

Supplemental

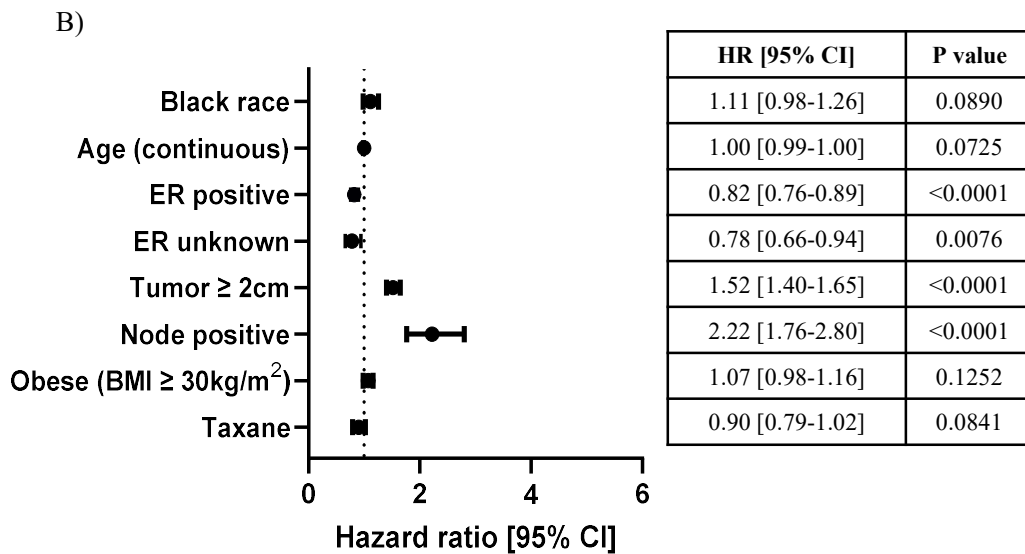
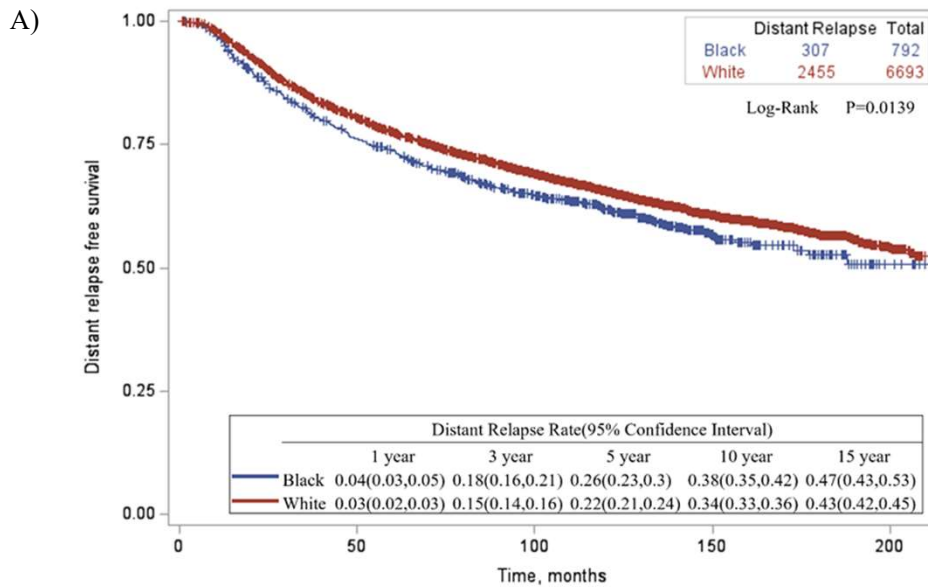
Supplement Table 1S. Patient characteristics, Adjuvant cohort

‡Pathologic tumor size and node status

*Obesity defined as BMI \geq 30kg/m²

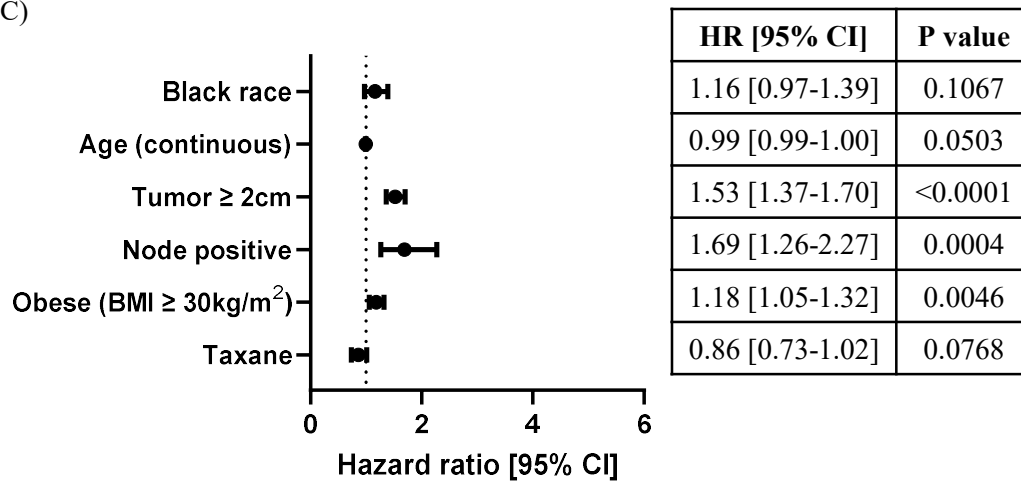
	All N=7,485	White N=6,693 (89.4%)	Black N=792 (10.6%)	P-value
Age, mean (SD)	49.5 (10.0)	49.8 (10.0)	47.5 (9.9)	<0.0001
ER status, count (%)				<0.0001
Negative	2702 (36.1)	2320 (34.7)	382 (48.2)	
Positive	4030 (53.8)	3711 (55.4)	319 (40.3)	
Unknown	753 (10.1)	662 (9.9)	91 (11.5)	
Node status, count (%)				<0.0001
Negative	1175 (15.7)	1010 (15.1)	165 (20.8)	
Positive	6241 (83.4)	5626 (84.1)	615 (77.7)	
Unknown	69 (0.9)	57 (0.9)	12 (1.5)	
Tumor size, count (%)				0.0083
<2cm	3117 (41.6)	2819 (42.1)	298 (37.6)	
\geq 2cm	4136 (55.3)	3677 (54.9)	459 (58.0)	
Unknown	232 (3.1)	197 (2.9)	35 (4.4)	
Obesity				<0.0001
No	5282 (70.6)	4868 (72.7)	414 (52.3)	
Yes	2201 (29.4)	1823 (27.2)	378 (47.7)	
Unknown	2 (0)	2 (0)	--	
Taxane, count(%)				0.1184
Yes	4457 (59.5)	3965 (59.2)	492 (62.1)	
No	3028 (40.5)	2728 (40.8)	300 (37.9)	

Supplement Figure 1S. Association between race and DRFS in adjuvant treatment cohort. A) Kaplan-Meier curve describing distant-relapse free survival in adjuvant treated cohort. Log-rank test were used to compare survival in White vs Black race patients. B) Cox-regression model adjusting for co-variables. C) Cox-regression model in ER-positive disease only. D) Cox-regression model in ER-negative disease only. Comparison groups: White race, node negative, tumor <2cm, BMI <30kg/m², no taxane. Pathologic tumor size and node status were used.

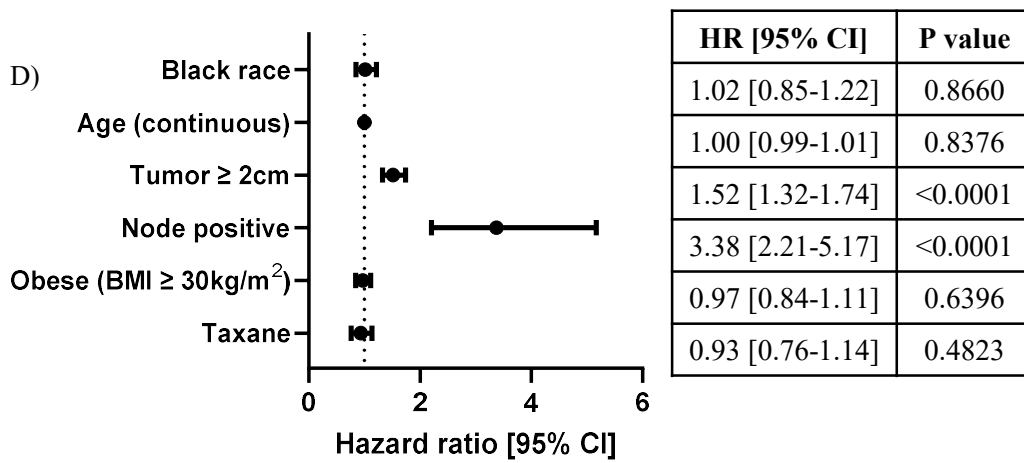


Supplement Figure 1S continued

C)



D)



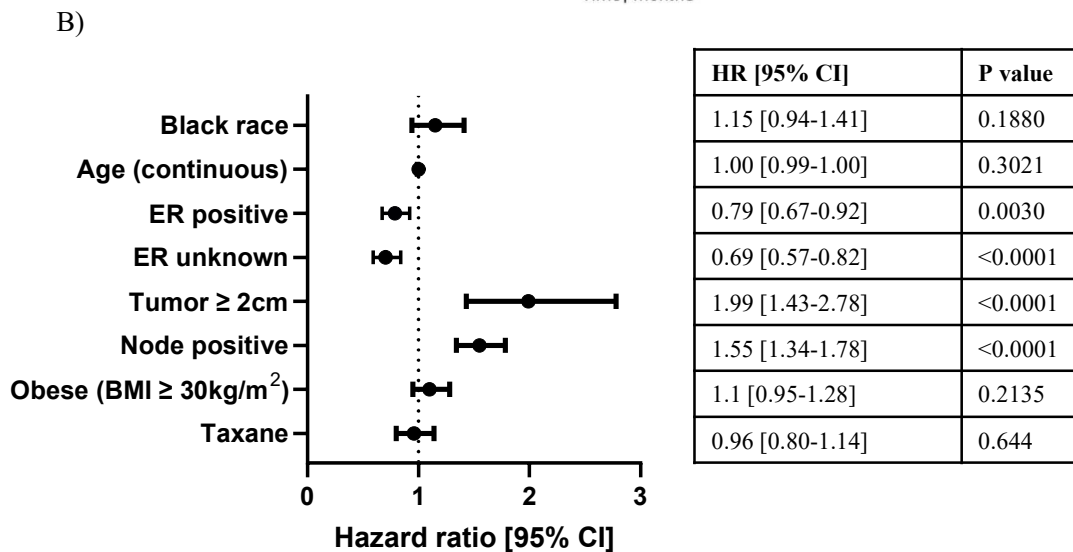
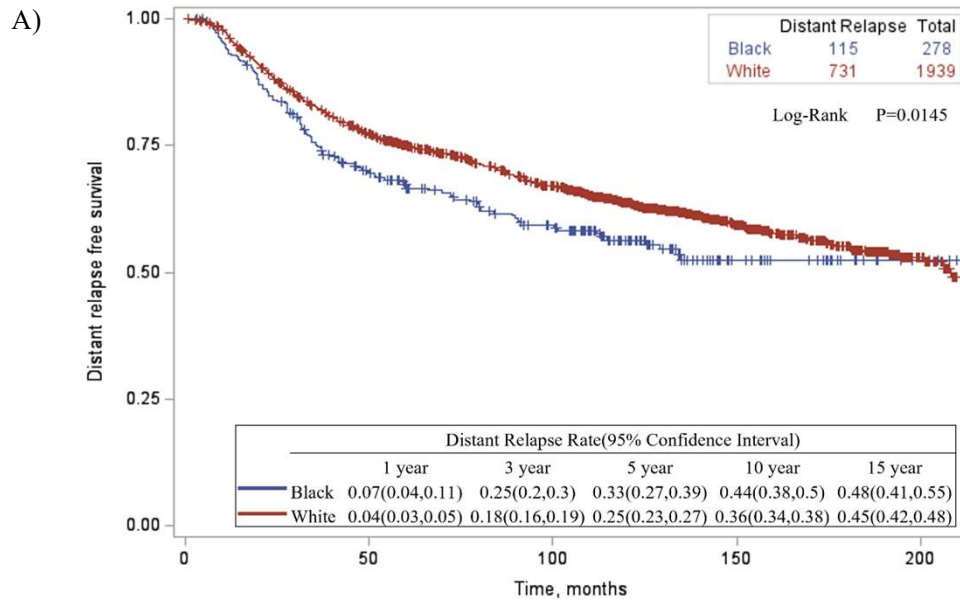
Supplement Table 2S. Patient characteristics, neoadjuvant cohort

‡Clinical (pre-treatment) tumor size and node status

*Obesity defined as BMI \geq 30kg/m²

	All (N=2,217)	White N=1,939 (87.5%)	Black N=278 (12.5%)	P-value
Age, mean (SD)	49.2 (10.0)	49.4 (10.0)	48 (10.3)	0.0231
ER status, count (%)				<0.0001
Negative	734 (33.1)	612 (31.6)	122 (43.9)	
Positive	912 (41.1)	840 (43.3)	72 (25.9)	
Unknown	571 (25.8)	487 (25.1)	84 (30.2)	
Node status, count (%)				0.0807
Negative	1528 (68.9)	1349 (69.6)	179 (64.4)	
Positive	689 (31.1)	590 (30.4)	99 (35.6)	
Tumor size, count (%)				0.0067
<2cm	148 (6.7)	140 (7.2)	8 (2.9)	
\geq 2cm	2,069 (93.3)	1799 (92.8)	270 (97.1)	
Obesity				<0.0001
No	1563 (70.5)	1425 (73.5)	138 (49.6)	
Yes	654 (29.5)	514 (26.5)	140 (50.4)	
Taxane, count(%)				0.4478
No	1346 (60.7)	1183 (61.0)	163 (58.6)	
Yes	871 (39.3)	756 (39.0)	115 (41.4)	
pCR				0.0051
No	1731 (78.1)	1533 (79.1)	198 (71.2)	
Yes	394 (17.8)	333 (17.2)	61 (21.9)	
Unknown	92 (4.1)	73 (3.8)	19 (6.8)	

Supplement Figure 2S. Association between race and DRFS in neoadjuvant treatment cohort. A) Kaplan-Meier curve describing distant-relapse free survival in neoadjuvant treated cohort. Log-rank and Wilcoxon tests were used to compare survival in White vs Black race patients. B) Cox-regression model adjusting for co-variates. Comparison groups: White race, ER-negative, node negative, tumor <2cm, BMI <30kg/m², no taxane. Clinical tumor size and node status were used.



Supplemental Table 3S: List of the eight NSABP trials and the accrual dates of each trial.

NSABP Trials	Accrual Dates
15	10/01/1984-10/14/1988
18	10/17/1988-04/30/1993
22	07/05/1989-05/31/1991
23	05/12/1991-12/31/1998
27	12/20/1995-12/29/2000
28	08/01/1995-05/22/1998
30	03/15/1999-03/31/2004
40	11/20/2006-06/30/2010

Supplemental Table 4S: Analysis of age as a continuous and categorical variable did not affect the results of the study significantly. Obesity lost significance when age was analyzed as a categorical variable.

	Age as continuous variable		Age as categorical variable	
	HR (95% CI)	P value	HR (95% CI)	P value
Race (Black vs White)	1.13 (1.01,1.25)	0.03	1.13 (1.02, 1.26)	0.0212
ER Status				
Unknown v Negative	0.73 (0.65, 0.83)	<0.0001	0.73 (0.64, 0.82)	<0.0001
Positive vs Negative	0.82 (0.76, 0.88)	<0.0001	0.81 (0.75, 0.87)	<0.0001
Node Status (Positive vs Negative)	1.71 (1.52,1.93)	<0.0001	1.72 (1.53, 1.93)	<0.0001
Tumor Size (≥ 2cm vs. ≤ 2cm)	1.54 (1.42, 1.67)	<0.0001	1.54 (1.42, 1.67)	<0.0001
Obese vs. Non-Obese	1.08 (1.00, 1.16)	0.0431	1.07 (0.99, 1.15)	0.0697
Taxane vs No Taxane	0.92 (0.83, 1.01)	0.0898	0.91 (0.83, 1.01)	0.0865
Age	0.99 (0.99, 1.00)	0.0501	1.00 (0.94, 1.08)	0.8598
NAC vs AC	1.09 (0.93, 1.29)	0.2768	1.09 (0.93, 1.29)	0.2842

Table 5S. Testing of Interaction in the entire cohort of Race and ER status.

	HR (95% CI)	P Value
Race		0.7626
Black vs White At ER=Unknown	1.39 (1.05, 1.84)	
Black vs White At ER=Positive	1.24 (1.05, 1.45)	
Black vs White At ER=Negative	0.98 (0.83, 1.14)	
ER Status		<.0001
Unknown vs Negative At Race=Black	0.99 (0.74, 1.34)	
Positive vs Negative At Race=Black	1.01 (0.82, 1.25)	
Unknown vs Negative At Race=White	0.70 (0.61, 0.80)	
Positive vs Negative At Race=White	0.79 (0.74, 0.86)	
Race*ER	-	0.0338
Node Status(Positive vs Negative)	1.72 (1.53, 1.93)	<.0001
Tumor Size(>=2cm vs <2cm)	1.54 (1.42, 1.67)	<.0001
Obese vs Non-obese	1.08 (1.01, 1.17)	0.0336
Taxane vs No Taxane	0.92 (0.83, 1.01)	0.0882
Age Unit=1	0.99 (0.99, 1.00)	0.0479
NAC vs AC	1.09 (0.93, 1.29)	0.2812

Table 6S. Testing of Interaction in the NAC cohort without pCR of Race and ER status.

	HR (95% CI)	P Value
Race		0.8284
Black vs White At ER=Unknown	1.48 (0.94, 2.35)	
Black vs White At ER=Positive	1.55 (1.06, 2.26)	
Black vs White At ER=Negative	0.96 (0.69, 1.35)	
ER Status		0.0002
Unknown vs Negative At Race=Black	1.10 (0.65, 1.85)	
Positive vs Negative At Race=Black	1.13 (0.71, 1.81)	
Unknown vs Negative At Race=White	0.71 (0.57, 0.90)	
Positive vs Negative At Race=White	0.70 (0.59, 0.84)	
Race*ER Status	-	0.1252
Node Status(Positive vs Negative)	1.61 (1.38, 1.88)	<.0001
Tumor Size(>=2cm vs <2cm)	1.93 (1.33, 2.79)	0.0005
Obese vs No obese	1.11 (0.94, 1.31)	0.2135
Taxane vs No Taxane	0.97 (0.80, 1.17)	0.7316
Age Unit=1	0.99 (0.99, 1.00)	0.1525

Appendix

Appendix 1: Summary of NSABP protocols included in study

Abbreviations: ER = estrogen receptor PR = progesterone receptor HER2 = human epidermal growth factor receptor 2 TAM = tamoxifen RT = radiation therapy

Adjuvant trials					
Trial	Selection	Stratification	Treatment	No patients	
B-15 arm 1	Total mastectomy or lumpectomy + axillary dissection + XRT Age <= 49 or age 50-59 with PR <10	Number positive nodes Type of operation Quantitative PR	Adriamycin 60mg/m ² IV + cyclophosphamide 600 mg/m ² IV q21 days x 4 cycles	Total White (%) Black (%) Other (%) Unknown (%)	767 639 (83.3%) 85 (11.1%) 30 (3.9%) 13 (1.7%)
B-18 arm 1	Patients with operable breast cancer	Age Clinical tumor size Clinical node status	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q 21 days x 4 cycles +TAM x 5yrs if >= 50 yo	Total White (%) Black (%) Other (%) Unknown (%)	751 607 (80.8) 85 (11.3) 52 (6.9) 7 (0.9)
B-22 arm 1	Operable breast cancer, histologically positive axillary nodes	Nodes Age ER Operation	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q 21 days x 4 cycles +TAM x 5yrs if >= 50 yo	Total White (%) Black (%) Other (%) Unknown (%)	755 663 (87.8) 64 (8.5) 23 (3.1) 5 (0.7)
B-23 arm 3&4	Histologically negative axillary nodes ER negative	Age Clinical tumor size Operation	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q21 days x 4 cycles +TAM or placebo	Total White (%) Black (%) Other (%) Unknown (%)	970 759 (78.2) 142 (14.6) 55 (5.7) 14 (1.4)
B-28 arm 1	Operative breast cancer Pathologically positive nodes	Number of positive nodes Tamoxifen Type of surgery	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q21 days x 4 cycles +TAM if ER/PR pos or >=50	Total White (%) Black (%) Other (%) Unknown (%)	1515 1297 (85.6) 116 (7.7) 97 (6.4) 5 (0.3)
B-28 arm 2	Operative breast cancer Pathologically positive nodes	Number of positive nodes Tamoxifen Type of surgery	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q21 days x 4 cycles Followed by paclitaxel 225 mg/m ² IV q21 days x 4 cycles +TAM if ER/PR pos or >=50	Total White (%) Black (%) Other (%) Unknown (%)	1521 1296 (85.2) 122 (8.0) 97 (6.3) 6 (0.4)
B-30 arm 1	Operable breast cancer Histologically positive nodes	Number of positive nodes Tamoxifen Surgery/RT	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q21 days x 4 cycles followed by docetaxel 100 mg/m ² q 21 days x 4 cycles +TAM if ER/PR pos	Total White (%) Black (%) Other (%) Unknown (%)	1740 1433 (82.4) 178 (10.2) 129 (7.4) 0 (0.0)
Neoadjuvant trials					
B-18 arm 2	Patients with operable breast cancer	Age Clinical tumor size Clinical nodal status	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q 21 days x 4 cycles (unless clinical progression, in which case chemo was completed post op (n=21)) +TAM x 5yrs if >= 50 yo	Total White (%) Black (%) Other (%) Unknown (%)	742 604 (81.4) 68 (9.2) 59 (8.0) 11 (1.5)
B-27 arm 1	Operable breast cancer : T1c-3N0M0, T1-3N1M0	Age Tumor size Clinical nodal status	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q21 days x 4 cycles +TAM regardless of hormone status	Total White (%) Black (%) Other (%) Unknown (%)	785 579 (73.8) 95 (12.1) 89 (11.3) 22 (2.8)
B-27 arm 2	Operable breast cancer : T1c-3N0M0, T1-3N1M0	Age Tumor size Clinical nodal status	Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q21 days x 4 cycles Followed by docetaxel 100mg/m ² q21 days x 4 cycles +TAM regardless of hormone status	Total White (%) Black (%) Other (%) Unknown (%)	783 595 (76.0) 90 (11.5) 81 (10.3) 17 (2.2)
B-40 arm 1A	HER2 neg invasive breast cancer diagnosed by core needle biopsy with palpable breast mass >= 2cm	Clinical tumor size Clinical nodal status Hormone receptor status Age	Docetaxel 100mg/m ² IV q21 days x4 cycles followed by Adriamycin 60mg/m ² IV cyclophosphamide 600 mg/m ² IV q 21 days x 4 cycles +TAM if ER/PR pos	Total White (%) Black (%) Other (%) Unknown (%)	193 161 (83.4) 25 (13.0) 3 (1.6) 4 (2.1)

Appendix 2. a) Kaplan-Meier curve describing survival in entire cohort adjusted for adjuvant vs neoadjuvant treatment, age, tumor size, node status, ER status, obesity, taxane, and protocol. B) Kaplan-Meier curve describing survival in adjuvant treated group adjusted for age, tumor size, node status, ER status, obesity, taxane, and protocol. C) Kaplan-Meier curve describing survival in the neoadjuvant treated group adjusted for age, tumor size, node status, ER status, obesity, taxane, and protocol. Adjusted Log-rank test was used to compare DRFS in Blacks vs Whites.

