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The measurement of health status has been a perennial problem which has plagued and intrigued workers in the health field for many years. Measures from vital statistics, primarily mortality measures based on death rates, were used as the best available method and are still used in the absence of other data, although it has long been recognized that the concept of health status includes the extent of disability and morbidity in the living population. Even sophisticated measures of death alone are not sufficient.

The attempt to incorporate measures of the health of the living population has led to an extensive literature on health indexes (the National Center for Health Statistics' Clearinghouse on Health Indexes is an excellent bibliographic reference for recent work). Many of the indexes for health status which have now been developed are extremely sophisticated and exhibit a high degree of ingenuity.1, 2, 3, 4 Unfortunately, many of them depend on data which are not readily available. Some of the indexes require measures which are extremely difficult to obtain without long and costly household interview surveys with highly structured questionnaire design. These require careful interviewer training for consistency in data collection and extensive data processing to combine the responses into an index.

Since the need for a measure of health status has increased with the passage of legislation (P.L. 93-641 requires the measurement of health status for health planning), it would be extremely helpful to have a measure based on easily collectable data. One approach is to simply ask people their opinions about their own health. This has been done on a number of studies and the responses have been found to correlate highly with other measures of status, need, and utilization of health services.

The version of the question used in the Health Interview Survey conducted by the National Center for Health Statistics is "Compared to other persons ...'s age, would you say that his health is excellent, good, fair, or poor?" Some examples of the proportion of persons in each age-health status group who report specified measures of utilization or disability are shown in Table 1. It is obvious that with each decline in reported health status, the proportion for whom utilization of physicians' or hospital services is reported increases as does the proportion for whom limitation of activity is reported. Such relationships are consistent with the findings from other studies indicating that the simple question on health can be used as a predictor for other measures of interest. Perceived health status was also consistent with the reporting found on demographic measures. Old people, poor people, rural residents, e.g., had relatively high proportions for whom

poor health was reported, corresponding with the generally high levels of disability among these groups.

It must be pointed out, however, that the question on the Health Interview Survey was not asked in isolation but was included as part of a questionnaire in which numerous other questions about health were asked. It followed questions on two-week disability days, physician visits, and limitation of activity. The relationships shown here may be influenced somewhat by the questionnaire context.

If perceived health status is indeed a useful measure as it appears to be, then a methodological question arises in the collection of the information. Is it necessary to ask each individual the question or can one family member report for the entire family living in the same household? This question is important, as all survey researchers know, because it is more costly and time consuming to collect data if each person must answer individually than it is if one respondent can report for the household.

An opportunity to evaluate the effect of self and proxy respondents arose from an experiment conducted by the Health Interview Survey in the Spring of 1972. The background and field experience of this study has been reported on in previous papers in the Proceedings of the Social Statistics Section and an extensive discussion of the methodology is contained in the technical appendix of a forthcoming NCHS publication.^{5, 6} In brief, the independent weekly samples were assigned to experimental and control groups. During half of the quarter, the regular HIS respondent rules, where frequently only one adult responds for the household, were in effect. During the other half all adults were required to respond for themselves and additional visits were made as needed. Other than the change in the respondent rule, all regular survey procedures remained in effect so that the experiment was conducted in the context of an ongoing National survey and the quality of the regular data collection was maintained. National estimates were made separately for both the control and experimental periods so that aggregate data were available to compare the National estimate as derived with the usual respondent procedures with those under the self-respondent rule. Only 5 percent of adult males and 3 percent of females had a proxy respondent during the experimental weeks in contrast with 41 and 14 percent during the control or usual procedure weeks.

We will now look at the differences that occur in perceived health status using the experimental respondent rules and the standard respondent rules. Tables 2-7 present estimates of the percent of the population in a number of categories who would be classified as being in excellent, good, fair or poor health as derived by each pro-

cedure. Data are presented for both males and females by color, age, family income, marital status and education of the head of the family. In addition, the percent difference between the experimental and the control procedures is shown for each category. A negative difference indicates that the estimates based on the standard respondent rule yields a higher response, a positive difference indicates a higher level using the self-respondent rule. Table 2 shows that in general the standard respondent rules appear to yield somewhat higher estimates of the proportion of the persons, both male and female, whose health is rated as "excellent." For example, overall 49.2 percent of males are rated as "excellent" under the standard rule while 45.4 percent are rated as "excellent" under the self-response rule. None of the differences for females are statistically significant at the 10 percent level. Table 3 shows the estimates of persons rated as being in "good" health. The pattern here is reversed with the standard rule yielding lower rates than the self-rule. The results from these two tables seem to indicate that respondents tend to be more critical, i.e., more likely to rate themselves as "good" rather than "excellent," when evaluating their own status, than when evaluating someone else's health, usually that of a spouse. Some of the differences by socio-demographic categories are difficult to explain. The easiest explanation of these differences applies to the one found for married men who are least likely of all groups to be self respondents under the standard rule. Their wives, or whoever responds for them, are apparently more likely to report "excellent" health for them than they report for themselves. This results in a higher proportion of "excellent" ratings than under the self response rule.

The differences between the control and experimental groups on the reporting of "excellent" or "good" health status disappear when the two health status categories are combined (Table 4). There are no significant differences between the estimates based on the two respondent procedures.

Tables 5 and 6 show the impact of the respondent rules on the reporting of "fair" and "poor" health status. The pattern is less clear at this end of the health status spectrum. Only one statistically significant difference was found at the "fair" health status level. Only three significant differences were found at the "poor" health status level. Also, there is no pattern in the direction of the differences. However, as with the more positive end of the health status continuum, when the "poor" and "fair" categories are combined, (Table 7) the only significant difference occurred for females in families where the head had less than a high school education.

Conclusion

We have looked at the impact of two different respondent rule procedures, the use of a household respondent versus all self-respondents, on the reporting of perceived health status. While

some differences occur in the "excellent" and "good" health categories, with the all selfrespondent procedure giving lower estimates of "excellent" health and higher estimates of "good" health, the differences are minimal when the two categories are combined. By combining the "fair" and "poor" categories the differences also disappear. These findings would seem to indicate that if "excellent" plus "good" health can be interpreted as the positive end of a health status continuum and "fair" plus "poor" as the negative end, then the use of standard respondent rules provides a population estimate of health status comparable to a self-reported estimate. However, this is only a measure of positive or negative direction on a health status continuum. If the concern is for the strength or degree, that is, the differentation between "good" and "excellent" health status and to a lesser extent between "fair" and "poor" health status, then the two response rules provide somewhat different results. Even so, the differences that occur between the self and standard rules in the "excellent" and "good" categories are not large, between about 5 and 16 percent of the estimate under the standard rules.

Therefore, in conclusion, it appears that household respondents can be used to report the perceived health status of other household members.

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Health status	Age					
	Under 17	17-44	45-64	65 and over		
Doctor visits:	Percent with 10 or more doctor visits in past 12 months					
Health status Excellent Good Fair Poor	3.7 7.1 23.1 51.3	6.0 10.1 23.3 48.8	4.6 8.7 22.2 45.6	8.5 14.0 25.6 43.6		
Hospital episodes:	Percent with one or more hospital ep- isodes in past 12 months					
Health status Excellent Good Fair Poor	4.3 6.5 14.9 31.5	9.0 12.7 22.4 40.2	7.0 11.1 19.0 35.6	10.3 13.6 21.7 35.2		
Limitation in major activity:	Percent with limitation in major activity					
Health status Excellent Good Fair Poor	0.6 2.1 13.7 48.4	1.3 5.2 23.0 68.1	3.2 11.2 42.8 86.0	14.4 31.2 60.2 88.4		

Table 1. Percent of persons in specified health status and age category with ten or more doctor visits in past 12 months, with one or more hospital episodes in past 12 months, and with limitation in major activity: United States, 1974

NOTE: Data in this paper are based on household interviews of the civilian, noninstitutionalized population.

SOURCE: Unpublished data from the Health Interview Survey, National Center for Health Statistics.

 Tables 2, 3, 6 4.
 POSITIVE NEALTH STATUS: Rate per 100 population based on self-respondent and standardrespondent rules and percent difference between these rates by sex and selected population characteristics: United States, Spring 1972

		Male			Female		
		Stan-		<u>}</u>	Stan-		
Selected characteristics	Self	dard	Per-	Self	dard	Per-	
	respon-	respon-	cent	respon-	respon-	cent	
	dent	dent	differ-	dent	dent	differ-	
·	rule	rule	ence	rule	rule	ence	
Table 2. EXCELLENT							
Total - 17+ years	45.4	49.2	-7.7 †	40.9	41.9	-2.4	
Color							
White	45.9	50.7	-9.5†	41.9	43.7	-4.1	
Age	40.4	37.3	0.5	32.2	20.3	13.0	
17-24 years	54.8	58.1	-5.7	50.9	52.8	-3.6	
25-44 years	56.8	59.5	-4.5	49.7	49.1	1.2	
45-64 years	35.8	40.7	-12.0+	33.6	34.9	-3.7	
Family income	27.0	20.0	-3.3	27.2	29.1	-0.5	
Less than \$5,000	31.2	29.6	5.4	28.2	27.0	4.4	
\$5,000-\$9,999	41.4	45.2	-8.4†	38.5	40.4	-4.7	
\$10,000-\$14,999	51.1	55.7	-8.3	48.1	50.5	-4.8	
\$15,000 or more	57.9	64.0	-9.51	53.8	36.5	-4.8	
Married	45.8	50.7	-9.7+	42.3	43.5	-2.8	
Widowed, separated, divorced	33.8	34.0	-0.6	32.7	33.9	-3.5	
Never married	49.3	49.8	-1.0	47.6	47.8	-0.4	
Education of head of family	22.2	77 6	2.6	20 5	28 5	2 5	
12 years	49 6	55.8	-11.1+	44.3	45.9	-3.5	
13 years or more	61.4	66.5	-7.7+	57.6	60.0	-4.0	
Table 3. GOOD							
Total - 17+ years	38.2	35.3	8.2+	41.1	39.1	5.1-	
<u>COIOT</u> White	38.1	34.6	10 1+	41 0	38.7	5.9-	
411 other	38.8	40.8	-4.9	42.2	42.4	-0.5	
Age							
17-24 years	37.3	35.1	6.3	40.8	38.1	7.1	
23-44 years	34.2	32.0	4.9	39.8	38.9	2.3	
65 years and over	40.2	36.5	10.1	38.9	38.1	2.1	
Family income							
Less than \$5,000	36.3	36.2	0.3	40.0	39.2	2.0	
\$5,000-\$9,999	40.9	38.2	7.1	44.7	40.2	11.2-	
\$15,000 or more	34.2	30.0	14.0	36.5	35.7	2.2	
Marital status	3412	5010			5511		
Married	38.0	34.0	11.8+	41.6	39.5	5.3	
Widowed, separated, divorced	39.2	41.4	-5.3	39.8	37.3	6.7	
Never married	38.3	37.8	1.3	40.4	40.4	0.0	
Less than 12 years	41.1	40.8	0.7	43.8	42.4	3.3	
12 years	39.6	34.3	15.5+	42.8	40.8	4.9	
13 years or more	32.2	27.7	16.2+	34.3	31.5	8.5	
Table 4. EXCELLENT + GOOD					•		
Total - 17+ years	83.5	84.5	-1.2	82.0	81.0	1.2	
Color		05 0	, .	02.0	02 /	0.6	
White	84.0	85.3	-1.5	82.9	82.4	0.6	
Age	19.5	70.1	1.5	/4.4	10.1	5.2	
17-24 years	92.1	93.2	-1.2	91.8	90.9	1.0	
25-44 years	91.0	92.1	-1.2	89.5	88.0	1.7	
45-64 years	77.9	78.8	-1.1	66 1	15.3	2.8	
Family income	07.0	05.1	4.1	00.1	07.2	-1.0	
Less than \$5,000	67.5	65.8	2.6	68.2	66.2	3.0	
\$5,000-\$9,999	82.3	83.4	-1.3	83.2	80.6	3.2	
\$10,000-\$14,999	90.5	92.1	-1.7	88.7	90.6	-2.1	
\$13,000 or more	92.1	94.0	-2.0	90.3	92.2	-2.1	
Married	83.9	84.8	-1.1	83.9	82.9	1.2	
Widowed, separated, divorced	73.0	75.4	-3.2	72.5	71.2	1.8	
Never married	87.6	87.5	0.1	88.0	88.3	-0.3	
Education of head of family	73 /	74 4	_1 3	73.3	70.8	3.5	
12 years	89.1	90.1	-1.1	87.1	86.7	0.5	
13 years or more	93.6	94.2	-0.6	91.9	91.5	0.4	

+ Difference is statistically significant at the 0.10 level.

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SOURCE: Unpublished data from the Health Interview Survey, National Center for Health Statistics.

Tables 5, 6, 6 7. NEGATIVE HEALTH STATUS: Rate per 100 population based on self-respondent and standardrespondent rules and percent difference between these rates by sex and selected population characteristics: United States, Spring 1972

	Male			Female		
Selected characteristics	Self respon- dent	Stan- dard respon- dent	Per- cent differ-	Self respon- dent	Stan- dard respon- dent	Per- cent differ
Table 5. DATD	rule	rule	ence	rule	rule	ence
Total - 17+ years	11.8	11.3	4.4	13.9	14.2	-2.1
<u>Loior</u> White	11.5	10.8	6.5	13.2	13.2	0.0
All other	14.2	15.3	-7.2	20.2	22.4	-9.8
17-24 years	6.0	5.3	13.2	6.7	8.4	-20.2
25-44 years	6.8	· 5.9	15.3	8.7	9.2	-5.4
40-64 years	15.1	15.4	-1.9	17.6	17.9	-1.7
Family income	23.4	24.0	-4.9	24.4	23.9	2.1
Less than \$5,000	22.3	22.3	0.0	24.0	24.7	-2.8
\$5,000-\$9,999	12.1	13.3	-9.0	13.2	15.1	-12.6
\$10,000-\$14,999	7.8	6.3	23.8	9.5	7.0	35.7+
\$15,000 or more	6.0	4.9	22.4.	7.3	6.3	15.9
Married	11.6	11.0	5.5	13.0	13.1	-0.8
Widowed, separated, divorced	18.4	18.1	1.7	19.4	20.7	-6.3
Never married	9.2	9.3	-1.1	9.3	8.6	8.1
Education of head of family						
Less than 12 years	18.7	18.3	2.2	20.3	21.8	-6.9
13 years or more	4.5	4.5	0.0	6.5	9.9 7.0	-7.1
is years of more	4.5	4.7	0.9	0.5	/.0	
Table 6. POOR						
Total - 17+ yearsColor	3.8	3.5	8.6	3.2	3.9	-17.9
White	3.5	3.2	9.4	3.1	3.6	-13.9
All other	6.0	6.1	-1.6	4.5	6.2	-27.4
Age				0.5		• •
25-44 years	1 3	1 5	-13.3	1.2	2 0	-40.0
45-64 years	6.2	4.9	26.5	4.2	6.0	-30.0+
65 years and overFamily income	7.6	9.7	-21.6	8.0	7.9	1.3
Less than \$5,000	9.4	11.2	-16.1	7.1	8.3	-14.5
\$5,000-\$9,999	4.7	2.9	62.1+	2.9	3.5	-17.1
\$10,000-\$14,999	1.0	1.2	-16.7	1.3	1.9	-31.6
\$15,000 or more	0.8	0.8	0.0	1.2	1.3	-/./
Married	3.6	3.5	2.9	2.2	3.2	-31.3+
Widowed, separated, divorced	7.9	5.8	36.2	7.4	7.3	1.4
Never married	2.5	2.6	-3.8	1.4	2.2	-36.4
Education of head of family	60		6 E	5.2	67	20.0
Less than 12 years	0.9	13	4.5	5.5	21	-20.9
13 years or more	1.4	1.2	16.7	1.1	1.3	-15.4
Table 7. FAIR + POOR						
Total - 17+ years	15.6	14.9	4.7	17.2	18.2	-5.5
Color		-				
White	15.0	14.1	6.4	16.2	16.8	-3.6
All other	20.3	21.4	-5.1	24.7	28.5	-13.3
17-24 years	6.8	Ġ.1	11.5	7.2	8.4	-14.3
25-44 years	8.1	7.4	9.5	10.0	11.2	-10.7
45-64 years	21.3	20.3	4.9	21.7	23.9	-9.2
65 years and over	31.0	34.3	-9.6	32.4	31.8	1.9
ramily income	31.7	33.6	-5.7	31.1	33.0	-5.8
\$5,000-\$9,999	16.8	16.2	3.7	16.1	18.7	-13.9
\$10,000-\$14,999	8.7	7.5	16.0	10.8	9.0	20.0
\$15,000 or more	6.8	5.7	19.3	8.4	7.5	12.0
Marital status	15.2	14 5	<u>د</u> ۹	15.2	16.2	-6.7
Widowed, separated divorced	26.3	24.0	9.6	26.8	28.0	-4.3
Never married	11.7	11.9	-1.7	10.7	10.8	-0.9
Education of head of family		<u>.</u>			aa <i>i</i>	0.5.
Less than 12 years	23./ 9.8	24.9	5.2	25.7	20.4	-9.JT -1.7
13 years or more	5.9	5.7	3.5	7.6	8.4	-9.5
			-	[

+ Difference is statistically significant at the 0.10 level.

SOURCE: Unpublished data from the Nealth Interview Survey, National Center for Health Statistics.

Selected characteristic	Male	Female
	Population in thousand	
Total 19+ years	61,218	69,591
Age		
19-44 years	32,919	35,861
45-64 years	20,026	22,154
65 years and over	8,273	11,576
Color		
White	54 844	61 790
	6 27/	7 901
All other	0,374	7,001
Family income		
Less than \$5,000	11,741	17,200
\$5,000-\$9,999	18,059	20,191
\$10 000-\$1/ 999	14 941	15 041
\$15,000-\$14,999	12 278	13,075
\$15,000 Of mole	15,270	15,075
Education of head of family		
Less than 12 years	25,677	30,188
12 years	17,909	20.844
13 years or more	16 930	17,768
15 years of more	10,750	1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
<u>Marital status</u>		
Married	46,170	47,396
Widowed, separated, divorced	5,103	14,674
Never married	9,945	7,521
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Table 8. Estimated population by sex and selected population characteristics: United States, Spring 1972

NOTE: For official population estimates see Bureau of the Census reports on the civilian population of the United States, in <u>Current Population Reports</u>, Series P-20, P-25, and P-60.

SOURCE: Unpublished data from the Health Interview Survey, National Center for Health Statistics.