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SUPPLEMENTAL SOCIAL INSURANCE
AND THE HEALTH OF THE POOR

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Supplemental Social Insurance
and the Health of the Poor

ABSTRACT

In 1974 the federal government instituted Supplemental Social Insurance (SSI). The eligible group was the elderly on welfare and disabled individuals. The program distributed extra income and made people eligible for Medicaid in all states except Arizona which did not have Medicaid. We used subjective and objective health information in the Retirement History Survey (RHS) to examine the impact of the program. The RHS is a sample that began in 1969 and included heads of households who were 58 to 63 years old. The respondents or widows were resurveyed every second year through 1977. Before 1974 those who subsequently received SSI were in much worse health than those who did not. After 1974 the differences in health were small and not statistically significant.

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Supplemental Social Insurance, which began in 1974, is a program intended to increase the transfer payments, income, and medical care of those elderly who are on welfare rolls or anyone who is blind or disabled.¹ The amount given depends on family composition and accumulated financial resources but in 1974 varied from \$140 a month for a single individual to \$210 for a couple. "Essential persons" - ineligible spouses or relatives living with the eligible person - were also provided for with a maximum of \$70 a month.

Eligible persons may also receive state supplementary SSI payments. These payments are mandatory to those whose state welfare payments exceeded the SSI payments in 1973. States could also provide payments at their own discretion. In 1974 combined SSI payments made to individuals ranged from \$140 a month (in 25 states) to \$250 in Alaska. The state supplementary payments are either state or federally administered at the discretion of the state. In addition the law mandated that people who receive SSI also are eligible for Medicaid.²

An important element in the welfare of the poor is their health. Morbidity and mortality of the elderly increase rapidly for people above the age of 60. For example, according to the 1977 Vital Statistics the death rate per year is 1.4, 3.1, and 7.2% at ages 55 to 64, 65 to 74, and 75 to 84 respectively. Similarly in the Retirement History Survey (RHS) which is the data set used in our analysis, the proportion of people with health better than others of the same age declines rapidly over time while the proportion

¹ For eligibility criteria see the Social Security Handbook, which is also the source of the following details.

² Arizona did not have Medicaid and some fifteen states have stricter financial levels than the SSI income level and would require some extra expenditures by SSI recipients. See Davidson and Marmor (1980) for details.

with worse health than others increases rapidly. In addition, Rosen and Taubman (1982) have shown that in the RHS those in the worse health category at one point in time have only a small probability of returning to the better category though this probability increases with education.

Governmental programs in general and the SSI program in particular are often described as well meaning but unsuccessful. The failure may occur for several reasons. First the targeted population is ill defined and the criteria used to establish eligibility leave out too many who should be eligible and/or let in too many who should be ineligible. Second, the people receiving the aid either squander it or engage in reallocations so that the intended beneficiary is not made better off.³ Third, to run the program is so costly that the loss in social efficiency more than offsets the gain in social equity. However, only 20% to 30% of the population in the post 65 age group works; hence, it seems unlikely that this particular benefit affects retirement-labor force participation choices and thus much of these inefficiency effects will be muted.⁴ Furthermore it is doubtful that people in this income range were at or near the satiation point; hence, more income must lead to more utility, although there still remains the question of whether the elderly poor were helped substantially.

SSI will be successful if it aids people to recover good health, prevents a drop in the percentage in better health, or reduces age specific mortality rates. This paper examines the impact of the Supplemental Social Insurance program on individual health status to see if the program has had its designated effect. To determine if the program has had these impacts we make

³ See Becker (1981) on Head Start.

⁴ In 1973 33.5% of the men aged 66-67 were in the labor force. In 1975, the corresponding percentage was 21.7%.

use of a longitudinal sample in which some of the surveys took place before the program began and some after. The sample used also contains people who were eligible and others who were not for SSI.

Section 1 discusses the RHS from which the data for this study was drawn. Section 2 presents a descriptive analysis of temporal health patterns for five biennial periods from 1969 through 1977. In section 3 we carry out an ordered probit analysis of morbidity for each of the five time periods and also present estimates of the relative risks of worse health and death if SSI were cut back. Section 4 concludes.

1. The Data

The data used in this study come from the Retirement History Survey which contains five biennial surveys taken during the period 1969 through 1977 and individually matched records of Social Security earnings beginning in 1950. The sample contains about 8500 men and 2500 women all of whom were heads of household in 1969. Thus by standard though archaic usage, married women spouse present will not be sampled except in very unusual circumstances. In the sample about 3% of the men and 10% of the women received SSI in 1975.

The sample is designed to study why people retire when they do and what happens after retirement. The sample contains objective health information such as date of death and hospitalization and subjective information such as how your health compares with others of the same age and how it has changed over time.

For our study we use both the mortality and the subjective morbidity information. We believe that the subjective information is a good proxy for objective measures despite the arguments presented by Parsons (1982) who in a younger age group finds that labor force participation responds "correctly" to

a fixed transfer benefit/potential wage rate variable when a mortality index is used but "incorrectly" when a subjective measure similar to ours is used as a health measure. Our belief is based on the following. In the RHS, the people who report themselves in worse health are twice as likely to die in a 4 year time span as those in better health (Rosen and Taubman (1982)), have Parsons' "correct" sign on the benefit/wage variable (Slade (1981)) and generally display the properties one would expect in a health production function (Rosen and Taubman (1982), and Carleton (1981)).⁵

2. Temporal Health Patterns

Prior research has indicated that health varies with some socioeconomic characteristics such as education.⁶ It may be argued that these characteristics cause both the poor health and the individual's eligibility for SSI. Thus there are some advantages in simply comparing the SSI population with the non SSI population in each year without controlling for education and other factors.

To determine eligibility when the people were 65 to 70 years old we use the income information in 1975 for 1975 and earlier and the 1977 information in that year. A detailed breakdown contains SSI as a separate category. We

⁵ For example married men in worse health are much more likely to survive 4 years than non-married men.

⁶ Previous studies in the general area include Kitagawa and Hauser (1973), Lerner (1980), Link, Long, and Settle (1982), Metropolitan Life Insurance Co. Statistical Bulletin (1977), and Yeracaris and Kim (1978).

then use 1975 eligibility in earlier time periods.⁷

In tables 1-5 we present the distribution of health states in the various years for 4 groups: those receiving SSI in 1975 or 1977, those in 1975 receiving the minimum retirement benefit who retired early, those in 1975 receiving the minimum benefit who retired at 65, and the remainder. As the large chi-squared statistics indicate these distributions are not very similar.

We distinguish the minimum benefit group because they are receiving a benefit proportionally greater than entitled by their prior contributions. People receiving minimum benefits are thought to include two distinct groups, those with "permanent" low earnings capacity which occurs partially because of poor health and those who worked primarily in nonsocial security covered occupations (such as the Federal Government) who are on average not in poor health and who receive another pension.

In 1969 about 15% of the SSI eligible population were in better health than others. The corresponding figures for minimum, early retirement, and the remaining sample members are 27%, 33% and 35% respectively. The percentage in worse health for the same groups (in the same order) are 45, 25, 21 and 19.⁸ A glance at these percentages indicate that in 1969 morbidity varies substantially with social security status. The nonminimum benefit

⁷There is a potentially important problem with using the 1975 eligibility for prior periods. If the person dies before 1975, we will not learn with certainty if he would have been eligible. We can, however, estimate this probability and correct for the selectivity bias. The results with and without the mills ratio were quite similar and we chose to report the latter. Results correcting for the selectivity bias are available from the authors.

⁸ A chi-square test of the null hypothesis that the frequency distributions are the same across social security status yields a test statistic of 211.4. The chi square statistic with three degrees of freedom is 5.99 at a significance level of .05.

people are healthier than the other groups, the SSI eligible group is the least healthy, and the early retirement group is less healthy than the regular group. Moreover, the SSI eligible group is much less healthy than the others.

Moving to 1971 and 1973, we observe an overall worsening of health but very similar patterns. The SSI and minimum benefit early retirement groups remained about constant while the others' health worsened somewhat, but the SSI eligibles are in far worse health.⁹

SSI begins in 1974. In 1975, when the people were 65 to 70 years old, the distributions are much different. The percentage in better health are 17, 27, 39 and 25 for those in the SSI, early minimum benefit, regular minimum benefit and other category. All categories show an increase from their 1973 levels of 2-3% except the minimum retirement group which increases almost 9%.

In the worse health than others category, the percentages are 30, 21, 19 and 11 respectively. This represents a drop of about 5% for the SSI group and 3% in the other category. The minimum benefit early retirement remained virtually the same while the early retirement group increased about 4%. Those dead increased by about two points in each category. Measured in rates of growth the SSI recipients did much better.

In 1977 the improvement for the SSI groups continues. The SSI group has a slight increase while the others record a drop in the better category.

In general the results from the pre and post SSI program suggest that the program has improved the health of the SSI recipients. We turn next to some multivariate estimates that will allow us to control for other determinants of morbidity and mortality.

⁹ The regular minimum retirement group has the highest fraction in better health, but there are only 80 people in this cell.

3. Ordered Probits

Better, same, worse health and dead are distinct health categories (states) that can be rank ordered. We can make use of the rankings to establish an estimate of the cardinal differences between the states. The technique was introduced by Aitchison and Bennett (1970), and has been generalized to handle heteroscedasticity by Akin, Guilkey, and Sickles (1979) and endogenous explanatory variables by Lee (1982). The standard model used in this study assumes that the coefficients are stable across states and that the error distribution is independent of characteristics of the state. We use two conventional normalizations to set the error variance to unity and the first threshold (μ_0) to zero. The model can be written as

$$(3.1) \quad y_i^* = X_i \beta + \varepsilon_i \quad i = 1, \dots, N,$$

where

$$y_i = \begin{cases} 0 & \text{if } \mu_{-1} < y_i^* < \mu_0 \\ 1 & \text{if } \mu_0 \leq y_i^* < \mu_1 \\ \cdot & \\ \cdot & \\ \cdot & \\ S & \text{if } \mu_s \leq y_i^* < \mu_{s+1}, \mu_{-1} = -\infty, \mu_{s+1} = +\infty \end{cases}$$

and where X_i and β_i are (1xk) and (kx1) vectors of explanatory exogenous variables and coefficients; ε_i is identically and independently distributed as $N(0,1)$ and the μ_i 's are nonstochastic thresholds. The likelihood function for each sample at time t is given by

$$(3.3) \quad L = \prod_{i=1}^N [\Phi(X_i \beta - \mu_{y_i}) - \Phi(X_i \beta - \mu_{y_i-1})],$$

where $\Phi(\lambda)$ is the distribution function for the standardized normal. The estimation of (3.3) was carried out using the Gauss-Newton method. The gradient and information matrix are given in McKelvey and Zavonia (1978).

Table 6.I presents estimates for the various years. The independent variables used include education, age and, for 1975 and 1977, the dollar amount of SSI in 1975 or, if none, then in 1977. We also control for whether or not the individual is married and living with their spouse, is single or widowed, their race, sex, and if female whether or not her occupation is housewife. The final dummy variable indicates whether or not the individual receives SSI. Table 6.II contains a similar set of results but with prior health states and dummy variables for minimum and minimum early retirement benefits as additional explanatory variables. We also present the estimated thresholds and $-2\ln(\lambda)$ where λ is the likelihood ratio under the null hypothesis that all coefficients other than the thresholds are zero.

In 1969, 1971, and 1973 the coefficient on SSI is statistically significant and indicates that those eligible are in worse health. These coefficients vary little over this time interval as do the marginal probabilities evaluated at the mean values of the explanatory variables. In 1975 and 1977 the coefficients become statistically insignificant with a very low statistic especially in 1977.

We can examine health change equations by adding prior health status to the analysis. Rosen and Taubman (1982) report that the inclusion of this variable generally reduces the significance level of other independent variables. This effect is found in 1971 and 1973 though the 1973 coefficient is almost significant at the 5% level.

An interesting result in the tables is that those receiving minimum

benefits usually are in significantly better health. This remains true even after controlling for prior health. This may be due to the often argued point that a major population component of the minimum retirement benefit group are people who primarily work for the U.S. government but take a job covered by Social Security for the minimum time needed to collect benefits.

Our results suggest that people have benefited from SSI and thus would be at a higher risk of poor health or death if their SSI income were reduced. Table 7 reports these relative odds for the states worse health and death using the estimates from Table 6.I. The odds ratios are generated from the polytomous probit estimates by first calculating the probability that an individual would be in the particular state, identified by two adjacent thresholds, given a set of demographic characteristics for a given level of SSI. We then perform the same calculations at a different level of SSI. The ratio is the odds ratio. We present results for different configurations of dummy variables at average age and education. For illustrative purposes we chose an annual reduction in payments from \$3000 annually to zero and from \$2000 to zero. As one can see the level of SSI income has a dramatic effect on the relative odds of being in worse health and of death. For example, in 1977 a white male living with his spouse would be at a 71% greater risk of death if his SSI benefits were cut \$3000.00/year. Interestingly the effect of reduced SSI income on risk of death is significantly higher than is the effect on the risk of worse health.

The effect of SSI on the pattern of morbidity over time is illustrated in Figure 1. We can see that over the sample period the health status of the average individual has deteriorated. However we can also see the dramatic relative improvement in health status brought about by the SSI program which starts in 1975. Clearly those who were included in this program benefited,

either in terms of objective health measures or in terms of self-perceived health status.

4. Conclusion

Our results indicate that people receiving SSI payments have improved their health once the program began. These results do not tell us why, although an obvious possibility is that the funds are used for preventive and curative health expenditures. The RHS does have data on such expenditures but we have not yet studied them in this regard. However, Link, Long and Settle (1982) have recently published some relevant results based on the 1969, '74 and '76 Health Interview Surveys. They indicate on page 206 that those with income less than \$5,000 utilized hospitals and (if chronically ill) physicians far less than those with higher income in 1969 but that these differences had been substantially reduced or eliminated by 1976. Of course, medicare and medicaid provisions also changed over this time period but the trend was to increase co-pay provisions and to reduce government help and thus increase the private costs of health care. Thus it appears that SSI has helped maintain and improve the health stock of the elderly.

Table 1
Health in 1969

	RECEIVES SSI	EARLY MIN RET	MIN RET	ALL OTHERS	TOTAL
1. Health Better than Others the Same Age					
Number	73	97	26	3577	3773
Col PCT	15.40	26.80	32.50	34.98	
2. Health Same as Others					
Number	188	174	37	4689	5088
Col PCT	39.66	48.07	46.25	45.85	
3. Health Worse than Others					
Number	213	91	17	1961	2282
Col PCT	44.94	25.14	21.25	19.17	
TOTAL	474	362	80	10227	11143
	4.25	3.25	0.72	91.78	

$$\chi^2 = 211.92$$

Table 2
Health in 1971

	RECEIVES SSI	EARLY MIN RET	MIN RET	ALL OTHERS	TOTAL
1. Health Better than Others of the same age					
Number	111	97	23	2743	2974
Col PCT	15.95	26.80	28.75	27.42	
2. Health Same as Others					
Number	328	180	43	5242	5793
Col PCT	47.13	49.72	53.75	52.39	
3. Health Worse than Others					
Number	237	81	14	1557	1889
Col PCT	34.05	22.38	17.5	15.56	
4. Dead					
Number	20	4	0	463	487
Col PCT	2.87	1.10	0.00	4.63	
TOTAL	696	362	80	10005	11143
	6.25	3.25	0.72	89.79	

$$\chi^2 = 196.37$$

Table 3
1973 Health

	RECEIVES SSI	EARLY MIN RET	MIN RET	ALL OTHERS	TOTAL
<hr/>					
1. Health Better than Others the same age					
Number	67	87	24	2401	2579
Col PCT	14.14	24.03	30.00	23.48	
2. Health Same as Others					
Number	214	193	44	5438	5889
Col PCT	45.15	53.31	55.00	53.17	
3. Health Worse than Others					
Number	166	77	12	1442	1697
Col PCT	35.02	21.27	15.00	14.10	
4. Dead					
Number	27	5	0	946	978
Col PCT	5.70	1.38	0.00	9.25	
TOTAL	474	362	80	10227	11143
	4.25	3.25	0.72	91.78	

$$\chi^2 = 203.77$$

Table 4
Health in 1975

	RECEIVES SSI	EARLY MIN RET	MIN RET	ALL OTHERS	TOTAL
1. Health Better than Others Same Age					
Number	117	98	31	2546	2792
Col PCT	16.81	27.07	38.75	25.45	
2. Health Same as Others					
Number	323	177	32	5132	5664
Col PCT	46.41	48.90	40.00	51.29	
3. Health Worse than Others					
Number	207	76	15	1128	1426
Col PCT	29.74	20.99	18.75	11.27	
4. Dead					
Number	49	11	2	1199	1261
Col PCT	7.04	3.04	2.50	11.98	
TOTAL	696	362	80	10005	11143
	6.25	3.25	0.72	89.79	

$$\chi^2 = 262.4$$

Table 5
Health in 1977

	RECEIVES SSI	EARLY MIN RET	MIN RET	ALL OTHERS	TOTAL
1. Health Better than Others the Same Age Number	125	94	22	2247	2488
Col PCT	17.96	25.97	27.50	22.46	
2. Health Same as Others Number	315	185	40	5375	5915
Col PCT	45.26	51.10	50.00	53.72	
3. Health Worse than Others Number	191	65	13	948	1217
Col PCT	27.44	17.96	16.25	9.48	
4. Dead Number	65	18	5	1435	1523
Col PCT	9.34	4.97	6.25	14.34	
TOTAL	696	362	80	10005	11143
	6.25	3.25	0.72	89.79	

$$\chi^2 = 455.54$$

Table 6.1
Ordered Probit Estimates

	1969	1971	1973	1975	1977
	Coefficients	SE	SE	SE	SE
Constant	1.56*	0.38	1.19*	0.60	0.21
Married living with spouse	-0.21*	0.045	-0.24*	-0.24*	-0.18*
Single	-0.045	0.053	-0.14*	-0.11*	-0.093
Widowed	-0.11*	0.045	-0.14*	-0.12*	-0.11*
Black	0.082*	0.038	0.079*	0.079*	0.11*
Female	-0.17*	0.041	-0.27*	-0.25*	-0.28*
Education	-0.064*	0.0033	-0.054*	-0.040*	-0.038*
Age	-0.0056	0.0063	0.0042	0.011	0.019*
Housewife	0.34*	0.084	0.19*	0.16	0.20*
Receives SSI	0.37*	0.044	0.16*	0.12	0.073
SSI75 \$ or SSI77 \$				-0.00009	-0.00007
μ_1	1.29	.015	1.45*	1.12*	1.04*
μ_2			2.11*	1.82*	1.84*
$-2\ln(\lambda)$	688.8	432.0	240.9	193.9	265.9

*Significant at the 5% level.

Table 6.11

Ordered Probit Estimates

	1969		1971		1973		1975		1977	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Constant	1.56*	0.38	1.23*	0.38	1.02*	0.39	0.86*	0.41	0.89*	0.42
Living with Spouse	-0.21*	0.045	-0.10*	0.044	-0.15*	0.046	-0.014	0.050	0.15*	0.050
Single	-0.045	0.053	-0.038	0.053	-0.13*	0.055	0.026	0.058	-0.033	0.059
Widowed	-0.11*	0.045	-0.044	0.045	-0.11*	0.046	0.0124	0.049	0.016	0.049
Black	0.082*	0.038	0.044	0.037	0.049	0.038	0.012	0.041	0.030	0.041
Female	-0.17*	0.041	-0.16*	0.041	-0.18*	0.042	-0.058	0.045	-0.047	0.046
Education	-0.064*	0.0033	-0.030*	0.0033	-0.027*	0.0034	-0.022*	0.0035	-0.025*	0.0036
Age	-0.0055	0.0063	-0.0011	0.0063	0.0047	0.0064	0.0010	0.0067	0.0033	0.0069
Housewife	0.34*	0.084	0.22*	0.083	-0.017	0.086	0.047	0.090	0.13	0.090
Receives SSI	0.37*	0.045	0.029	0.044	0.098	0.052	0.11	0.088	0.18*	0.059
Minimum Early Retirement	0.033	0.061	-0.13*	0.061	-0.17*	0.062	-0.098	0.064	-0.032	0.064
Minimum Retirement	-0.13	0.12	-0.24*	0.12	-0.27*	0.11	-0.21	0.12	0.093	0.12
Health better ₋₁			-0.66*	0.025	-0.73*	0.028	-0.78*	0.029	-0.96*	0.029
Health worse ₋₁			0.89*	0.029	0.87*	0.030	0.88*	0.032	0.85*	0.035
Dead ₋₁					5.51*	0.638	5.72*	0.45	4.89*	0.14
SSI 759 or SSI 779							-0.00008	0.00008	-0.00005	0.00006
V ₁	1.29*	.015	1.68*	.018	1.75*	.019	1.41*	.018	2.01*	.022
V ₂			2.73*	.027	2.75*	.027	2.78*	.032	3.02*	.033
-2ln(L)	690.2		7820.6		5125.3		7269.6		8874.6	

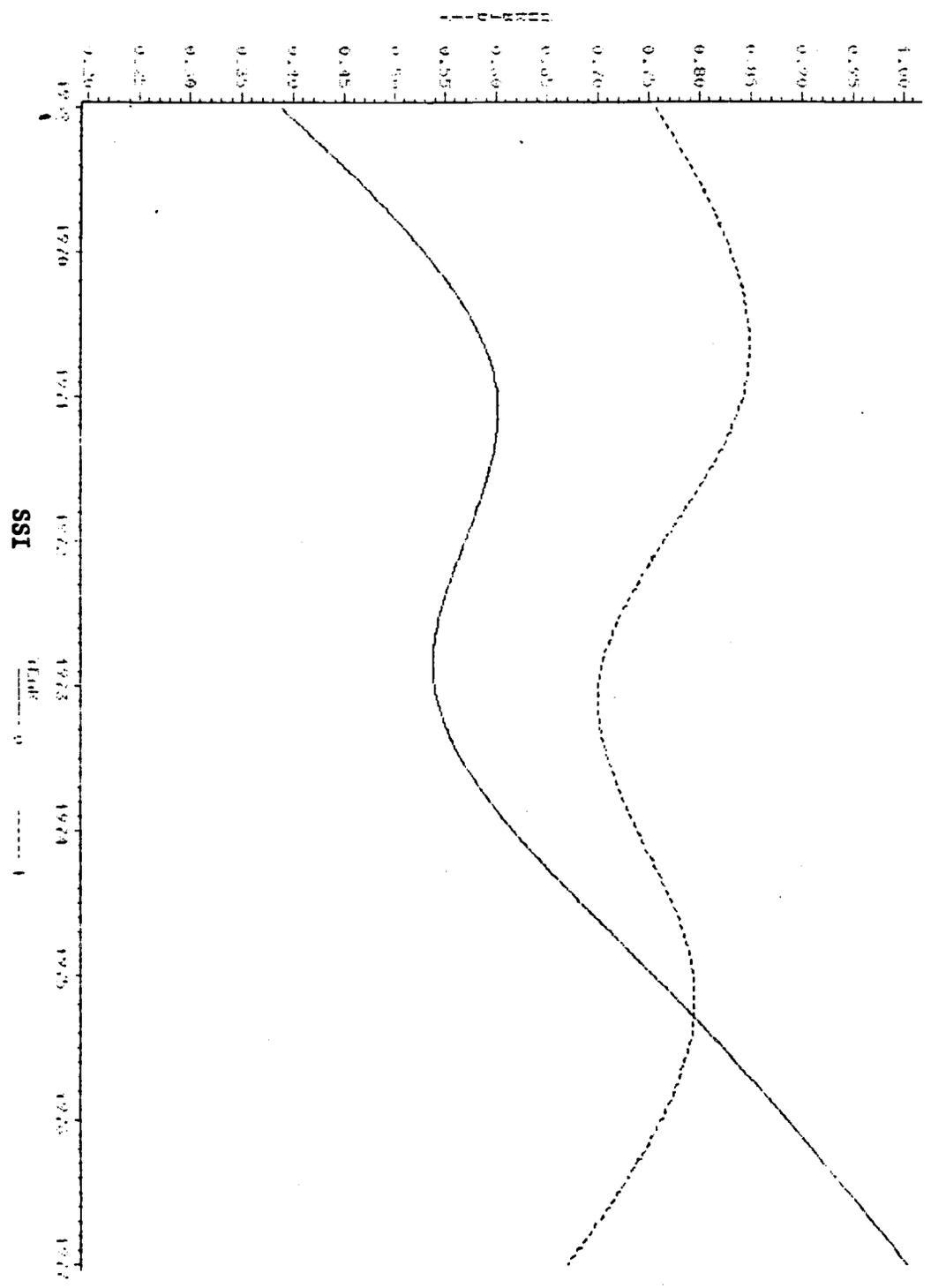
*Significant at the 5% level

Table 7

Selected Relative Risks (in percents) of Worse Health
or Death Given a Cut Back in SSI

Year	Dummy Variable Configuration						Reduction of \$2000 Annually		Reduction of \$3000 Annually		
	MSP	SING	WID	BK	FEM	HW	Worse Health	Death	Worse Health	Death	
1975	1	0	0	0	0	0	15	35	25	58	
	<hr/>										
	0	0	1	0	1	1	14	34	24	56	
	<hr/>										
1977	0	1	0	0	0	0	12	32	21	54	
	<hr/>										
	1	0	0	1	0	0	14	33	22	55	
	<hr/>										
1977	1	0	0	0	0	0	15	42	26	71	
	<hr/>										
	0	0	1	0	1	1	15	42	26	72	
	<hr/>										
1977	0	1	0	0	0	0	13	40	22	67	
	<hr/>										
1977	1	0	0	1	0	0	12	39	21	66	
<hr/>											

FIGURE 1
 TEMPORAL MORBIDITY PATTERNS
 (WITH AND WITHOUT SUPPLEMENTAL SOCIAL INS.)



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