INCOME DIFFERENTIALS IN MORTALITY: PRELIMINARY RESULTS BASED ON IRS-SSA LINKED DATA

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The correlation between low positions in social hierarchies and high death rates has been amply documented. Antonovsky [2] , for example, examined thirty studies and found only three which reported no consistent relationship between social class and mortality. But interpreting the meaning of this well-known correlation and designing social policies to successfully attack it require probing its underlying causal mechanisms in ways which have so far eluded us.

Because mortality is a rare event unequally distributed throughout the population, large samples are required for its statistical analysis. Moreover, information about the numerator (deaths) is typically collected separately from information about the denominator. Hence, cost constraints usually cut to the bone such information as might provide insight into the mechanisms linking social position to mortality. Statistical analyses of mortality inevitably have a grossly descriptive flavor, with the results lacking the power to discriminate between alternative theoretical hypotheses. Consequently, although the long and honorable tradition of "socioeconomic epidemiology" has succeeded in documenting a social problem which is quite literally a matter of life and death, it can provide little specific guidance on how to attack the problem. Or, equivalently, a great deal of conflicting advice is given, urging housing subsidies or national health insurance or better labeling on breakfast cereals or a negative income tax, because the empirical evidence is insufficiently powerful to discriminate among alternative hypotheses about action consequences.

The solution is not to abandon, but to improve, statistical analyses of mortality. Although good ideas are always in short supply, it seems to be a fact of life that as our analysis aspirations increase linearly, the cost of mortality data sufficiently rich to support such analyses increases exponentially. In this context, the most encouraging news from the research community is an emerging new source of individual-level data on social behavior in general and on mortality in particular generated by sophisticated interagency data linkages. By merging existing data from several sources, such linkages make possible larger, more detailed microdata files than could ever be collected from a survey and at a fraction of the cost. Moreover, interagency linkages use data already being collected and so avoid new strain on an already overquestioned population.

This paper reports a statistical analysis of mortality drawn from just such a linked microdata file: in this case, a large (N=248,019) national file created by linking 1969 individual income tax data from the U.S. Treasury Department to 1969-76 mortality and other data from the Social Security Administration. Although the file we analyzed - one of the first interagency linked data sets to emerge - lacks important information which later data files are likely to contain, enough new information is contained to permit analyses heretofore impossible. We use the file to estimate a white male's chances of dying over the years 1970-76 as they are related to income by type in 1969 and also controlling for age and marital status in 1969. Both tabular and multivariate logit analyses are used to address three questions. What was the relationship of income to mortality for white males in the United States over the 1970-76 period? Did the relationship of income to mortality vary as the source of the income varied? Did the relationships of income by source to subsequent mortality vary as the timing of death was increasingly distanced from the measurement of income? Although the results share with previous statistical analyses a limited power to discriminate among alternative theories as to why differentials exist, they nevertheless add appreciably to our descriptive knowledge of income differentials in mortality in the United States.

PREVIOUS RESEARCH

The inverse correlation of income and mortality was reaffirmed in Kitagawa and Hauser's analysis of a nationwide sample of 1960 decedents [7] . Their findings for white males indicated a strong association of lower incomes with higher death rates for those aged 25-64, and a less marked but similar association for those aged 65 and over. A simple cross sectional association of socioeconomic characteristics and probabilities of death, however, does not provide an adequate basis for a causal interpretation of the income/mortality gradient. Kitagawa and Hauser [7] and Vallin [9] identify some of the problems. One important shortcoming is that at least two effects could be the source of the simple bivariate correlation: first, the impact of income on mortality, and second, the effects of long- or short-term poor health on income-generating capacity. Illness may curtail work, and it may force the sale of assets and property. Oh and Scheuren's work [8] with estate multipliers indirectly suggests that the impact of poor health on income begins to show up roughly five years before the occurrence of death.

An apparent solution to the contamination of the income/mortality relationship by the effects of acute short-term illness is the distancing of the income measurement from the period of illness and death. One data collection design that incorporates this solution is the recording of income characteristics for a sample at one point in time and the subsequent monitoring of the sample's mortality experience. This design enables an examination of how the income/mortality relationship changes as the interval between the income measurement and the period of risk of death grows. For examples of the use of such a prospective design in the analysis of general socioeconomic mortality differentials, see Comstock and

Tonascia's study of mortality differentials by education [3], and Vallin's [9] and Fox's [5] reports on occupational mortality differentials.

The problem of interpreting the relationship of mortality to income, or to any other socioeconomic factor, is highlighted by the widely different conclusions drawn by different public health and mortality researchers. Kitagawa and Hauser's interpretation of socioeconomic mortality differentials led them to conclude that mortality in the United States could only be reduced by improvements in the living conditions of the lower socioeconomic groups [7]. Among the areas for change they mentioned were environmental and housing quality, and access to medical care. Other researchers, however, disagree with the assumption that differential mortality risks arise simply from a maldistribution of resources. Vallin [9] and Eyer [4], for example, argue that differential risks are a consequence of the fundamental divisions inherent in the economic structure upon which industrial society is based. Still others contend that the increased consumption associated with higher income may lead to increased risks of disability and death [6].

Unfortunately, empirical evidence oriented toward disentangling the mechanisms underlying the income/mortality gradient is sparse. Data to support an analysis of the interaction of occupational experiences, educational attainment, earnings, wealth, consumption, and environmental characteristics, all over a lifetime, are non-existent. Since it contains information on income by detailed source, the IRS-SSA linked file can shed additional light on the nature of the income/mortality relationship.

POSSIBLE SOURCES OF INCOME DIFFERENTIALS

What processes might give rise to an observed correlation between income and mortality? In spite of the limited testing power in the IRS-SSA data, we list below four classes of possible explanations for an income/mortality relationship.

A. Differentials will occur if increases in income are used on balance to buy goods and services which prolong life. Examples of goods and services which might be both income elastic and life-prolonging include: living space, healthy diet, pollution-free environments; leisure; quantity and quality of health care. Elasticities might vary by income class and prices or non-price access might vary also. Research into such processes would seek to identify particular goods and services with effects on mortality, estimate price and income elasticities and identify non-price barriers to access. It is also possible that mere possession of income creates well-being apart from its purchase of specific commodities. Policies based on this explanation of income differentials would attempt to redistribute income, manipulate prices and non-price barriers, and change elasticities.

B. Differentials will occur if both income and mortality differ systematically by occupation and industry. In this case, the causal agent is work and the income/mortality correlation is spurious. Occupation and industry information are likely to be available in future linked files so that this hypothesis can be directly tested. Policies based on such an understanding would focus on changes in the workplace. The IRS-SSA data permit an **indirect** test of this hypothesis if we assume that wage income is a better proxy for occupation- and industry-generated risks than asset income, and that proprietors are in general better off than non-proprietors. Such assumptions lead to a prediction that wage income will have the strongest correlation with mortality and that those with no proprietor's income would be worse off than those with positive or negative proprietor's income. In addition, since occupation and industry changes are relatively infrequent, differentials arising from such a source are likely to be fairly constant over time.

C. Differentials will occur if long-term individual differences (e.g., family background, physical vigor, aspirations, education) influence income and mortality in different directions. Such an explanation would suggest that differentials would be highly impervious to policy intervention. Research directly bearing on such an hypothesis would seek to identify long-term individual differences with presumed effects on both longevity and income. The IRS-SSA data permit a weak test, namely that differentials arising from such a source would be quite constant over time.

D. Differentials will occur if short-term individual differences (e.g., medical or psychological problem) affect both income and mortality in opposite directions. Again, to the extent that such an interpretation is correct, traditional policy measures are likely to be quite misdirected. This explanation implies that an observed correlation between earned income and mortality should be short-lived; as the elapsed time from the earnings measurement increases, the gradient should disappear. The asset income/mortality gradient should be weak or non-existent at all times, since it seems reasonable to assume that short-term problems would affect asset income less than wage income.

To summarize, the IRS-SSA data contain two sources of inherent testing power concerning the processes leading to income differentials in mortality: variations in the income/mortality relationship (a) as the income measurement is distanced from the timing of mortality risk and (b) as income is measured by source.

By observing mortality during a period one to seven years after the measurement of income, we gain some sense of whether long- or short-term factors are at work. To the extent that relationships remain constant throughout the 1970-76 period, it implies that long-term factors (occupation, industry, family background, education) are responsible. To the extent that relationships change over the period, it suggests that short-term processes (illness) are at work. Income could be causal in either a short- or long-term sense. Insofar as current income dominates (that is, current mortality risk is largely dependent

on current purchases of life-prolonging goods and services), income can be considered a short-term factor. Insofar as lifetime income dominates (that is, current mortality risk depends on all previous consumption of life-prolonging goods and services), income can be considered a long-term factor. Since lifetime income seems more important for determining life chances than current income, the latter position seems more reasonable.

The second leverage is the identification of income by source. Insofar as income is used to purchase life-prolonging goods and services, the question becomes whether the propensity to consume such goods and services varies as the income source varies. However, evidence comparing elasticities by income source is lacking. Secondly, insofar as the workplace is the underlying causal agent, we would expect wage income to be a better proxy than asset income, and proprietor vs. nonproprietor to be a meaningful distinction. Thirdly, insofar as other long-term individual differences are operative, we have no a priori expectation. Finally, insofar as short-term factors like illness are operative we would expect wage income to be the most responsive and asset income least responsive. That is, we would expect the relationship of wage income measured in 1969 to mortality measured during 1970-76 to change rapidly over that period, while the relationship of asset income measured in 1969 to mortality during 1970-76 would change slowly or not at all.

PREPARATION OF THE DATA

The linked IRS-SSA administrative data file is one of a series of experimental interagency data linkages that involves the Social Security Administration (SSA), the Internal Revenue Service (IRS), the National Center for Health Statistics, and the Bureau of the Census. This specific file was generated from the 1969 Statistics of Income-Social Security Administration Summary Earnings File, a part of the IRS-SSA Income and Wealth Study.

The initial sample was an individual income tax model sample of 253,580 returns drawn from the 1969 Statistics of Income file. Income characteristics and type of return in 1969 were exactly matched by Social Security number to SSA data on age, earnings histories, disability, and death from 1969-76. A computer error resulted in the loss of information for fifteen individuals. Hence, the matched file contained 253,565 cases.

Before releasing tabulations for this study, analysts at the Office of Research and Statistics (ORS) performed further editing. First, they identified records where no SSA data had been found (N=667) and records they considered obviously bad matches (N=4879). The remaining 248,019 records were considered acceptable IRS-SSA matches.

Second, the sample weights were readjusted to account for the final editing. To do this, the ORS broke the full file of 253,565 records and the "good" matched file of 248,019 records into 192 cells. These cells were composed by grouping each file into twenty four categories of adjusted gross income, taxable joint, taxable nonjoint, nontaxable joint, and nontaxable nonjoint return types. Examining these tables enabled adjustment factors to be calculated. The sample file was then weighted to represent the total population of taxfilers in the 1969 Statistics of Income Program.

The reporting of death to the SSA is virtually complete for white males, but not so good for women and nonwhites [1]. Thus, as a final step, records for women and nonwhites were dropped from the file.

From the weighted file of white male taxfilers, the ORS generated crosstabulations to our specification by the dimensions of 1969 age, marital status, wage income, asset income, and proprietor income, and by annual occurrence of death from 1969-76. However, we dropped 1969 deaths from the tables, since the income measurements for taxfilers who died in that year would be severely biased downward. Proprietor's income was defined as the sum of business or profession net profit or loss, farm net profit or loss, and partnership net profit or loss. Asset income was defined as the sum of dividends in adjusted gross income, interest received, rents net income or loss, royalties net income or loss, estates and trusts net income or loss, small business corporation net profit or loss, and sale of capital assets net capital gain or loss. Wage income was simply gross salaries and wages. An important difference exists between joint (or married) and nonjoint (or unmarried) taxfilers in that for joint returns the wage, proprietor and asset income amounts represent the combined earnings of both spouses.

ANALYSIS OF THE DATA

The first step of our analysis was directed at determining the gross relationships between income from different sources and mortality. It involved the generation of death rates by income level for the sample subdivided by 1969 age and marital status. The death rates were calculated for the entire period of risk (1970-76), and separately for the earlier (1970-72) and later (1973-76) periods. The numerators and denominators used in these calculations are presented in Table 1.

The estimates of death rates were then standardized for easier reference. The death rate for each income level within each 1969 marital status/age group was divided by the overall death rate for that group, with the resulting mortality ratio indicating relative, rather than actual, mortality experience. Selected mortality ratios, which are discussed extensively in the following section, are presented in Table 2.

The second step of our analysis assessed the relationships between income from each source and mortality while statistically holding constant income from other sources. Probabilities of death in the years 1970-72, 1973-74, and 1975-76 were estimated for each cell in the full crosstabulation of the three types of income. The probability

of death in each cell was then associated with binary variables representing the income characteristics of the cell. Separate weighted least squares logit equations were estimated for each of the three periods, for each of eight marital status/age groups. Collapsing some income categories was necessary to prevent zero-valued cells. The resulting logit coefficients are discussed in the next section, and coefficients from twelve of the equations are presented in Table 3.

RESULTS

Wage Income.-- Both the mortality ratio and logit analyses demonstrated that wage income in 1969 was strongly negatively related to the probability of death during 1970-76 for working age white male taxfilers. Except for the lowest wage income groups ($1-1499), sharp monotonic inverse associations were evident. The magnitude of the relationships varied from a 30% difference in mortality between low- and high-wage married males aged 60-64, to a 200% difference between low- and high-wage unmarried men.

Among elderly men, the association of low wage income and high probability of death was considerably weaker. Among married men aged 65-69 and unmarried men aged 65 and over, the mortality differential between low- and high-wage earners was roughly 30%.

However, a weakening of these sharp differentials as time elapsed was apparent in both the logit coefficients and the mortality ratios. Except for married men aged 25-44 and 60-64, a moderate inverse association of mortality and wage income persisted in the 1975-76 period.

Asset Income.-- Extremely small cell sizes for the high asset income categories seemed to cause unreliable estimates of death rates. However, when all men reporting gains in asset income were grouped together, a clear pattern emerged for married men: non-asset holders suffered greater chances of death during 1970-76 than did asset holders (i.e., men who reported non-zero net gain or loss of asset income in 1969). This difference varied from 10 to 40% for working age men, but showed a reversal for men aged 65 and over. Among these men, asset holders who lost income in 1969 had mortality experiences comparable to or worse than the experiences of non-asset holders. No association between mortality and asset income or status as an asset holder was evident for unmarried 1969 taxfilers.

There was no clear pattern of change in the relationship between asset income and mortality as time elapsed since 1969. Only among married men aged 25-44 and 55-59 did there seem to be a lessening in the differential between asset holders and non-asset holders.

Proprietor's Income.-- Logit and tabular analyses indicated a moderate but clear association of proprietor's status with lower death rates during 1970-76 for all white male 1969 taxfilers. However, there also seemed to be an inverse gradient between income and mortality among all men who reported net gains in proprietor's income in 1969. For example, married non-proprietors aged 55-59 died 25% more frequently than proprietors, 18% more frequently than proprietors gaining $1-10000, and 41% more frequently than proprietors gaining $10000 or more in 1969. These patterns were less pronounced for non-working age men.

The relationship between proprietor's income and mortality for married men weakened as time elapsed since 1969. For working age married men, the mortality differential between proprietors and non-proprietors declined roughly 40%, while for married men aged 65 and over, it declined roughly 30%.

DISCUSSION

The results suggest that both short- and long-term mechanisms create income differentials in mortality. Over the 1970-76 period, both wage and proprietor's income differentials weakened considerably. Although some of this weakening could be due to aging of the cohorts, these changes are most consistent with two hypotheses. First, insofar as current income dominates mortality risk and insofar as current income fluctuates over a seven year period, we would expect continuous weakening of the income/mortality correlation as the elapsed time from the income measurement increases. Second, other short-term factors could be affecting both income and life chances. Though we can only speculate, illness seems the most likely candidate. Hence, we believe our data suggest that a considerable part of the cross-sectional associations of mortality with wage and proprietor's income could be spurious, in the sense of being caused by other factors. However, to the extent that short-term income fluctuations are causal, the data are also consistent with that interpretation.

It is interesting that unmarried white working males exhibit the sharpest income differentials of all. We know, of course, that married males have considerably lower overall mortality than unmarried males. It could be that marriage to some extent mitigates the effects of illness or of low income on mortality.

Although the results suggest short-term factors are at work, they also clearly indicate the presence of long-term factors, since some earnings, asset, and proprietor's income differentials in mortality survive even six to seven years after the income measurement. Again, we cannot identify from our data which factors. The results are certainly consistent with the hypothesis that lifetime income is causal, since in general we observe decreasing mortality with increasing income regardless of source. They are also consistent with other long-term mechanisms such as occupation and industry, family background, education, etc.

We found clear evidence that, ceteris paribus, proprietors and asset holders (even those who report proprietor's or asset income losses) have

lower mortality than non-proprietors or non-asset holders. Although consistent with the lifetime income hypothesis, these results also suggest that the income source per se could be important.

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Table 1.--1969 WHITE MALE INCOME TAXFILERS BY AGE AND INCOME STATUS IN 1969 AND MORTALITY STATUS FOR THE PERIOD 1970-1976 (in THOUSANDS)

INCOME BY TYPE	Married															
	25-44 years				45-54 years				55-59 years				60-64 years			
	Reported Deaths		Population at Risk		Reported Deaths		Population at Risk		Reported Deaths		Population at Risk		Reported Deaths		Population at Risk	
	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76
Total.....	124	202	17232	17109	157	294	8681	8524	129	251	3629	3500	177	318	2924	2747
WAGE INCOME																
No Wages.....	5	11	820	815	16	30	746	730	14	29	417	403	50	52	494	443
$1-1499.....	2	4	440	438	2	13	264	262	6	11	141	135	14	20	187	173
$1500-2499....	5	5	272	267	5	3	137	132	5	12	79	74	9	8	92	84
$2500-4999....	14	13	1081	1067	16	20	526	510	27	31	321	294	22	37	322	300
$5000-7499....	23	36	2411	2387	21	39	903	882	19	39	474	455	23	56	431	408
$7500-9999....	33	50	3780	3746	35	50	1479	1444	24	41	643	619	25	54	499	474
$10000-14999..	26	58	5816	5791	38	91	2715	2677	23	58	955	932	21	60	558	536
$15000-24999..	13	22	2324	2311	20	41	1588	1568	10	23	486	476	9	25	268	259
$25000+.....	2	3	289	287	4	7	323	319	2	6	113	111	3	6	72	69
ASSET INCOME																
Net Loss.....	54	9	1008	1003	9	16	549	540	3	10	207	203	4	14	122	118
No Income.....	76	118	8837	8762	60	121	3021	2961	49	84	1036	988	45	78	675	630
$1-9999.....	42	74	7290	7248	85	153	4977	4892	74	153	2301	2226	123	218	2036	1913
$10000-14999..	-0-	-0-	36	36	1	1	53	52	1	1	31	30	2	3	38	36
$15000-24999..	-0-	-0-	29	29	1	1	37	37	1	1	27	26	2	2	27	25
$25000+.....	-0-	-0-	32	32	-0-	2	43	43	1	2	28	26	1	2	27	26
PROPRIETOR'S INCOME																
Net Loss.....	2	8	809	806	8	15	523	514	5	12	216	211	10	21	163	153
No Income.....	107	170	14201	14094	124	226	6460	6337	99	193	2639	2541	135	228	2106	1971
$1-9999.....	12	20	1721	1710	19	41	1278	1259	22	37	622	600	27	60	545	517
$10000-19999..	1	3	299	298	3	8	244	241	2	6	91	89	3	6	66	63
$20000+.....	1	2	202	200	2	4	176	174	1	3	61	60	2	4	44	42

Table 1.--1969 WHITE MALE INCOME TAXFILERS BY AGE AND INCOME STATUS IN 1969 AND MORTALITY STATUS FOR THE PERIOD 1970-1976 (in THOUSANDS) (cont.)

INCOME BY TYPE	Married (continued)								Unmarried							
	65-69 years				70+ years				25-64 years				65+ years			
	Reported Deaths		Population at Risk		Reported Deaths		Population at Risk		Reported Deaths		Population at Risk		Reported Deaths		Population at Risk	
	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76	70-72	73-76
Total.....	158	247	1893	1698	294	379	1716	1422	92	168	4613	4522	137	183	804	667
WAGE INCOME																
No Wages.....	58	75	619	561	172	233	962	789	18	20	436	418	103	109	485	382
$1-1499.....	28	35	248	220	48	41	232	184	23	27	463	440	12	26	111	99
$1500-2499....	20	26	167	146	21	24	142	121	2	23	279	277	4	20	60	56
$2500-4999....	55	58	454	398	26	49	242	215	14	32	832	818	11	22	103	92
$5000-7499....									19	23	1024	1006				
$7500-9999....									10	28	867	857				
$10000-14999..	33	53	405	372	26	31	138	112	5	13	563	558	6	6	45	39
$15000-24999..									1	2	127	126				
$25000+.....									-0-	-0-	23	23				
ASSET INCOME																
Net Loss.....	7	11	55	48	9	6	32	23	1	2	175	174	3	4	17	14
NO Income.....	42	61	318	276	32	42	165	133	48	97	2631	2582	20	38	182	162
$1-9999.....	140	164	1432	1292	222	30	1370	1148	42	68	1786	1745	109	134	578	469
$10000-14999..	2	3	35	33	14	12	63	49	-0-	-0-	7	7	2	2	10	8
$15000-24999..	2	5	25	23	8	11	44	36	-0-	-0-	6	6	2	3	10	8
$25000+.....	2	4	28	26	9	11	43	34	-0-	-0-	8	8	1	1	8	6
PROPRIETOR'S INCOME																
Net Loss.....	10	16	117	107	14	23	104	90	1	3	147	147	8	8	38	29
No Income.....	148	185	1390	1241	226	284	1257	1031	83	152	4010	3928	103	152	639	536
$1-9999.....	32	40	332	300	49	65	321	272	7	12	404	397	24	23	120	96
$10000-19999..	3	3	33	30	3	4	20	17	-0-	1	33	33	1	-0-	5	4
$20000+.....	1	3	22	20	2	3	14	12	-0-	1	18	18	-0-	-0-	2	2

-0- Between 1 and 499 deaths. Source: 1969 IRS-SSA Linked Administrative File.

Table 2.--MORTALITY RATIOS FOR THE PERIOD 1970 TO 1976 FOR 1969 WHITE MALE TAXFILERS BY MARITAL STATUS, AGE, AND INCOME STATUS IN 1969

INCOME BY TYPE	Married										Unmarried			
	25-44 years		45-54 years		55-59 years		60-64 years		65-69 years		25-64 years		65+ years	
	1970-1972	1973-1976	1970-1972	1973-1976	1970-1972	1973-1976	1970-1972	1973-1976	1970-1972	1973-1976	1970-1972	1973-1976	1970-1972	1973-1976
WAGE INCOME														
No Wages.....	0.84	1.13	1.22	1.19	0.93	1.00	1.68	1.02	0.91	0.92	2.04	1.29	1.25	1.05
$1-1499.....	0.63	0.75	0.45	1.49	1.19	1.15	1.25	0.99	1.09	1.10	2.48	1.66	0.65	0.94
$1500-2499....	2.54	1.55	1.91	0.70	1.74	2.25	1.57	0.78	1.19	1.23	0.31	2.19	0.38	0.88
$2500-4999....	1.85	1.04	1.66	1.15	2.23	1.49	1.13	1.07	1.20	1.00	0.85	1.05	0.63	0.88
$5000-7499....	1.35	1.27	1.27	1.27	1.13	1.20	0.88	1.19			0.93	0.63		
$7500-9999....	1.23	1.14	1.31	1.01	1.05	0.92	0.84	0.99			0.59	0.87		
$10000-14999..	0.62	0.85	0.77	0.98	0.67	0.87	0.63	0.96	0.79	0.97	0.46	0.63	0.80	0.54
$15000-24999..	0.78	0.81	0.71	0.76	0.56	0.67	0.56	0.83			0.45	0.42		
$25000+.....	0.87	0.88	0.65	0.59	0.56	0.72	0.68	0.72			0.19	0.37		
ASSET INCOME														
Net Loss.....	0.75	0.80	0.90	0.87	0.47	0.70	0.53	1.03	1.21	1.51	0.33	0.28	0.93	1.17
No Income.....	1.19	1.14	1.10	1.18	1.32	1.19	1.10	1.08	1.28	1.53	0.93	1.02	0.63	0.86
$1-9999.....	0.80	0.87	0.95	0.91	0.91	0.95	1.00	0.98	0.94	0.87	1.17	1.05	1.11	1.04
$10000-14999..	0.51	0.68	1.54	0.76	0.58	0.47	0.96	0.66	0.66	0.64	0.28	0.46	0.98	1.01
$15000-24999..	1.95	0.22	0.75	0.67	0.81	0.50	1.16	0.83	0.87	1.42	1.28	0.60	1.09	1.01
$25000+.....	0.53	0.58	0.58	1.26	1.23	1.00	0.84	0.80	0.77	0.97	0.77	0.63	1.16	0.84
PROPRIETOR'S														
Net loss.....	0.42	0.84	0.89	0.83	0.82	0.78	1.00	1.18	0.79	1.05	0.48	0.49	1.28	0.95
No Income.....	1.05	1.02	1.06	1.04	1.06	1.06	1.06	1.00	1.04	1.02	1.04	1.04	0.95	1.03
$1-9999.....	0.95	0.98	0.83	0.94	0.86	0.90	0.82	1.00	0.93	0.92	0.82	0.82	1.19	0.86
$10000-19999..	0.62	0.87	0.80	0.94	0.92	0.82	0.78	0.80	0.85	0.70	0.78	0.60	0.96	0.43
$20000+.....	0.89	0.75	0.62	0.67	0.62	0.62	0.64	0.73	0.65	0.97	1.01	1.16	0.67	0.63

Source: 1969 IRS-SSA Linked Administrative File.

Table 3.--LOGIT COEFFICIENTS OF MORTALITY EQUATIONS FOR WHITE MALE 1969 TAXFILERS BY MARITAL STATUS AND AGE IN 1969 AND BY PERIOD

INCOME BY TYPE	Married									Unmarried		
	45-54 years			55-59 years			60-64 years			25-64 years		
	1970-2	1973-4	1975-6	1970-2	1973-4	1975-6	1970-2	1973-4	1975-6	1970-2	1973-4	1975-6
WAGE INCOME												
No Wages.....	-	-	-	-	-	-	-	-	-	-	-	-
$1-2499.....	-0.55	0.31	-0.66	0.21	0.39	0.09	-0.60	0.07	-0.35	-0.94	-0.52	0.62
$2500-4999....	-0.23	-0.04	-0.80	0.59	0.04	-0.04	-0.92	-0.03	-0.02	-1.70	-1.22	0.05
$5000-9999....	-0.65	-0.21	-0.81	-0.28	-0.43	-0.52	-1.30	-0.03	0.02	-1.84	-1.71	-0.21
$10000-14999..	-1.24	-0.52	-0.75	-0.77	-0.86	-0.51	-1.69	0.08	-0.29	-2.37	-2.21	-0.04
$15000+.....	-1.34	-0.81	-0.98	-0.92	-1.00	-0.78	-1.67	-0.19	-0.37	-2.39	-2.27	-0.56
ASSET INCOME												
Net Loss.....	0.08	-0.04	-0.35	-0.74	-0.33	-0.39	-0.59	-0.22	0.21	-0.65	-0.84	-1.05
No Income.....	-	-	-	-	-	-	-	-	-	-	-	-
$1-9999.....	0.07	-0.15	-0.20	-0.11	0.35	-0.44	-0.03	-0.34	0.19	0.29	0.46	-0.15
$10000-24999..	0.42	-0.09	-0.61	-0.30	-0.85	-0.74	-0.08	-0.47	-0.25	-0.70	-0.33	-2.22
$25000+.....	-0.46	0.02	0.35	0.35	0.24	-0.14	-0.30	-0.54	-0.37	-0.49	-0.40	-0.31
PROPRIETOR'S INCOME												
Net Loss.....	-0.40	-0.39	-0.23	-0.60	-0.40	-0.43	-0.33	-0.07	0.38	-1.33	-0.97	-0.99
No Income.....	-	-	-	-	-	-	-	-	-	-	-	-
$1-9999.....	-0.81	-0.57	-0.29	-0.43	-0.54	-0.72	-1.00	-0.02	-0.05	-1.59	-1.60	-0.02
$10000+.....	-1.19	-0.78	-0.61	-0.94	-0.95	-0.53	-1.28	-0.28	-0.30	-1.62	-1.21	-0.78
CONSTANT	-3.02	-3.44	-3.12	-2.78	-2.91	-2.40	-1.49	-2.62	-2.66	-2.40	-2.68	-4.01

- Omitted category. Source: 1969 SSA-IRS Linked Administrative File.