

Appendix E1

Extended output for Table 3. All models were fit using the REML estimation approach.

Outcome: Adjusted lung density; $n = 6136$ records used for analysis

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		9.9585
Scanner model		66.1656
UN (1,1)	Subject level	200.78
UN (2,1)	Subject level	167.85
UN (2,2)	Subject level	220.67

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	192.45	6.5437	14	29.41	<0.0001	178.41	206.48
Phase (1)	3.0831	0.3838	6089	8.03	<0.0001	2.3307	3.8355
Emphysema (absent)	0.2433	0.5641	6089	0.43	0.6663	-0.8625	1.3491
Phase (1)*Emphysema (absent)	-2.8661	0.4106	6089	-6.98	<0.0001	-3.6710	-2.0611
Age, years	-0.00339	0.03167	6089	-0.11	0.9148	-0.06548	0.05870
Height, cm	-0.7198	0.03234	6089	-22.26	<0.0001	-0.7832	-0.6564
Gender (Male)	-8.1887	0.5971	6089	-13.71	<0.0001	-9.3592	-7.0183
Race (White)	-6.8008	0.5757	6089	-11.81	<0.0001	-7.9294	-5.6722
Smoking status (former)	-11.9870	0.5571	6089	-21.52	<0.0001	-13.0790	-10.8950
Scanner make (GE)**	7.5856	4.5424	6089	1.67	0.0950	-1.3190	16.4903
Scanner make (Phillips)**	11.6787	6.5290	6089	1.79	0.0737	-1.1204	24.4778
B35f_flag (no)	2.2518	1.3660	6089	1.65	0.0993	-0.4261	4.9296
Weight, kg	0.3603	0.01190	6089	30.28	<0.0001	0.3370	0.3837

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Siemens is reference.

Type 3 Tests of Fixed Effects (for nonbinary class variables)

Effect	Num DF	Den DF	F Value	Pr > F
Scanner make	2	6089	2.29	0.1016

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.2170	0.3569	6089	-0.61	0.5432	-0.9168	0.4827
Change for 'emphysema' group	-3.0831	0.3838	6089	-8.03	<0.0001	-3.8355	-2.3307

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	94.6479	2.6480	6089	35.74	<0.0001	89.4568	99.8390
1	1	97.2707	2.6440	6089	36.79	<0.0001	92.0876	102.45
2	0	94.4309	2.6587	6089	35.52	<0.0001	89.2188	99.6429
2	1	94.1876	2.6622	6089	35.38	<0.0001	88.9688	99.4064

Outcome: Perc15; r = 6136

Covariance Parameter Estimates

Covariance Parameter	Estimate
Study center	22.5412
Scanner model	55.3328
Subject	225.09
Residual	128.31

Note.—Compound symmetric structure used alternatively to including a random intercept for subjects, allowing convergence.

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	153.80	8.2264	14	18.70	<0.0001	136.16	171.45
Phase (1)	3.3069	0.6110	6089	5.41	<0.0001	2.1090	4.5048
Emphysema (absent)	1.9721	0.7714	6089	2.56	0.0106	0.4599	3.4842
Phase (1)*Emphysema (absent)	-3.0117	0.6875	6089	-4.38	<0.0001	-4.3593	-1.6640
Age, years	-0.1104	0.04071	6089	-2.71	0.0067	-0.1902	-0.03060
Height, cm	-0.4379	0.04272	6089	-10.25	<0.0001	-0.5217	-0.3542
Gender (Male)	-11.7491	0.7729	6089	-15.20	<0.0001	-13.2644	-10.2339
Race (White)	-8.9692	0.7427	6089	-12.08	<0.0001	-10.4252	-7.5132
Smoking status (former)	-9.8524	0.7152	6089	-13.78	<0.0001	-11.2545	-8.4503
Scanner make (GE)**	6.3334	4.3183	6089	1.47	0.1425	-2.1320	14.7988
Scanner make (Phillips)**	8.3404	6.8376	6089	1.22	0.2226	-5.0637	21.7446
B35f_flag (no)	-0.4584	2.0589	6089	-0.22	0.8238	-4.4946	3.5777
Weight, kg	0.3949	0.01618	6089	24.40	<0.0001	0.3632	0.4266

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Siemens is reference.

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Scanner make	2	6089	1.42	0.2419

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.2953	0.5650	6089	-0.52	0.6013	-1.4029	0.8124
Change for 'emphysema' group	-3.3069	0.6110	6089	-5.41	<0.0001	-4.5048	-2.1090

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	97.6354	2.9027	6089	33.64	<0.0001	91.9451	103.33
1	1	98.6750	2.8951	6089	34.08	<0.0001	92.9995	104.35
2	0	97.3402	2.9234	6089	33.30	<0.0001	91.6092	103.07
2	1	95.3681	2.9305	6089	32.54	<0.0001	89.6232	101.11

Outcome: lnLAA950; r = 6136

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		0.1363
Scanner model		0.5221
UN (1,1)	Subject level	1.2183
UN (2,1)	Subject level	0.9255
UN (2,2)	Subject level	1.5587

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	-3.8819	0.5405	14	-7.18	<0.0001	-5.0411	-2.7228
Phase (1)	-0.1701	0.03775	6089	-4.51	<0.0001	-0.2441	-0.09612
Emphysema (absent)	-0.5665	0.05032	6089	-11.26	<0.0001	-0.6652	-0.4679
Phase (1)*Emphysema (absent)	0.3676	0.04250	6089	8.65	<0.0001	0.2843	0.4509
Age, years	0.01539	0.002472	6089	6.22	<0.0001	0.01054	0.02024
Height, cm	0.01769	0.002591	6089	6.83	<0.0001	0.01261	0.02277
Gender (Male)	0.6328	0.04688	6089	13.50	<0.0001	0.5409	0.7247
Race (White)	0.2817	0.04502	6089	6.26	<0.0001	0.1935	0.3700
Smoking status (former)	0.4942	0.04333	6089	11.40	<0.0001	0.4092	0.5791
Scanner make (GE)**	-0.6120	0.4044	6089	-1.51	0.1303	-1.4049	0.1808
Scanner make (Phillips)**	-1.4892	0.5897	6089	-2.53	0.0116	-2.6452	-0.3333
B35f_flag (no)	0.1763	0.1198	6089	1.47	0.1412	-0.05856	0.4112
Weight, kg	-0.00520	0.000981	6089	-5.30	<0.0001	-0.00713	-0.00328

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Siemens is reference.

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Scanner make	2	6089	3.49	0.306

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.1975	0.03474	6089	-5.69	<0.0001	-0.2656	-0.1294
Change for 'emphysema' group	0.1701	0.03775	6089	4.51	<0.0001	0.09612	0.2441

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	-0.6801	0.2427	6089	-2.80	0.0051	-1.1560	-0.2043
1	1	-0.4812	0.2424	6089	-1.99	0.0471	-0.9563	-0.00614
2	0	-0.8777	0.2440	6089	-3.60	0.0003	-1.3559	-0.3994
2	1	-0.3111	0.2443	6089	-1.27	0.2028	-0.7899	0.1677

Outcome: FRC/TLC, r = 5358

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		10.7914
Scanner model		4.6614
UN (1,1)	Subject level	54.5612
UN (2,1)	Subject level	21.3306
UN (2,2)	Subject level	50.7750

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	33.5778	3.3019	13	10.17	<0.0001	26.4444	40.7112
Phase (1)	0.5696	0.3002	5312	1.90	0.0579	-0.01896	1.1581
Emphysema (absent)	-1.1848	0.3267	5312	-3.63	0.0003	-1.8253	-0.5443
Phase (1)*Emphysema (absent)	-0.5156	0.3496	5312	-1.47	0.1403	-1.2009	0.1697
Age, years	0.3020	0.01598	5312	18.91	<0.0001	0.2707	0.3334
Height, cm	0.04114	0.01717	5312	2.40	0.0166	0.007484	0.07480
Gender (Male)	-1.9959	0.3074	5312	-6.49	<0.0001	-2.5986	-1.3932
Race (White)	-2.2176	0.3041	5312	-7.29	<0.0001	-2.8137	-1.6215
Smoking status (former)	-2.3465	0.2833	5312	-8.28	<0.0001	-2.9018	-1.7912
Scanner make (GE)**	3.1726	1.3890	5312	2.28	0.0224	0.4495	5.8957
Scanner make (Phillips)**	1.1575	2.5521	5312	0.45	0.6502	-3.8456	6.1606
B35f_flag (no)	0.1977	0.9367	5312	0.21	0.8329	-1.6386	2.0340
Weight, kg	-0.02514	0.006656	5312	-3.78	0.0002	-0.03819	-0.01209

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Siemens is reference.

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Scanner make	2	5312	2.62	0.0726

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.05396	0.2728	5312	-0.20	0.8432	-0.5888	0.4809
Change for 'emphysema' group	-0.5696	0.3002	5312	-1.90	0.0579	-1.1581	0.01896

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	53.5057	1.1972	5312	44.69	<0.0001	51.1586	55.8527
1	1	55.2061	1.1936	5312	46.25	<0.0001	52.8662	57.5460
2	0	53.4517	1.2061	5312	44.32	<0.0001	51.0872	55.8162
2	1	54.6365	1.2117	5312	45.09	<0.0001	52.2610	57.0120

Outcome: FEV1/FVC, r = 6153

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		0.000015
UN (1,1)	Subject level	0.002216
UN (2,1)	Subject level	0.001538
UN (2,2)	Subject level	0.003365

Fixed parameter (Beta) estimates

Effect	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	0.9572	0.01916	20	49.96	<0.0001	0.9172	0.9972
Phase (1)	0.01652	0.001723	6123	9.59	<0.0001	0.01314	0.01990
Emphysema (absent)	0.03242	0.002400	6123	13.51	<0.0001	0.02772	0.03713
Phase (1)*Emphysema (absent)	-0.00964	0.002174	6123	-4.43	<0.0001	-0.01390	-0.00538
Age, years	-0.00120	0.000104	6123	-11.57	<0.0001	-0.00140	-0.00100
Height, cm	-0.00089	0.000112	6123	-7.96	<0.0001	-0.00111	-0.00067
Gender (Male)	-0.00094	0.001994	6123	-0.47	0.6384	-0.00485	0.002972
Race (White)	-0.01860	0.001831	6123	-10.16	<0.0001	-0.02219	-0.01501
Smoking status (former)	0.006927	0.001831	6123	3.78	0.0002	0.003337	0.01052
Weight, kg	0.000359	0.000043	6123	8.39	<0.0001	0.000275	0.000443

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.00688	0.001564	6123	-4.40	<0.0001	-0.00994	-0.00381
Change for 'emphysema' group	-0.01652	0.001723	6123	-9.59	<0.0001	-0.01990	-0.01314

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	0.7984	0.001491	6123	535.54	<0.0001	0.7955	0.8013
1	1	0.7756	0.001485	6123	522.48	<0.0001	0.7727	0.7785
2	0	0.7915	0.001907	6123	415.05	<0.0001	0.7878	0.7953
2	1	0.7591	0.002084	6123	364.20	<0.0001	0.7550	0.7632

Outcome: FEV1, r = 6153

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		0.001687
UN (1,1)	Subject level	0.1103
UN (2,1)	Subject level	0.09104
UN (2,2)	Subject level	0.1413

Fixed parameter (Beta) estimates

Effect	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	-1.9591	0.1342	20	-14.59	<0.0001	-2.2391	-1.6791
Phase (1)	0.08134	0.009568	6123	8.50	<0.0001	0.06258	0.1001
Emphysema (absent)	0.1173	0.01462	6123	8.02	<0.0001	0.08862	0.1459
Phase (1)*Emphysema (absent)	-0.02662	0.01155	6123	-2.30	0.0212	-0.04927	-0.00398
Age, years	-0.02836	0.000741	6123	-38.28	<0.0001	-0.02981	-0.02691
Height, cm	0.03621	0.000776	6123	46.65	<0.0001	0.03469	0.03774
Gender (Male)	0.5063	0.01410	6123	35.90	<0.0001	0.4786	0.5339
Race (White)	0.3829	0.01327	6123	28.84	<0.0001	0.3568	0.4089
Smoking status (former)	0.05096	0.01306	6123	3.90	<0.0001	0.02535	0.07656
Weight, kg	-0.00427	0.000291	6123	-14.66	<0.0001	-0.00484	-0.00370

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.05471	0.008735	6123	-6.26	<0.0001	-0.07184	-0.03759
Change for 'emphysema' group	-0.08134	0.009568	6123	-8.50	<0.0001	-0.1001	-0.06258

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	2.8072	0.01285	6123	218.38	<0.0001	2.7820	2.8324
1	1	2.7166	0.01280	6123	212.31	<0.0001	2.6915	2.7417
2	0	2.7525	0.01427	6123	192.85	<0.0001	2.7245	2.7805
2	1	2.6352	0.01514	6123	174.10	<0.0001	2.6056	2.6649

Outcome: 6MWD

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		32661
UN (1,1)	Subject level	79531
UN (2,1)	Subject level	42719
UN (2,2)	Subject level	125699

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	1036.41	121.03	20	8.56	<0.0001	783.94	1288.88
Phase (1)	46.4154	11.5625	6103	4.01	<0.0001	23.7488	69.0820
Emphysema (absent)	28.9218	15.2329	6103	1.90	0.0577	-0.9400	58.7837

Phase (1)*Emphysema (absent)	9.1214	14.8088	6103	0.62	0.5380	-19.9092	38.1519
Age, years	-10.1430	0.6208	6103	-16.34	<0.0001	-11.3601	-8.9260
Height, cm	6.9116	0.6654	6103	10.39	<0.0001	5.6072	8.2159
Gender (Male)	74.4858	11.8529	6103	6.28	<0.0001	51.2499	97.7216
Race (White)	85.8118	11.3445	6103	7.56	<0.0001	63.5725	108.05
Smoking status (former)	117.47	10.8652	6103	10.81	<0.0001	96.1682	138.77
Weight, kg	-4.6776	0.2572	6103	-18.18	<0.0001	-5.1818	-4.1733

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-55.5368	10.5271	6103	-5.28	<0.0001	-76.1736	-34.9000
Change for 'emphysema' group	-46.4154	11.5625	6103	-4.01	<0.0001	-69.0820	-23.7488

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	1443.63	40.5821	6103	35.57	<0.0001	1364.07	1523.18
1	1	1405.58	40.5376	6103	34.67	<0.0001	1326.11	1485.05
2	0	1388.09	41.3522	6103	33.57	<0.0001	1307.02	1469.15
2	1	1359.17	41.6511	6103	32.63	<0.0001	1277.52	1440.82

Outcome: Total SGRQ; r = 6179

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		22.8574
UN (1,1)	Subject level	259.48
UN (2,1)	Subject level	150.39
UN (2,2)	Subject level	256.23

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	53.8475	6.3532	20	8.48	<0.0001	40.5949	67.1001
Phase (1)	-0.2158	0.4940	6149	-0.44	0.6623	-1.1841	0.7526
Emphysema (absent)	-3.5586	0.6603	6149	-5.39	<0.0001	-4.8530	-2.2642
Phase (1)*Emphysema (absent)	0.5969	0.6111	6149	0.98	0.3287	-0.6010	1.7948
Age, years	-0.01361	0.03439	6149	-0.40	0.6923	-0.08104	0.05381
Height, cm	-0.2842	0.03633	6149	-7.82	<0.0001	-0.3554	-0.2130
Gender (Male)	-3.4263	0.6543	6149	-5.24	<0.0001	-4.7089	-2.1437
Race (White)	-0.2412	0.6295	6149	-0.38	0.7017	-1.4752	0.9929
Smoking status (former)	-6.5305	0.6049	6149	-10.80	<0.0001	-7.7163	-5.3446
Weight, kg	0.2370	0.01383	6149	17.14	<0.0001	0.2099	0.2641

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.3811	0.4544	6149	-0.84	0.4017	-1.2720	0.5097
Change for 'emphysema' group	0.2158	0.4940	6149	0.44	0.6623	-0.7526	1.1841

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	16.3441	1.1590	6149	14.10	<0.0001	14.0721	18.6162
1	1	19.3058	1.1558	6149	16.70	<0.0001	17.0400	21.5716
2	0	15.9630	1.1858	6149	13.46	<0.0001	13.6383	18.2877
2	1	19.5216	1.2063	6149	16.18	<0.0001	17.1568	21.8864

Outcome: SF36gen; r = 4000

Covariance Parameter Estimates (1 and 2 in parentheses refer to Phases)

Covariance Parameter		Estimate
Study center		1.8546
UN (1,1)	Subject level	90.2797
UN (2,1)	Subject level	52.8495
UN (2,2)	Subject level	81.8619

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	31.0936	4.3962	20	7.07	<0.0001	21.9233	40.2638
Phase (1)	0.8652	0.3431	3970	2.52	0.0117	0.1926	1.5378
Emphysema (absent)	1.8679	0.3922	3970	4.76	<0.0001	1.0989	2.6368
Phase (1)*Emphysema (absent)	-0.1087	0.4384	3970	-0.25	0.8041	-0.9681	0.7507
Age, years	0.05938	0.02362	3970	2.51	0.0120	0.01308	0.1057
Height, cm	0.1129	0.02541	3970	4.44	<0.0001	0.06306	0.1627
Gender (Male)	0.08796	0.4532	3970	0.19	0.8461	-0.8007	0.9766
Race (White)	0.1055	0.4305	3970	0.25	0.8063	-0.7385	0.9496
Smoking status (former)	3.9795	0.4159	3970	9.57	<0.0001	3.1640	4.7950
Weight, kg	-0.1037	0.009529	3970	-10.88	<0.0001	-0.1224	-0.08500

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Change for 'no emphysema' group	-0.7565	0.3337	3970	-2.27	0.0235	-1.4108	-0.1022
Change for 'emphysema' group	-0.8652	0.3431	3970	-2.52	0.0117	-1.5378	-0.1926

Least squares means for Phase*Emphysema categories

Phase	Emphysema (0 = abs, 1 = present)	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
1	0	49.8257	0.4592	3970	108.52	<0.0001	48.9255	50.7258
1	1	48.0665	0.4514	3970	106.48	<0.0001	47.1815	48.9515
2	0	49.0692	0.4281	3970	114.62	<0.0001	48.2299	49.9085
2	1	47.2013	0.4466	3970	105.70	<0.0001	46.3258	48.0768

Appendix E2

Extended output for Table 4. All models were fit using the REML estimation approach.

Outcome: Adjusted lung density; $n = 2886$ records used for analysis

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	176.73
Study center	7.0644
Scanner model	59.6583
Residual	42.1972

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	880	17.30	<0.0001
Phase*Emphysema class	3	880	4.21	0.0057
Scanner make	2	880	1.82	0.1633

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, lower	95% CI, upper
Intercept	183.68	9.6260	5	19.08	<0.0001	158.94	208.43
Phase (1)	5.6287	2.2719	880	2.48	0.0134	1.1698	10.0876
Emphysema (Mild)**	16.1751	3.1976	880	5.06	<0.0001	9.8993	22.4510
Emphysema (Mod.)**	13.4563	3.2054	880	4.20	<0.0001	7.1652	19.7474
Emphysema (Adv./Conf.)**	9.4081	3.3251	880	2.83	0.0048	2.8821	15.9341
Phase (1)*Emphysema (Mild)	-3.6158	2.2946	880	-1.58	0.1154	-8.1192	0.8877
Phase (1)*Emphysema (Mod)	-1.5010	2.3033	880	-0.65	0.5148	-6.0217	3.0196
Phase (1)*Emphysema (Adv./Conf.)	-1.8429	2.3968	880	-0.77	0.4421	-6.5470	2.8612
Age, years	0.002434	0.04807	880	0.05	0.9596	-0.09192	0.09678
Height, cm	-0.7579	0.04938	880	-15.35	<0.0001	-0.8548	-0.6610
Gender (Male)	-8.8997	0.8870	880	-10.03	<0.0001	-10.6405	-7.1588
Race (White)	-5.7251	0.8301	880	-6.90	<0.0001	-7.3543	-4.0958
Smoking status (former)	-14.6648	0.8700	880	-16.86	<0.0001	-16.3723	-12.9574
Scanner_make (GE)***	6.2697	4.3954	880	1.43	0.1541	-2.3570	14.8965
Scanner_make (Phillips)***	10.3718	6.3098	880	1.64	0.1006	-2.0122	22.7559
B35f_flag (no)	0.9853	1.8668	880	0.53	0.5978	-2.6785	4.6492
Weight_KG	0.4119	0.01940	880	21.23	<0.0001	0.3738	0.4499

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

*** Siemens is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	-2.0129	0.5610	880	-3.59	0.0004	-3.1140	-0.9118
Change for Mild	-4.1277	0.5859	880	-7.05	<0.0001	-5.2775	-2.9778
Change for Moderate	-3.7858	0.8831	880	-4.29	<0.0001	-5.5189	-2.0526
Change for Conf./adv.	-5.6287	2.2719	880	-2.48	0.0134	-10.0876	-1.1698

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	97.8093	2.6406	880	37.04	<0.0001	92.6266	102.99
1	Mild	97.2052	2.6512	880	36.66	<0.0001	92.0017	102.41
1	Moderate	92.8151	2.7496	880	33.76	<0.0001	87.4185	98.2116
1	Advanced/Confluent	85.2499	3.8045	880	22.41	<0.0001	77.7830	92.7169
2	Trace	95.7964	2.6725	880	35.84	<0.0001	90.5511	101.04
2	Mild	93.0776	2.6890	880	34.61	<0.0001	87.8000	98.3551
2	Moderate	89.0293	2.8275	880	31.49	<0.0001	83.4798	94.5788
2	Advanced/Confluent	79.6212	4.0816	880	19.51	<0.0001	71.6105	87.6320

Outcome: Perc15, r = 2886

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	245.56
Study center	19.5599
Scanner model	48.5779
Residual	113.75

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	880	13.93	<0.0001
Phase*Emphysema class	3	880	0.79	0.4993
Scanner make	2	880	1.32	0.2686

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	141.96	12.2729	5	11.57	<0.0001	110.41	173.51
Phase (1)	5.7731	3.6644	880	1.58	0.1155	-1.4188	12.9651
Emphysema (Mild)**	16.1336	4.3296	880	3.73	0.0002	7.6360	24.6311
Emphysema (Mod.)**	12.6718	4.3410	880	2.92	0.0036	4.1518	21.1918
Emphysema (Adv./Conf.)**	8.9394	4.5064	880	1.98	0.0476	0.09491	17.7839
Phase (1)*Emphysema (Mild)	-3.0906	3.7111	880	-0.83	0.4052	-10.3743	4.1931
Phase (1)*Emphysema (Mod)	-1.7191	3.7251	880	-0.46	0.6446	-9.0302	5.5920
Phase (1)*Emphysema (Adv./Conf.)	-3.0610	3.8749	880	-0.79	0.4298	-10.6662	4.5442
Age, years	-0.09661	0.06100	880	-1.58	0.1136	-0.2163	0.02310
Height, cm	-0.4976	0.06398	880	-7.78	<0.0001	-0.6232	-0.3720
Gender (Male)	-11.8967	1.1274	880	-10.55	<0.0001	-14.1094	-9.6840
Race (White)	-7.9322	1.0570	880	-7.50	<0.0001	-10.0067	-5.8576
Smoking status (former)	-12.7055	1.0987	880	-11.56	<0.0001	-14.8618	-10.5491
Scanner_make (GE)***	5.8780	4.2239	880	1.39	0.1644	-2.4121	14.1680

Scanner_make (Phillips)***	7.9376	6.5817	880	1.21	0.2281	-4.9800	20.8552
B35f_flag (no)	2.3719	2.6592	880	0.89	0.3726	-2.8472	7.5910
Weight_KG	0.4662	0.02591	880	18.00	<0.0001	0.4154	0.5171

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

*** Siemens is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	-2.6825	0.8594	880	-3.12	0.0019	-4.3692	-0.9959
Change for Mild	-4.0540	0.9016	880	-4.50	<0.0001	-5.8236	-2.2844
Change for Moderate	-2.7121	1.3958	880	-1.94	0.0523	-5.4516	0.02737
Change for Conf./adv.	-5.7731	3.6644	880	-1.58	0.1155	-12.9651	1.4188

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	97.5784	2.9453	880	33.13	<0.0001	91.7977	103.36
1	Mild	95.4881	2.9608	880	32.25	<0.0001	89.6771	101.30
1	Moderate	90.4138	3.1004	880	29.16	<0.0001	84.3289	96.4987
1	Advanced/Confluent	84.5354	4.5851	880	18.44	<0.0001	75.5363	93.5345
2	Trace	94.8959	3.0080	880	31.55	<0.0001	88.9922	100.80
2	Mild	91.4341	3.0360	880	30.12	<0.0001	85.4754	97.3929
2	Moderate	87.7017	3.2605	880	26.90	<0.0001	81.3023	94.1010
2	Advanced/Confluent	78.7623	5.1441	880	15.31	<0.0001	68.6663	88.8583

Outcome: ln(LAA950), r = 2886

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	0.7957
Study center	0.1253
Scanner model	0.4015
Residual	0.3452

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	880	112.29	<0.0001
Phase*Emphysema class	3	880	9.63	<0.0001
Scanner make	2	880	3.19	0.0414

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	-2.3374	0.7181	5	-3.25	0.0226	-4.1835	-0.4914
Phase (1)	-0.3726	0.2023	880	-1.84	0.0659	-0.7697	0.02456
Emphysema (Mild)**	-2.0096	0.2428	880	-8.28	<0.0001	-2.4862	-1.5330
Emphysema (Mod.)**	-1.4319	0.2435	880	-5.88	<0.0001	-1.9097	-0.9540
Emphysema (Adv./Conf.)**	-0.5659	0.2527	880	-2.24	0.0254	-1.0619	-0.06990

Phase (1)*Emphysema (Mild)	0.3640	0.2048	880	1.78	0.0759	-0.03799	0.7660
Phase (1)*Emphysema (Mod)	0.1080	0.2056	880	0.53	0.5995	-0.2955	0.5115
Phase (1)*Emphysema (Adv./Conf.)	0.02277	0.2139	880	0.11	0.9153	-0.3971	0.4426
Age, years	0.01381	0.003456	880	4.00	<0.0001	0.007025	0.02059
Height, cm	0.02209	0.003609	880	6.12	<0.0001	0.01501	0.02918
Gender (Male)	0.6326	0.06366	880	9.94	<0.0001	0.5076	0.7575
Race (White)	0.2031	0.06022	880	3.37	0.0008	0.08490	0.3213
Smoking status (former)	0.6036	0.06211	880	9.72	<0.0001	0.4817	0.7255
Scanner_make (GE)***	-0.4788	0.3628	880	-1.32	0.1873	-1.1910	0.2333
Scanner_make (Phillips)***	-1.2866	0.5230	880	-2.46	0.0141	-2.3131	-0.2601
B35f_flag (no)	-0.07338	0.1493	880	-0.49	0.6233	-0.3665	0.2197
Weight_KG	-0.01111	0.001458	880	-7.62	<0.0001	-0.01397	-0.00825

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

*** Siemens is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI Lower	95% CI, Upper
Change for Trace	0.008557	0.04798	880	0.18	0.8585	-0.08561	0.1027
Change for Mild	0.2646	0.05021	880	5.27	<0.0001	0.1660	0.3631
Change for Moderate	0.3498	0.07743	880	4.52	<0.0001	0.1978	0.5018
Change for Conf./adv.	0.3726	0.2023	880	1.84	0.0659	-0.02456	0.7697

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	-0.5812	0.2246	880	-2.59	0.0098	-1.0220	-0.1405
1	Mild	-0.2595	0.2253	880	-1.15	0.2496	-0.7016	0.1826
1	Moderate	0.5212	0.2313	880	2.25	0.0245	0.06731	0.9752
1	Advanced/Confluent	1.0643	0.2994	880	3.55	0.0004	0.4767	1.6520
2	Trace	-0.5727	0.2272	880	-2.52	0.0119	-1.0187	-0.1267
2	Mild	0.005069	0.2282	880	0.02	0.9823	-0.4428	0.4529
2	Moderate	0.8710	0.2379	880	3.66	0.0003	0.4040	1.3381
2	Advanced/Confluent	1.4369	0.3261	880	4.41	<0.0001	0.7970	2.0769

Outcome: FRC/TLC, r = 2455

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	20.3699
Study center	11.2251
Scanner model	3.9809
Residual	32.0163

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	675	3.70	0.0116
Phase*Emphysema class	3	675	2.06	0.1040
Scanner make	2	675	1.48	0.2273

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	34.4228	4.9600	4	6.94	0.0023	20.6517	48.1939
Phase (1)	4.1214	1.9936	675	2.07	0.0391	0.2070	8.0358
Emphysema (Mild)**	5.0932	1.8611	675	2.74	0.0064	1.4390	8.7474
Emphysema (Mod.)**	6.0956	1.8667	675	3.27	0.0011	2.4303	9.7609
Emphysema (Adv./Conf.)**	4.7279	1.9425	675	2.43	0.0152	0.9137	8.5420
Phase (1)*Emphysema (Mild)	-3.6264	2.0221	675	-1.79	0.0734	-7.5967	0.3439
Phase (1)*Emphysema (Mod)	-4.2503	2.0307	675	-2.09	0.0367	-8.2376	-0.2630
Phase (1)*Emphysema (Adv./Conf.)	-2.9773	2.1163	675	-1.41	0.1599	-7.1326	1.1780
Age, years	0.2630	0.02397	675	10.97	<0.0001	0.2159	0.3101
Height, cm	0.02505	0.02551	675	0.98	0.3265	-0.02504	0.07514
Gender (Male)	-1.3815	0.4443	675	-3.11	0.0020	-2.2539	-0.5091
Race (White)	-2.2787	0.4281	675	-5.32	<0.0001	-3.1193	-1.4381
Smoking status (former)	-2.6898	0.4299	675	-6.26	<0.0001	-3.5339	-1.8458
Scanner_make (GE)***	2.5019	1.4519	675	1.72	0.0853	-0.3489	5.3528
Scanner_make (Phillips)***	1.2323	2.6304	675	0.47	0.6396	-3.9324	6.3969
B35f_flag (no)	0.2143	1.1802	675	0.18	0.8559	-2.1029	2.5316
Weight_KG	-0.03396	0.01064	675	-3.19	0.0015	-0.05486	-0.01306

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

*** Siemens is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	-0.4950	0.4438	675	-1.12	0.2651	-1.3664	0.3763
Change for Mild	0.1289	0.4716	675	0.27	0.7847	-0.7971	1.0550
Change for Moderate	-1.1441	0.7571	675	-1.51	0.1312	-2.6306	0.3424
Change for Conf./adv.	-4.1214	1.9936	675	-2.07	0.0391	-8.0358	-0.2070

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	55.4225	1.2597	675	44.00	<0.0001	52.9491	57.8959
1	Mild	55.8009	1.2654	675	44.10	<0.0001	53.3163	58.2855
1	Moderate	55.7062	1.3230	675	42.11	<0.0001	53.1086	58.3039
1	Advanced/Confluent	53.9557	1.9113	675	28.23	<0.0001	50.2028	57.7085
2	Trace	54.9275	1.2939	675	42.45	<0.0001	52.3870	57.4679
2	Mild	55.9298	1.3062	675	42.82	<0.0001	53.3651	58.4946
2	Moderate	54.5621	1.4105	675	38.68	<0.0001	51.7926	57.3316
2	Advanced/Confluent	49.8343	2.2092	675	22.56	<0.0001	45.4965	54.1720

Outcome: FEV1/FVC, r = 2893

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	0.001166
Study center	3.193E-6
Residual	0.001272

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	902	46.10	<0.0001
Phase*Emphysema class	3	902	4.39	0.0045

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	0.9057	0.02960	5	30.60	<0.0001	0.8296	0.9818
Phase (1)	0.01148	0.01158	902	0.99	0.3218	-0.01125	0.03420
Emphysema (Mild)**	0.03220	0.01166	902	2.76	0.0059	0.009306	0.05509
Emphysema (Mod.)**	0.01343	0.01170	902	1.15	0.2516	-0.00954	0.03640
Emphysema (Adv./Conf.)**	-0.01426	0.01218	902	-1.17	0.2422	-0.03817	0.009653
Phase (1)*Emphysema (Mild)	0.003281	0.01178	902	0.28	0.7806	-0.01983	0.02640
Phase (1)*Emphysema (Mod)	0.007500	0.01182	902	0.63	0.5260	-0.01570	0.03070
Phase (1)*Emphysema (Adv./Conf.)	0.02049	0.01231	902	1.66	0.0964	-0.00367	0.04465
Age, years	-0.00101	0.000150	902	-6.74	<0.0001	-0.00130	-0.00071
Height, cm	-0.00080	0.000163	902	-4.89	<0.0001	-0.00112	-0.00048
Gender (Male)	-0.00305	0.002825	902	-1.08	0.2800	-0.00860	0.002490
Race (White)	-0.01751	0.002454	902	-7.13	<0.0001	-0.02232	-0.01269
Smoking status (former)	0.008689	0.002729	902	3.18	0.0015	0.003333	0.01405
Weight, kg	0.000407	0.000067	902	6.07	<0.0001	0.000276	0.000539

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	-0.01476	0.002437	902	-6.06	<0.0001	-0.01954	-0.00998
Change for Mild	-0.01898	0.002638	902	-7.19	<0.0001	-0.02416	-0.01380
Change for Moderate	-0.03197	0.004326	902	-7.39	<0.0001	-0.04046	-0.02348
Change for Conf./adv.	-0.01148	0.01158	902	-0.99	0.3218	-0.03420	0.01125

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	0.7844	0.001817	902	431.74	<0.0001	0.7808	0.7880
1	Mild	0.7699	0.001912	902	402.73	<0.0001	0.7661	0.7736
1	Moderate	0.7552	0.003157	902	239.23	<0.0001	0.7490	0.7614
1	Advanced/Confluent	0.7489	0.009221	902	81.22	<0.0001	0.7308	0.7670
2	Trace	0.7696	0.002405	902	320.00	<0.0001	0.7649	0.7744

2	Mild	0.7509	0.002666	902	281.63	<0.0001	0.7456	0.7561
2	Moderate	0.7232	0.004329	902	167.06	<0.0001	0.7147	0.7317
2	Advanced/Confluent	0.7375	0.01147	902	64.27	<0.0001	0.7149	0.7600

Outcome: FEV1; r = 2893

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	0.08102
Study center	0.000950
Residual	0.03515

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	902	1.99	0.1140
Phase*Emphysema class	3	902	0.20	0.8961

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	-2.1937	0.2071	5	-10.59	0.0001	-2.7261	-1.6613
Phase (1)	0.09822	0.06252	902	1.57	0.1165	-0.02448	0.2209
Emphysema (Mild)**	0.008559	0.07572	902	0.11	0.9100	-0.1400	0.1572
Emphysema (Mod.)**	-0.03462	0.07594	902	-0.46	0.6486	-0.1837	0.1144
Emphysema (Adv./Conf.)**	-0.03051	0.07894	902	-0.39	0.6992	-0.1854	0.1244
Phase (1)*Emphysema (Mild)	-0.01318	0.06349	902	-0.21	0.8356	-0.1378	0.1114
Phase (1)*Emphysema (Mod)	-0.00121	0.06373	902	-0.02	0.9849	-0.1263	0.1239
Phase (1)*Emphysema (Adv./Conf.)	-0.01748	0.06640	902	-0.26	0.7924	-0.1478	0.1128
Age, years	-0.02704	0.001079	902	-25.07	<0.0001	-0.02916	-0.02492
Height, cm	0.03748	0.001143	902	32.79	<0.0001	0.03523	0.03972
Gender (Male)	0.4480	0.02015	902	22.23	<0.0001	0.4085	0.4876
Race (White)	0.3751	0.01816	902	20.66	<0.0001	0.3394	0.4107
Smoking status (former)	0.06588	0.01961	902	3.36	0.0008	0.02740	0.1044
Weight, kg	-0.00446	0.000460	902	-9.69	<0.0001	-0.00536	-0.00356

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	-0.08504	0.01380	902	-6.16	<0.0001	-0.1121	-0.05796
Change for Mild	-0.09701	0.01489	902	-6.52	<0.0001	-0.1262	-0.06780
Change for Moderate	-0.08074	0.02381	902	-3.39	0.0007	-0.1275	-0.03401
Change for Conf./adv.	-0.09822	0.06252	902	-1.57	0.1165	-0.2209	0.02448

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	2.7463	0.01460	902	188.14	<0.0001	2.7176	2.7749
1	Mild	2.7150	0.01514	902	179.35	<0.0001	2.6853	2.7448

1	Moderate	2.7029	0.02298	902	117.61	<0.0001	2.6578	2.7480
1	Advanced/Confluent	2.7509	0.06419	902	42.86	<0.0001	2.6249	2.8769
2	Trace	2.6612	0.01717	902	155.01	<0.0001	2.6275	2.6949
2	Mild	2.6180	0.01867	902	140.25	<0.0001	2.5814	2.6547
2	Moderate	2.6221	0.02869	902	91.41	<0.0001	2.5659	2.6784
2	Advanced/Confluent	2.6527	0.07494	902	35.40	<0.0001	2.5056	2.7997

Outcome: 6MWD, r = 2884

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	40271
Study center	24438
Residual	57570

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	900	5.39	0.0011
Phase*Emphysema class	3	900	0.16	0.9242

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	907.06	192.16	5	4.72	0.0052	413.09	1401.03
Phase (1)	30.1081	77.3083	900	0.39	0.6970	-121.62	181.83
Emphysema (Mild)**	179.61	75.1538	900	2.39	0.0171	32.1099	327.10
Emphysema (Mod.)**	164.46	75.4102	900	2.18	0.0295	16.4572	312.46
Emphysema (Adv./Conf.)**	117.89	78.4272	900	1.50	0.1331	-36.0302	271.81
Phase (1)*Emphysema (Mild)	6.2789	78.6483	900	0.08	0.9364	-148.08	160.63
Phase (1)*Emphysema (Mod)	20.1879	78.9250	900	0.26	0.7982	-134.71	175.09
Phase (1)*Emphysema (Adv./Conf.)	20.1736	82.0949	900	0.25	0.8059	-140.95	181.29
Age, years	-10.3309	0.9703	900	-10.65	<0.0001	-12.2353	-8.4265
Height, cm	6.4502	1.0325	900	6.25	<0.0001	4.4237	8.4766
Gender (Male)	64.8046	17.8825	900	3.62	0.0003	29.7084	99.9008
Race (White)	87.9292	16.8964	900	5.20	<0.0001	54.7683	121.09
Smoking status (former)	130.97	17.3203	900	7.56	<0.0001	96.9803	164.97
Weight, kg	-3.9350	0.4273	900	-9.21	<0.0001	-4.7736	-3.0963

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	-36.3871	16.2141	900	-2.24	0.0251	-68.2089	-4.5653
Change for Mild	-50.2960	17.5097	900	-2.87	0.0042	-84.6607	-15.9314
Change for Moderate	-50.2817	28.5230	900	-1.76	0.0783	-106.26	5.6977
Change for Conf./adv.	-30.1081	77.3083	900	-0.39	0.6970	-181.83	121.62

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	1429.17	36.9892	900	38.64	<0.0001	1356.58	1501.77
1	Mild	1427.93	37.1511	900	38.44	<0.0001	1355.02	1500.85
1	Moderate	1381.35	40.3492	900	34.23	<0.0001	1302.16	1460.54
1	Advanced/Confluent	1243.29	68.2762	900	18.21	<0.0001	1109.29	1377.29
2	Trace	1392.79	38.4551	900	36.22	<0.0001	1317.31	1468.26
2	Mild	1377.64	39.1020	900	35.23	<0.0001	1300.90	1454.38
2	Moderate	1331.07	44.7195	900	29.76	<0.0001	1243.30	1418.84
2	Advanced/Confluent	1213.18	81.7811	900	14.83	<0.0001	1052.68	1373.68

Outcome: Total SGRQ, r = 2911

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	176.23
Study center	28.1207
Residual	116.10

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	920	5.95	0.0005
Phase*Emphysema class	3	920	0.42	0.7399

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	68.0873	10.5065	5	6.48	0.0013	41.0794	95.0952
Phase (1)	0.7765	3.5523	920	0.22	0.8270	-6.1951	7.7481
Emphysema (Mild)**	-3.6200	3.9252	920	-0.92	0.3566	-11.3235	4.0834
Emphysema (Mod.)**	-1.9595	3.9375	920	-0.50	0.6188	-9.6870	5.7680
Emphysema (Adv./Conf.)**	1.0128	4.0897	920	0.25	0.8045	-7.0134	9.0391
Phase (1)*Emphysema (Mild)	-1.4455	3.6093	920	-0.40	0.6889	-8.5290	5.6380
Phase (1)*Emphysema (Mod)	-2.1628	3.6229	920	-0.60	0.5507	-9.2728	4.9473
Phase (1)*Emphysema (Adv./Conf.)	-0.7331	3.7674	920	-0.19	0.8458	-8.1268	6.6605
Age, years	-0.1232	0.05429	920	-2.27	0.0235	-0.2298	-0.01667
Height, cm	-0.3235	0.05733	920	-5.64	<0.0001	-0.4360	-0.2110
Gender (Male)	-3.6872	1.0028	920	-3.68	0.0002	-5.6552	-1.7192
Race (White)	0.08603	0.9451	920	0.09	0.9275	-1.7687	1.9408
Smoking status (former)	-6.0116	0.9759	920	-6.16	<0.0001	-7.9269	-4.0963
Weight, kg	0.2601	0.02336	920	11.13	<0.0001	0.2142	0.3059

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	0.6690	0.7620	920	0.88	0.3802	-0.8265	2.1645
Change for Mild	1.3863	0.8229	920	1.68	0.0924	-0.2287	3.0012

Change for Moderate	-0.04338	1.3194	920	-0.03	0.9738	-2.6328	2.5461
Change for Conf./adv.	-0.7765	3.5523	920	-0.22	0.8270	-7.7481	6.1951

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	17.6598	1.3800	920	12.80	<0.0001	14.9515	20.3680
1	Mild	18.6030	1.3925	920	13.36	<0.0001	15.8702	21.3358
1	Moderate	23.0050	1.6380	920	14.04	<0.0001	19.7903	26.2197
1	Advanced/Confluent	22.7253	3.4284	920	6.63	<0.0001	15.9968	29.4538
2	Trace	18.3288	1.4673	920	12.49	<0.0001	15.4491	21.2084
2	Mild	19.9893	1.5131	920	13.21	<0.0001	17.0198	22.9588
2	Moderate	22.9616	1.8795	920	12.22	<0.0001	19.2730	26.6502
2	Advanced/Confluent	21.9488	4.0510	920	5.42	<0.0001	13.9985	29.8991

Outcome: SF26gen, r = 1870

Covariance Parameter Estimates

Covariance Parameter	Estimate
Subject	54.7082
Study center	0.7058
Residual	36.9503

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
Emphysema class	3	489	4.09	0.0070
Phase*Emphysema class	3	489	0.69	0.5582

Fixed parameter (Beta) estimates

Effect*	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Intercept	30.2757	6.9620	2	4.35	0.0490	0.3206	60.2308
Phase (1)	-0.6646	2.5159	489	-0.26	0.7918	-5.6079	4.2787
Emphysema (Mild)**	-0.1498	2.2855	489	-0.07	0.9478	-4.6405	4.3408
Emphysema (Mod.)**	-0.3973	2.2934	489	-0.17	0.8625	-4.9035	4.1089
Emphysema (Adv./Conf.)**	-2.9714	2.3818	489	-1.25	0.2128	-7.6512	1.7084
Phase (1)*Emphysema (Mild)	2.1776	2.5526	489	0.85	0.3940	-2.8379	7.1931
Phase (1)*Emphysema (Mod)	1.3918	2.5617	489	0.54	0.5872	-3.6416	6.4252
Phase (1)*Emphysema (Adv./Conf.)	2.3728	2.6611	489	0.89	0.3730	-2.8557	7.6013
Age, years	0.1284	0.03651	489	3.52	0.0005	0.05669	0.2001
Height, cm	0.08367	0.03889	489	2.15	0.0319	0.007270	0.1601
Gender (Male)	0.008784	0.6774	489	0.01	0.9897	-1.3223	1.3398
Race (White)	0.3267	0.6063	489	0.54	0.5903	-0.8646	1.5179
Smoking status (former)	3.3771	0.6448	489	5.24	<0.0001	2.1102	4.6441
Weight, kg	-0.07573	0.1582	489	-4.79	<0.0001	-0.1068	-0.04465

* Predictors followed by a level in parentheses are indicators; the estimate represents the average change in the outcome for that level compared with the reference level. Other predictors are continuous.

** Trace level is reference.

Estimates

Label	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
Change for Trace	-1.5130	0.5318	489	-2.85	0.0046	-2.5579	-0.4681
Change for Mild	-0.7272	0.5695	489	-1.28	0.2023	-1.8462	0.3918
Change for Moderate	-1.7082	0.9171	489	-1.86	0.0631	-3.5101	0.09368
Change for Conf./adv.	0.6646	2.5159	489	0.26	0.7918	-4.2787	5.6079

Least squares means

Phase	Emphysema presence category	Estimate	SE	DF	t Value	Pr > t	95% CI, Lower	95% CI, Upper
1	Trace	49.4016	0.5268	489	93.78	<0.0001	48.3666	50.4366
1	Mild	48.3683	0.5419	489	89.26	<0.0001	47.3036	49.4329
1	Moderate	46.7752	0.8398	489	55.70	<0.0001	45.1251	48.4253
1	Advanced/Confluent	47.3738	2.3603	489	20.07	<0.0001	42.7363	52.0113
2	Trace	47.8886	0.5074	489	94.38	<0.0001	46.8916	48.8856
2	Mild	47.6411	0.5549	489	85.85	<0.0001	46.5507	48.7314
2	Moderate	45.0670	0.8554	489	52.69	<0.0001	43.3864	46.7476
2	Advanced/Confluent	48.0384	2.2551	489	21.30	<0.0001	43.6076	52.4693

Appendix E3

Table 5 extended output for Cox proportional hazards model fit of 'Days followed', Breslow method used for ties.

Summary of the Number of Event and Censored Values

Total	Event	Censored	% Censored
4095	293	3802	92.84

Model Fit Statistics

Criterion	Without Covariates	With Covariates
-2 LOG L	4741.646	4623.474
AIC	4741.646	4635.474
SBC	4741.646	4657.555

Testing Global Null Hypothesis: BETA = 0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	118.1714	6	<0.0001
Score	112.1320	6	<0.0001
Wald	109.2573	6	<0.0001

Parameter	DF	Parameter Estimate	SE	Chi-Square	Pr > ChiSq	Hazard Ratio	95% Hazard Ratio Confidence Limits	
Emphysema (presence)	1	0.17158	0.12039	2.0313	0.1541	1.187	0.938	1.503
Age, years	1	0.05090	0.00822	38.3833	<0.0001	1.052	1.035	1.069
Height, cm	1	-0.00808	0.00849	0.9055	0.3413	0.992	0.976	1.009
Gender (Male)	1	0.87321	0.16946	26.5539	<0.0001	2.395	1.718	3.338
Race (White)	1	-0.23214	0.13611	2.9090	0.0881	0.793	0.607	1.035
Smoking status (current)	1	0.97404	0.15661	38.6806	<0.0001	2.649	1.949	3.600