge all those who have contributed to the production of the data and analysis reported herein without a footnote longer than the report itself. But, without prejudice to the larger number, I here acknowledge with gratitude the following persons who have contributed extra effort to make this report possible. From MATHEMATICA I must thank David Kershaw, Jeri Fair, Marsha Shore, Frank Mason, Regina Pasche, Albert Rees, Glen Cain (on leave from Wisconsin), Robinson Hollister, Audrey Macdonald; from OEO, Thomas Glennan; and from Wisconsin, Nancy Williamson, Michael Watts, Claudio Frischtak, Felicity Skidmore and Margaret Witte.

obtaining conditional means) instead of the cruder tabulations of discrete changes that of necessity formed the principal evidence in the earlier report. The results discussed in the body of the current report will therefore be presented as means, adjusted means, and regression coefficients. (For comparison with the earlier results, Appendix II presents and discusses "change" tables of the kind used in the first preliminary report. In general, however, the two methods produce the same view of the basic outcomes that will be discussed below.)

DESCRIPTION OF THE DATA BASE

This analysis has been limited to a small number of the most basic indicators of labor supply and earnings. We have worked with the labor force status, hours worked, and earnings (all for the week preceding every interview) for each head and spouse, and an aggregate of any other adults (persons over 16) that are in the household unit. These data, in addition to family size, number of adults, number of children, and welfare status, are available from each successive quarterly interview, as well as the pre-enrollment interview (which was administered before families were notified of the experiment's existence). Besides the panel data on the above variables, the following static variables are available: city, ethnicity, age of head and spouse, average earnings, and weeks worked in year before enrollment, and finally, the family's designation either as a control family or as an experimental family assigned to one of the eight experimental treatments.

Any longitudinal study loses some of the families originally enrolled along the way. Most of the results cited here are for families that either completed a full year with no more than one missed interview (not the last one) for the "full sample" or completed the sixth quarterly and missed no more than one other for the "half sample." These will be termed the "continuous families." The excluded families represent the loss from panel attrition, and one important part of further work must be the analysis of possible biases produced by this loss. So far the losses have produced no significant changes from the distribution of the sample at the start, although the attrition rates are not quite constant over all subgroups of the sample. The loss so far amounts to 138 families from the original 1213, leaving 1075 "continuous" families to be analyzed (395 out of 505 for the half sample). While a cursory review of the nature of the losses has not uncovered any "drastic" disparity that would overturn the findings cited, neither can it be said that the losses have been analyzed as much as should or can be done. This is the first of a number of cautionary statements in this paper, warning against overinterpreting these early looks at the data. We do have a large amount of partial information on all these families and eventually can expect to remove much of the uncertainty they cause.

Within the continuous family sample two subgroups have been analyzed separately: the nonwelfare subgroup and the husband-wife subgroup. The nonwelfare subsample is defined as those families who reported welfare benefits for at most one of the quarters <u>not</u> including the last one. This subgrouping excludes 250 of the 1075 (23 percent)

continuous families. It is not offered as a satisfactory means of purifying the results of the effect of the various public-assistance programs. That will require a much more highly structured analytic model than is attempted here. But the subsample is useful in that it provides some confirmation that tendencies do not disappear when the welfare group is excluded and may perhaps also provide some empirical guidance to the badly-needed development of more satisfactory analyses. Here then is an additional reason for caution in generalizing from any tendencies discussed below. The interference coming from the sample families' behavior toward the alternatives provided by welfare has not been well specified theoretically and has therefore not been partialled out of any results obtained so far.

The husband-wife family is of interest because this most typical and most numerous type of family is easier for most of us to reason about introspectively. It is also the group for which continuous individual persons (the head and spouse) can be most readily identified for meaningful disaggregation of the family aggregates used for analyzing the other subgroups. The 943 families in this subsample, then, are an important group in themselves. Since they also dominate the total sample, we can use them as the most logical and the easiest place to begin looking at individual behavior in a family (or household) setting.

CRUDE TIME SERIES

Tables 1-7 display means of the primary indicators of labor supply and earnings for the various samples described above. Tables 1 and 3 contain

the control/experimental contrasts and a three-way ethnic breakdown for the total full and half samples respectively. The ethnic categorization is not exhaustive (a small group of unclassified cases are left out). The white group is surely heterogeneous ethnically and is best described as the non-black and non-Puerto Rican group. It should also be noted that the bulk of the "white" group is from the Scranton, Pennsylvania, site; virtually none of the other two groups are represented in Scranton; and "whites" are underrepresented in all the other sites. This imbalance is discussed further on pp. 31-34 below.

Tables 2 and 4 show breakdowns (for the full sample and half sample respectively) within the experimental group by generosity of plan. Because the families, on average, earn very close to the poverty line,[1] the plans have been classified by size of benefits paid when family income is <u>at</u> the poverty line. The lowest category pays no more than 5 percent of the poverty line in benefits at that income level, and the highest pays 75 percent.

Tables 5 and 6 show the control/experimental contrast for the non-welfare subsample only, and for the head and spouse of the husband-wife subsample. Table 7 shows the movement of the same variables in the four separate experimental sites.

The mean values in these tables have been calculated from the "usable" responses only, and as a consequence the number of families included in each mean will vary slightly from quarter to quarter. The loss from such scattered unusable responses rarely exceeds 3 percent.

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[1]The poverty line equaled $3300 for a family of 4 at the start of the experiment, subsequently inflated in pace with the consumer price index.

TABLE 1

LABOR SUPPLY AND EARNINGS MEANS FOR CONTROL AND EXPERIMENTAL GROUPS AND FOR ETHNIC GROUPS

First Year--Full Sample--Continuous Families

	Qtr.	Control (422)	Experi-mental (653)	White (387)	Black (386)	Spanish (272)
No. of employed persons/ family	0	1.08	1.14	1.15	1.11	1.10
	1	1.15	1.05	1.14	1.09	1.01
	2	1.16	1.09	1.16	1.12	1.00
	3	1.16	1.04	1.14	1.09	1.02
	4	1.18	1.02	1.11	1.12	0.96
Total hours/family	0	39.4	39.8	41.7	37.8	39.4
	1	40.8	36.7	39.7	36.7	37.8
	2	37.0	34.9	38.5	35.8	31.9
	3	39.6	36.9	39.0	37.1	37.0
	4	40.3	35.0	39.6	36.3	33.6
Total earnings/ family	0	87.74	88.84	94.89	86.13	81.99
	1	94.28	91.81	96.82	90.01	88.81
	2	88.90	88.88	94.94	91.73	76.58
	3	96.13	96.98	98.78	95.63	92.35
	4	96.65	94.03	100.92	94.91	82.96
Average earnings/ hour	0	2.23	2.23	2.28	2.28	2.08
	1	2.31	2.50	2.43	2.45	2.35
	2	2.40	2.55	2.47	2.56	2.40
	3	2.43	2.63	2.53	2.58	2.50
	4	2.40	2.69	2.55	2.61	2.47

TABLE 2

LABOR SUPPLY AND EARNINGS MEANS WITHIN EXPERIMENTAL GROUP--CLASSED BY POVERTY-LEVEL BENEFIT (B_p)

First Year--Full Sample--Continuous Families

	Qtr	B_p=0,5 (139)	B_p=20,25,30 (224)	B_p=45,50 (162)	B_p=75 (128)
No. of employed persons/ family	0	1.09	1.14	1.16	1.17
	1	1.08	1.04	1.07	1.02
	2	1.06	1.08	1.11	1.09
	3	0.99	1.05	1.08	1.01
	4	0.99	1.03	1.04	1.02
Total hours/ family	0	38.2	39.7	41.1	39.9
	1	36.5	36.9	36.0	37.5
	2	33.0	34.3	35.4	37.3
	3	33.1	38.4	38.5	36.3
	4	34.4	35.1	35.8	34.5
Total earnings/ family	0	83.06	89.27	91.14	91.33
	1	91.69	92.28	90.47	92.80
	2	82.72	88.47	87.12	98.76
	3	90.29	100.43	100.22	94.06
	4	95.12	92.02	95.70	94.32
Average earnings/ hour	0	2.17	2.25	2.22	2.29
	1	2.51	2.50	2.51	2.47
	2	2.51	2.58	2.46	2.65
	3	2.73	2.62	2.60	2.59
	4	2.76	2.62	2.67	2.73

TABLE 3

LABOR SUPPLY AND EARNINGS MEANS FOR CONTROL AND EXPERIMENTAL GROUPS AND FOR ETHNIC GROUPS

First 6 Quarters--Half Sample--Continuous Families

	Qtr.	Control (100)	Experi-mental (295)	White (40)	Black (185)	Spanish (151)
No. of employed persons/ family	0	0.99	1.13	1.05	1.10	1.11
	1	1.08	1.07	1.07	1.10	1.03
	2	1.09	1.06	1.02	1.09	0.99
	3	1.16	1.01	1.17	1.06	1.00
	4	1.16	0.99	1.10	1.09	0.92
	5	1.16	1.00	1.00	1.11	0.94
	6	1.07	0.97	0.95	1.03	0.91
Total hours/family	0	34.7	37.7	38.1	35.9	38.0
	1	38.2	35.1	35.9	35.4	35.8
	2	30.3	31.8	34.7	33.1	28.3
	3	38.7	35.7	44.7	34.5	35.4
	4	38.8	33.6	37.9	34.7	33.3
	5	39.0	34.4	31.3	36.8	33.8
	6	35.6	32.7	33.8	34.1	30.9
Total earnings/ family	0	74.66	81.74	95.79	75.73	79.96
	1	88.68	84.52	88.20	83.80	84.99
	2	73.07	78.69	93.58	82.30	66.68
	3	93.60	94.37	120.08	86.57	92.59
	4	92.71	89.96	105.25	88.55	84.87
	5	94.18	94.03	93.72	97.25	86.19
	6	87.35	89.46	97.92	90.79	78.98
Average earnings/ hour	0	2.15	2.17	2.51	2.11	2.10
	1	2.32	2.41	2.50	2.37	2.37
	2	2.41	2.47	2.70	2.49	2.36
	3	2.42	2.64	2.69	2.51	2.62
	4	2.39	2.68	2.78	2.55	2.55
	5	2.41	2.74	2.99	2.64	2.55
	6	2.46	2.73	2.90	2.66	2.56

TABLE 4

LABOR SUPPLY AND EARNINGS MEANS WITHIN EXPERIMENTAL GROUP--CLASSED BY POVERTY-LEVEL BENEFIT (B_p)

First 6 Quarters--Half Sample--Continuous Families

	Qtr	B_p = 0,5 (72)	B_p = 20,25,30 (117)	B_p = 45,50 (77)	B_p = 75 (29)
No. of employed persons/family	0	1.17	1.09	1.12	1.21
	1	1.12	1.10	1.00	1.00
	2	1.07	1.08	1.04	1.00
	3	0.94	1.05	0.99	1.03
	4	0.94	1.01	0.99	1.03
	5	0.94	1.02	1.01	1.03
	6	1.01	0.97	0.95	0.90
Total hours/family	0	41.1	36.9	36.7	35.4
	1	36.1	37.6	30.8	33.2
	2	32.7	32.7	30.1	30.8
	3	33.6	38.5	34.2	33.3
	4	31.9	34.4	34.0	33.3
	5	31.9	36.3	35.1	30.7
	6	35.2	32.2	32.2	30.4
Total earnings/ family	0	88.61	83.27	77.28	69.73
	1	86.39	91.17	73.50	81.38
	2	80.28	82.12	70.19	83.84
	3	92.34	100.53	87.56	92.07
	4	88.67	93.18	85.65	90.89
	5	86.03	101.11	94.28	84.57
	6	93.18	87.73	89.26	87.64
Average earnings/ hour	0	2.16	2.26	2.10	1.97
	1	2.39	2.42	2.39	2.45
	2	2.46	2.51	2.33	2.72
	3	2.74	2.61	2.56	2.76
	4	2.78	2.71	2.52	2.72
	5	2.70	2.78	2.69	2.75
	6	2.65	2.72	2.77	2.88

TABLE 5

LABOR SUPPLY AND EARNINGS MEANS FOR CONTROL AND EXPERIMENTAL GROUPS IN NON-WELFARE AND HUSBAND-WIFE SUBGROUPS

First Year, Full Sample

		Non-Welfare		Husband-Wife Families			
				Husbands		Wives	
	Qtr	Ctl (324)	Exp (501)	Ctl (372)	Exp (571)	Ctl (372)	Exp (571)
No. employed/ family (or % employed)	0	1.10	1.16	0.90	0.89	0.10	0.15
	1	1.20	1.11	0.85	0.87	0.15	0.13
	2	1.20	1.16	0.88	0.90	0.14	0.12
	3	1.24	1.12	0.90	0.89	0.17	0.12
	4	1.27	1.11	0.88	0.86	0.16	0.14
Total hours/family (or per head or per spouse)	0	40.2	41.2	34.5	33.6	2.8	4.0
	1	42.5	39.3	33.8	33.0	4.5	3.4
	2	39.3	38.2	31.3	31.3	3.8	3.0
	3	43.1	40.6	33.8	33.9	4.7	3.2
	4	44.7	39.2	33.6	31.5	4.7	3.9
Total earnings/ family (or per head or spouse)	0	91.92	92.63	81.01	79.69	5.39	6.65
	1	100.80	99.03	82.40	88.34	8.40	6.79
	2	96.71	99.35	79.57	84.52	7.75	6.09
	3	106.50	108.53	86.61	93.87	9.46	6.48
	4	108.60	106.55	86.60	89.06	9.05	8.04
Average earnings/ hour	0	2.29	2.25	2.35	2.37	1.92	1.66
	1	2.37	2.52	2.44	2.68	1.87	2.00
	2	2.46	2.60	2.54	2.70	2.04	2.03
	3	2.47	2.67	2.56	2.77	2.01	2.02
	4	2.43	2.72	2.58	2.83	1.93	2.06

TABLE 6

LABOR SUPPLY AND EARNINGS MEANS FOR CONTROL AND

EXPERIMENTAL GROUPS IN NON-WELFARE AND HUSBAND-WIFE SUBGROUPS

First 6 Quarters, Half Sample

		Non-Welfare		Husband-Wife Families			
				Husbands		Wives	
	Qtr	Ctl (75)	Exp (200)	Ctl (78)	Exp (238)	Ctl (78)	Exp (238)
No. employed/ family (or % employed)	0	1.05	1.18	0.85	0.89	0.12	0.15
	1	1.17	1.18	0.85	0.89	0.18	0.15
	2	1.23	1.18	0.87	0.89	0.12	0.13
	3	1.31	1.13	0.85	0.84	0.23	0.13
	4	1.33	1.13	0.86	0.82	0.21	0.16
	5	1.31	1.12	0.86	0.85	0.23	0.16
	6	1.29	1.08	0.83	0.83	0.14	0.16
Total hours/ family (or per head or spouse)	0	36.8	39.5	31.1	32.4	3.7	3.8
	1	42.0	39.2	33.0	31.6	5.7	4.3
	2	35.6	36.6	27.5	29.1	3.7	2.9
	3	44.4	41.4	34.2	33.3	6.6	3.8
	4	44.7	39.5	33.0	30.8	5.9	4.8
	5	45.6	39.3	33.7	32.1	5.7	4.2
	6	42.1	36.8	29.8	30.0	5.0	4.9
Total earnings/ family (or per head or spouse)	0	79.06	86.40	72.96	75.21	5.47	6.22
	1	96.41	94.51	82.22	82.17	8.65	7.99
	2	85.01	93.49	70.61	76.70	7.00	5.73
	3	107.66	111.43	89.42	93.88	12.56	7.78
	4	107.81	107.20	85.63	87.73	11.64	9.93
	5	112.62	109.64	88.30	95.15	10.45	7.71
	6	104.27	102.66	80.77	87.85	8.38	8.78
Average earnings/ hour	0	2.15	2.19	2.34	2.32	1.48	1.66
	1	2.30	2.41	2.49	2.60	1.52	1.88
	2	2.39	2.55	2.57	2.63	1.89	1.99
	3	2.42	2.69	2.61	2.82	1.90	2.06
	4	2.41	2.71	2.59	2.85	1.97	2.06
	5	2.47	2.79	2.62	2.97	1.83	1.84
	6	2.48	2.79	2.71	2.93	1.68	1.81

TABLE 7

LABOR SUPPLY AND EARNINGS MEANS

FOR EXPERIMENTAL SITES

		Continuous 0-6 Families		Continuous 0-4 Families	
	Qtr	Tren-ton (96)	Pat.-Pass. (299)	Jersey City (355)	Scran-ton (307)
No. of employed persons/family	0	1.19	1.06	1.09	1.17
	1	1.09	1.07	1.01	1.17
	2	1.00	1.09	1.10	1.17
	3	1.06	1.04	1.09	1.13
	4	1.07	1.02	1.10	1.12
	5	0.98	1.06	-	-
	6	0.92	1.02	-	-
Total hours/family	0	41.4	35.5	39.7	42.7
	1	37.1	35.4	38.8	40.6
	2	35.6	30.1	38.5	38.5
	3	38.5	35.7	39.4	38.3
	4	34.4	35.1	37.1	39.8
	5	35.0	35.7	-	-
	6	32.8	33.7	-	-
Total earnings/ family	0	87.00	77.62	92.58	94.35
	1	85.28	85.65	98.88	94.98
	2	83.38	75.30	100.64	90.99
	3	92.14	94.85	103.26	93.69
	4	81.19	93.44	97.64	98.23
	5	89.99	95.38	-	-
	6	85.80	89.95	-	-
Average earnings/ hour	0	2.10	2.19	2.33	2.21
	1	2.30	2.42	2.55	2.34
	2	2.34	2.50	2.61	2.36
	3	2.39	2.66	2.62	2.45
	4	2.36	2.66	2.63	2.47
	5	2.57	2.67	-	-
	6	2.62	2.67		

The average hourly earnings have been calculated as the ratio of mean earnings to mean hours from the corresponding table entries. They should not be regarded as simple wage rates.

In these tables we can note first of all a divergent trend between controls and experimentals in the number of persons employed per family. This is evident in the first table and is substantiated in the different subsamples that follow. The tendency does not appear to be very strong for the husbands in husband-wife families, but it is prominent for the wives. No very obvious differences within the experimental group show up, however. In terms of the entire sample, whites appear to have the largest number of employed persons per family, with black families next and Spanish-speaking families third. This result appears to be produced by the Scranton families in the white subsample, because in the half sample which excludes them the whites appear to be generally below the blacks in terms of this variable. There is also some indication of a loosening in the labor market evidenced by control husbands' decline in employment. This is supported, on the "added worker" hypothesis, by the opposite behavior of the control wives.

Total hours worked by all family members show very similar patterns of movement. Again a differential appears between controls and experimentals. The Puerto Rican families manage to get in the fewest number of hours, but all groups appear to be affected by unemployment and/or short weeks.

Turning to total earnings the picture does seem to be different. Here we have a generally increasing overall trend in earnings per family but we do not find any divergence between control and experimental

families. The inevitable consequence of this must be that average hourly earnings move in such a way as to offset the divergence of total family hours. The average hourly earnings figures in the last segment of several of the tables confirm this. Once again readily discernible patterns have not appeared within the experimental group. Earnings levels in general are lower for Puerto Ricans. Hourly earnings are also higher in the full sample for blacks than for (non-Puerto Rican) whites, but since this more than vanishes in the half sample it is again due to Scranton--where generally lower wage levels prevail (see Table 7).

ANALYSIS OF ADJUSTED MEANS

The tendencies visible in the sequence of mean values in the first six tables are more precisely estimated in Tables 8 and 9. These tables are based on simple control/experimental differentials estimated in "dummy" variable regressions which control for experimental site, ethnicity, and pre-enrollment value of the variable in question.[2]

These regressions were fitted for number of persons employed, total hours worked, and total earnings for the family aggregates; and within husband-wife families separately for the husband, wife, and other earners.

The adjusted means for control and experimental families shown in the tables are adjusted in the sense that each represents the regression value for the variable for a control (or experimental) family

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[2] See Appendix III (Technical Notes) for a full discussion.

TABLE 8

ADJUSTED MEAN ESTIMATES DERIVED FROM REGRESSION ESTIMATES OF DIFFERENTIALS IN EMPLOYMENT, HOURS, AND EARNINGS

Husband-Wife Families

	(1) # employed per family	(2) Hours per employee	(3) Hours per family	(4) Earnings per hour	(5) Earnings per family
Family total:					
Control mean	1.242	34.4	42.67	2.45	104.36
Abso. diff.	- .151**	+ .1	- 5.02**	+ .22	- 3.76
Exper. mean	1.091	34.5	37.65	2.67	100.60
% differ.	-12.2%	+ .3%	-11.8%	+9.0%	- 3.6%
Husband:					
Control mean	.885	37.9	33.55	2.61	87.52
Abso. diff.	- .032	- 1.0	- 2.09	+ .20	+ .75
Exper. mean	.853	36.9	31.46	2.81	88.27
% differ.	- 3.6%	- 2.6%	- 6.2%	+7.7%	+ .9%
Wife:					
Control mean	.176	28.6	5.03	1.92	9.66
Abso. diff.	- .044	- .1	- 1.27	+ .14	- 1.93
Exper. mean	.132	28.5	3.76	2.06	7.73
% differ.	-25.0%	- .4%	-25.2%	+7.3%	- 20.0%
Other earner:					
Control mean	.180	23.0	4.08	1.76	7.17
Abso. diff.	- .075**	+ 3.1	- 1.66*	+ .14	- 2.58
Exper. mean	.105	26.1	2.42	1.90	4.59
% differ.	-41.7%	+13.5%	-40.7%	+8.0%	- 36.0%

NOTE: The fourth quarterly means cited above have been adjusted, by use of regression analysis, for the differing composition of the control and experimental groups in terms of location, ethnicity, age, family size, and pre-enrollment value of the variable in question. These means, and the associated control-experimental differentials, may therefore be interpreted as applicable to control and experimental groups with identical composition in terms of these variables. Percent differentials are computed using the mean of the control as the base. Slight differences from the equivalent table in OEO's May 1971 release were produced by reruns on a corrected version of the tape. For detailed explanation see Appendix III.

*Significant at the .95 level. **Significant at the .99 level.

TABLE 9

ADJUSTED MEAN ESTIMATES DERIVED FROM REGRESSION ESTIMATES OF EXPERIMENTAL DIFFERENTIALS IN EMPLOYMENT, HOURS, AND EARNINGS

Family Totals - Alternate Samples

	(1) # employed per family	(2) hours per employee	(3) hours per family	(4) earnings per hour	(5) earnings per family
All continuous families					
Control mean	1.18	33.6	39.7	2.42	96.09
Abso. diff.	- .16**	+ 1.3	- 4.0**	+ .22	- 2.02
Exper. mean	1.02	34.9	35.7	2.64	94.07
% differ.	-13.5%	+ 4.0%	-10.1%	+ 9.1%	- 2.1%
All continuous "non-welfare" families					
Control mean	1.29	34.8	44.8	2.43	108.95
Abso. diff.	- .19**	+ .1	- 6.4**	+ .27	- 5.35
Exper. mean	1.10	34.9	38.4	2.70	103.60
% differ.	-14.4%	+ .3%	-14.3%	+11.1%	- 4.9%
The balance in "welfare" families					
Control mean	.86	27.6	23.8	2.29	54.62
Abso. diff.	- .15	+ 2.0	- 2.8	+ .15	- 3.34
Exper. mean	.71	29.6	21.0	2.44	51.28
% differ.	-17.7%	+ 7.2%	-11.7%	+ 6.6%	- 6.1%
Half sample continuous families					
Control mean	1.15	33.0	38.0	2.44	92.66
Abso. diff.	- .17*	+ .7	- 5.0*	+ .26	- 3.52
Exper. mean	.98	33.7	33.0	2.70	89.14
% differ.	-15.1%	+ 2.4%	-13.1%	+10.7%	- 3.8%

NOTE: See note for Table 8 and Appendix III.

having the same (sample average) values for all of the other variables in the regression--i.e., they would be identical to the crude means in a sample that was exactly balanced between control and experimental groups. The entries for hours per employee and earnings per hour have been calculated from the adjusted means in adjacent columns, and from them the absolute and percentage differences have been derived.

In Table 8 the family aggregates are shown and also broken down for the husband-wife families into components attributable specifically to the husband, the wife, and the total of any other earners there may be in the family.

The family aggregates in the first segment of the table indicate significant negative differentials for both employment per family and total hours. Quantitatively, experimental families are approximately 12 percent below control families in both respects. The differential for total earnings per family is much smaller (3%) and is not significantly different from zero. These coefficients agree with the observed tendencies discussed above in the tables of means. And once again there is implied a sharp difference in the movement of average hourly earnings--nearly 10 percent.

The lower part of the table shows three components of these family totals--husband, wife, and "other earners." Here we note that the largest differential in employment (and the only component which is significant) is that for "other earners." This makes up half the total family differential. Just over half the balance is accounted for by the wife. The reason this difference represents such a large percentage change is because the average employment rate of spouses is relatively small (one out of six for the controls). It should be noted

here that the principle of sample selection used has been partly responsible for the small fraction of employed wives. Families with total incomes above 150 percent of the poverty line were not eligible and this made it differentially hard for two-earner families to get into the experiment in the first place, even though the husband might be a relatively low-wage or "poor" earner.

When we consider hours, we find that two-fifths of the differential is accounted for by the husband's apparent response, although the only statistically significant differential is again for the "other earners" who account for one-third of the total. The most marked differential in hours per worker occurs also for the "other earners," and this moderates their reduction in total hours. The quite minor and statistically nonsignificant difference in earnings is compounded from a minute positive effect for the husband, offset by roughly equal-sized negative ones for the wife and the "other earners." These movements of components imply very similar (7 percent) positive differences in average hourly earnings for each of the three parts of the family total. The higher 10 percent increase for the total comes about because of the compositional difference whereby the husband's hours or earnings become a larger fraction of the total (made up, of course, of husbands plus wives plus other earners).

Table 9 shows the results for alternate samples of families. The results discussed earlier from Table 8 were for the husband-wife families, which are only a subset of the sample of continuous families shown in the first section of Table 9. The results here are

qualitatively very similar to those previous findings--not a surprising finding since husband-wife families make up 88 percent of all the continuous families.

The next two segments of the table show comparable regressions for "non-welfare" and "welfare" families separately.[3] The larger "non-welfare" subsample again displays the same general pattern of results for the same reasons. But the smaller group of "welfare" families, after allowing for the reduction in statistical precision, again shows a very consistent pattern of experimental differentials. While the differentials for hours and employment are not significant here, they are of similar sign and percentage magnitude. Finally, the same basic pattern emerges if only the half sample (Trenton and Paterson-Passaic) is used and when, moreover, the values from the fourth, fifth, and sixth quarterlies are taken into account to get a more stable indication of family response.[4]

The evidence reviewed so far does add up to an indication of substantial and significant negative differences in employees per family for the experimentals. In terms of family aggregates these amount (the small so-called welfare group aside) to 12-15 percent. This reduction in employment is partly offset by positive differences in hours per employee, so that the similar range of experimental differentials in hours is 9-14 percent. Larger offsetting differences (in the neighborhood of 10 percent for the family aggregates) completely eliminate the significance of the differential in family earnings.

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[3] For definitions see Appendix III.

[4] See Appendix III.

Inspection of Tables 1-7 suggests that much of the presumed response occurred between the pre-enrollment and first quarterly observations. This leads to asking whether all the significance in the results cited above comes from adjustments during the first quarter, with no subsequent adjustment large enough to meet the criterion of statistical significance. To test this, additional regressions were carried out, producing the adjusted means shown in Table 10. These new regressions examine the differentials at the first quarter, including among the adjustments the value of the same variable at the time of pre-enrollment, and as a second step show the differentials at the fourth quarter after adjustment for whatever differences already existed at the first quarter.

These estimates verify that the largest single adjustment did indeed take place during the first quarter, but they also show an equally significant and quantitatively roughly equal change over the third-quarter period from the first quarterly to the fourth. In neither case do we observe significant differences in earnings. Consequently the same positive differential in average hourly earnings is observed over both comparisons.

FURTHER EXPLORATION

Two aspects of the results cited above have been explored further in an effort to get a more complete picture of the nature of the divergences between control and experimental groups. First, there is the question whether the observed difference in hours and employment for experimental families is caused by a few persons who either leave

TABLE 10

ADJUSTED MEAN ESTIMATES

Intermediate Adjustments from Pre-enrollment to First Quarter and First Quarter to Fourth Quarter

	(1) # employed per family	(2) hours per employee	(3) hours per family	(4) earnings per hour	(5) earnings per family
First quarter means holding pre-enrollment value constant					
Control mean	1.151	35.0	40.2	2.32	93.26
Abso. diff.	- .103**	+ .1	- 3.5*	+ .18	- 1.38
Exper. mean	1.048	35.1	36.7	2.50	91.88
% differ.	-9.0%	+ .3%	- 8.7%	+7.8%	- 1.5%
Fourth quarter means holding first quarter value constant					
Control mean	1.126	34.0	38.3	2.48	94.99
Abso. diff.	- .099**	+ .4	- 3.1*	+ .17	- 1.83
Exper. diff.	1.024	34.4	35.2	2.65	93.16
% diff.	-8.9%	+ 1.1%	- 8.1%	+6.8%	1.9%

NOTE: See note for Table 8 and Appendix III.

or stay out of the labor force, or whether it is a more pervasive incremental change in behavior. Second, one may ask how the distribution of average hourly earnings has changed for the control and experimental families to produce the apparent difference in favor of the latter.

The first question has been examined by asking how many husbands in husband-wife families who were employed at the outset were found to be employed at each of the interviews conducted 6, 9, and 12 months later. They are tabulated in Table 11(A) according to whether such husbands were found employed at 3, 2, 1, or none of the successive periods. As can be seen, there is no evident tendency for the experimental group to gain "retirement cases" relative to the control group. The excess of "notemployed" appears rather to be spread out over many persons who are out of work for shorter periods. Table 11(B) is tabulated in a comparable way for husbands who were not employed initially. Here again there is no suggestion that the overall reduction is concentrated in a few dropouts.

The second question has been approached by looking at the distributions of average hourly earnings for husband-wife families and for the husband and wife separately within such families. Table 12(A) indicates (for experimentals and controls) how family average hourly earnings were distributed at pre-enrollment and at fourth quarterly. Table 12(B) shows how each pre-enrollment group had changed its distribution by the fourth quarterly.

Tables 13 and 14 show comparable tables for the earnings status and changes in it for the head and spouse respectively. These tables indicate that there was a tendency for average hourly earnings to

TABLE 11

EMPLOYMENT STATUS OF HEAD

Husband-Wife Families

A. Of Those Employed at Pre-enrollment

	Control		Experimental		Total	
	No.	%	No.	%	No.	%
Employed at none of quarterlies 2, 3, 4	8	2.4	8	1.6	16	1.9
Employed at one of quarterlies 2, 3, 4	15	4.5	19	3.7	34	4.0
Employed at two of quarterlies 2, 3, 4	31	9.3	58	11.4	89	10.6
Employed at all of quarterlies 2, 3, 4	280	83.8	425	83.3	705	83.5
TOTAL	334	100.0	510	100.0	844	100.0

B. Of Those Not Employed at Pre-enrollment

Employed at none of quarterlies 2, 3, 4	9	23.7	17	27.9	26	26.3
Employed at one or two of quarterlies 2, 3, 4	12	31.6	20	32.8	32	32.3
Employed at all of quarterlies 2, 3, 4	17	44.7	24	39.3	41	41.4
TOTAL	38	100.0	61	100.0	99	100.0

TABLE 12

A. INITIAL AND 4TH QUARTER DISTRIBUTION OF HUSBAND-WIFE FAMILIES: BY FAMILY AVERAGE HOURLY EARNINGS

	Status at Start				Status at Fourth			
	Control		Experimental		Control		Experimental	
	No.	%	No.	%	No.	%	No.	%
No one employed & not available	48	12.9	78	13.6	54	14.5	102	17.9
$2.25 or less	160	43.0	248	43.4	127	34.1	248	43.4
$2.26-$3.50	150	40.3	226	39.6	168	45.2	226	39.6
More than $3.50	14	3.8	19	3.3	23	6.2	19	3.3
TOTAL	372	100.0	571	100.0	372	100.0	571	100.0

B. BREAKDOWN OF MOVEMENTS IN FAMILIES' AVERAGE HOURLY EARNINGS FROM PRE-ENROLLMENT TO FOURTH QUARTER

	Control				Experimental			
	No one empl. & NA	$2.25 or	$2.26 to $3.50	More than $3.50	No one empl. & NA	$2.25 or less	$2.26 to $3.50	More than $3.50
Status at start	N=48	N=160	N=150	N=14	N=78	N=248	N=226	N=19
Breakdown by 4th quarter status:								
No one employed & not available	25.0 %	12.5 %	12.6 %	21.4 %	30.8 %	15.7 %	15.9 %	15.8 %
$2.25 or less	35.4	50.6	18.7	7.1	15.4	31.9	12.0	5.3
$2.26-$3.50	31.3	34.4	62.7	28.6	41.0	46.8	59.3	36.8
More than $3.50	8.3	2.5	6.0	42.9	12.8	5.6	12.8	42.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 13

A. INITIAL AND 4TH QUARTER DISTRIBUTION OF HUSBAND-WIFE FAMILIES: BY AVERAGE HOURLY EARNINGS OF HUSBAND

	Status at Start				Status at Fourth			
	Control		Experimental		Control		Experimental	
	No.	%	No.	%	No.	%	No.	%
No one employed & not available	58	15.6	96	16.9	71	19.1	130	22.8
$2.25 or less	141	37.9	215	37.6	102	27.4	91	15.9
$2.26-$3.50	159	42.7	238	41.7	173	46.5	283	49.6
More than $3.50	14	3.8	22	3.8	26	7.0	67	11.7
TOTAL	372	100.0	571	100.0	372	100.0	571	100.0

B. BREAKDOWN OF MOVEMENTS IN HUSBAND'S AVERAGE HOURLY EARNING FROM PRE-ENROLLMENT TO 4TH QUARTER

	Control				Experimental			
	No one empl. & NA	$2.25 or less	$2.26 to $3.50	More than $3.50	No one empl. & NA	$2.25 or less	$2.26 to $3.50	More than $3.50
Status at start	N=58	N=141	N=159	N=14	N=96	N=215	N=238	N=22
Breakdown by 4th quarter status:								
No one employed & not available	44.9 %	14.2 %	13.8 %	21.4 %	50.0 %	15.8 %	18.9 %	13.6 %
$2.25 or less	24.1	46.1	13.9	7.1	10.4	30.2	6.7	0.0
$2.26-$3.50	24.1	36.2	65.4	28.6	27.1	46.5	61.8	45.5
More than $3.50	6.9	3.5	6.9	42.9	12.5	7.5	12.6	40.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 14

A. INITIAL AND 4TH QUARTER DISTRIBUTION OF HUSBAND-WIFE FAMILIES: BY AVERAGE HOURLY EARNINGS OF WIFE

	Status at Start				Status at Fourth			
	Control		Experimental		Control		Experimental	
	No.	%	No.	%	No.	%	No.	%
No one employed & not available	335	90.1	499	87.4	317	85.2	500	87.6
$2.00 or less	28	7.5	53	9.3	38	10.2	38	6.6
More than $2.00	9	3.4	19	3.3	17	4.6	33	5.8
TOTAL	372	100.0	571	100.0	372	100.0	571	100.0

B. BREAKDOWN OF MOVEMENTS IN WIFE'S AVERAGE HOURLY EARNINGS FROM PRE-ENROLLMENT TO 4TH QUARTER

	Control			Experimental		
	No one empl. & NA	$2.00 or less	More than $2.00	No one empl. & NA	$2.00 or less	More than $2.00
Status at start	N=335	N=28	N=9	N=499	N=53	N=19
Breakdown by 4th quarter status:						
No one employed & not available	89.8 %	42.9 %	44.4 %	92.8 %	52.8 %	47.3 %
$2.00 or less	8.1	39.3	0.0	3.8	32.1	10.5
More than $2.00	2.1	17.8	55.5	3.4	15.1	42.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

increase over the first year of experience for both experimentals and controls, but that the shift in distribution was much greater for the experimental group. (Two statuses do not permit calculation of hourly earnings here. One, of course, is where no member of the family is employed. The other is where some information is missing. These two categories are shown together, along with a three-way division of the computable hourly earnings. These again have been calculated by simply dividing total hours worked into total family earnings.)

Tables 15(A) and 16(A) indicate how hours worked per week were distributed at pre-enrollment and at fourth quarterly for husbands and wives respectively. Tables 15(B) and 16(B) show how each pre-enrollment group had changed its distribution by the fourth quarterly. Clearly the likelihood of gaining or retaining full-time work is much higher for husbands than for wives, and it is also the case that less than one third of the thirty-nine wives employed full time at enrollment were still so employed a year later (at the 4th quarterly), even though there was a net increase of nine full-time working wives.

Part-time work is generally more prevalent among the wives than among the husbands. About half of the control husbands who were not working full time at the outset were doing so at the fourth quarter. In the case of the experimental husbands, the initially part-time workers are shown to be more likely than the controls to move into full-time employment. The experimental heads who were not employed at all at the beginning are, by contrast, less likely than equivalent controls to move to full-time employment. In the case of wives the

TABLE 15

A. INITIAL AND 4TH QUARTER DISTRIBUTION OF HUSBAND-WIFE FAMILIES: BY HOURS WORKED LAST WEEK BY HUSBAND

	Status at Start				Status at Fourth			
	Control		Experimental		Control		Experimental	
	No.	%	No.	%	No.	%	No.	%
No one employed & not available	58	15.5	94	16.5	70	18.8	129	22.6
30 or less	13	3.5	41	7.2	16	4.3	43	7.5
31-39	40	10.8	67	11.7	31	8.3	44	7.7
40 or more	261	70.2	369	64.6	255	68.6	355	62.2
TOTAL	372	100.0	571	100.0	372	100.0	571	100.0

B. BREAKDOWN OF MOVEMENTS IN HUSBAND'S HOURS WORKED LAST WEEK

	Control				Experimental			
	No one empl. & NA	30 or less	31-39	40 or more	No one empl. & NA	30 or less	31-30	40 or more
Status at start	N=58	N=13	N=40	N=261	N=94	N=41	N=67	N=369
Breakdown by 4th quarter status;								
No one employed & NA	44.8%	23.1%	20.0%	12.6%	48.9%	17.1%	19.4%	17.1%
30 or less	5.2	0.0	12.5	3.1	6.4	17.1	7.5	6.8
31-39	1.7	30.8	22.5	6.5	7.5	14.6	16.4	5.4
40 or more	48.3	46.1	45.0	77.8	37.2	51.2	56.7	70.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 16

A. INITIAL AND 4TH QUARTER DISTRIBUTION OF HUSBAND-WIFE FAMILIES: BY HOURS WORKED LAST WEEK BY WIFE

	Status at Start				Status at Fourth			
	Control		Experimental		Control		Experimental	
	No.	%	No.	%	No.	%	No.	%
No one employed & not available	335	90.0	498	86.2	317	85.2	499	87.4
20 or less	11	3.0	19	3.3	7	1.9	16	2.8
21-39	15	4.0	26	4.6	27	7.3	29	5.1
40 or more	11	3.0	28	4.9	21	5.6	27	4.7
TOTAL	372	100.0	571	100.0	372	100.0	571	100.0

B. BREAKDOWN OF MOVEMENTS IN WIFE'S HOURS WORKED LAST WEEK

	Control				Experimental			
	No one empl. & NA	20 or less	21-39	40 or more	No one empl. & NA	20 or less	21-39	40 or more
Status at start	N=335	N=11	N=15	N=11	N=498	N=19	N=26	N=28
Breakdown at 4th quarter status:								
No one employed & not available	89.8%	36.4%	40.0%	54.5%	92.6%	63.2%	46.2%	50.0%
20 or less	1.2	18.2	6.7	0.0	2.0	21.0	3.8	3.6
21-39	5.7	18.2	33.3	9.1	2.0	15.8	38.5	21.4
40 or more	3.3	27.3	20.0	36.4	3.4	0.0	11.5	25.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

numbers are too small at this point to warrant any attempt at interpreting the transitions--beyond the observation that over the first year control wives entered employment in substantial numbers, while there was a net reduction in employment among experimental wives.

Summing up all this and the indications mentioned in the previous section, I think it is clear that differential response of experimental families does exist--evidenced by fewer people employed at any one period in time, and correspondingly reduced total hours of labor supply. This differential is largely offset by increases in hourly earnings which are in turn partly produced by compositional changes of the kind described above. The rest of the differential is due to achieved increases in earning rates on the part of individual earners. The lower number of hours and fewer employees do not seem to be concentrated in a few lie-abouts, nor are they primarily accounted for by changes attributable to the head.

This is an unanticipated outcome, there having been a tacit assumption that any disincentive effect would show up in all the indicators of labor supply and earnings. A substantial amount of further work needs to be done both to verify this result more completely and to come to a satisfactory explanation of the process that has produced it.

As usual, it is not difficult to find a rationalization for the results. Currently, the most promising one is that the experimental treatment provides the security to enable earners to get better jobs. This process probably involves a longer search for some which would account for at least part of the reduced employment and hours. We

have at this point no clue as to how much of the hours and employment differential is attributable to this, and there remains, of course, a good theoretical basis for expecting an income effect working toward increased leisure. Certainly other explanations are possible, and much work over the coming months will be devoted to developing and testing alternative hypotheses. Indeed, one of the primary purposes behind this presentation of preliminary results is to stimulate discussion of such alternatives.

DIFFERENTIALS BY EXPERIMENTAL PLAN AND BY ETHNIC GROUP

Differential responses within the experimental group according to treatment parameters, and differential responses by ethnic group are a central concern of this study, as well as being two areas of acute general interest. However, at this time we can give no satisfactory account of what has been happening, even in a preliminary way. The reason for this is that the sequential way in which the families were enrolled in the four sites produced a substantial statistical confounding of site, ethnicity, and experimental treatment.

The methodological problem of sample allocation was not finally solved until after the families in Trenton, Paterson, and Passaic had been selected and enrolled. The assignment used in Trenton was a relatively uniform allocation over seven of the experimental plans and the control group, and our Trenton sample thus contains no one on the most generous 125 percent guarantee plan, and has a significant underrepresentation of controls. The families in Paterson-Passaic were allocated according to a relatively heuristic scheme which also turned out to

have insufficient control families as compared to the finally approved "optimal" allocation, as well as the wrong-sized cell groups for the plans themselves. The allocations in Jersey City and Scranton thus obviously had to be chosen to optimize the overall allocation. Hence, even in these sites there were departures from the "optimal" allocation--this time deliberate ones to offset the previous lack of optimality in the plan allocations. By the time enrollment in Scranton was complete, therefore, the allocation to experimental plans over the experiment as a whole had become satisfactory. But the problem of too few controls in the first sites had not yet been solved, and 141 new controls were enrolled in those sites (Trenton, Paterson, Passaic) the following year.

The problem is further complicated by the fact that the ethnic distributions in the four cities are by no means uniform. The most obvious disparity is that Scranton is almost all non-Puerto-Rican white and accounts for 75 percent of our entire white group; but our sample also contains a more than proportional number of blacks in Trenton and Jersey City and of Puerto Ricans in Paterson-Passaic. Consequently, even though there was an ethnically random assignment of experimental treatment within each site, there is a decidedly non-random overall allocation of experimental treatments to the several ethnic groups. Since we had too few controls in Trenton and Passaic at enrollment, this disparity also means that at the pre-enrollment interview we had more blacks in the experimental group than in the controls, and more whites in the controls than the experimentals. (At least part of this disparity, of course, will be eventually eliminated by the additional controls that were enrolled late.)

In spite of the confounding described above, which we have not yet disentangled analytically, we did perform a few crude tests and found no statistically significant differences either by plan or by ethnic group. We shall indicate here the tests that have been made and their outcome, but it would be imprudent to extrapolate that other tests--and more appropriate ones--will prove equally negative.

The first analytical effort used a variety of simple and obvious specifications of models to capture intra-experimental group differences. Groups of treatments were formed in various ways and represented by two to five binary variables. These were then used in regressions including (additive) binary variables for controlling city and ethnic group, the pre-enrollment value of the dependent variable (employment, hours, or earnings), family size, and age of head. Tests (Standard F-Ratio) were made on the ability of these groups of binaries to improve on the explanatory power of a single overall experimental effect, and none of them exceeded the 5 percent critical value. The values of the tax rate and the (index) level of the guarantee were also introduced as continuous parameters, and though their coefficients generally had the appropriate (negative) sign they were not significant (jointly or individually) in regressions of the kind cited above. Again, the ability to improve on a single overall experimental response was the criterion.[5]

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[5]It must be noted here that the use of binary variables to provide a relatively "form-free" description of the response is quite prodigal in its use of degrees of freedom. The more economical continuous specifications on the other hand are more restrictive, and of these only the very special linear form has yet been used. It should also be stressed again that there are many ways in which these first descriptive regressions must be respecified before they can be seriously regarded as appropriate models for explaining the response variables.

Equally crude efforts were made to search for any differential response among ethnic groups. It is, of course, generally conceded that the major ethnic minorities represented in our sample--blacks and Puerto Ricans--face different sets of alternatives in the labor market; and it is quite possible that cultural factors are responsible for some additional differences in their response to any given set of alternatives (such differences may also exist within the heterogeneous non-black and non-Puerto Rican white group).

In order to measure differences among the distinguishable ethnic groups in their response to the experimental treatment separate experimental binaries for each ethnic group (white, black, Spanish, and "other") were introduced in regressions like those described above. Again, these were found to add an insignificant amount to the explanatory ability achieved by a single overall experimental response. Differences were observed--some of which approached significance on an individual basis--but they appear too uncertain to warrant any interpretation at this time.

FINAL REMARKS

In closing this review of the first impressions from an extremely interesting body of new data, we must stress again how much more analysis is yet to be done. First, there are additional data yet to be collected, coded, and finally put into usable form. Only the first year of a three-year panel is currently available for the full sample (and even this does not yet include the "extra controls" added in the first enrolled

sites). Second, a large number of variables--economic, attitudinal, demographic, etc.--have been collected and are as yet unexploited. Finally, a wide range of analytic models, empirical methods, and hypotheses have yet to be brought to bear on the main (labor supply) objective of the experiment as well as a variety of subsidiary concerns relating to the effect of income-conditioned transfers.

APPENDIX I: OTHER REFERENCES

For a general description of how the experiment was set up, of the characteristics by which the sample was chosen, the rules of operation and so on, see Harold W. Watts, "Graduated Work Incentives: An Experiment in Negative Taxation," The American Economic Review, Volume LIX, No. 2, May 1969 (Institute for Research on Poverty Reprint # 39).

For a statistical exposition of the experimental sample design see John Conlisk and Harold Watts, "A Model for Optimizing Experimental Designs for Estimating Response Surfaces," Proceedings of the Social Statistics Section, American Statistical Association, 1969 (Institute for Research on Poverty Reprint # 54).

The first set of preliminary figures put out by the Institute on the experiment can be found in Harold W. Watts, Adjusted and Extended Preliminary Results from the Urban Graduated Work Incentive Experiment (Institute for Research on Poverty Discussion Paper # 69-70).

The Office of Economic Opportunity has so far issued two pamphlets on the New Jersey Experiment as follows. The first one appeared in February, 1970, entitled "Preliminary Results of the New Jersey Graduated Work Incentive Experiment"; and the second one was issued in May, 1971 entitled "Further Preliminary Results of the New Jersey Graduated Work Incentive Experiment."

APPENDIX II: ANALYSIS OF EARNINGS CHANGES

The principal tool used to examine the response to experimental treatments in the preliminary reports issued last year was a comparison of the distribution of changes in earnings for families in the control and experimental groups respectively. This tool was chosen as more suited to the state of the data at that time than more sensitive methods such as mean values and regressions. It is, however, a very cumbersome tool, particularly when one must provide control for other variables. Consequently, now that the data is in a more reliable, "cleaned" form it is time to discontinue this method of analyzing and developing results.

To provide an element of more direct comparability, however, this Appendix shows a selection of change distributions in Tables II-1 through II-5. Very briefly, and with one minor exception, there is no evidence of an experimental effect on earnings change. Chi-square tests were carried out for income changes over the first year for the full sample, and over the first 18 months for the half sample, where the experimentals were divided into two groups (those on low and high plans respectively).

Contrasts in total family earnings changes are displayed in Tables II-1 through II-3 for families that were interviewed continuously* through the 4th (or 6th for the half sample) quarter. Table II-2 is limited to

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*"Continuously" means that they have missed no more than one quarterly and have satisfactorily completed the most recent one.

those families who were not on welfare; and Table II-3 is limited to husband-wife families. In all these cases there is no significant difference between the controls and either of the two sets of experimentals. In Table II-4 we do find evidence (in the full sample) of a significant reduction in earnings of the experimental wives. However, it is worth noting that the findings of the half sample through the 6th quarter are decidedly not significant. Finally, Table II-5 gives the earnings changes for male heads. No significant differences appear.

TABLE II - 1

FAMILY EARNINGS CHANGE

ALL CONTINUOUS FAMILIES

		Control		Low Plans		High Plans		Total Experimentals		Total Families	
		No.	%	No.	%	No.	%	No.	%	No.	%
Full Sample	+	139	32.9	115	31.7	87	30.0	202	30.9	341	31.7
(Preenrollment-	=	171	40.5	137	37.7	121	41.7	258	39.5	429	39.9
4th Quarterly)	-	97	23.0	96	26.5	67	23.1	163	25.0	260	24.2
	na	15	3.6	15	4.1	15	5.2	30	4.6	45	4.2
	Total	422	100.0	363	100.0	290	100.0	653	100.0	1075	100.0
Half Sample	+	35	35.0	68	36.0	34	32.1	102	34.6	137	34.7
(Preenrollment-	=	35	35.0	54	28.6	36	34.0	90	30.5	125	31.7
6th Quarterly)	-	23	23.0	56	29.6	30	28.3	86	29.2	109	27.6
	na	7	7.0	11	5.8	6	5.7	17	5.8	24	6.1
	Total	100	100.0	189	100.0	106	100.0	295	100.0	395	100.0

\+ increase of more than $25
= change $25 or less
\- decrease of more than $25
na undetermined because at least one earnings observation is missing

Full: χ^2(d.f. = 6) = 3.41; Pr = .76

Half: χ^2(d.f. = 6) = 2.66; Pr = .85

TABLE II - 2

FAMILY EARNINGS CHANGE

ALL CONTINUOUS NON-WELFARE FAMILIES

		Control		Low Plans		High Plans		Total Experimentals		Total Families	
		No.	%	No.	%	No.	%	No.	%	No.	%
Full Sample	+	123	38.0	95	36.0	79	33.3	174	34.7	297	36.0
(Preenrollment-	=	131	40.4	108	40.9	100	42.2	208	41.5	339	41.1
4th Quarterly)	-	59	18.2	50	18.9	49	20.7	99	19.8	158	19.2
	na	11	3.4	11	4.2	9	3.8	20	4.0	31	3.8
	Total	324	100.0	264	100.0	237	100.0	501	100.0	825	100.0
Half Sample	+	31	41.3	53	43.4	26	33.3	79	39.5	110	40.0
(Preenrollment-	=	27	36.0	32	26.2	25	32.1	57	28.5	84	30.6
6th Quarterly)	-	12	16.0	30	24.6	22	28.2	52	26.0	64	23.2
	na	5	6.7	7	5.7	5	6.4	12	6.0	17	6.2
	Total	75	100.0	122	100.0	78	100.0	200	100.0	275	100.0

\+ increase of more than $25
= change $25 or less
\- decrease of more than $25
na undetermined because at least one earnings observation is missing

Full: χ^2(d.f. = 6) = 1.60; Pr = .95

Half: χ^2(d.f. = 6) = 5.48; Pr = .48

TABLE II - 3

FAMILY EARNINGS CHANGE

ALL CONTINUOUS HUSBAND-WIFE FAMILIES

		Control		Low Plans		High Plans		Total Experimentals		Total Families	
		No.	%	No.	%	No.	%	No.	%	No.	%
Full Sample	+	130	35.0	110	36.0	84	31.7	194	34.0	324	34.4
(Preenrollment-	=	157	42.2	125	40.9	111	41.9	236	41.3	393	41.7
4th Quarterly)	-	74	19.9	58	19.0	57	21.5	115	20.1	189	20.0
	na	11	3.0	13	4.3	13	4.9	26	4.6	37	3.9
	Total	372	100.0	306	100.0	265	100.0	571	100.0	943	100.0
Half Sample	+	31	39.7	65	43.6	31	34.8	96	40.3	127	40.2
(Preenrollment-	=	29	37.2	44	29.5	31	34.8	75	31.5	104	32.9
6th Quarterly)	-	13	16.7	33	22.2	22	24.7	55	23.1	68	21.5
	na	5	6.4	7	4.7	5	5.6	12	5.0	17	5.4
	Total	78	100.0	149	100.0	89	100.0	238	100.0	316	100.0

\+ increase of more than $25
= change $25 or less
\- decrease of more than $25
na undetermined because at least one earnings observation is missing

Full: χ^2(d.f. = 6) = 2.97; Pr = .81

Half: χ^2(d.f. = 6) = 3.72; Pr = .71

TABLE II - 4

WIFE EARNINGS CHANGE

CONTINUOUS HUSBAND-WIFE FAMILIES

		Control		Low Plans		High Plans		Total Experimentals		Total Families	
		No.	%	No.	%	No.	%	No.	%	No.	%
Full Sample	+	40	10.8	30	9.8	13	4.9	43	7.5	83	8.8
(Preenrollment-	=	317	85.2	255	83.3	225	84.9	480	84.1	797	84.5
4th Quarterly)	-	14	3.8	15	4.9	23	8.7	38	6.7	52	5.5
	na	1	0.3	6	2.0	4	1.5	10	1.8	11	1.2
	Total	372	100.0	306	100.0	265	100.0	571	100.0	943	100.0
Half Sample	+	8	10.3	13	8.7	7	7.9	20	8.4	28	8.9
(Preenrollment	=	63	80.8	126	84.6	75	84.3	201	84.5	264	83.5
6th Quarterly)	-	6	7.7	8	5.4	6	6.7	14	5.9	20	6.3
	na	1	1.3	2	1.3	1	1.1	3	1.3	4	1.3
	Total	78	100.0	149	100.0	89	100.0	238	100.0	316	100.0

\+ increase of $15 or more
= change of less than $15
\- decrease of $15 or more
na undetermined because at least one earnings observation is missing

Full: χ^2(d.f. = 6) = 18.19; Pr = .006 (significant)

Half: χ^2(d.f. = 6) = .86; Pr = .99

TABLE II - 5

HEAD'S EARNINGS CHANGE

ALL CONTINUOUS MALE-HEADED FAMILIES

		Control		Low Plans		High Plans		Total Experimentals		Total Families	
		No.	%	No.	%	No.	%	No.	%	No.	%
Full Sample	+	101	26.5	105	33.4	82	30.5	187	32.1	288	29.9
(Preenrollment-	=	203	53.3	149	47.5	129	48.0	278	47.7	481	49.9
4th Quarterly)	-	73	19.2	56	17.8	50	18.6	106	18.2	179	18.6
	na	4	1.1	4	1.3	8	3.0	12	2.1	16	1.7
	Total	381	100.0	314	100.0	269	100.0	583	100.0	964	100.0
Half Sample	+	22	27.5	61	39.9	36	40.0	97	39.9	119	36.9
(Preenrollment-	=	38	47.5	59	38.6	32	35.6	91	37.5	129	39.9
6th Quarterly)	-	19	23.8	31	20.3	19	21.1	50	20.6	69	21.4
	na	1	1.3	2	1.3	3	3.3	5	2.1	6	1.9
	Total	80	100.0	153	100.0	90	100.0	243	100.0	323	100.0

\+ increase of more than $25
= change $25 or less
\- decrease of more than $25
na undetermined because at least one earnings observation is missing

Full: χ^2(d.f. = 6) = 8.36; Pr = .21

Half: χ^2(d.f. = 6) = 5.94; Pr = .43

APPENDIX III: TECHNICAL NOTES

This appendix is intended to provide more complete documentation of the regressions underlying the adjusted means shown on Tables 8, 9 and 10. First the process by which the adjusted means are obtained from the regression estimates will be explained, and then the precise specification of the several regressions.

All the regressions contain (1) a set of additive "conditioning" variables the effect of which is to be removed from the differential between control and experimental groups, and (2) a simple binary or dummy variable which is equal to one for experimental families and zero for others. The coefficient of this binary variable measures the experimental differential taken net of the additive effects of the other variables in the regression. And this differential is precisely equal to the difference between the similarly net means for the control and experimental groups respectively.

The overall average of the dependent variable for the entire sample is simply a weighted average of the adjusted control and experimental means using the proportions of experimental and control families as weights. Having both the difference and the weighted average one can solve easily for the two adjusted means. Thus:

$$\bar{Y}_c = \bar{\bar{Y}} - P\Delta_x$$

$$\bar{Y}_x = \bar{Y}_c + \Delta_x,$$

where Δ_x is the regression estimate of the experimental differential, and P is the proportion of experimental families.

The estimates in Table 8 were derived, as described above, from regressions of the following form:

$$\left.\begin{matrix} YiF(4) \\ YiH(4) \\ YiW(4) \\ YiO(4) \end{matrix}\right\} = a + a_1 Y_i F(0) + \left\{\begin{matrix} a_2 TR \\ a_4 PP \\ a_4 SC \\ 0\ JC \end{matrix}\right\} + \left\{\begin{matrix} a_5 BL \\ a_6 SP \\ a_7 OT \\ 0\ WH \end{matrix}\right\}$$

$$+ a_8 NA(4) + a_9 NC(4) + a_{10} YNG + a_{11} X.$$

The symbols in this equation are defined below:

Y1F = No. of adults employed in family

Y1H = 1 if Husband employed otherwise zero

Y1W = 1 if Wife employed otherwise zero

Y1O = Number of other adults employed in family

Y2F = Total hours worked in family

Y2H = Hours worked by husband

Y2W = Hours worked by wife

Y2O = Hours worked by other adults in family

Y3F = Total earnings for all members of the family

Y3H = Earnings of husband

Y3W = Earnings of wife

Y3O = Earnings of other adults in the family

The parenthetical argument denotes the questionnaire from which the factor was taken

0 = pre-enrollment

1 = first quarterly questionnaire

2 = second quarterly questionnaire

3 = third quarterly questionnaire

4 = fourth quarterly questionnaire

The following are the other independent or regressor variables used in the equation:

TR	=	Trenton = 1, zero otherwise
PP	=	Paterson/Passaic = 1, zero otherwise
JC	=	Jersey City = 1, zero otherwise
SC	=	Scranton = 1, zero otherwise
BL	=	Black = 1, zero otherwise
SP	=	Spanish-speaking whites = 1, zero otherwise
WH	=	Other whites = 1, zero otherwise
OT	=	Other and not determined = 1, zero otherwise
NA	=	Number of adults in the family (16 years or over)
NC	=	Number of children in the family (under 16)
YNG	=	Binary variable = 1 if head is under 35, zero otherwise
X	=	Binary variable = 1 for experimental families 0 for control

(It will be noted that the a_{11} in the regression equation is the source of the Δ_x in the adjusted mean formulas.)

These regressions were carried out for the subset of husband-wife families only. There were 943 such families altogether--which was also the number used in the employment regressions. Thirty families did not have usable responses for 4th quarter hours worked. Hence the hours regressions were based on 913 families. The comparable loss in numbers used for the earnings regression was 37, leaving 906 usable observations.

The regressions behind Table 9 are of the same form but do not include NA, NC, and YNG. The first segment of the table (all continuous families) is drawn from the 1075 families who were continuous participants from pre-enrollment through the 4th. Once again some families had to be dropped out because of incomplete information--31 families for the hours regressions and 37 families for the earnings regression. The regression then is:

$$Y_iF(34) = a_0 + a_1 Y_i F(0) + \left\{ \begin{matrix} a_2 TR \\ a_3 PP \\ a_4 SC \\ 0\ JC \end{matrix} \right\} + \left\{ \begin{matrix} a_5 BL \\ a_6 SP \\ a_7 OT \\ 0\ WH \end{matrix} \right\} + a_{11} X \quad (i = 1,2,3).$$

The variables used here are already defined above, except that the parenthetical argument denotes an "opportunistic average of the variable" for the third and fourth quarters--YiF(34). This is an average that uses all of the information that is present and assumes that missing information is equal to the average of what is there. Zeros are not treated as missing data.

The next two segments show the results when the identical regressions were estimated for two partitions of the continuous families--(1) the 825 "non-welfare" families, and (2) the remaining 250 families who received some welfare payments either during the last quarter and/or during more than one of the other quarters. The non-welfare subsample loses 23 families because of incomplete hours and 31 because of incomplete earnings. The "welfare" group loses 13 and 14 respectively. The parenthetical argument here refers to the fourth quarter only--YiF(4).

The last segment of Table 9 shows results for the half sample (in Trenton-Paterson-Passaic). This of course means that Trenton is the only city dummy, with PP as the zero. Here the parenthetical argument denotes an opportunistic average of the variable for the fourth, fifth and sixth quarterlies--YiF(456). The 395 families in the half sample were again all available for the employment regressions but 11 were dropped for the hours regressions and 17 for the earnings.

Finally, the regressions in Table 10 reintroduce the variables for number of adults, number of children, and age of head (NA, NC, YNG) that were used in the first equation described for Table 8. The dependent variable for the first segment of Table 10 is YiF(1), and YiF(0) is used as a control variable. In the second segment, YiF(4) is the dependent variable and YiF(1) is a control variable. These regressions have been calculated from the subsample of continuous families that had usable responses for all of the three dependent variables at each of the observation points 0, 1 and 4. There were 986 families in this "complete information" sample.