

Supplementary Online Content

Michels KA, Pfeiffer RM, Brinton LA, Trabert B. Modification of the associations between duration of oral contraceptive use and ovarian, endometrial, breast, and colorectal cancers. *JAMA Oncol*. Published online January 18, 2018. doi:10.1001/jamaoncol.2017.4942

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

eTable. Characteristics of the NIH-AARP Diet and Health Study population across categories of duration of oral contraceptive use

	Duration of Oral Contraceptive Use							
	No use or up to 1 year		1 to 4 years		5 to 9 years		10 or more years	
	n	%	n	%	n	%	n	%
Age, years^a median [IQR]	64 [60-67]		59 [55-64]		59 [55-64]		60 [56-64]	
Race								
White	105,285	90.4	31,156	90.6	22,121	91.2	17,152	91.5
Black	6,608	5.7	2,067	6.0	1,438	5.9	1,117	6.0
Other	4,530	3.9	1,184	3.4	689	2.8	469	2.5
Education								
Did not complete High School	8,972	7.9	1,593	4.7	959	4.0	669	3.6
High School	33,332	29.2	7,525	22.2	5,232	21.9	3,912	21.2
Some college/post High School	40,286	35.3	12,842	37.9	9,273	38.8	7,218	39.0
College	15,919	14.0	5,816	17.2	4,070	17.0	3,120	16.9
Post graduate	15,584	13.7	6,071	17.9	4,343	18.2	3,577	19.3
Age at menarche								
12 years or younger	57,460	48.8	17,343	49.9	12,002	49.0	9,259	48.9
13 to 14 years	49,035	41.6	14,297	41.1	10,341	42.2	7,791	41.2
15 years or older	11,273	9.6	3,135	9.0	2,166	8.8	1,873	9.9
Menopausal status								
Pre-menopausal	2,224	1.9	2,256	6.5	1,606	6.6	1,130	6.0
Post-menopausal	115,568	98.1	32,492	93.5	22,881	93.4	17,758	94.0
Smoking Status								
Non-smoker	54,778	47.8	14,605	43.2	9,914	41.5	7,794	42.3
Former smoker	43,728	38.2	13,814	40.8	10,201	42.7	7,927	43.0
Current smoker	16,065	14.0	5,424	16.0	3,753	15.7	2,722	14.8
Current alcohol use								
Non-drinker	38,421	32.7	9,167	26.4	5,799	23.7	4,080	21.6
Less than or equal to 2 servings per day	74,038	63.0	23,797	68.5	17,259	70.5	13,558	71.7
Greater than 2 servings per day	5,100	4.3	1,789	5.1	1,429	5.8	1,279	6.8
Current Body mass index (kg/m²)								
Less than 25	48,467	42.5	15,214	44.9	11,301	47.2	9,147	49.3

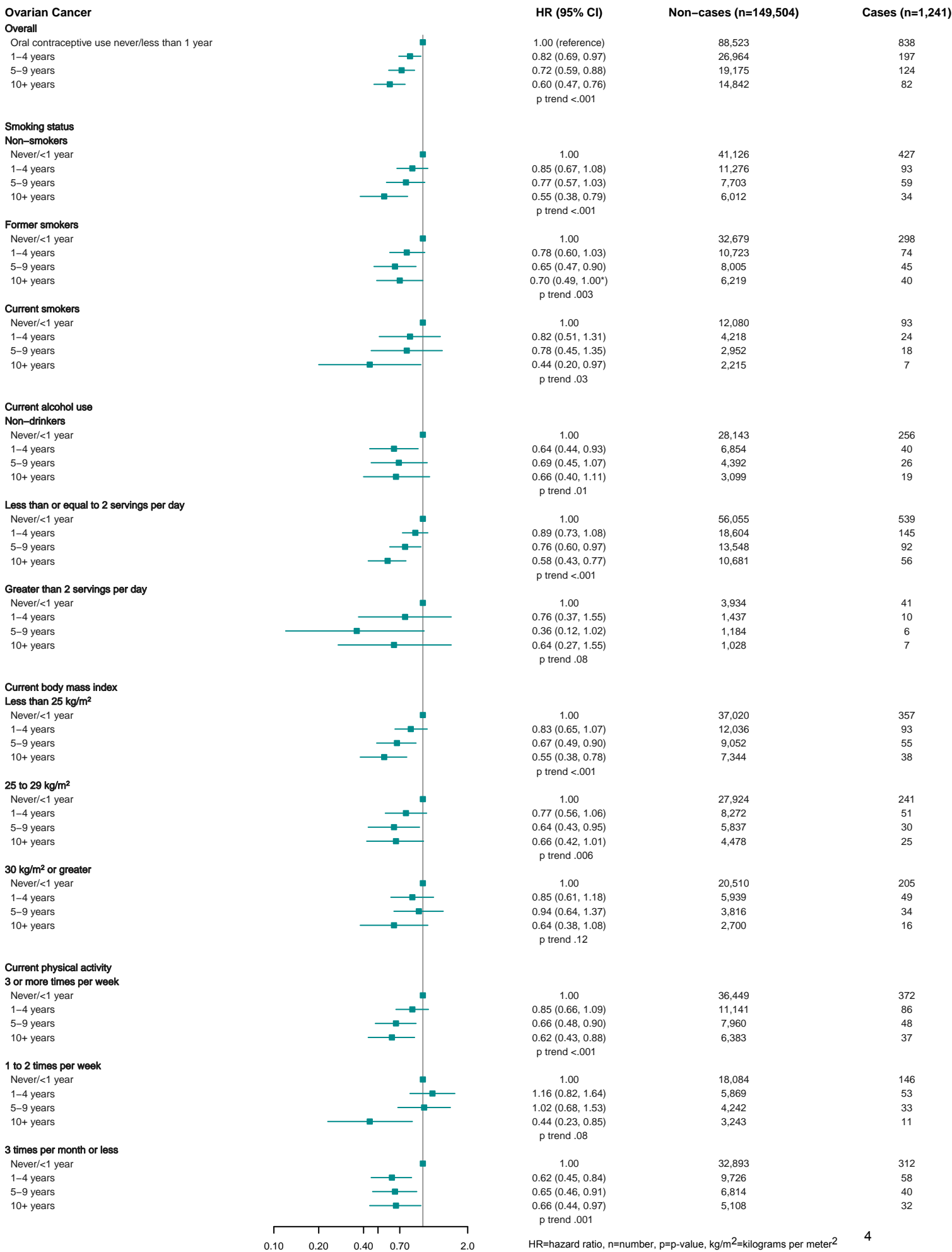
25 to 29	37,654	33.0	10,788	31.8	7,609	31.8	5,830	31.4
30 or greater	27,867	24.4	7,915	23.3	5,018	21.0	3,562	19.2
Current physical activity								
3 or more times per week	48,368	41.5	14,245	41.2	10,105	41.5	8,093	43.0
1 to 2 times per week	24,067	20.6	7,587	22.0	5,417	22.3	4,115	21.9
3 times per month or less	44,149	37.9	12,709	36.8	8,823	36.2	6,598	35.1
Has first degree relative with breast cancer								
No	98,138	87.0	29,082	87.2	20,499	87.1	15,930	87.6
Yes	14,606	13.0	4,258	12.8	3,025	12.9	2,265	12.5
Has first degree relative with colon cancer								
No	101,351	89.9	30,072	90.2	21,312	90.6	16,482	90.6
Yes	11,393	10.1	3,268	9.8	2,212	9.4	1,713	9.4
Has first degree relative with ovarian cancer								
No	41,727	93.2	13,265	93.7	9,659	94.2	7,541	93.3
Yes	3,046	6.8	885	6.3	593	5.8	538	6.7

n=number, IQR=interquartile range, kg/m²=kilograms per meter²

Characteristics reflect the analytic population prior to exclusions for specific cancer analyses (e.g., women with bilateral oophorectomy were excluded from Cox models for ovarian cancer).

Percentages in the table refer to proportions of the population who were not missing information on a given covariate. Missingness was less than 5% for all covariates, except family history of ovarian cancer, which was available for 51% of the population.

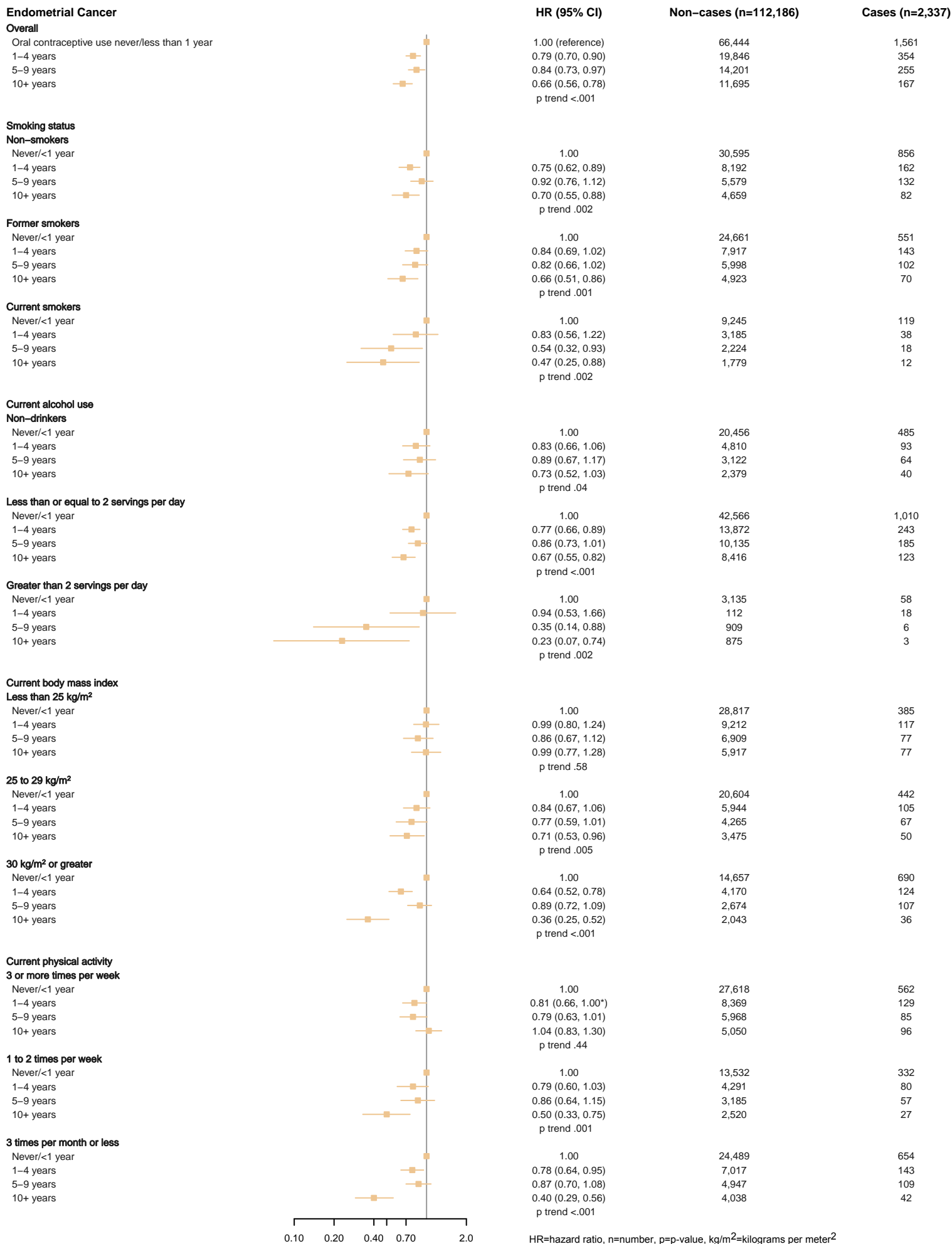
eFigure 1. Oral contraceptive use duration and time to ovarian cancer diagnosis across lifestyle characteristics



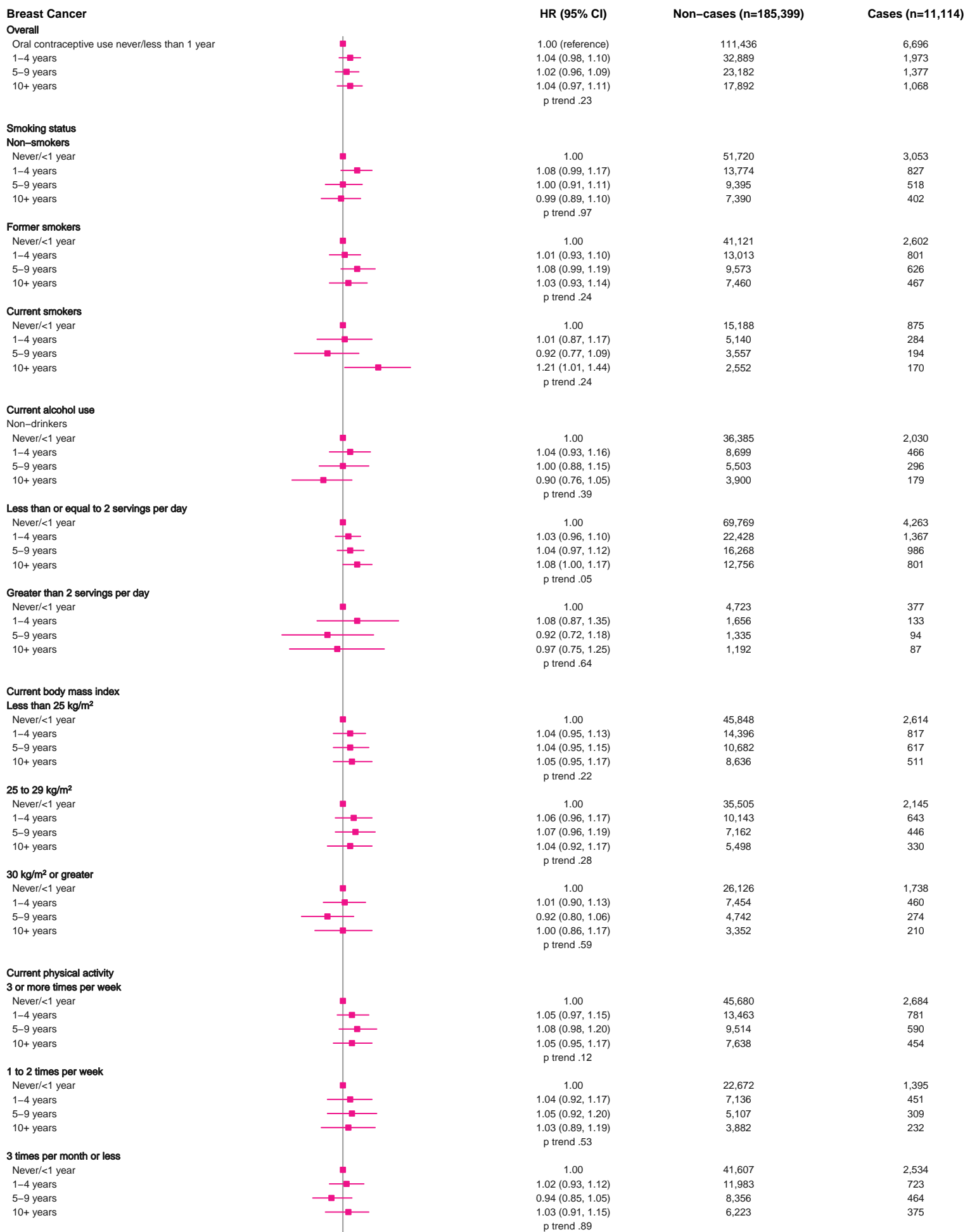
HR=hazard ratio, n=number, p=p-value, kg/m²=kilograms per meter²

*Statistically significant at alpha=0.05. Data are from the NIH-AARP Diet and Health Study. Prior oral contraceptive use and lifestyle factors queried at baseline (age 50-71).

eFigure 2. Oral contraceptive use duration and time to endometrial cancer diagnosis across lifestyle characteristics



eFigure 3. Oral contraceptive use duration and time to breast cancer diagnosis across lifestyle characteristics

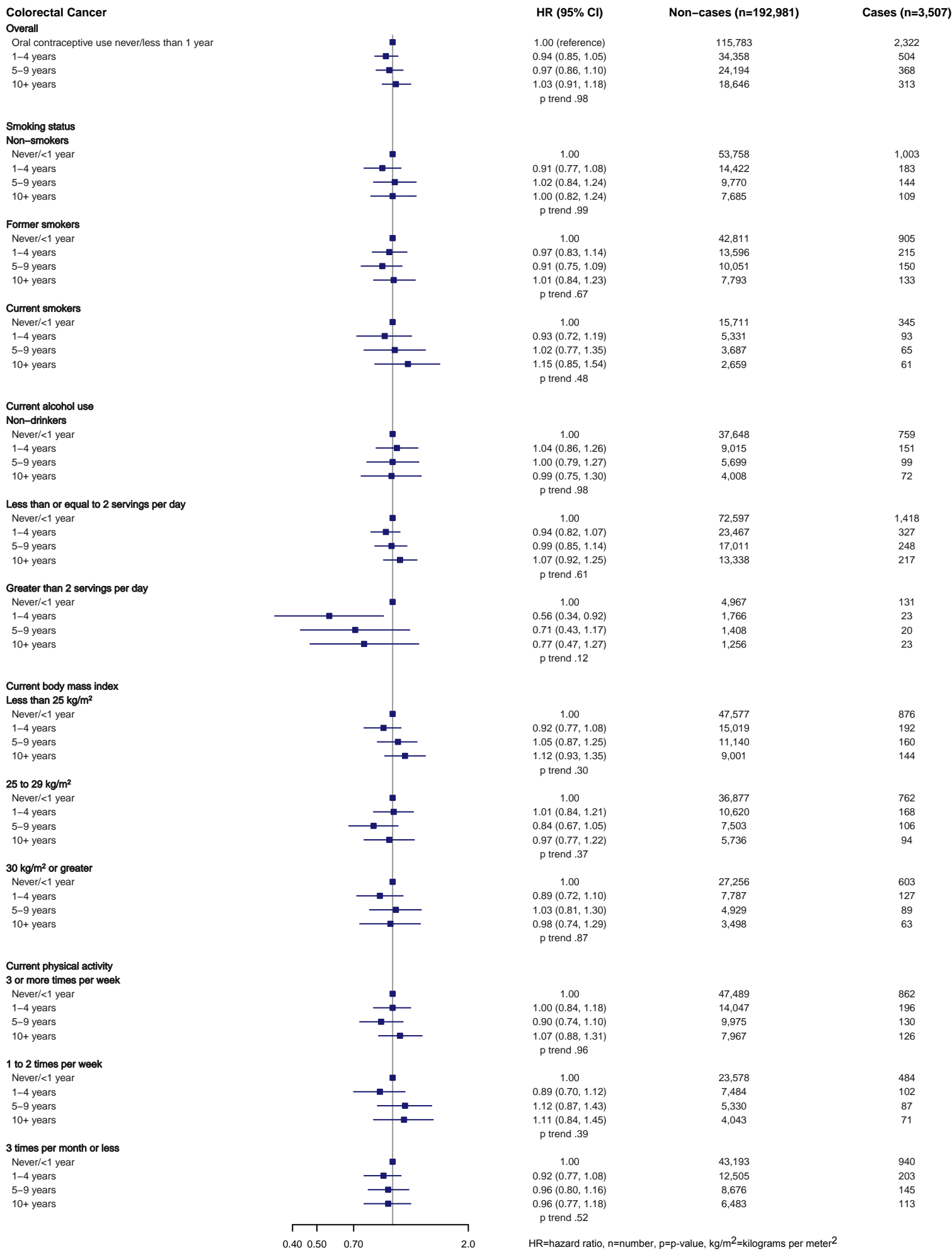


0.70 2.0

HR=hazard ratio, n=number, p=p-value, kg/m²=kilograms per meter²

Data are from the NIH-AARP Diet and Health Study. Prior oral contraceptive use and lifestyle factors queried at baseline (age 50-71).

eFigure 4. Oral contraceptive use duration and time to colorectal cancer diagnosis across lifestyle characteristics



0.40 0.50 0.70 2.0

HR=hazard ratio, n=number, p=p-value, kg/m²=kilograms per meter²

Data are from the NIH-AARP Diet and Health Study. Prior oral contraceptive use and lifestyle factors queried at baseline (age 50-71).

eFigure 5. Oral contraceptive use duration and time to breast (A), colorectal (B), or ovarian (C) cancer diagnosis across family history

A) Breast Cancer

No Family history of breast cancer

Oral Contraceptive Use Never/<1 year
1-4 years
5-9 years
10+ years

HR (95% CI)

Non-cases (n=185,399)

Cases (n=11,114)

1.00 (reference)	92,906	5,221
1.04 (0.98, 1.11)	27,517	1,562
1.04 (0.97, 1.12)	19,390	1,105
1.05 (0.97, 1.13)	15,076	854

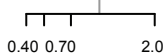
p trend .12

Family history of breast cancer

Never/<1 year
1-4 years
5-9 years
10+ years

1.00	13,436	1,169
1.02 (0.90, 1.17)	3,929	329
0.93 (0.80, 1.09)	2,808	217
1.00 (0.84, 1.18)	2,089	174

p trend .67



B) Colorectal Cancer

No Family history of colon cancer

Oral Contraceptive Use Never/<1 year
1-4 years
5-9 years
10+ years

Non-cases (n=192,981)

Cases (n=3,507)

1.00	99,356	1,961
0.93 (0.83, 1.04)	29,647	422
1.00 (0.88, 1.14)	20,984	326
1.09 (0.95, 1.24)	16,200	280

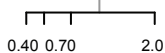
p trend .44

Family history of colon cancer

Never/<1 year
1-4 years
5-9 years
10+ years

1.00	11,145	245
1.04 (0.76, 1.41)	3,210	57
0.72 (0.47, 1.09)	2,182	30
0.62 (0.38, 1.01)	1,690	22

p trend .03



C) Ovarian Cancer

No Family history of ovarian cancer

Oral Contraceptive Use Never/<1 year
1-4 years
5-9 years
10+ years

Non-cases (n=76,630)

Cases (n=624)

1.00 (reference)	41,347	380
0.84 (0.66, 1.07)	13,173	92
0.79 (0.60, 1.05)	9,595	64
0.56 (0.39, 0.81)	7,504	37

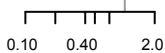
p trend <.001

Family history of ovarian cancer

Never/<1 year
1-4 years
5-9 years
10+ years

1.00	3,008	38
0.60 (0.26, 1.39)	877	8
0.27 (0.06, 1.14)	591	2
0.43 (0.13, 1.44)	535	3

p trend .03



HR=hazard ratio, CI=confidence interval, n=number, p=p-value

Approximately 4.4% of the population was missing information on family history of breast or colon cancer. Information on family history of ovarian cancer was available for 51% of the women in the ovarian cancer analyses (n=77,254).