

Table S1. Exclusion counts.	
	<i>n</i>
<i>HPFS Participants before exclusions</i>	51,530
Baseline Exclusions	
≥65 years old	9651
Death before baseline questionnaire	484
Reported that alcohol intake substantially <i>increased</i> within 5 years prior to 1986 baseline	3,567
Reported alcohol intake substantially <i>decreased</i> within 5 years prior to 1986 baseline	15,999
Reported ≥15 lb weight loss within 5 years prior to 1986 baseline	801
Diagnosed with cancer before or within 4 years of 1986 baseline	1519
Diagnosed with diabetes before or within 4 years of 1986 baseline	523
Diagnosed with renal failure, liver disease, ulcer disease, pulmonary disease, tuberculosis, multiple sclerosis, amyotrophic lateral sclerosis, and Parkinson’s disease before or within 4 years of 1986 baseline	1732
Insufficient alcohol or weight change or implausible energy intake throughout follow-up, so never contributed information to study (“skipped” for all periods).	2,283
Total participants contributing information to analysis	14,971

Table S2. Mean covariate values at 1986 baseline (the start of the first four-year period of observation) according to change in alcohol intake¹ from 1986 to 1990 among non-obese HPFS men .

	Increased intake	No change	Decreased intake	Total
<i>n</i>	982	11,120	1,915	14,017
Alcohol Intake (servings/day)				
Beer	0.43	0.27	0.85	0.36
Wine	0.38	0.22	0.71	0.30
Liquor	0.50	0.25	0.80	0.35
Total Alcohol	1.31	0.75	2.36	1.01
Age (years)	51.04	49.94	50.73	50.12
High Cholesterol, ever (%)	12	9	10	9
High Blood Pressure, ever (%)	18	14	16	14
Smoking Status (%)				
Never	35	42	38	46
Former	60	54	58	50
Current	5	4	4	4
BMI (kg/m ²)	24.79	24.74	24.92	24.77
Weight (pounds)	175.5	174.4	176.5	174.8
Physical Activity (MET-hr/wk) ²				
Total	39.21	35.52	40.02	36.39
Vigorous	7.39	7.47	7.43	7.48
TV watching (hours/week)	3.74	4.12	3.71	4.03
Dietary Covariates (Servings/Day)				
Total fruit without juice	1.29	1.46	1.37	1.44
Total vegetables	2.89	2.87	3.02	2.89
Whole-fat dairy	0.99	0.98	1.02	0.99
Low-fat dairy	0.73	0.84	0.72	0.81
Seafood	0.36	0.37	0.40	0.37
Whole grains	1.30	1.44	1.37	1.42
Refined grains	1.05	1.18	1.12	1.16
Nuts	0.27	0.25	0.31	0.26
Coffee	2.24	1.79	2.45	1.91
Sugary soft drinks	0.26	0.31	0.27	0.30
Low-calorie soft drinks	0.49	0.44	0.44	0.44
Juice	0.68	0.80	0.77	0.79
Sweets	1.06	1.35	1.19	1.31
Processed meats	0.39	0.37	0.41	0.37
non-processed meats	0.64	0.63	0.66	0.64
Fried food away from home	0.14	0.15	0.15	0.15
Trans fat (g/day))	1.23	1.30	1.18	1.28

Calories (kcal/day)	1903	1989	2161	2006
¹ A "decrease" is defined as a decrease in 0.5 drinks or more; an "increase" is defined as an increase of 0.5 drinks or more.				
² 1986 baseline total physical activity value was taken from 1990, after outdoor work and weightlifting was added, to better reflect values throughout follow-up. Still use 1986 value for vigorous physical activity, as vigorous activity items remained the same in all questionnaires.				

Table S3. 4-year weight change (lb) for every simultaneous 1 drink per day change in alcohol intake among non-obese HPFS men, 1986-2010 (n=14,971 men contributing 44,603 4-year periods)

	Weight Change, lb (95% CI)	p-value	Weight Change, lb (95% CI)	p-value	Weight Change, lb (95% CI)	p-value	Weight Change, lb (95% CI)	p-value
	Alternate Model 1 ²		Alternate Model 2 ³		Alternate Model 3 ⁴		Alternate Model 4 ⁵	
Total Alcohol	0.32 (0.18, 0.46)	<0.001	0.23 (0.10, 0.35)	<0.001	0.23 (0.10, 0.35)	<0.001	0.20, (0.07, 0.33)	0.002
Beer	0.38 (0.14, 0.63)	0.002	0.29 (0.08, 0.50)	0.008	0.35 (0.13, 0.56)	0.002	0.26 (0.04, 0.48)	0.02
Wine	0.32 (0.07, 0.56)	0.01	0.16 (-0.04, 0.36)	0.11	0.09 (-0.11, 0.29)	0.39	0.14 (-0.06, 0.34)	0.16
Liquor	0.36 (0.13, 0.58)	0.002	0.28 (0.09, 0.48)	0.005	0.31 (0.11, 0.51)	0.002	0.26 (0.06, 0.46)	0.01

¹ Unless otherwise noted below, all models are adjusted for **age** (years) at start of each 4-year period, **year** (at start of 4-year period), **history of high cholesterol** (ever, never), **history of high blood pressure** (ever, never), 4-year change in the following time-varying covariates: **smoking status** (current, past, never), **total physical activity** (MET hours per week), **vigorous physical activity** (MET hours per week), **watching TV** (hours per week), **sleep** (hours per night), and 4-year change in the following dietary covariates (servings/day): **fried potatoes, fruits, vegetables, juice, whole grains, refined grains, fried foods, processed meat, non-processed meat, nuts, coffee, sweets, sugar sweetened beverages** (other than juice), **diet beverages, whole-fat dairy products, low-fat dairy products, seafood**, and **trans fat**. Beer, wine, and liquor were also mutually adjusted for each other. When total alcohol intake was the main exposure models were not adjusted for any alcohol subtypes.

² *Instead of carrying forward missing values, anyone with missing covariate value is excluded from analysis, so only 11,714 men contributing 27,495 4-year periods are included in this model.*

³ *Adjusts for 1986 BMI instead of BMI at start of each 4-year period.*

⁴ *Does not adjust for 4-year change in dietary covariates.*

⁵ *Additionally adjusts for weight and total alcohol intake at start of 4-year period*

Table S4. 4-year weight change (lb) for every simultaneous 1 drink per day change in alcohol intake among non-obese HPFS men, 1994-2010 (n=7,371 men contributing 17,485 4-year periods)

	Weight Change, lb (95% CI)	P-value	Weight Change, lb (95% CI)	P-value	Weight Change, lb (95% CI)	P-value	P- interaction
<u>BMI at start of 4-year period</u>							
	BMI <25 kg/m²		BMI 25 to <27.5 kg/m²		BMI 27.5 to <30 kg/m²		
<i># 4-year periods</i>	8,070		6,220		3,195		
Light Beer	0.16 (-0.29, 0.60)	0.49	0.42 (-0.15, 0.99)	0.15	-0.20 (-0.99, 0.58)	0.61	0.66
Regular Beer	-0.04 (-0.81, 0.74)	0.93	-0.63 (-1.69, 0.43)	0.24	-1.15 (-2.43, 0.13)	0.08	0.06
Total Beer	0.33 (-0.21, 0.87)	0.23	1.07 (0.42, 1.71)	0.001	0.57 (-0.43, 1.57)	0.27	0.16
<u>Age at start of 4-year period</u>							
	<55 years old		55 to <60 years old		60 to 65 years old		
<i># 4-year periods</i>	5,016		5,469		7,000		
Light Beer	0.74 (0.20, 1.28)	0.007	0.13 (-0.49, 0.76)	0.68	-0.23 (-0.73, 0.26)	0.36	0.01
Regular Beer	0.95 (0.07, 1.83)	0.03	-0.68 (-1.84, 0.49)	0.26	-1.53 (-2.43, -0.64)	0.001	<0.001
Total Beer	0.72 (0.09, 1.35)	0.03	0.58 (-0.14, 1.31)	0.12	0.51 (-0.13, 1.15)	0.12	0.89
<u>Total alcohol intake (drinks/day) at start of 4-year period</u>							
	≤1 drinks/day		>1 to 2 drinks/day		>2 to 4 drinks/day		
<i># 4-year periods</i>	3,656		11,231		2,155		
Light Beer	0.11 (-2.95, 3.18)	0.94	0.29 (-0.18, 0.77)	0.23	-0.79 (-2.68, 1.09)	0.41	0.75
Regular Beer	-3.27 (-10.22, 3.69)	0.36	-0.54 (-1.37, 0.29)	0.20	3.14 (-1.62, 7.91)	0.20	0.89
Total Beer	1.31 (-3.18, 5.80)	0.57	0.78 (0.21, 1.34)	0.007	-1.56 (-4.65, 1.53)	0.32	0.93

¹Multivariable-adjusted models are adjusted for **age** (years) at start of each 4-year period, **year** (at start of 4-year period), **history of high cholesterol** (ever, never), **history of high blood pressure** (ever, never), 4-year change in the following time-varying covariates: **smoking status** (current, past, never), **total physical activity** (MET hours per week), **vigorous physical activity** (MET hours per week), **watching TV** (hours per week), **sleep** (hours per night), and 4-year change in the following dietary covariates (servings/day): **fried potatoes, fruits, vegetables, juice, whole grains, refined grains, fried foods, processed meat, non-processed meat, nuts, coffee, sweets, sugar sweetened beverages** (other than juice), **diet beverages, whole-fat dairy products, low-fat dairy products, seafood, and trans fat**. Beer, wine, and liquor were also mutually adjusted for each other. When total alcohol intake was the main exposure models were not adjusted for any alcohol subtypes. Models were not adjusted for the stratification variable.

Table S5. 4-year weight change (lb) according to change in alcohol intake among obese HPFS men, 1986-2010 (n=2,018 men contributing 4,349-year periods).**4a. Average weight change, lb (95% CI) for every one-drink continuous change in alcohol consumption**

	Age-Adjusted Model ¹	<i>p-value</i>	Multivariable-Adjusted Model ²	<i>p-value</i>	Multivariable ² + Total Energy Adjusted Model	<i>p-value</i>
Total Alcohol	0.45 (-0.12, 1.02)	0.12	0.45 (-0.12, 1.02)	0.12	0.26 (-0.33, 0.86)	0.38
Beer	0.63 (-0.48, 1.74)	0.26	0.54 (-0.53, 1.62)	0.32	0.31 (-0.78, 1.39)	0.58
Wine	-0.63 (-1.63, 0.38)	0.23	-0.53 (-1.55, 0.49)	0.31	-0.75 (-1.78, 0.29)	0.16
Liquor	1.31 (0.41, 2.21)	0.005	1.32 (0.44, 2.21)	0.003	1.13 (0.23, 2.04)	0.01

4b. Average weight change, lb (95% CI) by category of total alcohol change

	# 4-year periods	Age-Adjusted Model ¹	Multivariable-Adjusted Model ²	Multivariable ² + Total Energy Adjusted Model
Total Alcohol				
Decreased by ≥2 drinks/day	92	-2.90 (-5.91, 0.11)	-3.19 (-6.22, -0.17)	-2.68 (-5.74, 0.39)
Decreased by 1-<2 drinks/day	144	-1.80 (-4.11, 0.50)	-1.61 (-3.86, 0.64)	-1.31 (-3.58, 0.97)
Decreased by <1 drink/day	646	-0.31 (-1.38, 0.77)	-0.18 (-1.24, 0.88)	-0.10 (-1.16, 0.97)
No change ³	2,576	0.00 (ref)	0.00 (ref)	0.00 (ref)
Increased by <1 drink/day	650	-0.11 (-1.16, 0.94)	-0.20 (-1.22, 0.82)	-0.31 (-1.33, 0.72)
Increased by 1-<2 drinks/day	172	-0.90 (-2.76, 0.96)	-0.64 (-2.51, 1.23)	-0.85 (-2.72, 1.02)
Increased by ≥2 drinks/day	69	0.52 (-1.96, 2.99)	0.50 (-1.99, 2.99)	0.01 (-2.54, 2.57)

¹Age-adjusted models are adjusted for age (years) at start of each 4-year period

²Multivariable-adjusted models are adjusted for **age** (years) at start of each 4-year period, **year** (at start of 4-year period), **history of high cholesterol** (ever, never), **history of high blood pressure** (ever, never), 4-year change in the following time-varying covariates: **smoking status** (current, past, never), **total physical activity** (MET hours per week), **vigorous physical activity** (MET hours per week), **watching TV** (hours per week), **sleep** (hours per night), and 4-year change in the following dietary covariates (servings/day): **fried potatoes, fruits, vegetables, juice, whole grains, refined grains, fried foods, processed meat, non-processed meat, nuts, coffee, sweets, sugar sweetened beverages** (other than juice), **diet beverages, whole-fat dairy products, low-fat dairy products, seafood, and trans fat**. Beer, wine, and liquor were also mutually adjusted for each other. When total alcohol intake was the main exposure models were not adjusted for any alcohol subtypes.

³No change was defined as changing by less than 1 drink per week (0.14 drinks per day).

Table S6 - Exclusion Sensitivity Analyses. 4-year weight change (lb) according to change in alcohol intake among non-obese HPFS men, 1986-2010 without excluding men ≥65 years old, men who reported that alcohol intake substantially increased or decreased within 5 years prior to 1986 baseline, or men who reported a ≥15 pound weight loss within 5 years prior to 1986 baseline (32,548 men contributing 105,258 4-year periods)

	Age-Adjusted Model ¹				Multivariable-Adjusted Model ²				Multivariable ² + Total Energy Adjusted Model				
	Average weight change, lb (95% CI)			p-value	Average weight change, lb (95% CI)			p-value	Average weight change, lb (95% CI)			p-value	
Total Alcohol	0.35	0.27	0.43	<0.001	0.36	0.28	0.45	<0.001	0.32	0.24	0.41	<0.001	
Beer	0.36	0.21	0.51	<0.001	0.34	0.19	0.49	<0.001	0.28	0.13	0.44	<0.001	
Wine	0.20	0.06	0.33	0.004	0.27	0.14	0.41	<0.001	0.23	0.10	0.37	<0.001	
Liquor	0.55	0.42	0.69	<0.001	0.56	0.43	0.70	<0.001	0.53	0.39	0.66	<0.001	
	# 4-yr periods												
Decreased by ≥2 drinks/day	1946	-0.51	-0.92	-0.10	0.02	-0.66	-1.07	-0.25	0.002	-0.56	-0.97	-0.14	0.01
Decreased by 1-<2 drinks/day	3884	-0.55	-0.82	-0.28	<0.001	-0.53	-0.79	-0.27	<0.001	-0.48	-0.74	-0.21	<0.001
Decreased by <1 drink/day	17415	-0.22	-0.35	-0.09	<0.001	-0.16	-0.29	-0.04	0.01	-0.14	-0.27	-0.02	0.03
No change ³	65354												
Increased by <1 drink/day	18490	0.17	0.05	0.30	0.005	0.23	0.11	0.35	<0.001	0.21	0.09	0.33	<0.001
Increased by 1-<2 drinks/day	4233	0.48	0.24	0.73	<0.001	0.49	0.25	0.73	<0.001	0.43	0.19	0.67	<0.001
Increased by ≥2 drinks/day	1699	1.08	0.66	1.51	<0.001	1.08	0.66	1.50	<0.001	0.98	0.56	1.40	<0.001
without excluding men ≥65 years old (17,113 men contributing 55,711 4-year periods)													
	Age-Adjusted Model ¹				Multivariable-Adjusted Model ²				Multivariable ² + Total Energy Adjusted Model				
	Average weight change, lb (95% CI)			p-value	Average weight change, lb (95% CI)			p-value	Average weight change, lb (95% CI)			p-value	
Total Alcohol	0.26	0.17	0.36	<0.001	0.30	0.20	0.41	<0.001	0.28	0.16	0.39	<0.001	
Beer	0.36	0.16	0.56	<0.001	0.36	0.16	0.55	<0.001	0.32	0.12	0.53	0.00	
Wine	0.13	-0.05	0.31	0.15	0.22	0.04	0.40	0.01	0.20	0.01	0.38	0.04	
Liquor	0.39	0.21	0.57	<0.001	0.43	0.26	0.60	<0.001	0.41	0.23	0.59	<0.001	
	# 4-yr periods												
Decreased by ≥2 drinks/day	1095	-0.03	-0.49	0.43	0.90	-0.30	-0.83	0.23	0.27	-0.23	-0.77	0.31	0.40
Decreased by 1-<2 drinks/day	2344	-0.52	-0.84	-0.20	0.002	-0.55	-0.88	-0.21	0.001	-0.51	-0.85	-0.17	0.00

Decreased by ≥2 drinks/day	772	-0.10	-0.69	0.50	0.75	-0.38	-0.97	0.21	0.21	-0.29	-0.90	0.31	0.34
Decreased by 1-<2 drinks/day	1626	-0.51	-0.89	-0.13	0.01	-0.55	-0.92	-0.17	0.004	-0.50	-0.88	-0.13	0.01
Decreased by <1 drink/day	7303	-0.21	-0.40	-0.03	0.02	-0.21	-0.39	-0.03	0.02	-0.20	-0.38	-0.01	0.04
No change ³	26156												
Increased by <1 drink/day	7669	0.08	-0.09	0.26	0.35	0.10	-0.08	0.28	0.26	0.08	-0.09	0.26	0.35
Increased by 1-<2 drinks/day	1746	0.30	-0.06	0.66	0.11	0.24	-0.12	0.60	0.19	0.19	-0.17	0.56	0.30
Increased by ≥2 drinks/day	667	0.68	0.04	1.33	0.04	0.67	0.03	1.32	0.04	0.58	-0.07	1.24	0.08

¹Age-adjusted models are adjusted for age (years) at start of each 4-year period

²Multivariable-adjusted models are adjusted for **age** (years) at start of each 4-year period, **year** (at start of 4-year period), **history of high cholesterol** (ever, never), **history of high blood pressure** (ever, never), 4-year change in the following time-varying covariates: **smoking status** (current, past, never), **total physical activity** (MET hours per week), **vigorous physical activity** (MET hours per week), **watching TV** (hours per week), **sleep** (hours per night), and 4-year change in the following dietary covariates (servings/day): **fried potatoes, fruits, vegetables, juice, whole grains, refined grains, fried foods, processed meat, non-processed meat, nuts, coffee, sweets, sugar sweetened beverages** (other than juice), **diet beverages, whole-fat dairy products, low-fat dairy products, seafood, and trans fat**. Beer, wine, and liquor were also mutually adjusted for each other. When total alcohol intake was the main exposure models were not adjusted for any alcohol subtypes.

³No change was defined as changing by less than 1 drink per week (0.14 drinks per day).