

# THE LANCET

## Global Health

### Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

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# Body-mass index, blood pressure and cause-specific mortality in India: Prospective study of 500 000 adults

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**Part 2 – MEN. Questions to be asked only to men of age 35 or older**

1. **Name:** \_\_\_\_\_ **Father's name:** \_\_\_\_\_ **Wife's name:** \_\_\_\_\_  
 2. **Age (years):** \_\_\_\_\_ **Date of birth:** \_\_\_\_\_ **Place of birth:** \_\_\_\_\_  
 3. **Height (cm):** \_\_\_\_\_ **Weight (kg):** \_\_\_\_\_ **Waist (cm):** \_\_\_\_\_  
 4. **FIRST blood pressure reading (SBP/ DBP, mmHg):** ...../ .....

5. **Peak expiratory flow rate (L / minute):** \_\_\_\_\_

**6. Main occupations**

	Occupation	Main employer	Describe any significant chemical exposure at work	Age began	Age stopped
1					
2					

7. **Diet:** Vegetarian, no eggs/ Non-vegetarian/ Vegetarian with eggs; Brahmin diet? (Y/N)

**8. Previous history of treated disease**

	Y/N	Time since onset		Y/N	Time since onset
Hypertension			Cancer (& site)		
Asthma			Stroke/paralysis		
Diabetes			Heart attack		
Tuberculosis			Other (specify*)		

\*Coded later as cardiac/not

**9. Habits – smoking, chewing, snuff-taking, drinking**

Smoking	0/blank=never, 1=ex, 2=current	Frequency per day	Age began	Age stopped	Duration (years)
Bidis					
Cigarettes					
Other (specify)					

Circle places you smoke: 1. House, 2. Toilet, 3. Office, 4. Bus Stop, 5. Rly Stn, 6. Street, 7. Other  
 Time spent per day smoking (minutes): \_\_\_\_\_ Money spent per month on smoking (Rs): \_\_\_\_\_

Quid chewing or snuff-taking	0/blank=never, 1=ex, 2=current	Frequency per day	Age began	Age stopped	Duration (years)
Areca nut (AN) alone					
Tobacco alone					
AN + betel leaf (BL)					
AN + tobacco					
AN + BL + tobacco					
Manufactured quid - containing tobacco					
- without tobacco					
<b>Snuff-taking</b>					

Alcohol drinking	0/blank=never, 1=ex, 2=current	Frequency per week	Amount /event	Age began	Age stopped	Duration (years)
Indian liquor (arrack/toddy)						
Whisky						
Beer						
Brandy						
Other (specify)						

**10. SECOND blood pressure reading (SBP/DBP, mmHg):** ...../ ..... **[Jump to Part 4]**

**Part 3 – WOMEN. Questions to be asked only to women of age 35 or older**

1. **Name:** \_\_\_\_\_ **Husband's name:** \_\_\_\_\_  
 2. **Age (years):** \_\_\_\_\_ **Date of birth:** \_\_\_\_\_ **Place of birth:** \_\_\_\_\_  
 3. **Height (cm):** \_\_\_\_\_ **Weight (kg):** \_\_\_\_\_  
 4. **FIRST blood pressure reading (SBP/ DBP, mmHg):** ...../ .....

**6. Main occupations**

	Occupation	Main employer	Describe any significant chemical exposure at work	Age began	Age stopped
1					
2					

7. **Diet:** Vegetarian, no eggs/ Non-vegetarian/ Vegetarian with eggs; Brahmin diet? (Y/N)

**8. Previous history of treated disease**

	Y/N	Time since onset		Y/N	Time since onset
Hypertension			Cancer (& site)		
Asthma			Stroke/paralysis		
Diabetes			Heart attack		
Tuberculosis			Other (specify*)		

\*Coded later as cardiac/not

**9. Habits – smoking, chewing, snuff-taking, drinking**

	0/blank=never, 1=ex, 2=current	Frequency per day	Age began	Age stopped	Duration (years)
<b>Smoking:</b> Bidis					
Cigarettes					
Other (specify)					
<b>Chewing:</b> AN alone					
Tobacco alone					
AN + betel leaf (BL)					
AN + tobacco					
AN + BL + tobacco					
Manufactured quid - containing tobacco					
- without tobacco					
<b>Snuff-taking</b>					
<b>Alcohol</b> (specify type, frequency & quantity)					

10. **SECOND blood pressure reading (SBP/DBP, mmHg):** ...../ .....

**Part 4: Final result of visit(s) to this household**

- 1=Complete information, 2=Partial information, 3=No adult ever available / house locked, etc  
 4=Interview refused – give reason(s):

- No. of visits undertaken, and date of visit 1: \_\_\_\_\_ of visit 2: \_\_\_\_\_ of visit 3: \_\_\_\_\_

**Interviewed by:** \_\_\_\_\_

**Date of final interview:** \_\_\_\_\_

**Table S1: Mortality endpoints and their ICD-10 codes**

<b>Endpoint name</b>	<b>ICD-10 codes</b>
VASCULAR	I00-I99
Cardiac	I20-I25
Stroke	I60-I61, I63-I64
Other	Remainder of vascular
RENAL	N00-N29
RESPIRATORY	J00-99, A15-A16
Respiratory TB	A15-A16
Other respiratory	Remainder of respiratory
CANCER	C00-C97, D00-D48
Upper aerodigestive	C00-C15, C32
Stomach	C16
Lung	C33-C34
Breast	C50
Cervical	C53
Other	Remainder of cancer
Other or unspecified medical	Remainder of A00-Y89, excluding external or ill-defined causes
External	S00-S99, T00-T98, V01-V99, W00-W99, X00-X99, Y00-Y98, Z00-Z99
Ill-defined causes	R00-R99 (and not standard ICD codes)
ALL CAUSES	A00-Y89

**Table S2: Number of participants at baseline and exclusions from mortality analyses, by age and sex**

	Men, by baseline age				Women, by baseline age				Both sexes, by baseline age	
	35-59	60-69	70-79	≥80 (excluded)	35-59	60-69	70-79	≥80 (excluded)	35-69	70-79
<b>Initial number of participants</b>	216410	31640	13533	3263	186363	33074	12746	3781	467487	26279
<b>Excluded due to:*</b>										
Prior TB, stroke, heart attack, cancer or asthma	3455	1503	726	162	2993	927	406	110	8878	1132
SBP or BMI missing	11025	1743	889	311	21883	4196	1882	806	38847	2771
BMI < 15	1504	510	408	144	1770	607	363	165	4391	771
BMI ≥ 40	33	5	1	3	364	71	16	6	473	17
SBP < 80	35	6	2	2	87	16	9	9	144	11
SBP ≥ 250	2	1	0	0	3	2	0	0	8	0
<b>Total in main analyses</b>	<b>200356</b>	<b>27872</b>	<b>11507</b>	<b>0</b>	<b>159263</b>	<b>27255</b>	<b>10070</b>	<b>0</b>	<b>414746</b>	<b>21577</b>
<i>Total in analyses involving waist circumference</i>	<i>196517</i>	<i>27319</i>	<i>11252</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>223836</i>	<i>11252</i>

BMI=body-mass index, SBP=systolic blood pressure

\*Numbers are for progressive exclusion of participants.



**Table S3: Baseline characteristics of the participants\* included in the main mortality analyses at ages 35-69 years, by SBP and BMI**

	Baseline SBP, mmHg				Baseline BMI, kg/m <sup>2</sup>						All
	80-<125	125-<144	145-<165	165-<250	15-<18.5	18.5-<20	20-<22.5	22.5-<25	25-<30	30-<40	
Number of participants	189 814	180 901	34 548	9 483	36 882	39 607	116 045	110 013	90 612	21 587	414 746
Female, %	49%	39%	53%	63%	45%	40%	36%	41%	57%	74%	45%
Mean (SD) age, years	44 (9)	47 (9)	53 (9)	55 (9)	47 (10)	47 (10)	46 (9)	46 (9)	46 (9)	46 (9)	46 (9)
Mean (SD) SBP, mmHg	115 (8)	133 (5)	152 (6)	178 (12)	120 (17)	124 (16)	126 (14)	129 (14)	130 (16)	133 (18)	127 (15)
Mean (SD) DBP, mmHg	77 (7)	86 (7)	94 (10)	102 (14)	78 (10)	81 (10)	82 (9)	84 (9)	85 (10)	87 (11)	83 (10)
Mean (SD) BMI, kg/m <sup>2</sup>	22.4 (3.7)	23.7 (3.6)	24.7 (4.2)	24.8 (4.5)	17.2 (0.9)	19.3 (0.4)	21.3 (0.7)	23.7 (0.7)	26.8 (1.4)	32.5 (2.3)	23.2 (3.8)
Mean (SD) height (men), cm	164 (6)	164 (5)	164 (6)	164 (6)	164 (6)	164 (6)	164 (5)	164 (5)	163 (6)	162 (8)	164 (6)
Mean (SD) height (women), cm	153 (6)	154 (6)	153 (6)	153 (6)	153 (7)	154 (7)	154 (6)	154 (6)	152 (6)	151 (6)	153 (6)
Median or higher socioeconomic status, %†	52%	56%	60%	59%	36%	42%	50%	59%	66%	68%	55%
No formal education, %	20%	18%	17%	16%	28%	25%	21%	17%	14%	12%	19%
Self-reported diabetes, %	4%	5%	9%	11%	2%	4%	5%	6%	7%	8%	5%
Ever ≥weekly alcohol drinker (men only‡), %	30%	27%	30%	35%	43%	35%	29%	25%	22%	24%	28%
Ever smoker (men only‡), %	41%	36%	36%	39%	58%	48%	39%	33%	29%	27%	38%
Quid chewing (men), %	7%	6%	7%	9%	9%	7%	6%	6%	6%	7%	6%
Quid chewing (women), %	12%	10%	11%	11%	17%	15%	12%	10%	8%	9%	11%
Vegetarian diet, %	5%	4%	4%	3%	4%	4%	4%	5%	5%	6%	4%
Mean waist circumference (men only‡), cm	82 (9)	84 (9)	86 (10)	87 (10)	74 (8)	78 (7)	82 (7)	85 (7)	89 (9)	94 (12)	83 (9)
Previous treatment for hypertension, %	2%	4%	14%	24%	2%	3%	3%	5%	7%	10%	5%

SBP= systolic blood pressure, BMI= body-mass index.

\* Results are standardised to the age and sex at entry of the 414 746 participants, after exclusions as in Table S2.

† Socioeconomic status was measured using a composite score of housing type and ownership of various material goods (eg, refrigerator).

‡ <0.1% of women reported ever smoking or ever drinking alcohol at least weekly; waist circumference was measured in men only.

**Table S4: Blood pressure and BMI at baseline, by age and sex\***

Age at baseline, years	Participants	Mean age, years	Mean SBP, mmHg	Mean DBP†, mmHg	Mean BMI, kg/m <sup>2</sup>
<b>Men</b>					
35 - 39	71165	36	124	82	22.5
40 - 44	44390	41	126	83	22.7
45 - 49	37402	46	128	84	22.8
50 - 54	27991	51	130	85	22.8
55 - 59	19408	56	132	85	22.6
60 - 64	16758	61	134	85	22.4
65 - 69	11114	66	135	85	22.1
70 - 74	7562	71	137	85	21.7
75 - 79	3945	76	137	85	21.3
<b>Women</b>					
35 - 39	51297	36	121	80	23.8
40 - 44	35150	41	124	82	24.2
45 - 49	30783	46	127	83	24.1
50 - 54	23503	51	130	84	24.1
55 - 59	18530	56	133	85	23.8
60 - 64	16041	61	135	85	23.4
65 - 69	11214	66	137	85	23.0
70 - 74	6965	71	139	85	22.5
75 - 79	3105	76	140	85	22.2
<b>Both sexes</b>					
35-69	414746	46	127	83	23.2
70-79	21577	72	138	85	21.9

BMI= body-mass index, SBP=systolic blood pressure , DBP=diastolic blood pressure

\* Exclusions as in Table S2.

† Further excludes people with missing or out of range DBP (<40 or ≥150 mmHg; n=28)

**Table S5: Baseline characteristics of the participants\* included in the main mortality analyses at ages 35-69 years, among those resurveyed and those not resurveyed**

	Resurveyed	Not resurveyed
Number of participants	9 896	404 850
Female, %	29%	45%
Mean (SD) age, years	45 (8)	46 (9)
Mean (SD) SBP, mmHg	127 (14)	127 (16)
Mean (SD) DBP, mmHg	83 (9)	83 (10)
Mean (SD) BMI, kg/m <sup>2</sup>	23.1 (3.6)	23.2 (3.8)
Mean (SD) height (men), cm	164 (5)	164 (6)
Mean (SD) height (women), cm	152 (6)	153 (6)
Median or higher socioeconomic status, % <sup>†</sup>	53%	55%
No formal education, %	24%	18%
Self-reported diabetes, %	5%	5%
Ever ≥weekly alcohol drinker (men only <sup>‡</sup> ), %	30%	28%
Ever smoker (men only <sup>‡</sup> ), %	35%	38%
Quid chewing (men), %	7%	6%
Quid chewing (women), %	16%	11%
Vegetarian diet, %	3%	4%
Mean waist circumference (men only <sup>‡</sup> ), cm	83 (9)	83 (9)
Previous treatment for hypertension, %	4%	5%

SBP= systolic blood pressure, BMI= body-mass index.

Means and proportions standardised to baseline distributions of age and sex.

\* Exclusions as in Table S2.

<sup>†</sup> Socioeconomic status was measured using a composite score of housing type and ownership of various material goods (eg, refrigerator).

<sup>‡</sup> <0.1% of women reported ever smoking or ever drinking alcohol at least weekly; waist circumference was measured in men only.

**Table S6: Blood pressure and BMI of resurveyed participants,\* by age at baseline and at resurvey**

**(A) Baseline blood pressure and BMI, by age at baseline**

Age at baseline, years	Participants	Mean age, years	Mean SBP, mmHg	Mean DBP†, mmHg	Mean BMI, kg/m <sup>2</sup>
35 - 39	3266	36	123	81	22.8
40 - 44	2033	41	125	83	23.1
45 - 49	1774	46	126	83	22.9
50 - 54	1284	51	130	85	23.1
55 - 59	812	56	132	85	23.1
60 - 64	556	61	134	85	23.1
65 - 69	171	65	132	84	22.3
70 - 74	-	-	-	-	-
75 - 79	-	-	-	-	-
45-69‡	4597	54	130	84	23.0
<b>All</b>	9896	45	126	83	22.9

**(B) Resurvey blood pressure and BMI, by age at resurvey**

Age at resurvey, years	Participants	Mean age, years	Mean SBP, mmHg	Mean DBP†, mmHg	Mean BMI, kg/m <sup>2</sup>
35 - 39	-	-	-	-	-
40 - 44	-	-	-	-	-
45 - 49	1274	48	130	83	23.6
50 - 54	2785	52	130	82	24.0
55 - 59	1896	57	132	82	24.1
60 - 64	1649	62	133	82	23.9
65 - 69	1044	67	135	82	24.0
70 - 74	747	72	135	82	23.7
75 - 79	501	77	137	81	23.6
45-69‡	8648	55	131	82	23.9
<b>All</b>	9896	58	132	82	23.9

BMI= body-mass index, SBP=systolic blood pressure, DBP=diastolic blood pressure.

\*Exclusion as in Table S2, with further exclusion of those with missing or out of range SBP (<80 or ≥250 mmHg) or BMI (<15 or ≥40) at resurvey.

† Further excludes people with missing or out of range DBP (<40 or ≥150 mmHg) at resurvey (n=1).

‡ Standardised to the age at entry of participants included in the main mortality analyses (eTable 1).

**Table S7: Smoking and drinking at baseline and at resurvey, among resurveyed men and women\***

**(A) Smoking status in resurveyed men**

Smoking status at resurvey	Smoking status at baseline, number of participants		
	Ever	Never	All
Ever	2507	7	2514
Never	0	4570	4570
All	2507	4577	7084

**(B) Drinking status<sup>†</sup> in resurveyed men**

Drinking status at resurvey	Drinking status at baseline (number of participants)		
	Ever	Never	All
Ever	2163	45	2208
Never	0	4876	4876
All	2163	4921	7084

**(C) Smoking status in resurveyed women**

Smoking status at resurvey	Smoking status at baseline, number of participants		
	Ever	Never	All
Ever	1	0	1
Never	0	2970	2970
All	1	2970	2971

**(D) Drinking status<sup>†</sup> in resurveyed women**

Drinking status at resurvey	Drinking status at baseline, number of participants		
	Ever	Never	All
Ever	0	0	0
Never	0	2971	2971
All	0	2971	2971

\* Exclusion as in Table S2.

† Ever or never ≥weekly alcohol drinker

**Table S8: Baseline characteristics of the participants\* included in the main mortality analyses at ages 35-69 years, by follow-up status at censoring date (31 March 2015)**

	Active follow-up	Lost to active follow-up	Dead
Number of participants	145 315	226 210	43 221
Female, %	48%	44%	35%
Mean (SD) age, years	45 (9)	45 (9)	54 (10)
Mean (SD) SBP, mmHg	127 (15)	127 (15)	129 (19)
Mean (SD) DBP, mmHg	83 (9)	83 (9)	84 (11)
Mean (SD) BMI, kg/m <sup>2</sup>	23.4 (3.8)	23.1 (3.7)	22.8 (3.9)
Mean (SD) height (men), cm	164 (5)	164 (5)	163 (6)
Mean (SD) height (women), cm	153 (6)	153 (6)	152 (7)
Median or higher socioeconomic status, % <sup>†</sup>	61%	52%	47%
No formal education, %	19%	17%	26%
Self-reported diabetes, %	5%	5%	9%
Ever ≥weekly alcohol drinker (men only‡), %	26%	27%	45%
Ever smoker (men only‡), %	33%	38%	52%
Quid chewing (men), %	6%	6%	8%
Quid chewing (women), %	12%	10%	17%
Vegetarian diet, %	4%	5%	3%
Mean waist circumference (men only‡), cm	83 (9)	83 (9)	82 (9)
Previous treatment for hypertension, %	4%	4%	6%

SBP= systolic blood pressure, BMI= body-mass index.

Means and proportions standardised to baseline distributions of age and sex.

\* Exclusions as in Table S2.

<sup>†</sup> Socioeconomic status was measured using a composite score of housing type and ownership of various material goods (eg, refrigerator).

<sup>‡</sup> <0.1% of women reported ever smoking or ever drinking alcohol at least weekly; waist circumference was measured in men only.

**Table S9: Observed and expected\* numbers of deaths at ages 45-69 during follow-up years 3-12**

Age group, years	Follow-up year										All (3-12)
	3	4	5	6	7	8	9	10	11	12	
<b>Expected (E)</b>											
45-49	289	328	319	355	370	435	420	481	553	503	4053
50-54	405	388	410	446	450	418	474	462	516	538	4506
55-59	373	439	426	496	503	584	561	592	647	654	5275
60-64	541	514	554	536	565	534	628	609	714	723	5919
65-69	612	664	652	799	789	873	827	893	884	936	7928
All (45-69)	2220	2334	2361	2632	2677	2844	2910	3036	3315	3353	27682
<b>Observed (O)</b>											
45-49	266	313	333	301	304	349	325	362	341	309	3203
50-54	385	412	467	361	416	382	386	370	358	375	3912
55-59	392	485	479	450	425	579	501	521	466	446	4744
60-64	559	594	666	504	567	474	504	527	491	505	5391
65-69	523	615	610	710	711	730	700	702	545	539	6385
All (45-69)	2125	2419	2555	2326	2423	2514	2416	2482	2201	2174	23635
<b>O-E</b>											
45-49	-23	-15	14	-54	-66	-86	-95	-119	-212	-194	-850
50-54	-20	24	57	-85	-34	-36	-88	-92	-158	-163	-594
55-59	19	46	53	-46	-78	-5	-60	-71	-181	-208	-531
60-64	18	80	112	-32	2	-60	-124	-82	-223	-218	-528
65-69	-89	-49	-42	-89	-78	-143	-127	-191	-339	-397	-1543
All (45-69)	-95	85	194	-306	-254	-330	-494	-554	-1114	-1179	-4047
<b>O/E</b>											
45-49	0.92	0.95	1.04	0.85	0.82	0.80	0.77	0.75	0.62	0.61	0.79
50-54	0.95	1.06	1.14	0.81	0.92	0.91	0.81	0.80	0.69	0.70	0.87
55-59	1.05	1.10	1.13	0.91	0.85	0.99	0.89	0.88	0.72	0.68	0.90
60-64	1.03	1.16	1.20	0.94	1.00	0.89	0.80	0.87	0.69	0.70	0.91
65-69	0.86	0.93	0.94	0.89	0.90	0.84	0.85	0.79	0.62	0.58	0.81
All (45-69)	0.96	1.04	1.08	0.88	0.91	0.88	0.83	0.82	0.66	0.65	0.85

\*The number of deaths observed in the Chennai prospective study (with exclusions as in eTable 1) were compared to those expected given the Registrar-General of India's death rates for urban Tamil Nadu, 2015.

**Table S10: Mean baseline values and estimated usual values of SBP and DBP, by age\***

**(A) SBP**

Baseline SBP categories, mmHg	Age 35-69 at baseline			Age 70-79 at baseline		
	Participants	Mean SBP at baseline, mmHg	Estimated usual SBP†, mmHg	Participants	Mean SBP at baseline, mmHg	Estimated usual SBP†, mmHg
80-124	188208	115.2	121.3	5496	113.6	125.8
125-144	179076	132.7	130.0	7904	135.2	136.6
145-164	33872	152.8	140.1	4750	153.8	145.9
165-249	9205	177.8	152.6	1966	178.7	158.3
<b>All</b>	410361	127.4	127.4	20116	137.9	137.9

**(B) DBP‡**

Baseline DBP categories, mmHg	Age 35-69 at baseline			Age 70-79 at baseline		
	Participants	Mean DBP at baseline, mmHg	Estimated usual DBP†, mmHg	Participants	Mean DBP at baseline, mmHg	Estimated usual DBP†, mmHg
40-74	66855	69.0	78.1	3845	68.3	79.1
75-84	180270	80.5	82.2	6074	80.2	83.3
85-94	125806	88.8	85.1	6680	89.4	86.5
95-149	37407	101.7	89.6	3513	102.7	91.1
<b>All</b>	410338	83.1	83.1	20112	84.9	84.9

SBP=systolic blood pressure, DBP=diastolic blood pressure.

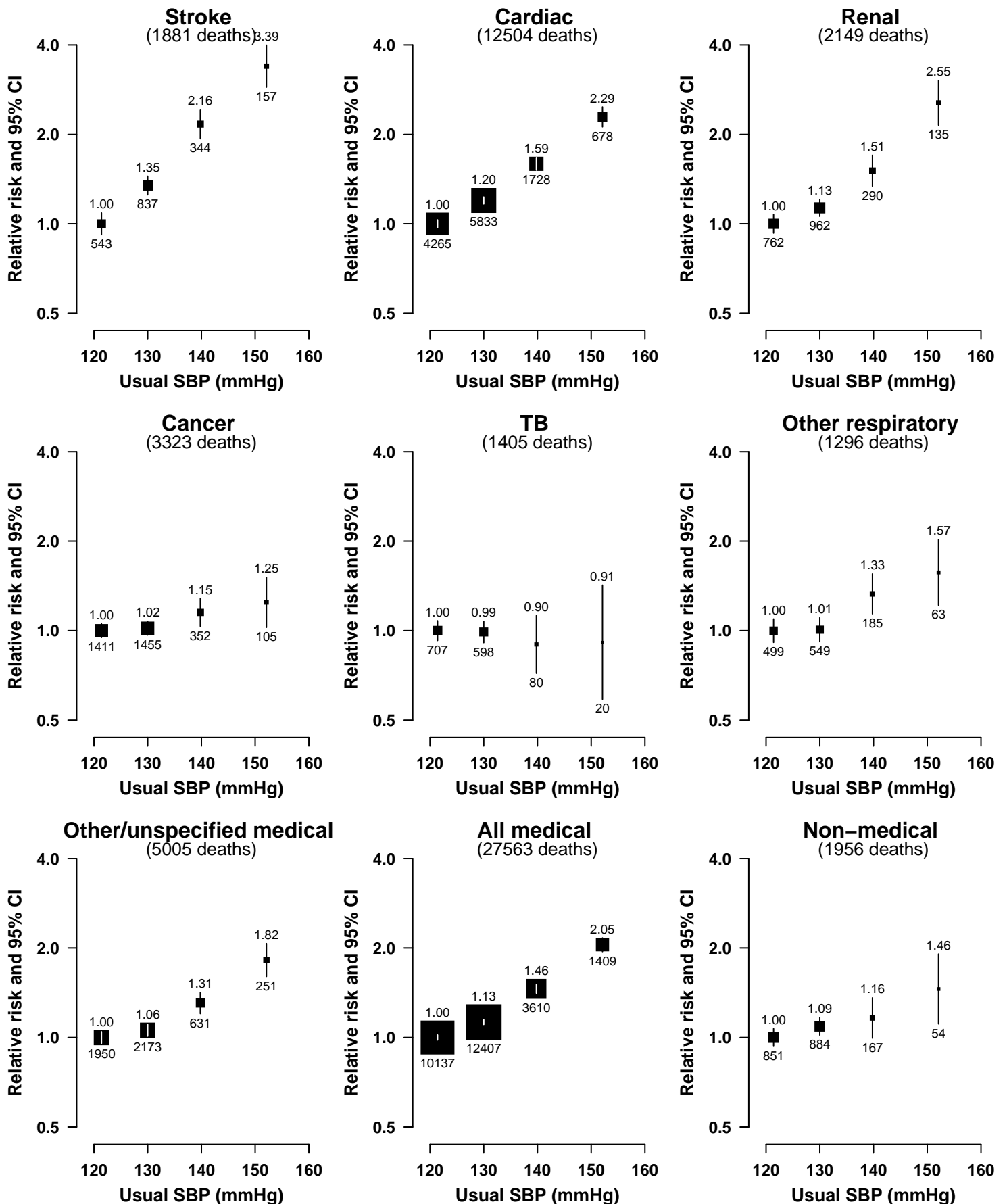
\*Exclusions as in Table S2, with the additional exclusion of participants with less than 2 years of follow-up.

† At baseline survey, blood pressure was measured twice (first with strong digit preference, then with a slower mercury fall past the first value) and averaged. Usual SBP and usual DBP were estimated by correcting mean SBP and mean DBP at baseline for regression dilution ratios of 0.50 and 0.35, respectively (self-correlations [Pearson] between baseline and resurvey blood pressure values in resurvey participants; further adjustment for age at baseline and sex did not materially change these self-correlations).

‡ Further excludes participants with out of range DBP (<40 or ≥150 mmHg) at baseline (n=27)

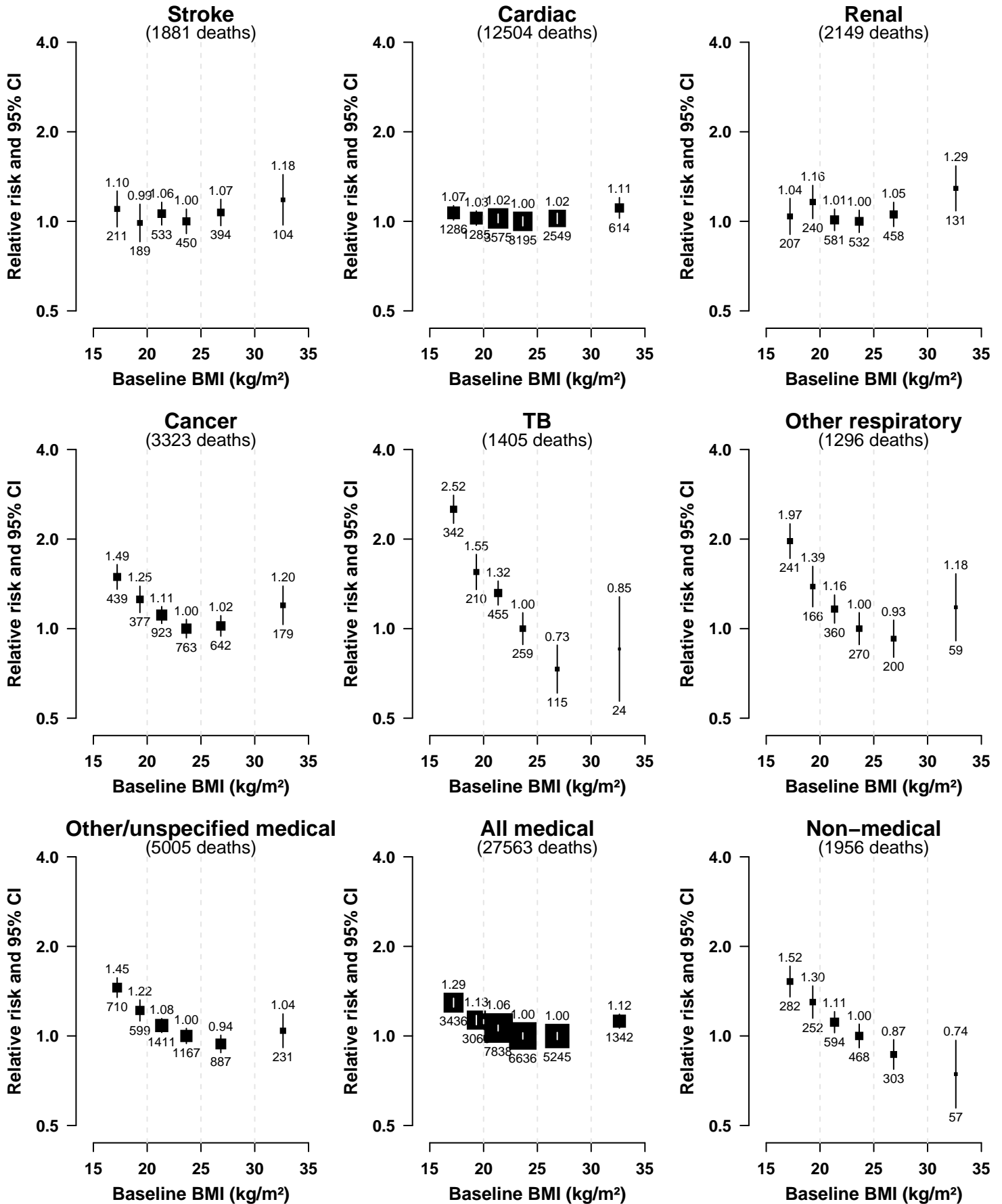


**Figure S1: Cause-specific mortality by SBP at ages 35–69**



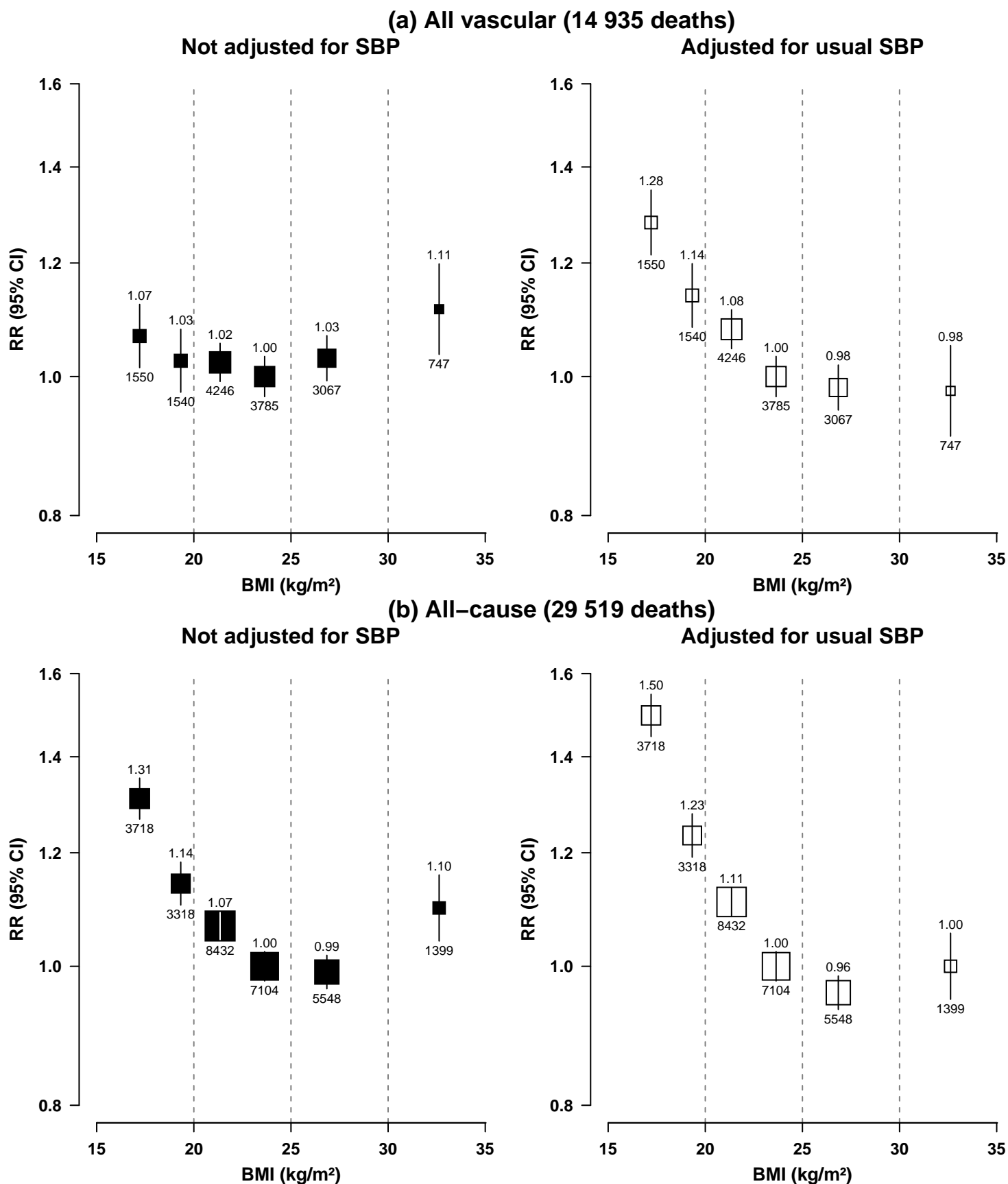
SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

**Figure S2: Cause-specific mortality by BMI at ages 35–69**



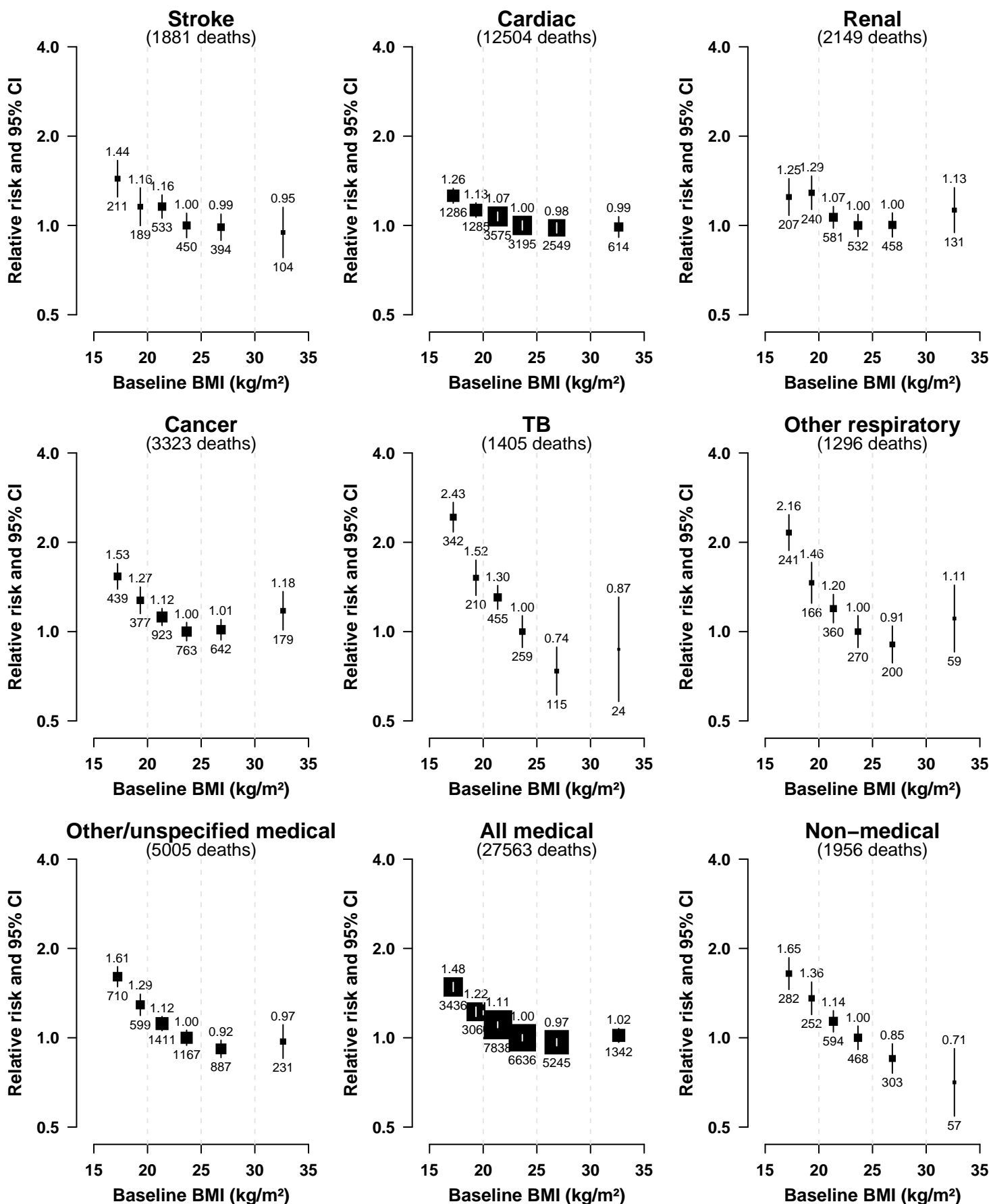
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

**Figure S3: All vascular and all-cause mortality at ages 35–69 years by baseline BMI, before and after adjustment for usual SBP**



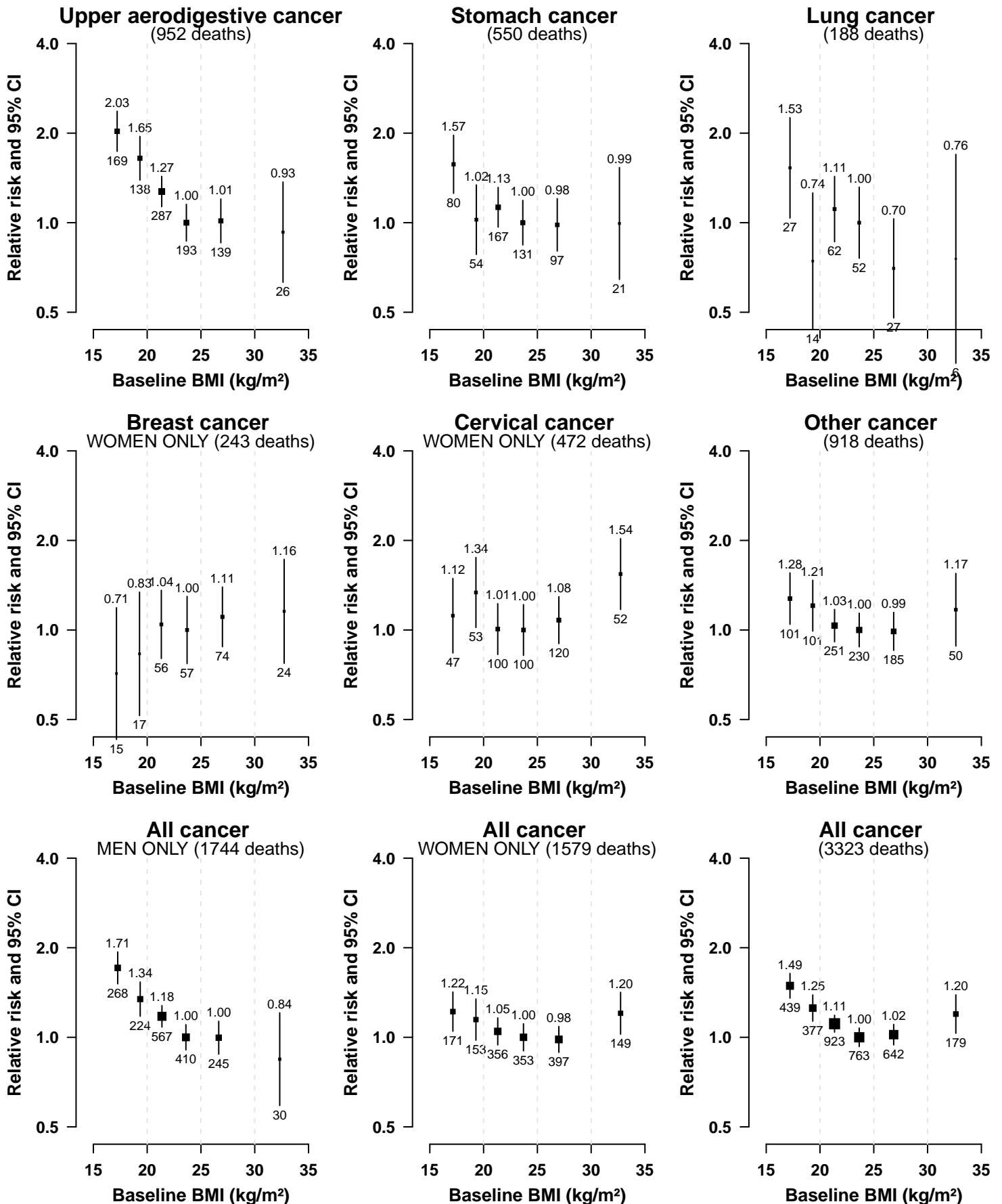
Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol, with further adjustment for usual SBP where indicated. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

**Figure S4: Cause-specific mortality by BMI at ages 35–69 additionally adjusted for usual SBP**



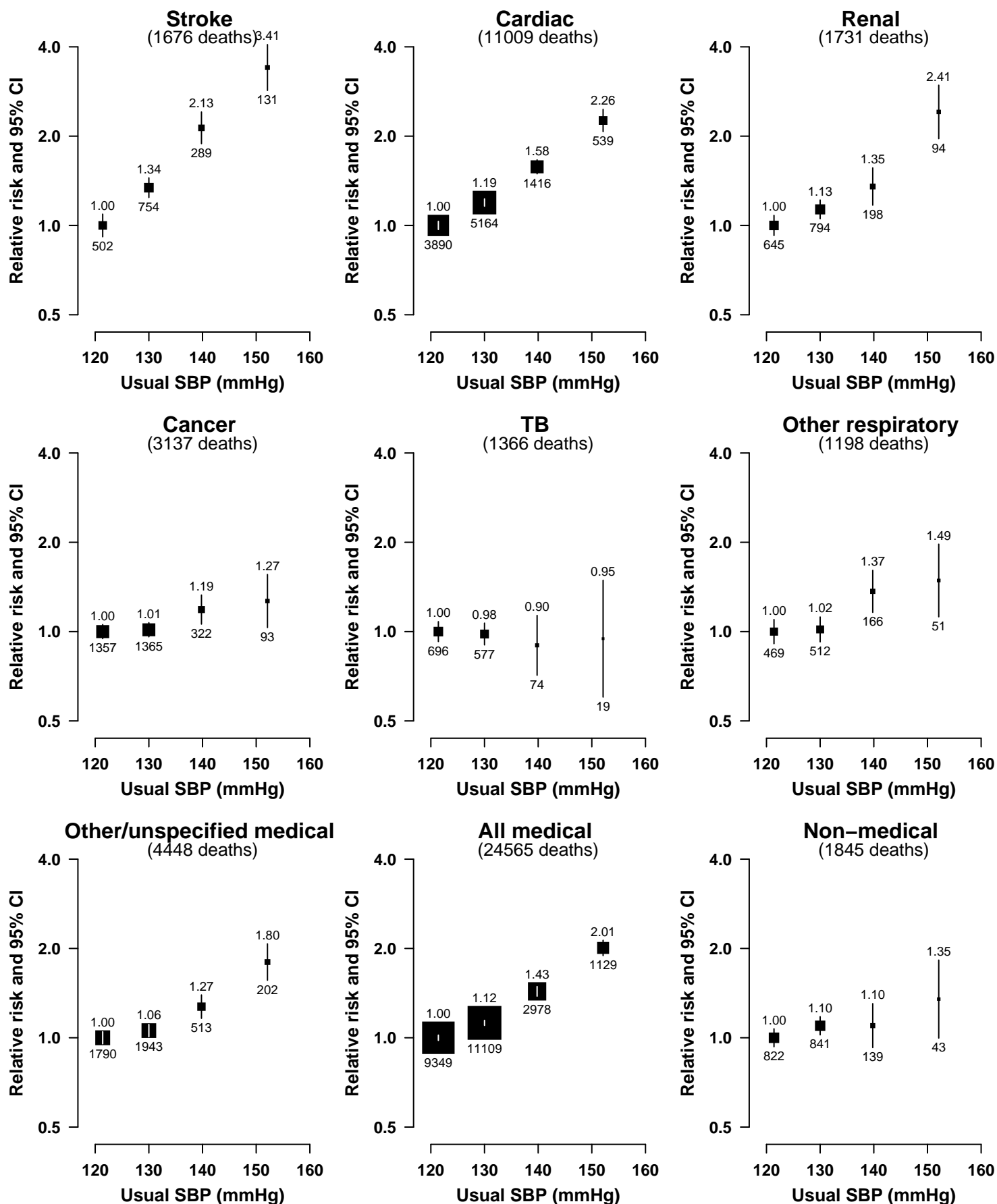
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up. **ADDITIONALLY ADJUSTED FOR USUAL SBP**

**Figure S5: Cancer mortality by BMI at ages 35–69**



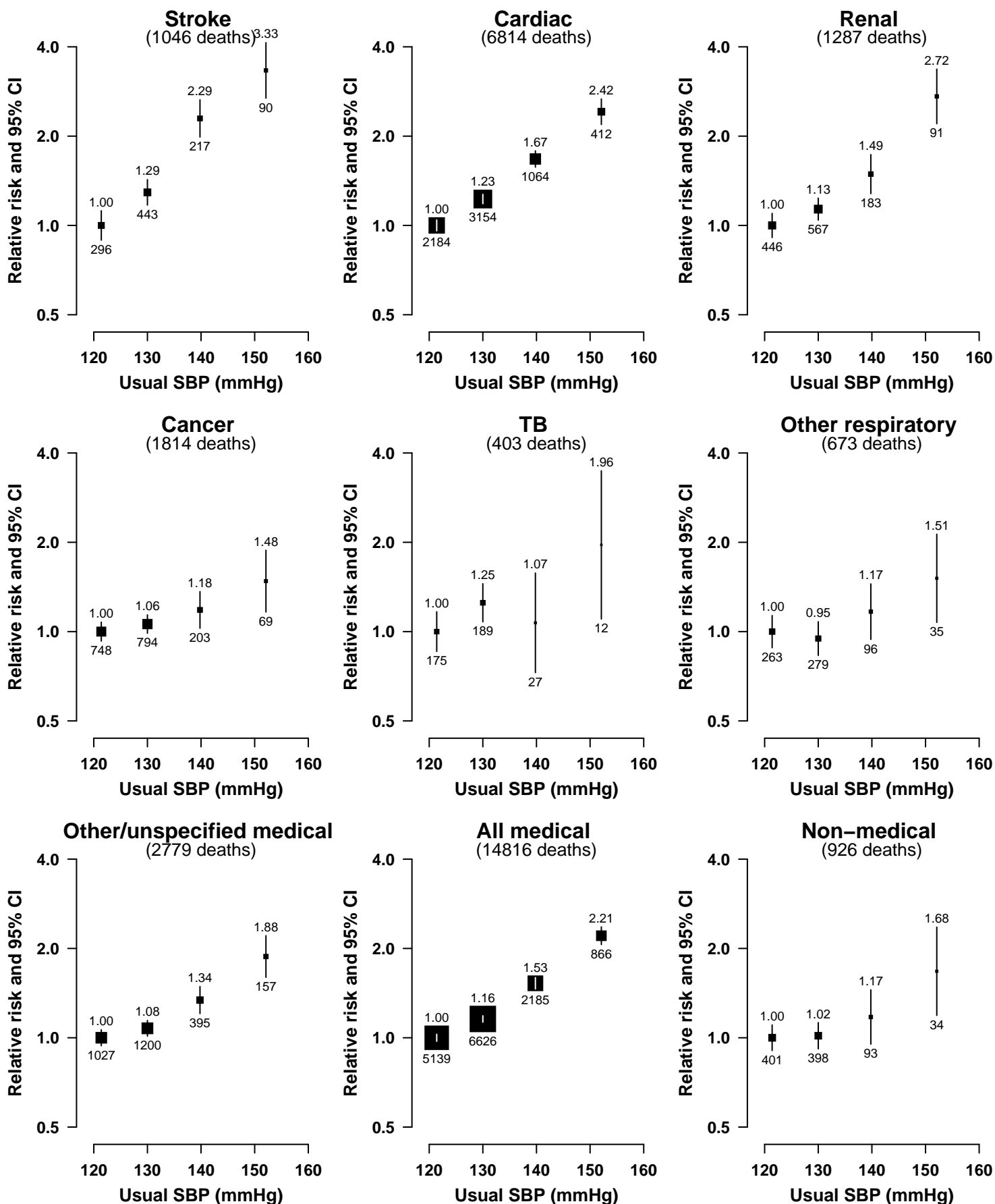
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m². For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

**Figure S6: Cause-specific mortality by SBP at ages 35–69  
EXCLUDING PRIOR DIABETES**



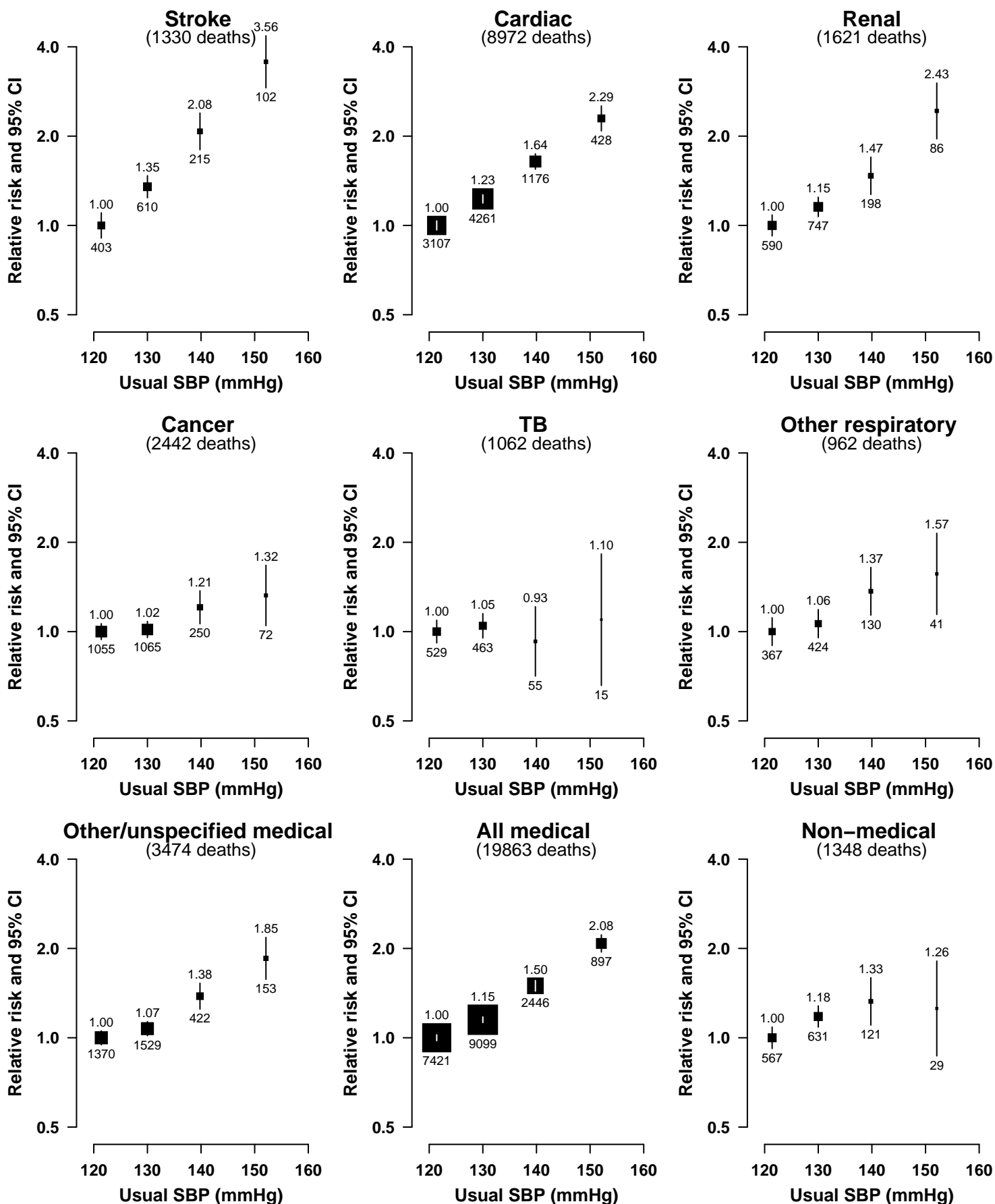
SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of prior diabetes and the first 2 years of follow-up.

**Figure S7: Cause-specific mortality by SBP at ages 35–69  
EXCLUDING SMOKERS, DRINKERS AND CHEWERS**



SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of ever smokers, quid chewers, ever-weekly drinkers, and the first 2 years of follow-up.

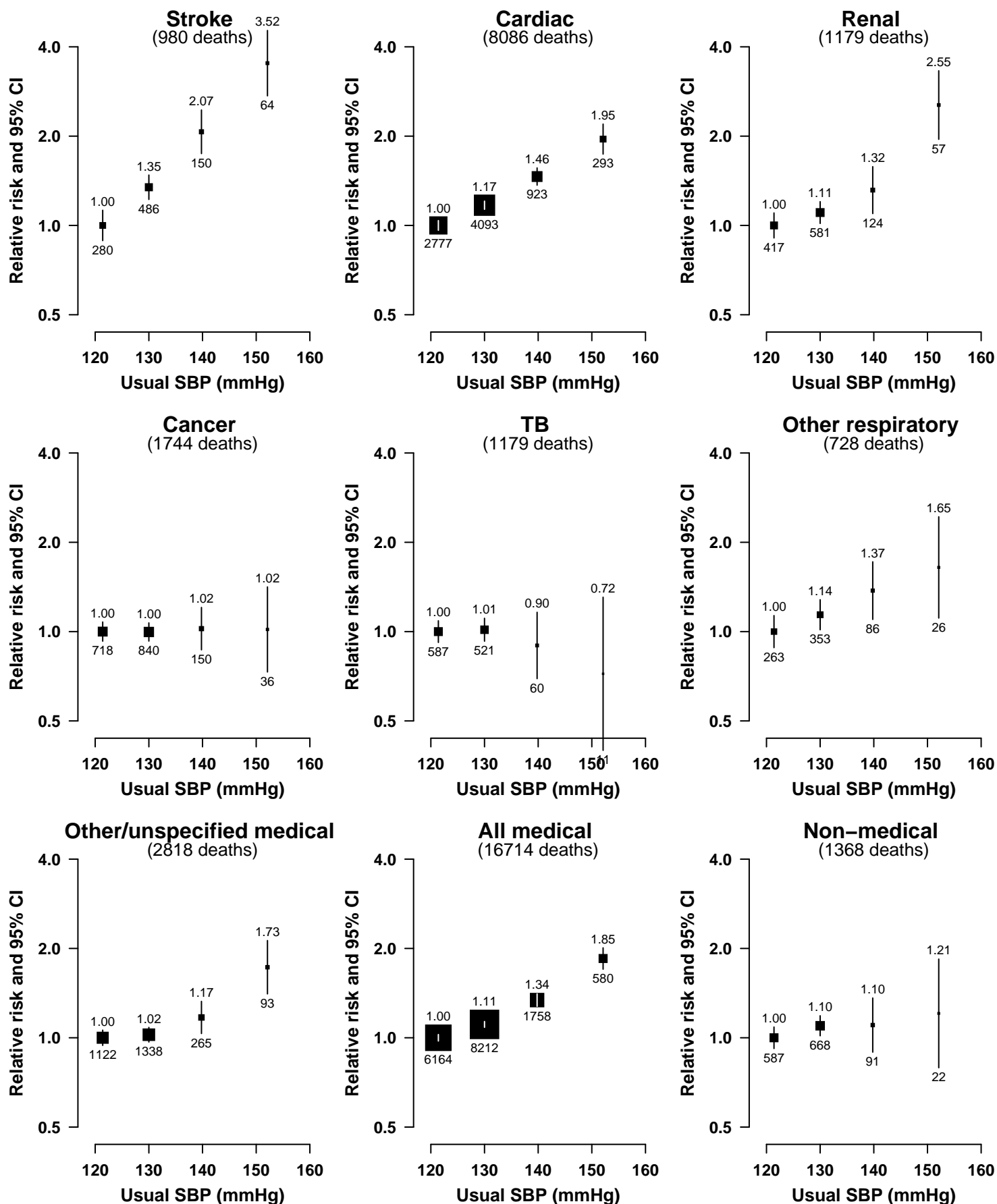
**Figure S8: Cause-specific mortality by SBP at ages 35–69  
EXCLUDING FIRST 5 YEARS OF FOLLOW-UP**



SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 5 years of follow-up.

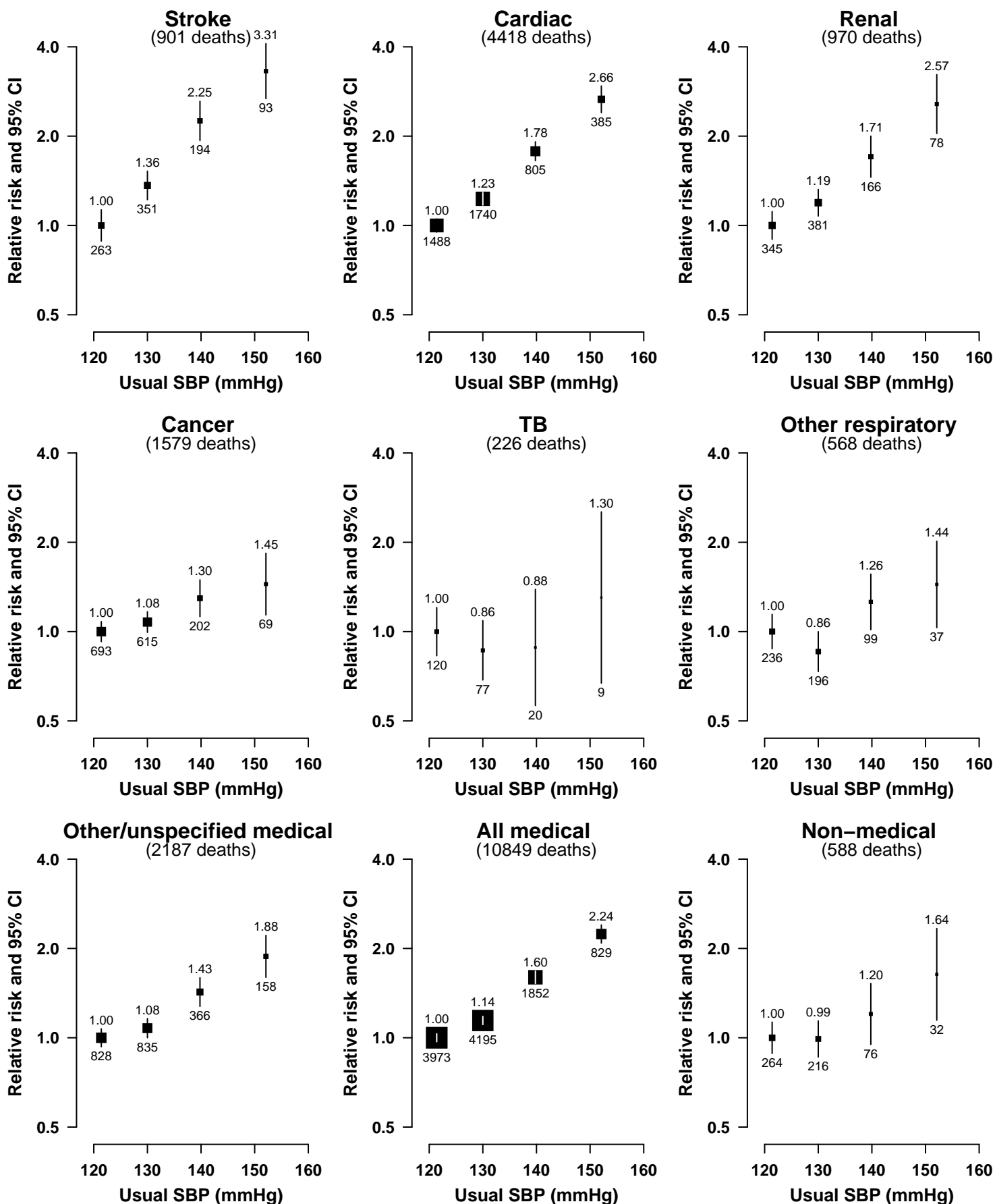


**Figure S9: Cause-specific mortality by SBP at ages 35–69  
MEN ONLY**



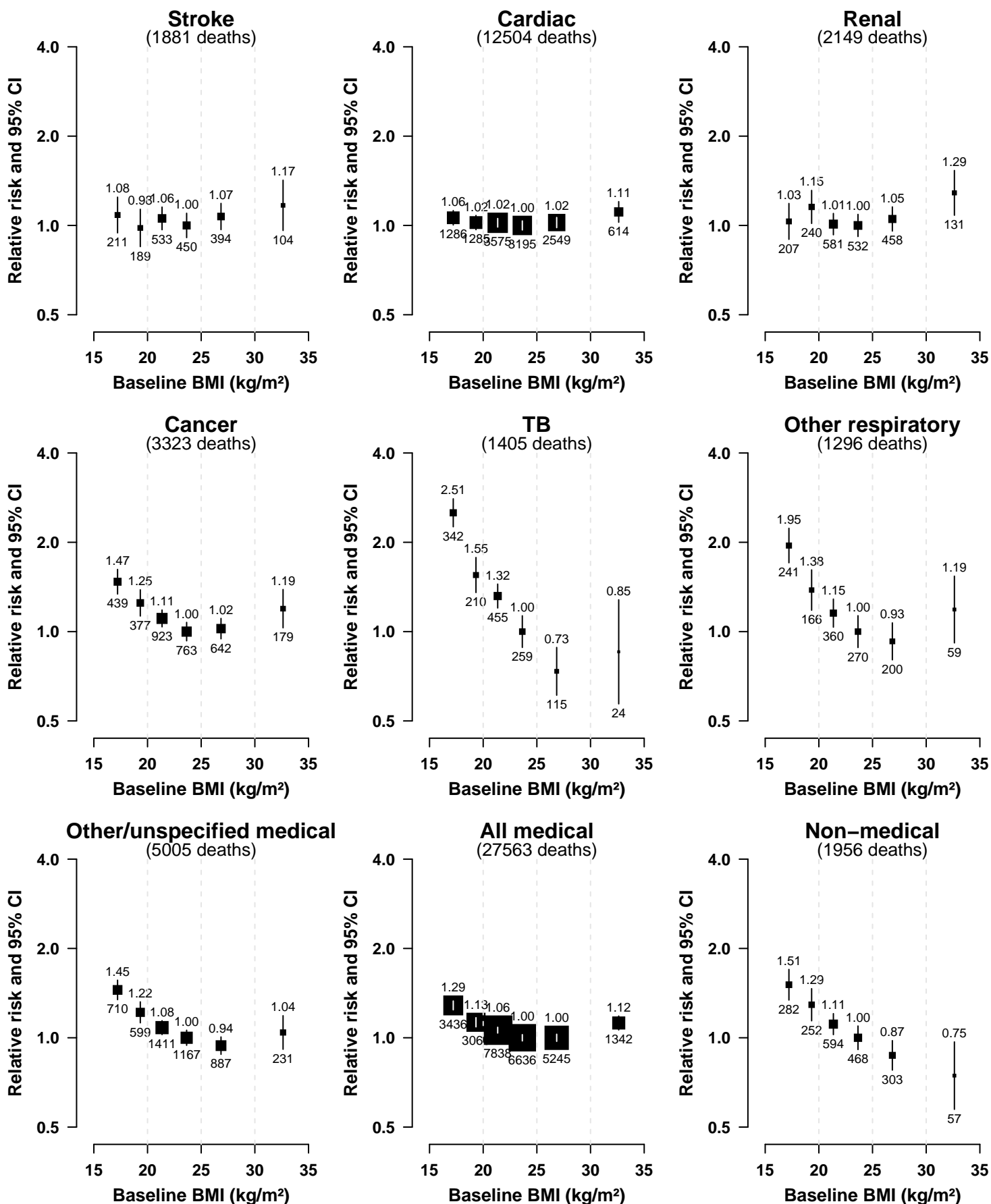
SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of women and the first 2 years of follow-up.

**Figure S10: Cause-specific mortality by SBP at ages 35–69  
WOMEN ONLY**



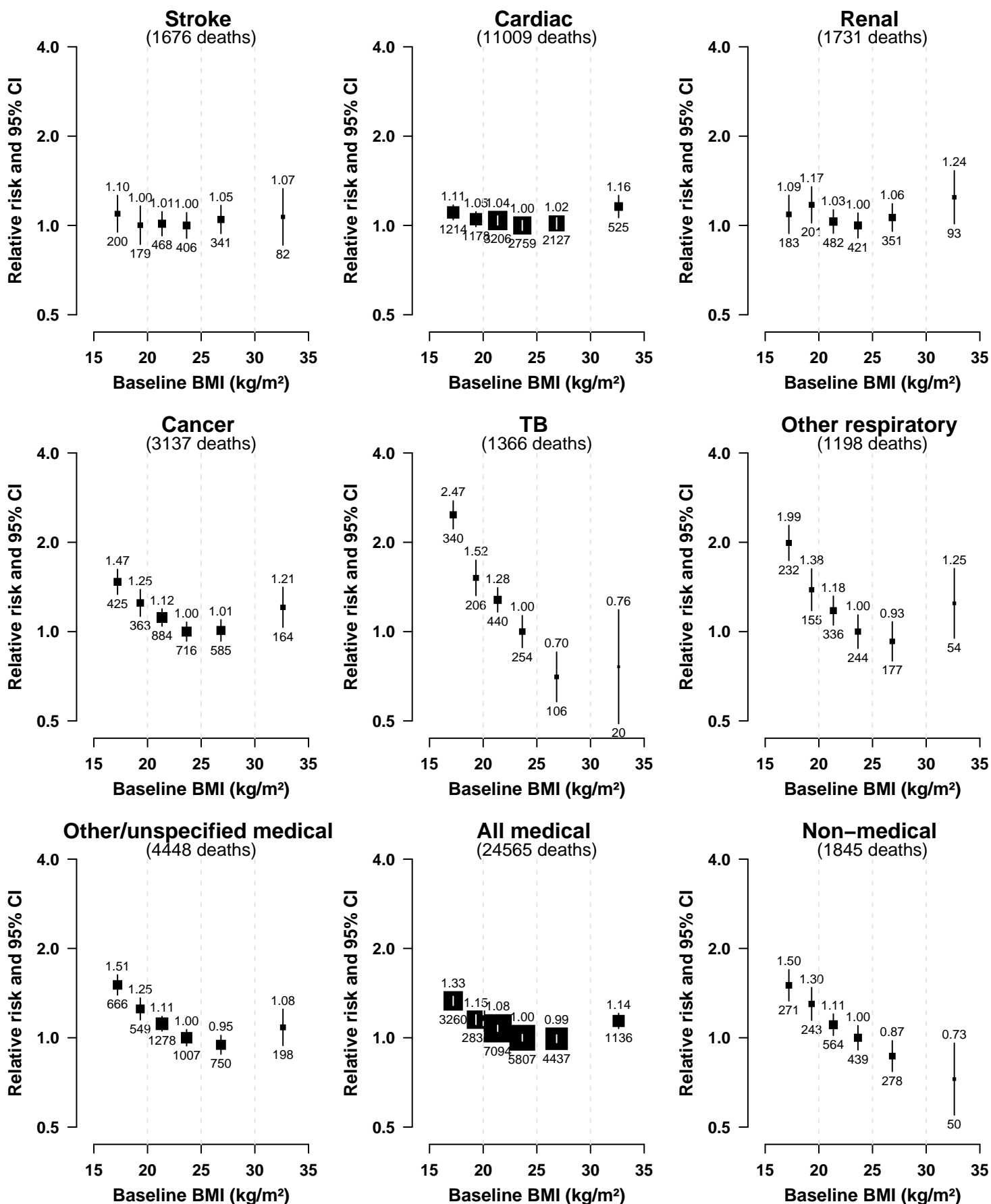
SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of men and the first 2 years of follow-up.

**Figure S11: Cause-specific mortality by BMI at ages 35–69  
ADDITIONALLY ADJUSTED FOR QUID CHEWING**



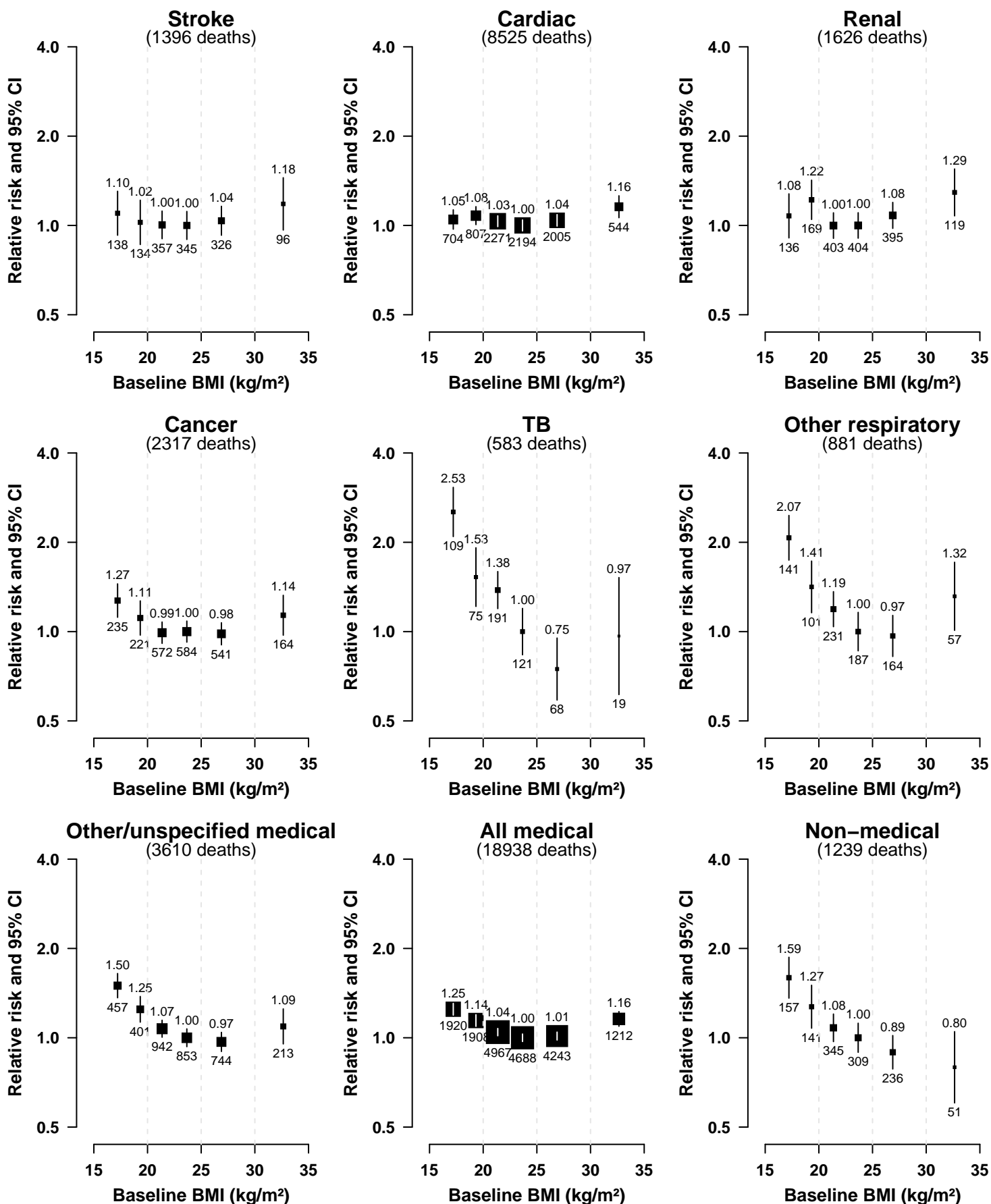
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking, alcohol and quid chewing. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

**Figure S12: Cause-specific mortality by BMI at ages 35–69  
EXCLUDING PRIOR DIABETES**



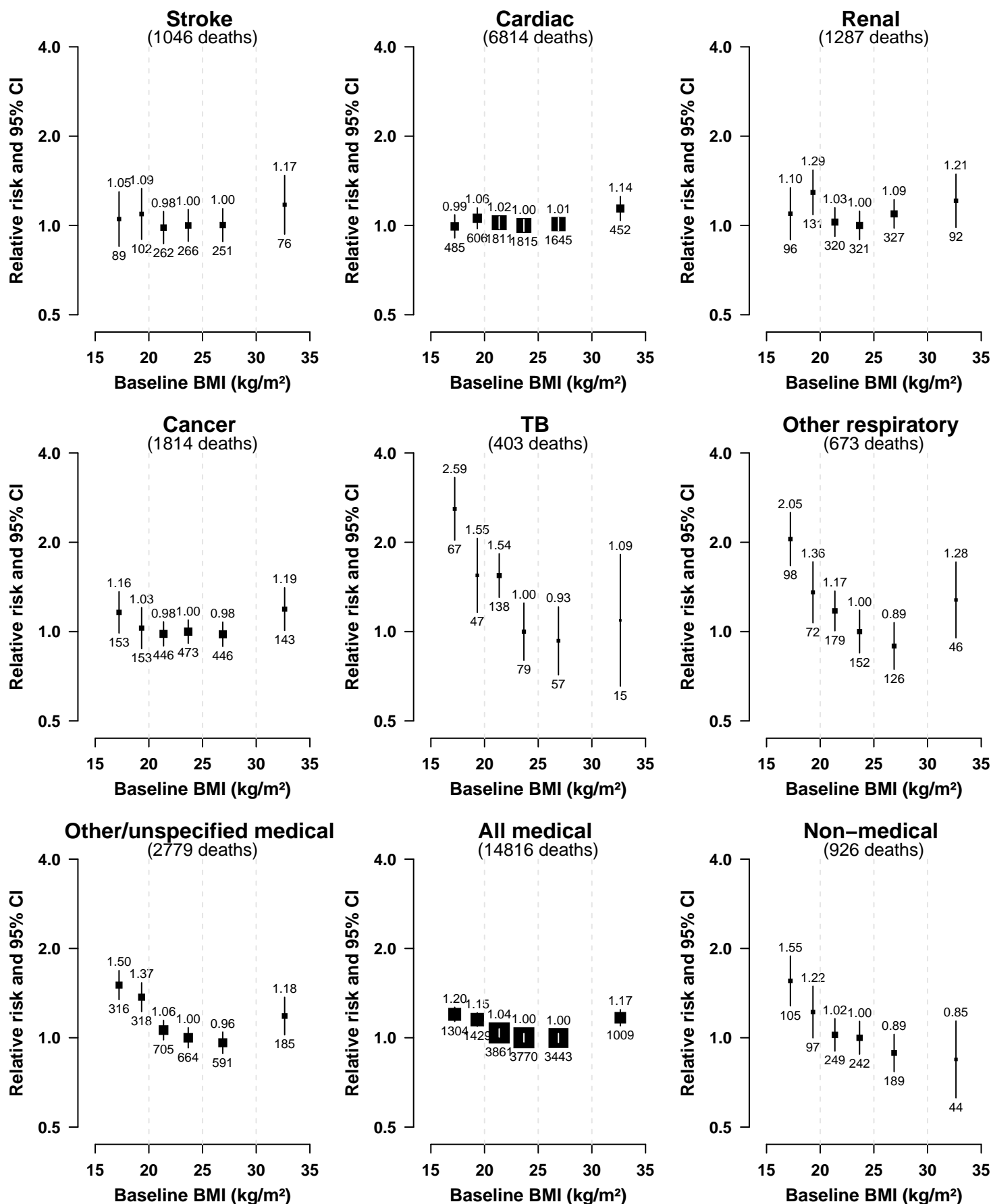
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of prior diabetes and the first 2 years of follow-up.

**Figure S13: Cause-specific mortality by BMI at ages 35–69  
EXCLUDING EVER SMOKERS**



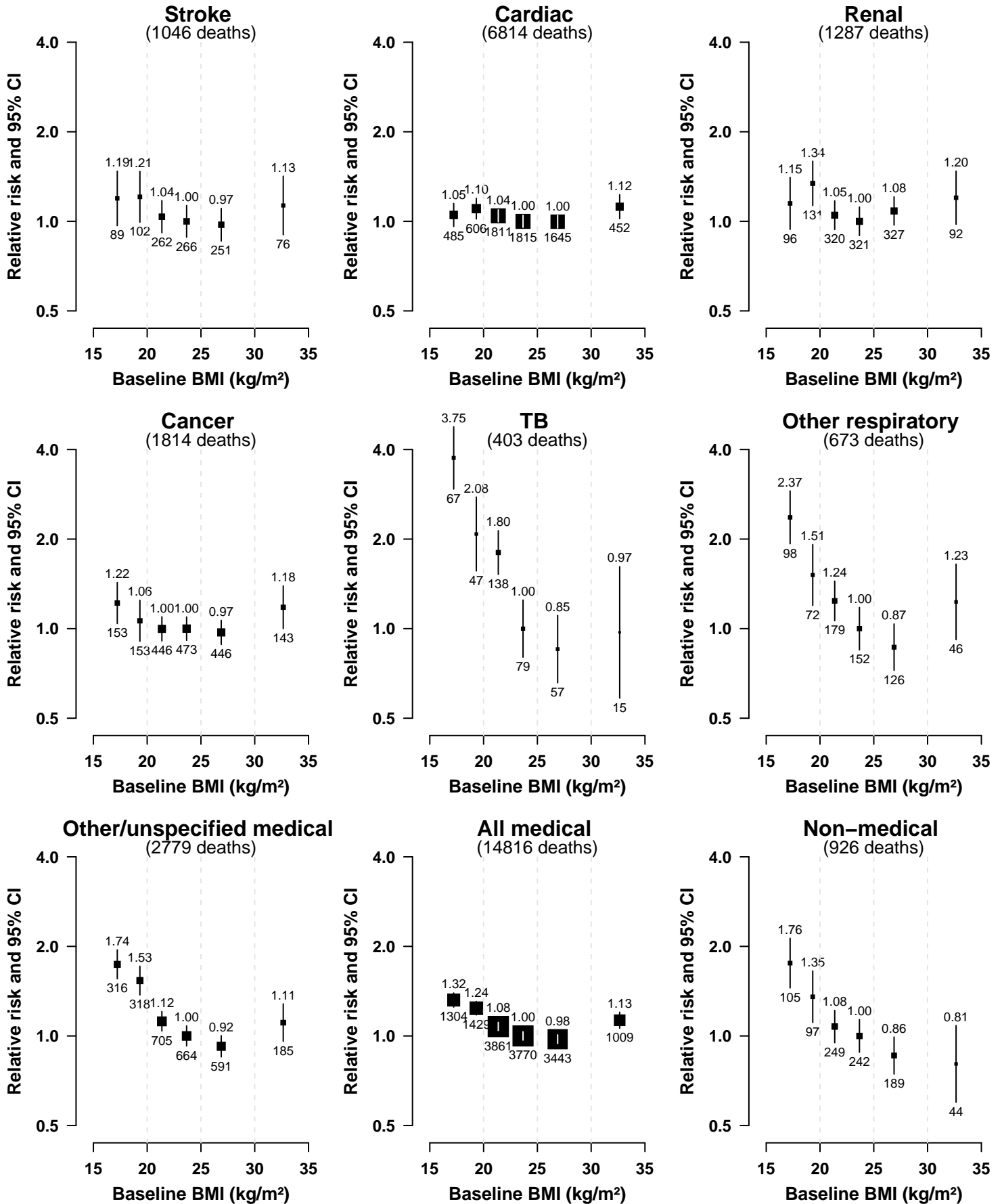
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of ever smokers and the first 2 years of follow-up.

**Figure S14: Cause-specific mortality by BMI at ages 35–69 EXCLUDING SMOKERS, DRINKERS AND QUID CHEWERS**



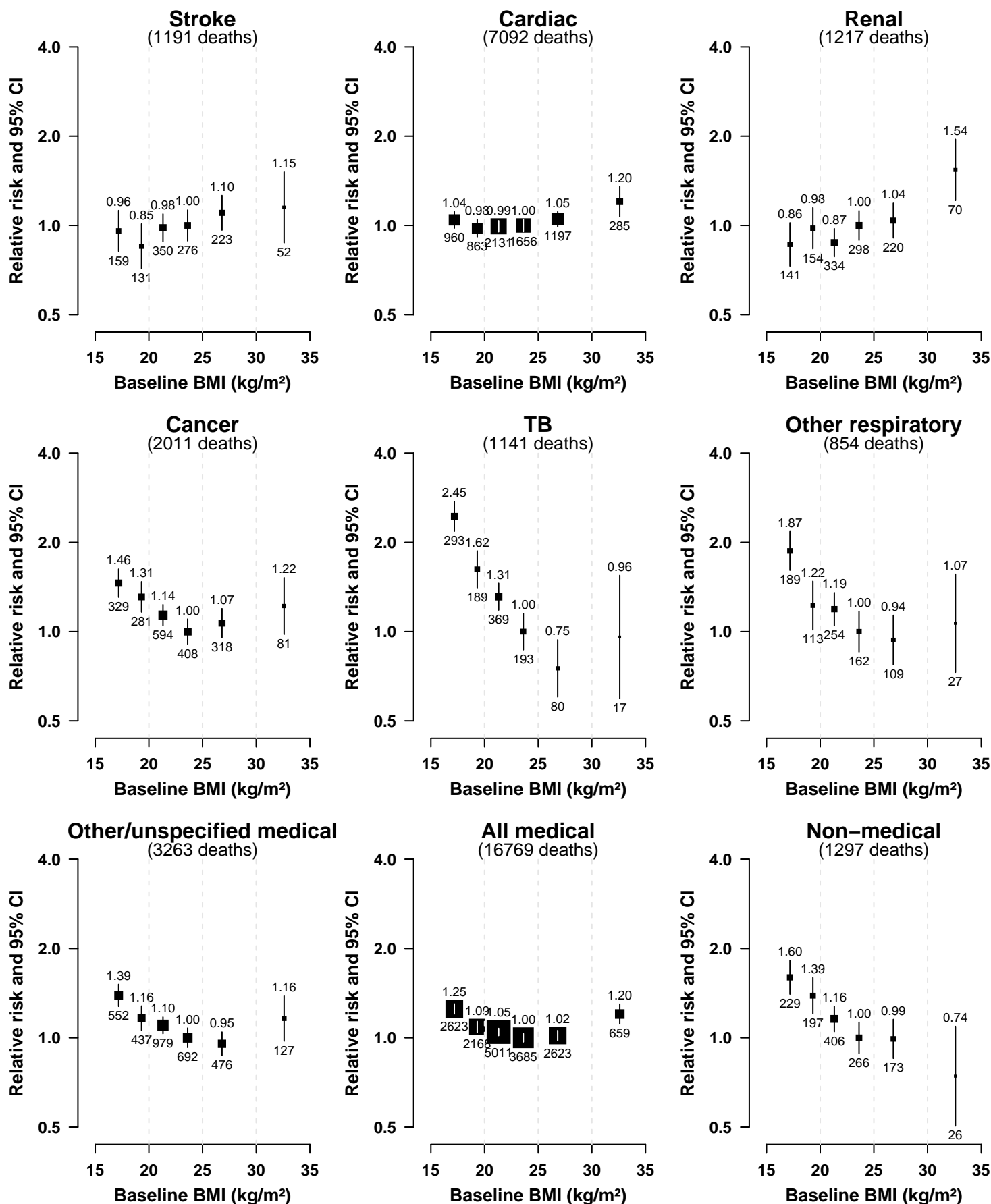
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education and socioeconomic status. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of ever smokers, quid chewers, ever-weekly drinkers and the first 2 years of follow-up.

**Figure S15: Cause-specific mortality by BMI at ages 35–69  
EXCLUDING SMOKERS, DRINKERS AND CHEWERS  
PRIOR TO ADJUSTMENT FOR SOCIAL CLASS OR EDUCATION**



BMI=body-mass index, SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age and sex. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with additional exclusion for smoking, drinking and chewing.

**Figure S16: Cause-specific mortality by BMI at ages 35–69  
RESTRICTED TO THOSE OF LOWER SOCIOECONOMIC STATUS**

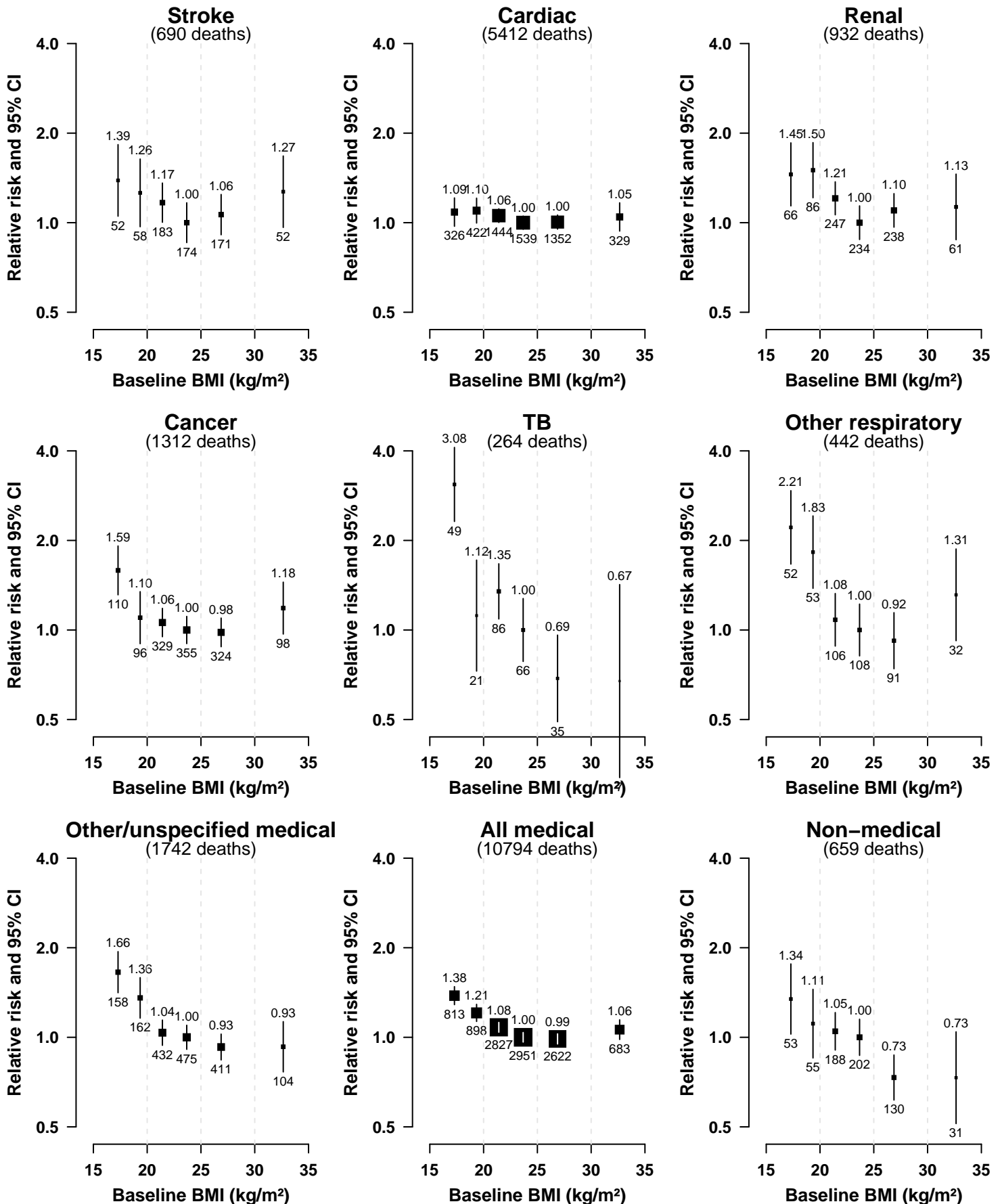


BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table s2, with further exclusion of the first 2 years of follow-up.

Lower socioeconomic status defined as in Table 1.



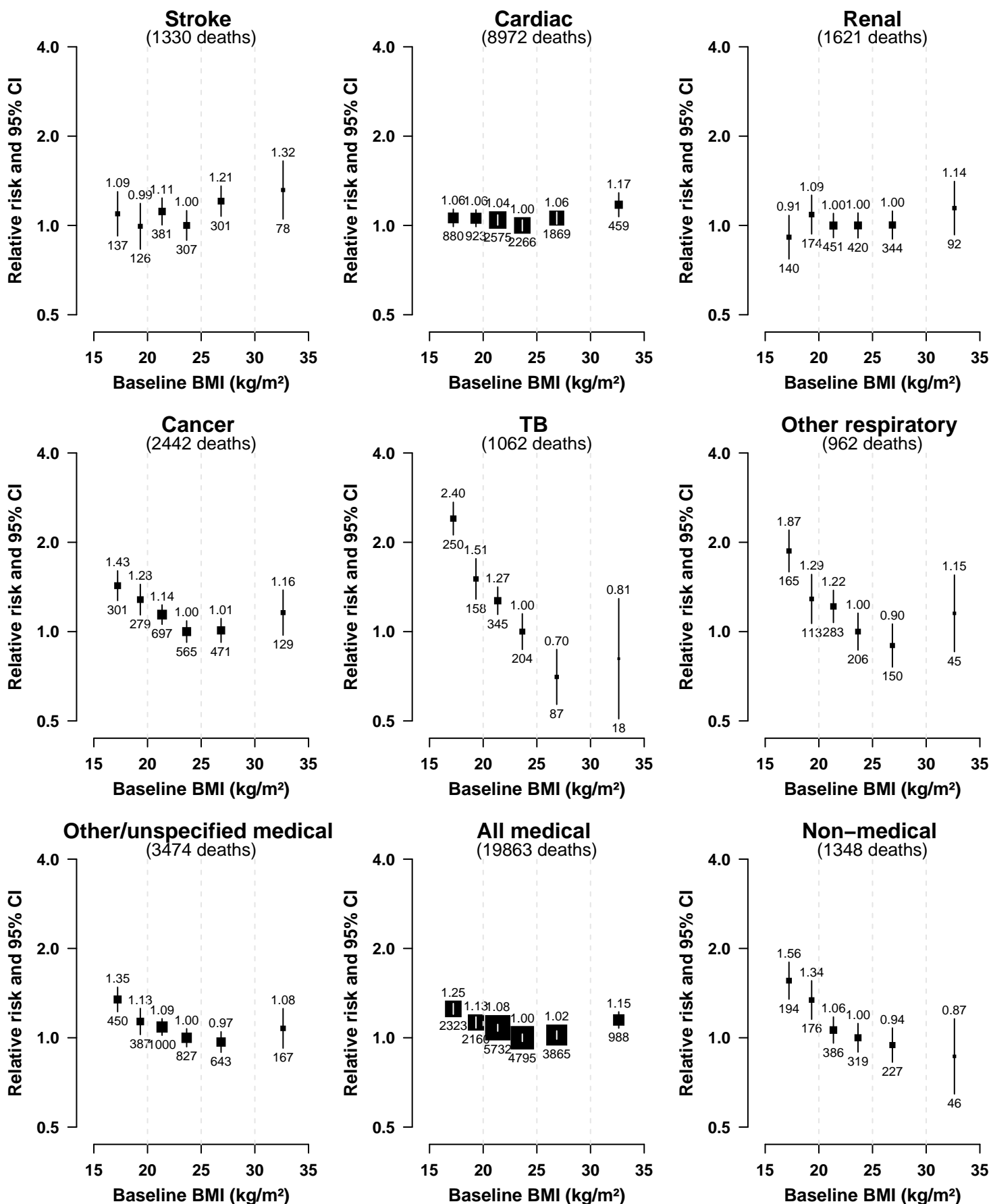
**Figure S17: Cause-specific mortality by BMI at ages 35-69  
RESTRICTED TO THOSE OF MEDIAN OR HIGHER SOCIOECONOMIC STATUS**



BMI=body-mass index. Death rate ratios (RR) at ages 35-69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15-18.5, 18.5-20, 20-22.5, 22.5-25 (reference), 25-30, 30-40 kg/m². For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table s2, with further exclusion of the first 2 years of follow-up.

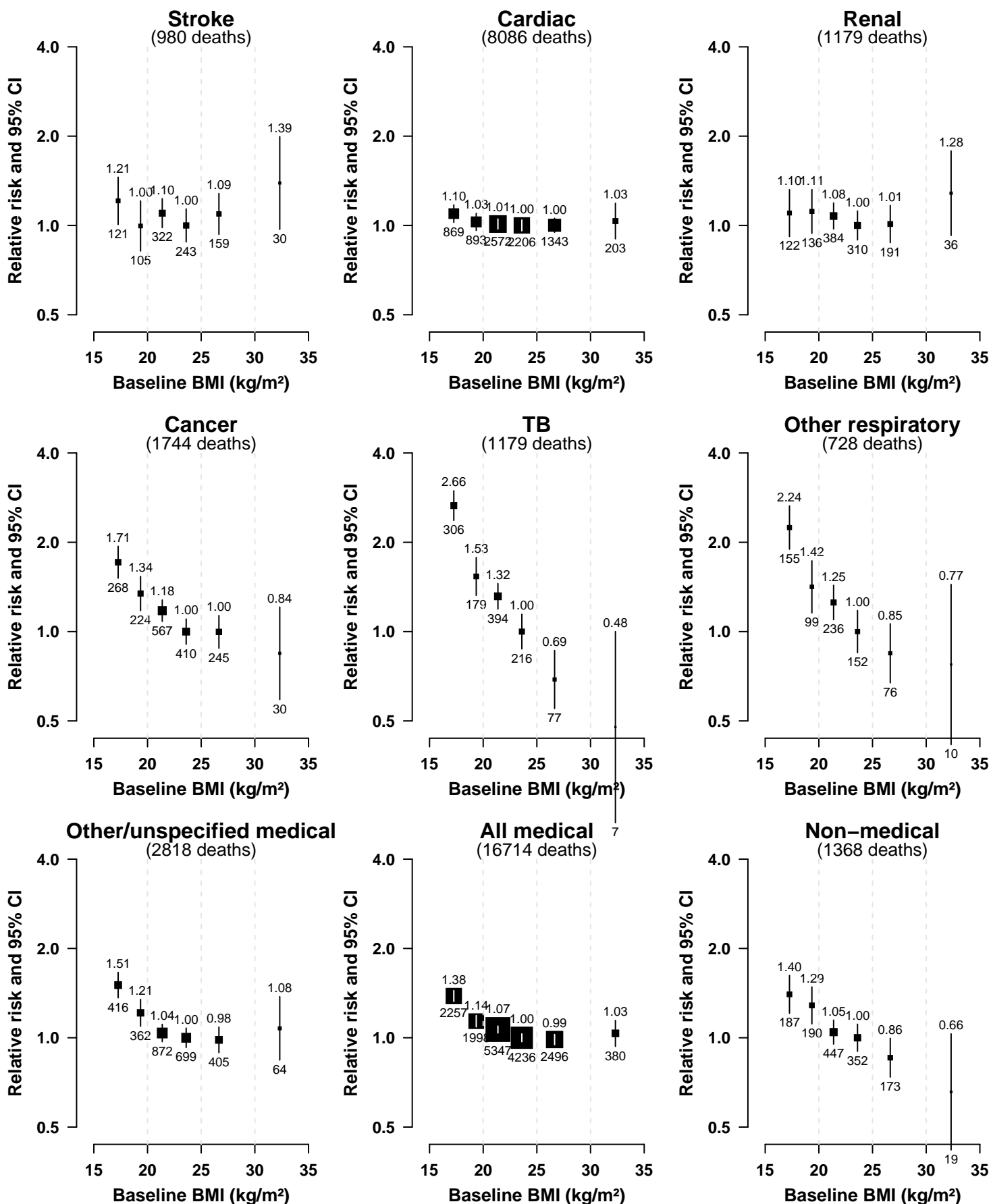
Median or higher socioeconomic status defined as in Table 1.

**Figure S18: Cause-specific mortality by BMI at ages 35–69  
EXCLUDING FIRST 5 YEARS FOLLOW-UP**



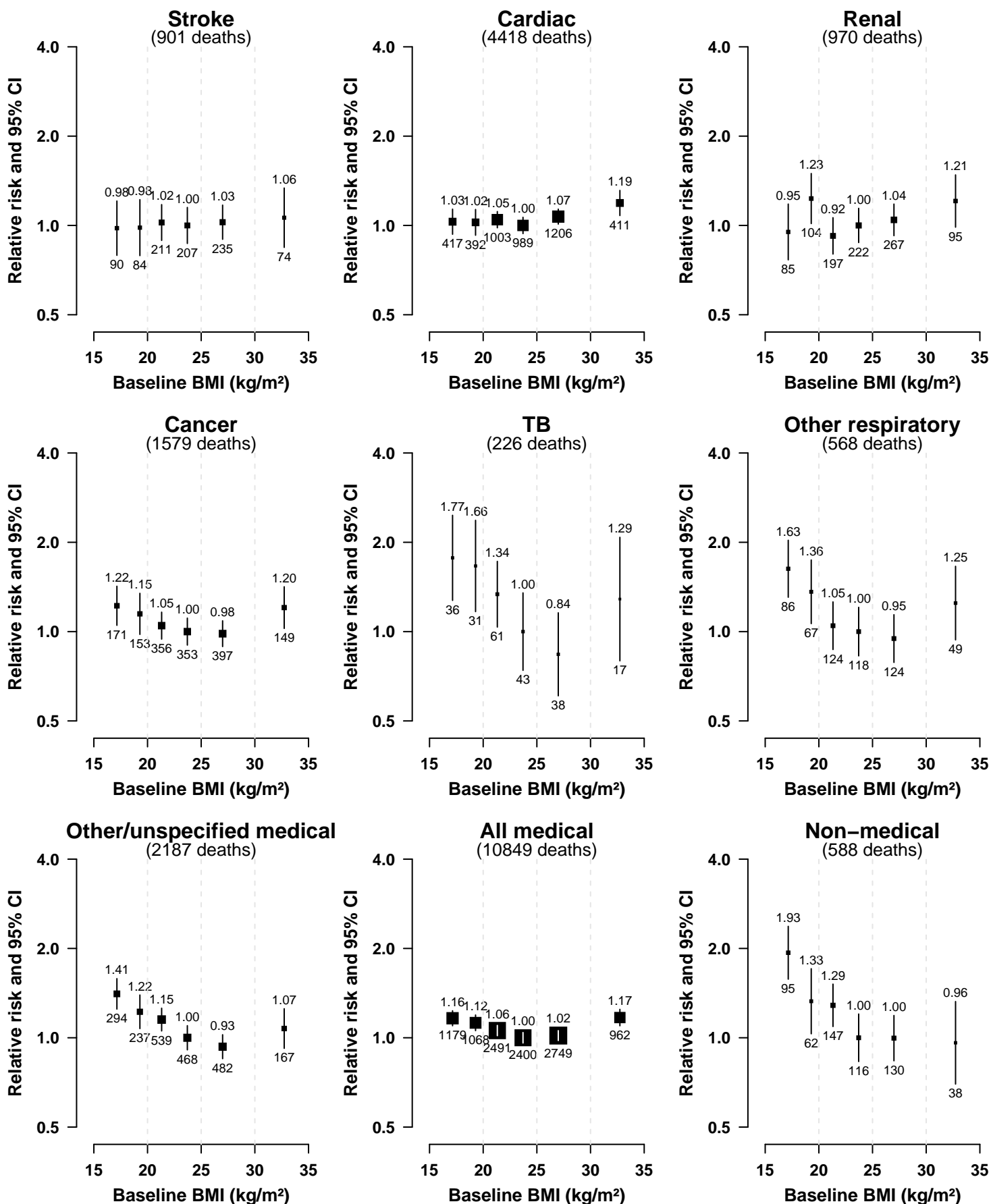
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m². For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 5 years of follow-up.

**Figure S19: Cause-specific mortality by BMI at ages 35–69  
MEN ONLY**



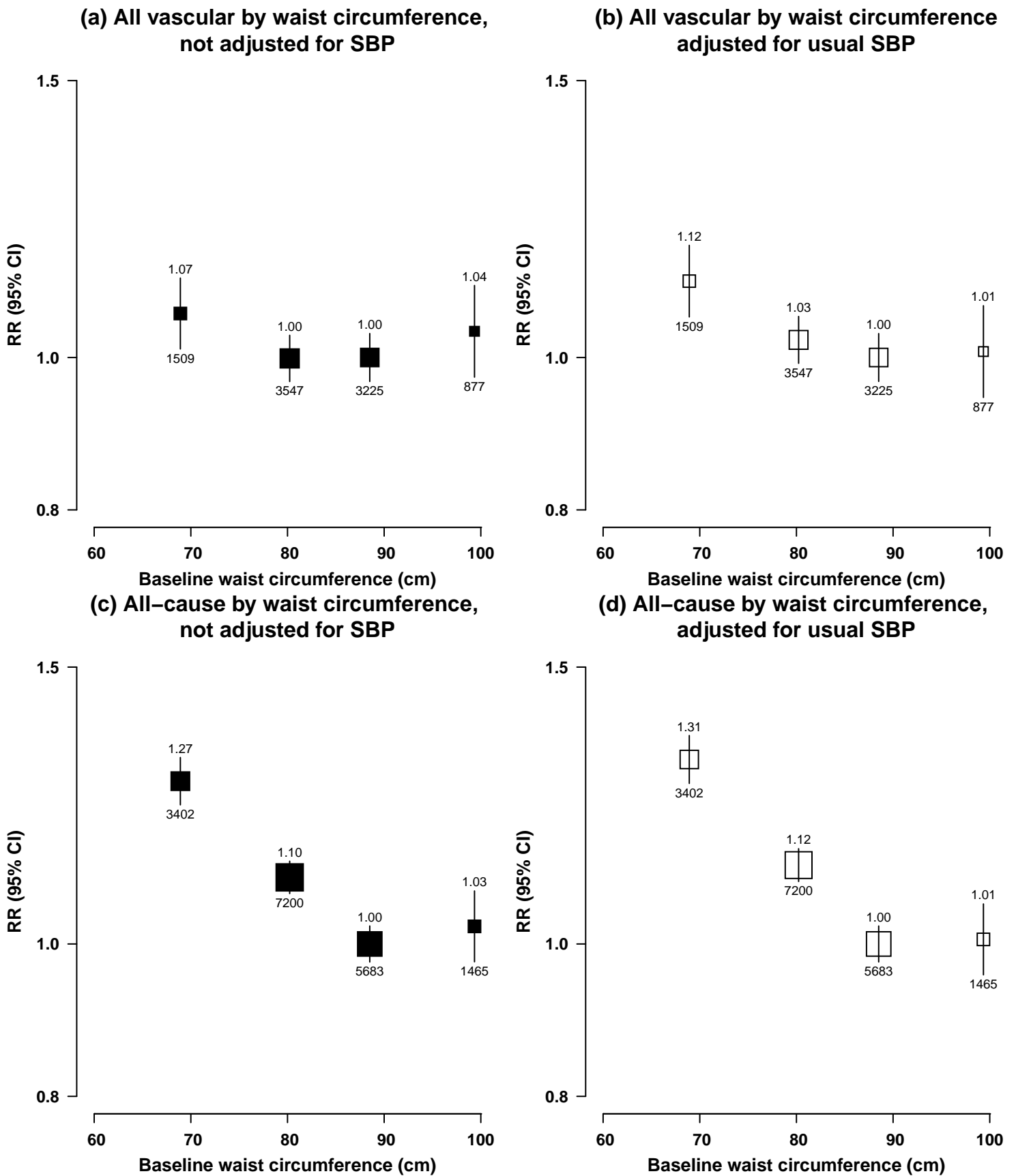
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of women and the first 2 years of follow-up.

**Figure S20: Cause-specific mortality by BMI at ages 35–69  
WOMEN ONLY**



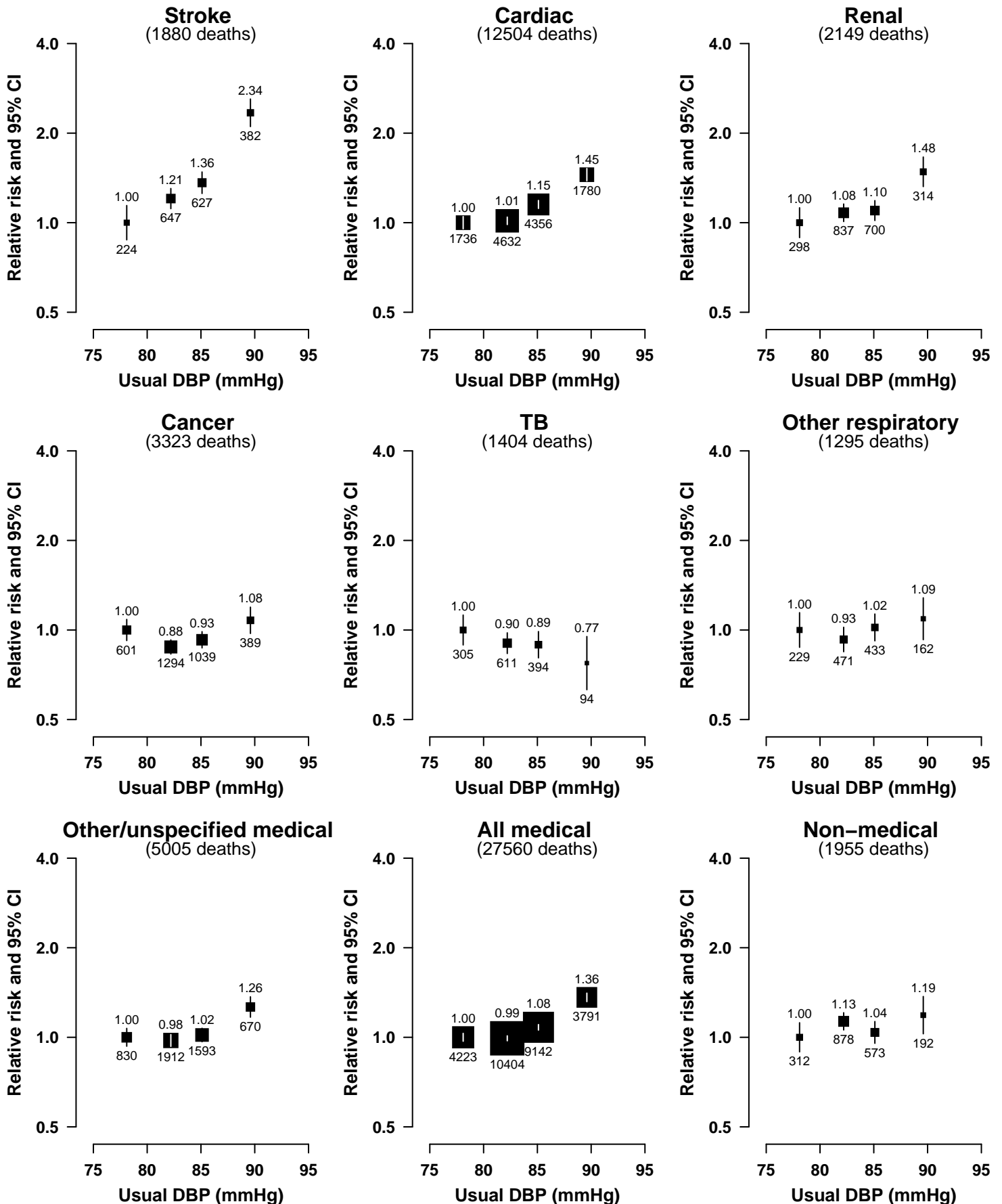
BMI=body-mass index. Death rate ratios (RR) at ages 35–69 years are adjusted for age, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of men and the first 2 years of follow-up.

**Figure S21: All vascular and all-cause mortality by waist circumference at ages 35–69 years (men only), before and after adjustment for usual SBP**



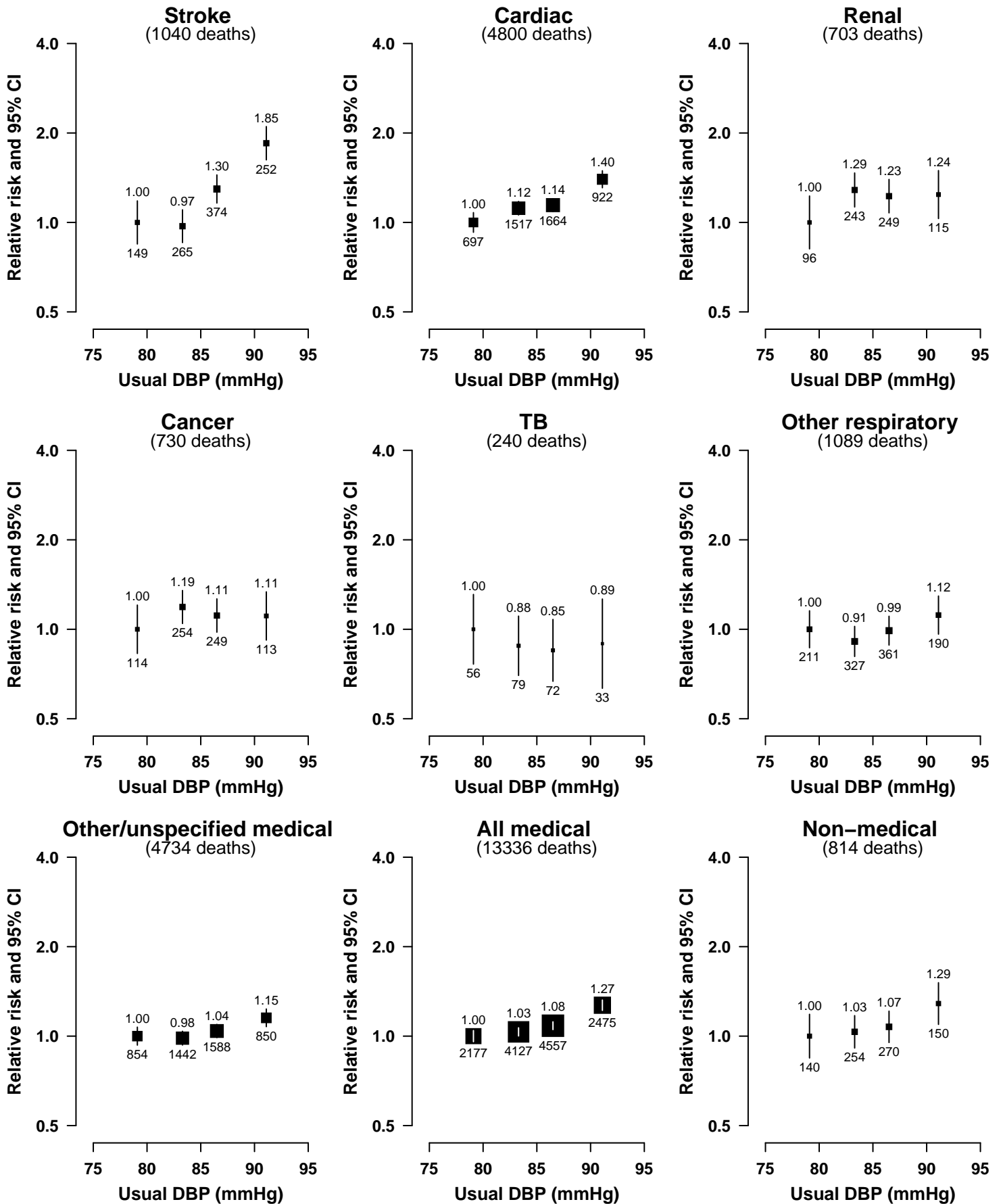
SBP=systolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, education, socioeconomic status, smoking and alcohol, with further adjustment for usual SBP where indicated. Waist circumference categories: <75, 75–85, 85–95 (reference), 95+ cm. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

**Figure S22: Cause-specific mortality by DBP at ages 35–69**



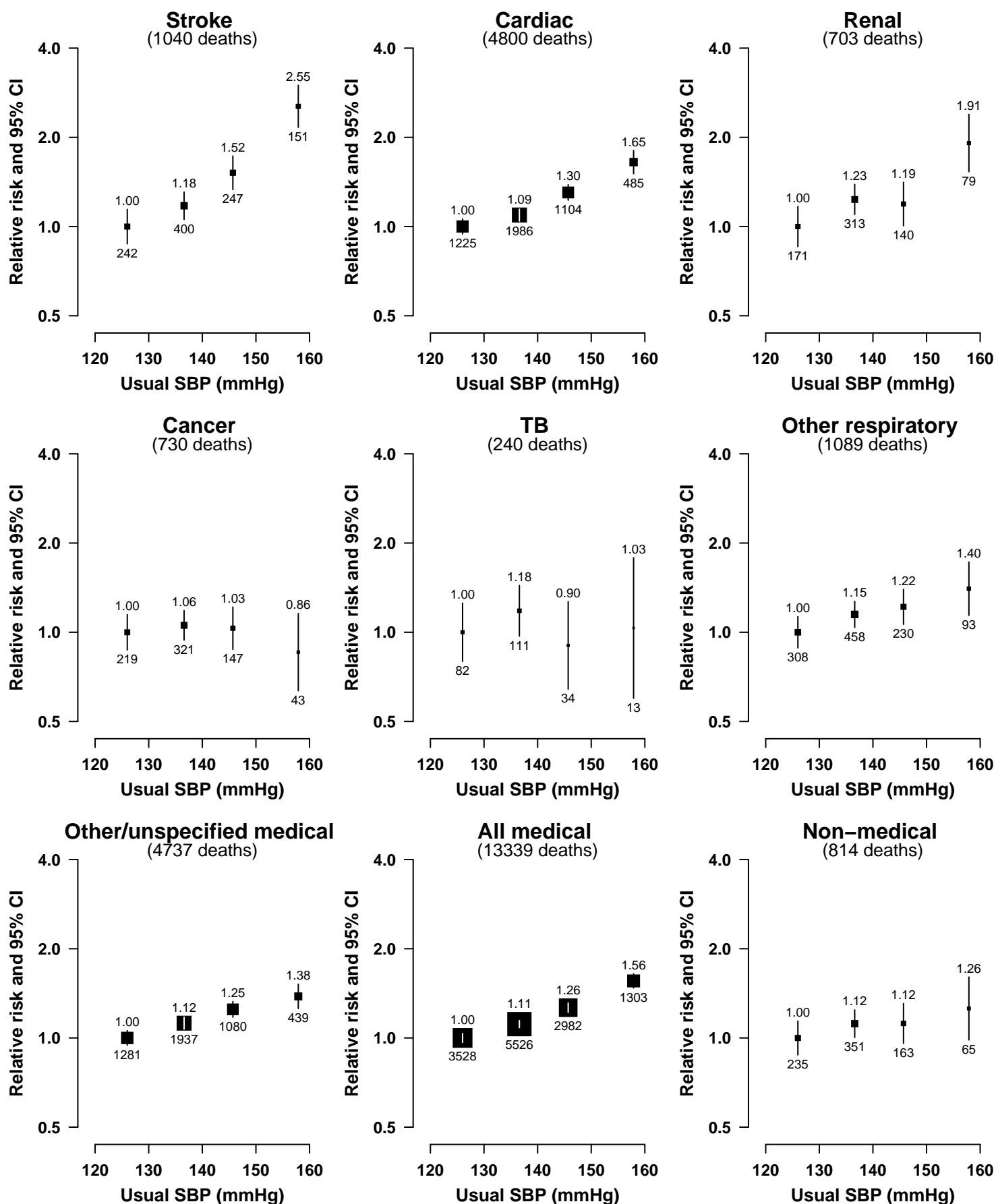
DBP=diastolic blood pressure. Death rate ratios (RR) at ages 35–69 years are adjusted for age, sex, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

**Figure S23: Cause-specific mortality by DBP at ages 70–79**



DBP=diastolic blood pressure. Death rate ratios (RR) at ages 70–79 years are adjusted for age, sex, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up.

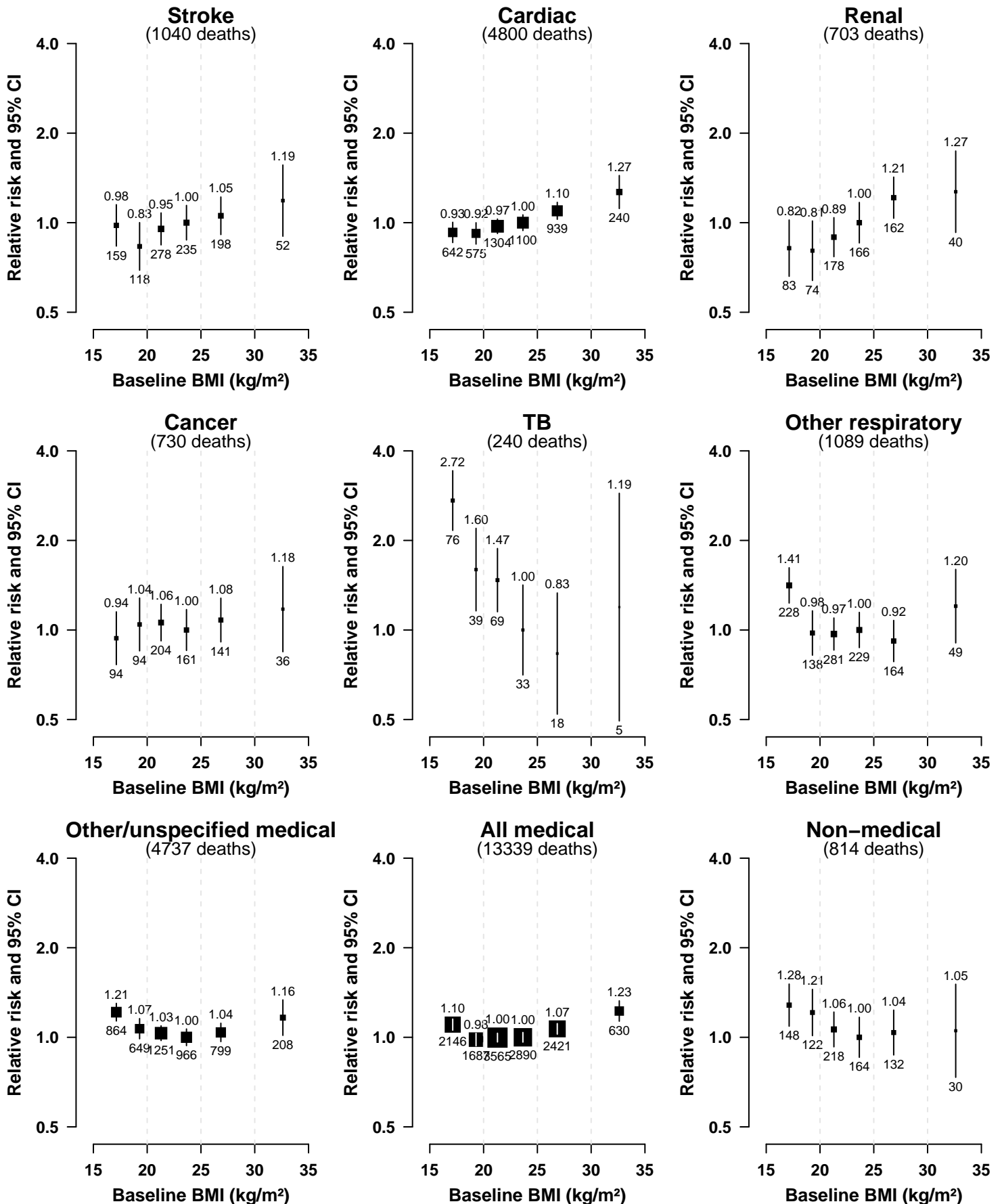
**Figure S24: Cause-specific mortality by SBP at ages 70–79**



SBP=systolic blood pressure. Death rate ratios (RR) at ages 70–79 years are adjusted for age, sex, education, socioeconomic status, smoking, alcohol and BMI. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, except that this is restricted to those with follow-up at ages 70–79 rather than 35–69, with further exclusion of the first 2 years of follow-up.

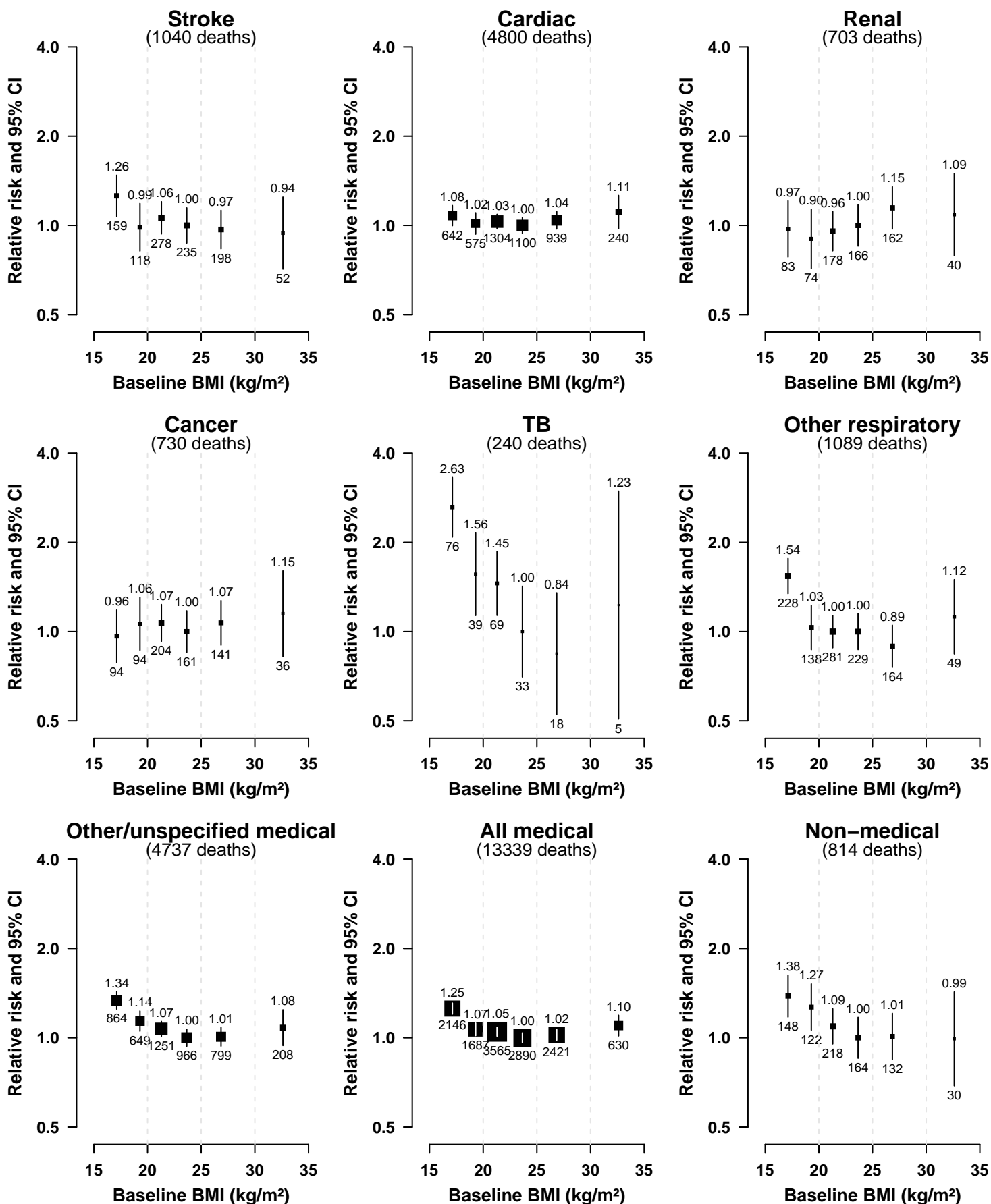


**Figure S25: Cause-specific mortality by BMI at ages 70–79**



BMI=body-mass index. Death rate ratios (RR) at ages 70–79 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, except that this is restricted to those with follow-up at ages 70–79 rather than 35–69, with further exclusion of the first 2 years of follow-up.

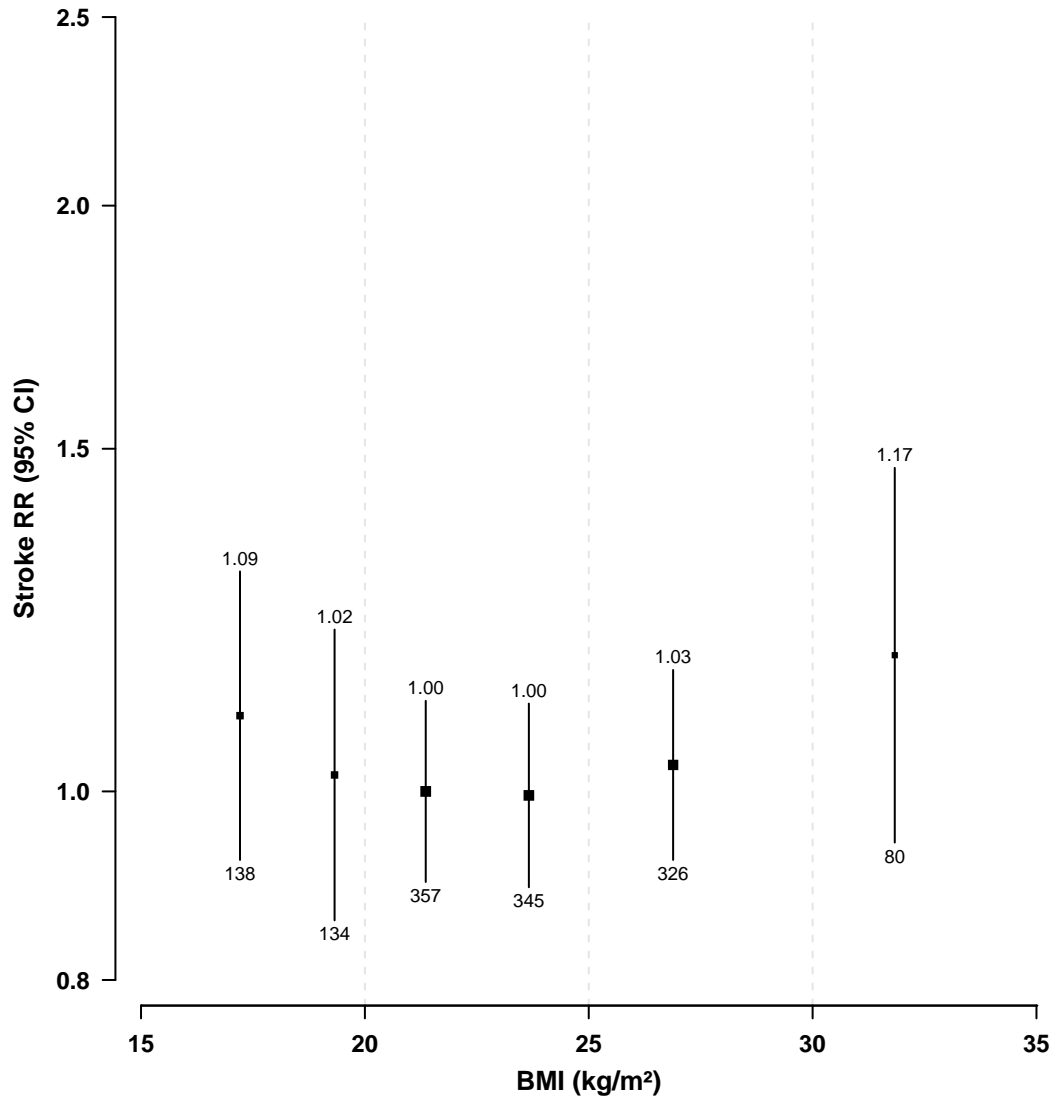
**Figure S26: Cause-specific mortality by BMI at ages 70–79 additionally adjusted for usual SBP**



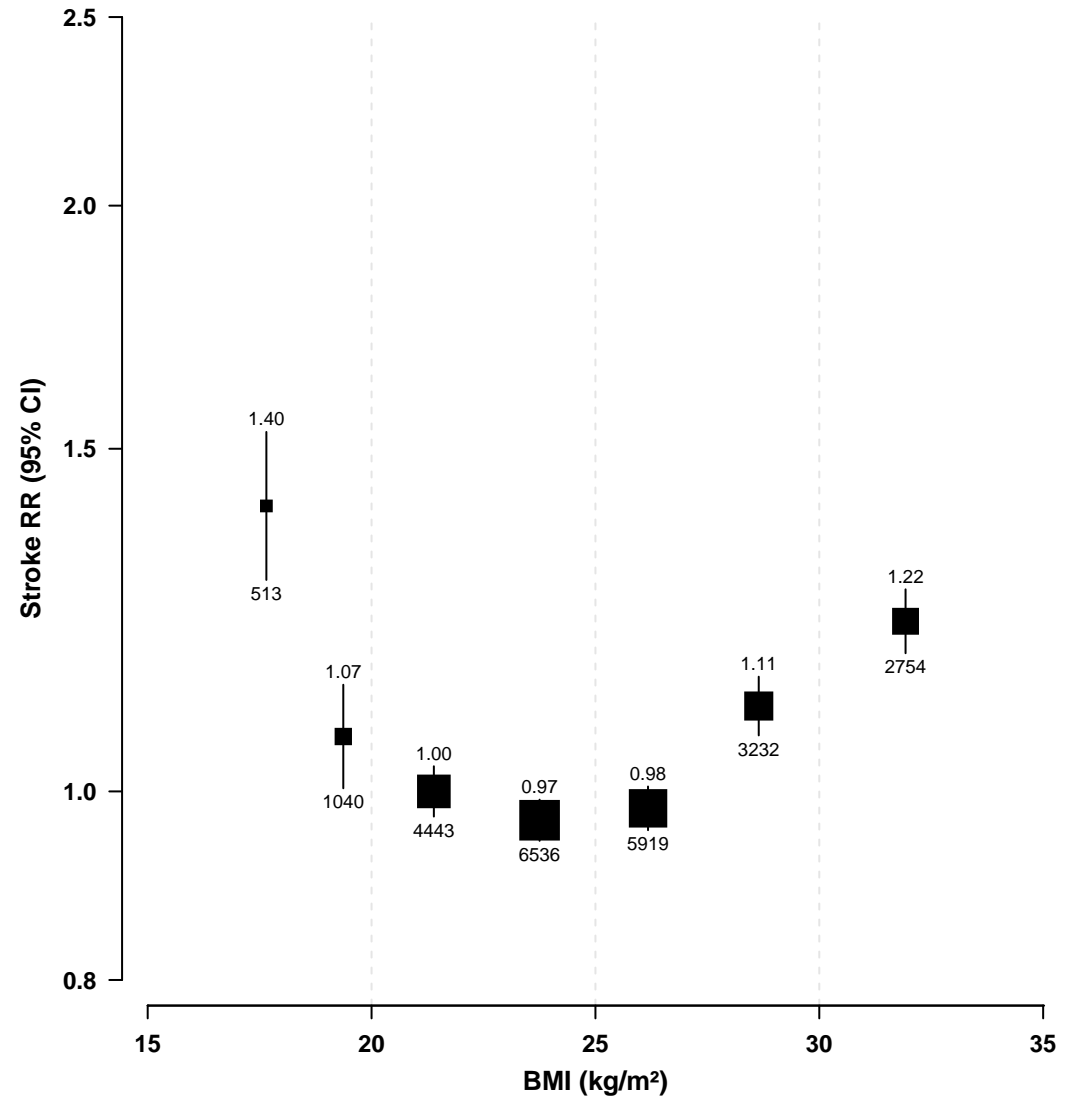
BMI=body-mass index. Death rate ratios (RR) at ages 70–79 years are adjusted for age, sex, education, socioeconomic status, smoking and alcohol. BMI categories: 15–18.5, 18.5–20, 20–22.5, 22.5–25 (reference), 25–30, 30–40 kg/m<sup>2</sup>. For each category, area of the square is inversely proportional to the variance of the category-specific log risk, which also determines the confidence interval (CI). RR shown above each square and the number of events below. Exclusions as in Table S2, with further exclusion of the first 2 years of follow-up. **ADDITIONALLY ADJUSTED FOR USUAL SBP**

**Figure S27: BMI vs stroke mortality rate in Chennai and in Europe/N. America (excluding smokers)**

**(a) Chennai city prospective study (1380 deaths in southern India)**



**(b) The Global BMI Mortality Collaboration (24 437 deaths in Europe/N. America)**



RR: Rate ratio for death from any cause, adjusted for major confounders, excluding early follow-up (2 years in Chennai, 5 years in N America/Europe) and those with prior chronic disease at baseline. Analyses exclude BMI<15 and BMI>35. Estimates for Europe/N America are from the Global BMI Mortality Collaboration. Conventions as in Figure 1.