

eTable 1. Bivariate associations between five behavior/dietary exposures – CBCS Phases I and II, ($n=1,808$).

	Smoking Status			Vegetable Intake (cups/week)			Fruit Intake (cups/week)			Alcohol Consumption (drinks/week)			
	Never/ Former	Current	OR ^a (95% CI)	≥14	<14	OR ^a (95% CI)	≥10.5	<10.5	OR ^a (95% CI)	None	<7	≥7	OR ^b (95% CI)
Vegetable Intake													
≥14 cups/week	719	190	1.00										
<14 cups/week	684	207	1.15 (0.92-1.43)										
Fruit Intake													
≥10.5 cups/week	685	146	1.00	598	233	1.00							
<10.5 cups/week	716	252	1.65 (1.31-2.08)	308	658	5.48 (4.48-6.72)							
Alcohol Consumption													
None	700	103	1.00	371	428	1.00	367	431	1.00				
1-6 drinks/week	561	196	2.37 (1.83-3.09)	407	349	0.74 (0.61-0.91)	340	414	1.04 (0.85-1.27)				
≥7 drinks/week	141	97	4.68 (3.36-6.51)	128	108	0.73 (0.54-0.98)	121	117	0.82 (0.62-1.10)				
Physical Activity													
5-7 times/week	338	74	1.00	226	185	1.00	214	196	1.00	164	185	59	1.00
1-4 times/week	413	84	0.93 (0.66-1.31)	267	228	1.04 (0.80-1.36)	249	247	1.08 (0.83-1.41)	209	215	72	1.06 (0.83-1.36)
<1 time/week	654	237	1.66 (1.24-2.22)	411	475	1.41 (1.12-1.79)	362	523	1.58 (1.25-2.00)	424	356	106	1.33 (1.07-1.67)

^aOdds ratios (ORs) and 95% confidence intervals (CIs) from bivariate logistic regression models.

^bORs and 95% CI from bivariate ordinal logistic regression model. Score test for the proportional odds assumption: $\chi^2=0.30$, $df=2$, $P=0.86$

eTable 2. Results from the latent class analysis of five behavior/dietary exposures – CBCS Phases I and II, ($n=1,808$).

# of LCs	Log Likelihood	Best H_0 Replicated	# of Parameters	AIC	BIC	SSABIC	LMR LRT P	Entropy
1	-7099.352	Yes	7	14212.705	14251.205	14228.966	N.A.	N.A.
2	-6930.318	Yes	15	13890.635	13973.135	13925.481	<0.001	0.605
3	-6879.435	Yes	23	13804.871	13931.370	13858.300	<0.001	0.834
4	-6863.992	Yes	31	13789.985	13960.484	13861.999	0.022	0.750

AIC=Akaike Information Criterion; BIC=Bayesian Information Criterion; LC=Latent Class; LMR LRT= Lo-Mendell-Rubin Adjusted Likelihood Ratio Test; SSAIBC=Sample-size adjusted BIC

eTable 3. Hazard Ratios (HRs) and 95% confidence intervals (CIs) for behavior/dietary exposures and 5-year mortality following breast cancer – CBCS Phases I and II (*n*=1,808).

	Deaths	Censored	5-Year All-Cause Mortality (<i>n</i> deaths=309)		
			Model 1 ^a	Model 2 ^b	Model 3 ^c
			HR (95% CI)	HR (95% CI)	HR (95% CI)
Smoking status					
Never/Former	232	1,178	1.00	1.00	1.00
Current	77	321	1.22 (0.94-1.58)	1.14 (0.88-1.48)	1.15 (0.87-1.52)
Vegetable Intake					
≥14 cups/week	143	766	1.00	1.00	1.00
<14 cups/week	164	727	1.17 (0.93-1.46)	1.10 (0.88-1.38)	1.11 (0.87-1.41)
Fruit Intake					
≥10.5 cups/week	139	692	1.00	1.00	1.00
<10.5 cups/week	168	800	1.08 (0.86-1.35)	1.04 (0.83-1.30)	1.02 (0.80-1.31)
Alcohol Consumption					
None	167	636	1.00	1.00	1.00
1-6 drinks/week	108	649	0.78 (0.61-1.00)	0.84 (0.65-1.08)	0.91 (0.70-1.20)
≥7 drinks/week	32	206	0.70 (0.48-1.02)	0.71 (0.48-1.03)	0.81 (0.54-1.22)
Physical Activity					
5-7 times/week	66	346	1.00	1.00	1.00
1-4 times/week	76	421	0.96 (0.69-1.34)	1.00 (0.72-1.39)	1.10 (0.77-1.56)
<1 time/week	167	724	1.15 (0.87-1.54)	1.09 (0.82-1.46)	1.03 (0.75-1.40)
Latent Classes					
HBD	149	767	1.00	1.00	1.00
HB-UD	113	511	1.14 (0.89-1.45)	1.06 (0.83-1.36)	1.09 (0.84-1.43)
UBD	47	221	1.11 (0.80-1.54)	1.03 (0.74-1.43)	1.11 (0.78-1.58)
HB-UD/UD	160	732	1.13 (0.90-1.41)	1.05 (0.84-1.32)	1.10 (0.86-1.40)
5-Year Breast Cancer-Specific Mortality (<i>n</i> deaths=248)					
	BC Deaths	Censored	Model 1 ^a	Model 2 ^b	Model 3 ^c
			csHR (95% CI)	csHR (95% CI)	csHR (95% CI)
Smoking status					
Never/former	189	1,221	1.00	1.00	1.00
Current	59	339	1.04 (0.77-1.39)	1.00 (0.74-1.34)	1.03 (0.75-1.42)
Vegetable Intake					
≥14 cups/week	116	793	1.00	1.00	1.00
<14 cups/week	132	759	1.09 (0.85-1.40)	1.05 (0.82-1.35)	1.01 (0.77-1.33)
Fruit Intake					
≥10.5 cups/week	109	722	1.00	1.00	1.00
<10.5 cups/week	139	829	1.06 (0.82-1.36)	1.03 (0.80-1.32)	1.00 (0.76-1.32)
Alcohol Consumption					
None	134	669	1.00	1.00	1.00
1-6 drinks/week	85	672	0.61 (0.46-0.81)	0.63 (0.47-0.84)	0.71 (0.52-0.97)
≥7 drinks/week	27	211	0.61 (0.40-0.93)	0.61 (0.40-0.93)	0.77 (0.49-1.19)
Physical Activity					
5-7 times/week	48	364	1.00	1.00	1.00
1-4 times/week	63	434	1.03 (0.71-1.50)	1.05 (0.72-1.53)	1.13 (0.76-1.68)
<1 time/week	137	754	1.19 (0.86-1.66)	1.15 (0.83-1.61)	1.03 (0.72-1.46)
Latent Classes					
HBD	123	793	1.00	1.00	1.00
HB-UD	91	533	1.01 (0.77-1.33)	0.96 (0.73-1.27)	0.96 (0.71-1.29)
UBD	34	234	0.84 (0.57-1.23)	0.80 (0.54-1.17)	0.89 (0.59-1.34)
HB-UD/UD	125	767	0.96 (0.74-1.23)	0.91 (0.71-1.18)	0.94 (0.71-1.23)

Carolina Breast Cancer Study (CBCS) participants were diagnosed with invasive breast cancer from 1993-1996 (Phase I) and 1996-2000 (Phase II) and followed-up for vital status through December 31, 2011.

HBD=Healthy Behavior and Diet; HB-UD=Healthy Behavior and Unhealthy Diet; UBD=Unhealthy Behavior and Diet

^aAdjusted for age at diagnosis (≥50 vs. <50 years), race (black vs. white), and study phase (Phase I vs. Phase II).

^bAdjusted for variables in Model 1 and education (<High school, High school/GED, and ≥College), and marital status (unmarried vs. married).

^cAdjusted for variables in Model 2 and tumor size (>2.0 vs. ≤2.0 cm) and estrogen receptor status (ER⁺ vs. ER⁻).

eTable 4. Association between behavior/dietary exposures and 13-year conditional all-cause mortality following breast cancer, stratified by race and age at diagnosis – CBCS Phases I and II ($n=1,499$).

	13-Year Conditional All-Cause Mortality			$P_{\text{Interaction}}$
	Deaths ($n=408$)	Censored ($n=1,091$)	HR (95% CI) ^a	
Race				0.98
White				
HBD	101	373	1.00	
HB-UD/UBD	103	301	1.18 (0.88-1.59)	
Black				
HBD	89	204	1.00	
HB-UD/UBD	115	213	1.22 (0.90-1.64)	
Age at diagnosis				0.45
<50 years				
HBD	60	301	1.00	
HB-UD/UBD	91	343	1.07 (0.76-1.52)	
≥50 years				
HBD	130	276	1.00	
HB-UD/UBD	127	171	1.38 (1.06-1.79)	

Carolina Breast Cancer Study (CBCS) participants were diagnosed with invasive breast cancer from 1993-1996 (Phase I) and 1996-2000 (Phase II) and followed-up for vital status through December 31, 2011. Conditional analyses are among women who survived >5 years.

ER=Estrogen Receptor; HBD=Healthy Behavior and Diet; HB-UD=Healthy Behavior and Unhealthy Diet; UBD=Unhealthy Behavior and Diet

^aAdjusted for age at diagnosis (≥50 vs. <50 years), race (black vs. white), study phase (Phase I vs. Phase II), education (<High school, High school/GED, and ≥College), marital status (unmarried vs. married), tumor size (>2.0 vs. ≤2.0 cm), and ER status (ER⁺ vs. ER⁻), as appropriate.

eTable 5. Hazard Ratios (HRs) and 95% confidence intervals (CIs) from hazard and subdistribution hazard models for behavior/dietary exposures and 13-year conditional breast cancer-specific mortality – CBCS Phases I and II (*n*=1,499).

	BC Deaths (<i>n</i> =179)	Non-BC Deaths (<i>n</i> =229)	Censored (<i>n</i> =1,091)	13-Year Conditional Hazard Model for Breast Cancer Mortality			13-Year Conditional Subdistribution Hazard Model for Breast Cancer Mortality		
				Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 1 ^a	Model 2 ^b	Model 3 ^c
				csHR (95% CI)	csHR (95% CI)	csHR (95% CI)	sHR (95% CI)	sHR (95% CI)	sHR (95% CI)
Smoking status									
Never/former	127	169	882	1.00	1.00	1.00	1.00	1.00	1.00
Current	52	60	209	1.46 (1.05-2.01)	1.41 (1.02-1.95)	1.44 (1.02-2.02)	1.42 (1.03-1.96)	1.38 (1.00-1.92)	1.43 (1.01-2.01)
Vegetable Intake									
≥14 cups/week	85	108	573	1.00	1.00	1.00	1.00	1.00	1.00
<14 cups/week	93	119	515	1.13 (0.84-1.51)	1.09 (0.81-1.46)	0.99 (0.73-1.34)	1.09 (0.81-1.46)	1.05 (0.78-1.42)	0.95 (0.70-1.30)
Fruit Intake									
≥10.5 cups/week	81	101	510	1.00	1.00	1.00	1.00	1.00	1.00
<10.5 cups/week	97	124	579	1.01 (0.75-1.36)	0.98 (0.73-1.32)	1.02 (0.75-1.38)	1.00 (0.74-1.35)	0.98 (0.73-1.32)	1.01 (0.74-1.38)
Alcohol Consumption									
None	80	125	431	1.00	1.00	1.00	1.00	1.00	1.00
1-6 drinks/week	74	68	507	0.80 (0.58-1.11)	0.83 (0.59-1.15)	0.83 (0.59-1.17)	0.83 (0.60-1.15)	0.86 (0.62-1.20)	0.85 (0.60-1.21)
≥7 drinks/week	21	34	151	0.75 (0.46-1.22)	0.76 (0.47-1.24)	0.79 (0.48-1.32)	0.77 (0.47-1.26)	0.78 (0.48-1.28)	0.84 (0.50-1.41)
Physical Activity									
5-7 times/week	40	56	250	1.00	1.00	1.00	1.00	1.00	1.00
1-4 times/week	39	51	331	0.72 (0.46-1.12)	0.74 (0.47-1.14)	0.80 (0.51-1.27)	0.74 (0.48-1.15)	0.75 (0.48-1.17)	0.81 (0.51-1.29)
<1 time/week	98	121	505	1.09 (0.76-1.58)	1.06 (0.73-1.54)	1.05 (0.71-1.54)	1.08 (0.74-1.56)	1.05 (0.72-1.52)	1.03 (0.70-1.52)
Latent Classes									
HBD	81	109	577	1.00	1.00	1.00	1.00	1.00	1.00
HB-UD	66	76	369	1.17 (0.85-1.62)	1.12 (0.80-1.55)	1.06 (0.76-1.49)	1.14 (0.82-1.58)	1.09 (0.79-1.52)	1.04 (0.74-1.48)
UBD	32	44	145	1.26 (0.83-1.89)	1.20 (0.79-1.81)	1.22 (0.79-1.87)	1.21 (0.80-1.83)	1.17 (0.77-1.77)	1.20 (0.77-1.85)
HB-UD/UD	98	120	514	1.20 (0.89-1.61)	1.14 (0.85-1.54)	1.11 (0.81-1.51)	1.16 (0.86-1.56)	1.12 (0.83-1.51)	1.09 (0.79-1.49)

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^aAdjusted for age at diagnosis (≥50 vs <50 years), race (black vs. white), study phase (Phase I vs. Phase II).

^bAdjusted for variables in Model 1 and education (<High school, High school/GED, and ≥College), and marital status (unmarried vs. married).

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eTable 6. Hazard Ratios (HRs) and 95% confidence intervals (CIs) from hazard and subdistribution hazard models for behavior/dietary exposures and 13-year conditional breast cancer-specific mortality, stratified by race, age at diagnosis, and estrogen receptor status – CBCS Phases I and II ($n=1,499$).

	BC Deaths ($n=179$)	Non-BC Deaths ($n=229$)	Censored ($n=1,091$)	13-Year Conditional Hazard Model for BC Mortality		13-Year Conditional Subdistribution Hazard Model for BC Mortality	
				csHR (95% CI) ^a	$P_{\text{Interaction}}$	sHR (95% CI) ^a	$P_{\text{Interaction}}$
<u>Race</u>					0.49		0.47
White							
HBD	40	61	373	1.00		1.00	
HB-UD/UBD	48	55	301	1.17 (0.75-1.84)		1.19 (0.76-1.88)	
Black							
HBD	41	48	204	1.00		1.00	
HB-UD/UBD	50	65	213	1.02 (0.67-1.57)		0.98 (0.63-1.52)	
<u>Age at diagnosis</u>					0.37		0.39
<50 years							
HBD	47	13	301	1.00		1.00	
HB-UD/UBD	62	29	343	1.00 (0.67-1.49)		1.01 (0.67-1.52)	
≥50 years							
HBD	34	96	276	1.00		1.00	
HB-UD/UBD	36	91	171	1.35 (0.83-2.20)		1.24 (0.76-2.03)	
<u>ER Status</u>					0.20		0.19
ER⁻							
HBD	20	32	228	1.00		1.00	
HB-UD/UBD	35	36	203	1.52 (0.86-2.67)		1.49 (0.84-2.63)	
ER⁺							
HBD	59	67	317	1.00		1.00	
HB-UD/UBD	59	74	271	1.01 (0.69-1.47)		0.98 (0.66-1.43)	

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