

Physical Functioning and Survival: Is the Link Weaker among Latino and Black Older Adults?

Online Appendix

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Figure A1

Figure A2

Table A1: Unweighted Summary Statistics of Analytic Samples at First Observation by Race/Ethnicity

| Race/Ethnicity | Full Sample | | | | Walking Speed Subsample | | | |
|---|----------------------|-------------|-------------|-----------------|-------------------------|-------------|-------------|-----------------|
| | Mean (SD) or Percent | | | Percent Missing | Mean (SD) or Percent | | | Percent Missing |
| | White | Latino | Black | All | White | Latino | Black | All |
| Demographics | | | | | | | | |
| Age (years) | 64.3 (11.1) | 59.9 (9) | 61.3 (9.9) | 0 % | 74.1 (7.2) | 72.7 (6.6) | 72.7 (6.8) | 0 % |
| Female | 55.74 % | 56.22 % | 60.17 % | 0 % | 57.07 % | 57.84 % | 62.58 % | 0 % |
| Married | 68.02 % | 64.9 % | 44.6 % | 0.1% | 62.87 % | 57.65 % | 41.00 % | 0.02 % |
| Foreign-born | 4.55 % | 59.42 % | 6.43 % | 0.05 % | 4.35 % | 55.45 % | 5.37% | 0.07 % |
| Died in follow-up period | 42.56 % | 24.06 % | 35.45 % | 0 % | 34.92 % | 27.33 % | 32.68% | 0 % |
| Mean follow-up (years) | 11.7 (5.9) | 10.1 (5.6) | 9.9 (5.7) | 0 % | 7 (3.3) | 6.5 (3.4) | 6.5 (3.2) | 0 % |
| Socioeconomic Characteristics | | | | | | | | |
| Education (years) | 12.8 (2.8) | 9.1 (4.7) | 11.7 (3.3) | 0.28 % | 12.9 (2.6) | 8.5 (4.6) | 11.4 (3.3) | 0.04 % |
| Household income | \$66,000 | \$38,300 | \$39,900 | 0 % | \$62,000 | \$28,300 | \$33,900 | 0 % |
| | (\$98,100) | (\$142,200) | (\$52,700) | | (\$133,400) | (\$33,000) | (\$37,600) | |
| Household wealth | \$401,200 | \$113,300 | \$88,100 | 0 % | \$623,200 | \$176,800 | \$162,200 | 0 % |
| | (\$1,224,000) | (\$341,700) | (\$249,000) | | (\$1,328,000) | (\$349,100) | (\$532,900) | |
| Health Characteristics | | | | | | | | |
| Often troubled by pain | 29.17 % | 34.24 % | 32.08 % | 0.11 % | 34.32 % | 37.86 % | 31.13 % | 0.08 % |
| Ever smoked | 58.87 % | 52.03 % | 59.21 % | 0.45 % | 57.8 % | 52.25 % | 57.91 % | 0.45 % |
| Ever diagnosed with arthritis | 45.03 % | 34.04 % | 45.55 % | 0.10 % | 66.28 % | 60.4 % | 68.56 % | 0.10 % |
| Ever diagnosed with diabetes | 11.15 % | 21.25 % | 21.99 % | 0.08 % | 19.29 % | 35.23 % | 34.42 % | 0.14 % |
| Ever diagnosed with high blood pressure | 39.68 % | 40.71 % | 61.24 % | 0.10 % | 59.48 % | 64.93 % | 77.95 % | 0.15 % |
| Ever had a stroke | 6.23 % | 4.35 % | 7.76 % | 0.05 % | 9.78 % | 7.14 % | 11.22 % | 0.10 % |
| Obese at maximum weight | 42.3 % | 51.37 % | 58.27 % | 18.59 % | 43.49 % | 51.48 % | 57.07 % | 1.23 % |
| Number of limitations | 2.6 (3) | 2.9 (3.2) | 3.2 (3.4) | 0.89 % | 3.1 (2.9) | 3.7 (3.2) | 3.9 (3.2) | 0.41 % |
| Fair/poor self-rated health | 26.10 % | 46.68 % | 41.00 % | 0 % | 24.68 % | 53.51 % | 39.64 % | 0 % |
| Walking speed (meters/second) | | | | | 0.9 (0.3) | 0.7 (0.3) | 0.7 (0.3) | 0 % |
| Unable to perform walking speed task | | | | | 6.22 % | 7.8 % | 12.27 % | 0 % |
| Number of respondents | 21,307 | 3,616 | 5,571 | | 9,196 | 1,039 | 1,622 | |
| Number of observations | 117,932 | 16,799 | 25,916 | | 31,541 | 3,222 | 5,072 | |

Notes: Means and percentages are defined for respondents not missing the variable. These statistics refer to the first observation of a respondent in the sample.

Table A2: Hazard Ratios (95% Confidence Intervals) Associated with Measures of Health and Physical Functioning Depicted in Figures 4-6

| Measure | Age | Model | White | Latino | Black |
|---|-----|-------|----------------------|----------------------|----------------------|
| Number of limitations | 60 | Base | 1.35 (1.33, 1.36) | 1.26 (1.22, 1.31) | 1.21 (1.19, 1.24) |
| Number of limitations | 60 | Full | 1.32 (1.30, 1.34) | 1.24 (1.20, 1.28) | 1.19 (1.17, 1.22) |
| Number of limitations | 70 | Base | 1.29 (1.28, 1.30) | 1.23 (1.20, 1.25) | 1.19 (1.18, 1.21) |
| Number of limitations | 70 | Full | 1.27 (1.26, 1.28) | 1.21 (1.18, 1.23) | 1.17 (1.16, 1.19) |
| Number of limitations | 80 | Base | 1.24 (1.23, 1.25) | 1.19 (1.17, 1.22) | 1.18 (1.16, 1.19) |
| Number of limitations | 80 | Full | 1.22 (1.21, 1.23) | 1.17 (1.15, 1.20) | 1.16 (1.14, 1.17) |
| Fair/Poor self-rated health | 60 | Base | 7.89 (7.19, 8.65) | 3.71 (2.85, 4.82) | 4.00 (3.41, 4.68) |
| Fair/Poor self-rated health | 60 | Full | 5.49 (4.97, 6.07) | 2.83 (2.16, 3.69) | 2.76 (2.35, 3.25) |
| Fair/Poor self-rated health | 70 | Base | 5.21 (4.91, 5.52) | 2.85 (2.40, 3.40) | 3.05 (2.74, 3.38) |
| Fair/Poor self-rated health | 70 | Full | 3.94 (3.70, 4.20) | 2.34 (1.96, 2.79) | 2.31 (2.08, 2.57) |
| Fair/Poor self-rated health | 80 | Base | 3.44 (3.30, 3.59) | 2.19 (1.88, 2.56) | 2.32 (2.10, 2.57) |
| Fair/Poor self-rated health | 80 | Full | 2.83 (2.70, 2.96) | 1.93 (1.66, 2.25) | 1.94 (1.75, 2.14) |
| Unable to complete walking speed test One SD below average | 70 | Base | 4.55 (3.76, 5.51) | 4.47 (2.74, 7.3) | 3.19 (2.26, 4.49) |
| Unable to complete walking speed test One SD below average | 70 | Full | 1.65 (1.57, 1.74) | 1.41 (1.2, 1.67) | 1.89 (1.65, 2.18) |
| Unable to complete walking speed test One SD below average | 70 | Full | 3.41 (2.81, 4.14) | 3.58 (2.17, 5.90) | 2.08 (1.48, 2.95) |
| Unable to complete walking speed test One SD below average | 70 | Full | 1.50 (1.43, 1.58) | 1.29 (1.09, 1.52) | 1.67 (1.45, 1.93) |

Table A3: Hazard Ratios (95% Confidence Intervals) from mixed effects Cox models predicting mortality from number of limitations

| | Base Model | Full Model |
|-----------------------------------|---------------------|---------------------|
| Latino | 1.028 (0.718,1.472) | 0.960 (0.672,1.371) |
| Black | 2.856 (2.245,3.634) | 2.105 (1.657,2.673) |
| Latino*Age | 0.998 (0.985,1.012) | 1.000 (0.986,1.013) |
| Black*Age | 0.977 (0.968,0.986) | 0.981 (0.972,0.991) |
| Number of limitations | 1.403 (1.376,1.429) | 1.376 (1.347,1.406) |
| Number of limitations*Age | 0.996 (0.995,0.997) | 0.996 (0.995,0.997) |
| Number of limitations*Latino | 0.927 (0.880,0.977) | 0.928 (0.882,0.977) |
| Number of limitations*Latino*Age | 1.001 (0.999,1.003) | 1.001 (0.999,1.003) |
| Number of limitations*Black | 0.878 (0.848,0.910) | 0.879 (0.849,0.910) |
| Number of limitations*Black*Age | 1.003 (1.001,1.004) | 1.003 (1.001,1.004) |
| Female | 0.503 (0.452,0.561) | 0.600 (0.537,0.671) |
| Female*Age | 1.002 (0.999,1.006) | 0.999 (0.995,1.003) |
| Married | | 0.738 (0.656,0.830) |
| Married*Age | | 1.006 (1.001,1.010) |
| Foreign-born | | 0.829 (0.767,0.895) |
| Years of Education | | 1.003 (0.997,1.009) |
| Log household income | | 0.978 (0.963,0.993) |
| Log household wealth | | 0.974 (0.969,0.979) |
| Arthritis | | 0.743 (0.658,0.839) |
| Arthritis*Age | | 1.004 (1.000,1.008) |
| Diabetes | | 2.058 (1.825,2.320) |
| Diabetes*Age | | 0.986 (0.982,0.990) |
| Ever smoked | | 2.229 (1.971,2.522) |
| Ever smoked*Age | | 0.984 (0.980,0.987) |
| Often troubled by pain | | 0.715 (0.630,0.812) |
| Often troubled by pain*Age | | 1.005 (1.001,1.010) |
| High blood pressure | | 1.136 (1.090,1.184) |
| Ever had stroke | | 1.364 (1.304,1.426) |
| Obese at maximum weight | | 0.963 (0.917,1.010) |
| Includes indicators for HRS wave? | No | Yes |
| Includes household random effect? | Yes | Yes |
| Number of observations | 30,494 | 30,494 |
| Number of respondents | 160,647 | 160,647 |

Note: Both models include a random effect at the household level to account for shared frailty. Interactions between age (centered on age 50) and the following variables were included because preliminary analyses revealed that the proportional hazards assumption was violated: race/ethnicity, number of limitations, race/ethnicity*number of limitations, sex, marital status, arthritis, diabetes, ever smoking, and often troubled by pain. Models do not include survey weights. Results are pooled from 10 imputations.

Table A4: Hazard Ratios (95% Confidence Intervals) from mixed effects Cox models predicting mortality from fair/poor self-rated health

| | Base Model | Full Model |
|-----------------------------------|------------------------|---------------------|
| Latino | 1.012 (0.727,1.408) | 1.022 (0.733,1.426) |
| Black | 2.431 (1.968,3.003) | 1.882 (1.521,2.329) |
| Latino*Age | 0.998 (0.988,1.009) | 0.998 (0.987,1.009) |
| Black*Age | 0.980 (0.973,0.987) | 0.982 (0.975,0.989) |
| Fair/poor self-rated health (SRH) | 11.947 (10.493,13.602) | 7.651 (6.655,8.797) |
| Fair/poor SRH*Age | 0.959 (0.955,0.963) | 0.967 (0.963,0.972) |
| Fair/poor SRH *Latino | 0.403 (0.272,0.598) | 0.447 (0.301,0.665) |
| Fair/poor SRH *Latino*Age | 1.015 (1.002,1.029) | 1.014 (1.001,1.028) |
| Fair/poor SRH *Black | 0.439 (0.338,0.569) | 0.431 (0.333,0.559) |
| Fair/poor SRH *Black*Age | 1.014 (1.005,1.024) | 1.015 (1.006,1.025) |
| Female | 0.641 (0.578,0.712) | 0.699 (0.626,0.781) |
| Female*Age | 1.002 (0.999,1.006) | 0.999 (0.995,1.003) |
| Married | | 0.736 (0.655,0.828) |
| Married*Age | | 1.004 (1.000,1.008) |
| Foreign-born | | 0.766 (0.709,0.827) |
| Years of Education | | 1.004 (0.998,1.010) |
| Log household income | | 0.975 (0.961,0.990) |
| Log household wealth | | 0.967 (0.963,0.972) |
| Arthritis | | 0.896 (0.796,1.008) |
| Arthritis*Age | | 1.003 (0.999,1.007) |
| Diabetes | | 1.902 (1.689,2.143) |
| Diabetes*Age | | 0.988 (0.984,0.992) |
| Ever smoked | | 2.061 (1.824,2.328) |
| Ever smoked*Age | | 0.986 (0.982,0.990) |
| Often troubled by pain | | 1.079 (0.959,1.214) |
| Often troubled by pain*Age | | 0.997 (0.994,1.001) |
| High blood pressure | | 1.131 (1.086,1.179) |
| Ever had stroke | | 1.518 (1.453,1.585) |
| Obese at maximum weight | | 1.032 (0.984,1.084) |
| Includes indicators for HRS wave? | No | Yes |
| Includes household random effect? | Yes | Yes |
| Number of observations | 30,494 | 30,494 |
| Number of respondents | 160,647 | 160,647 |

Note: Both models include a random effect at the household level to account for shared frailty. Interactions between age (centered on age 50) and the following variables were included because preliminary analyses revealed that the proportional hazards assumption was violated: race/ethnicity, fair/poor SRH, race/ethnicity*fair/poor SRH, sex, marital status, arthritis, diabetes, ever smoking, and often troubled by pain. Models do not include survey weights. Results are pooled from 10 imputations.

Table A5: Hazard Ratios (95% Confidence Intervals) from mixed effects Cox models predicting mortality from walking speed measures

| | Base Model | Full Model |
|---|---------------------|---------------------|
| Latino | 0.929 (0.688,1.256) | 0.859 (0.630,1.171) |
| Black | 1.190 (0.945,1.499) | 1.004 (0.793,1.271) |
| Latino*Age | 0.995 (0.977,1.013) | 0.997 (0.980,1.016) |
| Black*Age | 0.975 (0.962,0.989) | 0.978 (0.965,0.992) |
| Walking speed z-score | 0.617 (0.588,0.647) | 0.675 (0.643,0.709) |
| Walking speed z-score squared | 1.020 (1.017,1.023) | 1.015 (1.012,1.018) |
| Unable to complete walking test | 5.400 (4.228,6.898) | 3.924 (3.061,5.031) |
| Unable to complete walking test*Age | 0.966 (0.955,0.978) | 0.972 (0.961,0.985) |
| Walking speed z-score*Latino | 1.244 (1.045,1.481) | 1.242 (1.046,1.476) |
| Walking speed z-score squared*Latino | 1.063 (0.962,1.176) | 1.064 (0.965,1.174) |
| Unable to complete walking test*Latino | 0.984 (0.501,1.930) | 1.078 (0.542,2.144) |
| Unable to complete walking test*Latino *Age | 1.000 (0.964,1.037) | 0.994 (0.958,1.032) |
| Walking speed z-score*Black | 0.887 (0.75,1.049) | 0.900 (0.741,1.093) |
| Walking speed z-score squared*Black | 1.016 (0.948,1.089) | 1.001 (0.906,1.105) |
| Unable to complete walking test*Black | 0.596 (0.363,0.980) | 0.504 (0.307,0.827) |
| Unable to complete walking test*Black *Age | 1.033 (1.006,1.060) | 1.039 (1.013,1.067) |
| Height | 1.028 (0.668,1.581) | 1.061 (0.688,1.636) |
| Female | 0.718 (0.610,0.845) | 0.824 (0.692,0.981) |
| Female*Age | 0.989 (0.981,0.997) | 0.983 (0.974,0.992) |
| Married | | 0.852 (0.718,1.012) |
| Married*Age | | 1.001 (0.992,1.011) |
| Foreign-born | | 0.829 (0.723,0.952) |
| Years of Education | | 0.994 (0.983,1.005) |
| Log household income | | 0.985 (0.958,1.014) |
| Log household wealth | | 0.972 (0.963,0.981) |
| Arthritis | | 0.959 (0.802,1.147) |
| Arthritis*Age | | 1.001 (0.992,1.010) |
| Diabetes | | 1.855 (1.573,2.188) |
| Diabetes*Age | | 0.979 (0.970,0.988) |
| Ever smoked | | 2.432 (2.049,2.887) |
| Ever smoked*Age | | 0.972 (0.963,0.980) |
| Often troubled by pain | | 1.403 (1.195,1.647) |
| Often troubled by pain*Age | | 0.989 (0.981,0.997) |
| High blood pressure | | 1.171 (1.087,1.262) |
| Ever had stroke | | 1.522 (1.412,1.640) |
| Obese at maximum weight | | 1.010 (0.945,1.079) |
| Includes indicators for HRS wave? | No | Yes |
| Includes household random effect? | Yes | Yes |
| Number of observations | 11,857 | 11,857 |
| Number of respondents | 39,835 | 39,835 |

Note: Both models include a random effect at the household level to account for shared frailty. Interactions between age (centered on age 65) and the following variables were included because preliminary analyses revealed that the proportional hazards assumption was violated: race/ethnicity, ability to complete walking test, race/ethnicity*ability to complete walking test, sex, marital status, arthritis, diabetes, ever smoking, and often troubled by pain. Models do not include survey weights. Results are pooled from 10 imputations.

Table A6: Hazard Ratios (95% Confidence Intervals) from mixed effects Cox models predicting mortality from number of limitations in the walking speed subsample

| | Base Model | Full Model |
|-----------------------------------|---------------------|---------------------|
| Latino | 2.172 (1.323,3.566) | 1.914 (1.156,3.169) |
| Black | 2.459 (1.670,3.619) | 1.932 (1.311,2.847) |
| Latino*Age | 0.968 (0.938,0.998) | 0.971 (0.941,1.001) |
| Black*Age | 0.973 (0.949,0.996) | 0.978 (0.954,1.002) |
| Number of limitations | 1.379 (1.343,1.416) | 1.354 (1.314,1.396) |
| Number of limitations*Age | 0.993 (0.992,0.995) | 0.994 (0.992,0.995) |
| Number of limitations*Latino | 0.851 (0.787,0.921) | 0.857 (0.792,0.927) |
| Number of limitations*Latino*Age | 1.005 (1.001,1.010) | 1.005 (1.000,1.010) |
| Number of limitations*Black | 0.884 (0.834,0.938) | 0.886 (0.836,0.939) |
| Number of limitations*Black*Age | 1.003 (0.999,1.006) | 1.003 (0.999,1.006) |
| Female | 0.571 (0.490,0.665) | 0.708 (0.601,0.834) |
| Female*Age | 0.997 (0.989,1.005) | 0.989 (0.980,0.998) |
| Married | | 0.855 (0.720,1.016) |
| Married*Age | | 1.003 (0.993,1.013) |
| Foreign-born | | 0.887 (0.773,1.019) |
| Years of Education | | 0.998 (0.987,1.009) |
| Log household income | | 0.987 (0.959,1.017) |
| Log household wealth | | 0.978 (0.970,0.987) |
| Arthritis | | 0.757 (0.630,0.909) |
| Arthritis*Age | | 1.005 (0.996,1.015) |
| Diabetes | | 1.660 (1.406,1.959) |
| Diabetes*Age | | 0.982 (0.973,0.991) |
| Ever smoked | | 2.285 (1.925,2.712) |
| Ever smoked*Age | | 0.973 (0.964,0.981) |
| Often troubled by pain | | 0.793 (0.667,0.943) |
| Often troubled by pain*Age | | 1.005 (0.996,1.014) |
| High blood pressure | | 1.122 (1.041,1.209) |
| Ever had stroke | | 1.403 (1.301,1.512) |
| Obese at maximum weight | | 0.968 (0.906,1.035) |
| Includes indicators for HRS wave? | No | Yes |
| Includes household random effect? | Yes | Yes |
| Number of observations | 11,857 | 11,857 |
| Number of respondents | 39,835 | 39,835 |

Note: Both models include a random effect at the household level to account for shared frailty. Interactions between age (centered on age 65) and the following variables were included because preliminary analyses revealed that the proportional hazards assumption was violated: race/ethnicity, ability to complete walking test, race/ethnicity*ability to complete walking test, sex, marital status, arthritis, diabetes, ever smoking, and often troubled by pain. Models do not include survey weights. Results are pooled from 10 imputations.

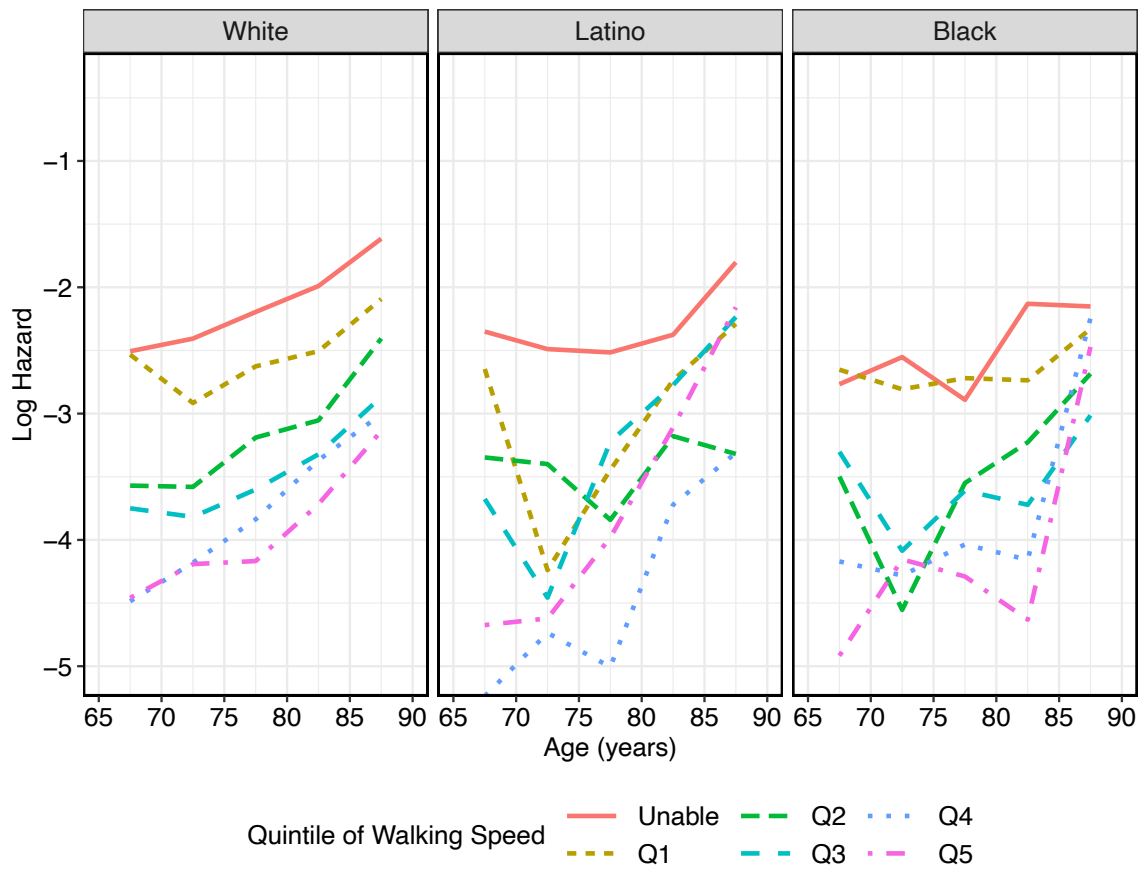


Figure A1: Observed log hazard of mortality by age and quintile of walking speed, stratified by race/ethnicity. Based on the subsample of respondents who participated in the in-home walking-speed tests.

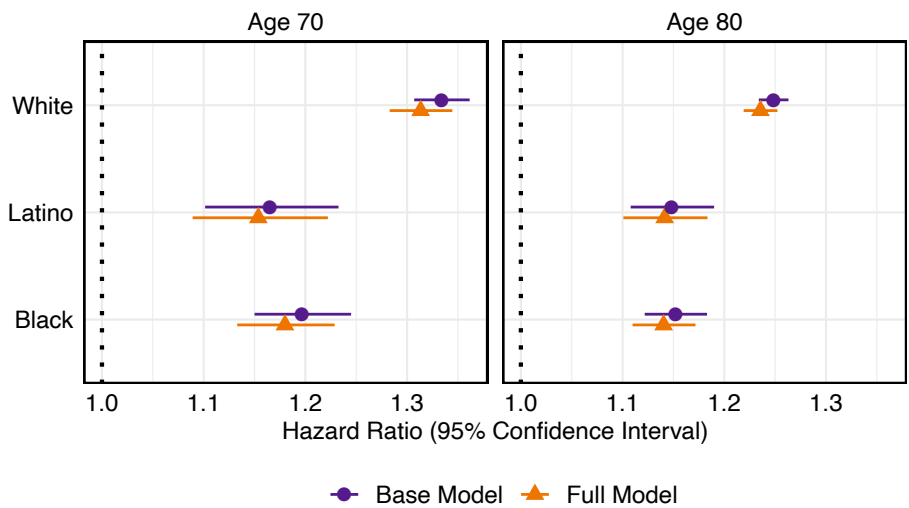


Figure A2: Hazard ratio (95% confidence interval) associated with number of limitations by age and by race/ethnicity in the walking speed subsample. The base model includes only sex, race/ethnicity, number of limitations, the interaction between race/ethnicity and self-reported number of limitations and a random effect at the household level. The full model additionally includes marital status, nativity, years of education, log household income, log household wealth, wave of HRS, whether the respondent is often troubled by pain and whether the respondent has a history of high blood pressure, stroke, diabetes, arthritis, smoking, or obesity. Interactions between age (centered on age 65) and the following variables were included because preliminary analyses revealed that the proportional hazards assumption was violated: race/ethnicity, number of limitations, race/ethnicity*number of limitations, sex, marital status, arthritis, diabetes, ever smoking, and often troubled by pain. These models were fit on the subsample of respondents who participated in the in-home walking speed test. Results are pooled from 10 imputations.