

Supplementary Table 1: Number of patients stratified by tumor dimensions, sociodemographic characteristics, and medical comorbidities.

	All Tumors		All Meningiomas		Benign Meningiomas		Malignant Meningiomas		All Gliomas		Gliomas (Grades I-III)		Gliomas (Grade IV)		Schwannomas		Acoustic Neuromas		Pituitary Tumors		Metastases		
	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls	
3D tumor volume																							
White	NA	NA	32	NA	28	NA	4	NA	26	NA	1	NA	7	NA	2	NA	1	NA	2	NA	7	NA	
Asian	NA	NA	26	NA	22	NA	4	NA	3	NA	3	NA	0	NA	6	NA	4	NA	4	NA	4	NA	
NHPi	NA	NA	21	NA	17	NA	4	NA	3	NA	3	NA	0	NA	5	NA	4	NA	4	NA	5	NA	
Hispanic	NA	NA	2	NA	2	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	1	NA	0	NA	
Black	NA	NA	1	NA	0	NA	1	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	1	NA	
NAAN	NA	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	
2D tumor volume																							
White	NA	NA	45	NA	41	NA	4	NA	26	NA	2	NA	8	NA	2	NA	1	NA	3	NA	13	NA	
Asian	NA	NA	32	NA	25	NA	7	NA	3	NA	3	NA	0	NA	8	NA	7	NA	6	NA	5	NA	
NHPi	NA	NA	23	NA	19	NA	4	NA	4	NA	3	NA	1	NA	6	NA	5	NA	5	NA	6	NA	
Hispanic	NA	NA	2	NA	2	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	1	NA	0	NA	
Black	NA	NA	1	NA	0	NA	1	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	1	NA	
NAAN	NA	NA	2	NA	2	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	
Largest tumor dimension																							
White	NA	NA	56	NA	49	NA	7	NA	26	NA	4	NA	11	NA	4	NA	3	NA	3	NA	14	NA	
Asian	NA	NA	35	NA	27	NA	8	NA	5	NA	3	NA	2	NA	9	NA	8	NA	7	NA	8	NA	
NHPi	NA	NA	30	NA	23	NA	7	NA	6	NA	4	NA	2	NA	6	NA	5	NA	5	NA	7	NA	
Hispanic	NA	NA	6	NA	5	NA	1	NA	0	NA	0	NA	0	NA	0	NA	0	NA	1	NA	0	NA	
Black	NA	NA	1	NA	0	NA	1	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	1	NA	
NAAN	NA	NA	3	NA	3	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	
Resection Status																							
Female	NA	NA	116	NA	93	NA	23	NA	6	NA	3	NA	3	NA	6	NA	4	NA	2	NA	NA	NA	
Male	NA	NA	6	NA	36	NA	6	NA	3	NA	2	NA	1	NA	4	NA	4	NA	0	NA	NA	NA	
White	NA	NA	6	NA	56	NA	8	NA	6	NA	3	NA	3	NA	4	NA	3	NA	0	NA	NA	NA	
Asian	NA	NA	9	NA	38	NA	9	NA	1	NA	1	NA	0	NA	1	NA	1	NA	0	NA	NA	NA	
NHPi	NA	NA	6	NA	26	NA	8	NA	1	NA	1	NA	0	NA	4	NA	3	NA	2	NA	NA	NA	
Hispanic	NA	NA	1	NA	6	NA	2	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	NA	NA	
Black	NA	NA	0	NA	0	NA	1	NA	0	NA	0	NA	0	NA	1	NA	1	NA	0	NA	NA	NA	
NAAN	NA	NA	0	NA	3	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	NA	NA	
Number of lesions	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28	NA	
Age	323	651	159	636	129	516	30	120	39	156	20	80	19	76	26	104	22	88	22	88	36	144	
Sex																							
Female	215	378	117	468	93	372	24	96	25	92	13	43	12	49	18	72	14	56	13	52	17	89	
Male	108	273	42	168	36	144	6	24	14	64	7	37	7	27	8	32	8	32	9	36	19	55	
Race																							
Asian	93	157	48	192	38	152	10	40	5	47	3	20	2	27	9	36	8	32	7	28	11	38	
White	134	215	64	256	56	224	8	32	26	65	12	39	14	26	8	32	6	24	4	16	17	67	
Hispanic	10	34	8	32	6	24	2	8	0	15	0	9	0	6	0	0	0	2	8	0	8	8	
NHPi	74	106	34	136	26	104	8	32	7	27	5	12	2	15	7	28	6	24	8	32	7	28	
Black	4	7	1	4	0	0	1	4	0	2	0	0	2	1	4	1	4	0	0	1	3	3	
NAAN	5	1	3	12	3	12	0	0	0	0	0	0	0	1	4	1	4	0	0	0	0	0	
Socioeconomic variables																							
Median household income	321	1292	158	636	128	516	30	120	39	156	20	80	19	76	26	104	22	88	22	88	35	144	
Overall poverty level in municipality	320	1288	158	636	128	516	30	120	39	156	20	80	19	76	26	104	22	88	22	88	34	140	
Municipality poverty level for ages 18-64	320	1288	158	636	128	516	30	120	39	156	20	80	19	76	26	104	22	88	22	88	34	140	
Municipality poverty level for ages 65 and older	320	1288	158	636	128	516	30	120	39	156	20	80	19	76	26	104	22	88	22	88	34	140	
Geographic origin population size	321	1292	158	636	128	516	30	120	39	156	20	80	19	76	26	104	22	88	22	88	35	144	
Geographic origin																							
Urban	206	754	101	382	74	312	27	70	22	88	11	38	11	50	19	57	15	44	15	54	26	84	
Suburban	113	526	55	249	52	201	3	48	17	67	9	42	8	25	7	46	7	43	7	33	9	59	
Rural	2	12	2	5	2	3	0	2	0	1	0	0	0	1	0	1	0	1	0	1	0	1	
Insurance type																							
Medicare	135	377	79	189	62	137	17	52	13	28	5	8	8	20	6	27	5	26	6	15	20	78	
Medicaid	68	277	28	127	24	105	4	22	6	36	3	24	3	12	6	26	6	23	5	31	8	20	
Private	97	547	41	269	36	233	5	36	18	78	11	42	7	36	13	46	10	35	6	40	6	38	
Military	19	88	10	50	7	40	3	10	2	12	1	6	1	6	0	5	0	4	5	2	1	8	
Income quartiles																							
First quartile	72	279	33	131	32	108	1	23	11	34	4	15	7	19	6	29	6	26	6	14	3	32	
Second quartile	60	283	30	137	27	109	3	28	6	29	4	16	2	13	5	29	5	26	2	19	7	28	
Third quartile	91	382	48	175	36	145	12	30	17	54	10	28	7	26	6	37	4	29	4	23	10	38	
Fourth quartile	98	348	47	193	33	154	14	39	5	39	2	21	3	18	9	9	7	7	10	32	15	46	
Marital status																							
Single	74	346	38	131	33	105	5	26	12	58	4	34	8	24	6	31	5	28	5	40	5	26	
Married	162	634	78	328	66	264	12	64	20	74	12	36	8	38	14	47	12	36	13	33	17	83	
Divorced	38	197	21	105	14	90	7	15	2	16	2	8	0	8	3	21	3	19	1	12	4	14	
Widowed	32	91	15	54	11	40	4	14	3	6	1	2	2	4	2	3	1	3	3	3	6	21	
Family history																							
Family history of brain tumors	18	25	12	12	11	11	1	1	3	3	2	1	1	2	1	2	0	2	0	1	2	1	
No family history of brain tumors	277	1203	140	600	115	490	25	110	31	144	15	74	16	70	25	101	22	85	21	79	21	125	
Family history of neurological disorders	31	275	10	131	6	114	4	17	3	37	1	14	2	23	8	25	7	23	1	23	0	12	
No family history of neurological disorders	263	954	143	481	121	387	22	94	31	109	16	61	15	48	18	78	15	64	20	57	21	114	
Family history of stroke	48	174	19	80	14	63	5	17	4	18	2	3	2	15	7	12	5	12	4	11	4	25	
No family history of stroke	247	1073	135	549	114	451	21	98	30	128	15	72	15	56	19	91	17	75	17	69	17	101	
Family history of cancer	146	593	66	306	58	248	8	58	22	74	13	35	9	39	14	36	14	27	8	42	12	73	
No family history of cancer	152	635	88	306	70	253	18	53	13	71	5	40	8	31	12	67	8	60	13	38	10	53	
Presenting Symptoms																							
Headaches	128	562	67	280	57	221	10	59	13	71	6	40	7	31	7	47	5	39	13	43	10	43	
No headaches	145	674	79	332	69	277	10	55	19	78	12	39	7	39	11	56	9	48	6	43	15	81	
DNI	106	459	61	211	52	164	9	47	2	62	1												

Supplementary Table 2a: multivariable logistic regression analysis for all tumors and meningiomas.

	All tumors		All meningiomas		Benign meningiomas		Malignant meningiomas	
	Unadjusted odds (95% CI)	Adjusted odds (95% CI)	Unadjusted odds (95% CI)	Adjusted odds (95% CI)	Unadjusted odds (95% CI)	Adjusted odds (95% CI)	Unadjusted odds (95% CI)	Adjusted odds (95% CI)
Median household income	1.00 (1.00, 1.00), P=0.86		1.00 (1.00, 1.00), P=0.99		1.00 (1.00, 1.00), P=0.26		1.00 (1.00, 1.00), P=0.025	
Overall poverty level	0.85 (0.06, 12.76), P=0.91		1.02 (0.02, 62.59), P=0.99		7.29 (0.10, 513.92), P=0.36		3.07 10–9 (0.00, 0.29), P=0.037	
Poverty level ages 18-64	1.20 (0.07, 19.59), P=0.9		1.34 (0.02, 94.85), P=0.89		10.26 (0.12, 866.89), P=0.30		1.63 10–8 (0.00, 1.01), P=0.05	
Poverty level 65 and older	0.16 (0.01, 3.48), P=0.24	20.64 (0.15, 2850.31), P=0.23	0.31 (0.00, 31.95), P=0.62		7.14 (0.06, 904.29), P=0.43		7.44 10–15 (0.00, 0.01), P=0.017	
Geographic origin population size	1.00 (1.00, 1.00), P=0.22		1.00 (1.00, 1.00), P=0.9		1.00 (1.00, 1.00), P=0.28		1.00 (1.00, 1.00), P=0.021	
Geographic origin								
Urban	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Suburban	0.79 (0.61, 1.01), P=0.065	0.71 (0.46, 1.11), P=0.13	0.84 (0.58, 1.20), P=0.33		1.09 (0.73, 1.62), P=0.67		0.16 (0.05, 0.56), P=0.004	0.21 (0.04, 1.13), P=0.069
Rural	0.61 (0.14, 2.75), P=0.52	3.08 (0.56, 17.07), P=0.20	1.51 (0.29, 7.91), P=0.62		2.81 (0.46, 17.12), P=0.26		0.01 (3.75 10–6, 15.91), P=0.99	0.60 (0.01, 50.16), P=0.99
Marital status								
Married	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Divorced/separated	0.75 (0.51, 1.115), P=0.16	0.55 (0.28, 1.06), P=0.076	0.84 (0.50, 1.43), P=0.52		0.62 (0.33, 1.16), P=0.14		2.49 (0.84, 7.39), P=0.10	
Single	0.84 (0.62, 1.14), P=0.25	1.04 (0.64, 1.71), P=0.86	1.22 (0.79, 1.89), P=0.37		1.26 (0.78, 2.02), P=0.35		1.03 (0.33, 3.20), P=0.97	
Widowed	1.38 (0.89, 2.13), P=0.15	1.70 (0.89, 3.23), P=0.11	1.17 (0.63, 2.18), P=0.63		1.10 (0.54, 2.26), P=0.80		1.52 (0.43, 5.43), P=0.52	
Insurance								
Private	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Medicaid	1.38 (0.98, 1.95), P=0.062		1.45 (0.86, 2.44), P=0.17		1.48 (0.84, 2.60), P=0.18		1.31 (0.32, 5.40), P=0.71	
Medicare	2.02 (1.51, 2.70), P<0.001		2.74 (1.80, 4.18), P<0.001		2.93 (1.85, 4.65), P<0.001		2.35 (0.80, 6.96), P=0.12	
Military	1.22 (0.71, 2.09), P=0.48		1.31 (0.62, 2.79), P=0.48		1.13 (0.47, 2.72), P=0.78		2.16 (0.44, 10.63), P=0.34	
Income quartiles								
Third quartile (middle class)	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
First quartile	1.08 (0.77, 1.53), P=0.65		0.92 (0.56, 1.51), P=0.74		1.19 (0.70, 2.04), P=0.52		0.11 (0.01, 0.90), P=0.039	
Second quartile	0.89 (0.62, 1.28), P=0.53		0.80 (0.48, 1.33), P=0.39		1.00 (0.57, 1.74), P=0.99		0.27 (0.07, 1.05), P=0.059	
Fourth quartile	1.18 (0.86, 1.63), P=0.31		0.89 (0.57, 1.39), P=0.61		0.86 (0.51, 1.46), P=0.58		0.90 (0.36, 2.22), P=0.81	
Presenting symptoms								
Headache								
No headache	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Headache	1.06 (0.81, 1.38), P=0.67		1.01 (0.70, 1.44), P=0.98		1.04 (0.70, 1.53), P=0.86		0.93 (0.36, 2.41), P=0.89	
DNV								
No DNV	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
DNV	1.08 (0.83, 1.42), P=0.57		1.35 (0.93, 1.95), P=0.11	1.60 (0.95, 2.70), P=0.080	1.41 (0.94, 2.10), P=0.094	2.52 (1.25, 5.08), P=0.010	1.18 (0.45, 3.08), P=0.73	
Cognitive difficulty								
No cognitive difficulty	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Cognitive difficulty	1.53 (1.16, 2.02), P=0.003	0.85 (0.53, 1.35), P=0.49	1.32 (0.90, 1.94), P=0.16		1.08 (0.70, 1.68), P=0.72		3.41 (1.36, 8.56), P=0.009	1.38 (0.42, 4.55), P=0.60
Gait/coordination dysfunction								
No gait/coordination dysfunction	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Gait/coordination dysfunction	1.16 (0.89, 1.51), P=0.28		1.13 (0.79, 1.63), P=0.50		1.14 (0.77, 1.69), P=0.51		1.04 (0.41, 2.66), P=0.94	
Seizures/epilepsy								
No seizures/epilepsy	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Seizures/epilepsy	3.05 (2.24, 4.15), P<0.001	2.73 (1.64, 4.56), P<0.001	3.25 (2.05, 5.15), P<0.001	3.88 (1.98, 7.60), P<0.001	2.65 (1.53, 4.58), P<0.001	4.36 (1.78, 10.65), P<0.001	6.93 (2.71, 17.75), P<0.001	8.25 (2.49, 27.33), P<0.001
Sleep disturbances								
No sleep disturbances	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Sleep disturbances	0.77 (0.59, 1.01), P=0.056	0.62 (0.41, 0.95), P=0.026	0.77 (0.53, 1.11), P=0.16	0.83 (0.49, 1.41), P=0.48	0.67 (0.45, 1.01), P=0.058	0.61 (0.30, 1.25), P=0.18	1.34 (0.55, 3.29), P=0.52	
Medical comorbidities								
BMI								
BMI	1.00 (0.99, 1.00), P=0.73		1.01 (0.98, 1.04), P=0.53		1.01 (0.98, 1.04), P=0.37		0.98 (0.90, 1.05), P=0.53	
Weight class								
Normal	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Underweight	0.86 (0.37, 1.96), P=0.72	1.04 (0.33, 3.28), P=0.95	0.94 (0.31, 2.86), P=0.92	0.83 (0.16, 4.26), P=0.82	0.25 (0.03, 1.90), P=0.18	0.66 (0.13, 3.36), P=0.99	9.86 (1.39, 69.83), P=0.022	
Pre-obesity	1.35 (0.99, 1.85), P=0.061	1.17 (0.73, 1.87), P=0.52	1.46 (0.94, 2.28), P=0.093	1.42 (0.77, 2.64), P=0.27	1.56 (0.96, 2.54), P=0.07	1.74 (0.78, 3.85), P=0.17	1.07 (0.35, 3.30), P=0.91	
Obesity class I	1.29 (0.87, 1.91), P=0.21	1.86 (1.04, 3.33), P=0.038	1.46 (0.85, 2.52), P=0.17	2.67 (1.28, 5.57), P=0.009	1.35 (0.74, 2.48), P=0.33	2.87 (1.08, 7.67), P=0.035	2.05 (0.57, 7.39), P=0.27	
Obesity class II	0.73 (0.41, 1.31), P=0.29	0.56 (0.21, 1.51), P=0.25	0.82 (0.36, 1.84), P=0.63	1.02 (0.31, 3.35), P=0.97	0.97 (0.42, 2.23), P=0.94	1.09 (0.24, 4.96), P=0.91	0.56 (0.06, 5.06), P=0.99	
Obesity class III	1.14 (0.63, 2.04), P=0.66	0.65 (0.23, 1.84), P=0.41	1.36 (0.59, 3.14), P=0.47	1.69 (0.50, 5.69), P=0.39	1.26 (0.51, 3.09), P=0.62	1.47 (0.28, 7.78), P=0.65	2.19 (0.20, 24.12), P=0.52	
Type 2 diabetes mellitus								
No diabetes mellitus	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Diabetes mellitus	1.12 (0.80, 1.56), P=0.51		1.14 (0.73, 1.80), P=0.56		1.21 (0.74, 1.99), P=0.45		0.85 (0.27, 2.72), P=0.79	
Hypertension								
No hypertension	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Hypertension	1.41 (1.10, 1.80), P=0.007		1.54 (1.09, 2.19), P=0.015		1.54 (1.05, 2.27), P=0.029	1.65 (0.83, 3.30), P=0.15	1.55 (0.69, 3.50), P=0.29	
CAD or Prior MI								
No CAD/MI	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
CAD/MI	0.95 (0.60, 1.53), P=0.85		0.90 (0.45, 1.77), P=0.75		1.12 (0.54, 2.32), P=0.76		0.29 (0.04, 2.34), P=0.25	
PVD								
No PVD	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
PVD	1.96 (0.88, 4.37), P=0.10		2.03 (0.50, 8.22), P=0.32		1.61 (0.31, 8.39), P=0.57		4.25 (0.26, 70.04), P=0.31	
Stroke								
No stroke	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Stroke	1.31 (0.92, 1.87), P=0.13	1.29 (0.75, 2.24), P=0.36	1.60 (0.99, 2.59), P=0.056	1.61 (0.80, 3.23), P=0.18	1.74 (1.00, 3.00), P=0.049	3.05 (1.31, 7.08), P=0.009	1.24 (0.45, 3.42), P=0.68	
History of Afib or flutter								
No Afib	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Afib	1.16 (0.67, 2.03), P=0.59		1.36 (0.65, 2.85), P=0.41		1.98 (0.91, 4.32), P=0.086		0.01 (6.23 10–5, 2.31), P=0.99	
CHF								
No CHF	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
CHF	1.34 (0.67, 2.67), P=0.41		1.95 (0.83, 4.62), P=0.13	4.24 (1.26, 14.21), P=0.019	2.24 (0.87, 5.73), P=0.093	6.64 (1.39, 31.73), P=0.018	1.04 (0.11, 9.63), P=0.98	
CVR								
No CVR	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
CVR	1.76 (0.45, 6.83), P=0.42			0.01 (3.74 10–4, 0.36), P=0.98		0.01 (1.74 10–4, 0.64), P=0.98	0.01 (2.83 10–5, 4.04), P=0.99	
History of head trauma								
No history of head trauma	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
History of head trauma	0.56 (0.37, 0.84), P=0.006	0.59 (0.30, 1.18), P=0.13	0.66 (0.36, 1.19), P=0.17	1.12 (0.50, 2.50), P=0.79	0.82 (0.44, 1.51), P=0.52		0.01 (5.77 10–5, 2.38), P=0.99	
History of cancer/neoplasm								
No history of cancer/neoplasm	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
History of cancer/neoplasm	2.80 (2.10, 3.71), P<0.001	2.90 (1.84, 4.58), P<0.001	2.26 (1.49, 3.43), P<0.001	2.69 (1.50, 4.82), P<0.001	1.81 (1.12, 2.92), P=0.015	2.26 (1.06, 4.81), P=0.035	5.23 (2.12, 12.89), P<0.001	3.94 (1.12, 13.86), P=0.032
OSA								
No OSA	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
OSA	1.04 (0.66, 1.62), P=0.88		0.87 (0.43, 1.76), P=0.69		0.72 (0.31, 1.66), P=0.44		1.62 (0.40, 6.51), P=0.50	
Asthma/COPD								
No asthma/COPD	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Asthma/COPD	0.81 (0.57, 1.16), P=0.25		0.65 (0.38, 1.11), P=0.11	0.44 (0.20, 0.98), P=0.044	0.60 (0.33, 1.07), P=0.083	0.37 (0.13, 1.05), P=0.062	1.04 (0.27, 3.95), P=0.96	
GERD								
No GERD	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
GERD	0.48 (0.28, 0.82), P=0.007		0.56 (0.28, 1.12), P=0.10		0.60 (0.28, 1.30), P=0.20		0.45 (0.10, 2.06), P=0.30	
Diverticular disease								
No diverticular disease	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Diverticular disease	2.10 (1.11, 3.95), P=0.022	2.88 (0.94, 8.76), P=0.063	2.34 (1.01, 5.40), P=0.046	3.20 (0.96, 10.71), P=0.059	2.56 (1.04, 6.31), P=0.041	3.70 (0.80, 17.18), P=0.095	1.39 (0.14, 13.90), P=0.78	
Autoimmune disease								
No autoimmune disease	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Autoimmune disease	0.97 (0.55, 1.69), P=0.91		1.24 (0.60, 2.58), P=0.56		1.43 (0.65, 3.12), P=0.38		0.58 (0.07, 4.88), P=0.61	

Supplementary Table 2b: Multivariable logistic regression analysis for gliomas.

	All Gliomas		Gliomas (Grades I-III)		Gliomas (Grade IV)	
	Unadjusted Odds (95% CI)	Adjusted Odds	Unadjusted Odds (95% CI)	Adjusted Odds	Unadjusted Odds (95% CI)	Adjusted Odds
Median household income	1.00 (1.00, 1.00), <i>P</i> =0.31		1.00 (1.00, 1.00), <i>P</i> =0.44		1.00 (1.00, 1.00), <i>P</i> =0.51	
Overall poverty level	0.92 (2.0×10 ⁻⁴ , 4341.44), <i>P</i> =0.99		0.80 (0.00, 2.17×10 ⁵), <i>P</i> =0.97		1.04 (0.00, 1.06×10 ⁵), <i>P</i> =0.99	
Poverty level ages 18-64	1.70 (2.7×10 ⁻⁴ , 10686), <i>P</i> =0.91		0.34 (0.00, 2.31×10 ⁵), <i>P</i> =0.88		6.01 (0.00, 6.26×10 ⁵), <i>P</i> =0.76	
Poverty level 65 and older	0.61 (3.06×10 ⁻⁵ , 12032), <i>P</i> =0.92		0.02 (0.00, 5.44×10 ⁵), <i>P</i> =0.64		4.39 (0.00, 8.06×10 ⁵), <i>P</i> =0.81	
Geographic origin population size	1.00 (1.00, 1.00), <i>P</i> =0.39		1.00 (1.00, 1.00), <i>P</i> =0.17		1.00 (1.00, 1.00), <i>P</i> =0.77	
Geographic origin	Referent		Referent		Referent	
Urban	Referent		Referent		Referent	
Suburban	1.01 (0.50, 2.06), <i>P</i> =0.97		0.74 (0.28, 1.98), <i>P</i> =0.55		1.45 (0.52, 4.07), <i>P</i> =0.48	
Rural	0.01 (1.13×10 ⁻⁵ , 9.86), <i>P</i> =0.99		NA		0.12 (4.35×10 ⁻⁴ , 34.3), <i>P</i> =0.99	
Marital status	Referent		Referent		Referent	
Married	Referent		Referent		Referent	
Divorced/Separated	0.46 (0.10, 2.18), <i>P</i> =0.33		0.75 (0.14, 4.03), <i>P</i> =0.74		0.31 (0.02, 4.53), <i>P</i> =0.99	
Single	0.77 (0.35, 1.69), <i>P</i> =0.51		0.35 (0.10, 1.20), <i>P</i> =0.10		1.58 (0.52, 4.78), <i>P</i> =0.42	
Widowed	1.85 (0.42, 8.06), <i>P</i> =0.41		1.50 (0.13, 18.1), <i>P</i> =0.75		2.38 (0.37, 15.3), <i>P</i> =0.36	
Insurance	Referent		Referent		Referent	
Private	Referent		Referent		Referent	
Medicaid	0.72 (0.26, 1.97), <i>P</i> =0.53		0.48 (0.12, 1.88), <i>P</i> =0.29		1.29 (0.29, 5.77), <i>P</i> =0.74	
Medicare	2.01 (0.87, 4.63), <i>P</i> =0.10		2.39 (0.65, 8.75), <i>P</i> =0.19		2.06 (0.65, 6.51), <i>P</i> =0.22	
Military	0.72 (0.15, 3.51), <i>P</i> =0.69		0.64 (0.07, 5.85), <i>P</i> =0.69		0.86 (0.09, 8.27), <i>P</i> =0.89	
Income quartiles	Referent		Referent		Referent	
Third quartile (middle class)	Referent		Referent		Referent	
First quartile	1.03 (0.43, 2.46), <i>P</i> =0.95		0.75 (0.20, 2.79), <i>P</i> =0.66		1.37 (0.41, 4.56), <i>P</i> =0.61	
Second quartile	0.66 (0.23, 1.85), <i>P</i> =0.43		0.70 (0.19, 2.60), <i>P</i> =0.59		0.57 (0.10, 3.15), <i>P</i> =0.52	
Fourth quartile	0.41 (0.14, 1.20), <i>P</i> =0.10		0.27 (0.05, 1.35), <i>P</i> =0.11		0.62 (0.14, 2.72), <i>P</i> =0.53	
Presenting symptoms	Referent		Referent		Referent	
Headache	Referent		Referent		Referent	
No headache	Referent		Referent		Referent	
Headache	0.75 (0.35, 1.63), <i>P</i> =0.47		0.49 (0.17, 1.43), <i>P</i> =0.19		1.26 (0.40, 3.97), <i>P</i> =0.70	
DNV	Referent		Referent		Referent	
No DNV	Referent		Referent		Referent	
DNV	0.10 (0.02, 0.43), <i>P</i> =0.002		7.77 10 ⁻⁴ (0.00, 0.05), <i>P</i> <0.001		0.08 (0.01, 0.64), <i>P</i> =0.017	
Cognitive difficulty	Referent		Referent		Referent	
No cognitive difficulty	Referent		Referent		Referent	
Cognitive difficulty	5.87 (2.59, 13.33), <i>P</i> <0.001		25.35 (3.48, 184.87), <i>P</i> =0.001		7.94 (2.54, 24.9), <i>P</i> <0.001	
Gait/coordination dysfunction	Referent		Referent		Referent	
No gait/coordination dysfunction	Referent		Referent		Referent	
Gait/coordination dysfunction	1.58 (0.72, 3.47), <i>P</i> =0.26		1.62 (0.54, 4.82), <i>P</i> =0.39		1.55 (0.49, 4.89), <i>P</i> =0.45	
Seizures/epilepsy	Referent		Referent		Referent	
No seizures/epilepsy	Referent		Referent		Referent	
Seizures/epilepsy	10.66 (4.60, 24.70), <i>P</i> <0.001		42.51 (4.04, 447.22), <i>P</i> =0.002		16.8 (4.88, 57.8), <i>P</i> <0.001	
Sleep disturbances	Referent		Referent		Referent	
No sleep disturbances	Referent		Referent		Referent	
Sleep disturbances	0.38 (0.15, 0.99), <i>P</i> =0.048		0.38 (0.06, 2.22), <i>P</i> =0.28		0.34 (0.09, 1.29), <i>P</i> =0.11	
Medical comorbidities/conditions	Referent		Referent		Referent	
BMI	1.00 (0.99, 1.01), <i>P</i> =0.77		1.05 (0.97, 1.14), <i>P</i> =0.23		0.99 (0.90, 1.10), <i>P</i> =0.87	
Weight category	Referent		Referent		Referent	
Normal	Referent		Referent		Referent	
Underweight	0.28 (0.007, 11.6), <i>P</i> =0.99		0.72 (0.008, 63.3), <i>P</i> =1.00		NA	
Pre-obesity	0.62 (0.24, 1.63), <i>P</i> =0.33		0.19 (0.03, 1.24), <i>P</i> =0.083		0.89 (0.27, 2.93), <i>P</i> =0.84	
Obesity Class I	0.53 (0.14, 2.05), <i>P</i> =0.36		0.09 (0.007, 1.11), <i>P</i> =0.060		0.46 (0.05, 4.18), <i>P</i> =0.49	
Obesity Class II	0.30 (0.01, 6.15), <i>P</i> =0.99		0.37 (0.01, 13.1), <i>P</i> =1.00		0.33 (0.001, 125), <i>P</i> =0.99	
Obesity Class III	2.21 (0.57, 8.55), <i>P</i> =0.25		49.68 (1.59, 1550), <i>P</i> =0.026		3.43 (0.62, 18.9), <i>P</i> =0.16	
Type 2 diabetes mellitus	Referent		Referent		Referent	
No diabetes mellitus	Referent		Referent		Referent	
Diabetes mellitus	0.52 (0.15, 1.84), <i>P</i> =0.31		0.31 (0.04, 2.55), <i>P</i> =0.28		0.79 (0.16, 3.93), <i>P</i> =0.77	
Hypertension	Referent		Referent		Referent	
No Hypertension	Referent		Referent		Referent	
Hypertension	1.30 (0.63, 2.71), <i>P</i> =0.48		1.20 (0.40, 3.54), <i>P</i> =0.75		1.51 (0.52, 4.37), <i>P</i> =0.45	
CAD or Prior MI	Referent		Referent		Referent	
No CAD/MI	Referent		Referent		Referent	
CAD/MI	0.46 (0.06, 3.78), <i>P</i> =0.47		0.01 (0.00, 8.38), <i>P</i> =0.99		0.73 (0.08, 6.49), <i>P</i> =0.78	
PVD	Referent		Referent		Referent	
No PVD	Referent		Referent		Referent	
PVD	0.01 (2.34×10 ⁻⁵ , 5.08), <i>P</i> =0.99		NA		0.01 (1.11×10 ⁻⁵ , 11.3), <i>P</i> =0.99	
Stroke	Referent		Referent		Referent	
No Stroke	Referent		Referent		Referent	
Stroke	1.79 (0.64, 4.99), <i>P</i> =0.27		3.79 (0.91, 15.8), <i>P</i> =0.068		0.84 (0.17, 4.24), <i>P</i> =0.83	
History of Afib or flutter	Referent		Referent		Referent	
No Afib	Referent		Referent		Referent	
Afib	1.24 (0.25, 6.25), <i>P</i> =0.79		0.01 (0.00, 8.38), <i>P</i> =0.99		2.40 (0.40, 14.3), <i>P</i> =0.34	
CHF	Referent		Referent		Referent	
No CHF	Referent		Referent		Referent	
CHF	0.01 (2.39×10 ⁻⁵ , 5.08), <i>P</i> =0.99		NA		0.01 (1.11×10 ⁻⁵ , 11.3), <i>P</i> =0.99	
CVR	Referent		Referent		Referent	
No CVR	Referent		Referent		Referent	
CVR	Na		Na		Na	
History of head trauma	Referent		Referent		Referent	
No history of head trauma	Referent		Referent		Referent	
History of head trauma	0.50 (0.16, 1.52), <i>P</i> =0.22		0.65 (0.17, 2.47), <i>P</i> =0.52		0.30 (0.04, 2.42), <i>P</i> =0.26	
History of cancer/neoplasm	Referent		Referent		Referent	
No History of cancer/neoplasm	Referent		Referent		Referent	
History of cancer/neoplasm	1.64 (0.64, 4.24), <i>P</i> =0.31		2.82 (0.82, 9.68), <i>P</i> =0.1		47.36 (0.30, 7583.19), <i>P</i> =0.14	
OSA	Referent		Referent		Referent	
No OSA	Referent		Referent		Referent	
OSA	0.61 (0.07, 5.10), <i>P</i> =0.65		2.17 (0.19, 25.2), <i>P</i> =0.54		0.01 (1.84×10 ⁻⁵ , 7.95), <i>P</i> =0.99	
Asthma/COPD	Referent		Referent		Referent	
No Asthma/COPD	Referent		Referent		Referent	
Asthma/COPD	0.53 (0.15, 1.86), <i>P</i> =0.32		1.69 (0.40, 7.07), <i>P</i> =0.47		0.01 (1.32×10 ⁻⁵ , 10.5), <i>P</i> =0.99	
GERD	Referent		Referent		Referent	
No GERD	Referent		Referent		Referent	
GERD	0.45 (0.10, 2.04), <i>P</i> =0.30		0.01 (0.00, 7.33), <i>P</i> =0.99		1.13 (0.22, 5.89), <i>P</i> =0.88	
Diverticular disease	Referent		Referent		Referent	
No diverticular disease	Referent		Referent		Referent	
Diverticular disease	0.86 (0.10, 7.62), <i>P</i> =0.89		0.01 (0.00, 8.53), <i>P</i> =0.99		1.52 (0.15, 15.6), <i>P</i> =0.72	
Autoimmune disease	Referent		Referent		Referent	
No autoimmune disease	Referent		Referent		Referent	
Autoimmune disease	0.01 (1.32×10 ⁻⁴ , 1.25), <i>P</i> =0.99		0.01 (0.00, 7.13), <i>P</i> =0.99		0.01 (1.93×10 ⁻⁵ , 7.84), <i>P</i> =0.99	
Thyroid disease	Referent		Referent		Referent	
No thyroid disease	Referent		Referent		Referent	
Thyroid disease	0.80 (0.22, 2.89), <i>P</i> =0.73		0.69 (0.08, 6.05), <i>P</i> =0.73		0.88 (0.17, 4.45), <i>P</i> =0.88	
Glaucoma	Referent		Referent		Referent	
No glaucoma	Referent		Referent		Referent	
Glaucoma	0.01 (7.55×10 ⁻⁵ , 1.81), <i>P</i> =0.99		0.01 (0.00, 11.1), <i>P</i> =0.99		0.01 (1.44×10 ⁻⁵ , 8.80), <i>P</i> =0.99	
Social history and psychiatric risk factors	Referent		Referent		Referent	
Smoking status	Referent		Referent		Referent	
Never smoker	Referent		Referent		Referent	
Former smoker	1.51 (0.63, 3.63), <i>P</i> =0.36		1.41 (0.39, 5.02), <i>P</i> =0.60		1.60 (0.47, 5.42), <i>P</i> =0.45	
Current smoker	0.97 (0.30, 3.13), <i>P</i> =0.96		2.11 (0.48, 9.33), <i>P</i> =0.33		0.37 (0.04, 3.15), <i>P</i> =0.36	
Alcohol use screen (AUDIT-C)	Referent		Referent		Referent	
Negative alcohol screen	Referent		Referent		Referent	
Positive alcohol screen	1.61 (0.59, 4.40), <i>P</i> =0.36		2.09 (0.48, 9.00), <i>P</i> =0.32		1.41 (0.34, 5.84), <i>P</i> =0.64	
Alcohol use disorder	Referent		Referent		Referent	
No alcohol use disorder	Referent		Referent		Referent	
Alcohol use disorder	0.01 (1.27×10 ⁻⁴ , 1.38), <i>P</i> =0.99		0.01 (0.00, 7.24), <i>P</i> =0.99		0.01 (1.67×10 ⁻⁵ , 8.72), <i>P</i> =0.99	
Depression screen (PHQ-2)	Referent		Referent		Referent	
Negative PHQ-2	Referent		Referent		Referent	
Positive PHQ-2	0.85 (0.18, 4.04), <i>P</i> =0.84		0.63 (0.07, 5.54), <i>P</i> =0.67		1.23 (0.13, 11.6), <i>P</i> =0.86	
PHQ-9 score	0.99 (0.86, 1.15), <i>P</i> =0.91		0.94 (0.74, 1.19), <i>P</i> =0.60		1.71 (0.21, 14.3), <i>P</i> =1.00	
Depression	Referent		Referent		Referent	
No depression	Referent		Referent		Referent	
Depression	1.12 (0.48, 2.61), <i>P</i> =0.79		1.17 (0.40, 3.48), <i>P</i> =0.77		1.02 (0.26, 4.07), <i>P</i> =0.98	
Psychiatric disorders (Excluding Depression)	Referent		Referent		Referent	
No psychiatric disorders	Referent		Referent		Referent	
Psychiatric disorders	0.80 (0.32, 1.98), <i>P</i> =0.63		1.02 (0.33, 3.19), <i>P</i> =0.98		0.52 (0.11, 2.55), <i>P</i> =0.42	
Family history	Referent		Referent		Referent	
Family history of brain tumors	Referent		Referent		Referent	
No family history of brain tumors	Referent		Referent		Referent	
Family history of brain tumors	4.65 (0.90, 24.11), <i>P</i> =0.068		17.5 (0.53, 578), <i>P</i> =0.11		9.87 (0.84, 116), <i>P</i> =0.069	
Family history of neurological disease	Referent		Referent		Referent	
No family history of neurological disease	Referent		Referent		Referent	
Family history of neurological disease	0.29 (0.08, 0.99), <i>P</i> =0.048		0.06 (0.00, 1.06), <i>P</i> =0.007		1.54 (0.07, 34.6), <i>P</i> =1.00	
Family history of stroke	Referent		Referent		Referent	
No family history of stroke	Referent		Referent		Referent	
Family history of stroke	0.95 (0.30, 3.01), <i>P</i> =0.93		3.20 (0.49, 20.8), <i>P</i> =0.22		0.58 (0.02, 16.2), <i>P</i> =1.00	
Family history of cancer	Referent		Referent		Referent	
No family history of cancer	Referent		Referent		Referent	
Family history of cancer	1.62 (0.76, 3.47), <i>P</i> =0.21		22.6 (2.40, 213), <i>P</i> =0.006		2.97 (0.96, 9.17), <i>P</i> =0.058	
			37.90 (1.05, 1373.58), <i>P</i> =0.047		0.89 (0.31, 2.59), <i>P</i> =0.84	

DNV: Dizziness, nausea, or vomiting; BMI: Body mass index; Afib: Atrial fibrillation or flutter; CHF: Congestive heart failure; CAD/MI: Coronary artery disease/myocardial infarction; PVD: Peripheral vascular disease; CVR: Cardiac valve replacement; OSA: Obstructive sleep apnea; GERD: Gastroesophageal reflux disease; AUDIT-C: Alcohol Use Disorders Identification Test-Consumption; IQR: Interquartile range; CI: Confidence interval; PHQ: Patient health questionnaire

Supplementary Table 2c: Multivariable logistic regression analysis for schwannomas, acoustic neuromas, pituitary tumors, and metastases.

	Schwannomas (Entire CNS)		Vestibular Schwannomas		Pituitary Adenomas		Metastases	
	Unadjusted Odds (95% CI)	Adjusted Odds	Unadjusted Odds (95% CI)	Adjusted Odds	Unadjusted Odds (95% CI)	Adjusted Odds	Unadjusted Odds (95% CI)	Adjusted Odds
Median household income	1.00 (1.00, 1.00), <i>P</i> =0.15		1.00 (1.00, 1.00), <i>P</i> =0.29		1.00 (1.00, 1.00), <i>P</i> =0.445		1.00 (1.00, 1.00), <i>P</i> =0.12	
Overall poverty level	0.03 (0.00, 710.59), <i>P</i> =0.48		0.09 (0.00, 1345.67), <i>P</i> =0.62		127.42 (0.00, 468106), <i>P</i> =0.37		0.010 (0.00, 2303.04), <i>P</i> =0.47	
Poverty level ages 18-64	0.04 (0.00, 1059.50), <i>P</i> =0.53		0.12 (0.00, 1867.06), <i>P</i> =0.67		850.31 (0.01, 4.90 107), <i>P</i> =0.23		0.01 (0.00, 3772.86), <i>P</i> =0.49	
Poverty level 65 and older	0.01 (0.00, 162.77), <i>P</i> =0.32		0.02 (0.00, 527.03), <i>P</i> =0.46		46.24 (0.00, 458 106), <i>P</i> =0.51		3.1710-10 (0.00, 0.38), <i>P</i> =0.040	4.9410-5 (0.00, 8.66107), <i>P</i> =0.49
Geographic origin population size	0.01 (0.00, 162.77), <i>P</i> =0.32		0.02 (0.00, 527.03), <i>P</i> =0.46		46.24 (0.00, 458 106), <i>P</i> =0.51		3.1710-10 (0.00, 0.38), <i>P</i> =0.040	4.9410-5 (0.00, 8.66107), <i>P</i> =0.49
Geographic origin								
Urban	Referent		Referent		Referent		Referent	
Suburban	0.46 (0.18, 1.18), <i>P</i> =0.11		0.48 (0.18, 1.29), <i>P</i> =0.14	0.16 (0.03, 1.00), <i>P</i> =0.051	0.76 (0.28, 2.07), <i>P</i> =0.60		0.49 (0.22, 1.13), <i>P</i> =0.094	0.32 (0.04, 2.35), <i>P</i> =0.26
Rural	0.009 (0.00, 30.14), <i>P</i> =0.99		0.009 (0.00, 59.73), <i>P</i> =0.99	0.09 (0.00, 56.23), <i>P</i> =1.00	0.01 (0.00, 26.01), <i>P</i> =0.99		0.009 (0.00, 12.98), <i>P</i> =0.99	
Marital status								
Married	Referent		Referent		Referent		Referent	
Divorced/Separated	0.48 (0.12, 1.85), <i>P</i> =0.29		0.47 (0.12, 1.89), <i>P</i> =0.29		0.21 (0.02, 1.80), <i>P</i> =0.15	0.51 (0.097, 2.72), <i>P</i> =1.00	0.72 (0.21, 2.45), <i>P</i> =0.60	
Single	0.65 (0.23, 1.87), <i>P</i> =0.43		0.54 (0.17, 1.70), <i>P</i> =0.29		0.32 (0.10, 0.98), <i>P</i> =0.05	0.032 (0.00, 0.80), <i>P</i> =0.036	1.07 (0.36, 3.17), <i>P</i> =0.91	
Widowed	2.24 (0.34, 14.76), <i>P</i> =0.40		1.00 (0.09, 10.54), <i>P</i> =1.00		2.54 (0.45, 14.26), <i>P</i> =0.29	37.09 (0.24, 5717.01), <i>P</i> =0.16	0.72 (0.25, 2.04), <i>P</i> =0.53	
Insurance								
Private	Referent		Referent		Referent		Referent	
Medicaid	0.82 (0.28, 2.41), <i>P</i> =0.71		0.91 (0.29, 2.86), <i>P</i> =0.88		1.08 (0.30, 3.85), <i>P</i> =0.91	2.70 (0.11, 64.13), <i>P</i> =0.54	2.53 (0.77, 8.32), <i>P</i> =0.13	
Medicare	0.79 (0.27, 2.31), <i>P</i> =0.66		0.67 (0.21, 2.21), <i>P</i> =0.51		2.67 (0.74, 9.57), <i>P</i> =0.13	5.10 (0.22, 119.19), <i>P</i> =0.31	1.62 (0.60, 4.38), <i>P</i> =0.34	
Military	0.01 (0.00, 34.70), <i>P</i> =0.99		0.01 (0.00, 106.77), <i>P</i> =0.99		16.67 (2.62, 106.08), <i>P</i> =0.003	409.97 (1.87, 900104), <i>P</i> =0.029	0.79 (0.08, 7.51), <i>P</i> =0.84	
Income quartiles								
Third quartile (middle class)	Referent		Referent		Referent		Referent	
First quartile	0.78 (0.23, 2.69), <i>P</i> =0.70		1.67 (0.42, 6.59), <i>P</i> =0.46	7.40 (0.77, 71.10), <i>P</i> =0.08	2.46 (0.59, 10.29), <i>P</i> =0.22		0.36 (0.09, 1.41), <i>P</i> =0.14	0.58 (0.03, 11.36), <i>P</i> =0.72
Second quartile	0.94 (0.26, 3.39), <i>P</i> =0.93		1.39 (0.34, 5.75), <i>P</i> =0.65	4.51 (0.40, 51.32), <i>P</i> =0.22	0.61 (0.10, 3.67), <i>P</i> =0.59		0.95 (0.32, 2.80), <i>P</i> =0.93	4.87 (0.56, 42.20), <i>P</i> =0.15
Fourth quartile	6.17 (1.74, 21.83), <i>P</i> =0.005		7.25 (1.65, 31.85), <i>P</i> =0.009	24.88 (2.14, 289.14), <i>P</i> =0.010	1.80 (0.50, 6.45), <i>P</i> =0.37		1.24 (0.50, 3.07), <i>P</i> =0.64	1.50 (0.38, 5.87), <i>P</i> =0.56
Presenting symptoms								
Headache								
No Headache	Referent		Referent		Referent		Referent	
Headache	0.76 (0.27, 2.11), <i>P</i> =0.60		0.68 (0.21, 2.21), <i>P</i> =0.53		2.17 (0.75, 6.23), <i>P</i> =0.15		1.26 (0.52, 3.03), <i>P</i> =0.61	
DNV								
No DNV	Referent	Referent	Referent	Referent	Referent	Referent	Referent	Referent
DNV	2.29 (0.80, 6.57), <i>P</i> =0.12	3.48 (0.95, 12.74), <i>P</i> =0.060	2.22 (0.69, 7.15), <i>P</i> =0.18	5.75 (1.13, 29.23), <i>P</i> =0.035	0.95 (0.34, 2.67), <i>P</i> =0.93		0.85 (0.33, 2.19), <i>P</i> =0.73	
Cognitive difficulty								
No cognitive difficulty	Referent		Referent		Referent		Referent	
Cognitive difficulty	0.66 (0.20, 2.18), <i>P</i> =0.50		0.68 (0.17, 2.63), <i>P</i> =0.57		1.74 (0.54, 5.56), <i>P</i> =0.35		1.34 (0.55, 3.26), <i>P</i> =0.52	
Gait/coordination dysfunction								
No gait/coordination dysfunction	Referent		Referent		Referent		Referent	Referent
Gait/coordination dysfunction	0.68 (0.24, 1.96), <i>P</i> =0.48		0.50 (0.15, 1.73), <i>P</i> =0.27		0.78 (0.27, 2.25), <i>P</i> =0.64		1.97 (0.84, 4.60), <i>P</i> =0.12	1.30 (0.44, 3.86), <i>P</i> =0.64
Seizures/epilepsy								
No seizures/epilepsy	Referent		Referent		Referent		Referent	Referent
Seizures/epilepsy	0.28 (0.04, 2.25), <i>P</i> =0.23		0.35 (0.04, 2.84), <i>P</i> =0.32		0.61 (0.13, 2.96), <i>P</i> =0.54		3.72 (1.44, 9.64), <i>P</i> =0.007	5.23 (1.56, 17.50), <i>P</i> =0.007
Sleep disturbances								
No sleep disturbances	Referent		Referent		Referent		Referent	
Sleep disturbances	1.23 (0.52, 2.95), <i>P</i> =0.64		1.04 (0.41, 2.67), <i>P</i> =0.93		0.87 (0.34, 2.24), <i>P</i> =0.78		0.68 (0.26, 1.75), <i>P</i> =0.42	
Medical comorbidities/conditions								
BMI	0.97 (0.91, 1.04), <i>P</i> =0.38		0.98 (0.91, 1.05), <i>P</i> =0.48		1.04 (0.98, 1.10), <i>P</i> =0.25		0.95 (0.88, 1.03), <i>P</i> =0.23	
Weight category								
Normal	Referent		Referent		Referent		Referent	Referent
Underweight	0.86 (0.09, 8.54), <i>P</i> =0.90		0.86 (0.09, 8.71), <i>P</i> =0.90		0.69 (0.07, 6.55), <i>P</i> =1.00	1.19 (0.13, 10.62), <i>P</i> =1.00	2.45 (0.23, 26.38), <i>P</i> =0.46	0.87 (0.03, 24.11), <i>P</i> =1.00
Pre-obesity	1.07 (0.39, 2.93), <i>P</i> =0.89		1.00 (0.33, 3.09), <i>P</i> =0.99		2.92 (0.79, 10.79), <i>P</i> =0.11	2.17 (0.15, 31.83), <i>P</i> =0.57	2.50 (0.82, 7.65), <i>P</i> =0.11	2.20 (0.43, 11.29), <i>P</i> =0.35
Obesity class I	0.80 (0.19, 3.31), <i>P</i> =0.75		0.86 (0.20, 3.73), <i>P</i> =0.84		8.75 (2.01, 38.14), <i>P</i> =0.004	272.31 (5.24, 141104), <i>P</i> =0.005	0.47 (0.05, 4.24), <i>P</i> =0.50	0.41 (0.06, 3.03), <i>P</i> =0.99
Obesity class II	0.27 (0.03, 2.26), <i>P</i> =0.23		0.31 (0.04, 2.76), <i>P</i> =0.30		4.38 (0.78, 24.66), <i>P</i> =0.094	237.49 (3.15, 179104), <i>P</i> =0.013	0.75 (0.08, 7.03), <i>P</i> =0.80	0.92 (0.06, 13.43), <i>P</i> =0.95
Obesity class III	0.49 (0.050, 4.45), <i>P</i> =0.53		0.57 (0.06, 5.41), <i>P</i> =0.63		0.71 (0.12, 4.18), <i>P</i> =0.99	0.76 (0.13, 4.36), <i>P</i> =1.00	0.44 (0.03, 6.58), <i>P</i> =0.99	0.44 (0.03, 6.69), <i>P</i> =1.00
Type 2 diabetes mellitus								
No diabetes mellitus	Referent		Referent		Referent		Referent	
Diabetes mellitus	1.57 (0.38, 6.36), <i>P</i> =0.53		1.58 (0.38, 6.52), <i>P</i> =0.53		1.08 (0.27, 4.25), <i>P</i> =0.92		0.82 (0.31, 2.17), <i>P</i> =0.69	
Hypertension								
No hypertension	Referent		Referent		Referent		Referent	
Hypertension	1.94 (0.82, 4.63), <i>P</i> =0.13		1.91 (0.74, 4.89), <i>P</i> =0.18		1.56 (0.61, 3.99), <i>P</i> =0.36		0.75 (0.34, 1.66), <i>P</i> =0.48	
CAD or prior MI								
No CAD/MI	Referent		Referent		Referent		Referent	
CAD/MI	1.00 (0.20, 5.02), <i>P</i> =1.00		1.16 (0.22, 6.00), <i>P</i> =0.86		1.64 (0.30, 9.08), <i>P</i> =0.57		0.56 (0.12, 2.58), <i>P</i> =0.46	
PVD								
No PVD	Referent		Referent		Referent		Referent	
PVD	1.00 (0.11, 9.34), <i>P</i> =1.00		1.35 (0.13, 13.63), <i>P</i> =0.8		4.10 (0.25, 68.20), <i>P</i> =0.33		2.28 (0.40, 13.04), <i>P</i> =0.35	
Stroke								
No stroke	Referent		Referent		Referent		Referent	
Stroke	0.38 (0.05, 3.08), <i>P</i> =0.36		0.42 (0.05, 3.49), <i>P</i> =0.42		0.33 (0.04, 2.69), <i>P</i> =0.3		1.58 (0.64, 3.92), <i>P</i> =0.33	
History of Afib or flutter								
No Afib	Referent		Referent		Referent		Referent	
Afib	2.04 (0.18, 23.40), <i>P</i> =0.57		2.05 (0.18, 23.67), <i>P</i> =0.57		0.01 (0.00, 6.22), <i>P</i> =0.99		0.72 (0.15, 3.37), <i>P</i> =0.67	
CHF								
No CHF	Referent		Referent		Referent		Referent	
CHF	0.01 (0.00, 8.08), <i>P</i> =0.99		0.01 (0.00, 10.12), <i>P</i> =0.99		0.01 (0.00, 7.43), <i>P</i> =0.99		1.22 (0.32, 4.66), <i>P</i> =0.77	
CVR								
No CVR	Referent		Referent		Referent		Referent	
CVR	4.12 (0.25, 68.16), <i>P</i> =0.32		4.14 (0.25, 68.98), <i>P</i> =0.32		NA		1128.98 (0.00, 5.6810124), <i>P</i> =0.99	
History of head trauma								
No history of head trauma	Referent	Referent	Referent	Referent	Referent		Referent	Referent
History of head trauma	0.34 (0.08, 1.57), <i>P</i> =0.17	0.46 (0.08, 2.61), <i>P</i> =0.38	0.36 (0.08, 1.69), <i>P</i> =0.20	0.18 (0.02, 1.55), <i>P</i> =0.12	0.55 (0.06, 4.73), <i>P</i> =0.59		0.23 (0.03, 1.78), <i>P</i> =0.16	0.52 (0.08, 3.39), <i>P</i> =0.99
History of cancer/neoplasm								
No history of cancer/neoplasm	Referent		Referent		Referent		Referent	
History of cancer/neoplasm	1.78 (0.61, 5.16), <i>P</i> =0.29		0.63 (0.13, 3.06), <i>P</i> =0.57		0.99 (0.19, 5.02), <i>P</i> =0.99		130.97 (0.49, 35213.75), <i>P</i> =0.99	
OSA								
No OSA	Referent		Referent		Referent		Referent	
OSA	1.27 (0.38, 4.28), <i>P</i> =0.70		1.56 (0.44, 5.45), <i>P</i> =0.49		1.54 (0.44, 5.38), <i>P</i> =0.50		0.70 (0.15, 3.28), <i>P</i> =0.65	
Asthma/COPD								
No Asthma/COPD	Referent	Referent	Referent	Referent	Referent		Referent	Referent
Asthma/COPD	0.40 (0.09, 1.84), <i>P</i> =0.24	10.74 (0.02, 7194.83), <i>P</i> =0.99	0.23 (0.03, 1.86), <i>P</i> =0.17	0.38 (0.05, 3.19), <i>P</i> =0.99	1.53 (0.49, 4.84), <i>P</i> =0.47		3.42 (1.42, 8.21), <i>P</i> =0.006	4.47 (1.07, 18.71), <i>P</i> =0.040
GERD								
No GERD	Referent		Referent		Referent		Referent	
GERD	0.01 (0.00, 3.44), <i>P</i> =0.99		0.01 (0.00, 5.71), <i>P</i> =0.99		0.01 (0.00, 5.58), <i>P</i> =0.99		0.95 (0.19, 4.60), <i>P</i> =0.95	
Diverticular disease								
No diverticular disease	Referent		Referent		Referent		Referent	
Diverticular disease	1069.35 (0.00, 6.88 10124), <i>P</i> =0.99		1074.23 (0.00, 6.7110124), <i>P</i> =0.99		4.25 (0.56, 32.02), <i>P</i> =0.16		0.70 (0.08, 6.05), <i>P</i> =0.75	
Autoimmune disease								
No autoimmune disease	Referent		Referent		Referent		Referent	
Autoimmune disease	0.65 (0.08, 5.68), <i>P</i> =0.7		1.00 (0.11, 9.42), <i>P</i> =1.00		2.02 (0.18, 23.39), <i>P</i> =0.57		1.75 (0.33, 9.47), <i>P</i> =0.51	
Thyroid disease								
No thyroid disease	Referent		Referent		Referent		Referent	
Thyroid disease	0.49 (0.11, 2.31), <i>P</i> =0.37		0.63 (0.13, 3.06), <i>P</i> =0.57		2.19 (0.60, 8.09), <i>P</i> =0.24		0.49 (0.14,	