Is Self-Rated Health Comparable across Racial and Ethnic Groups?
Evidence from the Health and Retirement Study

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Background

Self-rated health (SRH) has been widely used as a measure of health status in health surveys and studies. Whereas previous studies have established the validity of SRH as a health measure as well as a predictor of prospective mortality, few studies have assessed the comparability of SRH across racial and ethnic groups. In essence, this issue of comparability concerns whether racial and ethnic disparities in SRH are true reflections of corresponding differences in health status or they are more of a result of differential perceptions of health status across racial and ethnic groups. If the latter is the case, it questions the validity of using SRH as an indicator of racial and ethnic disparities in health status.

Objective

By using the short- and long-term all-cause mortality as a yardstick for retrospective health, this study seeks to assess the differential perceptions of health status, as reflected by SRH, across three major U.S. racial and ethnic groups including whites, blacks, and Hispanics.

Data, Measures, and Methodology

Data

Data used in this study come from the longitudinal sample of the Health and Retirement Study (HRS). The first wave of the HRS data collection started in 1992 with a targeted population of all adults of ages 51 to 61 in the contiguous United States. Our working sample contains 6,976 white, 1,671 black, and 904 Hispanic respondents who were between ages of 51 and 61 in the 1992 wave of the HRS and who were followed up through 2008. The total sample size is 9,551, out of which 1,916 or 20 percent died in or prior to 2008.

Measures

Respondents in the HRS were asked to identify and report their own racial and ethnic background from the following seven categories: 1. White/Caucasian; 2. Black/African American; 3. American Indian or Alaskan Native (including combination of 1 and 2); 4. Asian or Pacific Islander; 5. Hispanic/Latino; 6. Brown; "Moreno"; Trigueno; "de color" (of color); combination of Black and American Indian; and 7. Other (Specify). The working HRS sample in this study selected only those who identified with "1", "2" or "5" in the racial and ethnic categories listed.

Information on self-rated health was captured by the question "Would you say that your health is excellent, very good, good, fair, or poor?" These five categories have been consistently used in most previous measurements of self-rated health.

Mortality was measured in a 16-year period after the 1992 baseline survey. Respondents who participated in the baseline survey were then followed every other year for updated information. In the event where death was reported, an exit interview rather than a core interview was attempted. The exit interview was most often accomplished with

the widow(er) or with another close relative of the deceased respondent. This allows for the merge of the 1992 baseline data with the 2008 tracker and exit file for information on vital status. Records on mortality and its timing can be verified by linking the HRS data to the National Death Index.

Methodology

We first adopted the life table method to estimate survival rates from 1992 to 2008 by SRH categories at the baseline within each of the three racial and ethnic groups. Comparisons of these survival curves across racial and ethnic groups are expected to reveal whether and the extent to which a particular racial or ethnic group differentially evaluate their own health status compared to the other two groups. To verify the findings in a multivariate framework, we then ran a series of Cox Proportional Hazards (CPH) models in each of the three racial and ethnic groups, in which we modeled the relative risk of mortality as a function of SRH and selected demographic, socioeconomic, and anthropometric variables at the baseline. In an effort to differentiate between the short- and long-term effect of SRH on subsequent survival, we replicated the CPH models to predict survival separately in two periods: from 1992 to 1996 and from 1992 to 2008. In all the CPH models, deviation contrast was applied to all the SRH categories. As a result, the hazard ratio for each SRH category in the CPH models reflects how much its effect deviates from the average mortality in the whole sample, which allows for direct comparisons between hazard ratios associated with SRH categories across racial and ethnic groups.

Results

**Table 1: A Description of the HRS Sample at the 1992 Baseline (Mean or %)**

Variables	Race and Ethnicity		
	Whites	**Blacks**	**Hispanics**
Self-Rated Health			
Excellent	25.0	11.3	15.0
Very Good	31.3	21.1	14.8
Good	26.4	32.1	31.2
Fair	11.0	22.6	25.8
Poor	6.4	12.8	13.2
Age	55.5	55.5	55.3
Gender			
Male	48.4	42.1	45.4
Female	51.6	57.9	54.6
Years of Education	12.7	11.3	8.5
Nativity			
Native-Born	95.6	95.0	45.7
Foreign-Born	4.4	5.0	54.3
Homeownership			
Own	74.6	60.4	57.6
Rent	10.5	31.6	30.5
Other	14.9	8.0	11.8
Marital Status			
Married	78.7	51.6	68.5
Divorced	10.0	14.7	11.3
Widowed	4.8	12.3	6.2
Never Married	2.8	7.1	3.9
Other	3.7	14.4	10.2
Height (inches)	67.3	66.8	64.6
Body Mass Index			
Underweight (BMI<18.5)	1.3	1.4	1.1
Normal (18.5≤BMI<25)	37.6	24.5	27.4
Overweight (25≤BMI<30)	40.6	39.9	43.6
Obese (BMI≥30)	20.4	34.2	27.9
Number of Cases	6,976	1,671	904

Source: Health and Retirement Study.

Results based on **Table 1** reveal a distinction between whites and the two minority groups in terms of SRH. Blacks and Hispanics are more likely than whites to rate their health fair or poor and less likely to rate their health excellent and very good. In particular, Hispanics rate their health most negatively, with 39 percent rating their health fair or poor as compared to 17.4 percent for whites.

The racial and ethnic disparities in SRH at the baseline as revealed in **Table 1**, however, are not congruent with the differences in subsequent survival across the three racial and ethnic groups. **Figure 1** shows the survival curves during the period of 1992-2008 by SRH categories in each of the three groups. Mortality was substantially lower among Hispanics than among whites and blacks. In particular, the Hispanics advantage in mortality was more pronounced among those who rated their health poor or fair at the baseline.

Figure 1: Self-Rated Health and Mortality among whites, blacks, and Hispanics
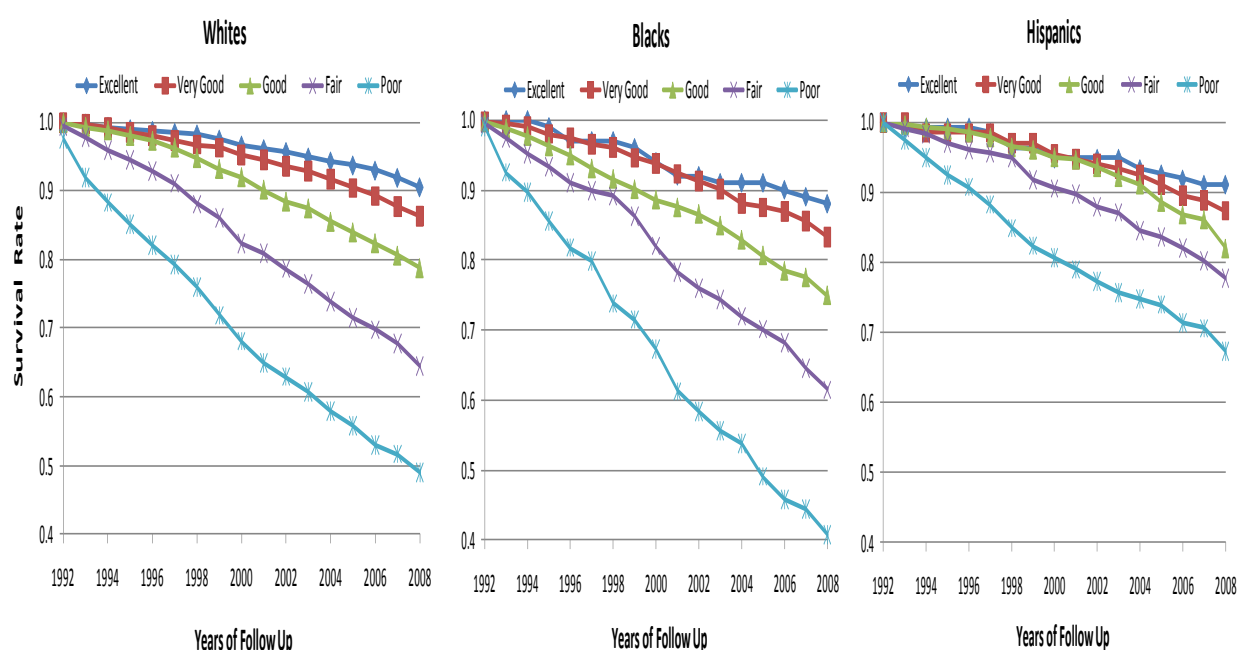
Source: The Health and Retirement Study.

More importantly, the association between SRH and subsequent mortality differs greatly between Hispanics and non-Hispanics. In each of the three racial and ethnic groups, mortality becomes reduced as SRH improves, yet the gradient turns out to be much smaller among Hispanics than among whites and blacks. At the end of the 16 years of follow up, the mortality gap between those who rated their health excellent and those who rated their health poor at the baseline was a bit over 20 percent among Hispanics, as compared to 40 percent for whites and close to 50 percent for blacks. The mortality level associated with poor SRH among Hispanics is even lower than that associated with fair SRH among whites and blacks.

We then assessed the relation between SRH and mortality risk in the period of 1992-1996 in each of the three racial and ethnic groups. **Table 2** shows the hazard ratios of mortality associated with each of the SRH categories after adjusting for the effect of age

and gender at the baseline. The point estimates suggest that for each of the SRH categories, risk of mortality was substantially lower for Hispanics as compared to whites and blacks. In particular, the Hispanic advantage becomes more evident when it comes to risk of mortality associated with poor SRH.

Table 2: Self-Rated Health at the Baseline and Relative Risk of Short-term Mortality Across Racial and Ethnic Groups (Adjusting Only for the Effect of Age and Gender at the Baseline)

Self-Rated Health	Relative Risk of Mortality in the 1992-1996 Period			
	Whites	Blacks	Hispanics	Total
Excellent	0.34*** (0.22, 0.53)	0.69 (0.30, 1.61)	0.18 (0.03, 1.14)	0.33*** (0.24, 0.45)
Very Good	0.54*** (0.38, 0.76)	0.71 (0.38, 1.36)	0.38 (0.10, 1.42)	0.51*** (0.40, 0.64)
Good	0.72* (0.52, 0.99)	1.39 (0.98, 1.39)	0.40 (0.16, 1.01)	0.75** (0.61, 0.92)
Fair	1.95*** (1.41, 2.68)	2.62*** (1.80, 3.82)	1.10 (0.58, 2.08)	1.83*** (1.51, 2.21)
Poor	4.83*** (3.61, 6.46)	5.38*** (3.76, 7.70)	2.82*** (1.57, 5.08)	4.32*** (3.63, 5.15)
Total	0.84* (0.71, 0.98)	1.67*** (1.39, 2.00)	0.72* (0.55, 0.93)	**1.00**

Source: Health and Retirement Study. *p<0.05; ** p<0.01; *** p<0.001. Numbers in the brackets are 95% confidence intervals.*

We then added to the CPH models explanatory variables on nativity, education, homeownership, marital status, and height and BMI. As indicated in the hazard ratios in **Table 3**, the Hispanic advantage in mortality as revealed in **Table 2** largely persists, although the magnitude as well as the level of statistical significance of the advantage becomes less salient.

Table 3: Self-Rated Health at the Baseline and Relative Risk of Short-term Mortality Across Racial and Ethnic Groups
(Adjusting for the Effect of Age, Gender, Nativity, Education, Homeownership, Marital Status, Height, and BMI at the Baseline)

Self-Rated Health	Relative Risk of Mortality in the 1992-1996 Period			
	Whites	Blacks	Hispanics	Total
Excellent	0.32*** (0.20, 0.51)	0.64 (0.28, 1.50)	0.21 (0.03, 1.34)	0.34*** (0.25, 0.46)
Very Good	0.53*** (0.37, 0.76)	0.66 (0.35, 1.27)	0.45 (0.12, 1.66)	0.52*** (0.41, 0.66)
Good	0.71* (0.51, 1.00)	1.26 (0.83, 1.91)	0.51 (0.20, 1.31)	0.79* (0.64, 0.96)
Fair	1.83*** (1.32, 2.55)	1.27*** (1.55, 3.34)	1.33 (0.68, 2.58)	1.83*** (1.51, 2.23)
Poor	4.32.*** (3.19, 5.85)	4.04*** (2.75, 5.92)	3.33*** (1.79, 6.17)	3.96*** (3.23, 4.79)
Total	0.96 (0.79, 1.17)	1.35** (1.11, 1.65)	0.77 (0.57, 1.04)	**1.00**

Source: Health and Retirement Study. *p<0.05; ** p<0.01; *** p<0.001. Numbers in the brackets are 95% confidence intervals.*

When long-term mortality has been used to verify SRH at the baseline (**Tables 4 and 5**), Hispanics still had the lowest mortality as compared to whites and blacks. Again the Hispanic advantage in survival persisted with or without adjusting for selected variables on

nativity, socioeconomic status, marital status, and anthropometric measures at the baseline. Interestingly, based on results from **Table 4**, the relative risk of mortality of Hispanics for each level of the SRH comes very close to the corresponding risk of mortality of blacks with the SRH one level higher.

Table 4: Self-Rated Health at the Baseline and Relative Risk of Long-term Mortality Across Racial and Ethnic Groups (Adjusting Only for the Effect of Age and Gender at the Baseline)

Self-Rated Health	Relative Risk of Mortality in the 1992-2008 Period			
	Whites	Blacks	Hispanics	Total
Excellent	0.39*** (0.33, 0.46)	0.53** (0.36, 0.79)	0.37*** (0.22, 0.63)	0.39*** (0.35, 0.44)
Very Good	0.58*** (0.51, 0.66)	0.74* (0.58, 0.96)	0.52** (0.33, 0.83)	0.58*** (0.53, 0.64)
Good	0.93 (0.82, 1.04)	1.17 (0.98, 1.39)	0.75* (0.57, 0.99)	0.93 (0.86, 1.01)
Fair	1.74*** (1.51, 1.99)	2.04*** (1.72, 2.43)	1.04 (0.79, 1.36)	1.65*** (1.51, 1.80)
Poor	2.90*** (2.51, 3.35)	3.79*** (3.17, 4.54)	1.76*** (1.29, 2.40)	2.86*** (2.61, 3.14)
Total	0.85*** (0.79, 0.91)	1.42*** (1.31, 1.54)	0.83*** (0.74, 0.92)	**1.00**

Source: Health and Retirement Study. $* p<0.05; ** p<0.01; *** p<0.001$. *Numbers in the brackets are 95% confidence intervals.*

Table 5: Self-Rated Health at the Baseline and Relative Risk of Long-term Mortality Across Racial and Ethnic Groups (Adjusting for the Effect of Age, Gender, Nativity, Education, Homeownership, Marital Status, Height, and BMI at the Baseline)

Self-Rated Health	Relative Risk of Mortality in the 1992-2008 Period			
	Whites	Blacks	Hispanics	Total
Excellent	0.40*** (0.34, 0.48)	0.50*** (0.33, 0.74)	0.45** (0.26, 0.77)	0.41*** (0.37, 0.47)
Very Good	0.60*** (0.52, 0.69)	0.70** (0.54, 0.90)	0.61* (0.39, 0.98)	0.61*** (0.56, 0.67)
Good	0.93 (0.82, 1.06)	1.07 (0.90, 1.29)	0.91* (0.68, 1.21)	0.96 (0.88, 1.04)
Fair	1.65*** (1.43, 1.89)	1.73*** (1.45, 2.06)	1.21 (0.91, 1.60)	1.61*** (1.47, 1.76)
Poor	2.57*** (2.22, 2.98)	2.88*** (2.38, 3.49)	1.91*** (1.38, 2.64)	2.57*** (2.33, 2.83)
Total	0.96 (0.88, 1.05)	1.20*** (1.10, 1.32)	0.87* (0.76, 0.99)	**1.00**

Source: Health and Retirement Study. $* p<0.05; ** p<0.01; *** p<0.001$. *Numbers in the brackets are 95% confidence intervals.*

Conclusion

When short and long-term mortality was used as a yardstick to verify SRH at the baseline, Hispanics rated their health much more negatively than whites and blacks of similar health status. This finding holds regardless of the incorporation of related variables on demographics, nativity, socioeconomic status, and anthropometry. Thus, SRH, as a global measure of health status, is not valid to be used as an indicator of health disparities between Hispanics and other racial and ethnic groups.