

**Supplemental Table 1.** Demographic Characteristics of Head and Neck Cancer Cases and Controls Restricted to U.S. Whites and Blacks in INHANCE, 1981-2007

Characteristic	No. Cases (n=7574)	%	No. Controls (n=7073)	%
Sex				
Female	2133	28.2	3143	33.1
Male	5441	71.8	6343	66.9
Race				
Black	975	12.9	953	10.1
White	6599	87.1	8533	90.0
Age				
17-39	319	4.2	563	5.9
40-44	376	5.0	519	5.5
45-49	745	9.8	871	9.2
50-54	1110	14.7	1387	14.6
55-59	1384	18.3	1677	17.7
60-64	1315	17.4	1519	16.0
65-69	1065	14.1	1366	14.4
70-74	758	10.0	960	10.1
75+	502	6.6	624	6.6
Education Level				
Less than junior high school	504	6.7	372	3.9
Some high school	1595	21.1	1172	12.4
High school graduate	1390	25.5	1981	20.9
Vocational school, some college	2200	29.1	3211	33.9
College graduate/postgraduate	1345	17.8	2750	29.0
Study Center				
Baltimore	202	2.7	187	2.0
Boston	470	6.2	595	6.3
Houston	758	10.0	784	8.3
Iowa	526	6.9	737	7.8
Los Angeles	313	4.1	733	7.7
MSKCC	101	1.3	145	1.5
New York Multicenter	1433	18.9	1604	16.9
North Carolina (1994-1997)	175	2.3	200	2.1
North Carolina (2002-2006)	1303	17.2	1357	14.3
Seattle (1985-1995)	402	5.3	596	6.3
Seattle-Leo	634	8.4	535	5.6
Tampa	197	2.6	836	8.8
US Multicenter	1060	14.0	1177	12.4
Tumor Site				
Head and Neck (NOS)	6	0.1		
Hypopharynx	424	5.6		
Larynx	1509	19.9		
Oral Cavity	2248	29.7		
Oral/Pharynx (NOS)	806	10.6		
Oro-pharynx	2581	34.0		

**Supplemental Table 2.** Smoking Characteristics and Associations with Head and Neck Cancer Risk by Race and Anatomic Site, INHANCE Consortium, 1981-2007

Cigarette Use Characteristic	Controls		Hypopharynx						Larynx						Oral Cavity					
	White	Black	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI
Cigarette Smoking																				
Never	3308	372	30	1		13	1		74	1		12	1		408	1		28	1	
Ever	5224	581	303	3.07	2.07-4.55	78	1.11	0.54-2.28	1195	6.55	5.10-8.41	227	7.48	3.72-15.03	1608	1.60	1.41-1.82	202	2.01	1.24-3.26
Missing	1								1									2		
Cigarette Smoking Status																				
Never	3308	372	30	1		13	1		74	1		12	1		408	1		28	1	
Former	3358	281	88	1.53	0.98-2.38	15	0.39	0.15-1.03	345	2.82	2.15-3.71	54	3.14	1.42-6.95	458	0.92	0.78-1.07	30	0.74	0.38-1.42
Current	1866	300	215	10.01	6.47-15.49	63	1.69	1.51-7.11	850	14.69	11.26-19.15	173	13.05	6.22-27.35	1149	3.13	2.71-3.62	172	3.39	2.03-5.68
Missing	1								1						1			2		
Smoking Frequency <sup>b</sup>																				
Never	3308	372	30	1		13	1		74	1		12	1		408	1		28	1	
1-10	1121	251	17	0.97	0.51-1.86	20	0.79	0.33-1.87	60	1.86	1.29-2.69	47	3.62	1.63-8.05	152	0.98	0.80-1.21	44	1.38	0.77-2.48
11-20	2039	220	94	2.87	1.83-4.51	36	1.23	0.53-2.83	371	5.50	4.18-7.24	91	8.52	3.89-18.66	557	1.70	1.45-1.99	88	2.39	1.35-4.23
21-30	857	53	68	5.08	3.10-8.34	9	2.79	0.94-8.23	295	9.51	7.07-12.80	38	22.70	8.90-57.94	364	2.55	2.12-3.08	28	3.37	1.52-7.47
>30	1197	52	122	4.48	2.83-7.11	11	1.03	0.33-3.16	463	11.27	8.47-15.01	50	16.30	5.62-47.29	530	2.30	1.93-2.76	41	3.35	1.56-7.20
Missing	11	5	2			2			7			1			5			3		
Smoking Duration <sup>c</sup>																				
Never	3291	372	29	1		13	1		71	1		11	1		404	1		26	1	
1-10	819	81	11	1.27	0.61-2.67	2	0.15	0.03-2.22	31	1.58	1.00-2.48	0	n/a		68	0.69	0.52-0.91	4	0.65	0.20-2.08
11-20	970	99	15	1.32	0.67-2.58	2	0.26	0.05-1.37	71	2.49	1.73-3.57	15	4.67	1.72-12.67	120	1.00	0.79-1.26	10	1.00	0.41-2.43
21-30	1209	148	40	2.05	1.20-3.51	20	1.15	0.46-2.89	171	4.35	3.18-5.95	45	6.41	2.64-15.54	292	1.52	1.27-1.83	36	1.69	0.85-3.34
>30	2228	249	237	5.13	3.37-7.80	49	1.23	0.55-2.77	920	12.62	9.64-16.53	167	14.49	6.74-31.19	1125	2.61	2.25-3.03	153	3.85	2.22-6.70
Missing	16	4	1			5			6			1			7			3		
Cumulative Smoking <sup>d</sup>																				
Never	3308	372	30	1		13	1		74	1		12	1		408	1		28	1	
1-10	1181	179	15	1.10	0.58-2.11	9	0.46	0.15-1.40	47	1.58	1.08-2.33	20	2.11	0.85-5.28	113	0.76	0.60-0.95	17	1.03	0.50-2.11

11-20	792	129	14	1.45	0.73-2.85	11	1.00	0.37-2.68	72	2.99	2.02-4.17	35	5.55	2.34-13.18	115	1.11	0.88-1.41	21	0.96	0.45-2.04
21-30	779	92	21	1.46	0.77-2.75	12	0.70	0.23-2.09	87	3.33	2.33-4.76	21	6.94	2.63-18.32	180	1.64	1.33-2.03	36	2.43	1.22-4.83
>30	2453	176	250	4.99	3.32-7.52	40	1.67	0.70-4.00	983	12.07	9.30-15.67	149	17.93	8.23-39.09	1191	2.49	2.15-2.88	126	4.37	2.44-7.82
Missing	20	5	3			6			7			2			9			4		

Cigarette Use Characteristic	Oral/Pharynx (NOS)						Oro-pharynx					
	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI
Cigarette Smoking												
Never	183	1		16	1		508	1		24	1	
Ever	505	1.23	1.02-1.48	102	1.68	0.91-3.12	1778	1.49	1.32-1.68	271	2.70	1.66-4.39
Missing												
Cigarette Smoking Status												
Never	183	1		16	1		508	1		24	1	
Former	171	0.76	0.60-0.96	23	1.03	0.47-2.25	677	1.05	0.92-1.21	51	1.54	0.85-2.81
Current	334	2.32	1.87-2.87	79	2.42	1.25-4.68	1101	2.48	2.16-2.84	220	3.85	2.30-6.43
Missing												
Smoking Frequency <sup>b</sup>												
Never	183	1		16	1		508	1		24	1	
1-10	59	0.84	0.61-1.15	22	0.97	0.45-2.10	205	1.12	0.93-1.35	65	1.85	1.06-3.24
11-20	165	1.20	0.95-1.52	49	2.28	1.10-4.72	627	1.51	1.31-1.74	102	2.72	1.54-4.84
21-30	94	1.64	1.22-2.20	13	2.44	0.87-6.85	357	1.87	1.56-2.23	49	5.83	2.82-12.03
>30	181	1.94	1.50-2.50	17	4.39	1.62-11.93	583	1.97	1.68-2.32	54	7.23	3.57-14.61
Missing	6			1			6			1		
Smoking Duration <sup>c</sup>												
Never	183	1		16	1		500	1		21	1	
1-10	30	0.62	0.41-0.94	6	1.40	0.49-4.01	164	1.10	0.90-1.35	4	0.65	0.20-2.07
11-20	42	0.75	0.52-1.07	6	0.95	0.32-2.86	160	0.86	0.70-1.05	14	1.52	0.68-3.40
21-30	67	0.86	0.63-1.17	20	1.63	0.70-3.79	328	1.33	1.12-1.58	75	3.34	1.78-6.28
>30	362	1.97	1.58-2.44	69	2.41	1.19-4.88	1125	2.36	2.05-2.73	174	5.79	3.22-10.44
Missing	4			1			9			7		
Cumulative Smoking <sup>d</sup>												

Never	183	1		16	1		508	1		24	1	
1-10	41	0.59	0.42-0.85	14	1.07	0.46-2.51	214	1.04	0.87-1.24	26	1.37	0.71-2.62
11-20	41	0.85	0.59-1.23	13	1.30	0.53-3.21	156	1.09	0.89-1.34	32	1.50	0.75-3.00
21-30	43	0.88	0.61-1.26	18	2.68	1.10-6.56	192	1.23	1.00-1.50	48	3.46	1.78-6.73
>30	373	1.94	1.57-2.39	56	2.99	1.40-6.36	1204	2.13	1.86-2.45	158	6.79	3.75-12.29
Missing	7			1			12			7		

<sup>a</sup> Odds ratios adjusted for age, sex, study center, educational level (with imputation for missing values), frequency of alcohol use (mL of ethanol per day, categorical), duration of cigar smoking (years, continuous), duration of pipe smoking (years, continuous), ever use of snuff, and ever use of chew.

<sup>b</sup> in cigarettes/day

<sup>c</sup> in years

<sup>d</sup> in pack-years

**Supplemental Table 3.** Alcohol Characteristics and Associations with Head and Neck Cancer Risk by Race and Anatomic Site, INHANCE Consortium, 1981-2007

Alcohol Use Characteristic	Controls			Hypopharynx					Larynx					Oral Cavity						
	White Cases	Black	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	White Cases	Adjusted OR <sup>a</sup>	Adjusted CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted CI
Number of Drinks/Day <sup>b</sup>																				
Never to <1	5850	641	92	1		14	1		514	1		67	1		842	1		63	1	
≥1 to <3	1427	155	74	3.33	2.37-4.67	22	5.84	2.55-13.40	233	1.32	1.08-1.60	47	1.71	1.00-2.94	424	2.05	1.78-2.37	45	2.67	1.64-4.35
≥3 to <5	433	51	42	5.66	3.66-8.77	10	10.91	3.51-33.93	135	2.13	1.64-2.76	25	1.41	0.66-3.02	228	3.52	2.89-4.28	28	3.31	1.74-6.31
≥5	553	84	105	11.70	8.04-17.02	35	17.61	7.37-42.05	329	3.16	2.56-3.91	92	2.57	1.51-4.37	438	5.05	4.25-6.00	80	5.47	3.36-8.93
Missing	10	2				1			3			1					1			
Amount per Day <sup>c</sup>																				
Never to ≤8	4681	540	60	1		9	1		391	1		47	1		624	1		45	1	
>8 to ≤18	1395	121	37	1.91	1.23-2.96	9	3.80	1.33-10.87	148	1.21	0.97-1.53	25	2.71	1.39-5.27	270	1.60	1.36-1.88	23	1.84	0.99-3.43
>18 to ≤40	1078	120	63	4.24	2.74-6.56	12	4.59	1.55-13.57	181	1.43	1.14-1.80	35	2.30	1.21-4.38	316	2.31	1.95-2.73	29	2.95	1.60-5.44
>40-≤75	535	63	47	6.68	4.22-10.55	14	14.48	4.71-44.50	154	2.08	1.61-2.69	29	2.17	1.01-4.66	270	3.88	3.20-4.71	34	5.02	2.55-9.88
>75	574	87	106	14.09	9.24-21.51	37	20.94	7.92-55.38	337	3.22	2.57-4.02	95	3.43	1.93-6.11	452	5.77	4.79-6.95	85	7.51	4.32-3.03
Missing	10	2				1			3			1					1			
Alcohol Duration <sup>d</sup>																				
Never to <20	3030	379	48	1		5	1		261	1		33	1		496	1		41	1	
≥20 to <30	979	96	30	2.14	1.32-3.49	12	9.87	2.89-33.75	142	1.60	1.24-2.07	28	3.05	1.47-6.33	274	1.62	1.36-1.94	29	2.01	1.07-3.79
≥30	3579	310	165	2.52	1.77-3.59	44	10.18	3.52-29.46	853	1.69	1.41-2.02	177	2.61	1.54-4.42	922	1.38	1.20-1.58	106	2.20	1.38-3.50
Missing	911	165	82			25			5								54			

Alcohol Use Characteristic	Oral/Pharynx (NOS)						Oro-pharynx					
	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	White Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI	Black Cases	Adjusted OR <sup>a</sup>	Adjusted 95% CI
Number of Drinks/Day <sup>b</sup>												
Never to <1	307	1		32	1		672	1		60	1	
≥1 to <3	160	2.11	1.70-2.61	20	2.11	1.05-4.22	500	1.77	1.56-2.02	69	3.42	2.17-5.37
≥3 to <5	83	3.50	2.63-4.66	19	4.49	2.06-9.81	267	2.81	2.35-3.36	35	3.80	2.11-6.86

≥5	120	3.47	2.65-4.56	43	6.59	3.55-12.21	433	3.27	2.78-3.84	118	8.39	5.33-13.22
Missing	3						2					
Amount per Day <sup>c</sup>				12								
Never to ≤8	236	1		23	1		694	1		45	1	
>8 to ≤18	93	1.45	1.12-1.87	11	1.81	0.79-4.31	339	1.50	1.29-1.74	23	1.86	1.02-3.38
>18 to ≤40	119	2.26	1.76-2.91	16	2.98	1.33-6.66	382	1.99	1.71-2.31	49	2.30	1.90-5.72
>40-≤75	98	3.70	2.79-4.90	19	6.02	2.57-14.10	306	2.93	2.46-3.49	45	5.16	2.82-9.45
>75	124	3.69	2.77-4.92	45	8.53	4.25-17.11	451	3.69	3.12-4.37	120	9.50	5.75-15.70
Missing	3						2					
Alcohol Duration <sup>c</sup>												
Never to <20	153	1		12	1		501	1		30	1	
≥20 to <30	57	1.20	0.87-1.65	15	4.61	1.86-11.41	350	1.83	1.56-2.16	42	4.12	2.33-7.27
≥30	305	1.85	1.48-2.32	59	5.79	2.81-11.95	1127	1.81	1.59-2.06	148	4.60	2.79-7.59
Missing	166			30			285			72		

<sup>a</sup> Odds ratios adjusted for age, sex, study center, educational level, pack-years of smoking, duration of cigar smoking (years), duration of pipe smoking (years), ever snuff use, and ever chew use.

<sup>b</sup> Drinking status with 15.6 mL of ethanol in lifetime

<sup>c</sup> in mL

<sup>d</sup> in years

