

# Examination of factors that mediate race/ethnicity (R/E) specific [Hispanic vs. non-Hispanic White (NHW)] differences in Patient Reported Outcomes (PROs) among elderly female breast cancer (BC) patients with follow-up survey data in the SEER-MHOS database.

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## Background

- BC is the most commonly diagnosed cancer in US women and has the largest national survivorship experience for female cancer (> 4 million), and about half of all BC deaths occur in women 70 years or older.
- BC diagnosis is known to influence patients' health-related quality of life (HRQOL), and often occurs in concert with other chronic conditions that are more prevalent with older age, and PROs can be used to characterize HRQOL.
- We previously reported on factors that mediate the R/E disparity in PROs for elderly women with BC using baseline surveys in SEER-MHOS data; however, whether these factors also mediate the disparity in Hispanic vs. NHW women with longitudinal follow-up survey data is unknown and was the impetus for our study.

## Objectives

### Specific Aim 1:

- To examine the extent to which R/E-specific differences (i.e., Hispanic vs. NHW) (a) exist in physical and mental health PROs among elderly BC patients who have completed follow-up surveys.
- To examine the extent the R/E specific differences are mediated by specific risk-domains among patients who have completed follow-up surveys.

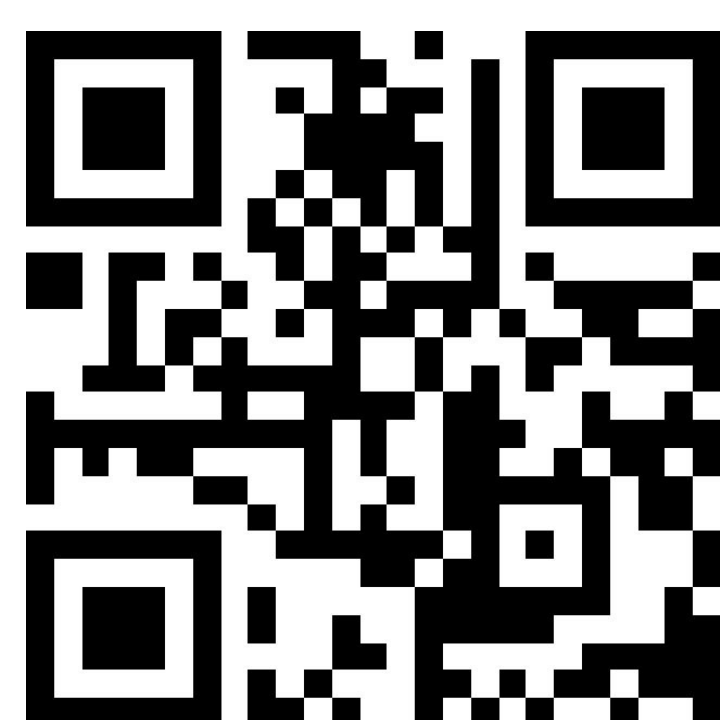
### Specific Aim 2:

- To evaluate R/E-specific aging trajectories by examining interactions using age- and follow-up cohort-stratified models among patients with follow-up surveys.

## Methodology

- Data is from the Surveillance, Epidemiology and End Results- Medicare Health Outcomes Survey (SEER-MHOS) database.
- Our analytic sample (n=8,542) is 7,695 NHW and 847 Hispanic women with BC diagnosed between 2010-17, and with longitudinal follow-up surveys done through 2019.

## Bibliography



- We used GLM with predictive margins [risk differences (RD) with 95% confidence intervals (CI)] to estimate average controlled direct associations (ACDA) for crude and age/body mass index (BMI)-adjusted physical and mental health PROs [Physical and Mental Component Summary T-Scores (PCS/MCS: are linear transformation of the 0-100 possible range scoring for 8 Veterans RAND 12 Item Health Survey (VR-12) sub-scales, with mean of 50 and standard deviation (SD) of 10, normed to the US population)] by R/E.
- We performed a series of ACDA controlling for the domains of socioeconomic position (SEP) [household income, poverty level, education]; comorbid disease [smoking status, diabetes, hypertension]; tumor biology [stage, grade, subtype]; treatment factors [treatment type]; and social support [marital status].

## Results

- Hispanic women had younger age at diagnosis, greater BMIs, and in general had lower household income compared to NHW women.
- Hispanic women were also less likely to be married, and more likely to have diabetes and hypertension..
- Compared to NHW, for Hispanic women: crude models showed MCS/PCS differences of -5.63 (95% CI: -6.54, -4.72) and -3.9 (95% CI: -3.99, -3.82); and age/BMI adjusted baseline models showed lower MCS/PCS scores [-5.23 (95% CI: -6.41, -4.05), and -3.56 (95% CI: -3.89, -3.22)], respectively (Tables 1 & 2).
- For both MCS/PCS scores, the SEP domain mediated the majority of the effect (MCS/PCS, 41%/63%) with household income having the greatest influence within the domain (MCS/PCS, 29%/43%); and education showing the second largest effect (28%/30%).
- In fully specified models with all 5 mediating domains, only the MCS R/E disparity remained significantly lower [-2.69 (95% CI: -3.43, -1.96)].
- Further, as the MCS difference from the latter model is >2% points, this difference is considered to be more than a minimally important difference.
- Observed PRO trends for all women decreased over the 10-year period, but trends remained worse for Hispanics overall and with lowest income (Figures 1-4).

## Contact Information

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Table 1: Estimates of mediated effects for PCS T-Score R/E disparity in covariate-adjusted models (Follow-up surveys)

	RD	95% CI	p-value	% Mediated**
Crude	-3.90	(-3.99, -3.82)	<0.0001	-
Baseline*	-3.56	(-3.89, -3.22)	<0.0001	-
SEP Domain*	-1.30	(-1.65, -0.95)	<0.0001	63.3%
Education*	-2.49	(-3.02, -1.96)	<0.0001	30.0%
Household Income*	-2.02	(-2.33, -1.72)	<0.0001	43.1%
Poverty Level*	-2.87	(-3.29, -2.44)	<0.0001	19.3%
Comorbidity Domain*	-3.21	(-3.56, -2.86)	<0.0001	9.7%
Clinical Domain*	-3.63	(-4.17, -3.08)	<0.0001	-2.0%
Social Support*	-3.28	(-3.75, -2.82)	<0.0001	7.6%
All domains*	-0.79	(-2.22, 0.63)	0.274	77.7%

SEP, Socioeconomic Position; RD, risk differences; 95% CI, 95% confidence intervals.

\*Generalized linear models, adjusted for age and body mass index

\*\*% mediated = [(baseline adjusted RD - domain RD) / baseline adjusted RD]

Table 2: Estimates of mediated effects for MCS T-Score R/E disparity in covariate-adjusted models (Follow-up surveys)

	RD	95% CI	p-value	% Mediated**
Crude	-5.63	(-6.54, -4.72)	<0.0001	-
Baseline*	-5.23	(-6.41, -4.05)	<0.0001	-
SEP Domain*	-3.06	(-4.38, -1.75)	<0.0001	41.4%
Education*	-3.79	(-5.01, -2.56)	<0.0001	27.6%
Household Income*	-3.69	(-5.01, 2.36)	<0.0001	29.5%
Poverty Level*	-4.72	(-5.98, -3.47)	<0.0001	9.7%
Comorbidity Domain*	-4.99	(-6.17, -3.81)	<0.0001	4.6%
Clinical Domain*	-5.37	(-6.40, -4.34)	<0.0001	-2.7%
Social Support*	-4.97	(-6.15, -3.78)	<0.0001	-5.0%
All domains*	-2.69	(-3.43, -1.96)	<0.0001	48.5%

SEP, Socioeconomic Position; RD, risk differences; 95% CI, 95% confidence intervals.

\*Generalized linear models, adjusted for age and body mass index

\*\*% mediated = [(baseline adjusted RD - domain RD) / baseline adjusted RD]

## Conclusions

- Our findings suggest that compared to NHW, Hispanic BC survivors had worse HRQOL outcomes over time and the observed PRO disparities are largely mediated by SEP, and likely mostly by household income and to a lesser extent education.
- Further, the R/E disparities worsen over time particularly for those with low SEP; this suggests that there is a need to provide sustainable support for this vulnerable group.
- In addition, Hispanic BC survivors appear to have an almost 2.7% lower MCS score which remains unexplained and requires further study.

Figure 1. Stratified estimates for mean MCS score by R/E in fully specified models (RDs and 95% CIs)

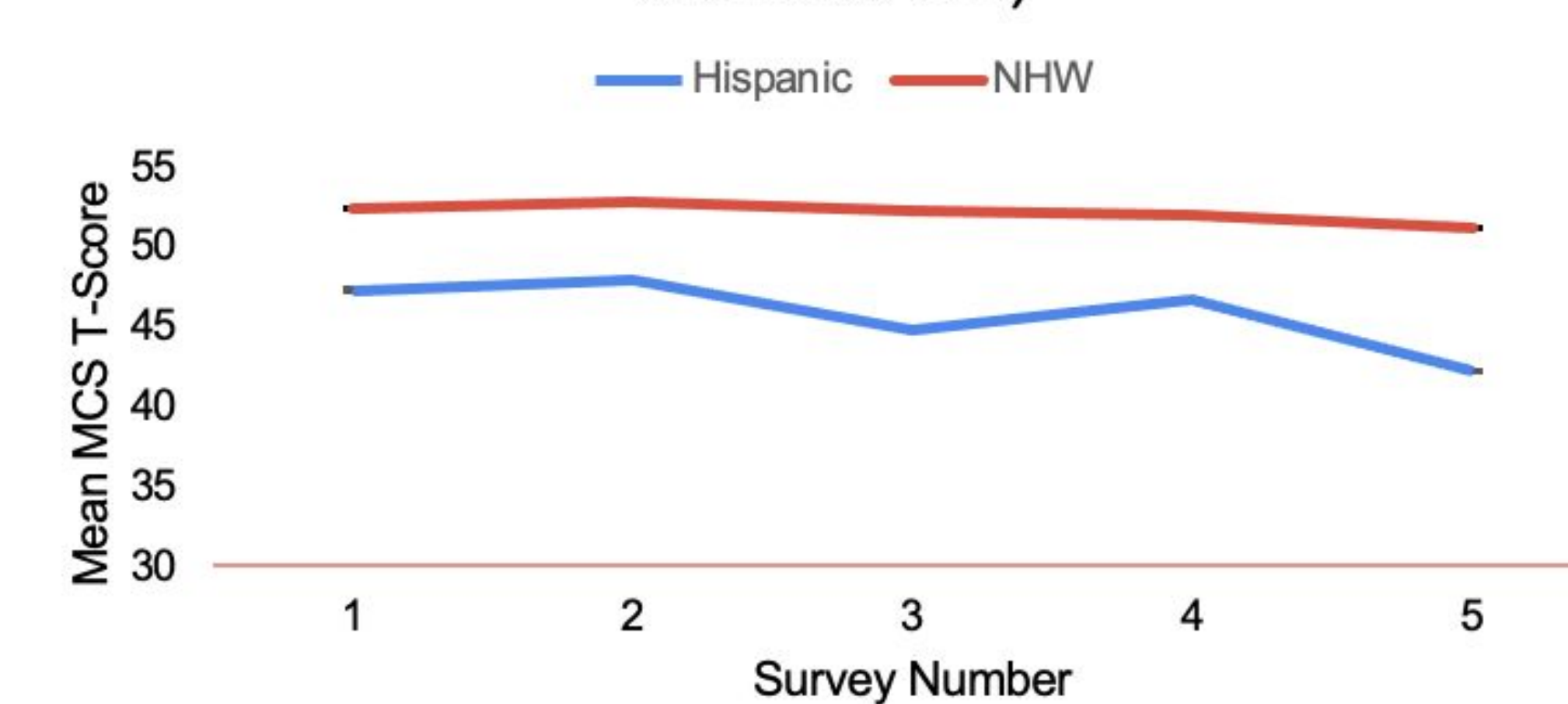


Figure 2. Stratified estimates for mean PCS score by R/E in fully specified models (RDs and 95% CIs)

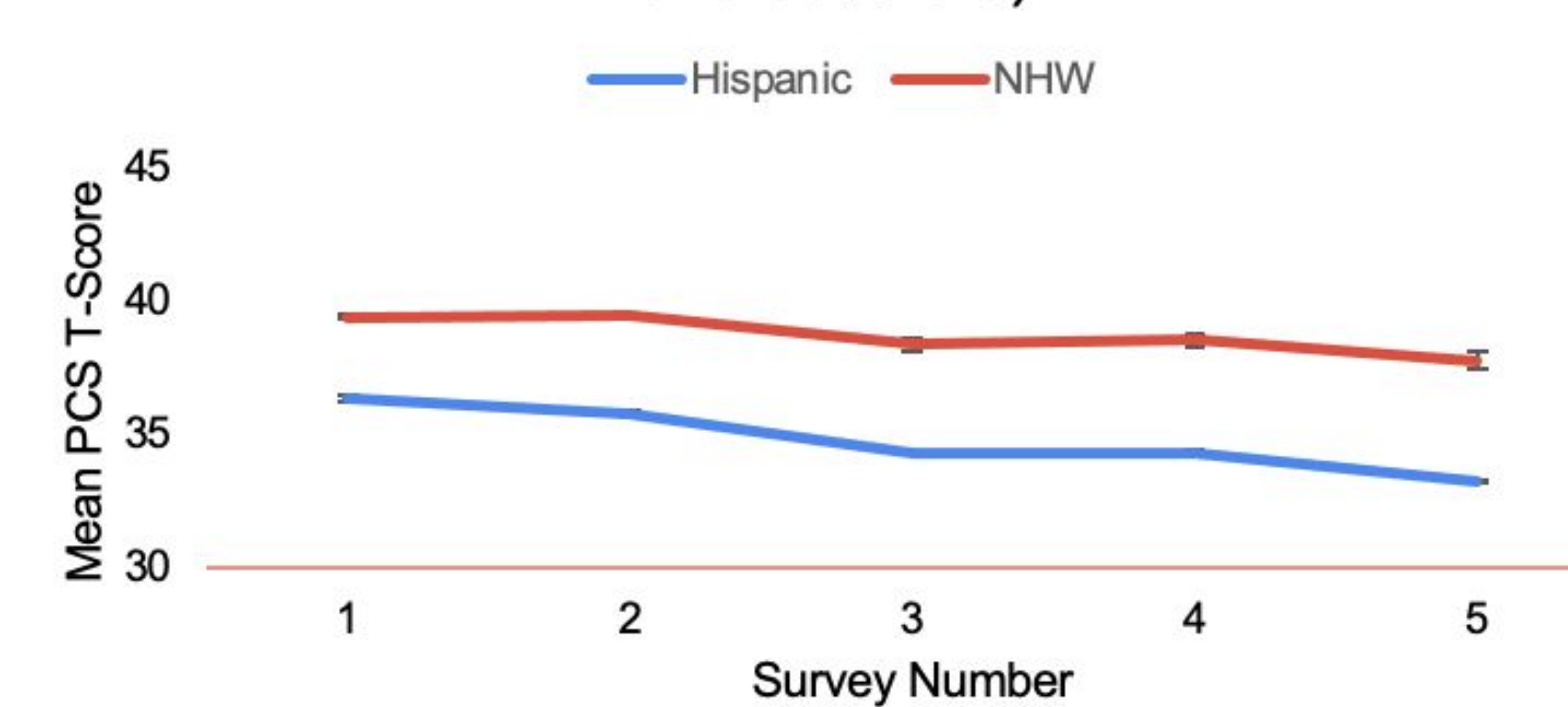


Figure 3. Stratified estimates for mean MCS score by R/E and household income level in fully specified models (RDs and 95% CIs)

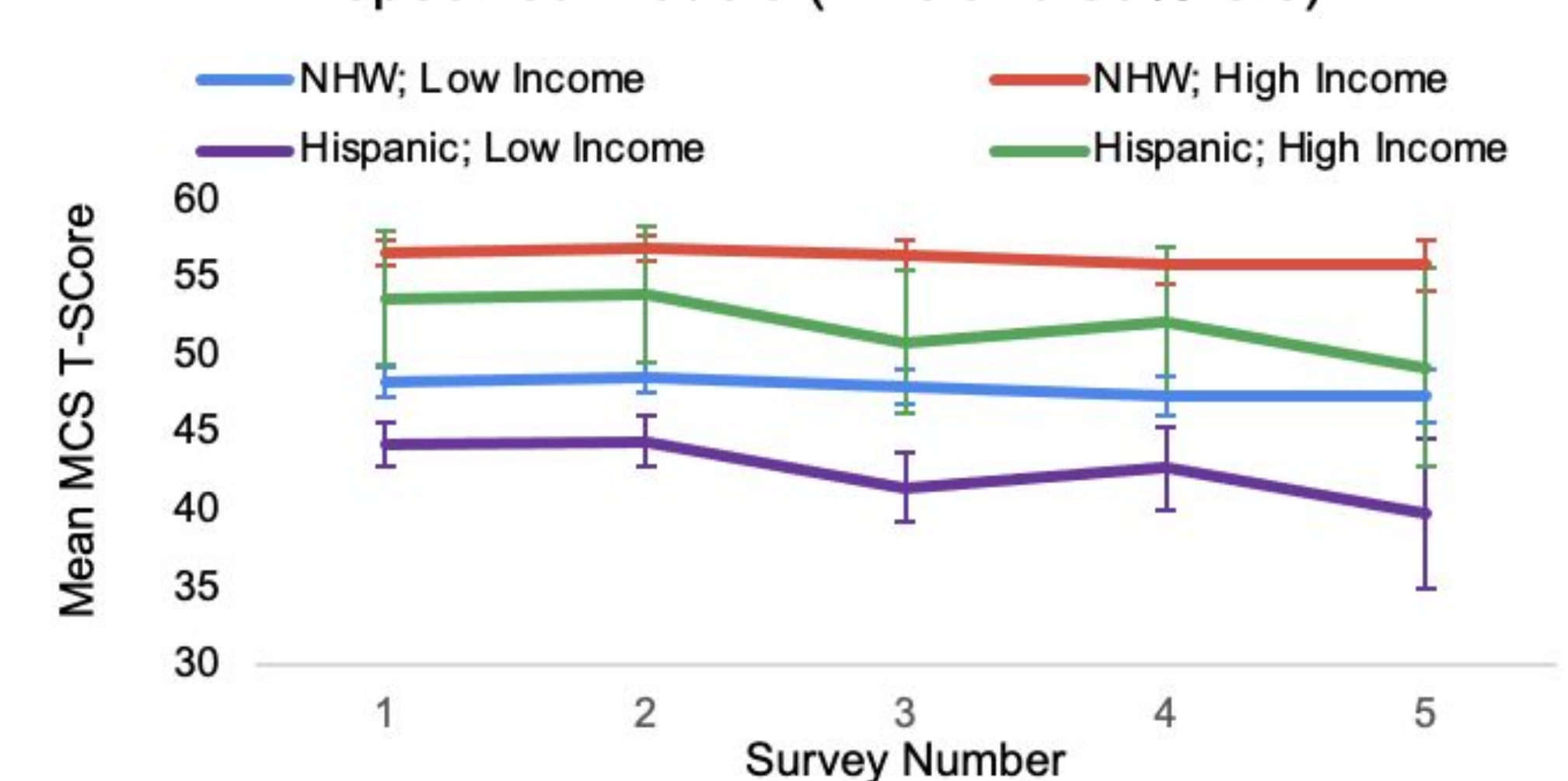


Figure 4. Stratified estimates for mean PCS score by R/E and household income level in fully specified models (RDs and 95% CIs)

