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## Financial hardship and mortality among older adults using the 1996-2004 Health and Retirement Study

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### Abstract

**PURPOSE**—We investigated the effect of financial hardship on mortality risk in a community-dwelling sample of adults age 50+ in the United States.

**METHOD**—The 1996 Health and Retirement Study cohorts were followed prospectively to 2004 (N=8,377). Gender-stratified grouped Cox models were used to estimate the difference in the RR of mortality between a specific number of financial hardships (one, two, or three or more) and no hardships; and the predictive utility of each individual financial hardship for mortality during the follow up period.

**RESULTS**—Gender-stratified models adjusted for demographics, socioeconomic characteristics, and functional limitations in 1996 showed that women reporting one (HR=1.42, 95% CI, 1.05, 1.92) or three or more (HR=1.60, 95% CI, 1.05, 2.46) and men reporting two (HR=1.80, 95% CI, 1.21, 2.69) financial hardships had a substantially higher probability of mortality compared to those reporting no financial hardships. Individual financial hardships that predicted mortality in fully adjusted models for women included receiving Medicaid (HR=2.23, 95% CI, 1.68, 2.98) and for men receiving Medicaid (HR=2.11, 95% CI, 1.57, 2.84) and receiving food stamps (HR=1.59, 95% CI, 1.09, 2.33).

**CONCLUSIONS**—These findings suggest that over and above the influence of traditional measures of socioeconomic status, financial hardship exerts an influence on the risk of mortality among older adults; and that the number and type of hardships important in predicting mortality may differ for men and women.

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## Keywords

mortality; elderly; socioeconomic

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## INTRODUCTION

Although mortality rates have declined significantly in the general population in the past 25 years (1), differentials in mortality rates remain and have been noted across a range of socioeconomic indicators (2-5). It has been suggested that the differential exposure to and the impact of risk factors by socioeconomic position results in worse health outcomes for those with lower socioeconomic status (SES) (6-8); however, few studies have expanded the evaluation of SES beyond traditional measures of education, income, and occupation (9). Yet, different demands on economic resources as well as disparate rates in the accumulation of assets across the life course can result in variations in household material conditions (10) of older adults and traditional measures of SES may not adequately capture this heterogeneity (11). As such, we know very little about the aspects of economic well-being associated with health outcomes among older adults not captured by traditional measures of SES (12). Whereas material conditions (13) have been shown to be associated with health (14) even after controlling for SES, psychosocial, and lifestyle factors (15); few studies have investigated the effects of material conditions such as financial hardship over time on mortality among older adults (16).

### Financial Hardship among Older Adults

The economic status of older adults has improved substantially over the previous four decades (17); yet there remain many older adults who fall through the social safety net of government programs in the U.S. and continue to struggle to pay for necessities such as food and medical care. Data from the 1996 Medical Expenditure Panel Survey suggest that out-of-pocket medical expenses increase with age and can vary by insurance status and number of conditions, with those reporting more conditions experiencing higher out-of-pocket costs (18). Prevalence estimates from the U.S. Department of Agriculture suggest that in 2004 approximately 6.5% of elderly households experienced food insecurity and among elderly persons living alone the estimate was 7.3% (19).

### Financial Hardship and Health

The few studies that have investigated the relationship between financial hardship and physical health have found a negative association (20). Ferrie, et al (2005) found that those reporting greater economic difficulties were more likely to have a higher incidence of myocardial infarction at follow-up in the Whitehall II study of adults age 35-55 in the U.K (21). In a study of adults age 25 and older, Lantz, et al (2005) found no association between financial stress and mortality; however, they did note a positive association between financial stress and functional limitations and poor self-rated health (22).

Using data from five biennial waves of the Health and Retirement Study (1996-2004), our primary aim was to determine the effect of financial hardship on mortality in a nationally representative sample of older adults in the U.S. We hypothesized that even after adjusting for lagged time-varying and time-invariant demographic and socioeconomic characteristics, as well as baseline functional limitations, financial hardship at time  $t_i$  would be positively associated with mortality at time  $t_{i+1}$ .

## METHODS

### Study Population

The Health and Retirement Study (HRS) is a national longitudinal study of the economic, health, marital, family status, and public/private support systems of older Americans funded by the National Institute on Aging and the Social Security Administration and conducted by the Institute for Social Research Survey Research Center at the University of Michigan (23). The HRS uses a national multistage area probability sample of households in the U.S., with oversamples of Blacks, Hispanics, and residents from the state of Florida. The details of the HRS are described elsewhere (24). In addition to the public use HRS data, we used data prepared by the RAND Center for the Study of Aging for respondent socioeconomic data (25).

For this study we used five waves of the HRS covering the 1996-2004 administrations. The response rate for the 1996 wave of the HRS was 88.3% (26). We started with all respondents who completed the HRS in 1996 (N=10,963) and followed those respondents forward to the HRS 2004. Respondents were dropped from analyses if they were under age 50 (N=495), if they were missing data on the financial hardship, socioeconomic, or demographic variables in 1996 (N=162), and if they were not eligible to be in the 1996 wave (N=1,929). The final sample used for analysis from the 1996 wave was N=8,377.

### Outcome variable

Mortality was determined in each wave by the HRS by matching study records to the National Death Index and by exit interviews with proxy respondents. In the present study, year of death was coded to correspond to the wave of data collection; therefore, deaths that occurred between the biennial administrations of the HRS were coded as occurring the next year the HRS was administered.

### Primary predictor variable

Financial hardship was conceptualized with two constructs in our study: food insecurity and medical need (27,28). Food insecurity was operationalized by two yes/no questions: "Did you (or other family members who were living here) receive government food stamps at any time in the last two years?" and "In the last two years, have you always had enough money to buy the food you need?" Medical need was also operationalized by two yes/no questions: "Have you been covered by health insurance through Medicaid at any time in the past two years?" and "At any time in the last two years have you ended up taking less medication than was prescribed for you because of the cost?" These four questions were summed to create a financial hardship score (0-4). Categories three and four were combined due to small cell sizes resulting in a final financial hardship range of 0-3.

### Demographic characteristics

Demographic characteristics such as gender, race (white/non-white), ethnicity (hispanic/non-hispanic), and age were assessed by self-report in the 1996 HRS. Couple status (coupled/ not coupled) was assessed at each wave and was used as a time-varying covariate in the analysis. Age was dichotomized for univariate and bivariate analysis: 50-64 and 65 and older. Age was used as a continuous variable in multivariable analysis.

### Socioeconomic indicators

Educational attainment was grouped into three categories for univariate and bivariate analyses: less than high school, high school diploma/GED, and some college or more. Educational attainment was a continuous variable in multivariable analyses representing the number of

years of schooling ranging from 0 to 17. The household annual income variable was created by summing the respondents self-reported wage/salary income, bonuses/overtime, pay/commissions/tips, second job or military reserve earnings, professional practice or trade income (29). Household annual income was heavily skewed to the right; therefore, we used the log of household income in multivariable models. To retain respondents reporting zero household income, prior to taking the log of household income we added a constant of '1' to respondents reporting zero income. Household annual income was used as a time-varying covariate in the analysis.

### Health characteristics

Functional limitations in 1996 were measured by a count of the number of activities the respondents reported having difficulty participating in such as walking several blocks, getting up from a chair, lifting or carrying objects over 10 pounds, and climbing one flight of stairs (ranging from 0-5).

### Statistical analysis

Data are collected in the HRS biennially, and the outcome (i.e. mortality) is grouped into discrete intervals. Time in this study was specified as discrete to correspond to the biennial data collection waves of the HRS; therefore, each wave represented a point in time. For statistical modeling, financial hardship, couple status, and household income values were allowed to vary across waves; but, the remaining demographic, socioeconomic, and health variables were used as time-invariant covariates and their values in 1996 were used. To capture the grouped nature of the HRS data, grouped Cox models with time varying predictors were developed to estimate the relative risk and 95% CI of mortality by financial hardship adjusting for baseline socio-demographic and health characteristics. The grouped hazard model is specified as follows:  $h(t) = \exp \left\{ - \int_{t_{i-1}}^t h_0(u) \exp [\beta' X_{(t-1)}] du \right\}$ ; where  $h_0(u)$  is the baseline hazard rate and  $[\beta' X_{(t-1)}]$  is a linear function of the Cox proportional hazard model. In this model the events of interest (i.e. mortality) are grouped into intervals  $(t_{i-1}, t_i)$ , but the time of occurrence within the interval is not specified (30,31). The time-varying covariates (i.e. financial hardship, couple status, and household income) were lagged by one wave for multivariable analysis; more specifically, the values of these variables in a prior wave  $(t_{i-1})$  are entered into the model to investigate the effect on the outcome (i.e. mortality) in the subsequent wave  $(t_i)$ . Applying this approach required that any mortality events occurring in 1996 be dropped from the analysis (N=31). Wald tests from pooled logistic regression models were used for bivariate analysis of the mortality outcome and the socioeconomic and demographic characteristics (32). Sample weights provided by the HRS to account for unequal selection probability were used in bivariate analysis.

SAS 9.2© was used for model building and PROC PHREG was used to develop grouped Cox models to estimate the RR and 95% CI of mortality(31). To test the crude and adjusted effect of financial hardship at a previous wave  $(t_{i-1})$  on the RR of mortality at a subsequent wave  $(t_i)$  during the follow-up period (1998-2004) four sets of models were developed. Financial hardship, couple status, and household income were entered into the models as time varying lagged covariates; and baseline characteristics such as age, race, ethnicity, years of schooling and functional limitation were entered as time invariant covariates. The first model was an unadjusted estimate of the effect of financial hardship occurring at any of the follow-up waves on the RR of subsequent wave mortality (Model 1). Next the respective time invariant and lagged time-varying demographic (Model 2), socioeconomic (Model 3), and health characteristics (Models 4) were added. It has been shown that the effects of financial hardship on health status might differ between men and women (33); therefore all analyses were stratified by gender.

## RESULTS

Table 1 presents the descriptive statistics for the full sample in 1996 and table 2 presents the descriptive statistics for the gender stratified sample in 1996. The average age for the full sample and the gender stratified sample was 60 years old. Eighty percent of the full sample reported no financial hardships in 1996, and 77% of women and 85% of men reported no financial hardships in 1996. These exposure rates remain relatively stable throughout the follow-up period. The total number of deaths during the follow up period was n=927. The mortality rate for the full sample was 11%, representing a 9% rate for women and a 13% rate for men. Weighted bivariate analysis for the full sample, adjusting for age in 1996, revealed that higher mortality during the follow-up period of 1996-2004 was associated with being male, non-white, not coupled, lower levels of education, and a higher number of functional limitations (see Table 1). Gender stratified bivariate analysis revealed similar results, except Hispanic ethnicity was significantly associated with mortality for men.

Results from the unadjusted and adjusted grouped Cox models investigating the association between lagged time-varying financial hardship and mortality are listed in Table 3 for women and Table 4 for men. For women, the unadjusted model revealed that women reporting one, two, or three or more financial hardships in a previous wave were more likely to die in a subsequent wave than women reporting no financial hardship (See Table 3). After adjusting for age in 1996, race, lagged time-varying couple status, and Hispanic ethnicity in Model 2, women reporting one financial hardship had a 78% higher (HR=1.78, 95% confidence interval (CI): 1.20, 2.62) probability of subsequent mortality compared to women reporting no financial hardship; and the women reporting two and three or more financial hardships were more than twice as likely to die during the follow up period (HR=2.07, CI: 1.44, 2.97; HR=2.89, CI: 1.98, 4.19, respectively) compared to women reporting no financial hardship. After adjusting for household income and years of education (Model 3), the differences in mortality were reduced but remained significant (see Table 3). After adjusting for functional limitations in Model 4, the women reporting one (HR=1.42, CI: 1.05, 1.92) and three or more (HR=1.60, CI: 1.05, 2.46) financial hardships had a substantially higher probability of mortality than the women reporting no financial hardship, but there was no difference in mortality for the women reporting two financial hardships (see Table 3).

Similar to the unadjusted model for women, each of the financial hardship categories was significant in the unadjusted model for men (See Table 4). After adjusting for the demographic characteristics in Model 2, the effects of financial hardship across all three categories on mortality remained significant. After adjusting for socioeconomic characteristics in Model 3, the men reporting two financial hardships were more than twice as likely to die during follow-up (HR=2.09, CI: 4.04, 4.13), but there was no significant difference in the RR of mortality of men reporting one or three or more financial hardships. Adjusting for functional limitations in 1996 in Model 4, reduced the probability of mortality to 80% higher for the two financial hardship group (HR=1.80, CI: 1.21, 2.69) (see Table 4).

The difference in the number of financial hardships important in predicting mortality between men and women encouraged us to evaluate the financial hardships individually (See Table 5). Four additional sets of models were developed for each of the time-varying financial hardships to evaluate them individually as predictors of mortality. The variables used for statistical control in the previously discussed models were used for the models developed here as well. For women, receiving Medicaid benefits significantly increased the RR of mortality in fully adjusted models (HR=2.23; CI: 1.68, 2.98); but, receiving food stamps and taking less medication than prescribed because of cost was not significant in the fully adjusted models when functional limitations in 1996 was added (See Table 5). Additionally, not always having enough money for food was not a significant predictor of mortality when socioeconomic

characteristics were added (see Table 5). For men, receiving Medicaid benefits (HR=2.11; CI: 1.57, 2.84) and receiving food stamps (HR=1.59; CI: 1.09, 2.33) significantly increased the RR of mortality in fully adjusted models; but, not having enough money for food was not significant in the adjusted model when functional limitations in 1996 was added (Table 5). Lastly, taking less meds than prescribed because of cost was only a significant predictor of mortality in the unadjusted model for men (HR=1.52; CI: 1.05, 2.20).

## DISCUSSION

This study investigated the association between the experience of financial hardship and mortality in a nationally representative sample of older adults in the United States using data from the 1996-2004 HRS. Our findings suggest that after controlling for demographic and socioeconomic characteristics and functional limitations, the presence of financial hardship in a previous wave of the HRS significantly increased the RR of mortality in subsequent waves among older men and women. In particular, it should be noted that over and above the influence of traditional measures of SES (i.e. education and household income), financial hardship as measured in this study exerted a significant effect on the risk of mortality over time for both men and women.

Our findings also suggest that the number and types of financial hardships that were important in predicting mortality in the fully adjusted models were different for men and women. In particular, women reporting one financial hardship or three or more financial hardships had a significantly higher RR of mortality; but for men, it was those reporting two financial hardships that had a significantly higher RR of mortality. Our results also showed that the financial hardship most important in predicting mortality in fully adjusted models for women was receiving Medicaid benefits; but, for men there were two financial hardships significant in fully adjusted models: receiving Medicaid benefits and receiving food stamps. In sum, the findings here suggest that specific hardships and the number of financial hardships may be important in increasing the risk of mortality in older men and women.

### Financial hardship and health

Previous research has shown a negative association between financial hardship and health outcomes (16,20,21,33). Our findings are consistent with these studies (34,35). Yet, our study differs from previous studies investigating the association between economic well-being or material conditions and health. First, our study is focused exclusively on older adults (50 years of age and older). Considering the imminent shift in population demographics as ‘baby boomers’ reach retirement age and begin to put unprecedented pressure on systems across all levels of government, an understanding of the specific socioeconomic pathways to negative health outcomes among this population is warranted. A second difference is that we operationalized specific hardships (medical need and food insecurity) instead of using income-based measures of hardship. A research focus on specific hardships may facilitate the development of targeted interventions that attempt to alleviate such hardships among low SES individuals. Mayer and Jencks (1989) suggest that income-based strategies for ensuring that all citizens have basic necessities such as enough food to eat and access to medical care may be less efficient than programs that focus on specific hardships (27). Although many studies have focused on the association between income and mortality (36), our study illustrates that a focus on financial hardship may elucidate effects on mortality over and above the effects suggested by income (27). Finally, our study was prospective in that we showed the negative association between financial hardship at time  $t_i$  and mortality at time  $t_{i+1}$ ; as such we were able to provide evidence of the temporal relationship between the presence of financial hardships and mortality among older adults.

## Limitations

There are limitations to the present study. First, the lack of standard conceptualization or operationalization of financial hardship could introduce measurement error into our modeling efforts. There is no standard measure of financial hardship to which we can compare our operationalization of financial hardship (28). However, similar to our study, many studies investigating financial hardship use indicators used in the classic Mayer and Jencks (1989) study. Additionally, there is no common term for financial hardship used across studies. For example, several terms have been used to describe household financial problems: economic/financial stress (37,38), economic distress (39), financial strain (40), economic insecurity (41), material hardship (42), and economic hardship (43). Lastly, the HRS excludes institutionalized persons; thus our results cannot generalize to older adults in nursing homes or other specialized care facilities.

## Conclusion

Consistent evidence supports an inverse relationship between socioeconomic position and health status (44-46). Yet, the mechanisms linking socioeconomic position to health remain unclear (47,48). Chronic stressors associated with social position have been proffered as potential links between socioeconomic status and health (49,50), where such stressors might include financial hardships (22). Kahn and Pearlin (2006) suggest that one of the most critical chronic stressors that may present among older adults is financial hardship (51). Experiencing the financial hardships measured in this study proved predictive of mortality, yet more work is needed in the conceptualization and operationalization of financial hardship in older adults. The significance of studying financial hardship is that it might influence health outcomes in unexpected and different ways from traditional measures of SES as the booming population of older adults enters retirement, experiences changes in income flow, and ages (52-54).

## ABBREVIATIONS AND ACRONYMS

CI	Confidence interval
HR	Hazard Ratio
HRS	Health and Retirement Study
Ref	Reference category
RR	Relative risk
SES	Socioeconomic status
U.K.	United Kingdom
U.S.	United States

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**Table 1**

Descriptive Statistics for Full Sample and Frequency Distributions Across Values of Financial Hardship in 1996, Including Bivariate Associations for Mortality and the Socioeconomic, Demographic and Health Variables

<b>Effect</b>	<b>N</b>	<b>Sample %<sup>†</sup></b>	<b>Hardship<sup>‡</sup>=0</b>	<b>Hardship=1</b>	<b>Hardship =2</b>	<b>Hardship≥3</b>	<b>P-value<sup>†</sup></b>
<b>Gender</b>							<.0001
<i>Female</i>	4,500	47.67	3,452	619	255	174	
<i>Male</i>	3,877	52.33	3,285	398	134	60	
<i>Total</i>	8,377						
<b>Race</b>							<.0001
<i>White</i>	6,707	86.80	5,657	702	230	118	
<i>Non-white</i>	1,670	13.20	1,080	315	159	116	
<i>Total</i>	8,377						
<b>Hispanic Ethnicity</b>							.25
<i>Hispanic</i>	735	6.78	295	285	103	52	
<i>Non-Hispanic</i>	7,642	93.22	6,442	732	286	182	
<i>Total</i>	8,377						
<b>Couple Status in 1996</b>							<.0001
<i>Coupled</i>	6,240	75.38	5,345	657	162	76	
<i>Not-coupled</i>	2,137	24.62	1,392	360	227	158	
<i>Total</i>	8,377						
<b>Age</b>							
<i>50-64</i>	7,649	91.34	6,146	923	363	217	
<i>≥ 65</i>	728	8.66	591	94	26	17	
<i>Total</i>	8,377						
<b>Education</b>							<.0001
<i>Less than High School</i>	2,142	22.52	1,260	480	242	160	
<i>High School/GED</i>	4,493	54.64	3,854	442	132	65	
<i>Some College or more</i>	1,742	22.85	1,623	95	15	9	
<i>Total</i>	8,377						
<i>Median number of functional limitations</i>	0		0	0	0	1	<.0001

Effect	N	Sample % <sup>ϕ</sup>	Hardship <sup>‡</sup> =0	Hardship=1	Hardship =2	Hardship≥3	P-value <sup>‡</sup>
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<i>in 1996</i> <sup>§</sup>							
Median Household Income in 1996	\$37,072		\$43,000	\$19,500	\$9,000	\$7,358	<.0001

<sup>ϕ</sup> Weighted frequency percent (may not add up to 100% due to rounding)

<sup>‡</sup> Hardship represents the sum of four yes/no questions: two food insecurity and two medical need questions

<sup>‡</sup> Adjusted for age in 1996 and weighted for complex sample survey design

<sup>§</sup> Functional limitations ranged from 0 to 5

**Table 2**

Gender Stratified Demographic, Socioeconomic and Health characteristics

	Women		Men	
	N	% <sup>†</sup>	N	% <sup>†</sup>
Total	4,500		3,877	
<b>Race</b>				
<i>White</i>	3,522	82.82	3,185	87.88
<i>Non-white</i>	978	14.18	6,92	12.12
<b>Hispanic Ethnicity</b>				
<i>Hispanic</i>	409	7.28	326	6.23
<i>Non-Hispanic</i>	4,091	92.72	3,551	93.77
<b>Couple Status in 1996</b>				
<i>Coupled</i>	2,971	68.32	3,269	83.14
<i>Not-coupled</i>	1,529	31.68	608	16.86
<b>Age</b>				
<i>50-64</i>	4,110	91.11	3,539	91.60
<i>≥ 65</i>	390	8.89	338	8.40
<b>Education</b>				
<i>Less than High School</i>	1,190	23.49	952	21.45
<i>High School/GED</i>	2,550	58.24	1,943	50.68
<i>Some College or more</i>	760	18.27	982	27.87
Median Household Income in 1996	\$31,172		\$43,075	
Median Functional Limitations in 1996 <sup>‡</sup>	0		0	

<sup>†</sup> Weighted frequency percent

**Table 3**

Hazard Ratios for the Unadjusted and Adjusted Multivariable Grouped Cox Regression Models Testing Financial Hardship as a Predictor of Mortality in the 1996-2004 Waves of the HRS for Women only

Effect	Model 1	Model 2	Model 3	Model 4
Financial hardship <sup>a</sup> : 3 or more vs 0	3.54 (2.50, 5.01)	2.89 (1.98, 4.19)	2.27 (1.50, 3.43)	1.60 (1.05, 2.46)
Financial hardship <sup>a</sup> : 2 vs 0	2.40 (1.71, 3.36)	2.07 (1.44, 2.97)	1.78 (1.20, 2.62)	1.25 (.83, 1.88)
Financial hardship <sup>a</sup> : 1 vs 0	1.93 (1.50, 2.50)	1.78 (1.36, 2.33)	1.57 (1.16, 2.10)	1.42 (1.05, 1.92)
Age in 1996		1.10 (1.06, 1.13)	1.09 (1.06, 1.13)	1.09 (1.06, 1.13)
White race (white:ref)		.84 (.67, 1.06)	.91 (.71, 1.17)	.96 (.75, 1.23)
Couple status <sup>a</sup> (coupled: ref)		.68 (.54, .84)	.69 (.54, .87)	.69 (.55, .88)
Hispanic ethnicity (Hispanic: ref)		.78 (.55, 1.18)	.67 (.45, 1.00)	.72 (.49, 1.07)
Household income (log) <sup>a</sup>			.93 (.87, 1.00)	.94 (.88, 1.02)
Years of schooling			.95 (.91, .99)	.96 (.92, 1.00)
Functional limitations in 1996				1.46 (1.33, 1.59)

Model 1 = crude model comparing those with zero financial hardships to those with one, two, or three or more financial hardships

Model 2 = adjusted for age in 1996, race, couple status, Hispanic ethnicity

Model 3 = adjusted for model 2 and household income and education

Model 4 = adjusted for model 3 and functional limitations in 1996

ref=reference category

<sup>a</sup> = lagged time-varying

**Table 4**

Hazard Ratios for the Unadjusted and Adjusted Multivariable Grouped Cox Regression Models Testing Financial Hardship as a Predictor of Mortality in the 1996-2004 Waves of the HRS for Men Only

Effect	Model 1	Model 2	Model 3	Model 4
Financial hardship <sup>a</sup> : 3 or more vs 0	2.74 (1.69, 4.45)	2.52 (1.53, 4.14)	1.68 (.95, 2.96)	1.18 (.65, 2.15)
Financial hardship <sup>a</sup> : 2 vs 0	3.01 (2.15, 4.20)	2.90 (2.04, 4.13)	2.09 (1.41, 3.09)	1.80 (1.21, 2.69)
Financial hardship <sup>a</sup> : 1 vs 0	1.49 (1.14, 1.94)	1.56 (1.18, 2.06)	1.31 (.97, 1.78)	1.21 (.89, 1.65)
Age in 1996		1.10 (1.07, 1.13)	1.09 (1.06, 1.12)	1.09 (1.06, 1.12)
White race (white:ref)		.71 (.57, .88)	.86 (.98, 1.09)	.87 (.69, 1.11)
Couple status <sup>a</sup> (coupled: ref)		.61 (.50, .76)	.68 (.54, .85)	.69 (.54, .87)
Hispanic ethnicity (Hispanic: ref)		.50 (.34, .73)	.36 (.23, .56)	.38 (.24, .60)
Household income (log) <sup>a</sup>			.88 (.83, .92)	.88 (.83, .92)
Years of schooling			.96 (.93, .99)	.97 (.94, 1.00)
Functional limitations in 1996				1.27 (1.14, 1.41)

Model 1 = crude model comparing those with zero financial hardships to those with one, two, or three or more financial hardships

Model 2 = adjusted for age in 1996, race, couple status, Hispanic ethnicity

Model 3 = adjusted for model 2 and household income and education

Model 4 = adjusted for model 3 and functional limitations in 1996

ref=reference category

<sup>a</sup> = lagged time-varying

**Table 5**

Hazard Ratios for the Unadjusted and Adjusted Multivariable Grouped Cox Regression Models Testing Each of the Financial Hardship Variables Individually as a Predictor of Mortality in Separate Models in the 1996-2004 Waves of the HRS

	Model 1		Model 2		Model 3		Model 4	
	Women	Men	Women	Men	Women	Men	Women	Men
Medicaid <sup>§</sup>	3.94 (3.11, 4.99)	3.36 (2.58, 4.38)	3.24 (2.50, 4.20)	2.90 (2.19, 3.84)	2.76 (2.09, 3.64)	2.39 (1.79, 3.19)	2.23 (1.68, 2.98)	2.11 (1.57, 2.84)
Food Stamps <sup>‡</sup>	2.36 (1.75, 3.20)	2.66 (1.87, 3.78)	1.76 (1.28, 2.43)	2.33 (1.61, 3.37)	1.47 (1.06, 2.04)	1.83 (1.25, 2.65)	1.17 (.84, 1.64)	1.59 (1.09, 2.33)
Food Insecurity <sup>‡</sup>	1.86 (1.39, 2.49)	1.70 (1.23, 2.32)	1.56 (1.15, 2.13)	1.85 (1.34, 2.55)	1.29 (.94, 1.77)	1.46 (1.05, 2.05)	1.07 (.78, 1.48)	1.30 (.93, 1.83)
Less Medication <sup>¶</sup>	1.90 (1.42, 2.54)	1.52 (1.05, 2.20)	1.69 (1.26, 2.27)	1.43 (.99, 2.08)	1.49 (1.11, 2.01)	1.19 (.81, 1.73)	1.25 (.92, 1.69)	1.03 (.70, 1.52)

Model 1 = crude model comparing those with the financial hardship to those without it; Model 2 = adjusted for: baseline age, race, couple status, Hispanic ethnicity; Model 3 = adjusted for model 2 and household income and education; Model 4 = adjusted for model 3 and baseline functional limitations. The financial hardship variables were measured in the HRS by the following questions (response options were yes/no):

<sup>§</sup> Have you been covered by health insurance through Medicaid at any time in the past two years?

<sup>‡</sup> Did you (or other family members who were living here) receive government food stamps at any time in the last two years?

<sup>‡</sup> In the last two years, have you always had enough money to buy the food you need?

<sup>¶</sup> At any time in the last two years have you ended up taking less medication than was prescribed for you because of the cost?