Supplementary Online Content

- Zhong VW, Van Horn L, Greenland P, et al. Associations of processed meat, unprocessed red meat, poultry, or fish intake with incident cardiovascular disease and all-cause mortality. *JAMA Intern Med.* Published online February 3, 2020. doi:10.1001/jamainternmed.2019.6969
- **eTable 1.** Partial Correlation Coefficients Between the 4 Foods and Dietary and Other Lifestyle Factors
- eTable 2. Key Characteristics Between the Included and Excluded Participants
- **eTable 3.** Imputation Analysis for the Associations Between the 4 Foods and Incident CVD and All-Cause Mortality (n=34504)
- **eTable 4.** Associations Between the 4 Foods and Incident CVD and All-Cause Mortality After Excluding Early Events and Arbitrary Truncations
- **eTable 5.** Associations Between the 4 Foods and Incident CVD and All-Cause Mortality After Excluding One Cohort
- **eTable 6.** Associations Between Quintiles of the Intake for Each of the 4 Foods and Incident CVD and All-Cause Mortality
- **eTable 7.** Energy Density Models for the Associations Between the 4 Foods and Incident CVD and All-Cause Mortality
- **eTable 8.** Associations Between the 4 Foods and Incident CVD Using Subdistribution Hazard Models
- **eTable 9.** Associations of Fatty Fish or Nonfatty Fish Intake With Incident CVD and All-Cause Mortality
- **eFigure 1.** Association Between Processed Meat Intake (2 vs 0 Servings/Week) and Incident CVD Among Different Subgroups
- **eFigure 2.** Association Between Each Additional 2 Servings of Unprocessed Red Meat Consumed per Week and Incident CVD Among Different Subgroups
- **eFigure 3.** Association Between Each Additional 2 Servings of Poultry Consumed per Week and Incident CVD Among Different Subgroups
- **eFigure 4.** Association Between Each Additional 2 Servings of Fish Consumed per Week and Incident CVD Among Different Subgroups
- **eFigure 5.** Association Between Each Additional 2 Servings of Processed Meat Consumed per Week and All-Cause Mortality Among Different Subgroups

- **eFigure 6.** Association Between Each Additional 2 Servings of Unprocessed Red Meat Consumed per Week and All-Cause Mortality Among Different Subgroups
- **eFigure 7.** Association Between Each Additional 2 Servings of Poultry Consumed per Week and All-Cause Mortality Among Different Subgroups
- **eFigure 8.** Association Between Each Additional 2 Servings of Fish Consumed per Week and All-Cause Mortality Among Different Subgroups

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

eTable 1. Partial correlation coefficients between the 4 foods and dietary and other lifestyle factors

	Processed	meat	Unprocessed red meat		Poultry		Fish	
	Coefficienta	Р	Coefficienta	P	Coefficienta	Р	Coefficienta	P
Foods and diet quality								
Processed meat			0.13	<.001	-0.09	<.001	-0.07	<.001
Unprocessed red meat	0.13	<.001			0.05	<.001	-0.05	<.001
Poultry	-0.09	<.001	0.05	<.001			0.20	<.001
Fish	-0.07	<.001	-0.05	<.001	0.20	<.001		
Eggs	0.18	<.001	0.003	.66	-0.04	<.001	-0.04	<.001
Low-fat dairy products	-0.13	<.001	-0.14	<.001	0.006	.30	0.04	<.001
High-fat dairy products	-0.01	.19	-0.06	<.001	-0.08	<.001	-0.08	<.001
Whole grains	-0.12	<.001	-0.16	<.001	0.02	<.001	0.06	<.001
Refined grains	0.03	<.001	-0.001	.86	-0.10	<.001	-0.14	<.001
Fruits	-0.15	<.001	-0.17	<.001	0.05	<.001	0.13	<.001
Vegetables excluding potatoes	-0.11	<.001	-0.05	<.001	0.16	<.001	0.24	<.001
aHEI-2010 score ^b	-0.20	< 0.0001	-0.18	< 0.0001	0.18	< 0.0001	0.34	< 0.0001
Nutrients								
Dietary cholesterol	0.23	<.001	0.23	<.001	0.14	<.001	0.10	<.001
Saturated fat	0.28	<.001	0.27	<.001	-0.10	<.001	-0.16	<.001
Unsaturated fat	0.32	<.001	0.33	<.001	0.03	<.001	-0.04	<.001
Trans fat	0.23	<.001	0.53	<.001	0.07	<.001	0.03	<.001
Animal protein	0.05	<.001	0.43	<.001	0.46	<.001	0.41	<.001
Fiber	-0.16	<.001	-0.16	<.001	0.12	<.001	0.18	<.001
Sodium	0.15	<.001	0.006	.32	0.05	<.001	0.05	<.001
Iron	-0.03	<.001	0.001	.90	0.05	<.001	0.05	<.001
Other lifestyle factors								
Current smoking	0.09	<.001	0.03	<.001	-0.08	<.001	-0.04	<.001
Smoking pack years	0.08	<.001	0.03	<.001	-0.06	<.001	-0.02	.001
Alcohol	-0.02	.001	-0.02	<.001	-0.04	<.001	-0.01	.26
Physical acitvity level	-0.06	<.001	-0.07	<.001	0.02	<.001	0.07	<.001

^a Adjusted for cohort, total energy intake, age, sex, and race and ethnicity.

^b aHEI, alternate healthy eating index. Unprocessed red meat and processed meat were excluded from the calculation.

eTable 2. Key characteristics between the included and excluded participants

	Included	Excluded*
	(n=29 682)	(n=4822)
Age, mean (SD), y	53.7 (15.7)	59.3 (15.4)
Sex, No. (%)		
Male	13 168 (44.4)	2193 (45.5)
Female	16 514 (55.6)	2629 (54.5)
Race and ethnicity, No. (%)		
Non-Hispanic White	20 581 (69.3)	2898 (60.1)
Non-Hispanic Black	7004 (23.6)	1698 (35.2)
Hispanic	1348 (4.5)	141 (2.9)
Chinese	731 (2.5)	71 (1.5)
Other	18 (0.1)	14 (0.3)
Some college or more, No. (%)	15 680 (52.8)	1994 (43.1)
Current smoker, No. (%)	6057 (20.4)	1178 (24.4)
BMI, mean (SD), kg/m ²	27.0 (5.2)	27.5 (5.3)
Diabetes, No. (%)	2570 (8.7)	546 (11.6)
SBP, mean (SD), mm Hg	123.0 (20.1)	129.5 (22.4)
Total cholesterol, mean (SD), mg/dL	203.4 (40.5)	205.2 (42.4)
Use of anti-hypertensive drugs, No. (%)	7613 (25.6)	1523 (31.8)
Use of lipid-lowering drugs, No. (%)	1659 (5.6)	272 (5.8)

BMI, body mass index; SBP, systolic blood pressure; SD, standard deviation.

^{*}A combination of 602 participants who had extreme energy intake (<500 or >6000 kcal/day) and 4220 participants who had missing data for one or more study variables.

eTable 3. Imputation analysis for the associations between the 4 foods and incident CVD and all-cause mortality (n=34 504)

	Hazard ratio (95% CI) ^a	P
Processed meat		
Incident CVD	1.07 (1.03-1.10)	<.001
All-cause mortality	1.03 (1.02-1.04)	<.001
Unprocessed red meat		
Incident CVD	1.03 (1.01-1.05)	<.001
All-cause mortality	1.03 (1.01-1.04)	.003
Poultry		
Incident CVD	1.03 (1.00-1.05)	.03
All-cause mortality	0.99 (0.97-1.01)	.30
Fish		
Incident CVD	1.01 (0.99-1.02)	.54
All-cause mortality	0.99 (0.97-1.01)	.18
0 T 1 1 1 1 1 1 1	(07775) : 1 1 1 1 0 1 1 1	

a Incident cardiovascular disease (CVD) included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Cohort-stratified cause-specific hazard models for incident CVD and cohort-stratified standard proportional hazards models for all-cause mortality were applied. The models were further stratified by age groups, sex, and race and ethnicity for the association between processed meat intake and all-cause mortality, to satisfy proportional hazards assumption. The models were adjusted for age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity *z* score, alcohol intake (gram), and hormone therapy (y/n). The association between processed meat intake and incident CVD was non-monotonic (*P* for non-linearity =.006) and thus a quadratic term for processed meat intake was added in addition to the original linear term. The interpretation was based on each additional 2 servings of the food consumed per week for all the associations except for the association between processed meat intake and incident CVD where the comparison was 2 vs 0 servings per week specifically. Ten imputed data sets were used.

eTable 4. Associations between the 4 foods and incident CVD and all-cause mortality after excluding early events and arbitrary truncations

	Excluding events within		Excluding events within		Censoring at 10-year		Censoring at 20-year follow	
	first 2 year	first 2 years		first 5 years		follow up		
	Hazard ratio	P	Hazard ratio	P	Hazard ratio	P	Hazard ratio	P
	(95% CI) ^a		(95% CI) ^a		(95% CI) ^a		(95% CI) ^a	
Processed meat								_
Incident CVD	1.06 (1.02-1.10)	.001	1.07 (1.03-1.11)	.001	1.08 (1.02-1.14)	.004	1.08 (1.04-1.12)	<.001
All-cause mortality	1.03 (1.02-1.05)	<.001	1.03 (1.02-1.05)	<.001	1.04 (1.01-1.07)	.003	1.03 (1.01-1.05)	<.001
Unprocessed red meat								
Incident CVD	1.04 (1.01-1.06)	.003	1.03 (1.00-1.05)	.04	1.03 (1.00-1.07)	.05	1.03 (1.01-1.06)	.01
All-cause mortality	1.02 (1.00-1.04)	.02	1.02 (1.00-1.05)	.03	1.04 (1.01-1.07)	.02	1.03 (1.01-1.05)	.006
Poultry								
Incident CVD	1.04 (1.02-1.07)	.002	1.04 (1.01-1.07)	.007	1.04 (1.00-1.08)	.07	1.03 (1.00-1.06)	.03
All-cause mortality	0.99 (0.97-1.02)	.52	0.99 (0.96-1.01)	.36	1.01 (0.97-1.05)	.71	1.00 (0.97-1.02)	.78
Fish								
Incident CVD	1.00 (0.98-1.02)	.83	1.00 (0.98-1.02)	.99	1.00 (0.97-1.03)	.97	1.01 (0.99-1.03)	.52
All-cause mortality	0.99 (0.97-1.01)	.35	0.99 (0.97-1.01)	.39	0.95 (0.92-0.98)	.003	0.98 (0.96-1.00)	.09

a Incident cardiovascular disease (CVD) included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Cohort-stratified cause-specific hazard models for incident CVD and cohort-stratified standard proportional hazards models for all-cause mortality were applied. The models were further stratified by age groups, sex, and race and ethnicity for the association between processed meat intake and all-cause mortality and further stratified by sex for the association between unprocessed red meat intake and all-cause mortality, to satisfy proportional hazards assumption. The models were adjusted for age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity *z* score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, and 3 of the 4 foods (processed meat, unprocessed red meat, poultry, and fish). The association between processed meat intake and incident CVD was non-monotonic (*P* for non-linearity =.006) and thus a quadratic term for processed meat intake was added in addition to the original linear term. The interpretation was based on each additional 2 servings of the food consumed per week for all the associations except for the association between processed meat intake and incident CVD where the comparison was 2 vs 0 servings per week specifically.

eTable 5. Associations between the 4 foods and incident CVD and all-cause mortality, after excluding one cohort

		Incident CV	VD	All-cause mortality		
Cohort dropped	Remaining sample size	HR (95% CI) ^a	P	HR (95% CI) ^a	P	
Processed meat						
ARIC	17681	1.05 (1.00-1.11)	.05	1.03 (1.01-1.06)	.004	
CARDIA	24950	1.07 (1.03-1.11)	<.001	1.04 (1.02-1.05)	<.001	
CHS	26019	1.09 (1.05-1.14)	<.001	1.03 (1.01-1.05)	.003	
FHS	29074	1.07 (1.03-1.11)	<.001	1.03 (1.02-1.05)	<.001	
FOS	27122	1.06 (1.03-1.10)	<.001	1.03 (1.02-1.05)	<.001	
MESA	23564	1.07 (1.04-1.12)	<.001	1.03 (1.02-1.05)	<.001	
Unprocessed red meat						
ARIC	17681	1.02 (0.99-1.05)	.30	1.02 (1.00-1.05)	.11	
CARDIA	24950	1.03 (1.01-1.06)	.01	1.03 (1.00-1.05)	.02	
CHS	26019	1.04 (1.02-1.07)	.001	1.03 (1.00-1.05)	.02	
FHS	29074	1.03 (1.01-1.06)	.003	1.03 (1.01-1.05)	.01	
FOS	27122	1.03 (1.01-1.05)	.009	1.03 (1.01-1.05)	.005	
MESA	23564	1.04 (1.02-1.07)	<.001	1.03 (1.01-1.06)	.001	
Poultry						
ARIC	17681	1.03 (0.99-1.07)	.11	0.99 (0.96-1.02)	.48	
CARDIA	24950	1.04 (1.01-1.07)	.005	0.99 (0.97-1.02)	.46	
CHS	26019	1.04 (1.00-1.07)	.02	0.99 (0.96-1.02)	.51	
FHS	29074	1.03 (1.01-1.06)	.02	0.99 (0.97-1.02)	.59	
FOS	27122	1.03 (1.00-1.06)	.02	0.99 (0.97-1.01)	.38	
MESA	23564	1.05 (1.02-1.08)	.001	1.00 (0.98-1.03)	.92	
Fish						
ARIC	17681	1.00 (0.97-1.02)	.79	0.98 (0.96-1.00)	.11	
CARDIA	24950	1.00 (0.98-1.02)	.94	0.99 (0.97-1.01)	.18	
CHS	26019	1.01 (0.98-1.04)	.34	0.99 (0.97-1.02)	.64	
FHS	29074	1.01 (0.98-1.03)	.59	0.99 (0.97-1.01)	.20	
FOS	27122	1.00 (0.98-1.02)	.83	0.99 (0.97-1.01)	.16	
MESA	23564	1.00 (0.98-1.02)	.99	0.99 (0.97-1.01)	.25	

ARIC, Atherosclerosis Risk in Communities; CARDIA, Coronary Artery Risk Development in Young Adults; CHS, Cardiovascular Health Study; CI, confidence interval; CVD, cardiovascular disease; FHS, Framingham Heart Study; FOS, Framingham Offspring Study; HR, hazard ratio; MESA, Multi-Ethnic Study of Atherosclerosis.

a There were 6963 incident CVD events and 8875 all-cause deaths in the total study sample (n=29 682). Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Cohort-stratified cause-specific hazard models for incident CVD and cohort-stratified standard proportional hazards models for all-cause mortality were applied. The models were further stratified by age groups, sex, and race and ethnicity for the association between processed meat intake and all-cause mortality and further stratified by sex for the association between unprocessed red meat intake and all-cause mortality, to satisfy proportional hazards assumption. The models were adjusted for age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<hi>high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, and 3 of the 4 foods (processed meat, unprocessed red meat, poultry, and fish). The association between processed meat intake and incident CVD was non-monotonic (P for non-linearity =.006) and thus a quadratic term for processed meat intake was added in addition to the original linear term. The interpretation was based on each additional 2 servings of the food consumed per week for all the associations except for the association between processed meat intake and incident CVD where the comparison was 2 vs 0 servings per week specifically.

eTable 6. Associations between quintiles of the intake for each of the 4 foods and incident CVD and all-cause mortality^a

	Hazard ratio (95% confidence interval)					
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	P for trend
Processed meat ^b	n=5936	n=5937	n=5937	n=5936	n=5936	
Incident CVD						
Model 1 ^c	1.00 (Ref)	1.06 (0.97-1.15)	1.10 (1.01-1.19)	1.20 (1.10-1.30)	1.29 (1.19-1.41)	<.001
Model 2 ^d	1.00 (Ref)	1.03 (0.94-1.12)	1.04 (0.96-1.14)	1.13 (1.04-1.22)	1.16 (1.07-1.26)	<.001
Model 3 ^e	1.00 (Ref)	1.03 (0.95-1.13)	1.05 (0.96-1.15)	1.13 (1.04-1.23)	1.16 (1.06-1.27)	<.001
All-cause mortality						
Model 1 ^c	1.00 (Ref)	1.00 (0.93-1.08)	1.06 (0.99-1.15)	1.12 (1.04-1.20)	1.29 (1.20-1.39)	<.001
Model 2 ^d	1.00 (Ref)	0.96 (0.89-1.04)	1.00 (0.93-1.08)	1.03 (0.95-1.11)	1.13 (1.05-1.22)	<.001
Model 3 ^e	1.00 (Ref)	0.96 (0.89-1.03)	0.98 (0.91-1.06)	1.01 (0.93-1.09)	1.09 (1.01-1.18)	<.001
Unprocessed red meat ^b	n=5936	n=5937	n=5936	n=5936	n=5937	
Incident CVD						
Model 1 ^c	1.00 (Ref)	1.08 (1.00-1.16)	1.12 (1.04-1.21)	1.19 (1.11-1.29)	1.17 (1.09-1.26)	<.001
Model 2 ^d	1.00 (Ref)	1.06 (0.98-1.14)	1.08 (1.00-1.16)	1.14 (1.06-1.23)	1.11 (1.03-1.20)	.003
Model 3 ^e	1.00 (Ref)	1.05 (0.97-1.14)	1.07 (0.99-1.15)	1.13 (1.05-1.22)	1.11 (1.02-1.20)	.01
All-cause mortality						
Model 1 ^c	1.00 (Ref)	1.09 (1.02-1.16)	1.10 (1.03-1.18)	1.14 (1.07-1.22)	1.20 (1.13-1.29)	<.001
Model 2 ^d	1.00 (Ref)	1.07 (1.00-1.14)	1.05 (0.98-1.13)	1.08 (1.01-1.16)	1.13 (1.06-1.21)	<.001
Model 3 ^e	1.00 (Ref)	1.06 (0.99-1.13)	1.04 (0.97-1.12)	1.07 (1.00-1.15)	1.13 (1.05-1.21)	.001
Poultry ^b	n=5937	n=5933	n=5939	n=5937	n=5936	
Incident CVD						
Model 1 ^c	1.00 (Ref)	0.94 (0.87-1.01)	0.98 (0.91-1.06)	0.93 (0.86-1.00)	0.98 (0.91-1.06)	.90
Model 2 ^d	1.00 (Ref)	0.97 (0.90-1.05)	1.01 (0.93-1.09)	0.98 (0.91-1.06)	1.06 (0.98-1.15)	.06
Model 3 ^e	1.00 (Ref)	0.97 (0.90-1.05)	1.01 (0.94-1.09)	0.99 (0.92-1.07)	1.09 (1.00-1.18)	.02
All-cause mortality						
Model 1 ^c	1.00 (Ref)	0.87 (0.81-0.93)	0.88 (0.82-0.94)	0.82 (0.77-0.88)	0.85 (0.80-0.91)	<.001
Model 2 ^d	1.00 (Ref)	0.92 (0.86-0.98)	0.91 (0.85-0.97)	0.88 (0.83-0.94)	0.95 (0.89-1.02)	.34
Model 3 ^e	1.00 (Ref)	0.92 (0.86-0.98)	0.92 (0.86-0.98)	0.89 (0.84-0.96)	0.97 (0.91-1.04)	.83
Fish ^b	n=5936	n=5937	n=5936	n=5935	n=5938	
Incident CVD						
Model 1 ^c	1.00 (Ref)	1.02 (0.94-1.10)	0.92 (0.85-1.00)	0.98 (0.90-1.06)	0.97 (0.90-1.06)	.64
Model 2 ^d	1.00 (Ref)	1.04 (0.96-1.13)	0.97 (0.89-1.05)	1.03 (0.95-1.11)	1.03 (0.95-1.12)	.50
Model 3 ^e	1.00 (Ref)	1.04 (0.96-1.13)	0.97 (0.89-1.05)	1.03 (0.95-1.12)	1.04 (0.96-1.13)	.31
All-cause mortality						

Hazard ratio (95% confidence interval)							
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	- <i>P</i> for trend	
Model 1 ^c	1.00 (Ref)	0.95 (0.89-1.02)	0.88 (0.82-0.95)	0.88 (0.82-0.95)	0.88 (0.82-0.94)	.001	
Model 2 ^d	1.00 (Ref)	0.98 (0.91-1.05)	0.93 (0.87-1.00)	0.93 (0.87-1.00)	0.93 (0.87-1.00)	.09	
Model 3 ^e	1.00 (Ref)	0.97 (0.90-1.04)	0.93 (0.87-1.00)	0.94 (0.87-1.01)	0.95 (0.88-1.02)	.30	

^a There were 6963 incident cardiovascular disease (CVD) events and 8875 all-cause deaths (n=29 682). Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Cohort-stratified cause-specific hazard models for incident CVD and cohort-stratified standard proportional hazards models for all-cause mortality were applied. The models were further stratified by age groups, sex, and race and ethnicity for the association between processed meat intake and all-cause mortality and further stratified by sex for the association between unprocessed red meat intake and all-cause mortality, to satisfy proportional hazards assumption.

^b The unit of the 4 foods was converted into serving/day/1000 kcal before modeling. The median consumption from Quintile 1 to Quintile 5 was 0, 0.06, 0.13, 0.24 and 0.50 serving/day/1000 kcal for processed meat; 0.07, 0.16, 0.25, 0.35, and 0.54 serving/day/1000 kcal for unprocessed red meat; 0.04, 0.09, 0.16, 0.25, and 0.42 serving/day/1000 kcal for poultry; and 0.02, 0.08, 0.14, 0.24, and 0.47 serving/day/1000 kcal for fish.

^c Model 1: age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), and education (<high school, high school, some college or more).

^d Model 2: Model 1 plus total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, \geq 40), cohort-specific physical activity z score, alcohol intake (gram), and use of hormone therapy (y/n).

^e Model 3: Model 2 plus fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, and 3 of the 4 foods (processed meat, unprocessed red meat, poultry, and fish); a term of processed meat squared was additionally adjusted when analyzing the incident CVD outcome.

eTable 7. Energy density models for the associations between the 4 foods and incident CVD and all-cause mortality

	Hazard ratio (95% CI) ^a	P
Processed meat		
Incident CVD	1.03 (1.02-1.05)	<.001
All-cause mortality	1.03 (1.02-1.05)	<.001
Unprocessed red meat		
Incident CVD	1.04 (1.02-1.06)	<.001
All-cause mortality	1.03 (1.02-1.05)	<.001
Poultry		
Incident CVD	1.03 (1.01-1.05)	.009
All-cause mortality	1.00 (0.98-1.02)	.83
Fish		
Incident CVD	1.00 (0.99-1.02)	.68
All-cause mortality	0.99 (0.98-1.01)	.43

a The unit of the 4 foods was converted into serving/day/1000 kcal before modeling. There were 6963 incident cardiovascular disease (CVD) events and 8875 all-cause deaths (n=29 682). Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Cohort-stratified cause-specific hazard models for incident CVD and cohort-stratified standard proportional hazards models for all-cause mortality were applied. The models were further stratified by age groups, sex, and race and ethnicity for the association between processed meat intake and all-cause mortality and further stratified by sex for the association between unprocessed red meat intake and all-cause mortality, to satisfy proportional hazards assumption. The models were adjusted for age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, and 3 of the 4 foods (processed meat, unprocessed red meat, poultry, and fish). All associations were monotonic (P value for non-linearity >.05). The interpretation was based on each additional 2 servings of the food consumed per week for all the associations, at daily energy consumption level of 2000 kcal.

eTable 8. Associations between the 4 foods and incident CVD, using subdistribution hazard models^a

	Hazard ratio (95% CI) ^b	P
Processed meat	1.07 (1.04-1.12)	<.001
Unprocessed red meat	1.02 (0.99-1.04)	.18
Poultry	1.04 (1.01-1.06)	.01
Fish	1.01 (0.99-1.03)	.31

^a There is no competing risk for all-cause mortality, so we only evaluated incident cardiovascular disease (CVD) using subdistribution hazard models.

b There were 6963 incident CVD events. Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Cohort-stratified subdistribution hazard models were applied. The models were adjusted for age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity *z* score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, and 3 of the 4 foods (processed meat, unprocessed red meat, poultry, and fish). The association between processed meat intake and incident CVD was non-monotonic (*P* value for non-linearity =.0005) and thus a quadratic term for processed meat intake was added in addition to the original linear term. The interpretation was based on each additional 2 servings of the food consumed per week for all the associations except for the association between processed meat intake and incident CVD where the comparison was 2 vs 0 servings per week specifically.

eTable 9. Associations of fatty fish or nonfatty fish intake with incident CVD and all-cause mortality

	Incident CVD		All-cause mortality		
	Hazard ratio (95% CI) ^a	P	Hazard ratio (95% CI) ^a	P	
Fatty fish	1.01 (0.97-1.05)	.51	0.99 (0.95-1.02)	.43	
Nonfatty fish	1.01 (0.97-1.04)	.76	0.99 (0.96-1.03)	.73	

a There were 6963 incident cardiovascular disease (CVD) events and 8875 all-cause deaths (n=29 682). Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Cohort-stratified cause-specific hazard models for incident CVD and cohort-stratified standard proportional hazards models for all-cause mortality were applied. The models were adjusted for age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity *z* score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, processed meat, processed meat squared (for incident CVD only), unprocessed red meat, and poultry. The interpretation was based on each additional 2 servings of fish consumed per week.

eFigure 1. Association between processed meat consumed (2 vs 0 servings/week) and incident CVD among different subgroups

Subgroups	Events/total	Hazard ratio (95% CI) ^a	P value		<i>P</i> value fo interaction
√ge					
<45 years	298/5210	1.17 (1.01-1.36)	.04		
45-64 years	3649/17025	1.12 (1.07-1.17)	<.001	-	.008
≥65 years	3016/7447	1.00 (0.95-1.05)	.98	- -	
Sex					
Men	3525/13168	1.05 (1.01-1.10)	.02	-	.48
Women	3438/16514	1.09 (1.04-1.15)	<.001	- -	.40
Race and ethnicity					
Non-Hispanic white	5228/20581	1.07 (1.03-1.12)	<.001	-	
Non-Hispanic black	1474/7004	1.05 (0.98-1.12)	.15	+=-	.06
Other	261/2097	1.26 (1.02-1.57)	.03		
Education level					
Less than high school	1944/5541	1.02 (0.96-1.08)	.61	- 	
High school	2102/8461	1.09 (1.02-1.15)	.006	-■-	.17
Some college or more	2917/15680	1.11 (1.05-1.17)	<.001	-	
Smoking status					
Never	3017/14772	1.08 (1.02-1.13)	.004	-=-	
Former	2301/8853	1.06 (1.00-1.12)	.03	-	.18
Current	1645/6057	1.09 (1.02-1.17)	.009		
Neight status					
BMI <25 kg/m ²	2071/11553	1.06 (1.00-1.12)	.06	- = -	
25 ≤ BMI <30 kg/m ²	2850/11172	1.05 (1.00-1.11)	.05	-	.98
BMI ≥30 kg/m ²	2042/6957	1.04 (0.98-1.11)	.15	+=-	
Diabetes ^b					
No	5789/27112	1.04 (1.01-1.09)	.03	=	00
Yes	1174/2570	1.09 (1.02-1.18)	.02		.08
Hypertension ^c					
No	2981/19000	1.07 (1.02-1.13)	.006	- ■-	
Yes	3982/10682	1.07 (1.02-1.12)	.004		.99
Hyperlipidemia ^d	,	,			
No	5025/23206	1.06 (1.02-1.11)	.002	-	
Yes	1938/6476	1.10 (1.04-1.17)	.002		.61
ow lipids ^e					
No	6600/26862	1.07 (1.03-1.11)	<.001	-	
Yes	363/2820	1.10 (0.95-1.26)	.21		.63
Eating a higher quality diet ^f	222, 222				
No	5574/22262	1.06 (1.02-1.10)	.003	-	
Yes	1389/7420	1.13 (1.05-1.22)	.002	≡	.05
Eating a high saturated fat die			.002		
No	5257/22342	1.09 (1.05-1.14)	<.001	-	
Yes	1706/7340	1.03 (0.97-1.10)	.28		.31
Eating a low saturated fat diet		1.05 (0.57 1.10)	.20		
No	6542/27581	1.07 (1.03-1.11)	<.001	-	
Yes	421/2101	1.32 (1.01-1.72)	.04	<u> </u>	.13
Eating high fat diet ⁱ	421/2101	1.52 (1.01 1.72)	.04	_	
No	5251/22288	1.10 (1.05-1.14)	<.001	_	
Yes	1712/7394	1.03 (0.96-1.09)	.43		.20
ating a high protein diet ^j	1/12//354	1.03 (0.30-1.03)	.+3		
No	4838/22137	1.05 (1.01-1.10)	.01		
Yes	4838/22137 2125/7545	1.12 (1.06-1.19)	.01 <.001	- _	.18
res Eating a high carbohydrate die		1.12 (1.00-1.19)	<.UU1	-	
		1 06 /1 02 1 10\	.004		
No Vos	5369/22291 1594/7391	1.06 (1.02-1.10)	.004 <.001		.16
Yes	1034//391	1.15 (1.06-1.26)	<.UU1	-8 -	

- ^a Cohort-stratified cause-specific hazard models were used. Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, unprocessed red meat, poultry, and fish, where relevant.
- b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- ^e Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ¹ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ^j Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).

eFigure 2. Association between each additional 2 servings of unprocessed red meat consumed per week and incident CVD among different subgroups

Subgroups	Events/total	Hazard ratio (95% CI) ^a	P value		P value fo interaction
Age					
<45 years	298/5210	1.06 (1.00-1.13)	.05	 ■ 	
45-64 years	3649/17025	1.02 (0.99-1.05)	.14	 = -	.28
≥65 years	3016/7447	1.01 (0.98-1.04)	.62	+	
Sex					
Men	3525/13168	1.05 (1.02-1.07)	<.001	-=-	.07
Women	3438/16514	1.02 (0.99-1.04)	.31	 ■ -	.07
Race and ethnicity					
Non-Hispanic white	5228/20581	1.03 (1.00-1.05)	.02		
Non-Hispanic black	1474/7004	1.04 (1.00-1.08)	.04	-■-	.64
Other	261/2097	1.00 (0.93-1.09)	.93		
Education level					
Less than high school	1944/5541	1.01 (0.98-1.05)	.49	- 	
High school	2102/8461	1.03 (1.00-1.07)	.06	 = -	.26
Some college or more	2917/15680	1.05 (1.02-1.08)	.002	-=-	
Smoking status					
Never	3017/14772	1.03 (1.00-1.07)	.02	-■-	
Former	2301/8853	1.02 (0.99-1.05)	.28	+=-	.39
Current	1645/6057	1.05 (1.01-1.09)	.006	-■-	
Weight status					
BMI <25 kg/m ²	2071/11553	1.02 (0.99-1.06)	.16	 = -	
25 ≤ BMI <30 kg/m ²	2850/11172	1.03 (1.00-1.06)	.03	 -■-	.26
BMI ≥30 kg/m²	2042/6957	1.00 (0.97-1.03)	.98	- 	
Diabetes ^b					
No	5789/27112	1.01 (0.99-1.04)	.24	-	02
Yes	1174/2570	1.07 (1.02-1.11)	.003		.02
- Hypertension ^c		,			
No	2981/19000	1.04 (1.01-1.07)	.007	- -	
Yes	3982/10682	1.02 (0.99-1.05)	.11	 = -	.34
Hyperlipidemia ^d	,	(,			
No	5025/23206	1.02 (1.00-1.05)	.05	 ■	
Yes	1938/6476	1.06 (1.02-1.09)	.003	-■-	.11
₋ow lipids ^e		1.00 (1.01 1.00)			
No	6600/26862	1.03 (1.01-1.06)	.005		
Yes	363/2820	1.01 (0.94-1.08)	.81		.50
Eating a higher quality diet ^f	303, 2020	1.01 (0.5 1 1.00)	.01		
No	5574/22262	1.02 (0.99-1.04)	.14		
Yes	1389/7420	1.09 (1.05-1.14)	<.001	_ 	<.001
Eating a high saturated fat die		1.05 (1.05-1.14)	<.001	-	
No	5257/22342	1.05 (1.02-1.08)	<.001		
Yes	1706/7340	1.00 (0.97-1.04)	.85	<u>+</u>	.02
Tes Eating a low saturated fat diet		1.00 (0.57-1.04)	.65		
_		1 02 /1 01 1 05)	.009	<u>-</u> -	
No Yes	6542/27581 421/2101	1.03 (1.01-1.05) 1.18 (1.03-1.34)	.009	-	.04
	421/2101	1.16 (1.05-1.54)	.01	-	
Eating high fat diet ⁱ	F2F4 /22200	1 00 (1 02 1 00)	< 001	_	
No	5251/22288	1.06 (1.03-1.09)	<.001	<u> </u>	<.001
Yes	1712/7394	0.99 (0.96-1.03)	.71	- 	
Eating a high protein diet ^j	4020/22427	4 02 /4 00 4 05	00	 _	
No	4838/22137	1.03 (1.00-1.05)	.08	<u>[=-</u>	.38
Yes	2125/7545	1.01 (0.98-1.04)	.53	- - - - - - - - - - 	
Eating a high carbohydrate die					
No	5369/22291	1.03 (1.01-1.05)	.01	-=-	.64
Yes	1594/7391	1.05 (0.98-1.11)	.15	+■-	.0-
			+		
©2020 American Medical A	Association All rig	hts reserved		0.8 1.0 1.2	1.4

- ^a Cohort-stratified cause-specific hazard models were used. Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, processed meat, processed meat squared, poultry, and fish, where relevant.
- ^b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- ^e Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ⁱ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ¹ Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).

eFigure 3. Association between each additional 2 servings of poultry consumed per week and incident CVD among different subgroups

Subgroups	Events/total	Hazard ratio (95% CI) ^a	P value		<i>P</i> value for interaction
Age	200/=5:-				
<45 years	298/5210	0.99 (0.89-1.11)	.85		
45-64 years	3649/17025	1.04 (1.00-1.07)	.04	├-	.72
≥65 years	3016/7447	1.03 (0.99-1.07)	.15	+=-	
Sex					
Men	3525/13168	1.03 (0.99-1.07)	.09	 ■ -	.73
Women	3438/16514	1.04 (1.01-1.08)	.02		.73
Race and ethnicity					
Non-Hispanic white	5228/20581	1.05 (1.02-1.08)	.001	-	
Non-Hispanic black	1474/7004	1.02 (0.97-1.07)	.41	⊣= —	.08
Other	261/2097	0.93 (0.83-1.04)	.22		
ducation level					
Less than high school	1944/5541	1.04 (1.00-1.08)	.07	⊢= -	
High school	2102/8461	1.04 (0.99-1.09)	.09	 ■	.93
Some college or more	2917/15680	1.03 (0.99-1.07)	.13		
moking status	,	,			
Never	3017/14772	1.02 (0.98-1.06)	.34		
Former	2301/8853	1.03 (0.99-1.07)	.20	<u> </u>	.13
Current	1645/6057	1.08 (1.03-1.13)	.002	-	.13
	1043/0037	1.06 (1.05-1.15)	.002	-	
Veight status	2074/44552	1 06 /1 01 1 11	02		
BMI < 25 kg/m ²	2071/11553	1.06 (1.01-1.11)	.02	<u> </u>	20
25 ≤ BMI <30 kg/m ²	2850/11172	1.03 (0.99-1.07)	.15		.29
BMI ≥30 kg/m ²	2042/6957	1.01 (0.96-1.05)	.82		
Diabetes ^b				<u>_</u>	
No	5789/27112	1.04 (1.01-1.07)	.01	<u></u>	.20
Yes	1174/2570	1.00 (0.94-1.05)	.91		.20
lypertension ^c					
No	2981/19000	1.04 (1.00-1.08)	.06	 -	.56
Yes	3982/10682	1.02 (0.99-1.06)	.16	 ■ -	.50
lyperlipidemia ^d					
No	5025/23206	1.03 (1.00-1.06)	.03	- = -	
Yes	1938/6476	1.04 (1.00-1.09)	.07		.73
ow lipids ^e					
No	6600/26862	1.03 (1.01-1.06)	.01		
Yes	363/2820	1.07 (0.98-1.17)	.13	 ■	.45
ating a higher quality diet ^f	303/2020	1.07 (0.36-1.17)	.13		
	5574/22262	1 04 /1 01 1 07\	02	-	
No		1.04 (1.01-1.07)	.02	↓	.99
Yes	1389/7420	1.04 (0.99-1.09)	.14	-	
ating a high saturated fat diet				<u>_</u>	
No	5257/22342	1.04 (1.01-1.07)	.01		.91
Yes	1706/7340	1.03 (0.98-1.09)	.18	 -	
ating a low saturated fat dieth					
No	6542/27581	1.04 (1.01-1.07)	.01	-= -	.61
Yes	421/2101	1.01 (0.92-1.12)	.83		.01
ating high fat diet ⁱ					
No	5251/22288	1.06 (1.03-1.09)	<.001	-=-	004
Yes	1712/7394	0.98 (0.93-1.03)	.34	_ = -	.004
ating a high protein diet ^j	-	. ,		-1	
No	4838/22137	1.03 (0.99-1.07)	.10		_
Yes	2125/7545	1.01 (0.97-1.05)	.65		.37
ating a high carbohydrate diet		1.01 (0.57 1.05)	.05		
No	 5369/22291	1.04 (1.01-1.07)	.01	1	
					.46
Yes	1594/7391	1.01 (0.95-1.08)	.65	- 	
				+	++
©2020 American Medical As	ssociation. All rig	ghts reserved.		0.8 1.0	1.2 1.4
				5.0	1

- ^a Cohort-stratified cause-specific hazard models were used. Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, processed meat, processed meat squared, unprocessed red meat, and fish, where relevant.
- ^b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- ^e Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- ^g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ¹ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ¹ Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).

eFigure 4. Association between each additional 2 servings of fish consumed per week and incident CVD among different subgroups

Age	Subgroups	Events/total	Hazard ratio (95% CI) ^a	<i>P</i> value		<i>P</i> for interaction
45-64 years 3649/17025 1.01 (0.98-1.04) 52 265 years 3016/7447 0.98 (0.95-1.00) .06						
265 years 3016/7447 0.98 (0.95-1.00) 0.6 exicx Men 3525/13168 1.01 (0.98-1.04) .40					- = -	
Men 3525/13168 1.01 (0.98-1.04) .40	· ·	•	, ,		- - -	.17
Men 3525/31368 1.01 (0.98-1.04) 4.0 Women 3438/16514 0.99 (0.97-1.02) .70 Women 3438/16514 0.99 (0.97-1.02) .70 Non-Hispanic white 5228/20581 1.01 (0.99-1.03) .48 Non-Hispanic black 1474/7004 0.98 (0.93-1.02) .25 Iduation level Less than high school 1944/5541 0.99 (0.95-1.02) .45 Less than high school 2102/8461 1.00 (0.97-1.04) .87 ————————————————————————————————————		3016/7447	0.98 (0.95-1.00)	.06		
Momen 3438/16514 0.99 (0.97-1.02) .70		0-0-110100	(
Non-Hispanic black 1474/7004 15228/20581 1.01 (0.99-1.03) 1.48 Non-Hispanic black 1474/7004 0.98 (0.93-1.02) 1.25 Other 261/2097 0.93 (0.83-1.05) 2.44 diducation level Less than high school 1944/5541 1.00 (0.97-1.04) 1.87 Some college or more 1917/15680 1.01 (0.98-1.04) 1.02 (0.98-1.04) 1.03 (0.98-1.04) 1.04 Some college or more 100 (0.98-1.04) 1.05 (0.98-1.04) 1.06 (0.98-1.04) 1.07 (0.98-1.04) 1.08 (0.98-1.04) 1.09 (0.98-1.03) 1.09 (0.98-1.03) 1.09 (0.98-1.03) 1.09 (0.98-1.03) 1.09 (0.98-1.03) 1.09 (0.99-1.03		·	•		 -	.34
Non-Hispanic white 5228/20581 1.01 (0.99-1.03) .48 Non-Hispanic black 1474/7004 0.98 (0.93-1.02) .25 Other 261/2097 0.93 (0.83-1.05) .24 High school 1944/5541 0.99 (0.95-1.02) .45 High school 2102/8461 1.00 (0.97-1.04) .87 Some college or more 2917/15680 1.01 (0.98-1.03) .78 Never 3017/14772 1.00 (0.98-1.03) .78 Former 2301/8853 1.01 (0.98-1.04) .38 Current 1645/6057 0.98 (0.94-1.02) .34 Weight status BMI <25 kg/m² 2071/11553 1.01 (0.97-1.04) .76 JS ≤ BMI <30 kg/m² 2850/11172 1.00 (0.97-1.03) .78 BMI ≥30 kg/m² 2042/6957 0.99 (0.95-1.02) .54 Jainbetes⁰ No 5789/27112 1.00 (0.98-1.02) .90 Vyes 1174/2570 0.99 (0.95-1.03) .60 Hypertension⁴ No 2981/19000 1.02 (0.99-1.05) .17 Yes 3982/10682 0.98 (0.96-1.01) .15 Hyperlipidemiaժ No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.02) .98 Yes 1938/6476 1.01 (0.98-1.02) .98 Yes 1938/6476 1.01 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality diet¹ No 5257/22342 1.01 (0.98-1.02) .93 Taiting a high saturated fat diet² No 5257/22342 1.01 (0.98-1.02) .93 Yes 1706/7340 0.99 (0.95-1.03) .70 Taiting a high saturated fat diet² No 5257/22342 1.01 (0.98-1.02) .93 Yes 1706/7340 0.99 (0.95-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .55 Total saturated fat diet² No 5257/22342 1.01 (0.98-1.02) .93 Taiting a high saturated fat diet² No 5257/22342 1.01 (0.98-1.02) .93 Yes 1706/7340 0.99 (0.95-1.03) .55 Total saturated fat diet² No 5257/22342 1.00 (0.98-1.02) .93 Yes 1706/7340 0.99 (0.95-1.03) .70 Taiting a high protein diet' No 5257/22342 1.00 (0.98-1.02) .89 Yes 1712/7394 0.99 (0.96-1.03) .71 Taiting a high rortein diet' No 5257/22385 1.00 (0.99-1.05) .23 Yes 1712/7394 0.99 (0.96-1.03) .71 Taiting a high carbohydrate diet³ No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (0.09-1.02) .66 Yes 1594/7391 1.05 (0.09-1.02) .66		3438/16514	0.99 (0.97-1.02)	.70	+	
Non-Hispanic black 1474/7004 0.98 (0.93-1.02) 2.5			(
Other (ducation level Less than high school 1944/5541 0.99 (0.95-1.02) .45		·	•		-	
Section Sect					-■ 	.18
Less than high school 1944/5541 0.99 (0.95-1.02) .45 High school 2102/8461 1.00 (0.97-1.04) .87 Some college or more 2917/15680 1.01 (0.98-1.04) .41 moking status Never 3017/14772 1.00 (0.98-1.03) .78 Former 2301/8853 1.01 (0.98-1.04) .38		261/2097	0.93 (0.83-1.05)	.24		
High school 2102/8461 1.00 (0.97-1.04) 87 Some college or more 2917/15680 1.01 (0.98-1.04) .41 micking status Never 3017/14772 1.00 (0.98-1.03) .78 Former 2301/8853 1.01 (0.98-1.04) .38 ————————————————————————————————————						
Some college or more moking status Never 3017/14772 1.00 (0.98-1.03) .78 Former 2301/8853 1.01 (0.98-1.04) .38 Current 1645/6057 0.98 (0.94-1.02) .34 Veight status BMI <25 kg/m² 2071/11553 1.01 (0.97-1.04) .76 25 ≤ BMI <30 kg/m² 2850/11172 1.00 (0.97-1.03) .78 BMI ≥30 kg/m² 2042/6957 0.99 (0.96-1.02) .54 Jiabetes³ No 5789/27112 1.00 (0.98-1.02) .90 Yes 1174/2570 0.99 (0.95-1.03) .60 Typertension* No 2981/19000 1.02 (0.99-1.05) .17 Yes 3982/10682 0.98 (0.96-1.01) .15 Typerlipidemia* No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 We 1910/18° No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 Tating a higher quality diet* No 574/22262 1.00 (0.98-1.02) .93 Yes 1289/7420 1.01 (0.98-1.05) .43 Tating a high saturated fat diet* No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 Tating a high saturated fat diet* No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 Tating a high saturated fat diet* No 5251/2288 1.01 (0.98-1.03) .55 Types 1712/7394 0.99 (0.96-1.03) .71 Tating a high protein diet' No 4838/22137 1.02 (0.99-1.05) .23 Yes 1712/7394 0.99 (0.96-1.03) .71 Tating a high carbohydrate diet* No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	_				-	
Noking status Never 3017/14772 1.00 (0.98-1.03) .78 Former 2301/8853 1.01 (0.98-1.04) .38 Current 1645/6057 0.98 (0.94-1.02) .34 Veight status BMI <25 ≤ B/m² 2071/11553 1.01 (0.97-1.04) .76 25 ≤ BMI <30 kg/m² 2850/11172 1.00 (0.97-1.03) .78 BMi ≥30 kg/m² 2042/6957 0.99 (0.96-1.02) .54 Ves 1174/2570 0.99 (0.96-1.02) .90 Ves 1174/2570 0.99 (0.95-1.03) .60 Veyer 1174/2570 0.99 (0.95-1.03) .60 Veyer 3982/10682 0.98 (0.96-1.01) .15 Ves 3982/10682 0.98 (0.96-1.01) .15 Ves 1938/6476 1.01 (0.98-1.02) .91 Ves 1938/6476 1.01 (0.98-1.02) .91 Ves 363/2820 1.02 (0.95-1.11) .55 Ves 363/2820 1.02 (0.95-1.11) .55 Ves 389/7420 1.01 (0.98-1.05) .43 Ves 1389/7420 1.01 (0.98-1.05) .43 Ves 1389/7420 1.01 (0.98-1.05) .43 Ves 1706/7340 0.99 (0.95-1.03) .70 Ves 1706/7340 0.99 (0.95-1.03) .70 Ves 1706/7340 0.99 (0.95-1.03) .70 Ves 1712/7394 0.99 (0.95-1.03) .71 Ves 1712/7394 0.99 (0.96-1.03) .71 Ves 1712/7394 0.90 (0.97-1.02) .66	_	·			-	.50
Never 3017/14772 1.00 (0.98-1.03) .78 Former 2301/8853 1.01 (0.98-1.04) .38 Current 1645/6057 0.98 (0.94-1.02) .34 Veight status BMI <25 kg/m² 27/11553 1.01 (0.97-1.04) .76	_	2917/15680	1.01 (0.98-1.04)	.41	 -	
Former	-					
Current Current 1645/6057 0.98 (0.94-1.02) .34	Never	·			+	
Veight status BMI <25 kg/m² 2071/11553 1.01 (0.97-1.04) .76 25 ≤ BMI <30 kg/m² 2850/11172 1.00 (0.97-1.03) .78 BMI ≥30 kg/m² 2042/6957 0.99 (0.96-1.02) .54			, ,		 = -	.39
BMI <25 kg/m² 2071/11553 1.01 (0.97-1.04) .76		1645/6057	0.98 (0.94-1.02)	.34	-■ 	
25 ≤ BMI <30 kg/m² 2850/11172 1.00 (0.97-1.03) .78 BMI ≥30 kg/m² 2042/6957 0.99 (0.96-1.02) .54 isiabetesb No 5789/27112 1.00 (0.98-1.02) .90 Yes 1174/2570 0.99 (0.95-1.03) .60 Vypertlensionc No 2981/19000 1.02 (0.99-1.05) .17 Yes 3982/10682 0.98 (0.96-1.01) .15 Vyerlipidemiad No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 ow lipidsc No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat dietce No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat dietce No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dietce No 5251/22288 1.01 (0.98-1.03) .63 Yes 421/2101 1.02 (0.95-1.10) .55 ating high protein dietce No 4838/22137 1.02 (0.99-1.05) .23 Yes 1726/7394 0.99 (0.96-1.03) .71 ating a high carbohydrate dietce No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	_					
BMI≥30 kg/m² 2042/6957 0.99 (0.96-1.02) .54 No 5789/27112 1.00 (0.98-1.02) .90 Yes 1174/2570 0.99 (0.95-1.03) .60 Pypertension ^c No 2981/19000 1.02 (0.99-1.05) .17 Yes 3982/10682 0.98 (0.96-1.01) .15 Pyperlipidemia ^d No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 owl lipids ^e No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat diet8 No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat diet ^h No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating a high fat dieti No 5251/22288 1.01 (0.98-1.03) .56 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04					+	
No 5789/27112 1.00 (0.98-1.02) .90 Yes 1174/2570 0.99 (0.95-1.03) .60 Whyertension ^c No 2981/19000 1.02 (0.99-1.05) .17 Yes 3982/10682 0.98 (0.96-1.01) .15 Whyerlipidemiad No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 ow lipids ^e No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 Vating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 atting a high saturated fat diets No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 Ves 421/2101 1.02 (0.95-1.10) .55 atting high fat dieti No 5251/22288 1.01 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 atting a high protein dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 atting a high protein dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 atting a high protein dieti No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	O.	•		.78	- 	.78
No 5789/27112 1.00 (0.98-1.02) .90 Yes 1174/2570 0.99 (0.95-1.03) .60 lypertension ^c No 2981/19000 1.02 (0.99-1.05) .17 Yes 3982/10682 0.98 (0.96-1.01) .15 lyperlipidemia ^d No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 ow lipids ^e No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality diet ^f No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat diet ^g No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat diet ^g No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating a high fat diet ^g No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein diet ^g No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ^g No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	3MI ≥30 kg/m²	2042/6957	0.99 (0.96-1.02)	.54	-	
Yes 1174/2570 0.99 (0.95-1.03) .60 lypertension ^c No 2981/19000 1.02 (0.99-1.05) .17 Yes 3982/10682 0.98 (0.96-1.01) .15 lyperlipidemia ^d No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 ow lipids ^e No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality diet ^f No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat diet ⁸ No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat diet ⁸ No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat diet ¹ No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein diet ¹ No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ⁸ No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	betes ^b					
No	No		, ,		†	.58
No 2981/19000 1.02 (0.99-1.05) 1.7 Yes 3982/10682 0.98 (0.96-1.01) 1.5 Plyperlipidemiad No 5025/23206 1.00 (0.98-1.02) 91 Yes 1938/6476 1.01 (0.98-1.05) .55 ow lipidse No 6600/26862 1.00 (0.98-1.02) 98 Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) 93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat dietf No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	1174/2570	0.99 (0.95-1.03)	.60		.56
Yes 3982/10682	pertension ^c					
Ayperlipidemiad No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 ow lipidse No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 dating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 dating a high saturated fat dietf No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat dietf No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 dating high fat dietf No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 dating a high protein dietf No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 dating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	No	2981/19000	1.02 (0.99-1.05)	.17	∤■ −	.03
No 5025/23206 1.00 (0.98-1.02) .91 Yes 1938/6476 1.01 (0.98-1.05) .55 ow lipidse No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat diet8 No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	3982/10682	0.98 (0.96-1.01)	.15	-■	.03
Yes	perlipidemia ^d					
No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 lating a higher quality diet ^f No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 lating a high saturated fat diet ⁸ No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 lating a low saturated fat diet ⁸ No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 lating high fat diet ¹ No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 lating a high protein diet ¹ No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 lating a high carbohydrate diet ⁸ No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	No	5025/23206	1.00 (0.98-1.02)	.91	+	.54
No 6600/26862 1.00 (0.98-1.02) .98 Yes 363/2820 1.02 (0.95-1.11) .55 lating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 lating a high saturated fat diet8 No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 lating a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 lating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 lating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 lating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	1938/6476	1.01 (0.98-1.05)	.55	- ₱-	.54
Yes 363/2820 1.02 (0.95-1.11) .55 ating a higher quality dietf No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat dietg No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	v lipids ^e					
Asting a higher quality diet ^f No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 Asting a high saturated fat diet ^g No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 Asting a low saturated fat diet ^h No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 Asting high fat diet ⁱ No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 Asting a high protein diet ⁱ No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 Asting a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	No	6600/26862	1.00 (0.98-1.02)	.98	+	.56
No 5574/22262 1.00 (0.98-1.02) .93 Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat diet ⁸ No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat diet ^h No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat diet ⁱ No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein diet ⁱ No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .666 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	363/2820	1.02 (0.95-1.11)	.55	- ■	.50
Yes 1389/7420 1.01 (0.98-1.05) .43 ating a high saturated fat diet ⁸ No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat diet ^h No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat diet ^h No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein diet ^h No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	ing a higher quality diet ^f					
Ating a high saturated fat diets No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 Ating a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 Ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 Ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 Ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	No	5574/22262	1.00 (0.98-1.02)	.93	+	45
No 5257/22342 1.01 (0.98-1.03) .56 Yes 1706/7340 0.99 (0.95-1.03) .70 ating a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	1389/7420	1.01 (0.98-1.05)	.43	- ■-	.45
Yes ating a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	ing a high saturated fat die	et ^g				
Acting a low saturated fat dieth No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	No	5257/22342	1.01 (0.98-1.03)	.56	+	F.4
No 6542/27581 1.00 (0.98-1.02) .89 Yes 421/2101 1.02 (0.95-1.10) .55 ating high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	1706/7340	0.99 (0.95-1.03)	.70	-	.51
Yes 421/2101 1.02 (0.95-1.10) .55 Taking high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 Taking a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 Taking a high carbohydrate dieti No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	ing a low saturated fat die	et ^h				
Yes 421/2101 1.02 (0.95-1.10) .55 Taking high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 Taking a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 Taking a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	No	6542/27581	1.00 (0.98-1.02)	.89		F0
Asting high fat dieti No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	·			——	.58
No 5251/22288 1.01 (0.98-1.03) .63 Yes 1712/7394 0.99 (0.96-1.03) .71 ating a high protein diet ⁱ No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	ing high fat diet ⁱ					
Yes 1712/7394 0.99 (0.96-1.03) .71 Tating a high protein dieti No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 Tating a high carbohydrate dietk No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04		5251/22288	1.01 (0.98-1.03)	.63	<u> </u>	
No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04	'es	·			<u>.</u>	.54
No 4838/22137 1.02 (0.99-1.05) .23 Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04		,	, ,		7	
Yes 2125/7545 0.96 (0.93-0.99) .008 ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04		4838/22137	1.02 (0.99-1.05)	.23	<u> </u>	
Ating a high carbohydrate diet ^k No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04		·				.002
No 5369/22291 1.00 (0.97-1.02) .66 Yes 1594/7391 1.05 (1.00-1.10) .04			(
Yes 1594/7391 1.05 (1.00-1.10) .04			1.00 (0.97-1 02)	.66]	
+ + + + + + + + + + + + + + + + + + + +					#	.03
©2020 American Medical Association, All rights reserved		100 ./ / 001	(1.00 1.10)	.0 +	├-	
©2020 American Medical Association, All rights reserved	_			+		++
© 2020 American Medical Association. All rights reserved. 0.8 1.0 1.2	2020 American Medical A	Association. All rig	nts reserved.	0.8	8 1.0 1	.2 1.4

- ^a Cohort-stratified cause-specific hazard models were used. Incident CVD included fatal and nonfatal coronary heart disease, fatal and nonfatal stroke, fatal and nonfatal heart failure, and other CVD deaths. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, processed meat, processed meat squared, unprocessed red meat, and poultry, where relevant.
- ^b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- ^e Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- ^g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ⁱ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ¹ Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).

eFigure 5. Association between each additional 2 servings of processed meat consumed per week and all-cause mortality among different subgroups

Subgroups	Events/total	Hazard ratio (95% CI) ^a	<i>P</i> value		<i>P</i> value fo interaction
Age .					
<45 years	409/5210	1.03 (0.97-1.09)	.40	 =	
45-64 years	4041/17025	1.03 (1.01-1.05)	.007	-	.23
≥65 years	4425/7447	1.05 (1.03-1.07)	<.001		
Sex					
Men	4439/13168	1.04 (1.02-1.06)	<.001	-	.58
Women	4436/16514	1.03 (1.01-1.05)	.01	-	.50
Race and ethnicity					
Non-Hispanic white	6668/20581	1.04 (1.02-1.05)	<.001	-	
Non-Hispanic black	1862/7004	1.03 (1.00-1.05)	.05		.59
Other	345/2097	1.10 (0.96-1.25)	.19		<u>—</u>
Education level					
Less than high school	2525/5541	1.02 (1.00-1.05)	.04	-	
High school	2609/8461	1.04 (1.02-1.07)	<.001	-■-	.43
Some college or more	3741/15680	1.04 (1.01-1.06)	.004	-	
Smoking status					
Never	3805/14772	1.04 (1.02-1.06)	<.001	-	
Former	2877/8853	1.05 (1.02-1.07)	<.001	-	.47
Current	2193/6057	1.03 (1.00-1.05)	.04	-	
Weight status	•	,			
BMI <25 kg/m ²	3150/11553	1.04 (1.02-1.07)	<.001	-	
25 ≤ BMI <30 kg/m ²	3509/11172	1.03 (1.00-1.05)	.02	-	.37
BMI ≥30 kg/m ²	2216/6957	1.02 (1.00-1.05)	.08		
Diabetes ^b	,	(,			
No	7501/27112	1.02 (1.00-1.04)	.02	=	
Yes	1374/2570	1.05 (1.02-1.09)	<.001	- <u>-</u> -	.06
Hypertension ^c	107 1,1070	1.00 (1.01 1.00)		-	
No	4024/19000	1.03 (1.01-1.05)	.001		
Yes	4851/10682	1.03 (1.01-1.05)	<.001	-	.99
Hyperlipidemia ^d	4031/10002	1.03 (1.01-1.03)	1.001	-	
No	6555/23206	1.03 (1.02-1.05)	<.001		
Yes	2320/6476	1.04 (1.01-1.06)	.01	-	.82
Low lipids ^e	2320/04/0	1.04 (1.01-1.00)	.01	-	
No	8229/26862	1 02 /1 02 1 05\	<.001	_	
Yes	646/2820	1.03 (1.02-1.05) 1.02 (0.97-1.06)	.45		.46
	040/2820	1.02 (0.97-1.06)	.45	—	
Eating a higher quality diet ^f	7051/22262	1 02 /1 01 1 05\	< 001	<u> </u>	
No	7051/22262	1.03 (1.01-1.05)	<.001		.07
Yes	1824/7420	1.06 (1.03-1.10)	<.001		
Eating a high saturated fat die		1 02 /1 01 1 05\	002	_	
No	6677/22342	1.03 (1.01-1.05)	.003		.68
Yes	2198/7340	1.04 (1.01-1.06)	.002	-	
Eating a low saturated fat die		4 02 /4 02 4 05\	. 004		
No	8294/27581	1.03 (1.02-1.05)	<.001	=	.04
Yes	581/2101	1.20 (1.04-1.38)	.01		
Eating high fat diet ⁱ					
No	6654/22288	1.03 (1.01-1.05)	.005	-	.46
Yes	2221/7394	1.04 (1.02-1.06)	<.001		
Eating a high protein diet ^j					
No	6301/22137	1.03 (1.01-1.05)	.001	■	.33
Yes	2574/7545	1.04 (1.02-1.07)	<.001	-■-	.55
Eating a high carbohydrate di					
No	6806/22291	1.03 (1.02-1.05)	<.001		.71
Yes	2069/7391	1.03 (0.98-1.07)	.23	↓ ■−	./1

- ^a Cohort-stratified standard proportional hazards models were used. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, unprocessed red meat, poultry, and fish, where relevant. Models were further stratified by age groups, sex, and race and ethnicity to satisfy proportional hazards assumption.
- b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- ^e Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ¹ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ^j Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).

eFigure 6. Association between each additional 2 servings of unprocessed red meat consumed per week and all-cause mortality among different subgroups

Age	1.06 (1.00-1.11) 0.99 (0.97-1.02) 1.01 (0.99-1.04) 1.03 (1.00-1.05) 1.03 (1.00-1.05) 1.02 (1.00-1.04) 1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.04 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.05) 1.03 (1.01-1.05)	.03 .55 .30 .03 .04 .08 .003 .34 .19 .04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.06 .99 .18 .84 .03 .33 .03
45-64 years ≥65 years 4425/7447 lex Men 4439/13168 Women 4436/16514 Race and ethnicity Non-Hispanic white Non-Hispanic black Other ducation level Less than high school High school Some college or more moking status Never 3805/14772 Former 2877/8853 Current Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² Diabetesb No No 7501/27112 Yes 1374/2570 Rypertensionc No Yes 4851/10682 Ryperlipidemiad No S229/26862 Yes 646/2820 Rating a higher quality dietf No 7051/22262 Yes Rating a high saturated fat dietg No 6677/22342	0.99 (0.97-1.02) 1.01 (0.99-1.04) 1.03 (1.00-1.05) 1.03 (1.00-1.05) 1.02 (1.00-1.04) 1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.05)	.55 .30 .03 .04 .08 .003 .34 .19 .04 .04 .20 .29 <.001 .007 .28 .37		.99 .18 .84 .03 .33
Men 4439/13168 Women 4436/16514 Race and ethnicity Non-Hispanic white 6668/20581 Non-Hispanic black 1862/7004 Other 345/2097 Riducation level Less than high school 2525/5541 High school 2609/8461 Some college or more 3741/15680 Rmoking status Never 3805/14772 Former 2877/8853 Current 2193/6057 Weight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 3509/1172 BMI ≥30 kg/m² 3509/1172 Yes 1374/2570 Rypertensionc No 7501/27112 Yes 4851/10682 Ryperlipidemiad No 6555/23206 Yes 2320/6476 Now lipidse No 8229/26862 Yes 646/2820 Rating a higher quality dietf No 7051/22262 Ryes Rating a high saturated fat diets No 7051/22262 Ryes Rating a high saturated fat diets No 6677/22342	1.01 (0.99-1.04) 1.03 (1.00-1.05) 1.03 (1.00-1.05) 1.02 (1.00-1.04) 1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.04) 1.01 (0.99-1.05)	.30 .03 .04 .08 .003 .34 .19 .04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.99 .18 .84 .03 .33
Men 4439/13168 Women 4436/16514 Race and ethnicity Non-Hispanic white 6668/20581 Non-Hispanic black 1862/7004 Other 345/2097 Education level Less than high school 2525/5541 High school 2609/8461 Some college or more 3741/15680 Smoking status Never 3805/14772 Former 2877/8853 Current 2193/6057 Weight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 3509/1172 BMI ≥30 kg/m² 2216/6957 Diabetesb No 7501/27112 Yes 1374/2570 Hypertensionc No 4024/19000 Yes 4851/10682 Hyperlipidemiad No 6555/23206 Yes 2320/6476 Low lipidse No 8229/26862 Yes 646/2820 Eating a higher quality dietf No 7051/22262 Yes 1824/7420 Eating a high saturated fat diets No 6677/22342	1.03 (1.00-1.05) 1.03 (1.00-1.05) 1.02 (1.00-1.04) 1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.04) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.03 .04 .08 .003 .34 .19 .04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.18 .84 .03
Men 4439/13168 Women 4436/16514 Race and ethnicity Non-Hispanic white 6668/20581 Non-Hispanic black 1862/7004 Other 345/2097 Education level Less than high school 2525/5541 High school 2609/8461 Some college or more 3741/15680 Emoking status Never 3805/14772 Former 2877/8853 Current 2193/6057 Weight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 Diabetesb No 7501/27112 Yes 1374/2570 Hypertensionc No 4024/19000 Yes 4851/10682 Hyperlipidemiad No 6555/23206 Yes 2320/6476 Down lipidse No 8229/26862 Yes 646/2820 Eating a higher quality dietf No 7051/22262 Yes 1824/7420 Eating a high saturated fat diets No 6677/22342	1.03 (1.00-1.05) 1.02 (1.00-1.04) 1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.04 .08 .003 .34 .19 .04 .04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.18 .84 .03
Women A436/16514	1.03 (1.00-1.05) 1.02 (1.00-1.04) 1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.04 .08 .003 .34 .19 .04 .04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.18 .84 .03
Non-Hispanic white Non-Hispanic black Other Other ducation level Less than high school High school Some college or more moking status Never Former Current Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 3130/27112 Yes No No Yes No	1.02 (1.00-1.04) 1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.08 .003 .34 .19 .04 .04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.18 .84 .03
Non-Hispanic white 6668/20581 Non-Hispanic black 1862/7004 Other 345/2097 ducation level 2525/5541 Less than high school 2609/8461 Some college or more 3741/15680 moking status 3805/14772 Former 2877/8853 Current 2193/6057 Veight status BMI <25 kg/m²	1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.003 .34 .19 .04 .04 .20 .29 <.001 .007 .28 .37 .24		.84 .03 .33
Non-Hispanic black Other Other Other ducation level Less than high school High school Some college or more moking status Never Former Current Veight status BMI <25 kg/m² 25 ≤ BMI <30 kg/m² 3509/1172 BMI ≥30 kg/m² 3509/1172 BMI ≥30 kg/m² 3509/1172 Yes No 7501/27112 Yes 1374/2570 Rypertensionc No Yes 4851/10682 Ryperlipidemiad No Some college or more No Some college or more A024/19000 Yes 4851/10682 Ryperlipidemiad No Some college or more Some college or more A024/19000 Yes 4851/10682 Ryperlipidemiad No Some college or more Some college No Some college Some	1.05 (1.02-1.09) 1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.003 .34 .19 .04 .04 .20 .29 <.001 .007 .28 .37 .24		.84 .03 .33
Other ducation level Less than high school	1.04 (0.96-1.11) 1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.34 .19 .04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.84 .03 .33
Iducation level Less than high school 2525/5541 High school 2609/8461 Some college or more 3741/15680 Immoking status 3805/14772 Former 2877/8853 Current 2193/6057 Veight status BMI < 25 kg/m²	1.02 (0.99-1.05) 1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.19 .04 .04 .20 .29 <.001 .007 .28 .37 .24		.03
Less than high school High school Some college or more moking status Never Former Current Veight status BMI <25 kg/m² 25 ≤ BMI <30 kg/m² 3509/1172 BMI ≥30 kg/m² 3509/1172 BMI ≥30 kg/m² 2193/6057 No 7501/27112 Yes 1374/2570 Hypertensionc No Yes 4024/19000 Yes 4851/10682 Hyperlipidemiad No 6555/23206 Yes 0w lipidse No 8229/26862 Yes 646/2820 Sating a higher quality dietf No 7051/22262 Tyes Sating a high saturated fat dietg No 6677/22342	1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.03
High school Some college or more moking status Never Former Current Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 3509/11172 BMI ≥30 kg/m² 3509/11172 Yes 1374/2570 No Typertensionc No Yes 4024/19000 Yes 4851/10682 Ryperlipidemiad No Some college or more No 4024/19000 Yes 4851/10682 Ryperlipidemiad No Some college or more Some	1.03 (1.00-1.06) 1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.04 .04 .20 .29 <.001 .007 .28 .37 .24 .005		.03
Some college or more moking status Never 3805/14772 Former 2877/8853 Current 2193/6057 Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 Diabetesb No 7501/27112 Yes 1374/2570 Noypertensionc No 4024/19000 Yes 4851/10682 Noyperlipidemiad No 6555/23206 Yes 2320/6476 Ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat diets No 6677/22342	1.03 (1.00-1.05) 1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.04 .20 .29 <.001 .007 .28 .37 .24 .005		.03
Moking status Never 3805/14772 Former 2877/8853 Current 2193/6057 Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 viabetesb No 7501/27112 Yes 1374/2570 ypertensionc No 4024/19000 Yes 4851/10682 yperlipidemiad No 6555/23206 Yes 2320/6476 ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat diets No 6677/22342	1.02 (0.99-1.04) 1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.20 .29 <.001 .007 .28 .37 .24 .005		.03
Never 3805/14772 Former 2877/8853 Current 2193/6057 Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 Diabetesb No 7501/27112 Yes 1374/2570 No 4024/19000 Yes 4851/10682 Hyperlipidemiad No 6555/23206 Yes 2320/6476 ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat diets No 6677/22342	1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.29 <.001 .007 .28 .37 .24 .005	# # # # #	.03
Former 2877/8853 Current 2193/6057 Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 iiabetesb No 7501/27112 Yes 1374/2570 ypertensionc No 4024/19000 Yes 4851/10682 yperlipidemiad No 6555/23206 Yes 2320/6476 ow lipidse No 8229/26862 Yes 646/2820 atting a higher quality dietf No 7051/22262 Yes 1824/7420 atting a high saturated fat dietg No 6677/22342	1.02 (0.99-1.05) 1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.29 <.001 .007 .28 .37 .24 .005	# # # # #	.03
Current /eight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 iabetesb No 7501/27112 Yes 1374/2570 ypertensionc No 4024/19000 Yes 4851/10682 yperlipidemiad No 6555/23206 Yes 2320/6476 bw lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg No 6677/22342	1.06 (1.03-1.09) 1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	<.001 .007 .28 .37 .24 .005	* * * * *	.03
Veight status BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 Viabetesb No 7501/27112 Yes 1374/2570 Vypertensionc No 4024/19000 Yes 4851/10682 Vyperlipidemiad No 6555/23206 Yes 2320/6476 ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg No 6677/22342	1.04 (1.01-1.07) 1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.007 .28 .37 .24 .005	* * * *	.03
BMI <25 kg/m² 3150/11553 25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 biabetesb No 7501/27112 Yes 1374/2570 lypertensionc No 4024/19000 Yes 4851/10682 lyperlipidemiad No 6555/23206 Yes 2320/6476 ow lipidsc No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg	1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.28 .37 .24 .005	* * * *	.03
25 ≤ BMI <30 kg/m² 3509/11172 BMI ≥30 kg/m² 2216/6957 biabetesb No 7501/27112 Yes 1374/2570 bypertensionc No 4024/19000 Yes 4851/10682 byperlipidemiad No 6555/23206 Yes 2320/6476 bow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg No 6677/22342	1.01 (0.99-1.04) 1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.28 .37 .24 .005	* - - - -	.03
BMI ≥30 kg/m² iabetesb No 7501/27112 Yes 1374/2570 ypertensionc No 4024/19000 Yes 4851/10682 yperlipidemiad No 6555/23206 Yes 2320/6476 ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg No 6677/22342	1.01 (0.98-1.05) 1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.37 .24 .005	* - -	.03
iabetes ^b No 7501/27112 Yes 1374/2570 ypertension ^c No 4024/19000 Yes 4851/10682 yperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 ating a higher quality diet ^f No 7051/22262 Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342	1.01 (0.99-1.03) 1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.24 .005	-	
No 7501/27112 Yes 1374/2570 ypertension ^c No 4024/19000 Yes 4851/10682 yperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 atting a higher quality diet ^f No 7051/22262 Yes 1824/7420 atting a high saturated fat diet ^g No 6677/22342	1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.005 .02		
Yes 1374/2570 ypertension ^c No 4024/19000 Yes 4851/10682 yperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 ating a higher quality diet ^f No 7051/22262 Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342	1.06 (1.02-1.10) 1.03 (1.01-1.06) 1.02 (1.00-1.05)	.005 .02	-	
ypertension ^c No 4024/19000 Yes 4851/10682 yperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 ating a higher quality diet ^f No 7051/22262 Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342	1.03 (1.01-1.06) 1.02 (1.00-1.05)	.02	*	
No 4024/19000 Yes 4851/10682 yperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 ating a higher quality diet ^f No 7051/22262 Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342	1.02 (1.00-1.05)		=	.59
No 4024/19000 Yes 4851/10682 yperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 ating a higher quality diet ^f No 7051/22262 Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342	1.02 (1.00-1.05)			.59
Yes 4851/10682 lyperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 ating a higher quality diet ^f No 7051/22262 Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342	1.02 (1.00-1.05)		=	.59
yperlipidemia ^d No 6555/23206 Yes 2320/6476 ow lipids ^e No 8229/26862 Yes 646/2820 ating a higher quality diet ^f No 7051/22262 Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342				
No 6555/23206 Yes 2320/6476 ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg No 6677/22342	1.03 (1.01-1.05)			
Yes 2320/6476 ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat diets No 6677/22342		.01	-	
ow lipidse No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg No 6677/22342	1.02 (0.99-1.06)	.18	+=-	.76
No 8229/26862 Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat diets No 6677/22342	2.02 (0.00 2.00)			
Yes 646/2820 ating a higher quality dietf No 7051/22262 Yes 1824/7420 ating a high saturated fat dietg No 6677/22342	1.03 (1.01-1.05)	.005	-	
No 7051/22262 Yes 1824/7420 ating a high saturated fat diets No 6677/22342	1.01 (0.96-1.06)	.70		.49
No 7051/22262 Yes 1824/7420 ating a high saturated fat diets No 6677/22342	1.01 (0.30 1.00)	., 0	Γ	
Yes 1824/7420 ating a high saturated fat diet ^g No 6677/22342	1.02 (1.00-1.04)	.05	=	
ating a high saturated fat diet ^g No 6677/22342	1.04 (1.01-1.08)	.02	- <u>-</u> -	.24
No 6677/22342	1.04 (1.01-1.08)	.02	-	
•	1.04 (1.01-1.06)	.002	<u>_</u>	
163 2130/7340	1.04 (1.01-1.00)	.48	_ 	.11
ating a low caturated for dioth	1.01 (0.98-1.04)	.40	7	
ating a low saturated fat dieth	1 02 /1 01 1 0E)	01		
No 8294/27581 Yes 581/2101	1.03 (1.01-1.05)	.01		.23
•	1.10 (0.98-1.24)	.10	 	
ating high fat diet ⁱ	1 04 (1 02 1 06)	001		
No 6654/22288	1.04 (1.02-1.06)	.001	-	.06
Yes 2221/7394	1.01 (0.98-1.04)	.54	+	
ating a high protein diet ^j	4 00 /0 00 4 00	40		
No 6301/22137	1.02 (0.99-1.04)	.19	 ■ -	.67
Yes 2574/7545	1.01 (0.98-1.04)	.47	+	
ating a high carbohydrate diet ^k				
No 6806/22291	1.03 (1.00-1.05)	.02	-	.49
Yes 2069/7391	1.05 (0.99-1.10)	.11		.+3

- ^a Cohort-stratified standard proportional hazards models were used. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, processed meat, poultry, and fish, where relevant. Models were further stratified by sex to satisfy proportional hazards assumption.
- b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- ^e Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- ^f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ¹ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ^j Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).

eFigure 7. Association between each additional 2 servings of poultry consumed per week and all-cause mortality among different subgroups

Subgroups	Events/total	Hazard ratio (95% CI) ^a	<i>P</i> value		<i>P</i> value fo interactio
Age					
<45 years	409/5210	1.08 (0.99-1.18)	.08	 	
45-64 years	4041/17025	0.98 (0.94-1.01)	.16	-■ †	.09
≥65 years	4425/7447	0.99 (0.95-1.02)	.38	-■	
Sex					
Men	4439/13168	1.00 (0.97-1.03)	.96	- ♦-	.57
Women	4436/16514	0.99 (0.96-1.02)	.40	- ■	.57
Race and ethnicity					
Non-Hispanic white	6668/20581	1.00 (0.97-1.02)	.73		
Non-Hispanic black	1862/7004	1.00 (0.96-1.04)	.94	- •	.61
Other	345/2097	0.95 (0.86-1.05)	.28		
Education level					
Less than high school	2525/5541	1.00 (0.96-1.04)	.87	-	
High school	2609/8461	1.00 (0.96-1.04)	.95	-	.77
Some college or more	3741/15680	0.98 (0.95-1.02)	.35	- ■	
Smoking status					
Never	3805/14772	0.98 (0.95-1.02)	.30	■-	
Former	2877/8853	0.99 (0.95-1.03)	.57		.60
Current	2193/6057	1.01 (0.97-1.06)	.66		
Weight status	•	,			
BMI <25 kg/m ²	3150/11553	1.00 (0.97-1.04)	.85	- 	
25 ≤ BMI <30 kg/m ²	3509/11172	0.98 (0.95-1.02)	.37	- ■	.69
BMI ≥30 kg/m ²	2216/6957	0.98 (0.94-1.03)	.45	■ -	
Diabetes ^b	,	(0.0 (=.00)			
No	7501/27112	0.99 (0.97-1.02)	.67	-	
Yes	1374/2570	0.95 (0.90-1.00)	.06	- ■-Ī	.13
- Turney - T	137 1/2370	0.55 (0.50 1.00)	.00	_	
No	4024/19000	1.00 (0.97-1.04)	.89		
Yes	4851/10682	0.98 (0.95-1.01)	.18	- = T	.29
- Tes Hyperlipidemia ^d	4031/10002	0.30 (0.33 1.01)	.10	7	
No	6555/23206	1.00 (0.97-1.02)	.83		
Yes	2320/6476	0.98 (0.94-1.02)	.36	- ■-	.49
₋ow lipids ^e	2320/04/0	0.36 (0.34-1.02)	.50	_	
No	8229/26862	0.99 (0.97-1.02)	.56		
Yes	646/2820	0.99 (0.92-1.06)	.50 .74		.91
Tes Eating a higher quality diet ^f	040/2820	0.99 (0.92-1.06)	.74	7	
	7051/22262	1.00 (0.97-1.03)	.88	<u>.</u>	
No					.48
Yes	1824/7420	0.98 (0.94-1.02)	.37	-	
Eating a high saturated fat d		0.00 (0.00 1.03)	47		
No	6677/22342	0.99 (0.96-1.02)	.47	1	.66
Yes	2198/7340	1.00 (0.96-1.05)	.95		
Eating a low saturated fat die		0.00 (0.07.4.03)	50		
No	8294/27581	0.99 (0.97-1.02)	.50	- 	.73
Yes	581/2101	1.01 (0.92-1.10)	.87		
Eating high fat diet ⁱ					
No	6654/22288	1.00 (0.97-1.02)	.75	+	.62
Yes	2221/7394	0.98 (0.94-1.03)	.44	-■ 	
Eating a high protein diet ^j					
No	6301/22137	0.98 (0.95-1.01)	.25	-■ 	.73
Yes	2574/7545	0.97 (0.94-1.01)	.12	-■ 	., 5
Eating a high carbohydrate d					
No	6806/22291	0.99 (0.97-1.02)	.57		.98
Yes	2069/7391	0.99 (0.94-1.05)	.78	_	.30
				I	

- ^a Cohort-stratified standard proportional hazards models were used. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, unprocessed red meat, processed meat, and fish, where relevant.
- ^b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- $^{\rm e}$ Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ¹ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ^j Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).

eFigure 8. Association between each additional 2 servings of fish consumed per week and all-cause mortality among different subgroups

Subgroups	Events/total	Hazard ratio (95% CI) ^a	<i>P</i> value		P value for interaction
Age					
<45 years	409/5210	1.03 (0.96-1.11)	.36		_
45-64 years	4041/17025	0.98 (0.95-1.02)	.32	_=	.05
≥65 years	4425/7447	0.96 (0.93-0.98)	<.001	-	
Sex				1	
Men	4439/13168	1.00 (0.97-1.02)	.79	<u> </u>	.26
Women	4436/16514	0.98 (0.96-1.00)	.08	=	0
Race and ethnicity					
Non-Hispanic white	6668/20581	0.99 (0.97-1.01)	.40	_=	
Non-Hispanic black	1862/7004	0.97 (0.93-1.00)	.08	-	.47
Other	345/2097	0.98 (0.89-1.08)	.64 -	-	
Education level	a= /-		0.5		
Less than high school	2525/5541	0.96 (0.93-0.99)	.02		_
High school	2609/8461	1.01 (0.98-1.04)	.65	I	.10
Some college or more	3741/15680	0.99 (0.97-1.01)	.38		
Smoking status					
Never	3805/14772	0.99 (0.97-1.02)	.50	1	
Former	2877/8853	1.01 (0.98-1.03)	.64		.01
Current	2193/6057	0.95 (0.91-0.98)	.002		
Weight status					
BMI <25 kg/m ²	3150/11553	0.99 (0.96-1.02)	.56	I	
$25 \le BMI < 30 \text{ kg/m}^2$	3509/11172	0.99 (0.97-1.02)	.55		.38
BMI ≥30 kg/m ²	2216/6957	0.97 (0.94-1.00)	.05	-	
Diabetes ^b					
No	7501/27112	0.99 (0.97-1.01)	.34	_=	.06
Yes	1374/2570	0.95 (0.91-0.99)	.01		.00
Hypertension ^c]	
No	4024/19000	1.00 (0.97-1.03)	.99	_+	.09
Yes	4851/10682	0.97 (0.95-1.00)	.02	=	.03
Hyperlipidemia ^d				_	
No	6555/23206	0.98 (0.96-1.00)	.07	╼ Ĺ	.16
Yes	2320/6476	1.01 (0.98-1.04)	.73	₹	.10
Low lipids ^e					
No	8229/26862	0.99 (0.97-1.01)	.34	_₹	.28
Yes	646/2820	0.96 (0.90-1.02)	.17	-	.20
Eating a higher quality diet ^f				_[
No	7051/22262	0.98 (0.96-1.00)	.08	=	.13
Yes	1824/7420	1.01 (0.98-1.04)	.59	 -	.13
Eating a high saturated fat d	iet ^g				
No	6677/22342	0.99 (0.97-1.01)	.15	=	.59
Yes	2198/7340	1.00 (0.96-1.03)	.79	- ₱-	.55
Eating a low saturated fat di	et ^h				
No	8294/27581	0.99 (0.97-1.01)	.21	=	.76
Yes	581/2101	0.98 (0.92-1.04)	.49		.70
Eating high fat diet ⁱ					
No	6654/22288	0.98 (0.96-1.00)	.06	=	.12
Yes	2221/7394	1.01 (0.98-1.04)	.65	+	.12
Eating a high protein diet ^j					
No	6301/22137	0.98 (0.96-1.01)	.12	-= 	.42
Yes	2574/7545	0.97 (0.94-0.99)	.01	-	.42
Eating a high carbohydrate d		,			
No	6806/22291	0.98 (0.97-1.00)	.12	-	27
Yes	2069/7391	1.01 (0.96-1.05)	.81	—	.37
©2020 American Medical			+		++
			0.8	1.0 1	.2 1.4
				Hazard ratio	

- ^a Cohort-stratified standard proportional hazards models were used. Adjustment covariates included age, sex, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Chinese, other), education (<high school, high school, some college or more), total energy, smoking status (current, former, never), smoking pack-years (0, 0.1-4.9, 5.0-9.9, 10-19.9, 20-29.9, 30-39.9, ≥40), cohort-specific physical activity z score, alcohol intake (gram), hormone therapy (y/n), fruits, legumes, potatoes, other vegetables excluding legumes and potatoes, nuts and seeds, whole grains, refined grains, low-fat dairy products, high-fat dairy products, sugar-sweetened beverages, eggs, unprocessed red meat, processed meat, and poultry, where relevant.
- b Fasting glucose ≥126 mg/dL or HbA1c ≥6.5% or taking glucose-lowering drugs.
- ^c Blood pressure ≥140/90 mm Hg or taking antihypertensive drugs.
- ^d Total cholesterol ≥240 mg/dL or taking lipid-lowering drugs.
- ^e Low density lipoprotein cholesterol <70 mg/dL or non-high density lipoprotein cholesterol <100 mg/dL, among those who did not take lipid-lowering drugs.
- f Alternate Healthy Eating Index 2010 score in the highest quartile (a score of 51.1 or higher). The original version of the aHEI-2010 score has a range of 0-110 points. The aHEI-2010 score in this study had a range of 0-100 points due to the removal of the meat item.
- g Percent of energy consumed from saturated fat in the highest quartile (14% or higher).
- ^h Percent of energy consumed from saturated fat <7%.
- ¹ Percent of energy consumed from fat in the highest quartile (37.9% or higher).
- ^j Percent of energy consumed from protein in the highest quartile (18.9% or higher).
- ^j Percent of energy consumed from carbohydrates in the highest quartile (55.4% or higher).