

Table S1. Total and cancer site-specific population attributable fraction (PAF, %) of cancer incidence attributable to selected modifiable risk factors in Japan in 2015

ICD-10	Site	Active smoking	Secondhand smoking	Alcohol	Body mass index	Physical inactivity	Infections	Highly-salted food consumption	Vegetable consumption	Fruit consumption	Dietary fiber consumption	Red and processed meat consumption	Breastfeeding	Exogenous Hormone Use	Air pollution	PAF (%)	Total incidence	Attributable number of incidence
Men																		
C01	Base of Tongue	43.4		26.8			46.0									72.3	654	473
C02-C06	Oral and mouth	43.4		26.8			4.3									59.8	6,409	3,835
C09-C10	Tonsil and Oropharynx	43.4		26.8			46.0									72.3	2,033	1,469
C11	Nasopharynx	43.4		26.8			80.0									82.4	581	479
C00, C07-C08, C12-C14	Other oral pharynx	43.4		26.8												58.6	4,802	2,812
C15	Esophagus	57.5		58.7	0.4											82.4	19,390	15,971
C16	Stomach	21.5		5.6	0.4		85.0	17.7	1.8							85.0	91,883	78,129
C18	Colon	10.8		18.1	2.8	6.8					13.6	0.1				42.0	50,394	21,184
C19-C20	Rectum	11.5		18.1	2.8	6.8										34.1	30,433	10,387
C21	Anus						88.0									88.0	521	458
C22	Liver	31.9		31.9	4.0		59.6									74.3	28,222	20,960
C23	Gallbladder				3.1											3.1	3,721	114
C25	Pancreas	26.8			0.0											26.8	19,523	5,241
C30-31	Sinonasal	48.9														48.9	1,333	652
C32	Larynx	68.5		27.0												77.0	4,630	3,565
C33-C34	Lung	61.7	1.3							0.7					10.7	66.3	83,169	55,181
C60	Penis						51.0									51.0	412	210
C61	Prostate				1.4											1.4	82,896	1,145
C64	Kidney	25.8			3.1											28.1	13,471	3,786
C65-C66	Renal pelvis & ureter	66.1														66.1	5,292	3,498
C67	Bladder	41.6														41.6	15,280	6,361
C81	Hodgkin disease						56.0									56.0	805	451
C82-C85, C96	Non-Hodgkin Lymphoma						3.7									3.7	15,195	561
C837	Burkitt's lymphoma						30.0									30.0	170	51

C915	ATL						100.0							100.0	912	912
C920, C924, C925	Acute Myeloid leukemia	20.6												20.6	2,970	611
ALL	All sites	23.6	0.2	8.3	1.0	1.0	18.1	3.0	0.3	0.1	1.2	0.0	1.6	43.4	549,241	238,497
Women																
C01	Base of Tongue	13.3		12.9			46.0							58.4	38	22
C02-C06	Oral and mouth	13.3		12.9			4.3							27.6	4,544	1,256
C09-C10	Tonsil and Oropharynx	13.3		12.9			46.0							58.4	475	277
C11	Nasopharynx	13.3		12.9			80.0							83.5	277	231
C00, C07-C08, C12-C14	Other oral pharynx	13.3		12.9										24.5	1,150	281
C15	Esophagus	20.4		28.3	0.1									42.9	3,540	1,520
C16	Stomach	1.6		2.1	0.1		84.9	15.4	1.3					87.1	42,203	36,761
C18	Colon	0.9		7.2	0.7	0.0					7.1	0.0		15.1	44,310	6,706
C19-C20	Rectum	2.0		7.2	0.7	0.0								9.7	16,401	1,599
C21	Anus						88.0							88.0	472	415
C22	Liver	5.2		12.7	1.2		64.0							70.0	15,087	10,566
C23	Gallbladder				0.9									0.9	5,190	45
C25	Pancreas	7.7			0.0									7.7	18,524	1,420
C30-31	Sinonasal	19.7												19.7	705	139
C32	Larynx	0.0		13.5										13.5	360	48
C33-C34	Lung	20.9	8.7							0.2			7.5	33.2	40,025	13,298
C50	Breast			6.4	0.4	5.0							1.3	1.6	14.0	84,709
C51	Vulva						48.0							48.0	867	416
C52	Vagina						78.0							78.0	363	283
C53	Cervix	15.6					100.0							100.0	11,253	11,253
C54	Endometrium				0.6	14.7							1.1	0.0	16.1	15,372
C56	Ovary				0.0								0.0	1.0	1.0	10,166
C64	Kidney	2.2			1.0									3.1	5,954	184
C65-66	Renal pelvis & ureter	2.8												2.8	3,008	84
C67	Bladder	9.5												9.5	5,168	493
C81	Hodgkin disease						56.0							56.0	446	250

C82-C85, C96	Non-Hodgkin Lymphoma						3.7									3.7	12,581	464
C837	Burkitt's lymphoma						30.0									30.0	138	41
C915	ATL						100.0									100.0	663	663
C920, C924, C925	Acute Myeloid leukemia	5.3														5.3	1,983	106
ALL	All sites	4.0	0.9	3.5	0.3	1.6	14.7	1.6	0.1	0.0	0.8	0.0	0.3	0.4	0.7	25.3	408,572	103,237
Both sexes																		
C01	Base of Tongue	34.1		22.5			46.0									68.9	692	477
C02-C06	Oral and mouth	34.1		22.5			4.3									50.8	10,954	5,562
C09-C10	Tonsil and Oropharynx	34.1		22.5			46.0									68.9	2,509	1,728
C11	Nasopharynx	34.1		22.5			80.0									83.6	858	718
C00, C07-C08, C12-C14	Other oral pharynx	34.1		22.5												48.9	5,952	2,911
C15	Esophagus	51.7		54.0	0.3											77.8	22,930	17,835
C16	Stomach	15.3		4.5	0.3		84.9	17.0	1.7							86.0	134,087	115,311
C18	Colon	6.2		13.4	1.9	3.9					10.5	0.0				31.3	94,703	29,630
C19-C20	Rectum	8.2		13.4	1.9	3.9										25.0	46,835	11,718
C21	Anus						88.0									88.0	993	874
C22	Liver	22.6		25.2	3.0		61.2									73.8	43,308	31,942
C23	Gallbladder				1.8											1.8	8,911	160
C25	Pancreas	17.5			0.0											17.5	38,046	6,661
C30-31	Sinonasal	38.8														38.8	2,038	790
C32	Larynx	63.6		26.0												73.0	4,990	3,645
C33-C34	Lung	48.5	3.7							0.5					9.7	55.2	123,194	68,003
C50	Breast			6.4	0.4	5.0							1.3	1.6		14.0	84,709	11,844
C51	Vulva						48.0									48.0	867	416
C52	Vagina						78.0									78.0	363	283
C53	Cervix	15.6					100.0									100.0	11,253	11,253
C54	Endometrium				0.6	14.7							1.1	0.0		16.1	15,372	2,473
C56	Ovary				0.0								0.0	1.0		1.0	10,166	102
C60	Penis						51.0									51.0	412	210
C61	Prostate				1.4											1.4	82,896	1,145

C64	Kidney	18.5															2.5											20.6	19,426	3,994
C65-66	Renal pelvis & ureter	43.2																										43.2	8,300	3,582
C67	Bladder	33.5																										33.5	20,448	6,855
C81	Hodgkin disease															56.0											56.0	1,251	701	
C82-C85, C96	Non-Hodgkin Lymphoma															3.7											3.7	27,776	1,025	
C837	Burkitt's lymphoma															30.0											30.0	308	92	
C915	ATL															100.0											100.0	1,575	1,575	
C920, C924, C925	Acute Myeloid leukemia	14.5																										14.5	4,953	717
ALL	All sites	15.2	0.5	6.2	0.7	1.3	16.6	2.4	0.2	0.1	1.0	0.0	0.1	0.2	1.2	35.9	957,813	344,230												

The number of both sexes is not equal to the sum of men and women due to rounding.

Table S2. Total and cancer site-specific population attributable fraction (PAF, %) of cancer mortality attributable to selected modifiable risk factors in Japan in 2015

ICD-10	Site	Active smoking	Secondhand smoking	Alcohol	Body mass index	Physical inactivity	Infections	Highly-salted food consumption	Vegetable consumption	Fruit consumption	Dietary fiber consumption	Red and processed meat consumption	Breastfeeding	Exogenous Hormone Use	Air pollution	PAF (%)	Total deaths	Attributable number of deaths
Men																		
C01	Base of Tongue	41.8		26.6			46.0									71.8	26	19
C02-C06	Oral and mouth	41.8		26.6			4.3									58.6	1,844	1,081
C09-C10	Tonsil and Oropharynx	41.8		26.6			46.0									71.8	798	573
C11	Nasopharynx	41.8		26.6			80.0									82.6	224	185
C00, C07-C08, C12-C14	Other oral pharynx	41.8		26.6												57.2	2,366	1,354
C15	Esophagus	56.5		57.4	0.2											81.4	9,774	7,960
C16	Stomach	19.9		5.4	1.1		87.7	18.1	1.1							86.6	30,809	26,685
C18	Colon	10.6		17.3	2.5	7.2					12.4	0.1				40.7	17,063	6,952
C19-C20	Rectum	11.0		17.3	2.5	7.2										33.2	9,755	3,242
C21	Anus						88.0									88.0	209	184
C22	Liver	31.3		30.8	3.6		62.7									75.3	19,008	14,320
C23	Gallbladder				2.7											2.7	2,532	68
C25	Pancreas	26.7			0.0											26.7	16,186	4,320
C30-31	Sinonasal	48.4														48.4	392	190
C32	Larynx	66.7		26.1												75.4	899	678
C33-C34	Lung	60.9	1.4							0.5					0.1	65.6	53,208	34,906
C60	Penis						51.0									51.0	141	72
C61	Prostate				3.0											3.0	11,326	338
C64	Kidney	24.6			2.5											26.5	3,182	842
C65-C66	Renal Pelvis and Ureter	64.7														64.7	2,353	1,522
C67	Bladder	40.7														40.7	5,582	2,273
C81	Hodgkin disease						56.0									56.0	102	57
C82-C85, C96	Non-Hodgkin Lymphoma						3.7									3.7	6,568	243

C837	Burkitt's lymphoma						30.0									30.0	36	11
C915	ATL						100.0									100.0	446	446
C920, C924, C925	Acute Myeloid leukemia	21.2														21.2	2,968	629
ALL	All sites	29.8	0.3	8.8	1.0	0.9	18.5	2.5	1.0	0.1	1.0	0.0	0.0	0.0	2.6	49.7	21,9508	109,151
Women																		
C01	Base of Tongue	10.0		10.5			46.0									56.0	2	1
C02-C06	Oral and mouth	10.0		10.5			4.3									22.9	1,467	336
C09-C10	Tonsil and Oropharynx	10.0		10.5			46.0									56.0	167	94
C11	Nasopharynx	10.0		10.5			80.0									83.1	75	62
C00, C07-C08, C12-C14	Other oral pharynx	10.0		10.5												19.5	411	80
C15	Esophagus	18.3		26.7	0.1											40.2	1,965	789
C16	Stomach	1.3		2.0	0.2		88.5	15.8	0.2							90.1	15,870	14,294
C18	Colon	0.7		6.6	0.6	0.0					7.9		0.0			15.1	17,275	2,607
C19-C20	Rectum	1.8		6.6	0.6	0.0										8.8	5,606	494
C21	Anus						88.0									88.0	202	178
C22	Liver	3.4		11.8	1.1		68.0									72.6	9,881	7,176
C23	Gallbladder				0.8											0.8	3,716	30
C25	Pancreas	7.2			0.0											7.2	15,680	1,134
C30-31	Sinonasal	17.1														17.1	245	42
C32	Larynx	0.0		11.8												11.8	72	8
C33-C34	Lung	18.3	9.1							0.1					0.1	31.2	21,170	6,610
C50	Breast			5.8	0.6	5.6							1.3	1.6		14.2	13,584	1,923
C51	Vulva						48.0									48.0	262	126
C52	Vagina						78.0									78.0	151	118
C53	Cervix	13.1					100.0									100.0	2,813	2,813
C54	Endometrium				1.0	16.9							1.1	0.0		18.5	2,322	431
C56	Ovary				0.0								0.0	1.1		1.1	4,676	51
C64	Kidney	1.8			0.9											2.7	1,584	42
C65-C66	Renal Pelvis and Ureter	2.4														2.4	1,558	38
C67	Bladder	8.0														8.0	2,548	205

C81	Hodgkin disease						56.0									56.0	58	32
C82-C85, C96	Non-Hodgkin Lymphoma						3.7									3.7	5,140	190
C837	Burkitt's lymphoma						30.0									30.0	20	6
C915	ATL						100.0									100.0	506	506
C920, C924, C925	Acute Myeloid leukemia	4.4														4.4	1,808	79
ALL	All sites	4.7	1.3	3.0	0.3	0.8	16.5	1.7	0.3	0.0	0.9	0.0	0.1	0.2	1.0	26.8	150,838	40,495
Both sexes																		
C01	Base of Tongue	32.6		21.9			46.0									68.3	28	19
C02-C06	Oral and mouth	32.6		21.9			4.3									49.4	3,311	1,635
C09-C10	Tonsil and Oropharynx	32.6		21.9			46.0									68.3	965	659
C11	Nasopharynx	32.6		21.9			80.0									83.8	299	250
C00, C07-C08, C12-C14	Other oral pharynx	32.6		21.9												47.4	2,777	1,317
C15	Esophagus	50.1		52.3	0.2											76.2	11,739	8,943
C16	Stomach	13.6		4.2	0.8		88.0	17.3	0.8							88.0	46,679	41,100
C18	Colon	5.6		12.4	1.6	3.9					10.2	0.0				33.1	34,338	11,353
C19-C20	Rectum	7.7		12.4	1.6	3.9										23.4	15,361	3,601
C21	Anus						88.0									88.0	411	362
C22	Liver	21.8		24.3	2.8		64.5									75.3	28,889	21,748
C23	Gallbladder				1.6											1.6	6,248	98
C25	Pancreas	17.1			0.0											17.1	31,866	5,454
C30-31	Sinonasal	36.4														36.4	637	232
C32	Larynx	61.7		25.1												71.3	971	693
C33-C34	Lung	48.8	3.6							0.4					9.8	55.4	74,378	41,208
C50	Breast			5.8	0.6	5.6							1.3	1.6		14.2	13,584	1,923
C51	Vulva						48.0									48.0	262	126
C52	Vagina						78.0									78.0	151	118
C53	Cervix	13.1					100.0									100.0	2,813	2,813
C54	Endometrium				1.0	16.9							1.1			18.5	2,322	431
C56	Ovary				0.0								0.0	1.1		1.1	4,676	51

C60	Penis							51.0										51.0	141	72
C61	Prostate					3.0												3.0	11,326	338
C64	Kidney	17.0					1.9											18.6	4,766	888
C65-C66	Renal pelvis and ureter	39.9																39.9	3,911	1,560
C67	Bladder	30.5																30.5	8,130	2,478
C81	Hodgkin disease							56.0										56.0	160	90
C82-C85, C96	Non-Hodgkin Lymphoma							3.7										3.7	11,708	433
C837	Burkitt's lymphoma							30.0										30.0	56	17
C915	ATL							100.0										100.0	952	952
C920, C924, C925	Acute Myeloid leukemia	14.8																14.8	4,776	709
ALL	All sites	19.6	0.7	6.5	0.7	0.8	17.7		2.2	0.7	0.1	0.9		0.0	0.1	0.1	2.0	41.0	370,346	151,672

The number of both sexes is not equal to the sum of men and women due to rounding.