

Supplemental Online Content

Holder EX, Barnard ME, Xu NN, Barber LE, Palmer JR. Neighborhood disadvantage, individual experiences of racism, and breast cancer survival. *JAMA Netw Open*. 2025;8(4):e253807. doi:10.1001/jamanetworkopen.2025.3807

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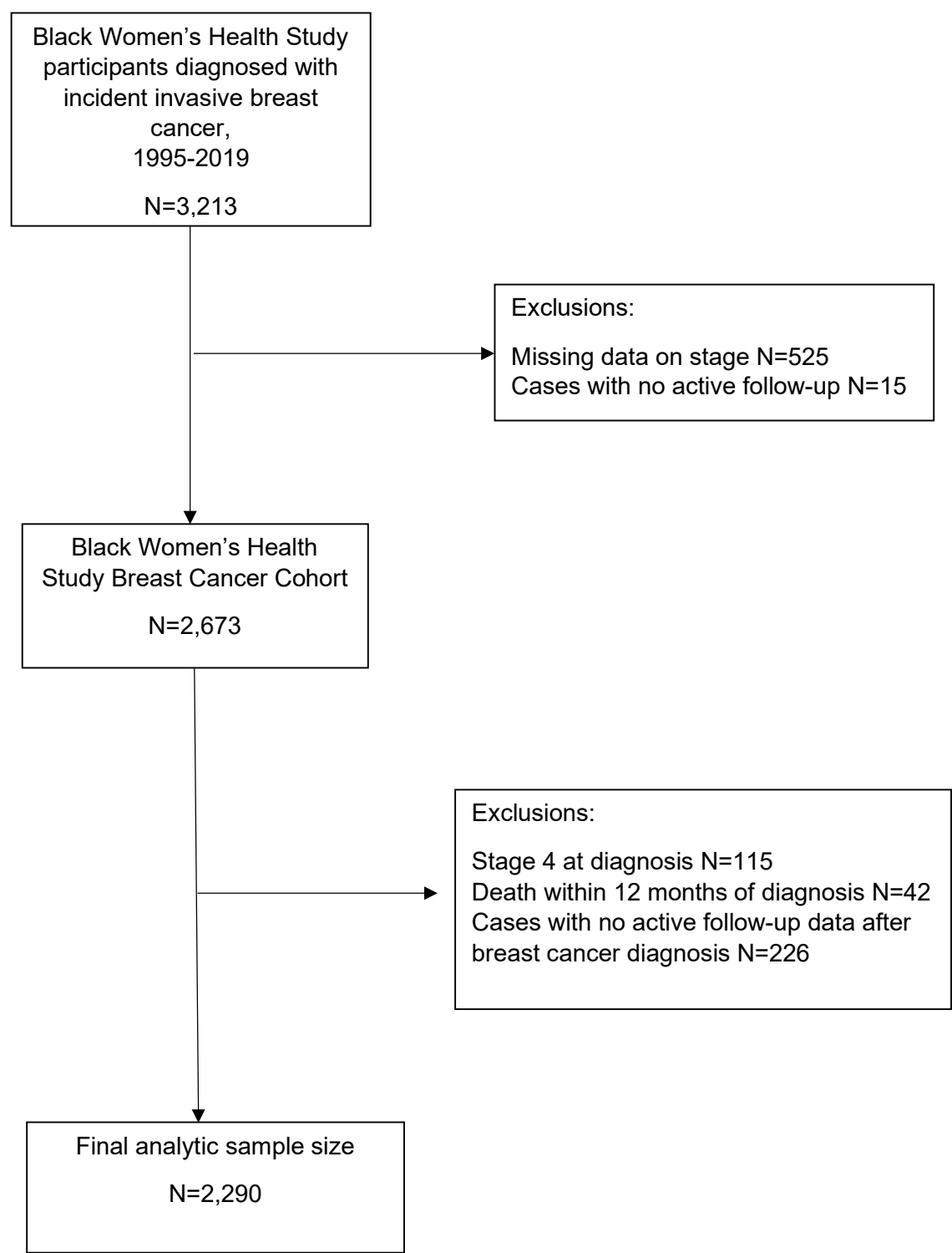
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This supplemental material has been provided by the authors to give readers additional information about their work.

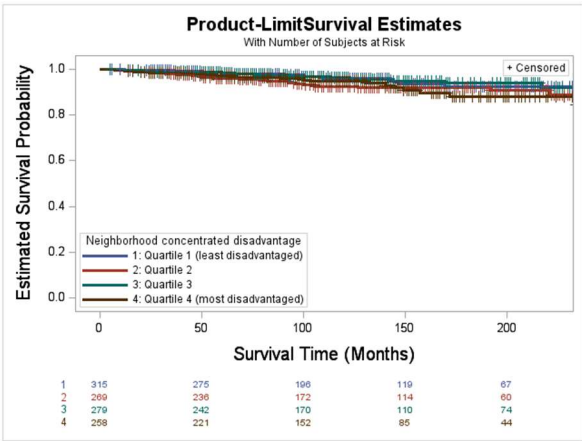
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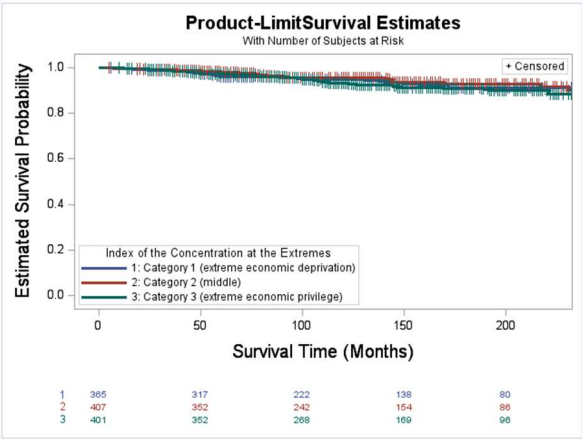
eFigure 2. Kaplan-Meier Curves of Neighborhood Concentrated Disadvantage and the Index of the Concentration at the Extremes by Stage at Diagnosis

Stage 1

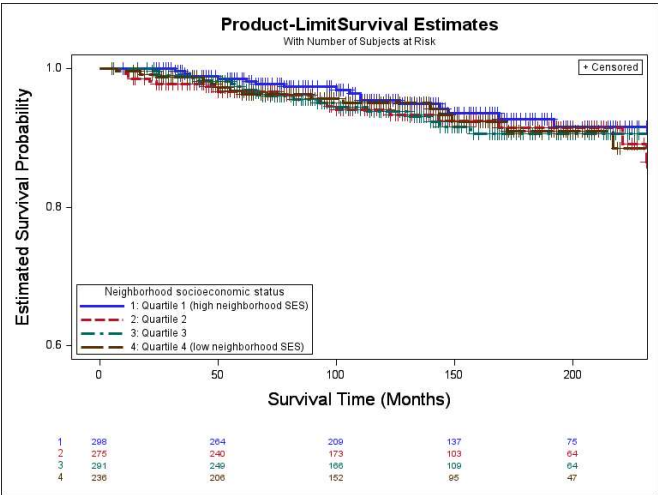
Neighborhood concentrated disadvantage
Extremes



Index of the Concentration at the
Extremes

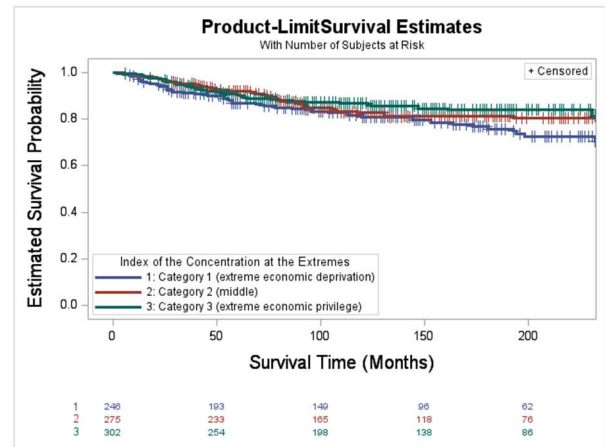
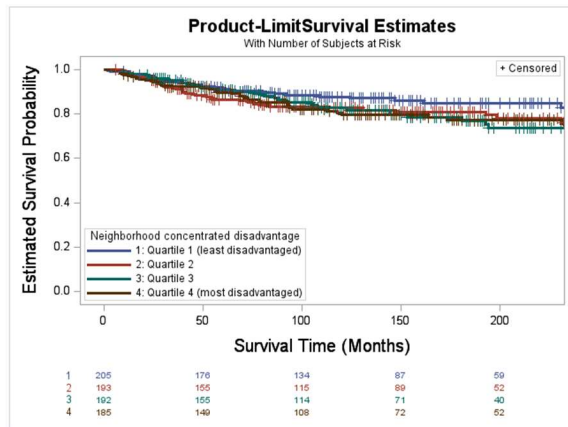


Neighborhood Socioeconomic Status

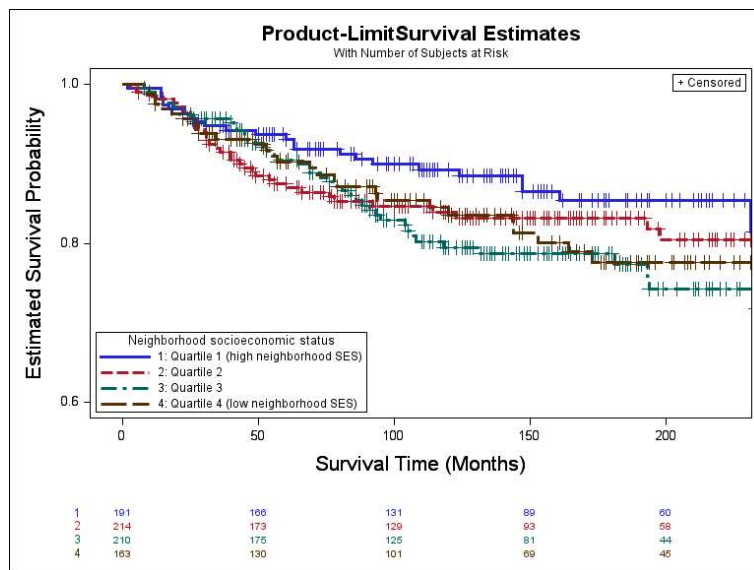


Stage 2

Neighborhood Concentrated Disadvantage Extremes

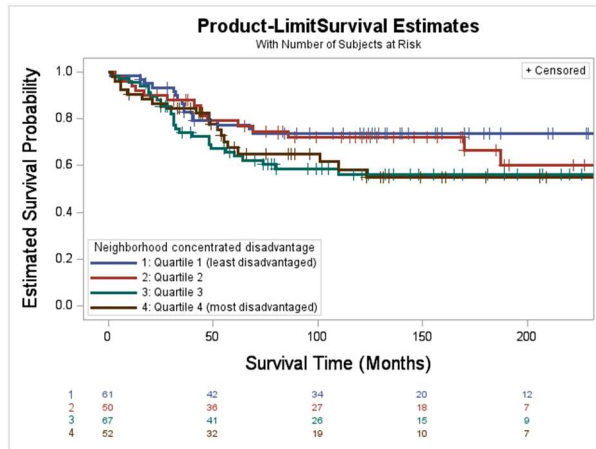


Neighborhood Socioeconomic Status

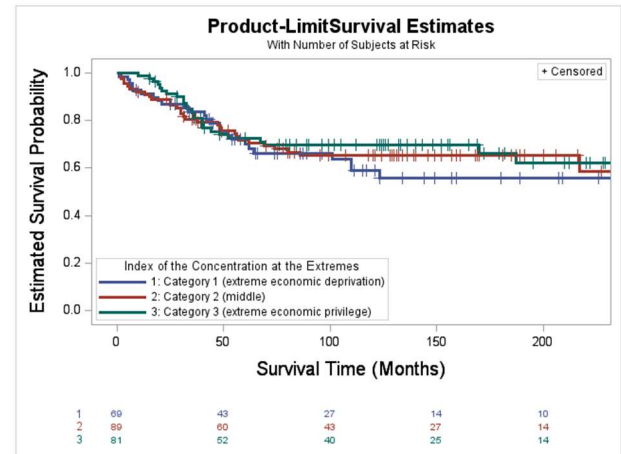


Stage 3

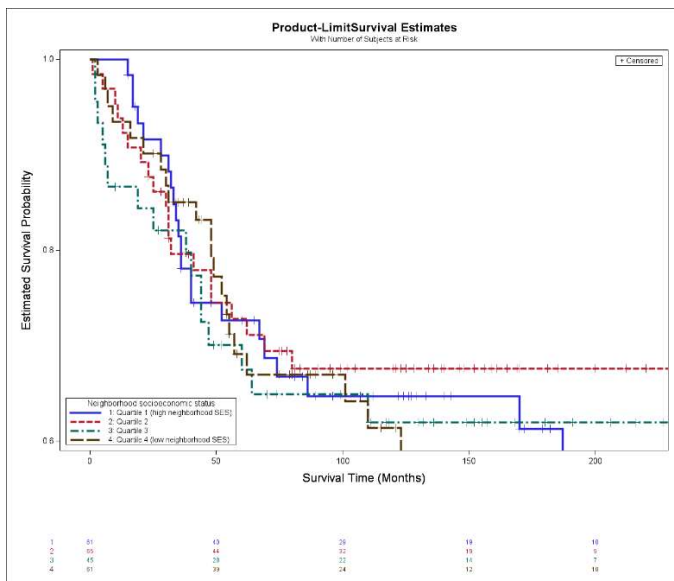
Neighborhood Concentrated Disadvantage Extremes



Index of Concentration at the



Neighborhood Socioeconomic Status



eTable 1. Associations Between Neighborhood Socioeconomic Status (SES) and Breast Cancer Mortality in the Black

Neighborhood SES (N=2,110)	Deaths	Person-years	Age-adjusted, HR* (95% CI) ¹	+ stage, ER status HR* (95% CI) ²	Fully adjusted HR* (95% CI) ³
Quartile 1 (low)	67	5,038	1.33 (0.94, 1.88)	1.21 (0.86, 1.70)	1.07 (0.74, 1.55)
Quartile 2	79	5,935	1.33 (0.96, 1.85)	1.31 (0.94, 1.82)	1.25 (0.88, 1.77)
Quartile 3	76	6,183	1.20 (0.86, 1.68)	1.12 (0.80, 1.56)	1.06 (0.75, 1.49)
Quartile 4 (high)	64	6,592	1.00 (ref)	1.00 (ref)	1.00 (ref)
P-trend			0.008	0.03	0.21

Women’s Health Study

Abbreviations: HR, hazard ratio; CI, confidence interval; ER, estrogen receptor; SES, socioeconomic status

¹Hazard ratios adjusted for age at diagnosis

²Hazard ratios additionally adjusted for stage at diagnosis, and estrogen receptor status

³Hazard ratios additionally adjusted for grade, body mass index, radiation and endocrine therapy, chemotherapy, diabetes, menopause status, alcohol intake, cigarette smoking, vigorous physical activity, education, insurance status, region

*P-values for all HRs were > 0.05

eTable 2. Associations Between Individual Components of the Neighborhood Disadvantage Score and Breast Cancer–Specific Mortality in the Black Women’s Health Study

Neighborhood concentrated disadvantage	Deaths	HR per standard deviation of nDIS score (95% CI) ¹
Percentage of individuals below 18 years of age	291	0.98 (0.89, 1.08)
Percentage of individuals on public assistance	291	1.05 (0.93, 1.18)
Percentage unemployed	291	1.12 (1.01, 1.24)
Percentage of Black residents	291	1.11 (0.99, 1.25)
Percentage of female-headed households	291	1.21 (1.08, 1.35)*
Percent of individuals below the poverty line	291	1.06 (0.95, 1.19)

Abbreviations: BWHS, Black Women’s Health Study; HR, hazard ratio; nDIS, neighborhood concentrated disadvantage; CI, confidence interval
¹Hazard ratios adjusted for age and stage at diagnosis, and estrogen receptor status
*Indicates p<0.05

Neighborhood-level indices	Deaths	Person-years	Age-adjusted, HR* (95% CI) ¹	+ stage, ER status HR* (95% CI) ²	Fully adjusted HR* (95% CI) ³
Neighborhood concentrated disadvantage (N=2,216)					
Quartile 1 (least disadvantaged)	128	6,574	1.00 (ref)	1.00 (ref)	1.00 (ref)
Quartile 2	121	5,923	1.09 (0.85, 1.39)	1.09 (0.85, 1.40)	1.02 (0.79, 1.32)
Quartile 3	145	5,841	1.26 (0.99, 1.59)	1.23 (0.97, 1.56)	1.07 (0.84, 1.37)
Quartile 4 (most disadvantaged)	159	5,189	1.53 (1.21, 1.93)*	1.53 (1.21, 1.93)*	1.28 (1.00, 1.64)*
P-trend			<.001	<.001	0.009
Index of Concentration at the Extremes (N=2,235)					
Extreme economic privilege	179	9,122	1.00 (ref)	1.00 (ref)	1.00 (ref)
Middle	190	8,620	1.07 (0.88, 1.32)	1.04 (0.85, 1.28)	0.99 (0.81, 1.22)
Extreme economic deprivation	221	7,326	1.44 (1.18, 1.75)*	1.40 (1.14, 1.70)*	1.21 (0.97, 1.49)
P-trend			<.001	<.001	0.02
Neighborhood SES (N=2,235)					
Quartile 1 (low)	143	5,038	1.50 (1.18, 1.91)*	1.41 (1.10, 1.79)*	1.16 (0.90, 1.51)
Quartile 2	160	5,935	1.43 (1.13, 1.81)*	1.45 (1.15, 1.84)*	1.27 (0.99, 1.62)
Quartile 3	136	6,183	1.17 (0.92, 1.50)	1.13 (0.88, 1.44)	1.06 (0.82, 1.36)
Quartile 4 (high)	121	6,592	1.00 (ref)	1.00 (ref)	1.00 (ref)
P-trend			<.001	<.001	0.03

**eTable 3.
Associations
Between
Neighborhood-Level
Indices and All-Cause
Mortality in the Black
Women's Health
Study**

Abbreviations: HR, hazard ratio; CI, confidence interval; ER, estrogen receptor; SES, socioeconomic status

¹Hazard ratios adjusted for age at diagnosis

²Hazard ratios additionally adjusted for stage at diagnosis, and estrogen receptor status

³Hazard ratios additionally adjusted for grade, body mass index, radiation and endocrine therapy, chemotherapy, diabetes, menopause status, alcohol intake, cigarette smoking, vigorous physical activity, education, insurance status, region

*P-values for all HRs were > 0.05

eTable 4. Associations of Experiences With Daily and Institutional Racism With All-Cause Mortality in the Black Women’s

	Deaths	Person-years	Age-adjusted, HR* (95% CI) ¹	+ stage, ER status HR* (95% CI) ²	Fully adjusted HR* (95% CI) ³
Daily Racism (N=2,139)					
Quantile 1 (lowest)	146	5,939	1.00 (ref)	1.00 (ref)	1.00 (ref)
Quantile 2	146	6,309	1.07 (0.85, 1.35)	1.06 (0.84, 1.34)	1.06 (0.84, 1.35)
Quantile 3	154	6,652	1.05 (0.83, 1.32)	1.05 (0.83, 1.32)	1.05 (0.83, 1.33)
Quantile 4 (highest)	110	4,672	1.11 (0.86, 1.43)	1.08 (0.84, 1.39)	1.09 (0.85, 1.42)
P-trend			0.48		0.53
Institutional Racism (N=2,080)					
No to all	165	7,387	1.00 (ref)	1.00 (ref)	1.00 (ref)
Yes to 1	163	7,096	1.02 (0.82, 1.26)	1.04 (0.84, 1.30)	1.07 (0.85, 1.33)
Yes to ≥2	200	8,393	1.07 (0.87, 1.32)	1.10 (0.89, 1.35)	1.11 (0.90, 1.37)
P-trend			0.50	0.39	0.35

Health Study

Abbreviations: HR, hazard ratio; CI, confidence interval; ER, estrogen receptor

¹Hazard ratios adjusted for age at diagnosis

²Hazard ratios additionally adjusted for stage at diagnosis, and estrogen receptor status

³Hazard ratios additionally adjusted for grade, body mass index, radiation and endocrine therapy, chemotherapy, diabetes, menopause status, alcohol intake, cigarette smoking, vigorous physical activity, education, insurance status, region

*P-values for all HRs were > 0.05

eTable 5. Associations¹ of the Joint Effects of Experiences of Neighborhood Concentrated Disadvantage and Daily Racism With Breast Cancer–Specific Mortality in the Black Women’s Health Study

Daily Racism x nDIS (N=1,991)	Deaths	HR* (95% CI)
low racism/ low nDIS	65	1.00 (ref)
high racism/ low nDIS	56	0.91 (0.64, 1.30)
low racism/ high nDIS	74	1.27 (0.91, 1.78)
high racism/ high nDIS	70	1.28 (0.92, 1.80)

Abbreviations: nDIS; neighborhood concentrated disadvantage; HR, hazard ratio; CI, confidence interval

¹Hazard ratios adjusted for age at diagnosis, stage at diagnosis, and estrogen receptor status

*P-values for all HRs were > 0.05