

Appendix A:

Scatterplots of Ranks for Current LAS Compared to the Revised LAS for Each Covariate in the LAS Calculation

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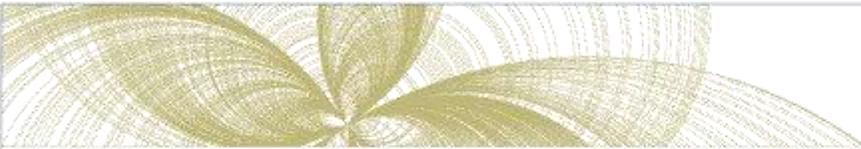


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Figure 1. Scatterplot: current and revised model LAS rank for 2010 cohort of waitlist candidates, by age group

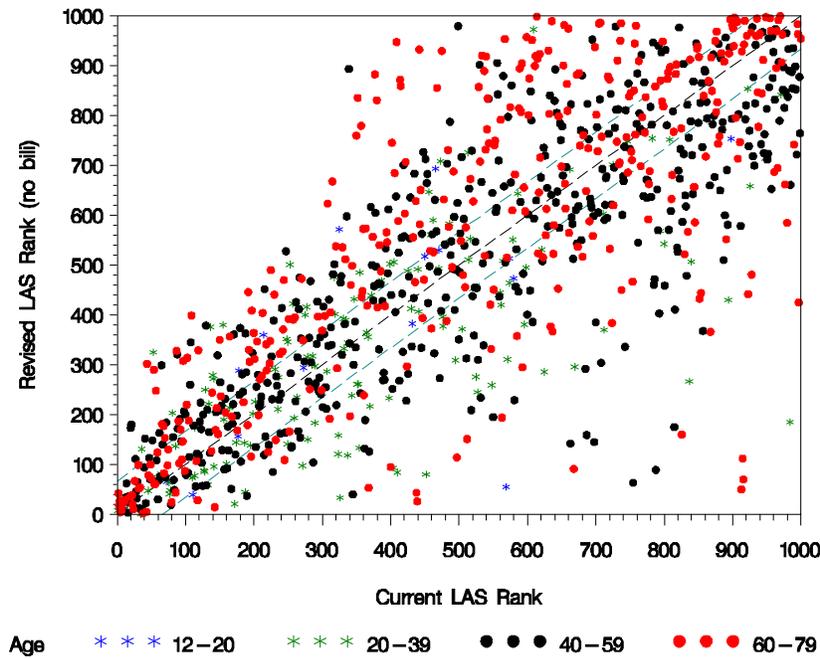


Figure 2. Scatterplot: current and revised model LAS rank for 2010 cohort of waitlist candidates, by age, diagnosis group A

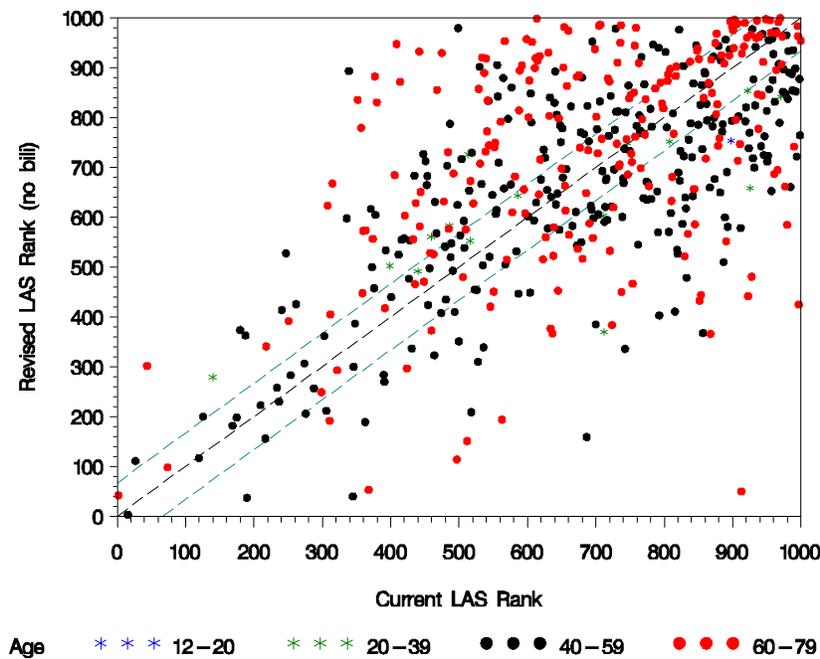


Figure 3. Scatterplot: current and revised model LAS rank for 2010 cohort of waitlist candidates, by age, diagnosis group B

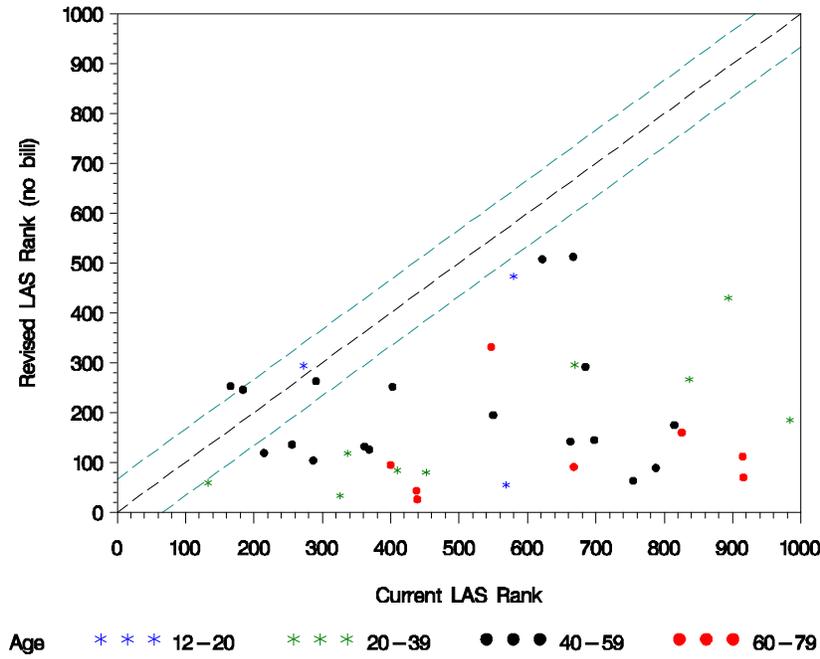


Figure 4. Scatterplot: current and revised model LAS rank for 2010 cohort of waitlist candidates, by age, diagnosis group C

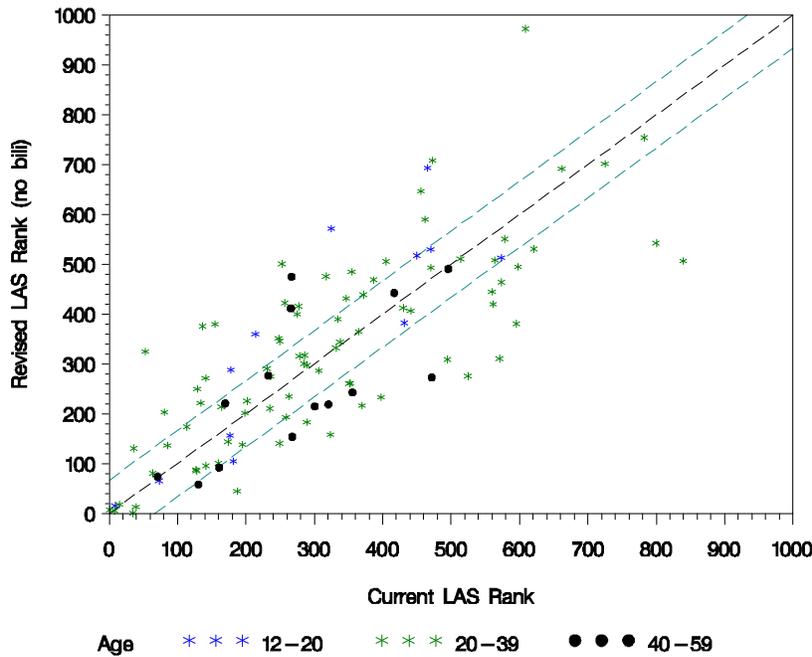


Figure 5. Scatterplot: current and revised model LAS rank for 2010 cohort of waitlist candidates, by age, diagnosis group D

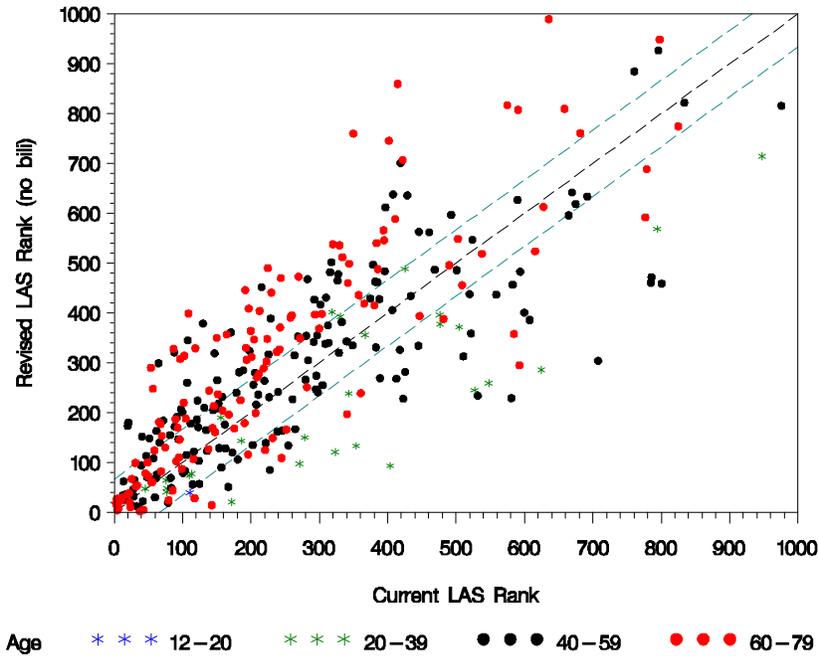
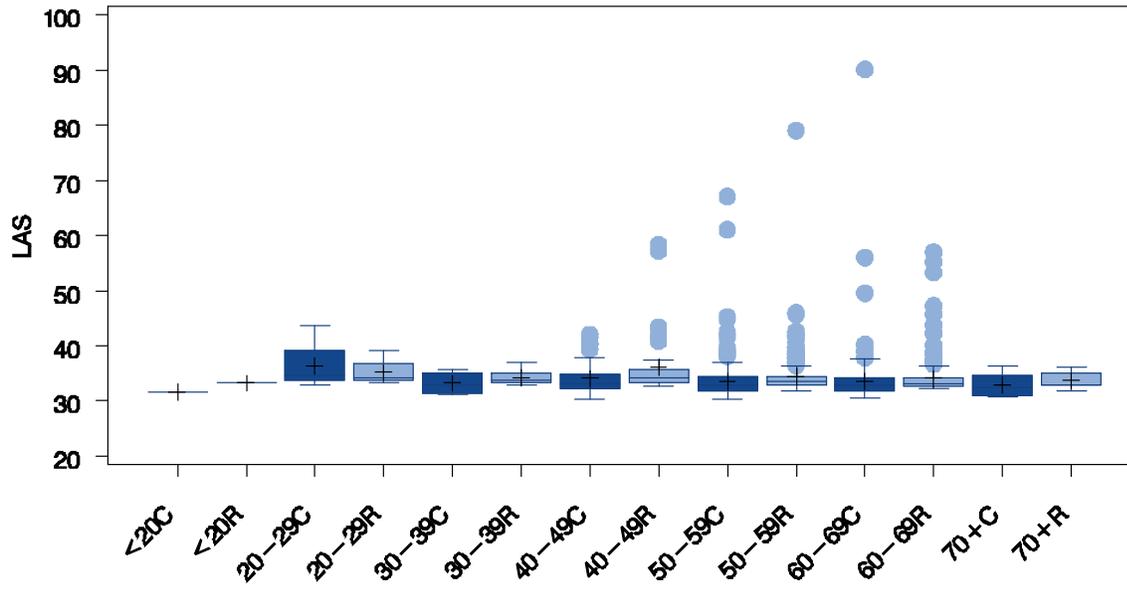


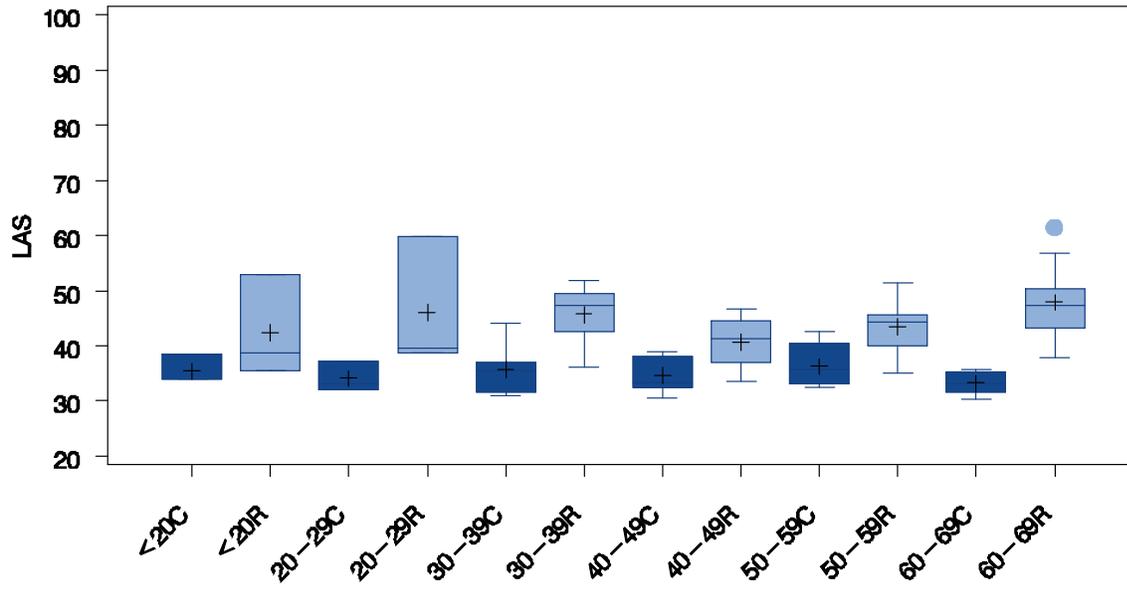
Figure 6. Boxplots: current and revised model LAS, by age group, diagnosis group A candidates



Age group by Model (C=Current, R=Revised) for Dgn Group A

N	1	1	4	4	11	11	45	45	236	236	228	228	9	9
Mean	32	33	36	35	33	34	34	36	34	34	34	34	33	34
Std Dev	.	.	5	3	2	1	3	6	4	4	5	3	2	2
Min	32	33	33	33	31	33	30	33	30	32	31	32	31	32
Max	32	33	44	39	36	37	42	58	67	79	90	57	36	36

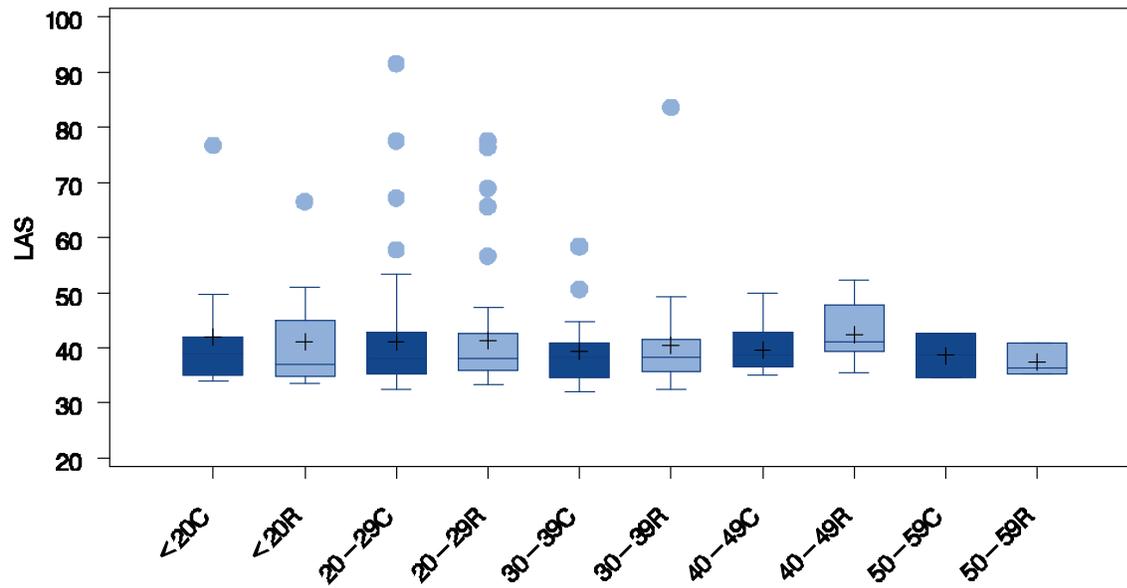
Figure 7. Boxplots: current and revised model LAS, by age group, diagnosis group B



Age group by Model (C=Current, R=Revised) for Dgn Group B

N	3	3	3	3	6	6	8	8	11	11	9	9
Mean	35	42	34	46	36	46	35	41	36	43	33	48
Std Dev	3	9	3	12	5	6	3	5	4	5	2	8
Min	34	35	32	39	31	36	30	33	32	35	30	38
Max	38	53	37	60	44	52	39	47	43	51	36	61

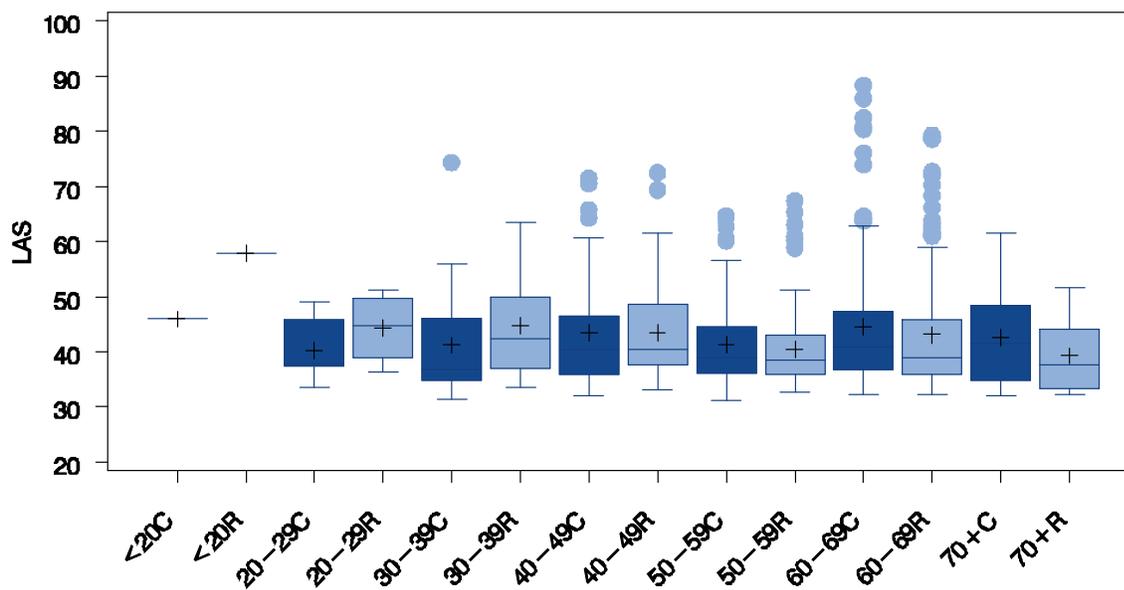
Figure 8. Boxplots: current and revised model LAS, by age group, diagnosis group C



Age group by Model (C = Current, R = Revised) for Dgn Group C

N	12	12	53	53	30	30	11	11	3	3
Mean	42	41	41	41	39	41	40	42	39	38
Std Dev	12	10	11	10	7	9	4	5	4	3
Min	34	34	32	33	32	32	35	35	35	35
Max	77	67	92	78	58	84	50	52	43	41

Figure 9. Boxplots: current and revised model LAS, by age group, diagnosis group D



Age group by Model (C = Current, R = Revised) for Dgn Group D

N	1	1	6	6	23	23	62	62	101	101	122	122	12	12
Mean	46	58	40	44	41	45	43	44	41	41	45	43	43	39
Std Dev	.	.	6	6	10	9	10	9	8	7	12	11	9	7
Min	46	58	34	36	31	33	32	33	31	33	32	32	32	32
Max	46	58	49	51	74	64	72	73	65	67	88	79	62	52

Figure 10: Scatterplot of current vs. revised model LAS rank by bronchiectasis

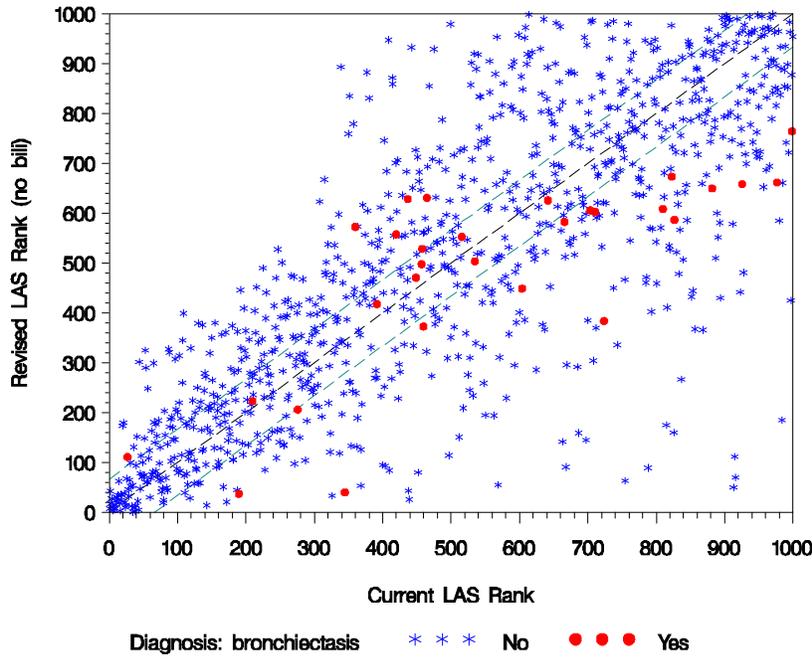


Figure 11: Scatterplot of current vs. revised model LAS rank by Eisenmenger syndrome

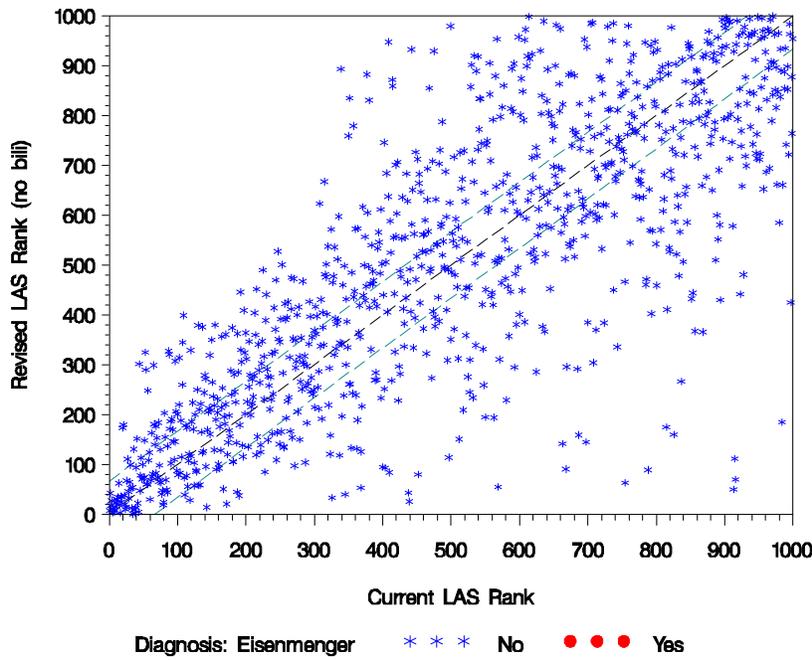


Figure 12: Scatterplot of current vs. revised model LAS rank by lymphangioleiomyomatosis

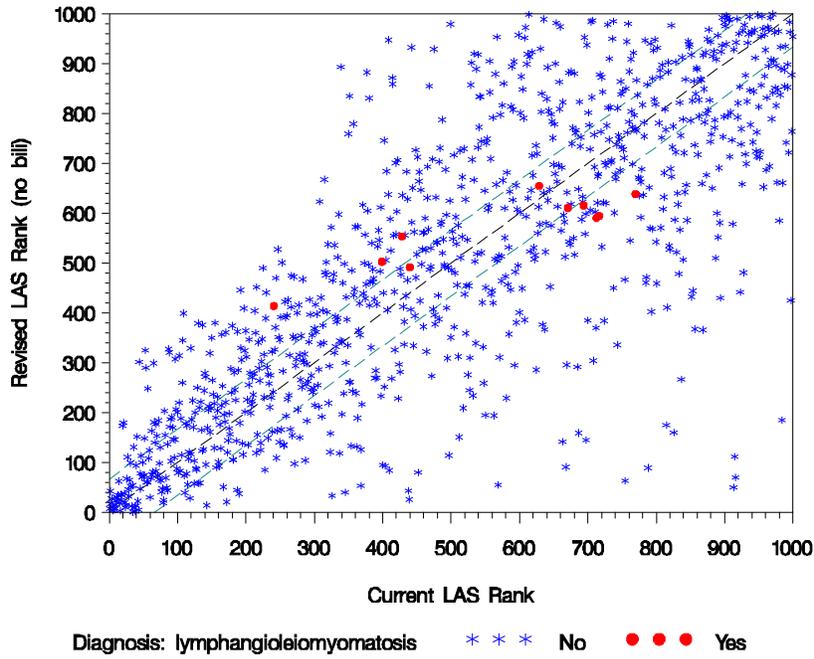


Figure 13: Scatterplot of current vs. revised model LAS rank by obliterative bronchiolitis, non-retransplant

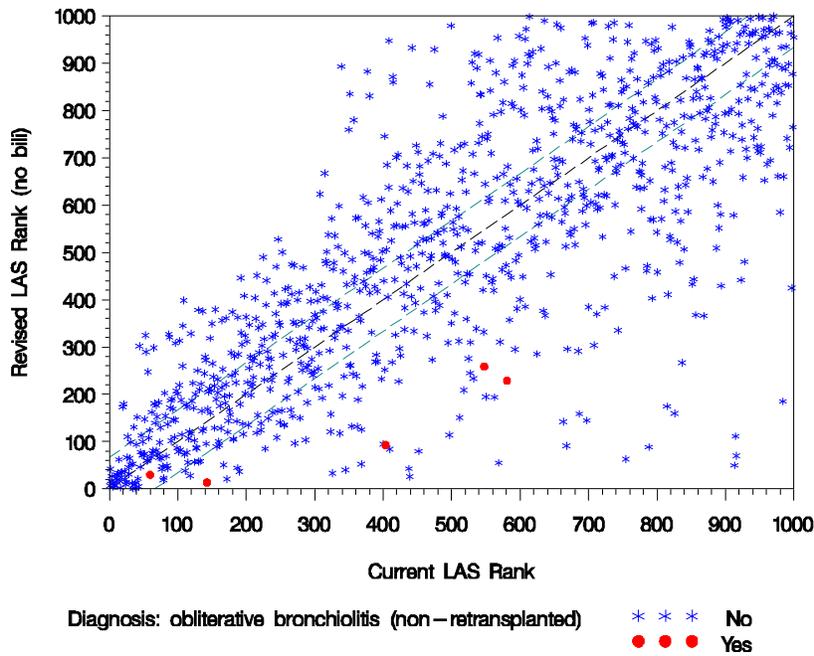




Figure 14: Scatterplot of current vs. revised model LAS rank by other pulmonary fibrosis

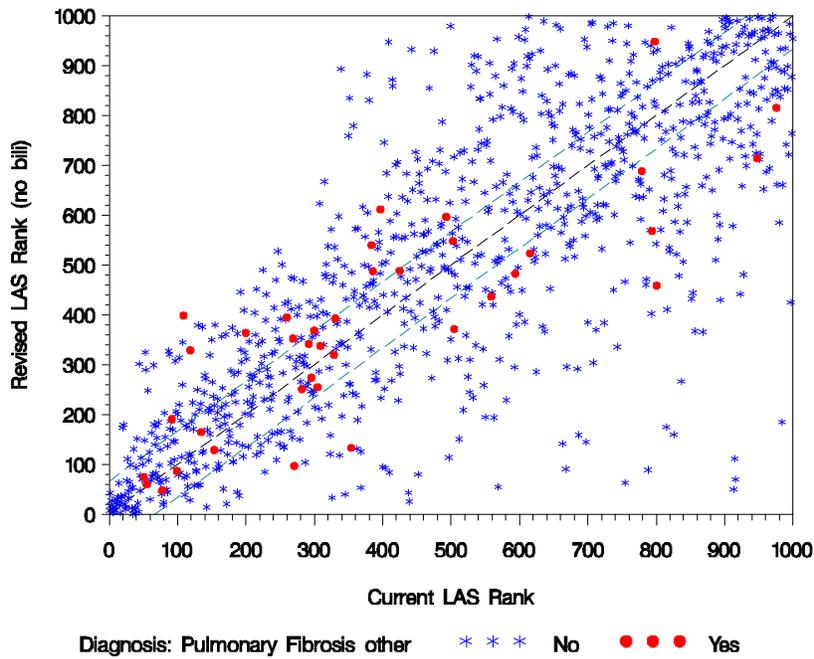


Figure 15: Scatterplot of current vs. revised model LAS rank by sarcoidosis and PA mean > 30 mm Hg

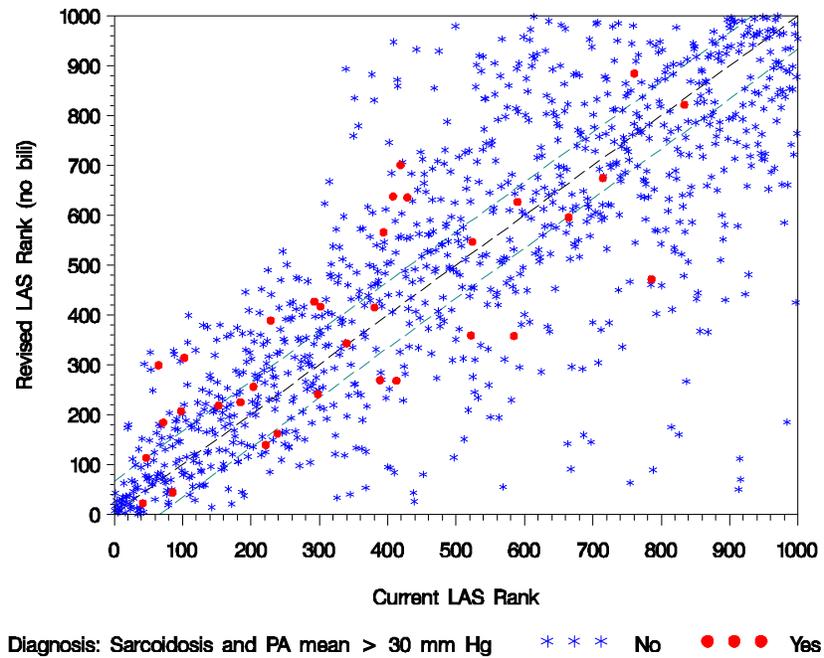




Figure 16: Scatterplot of current vs. revised model LAS rank by sarcoidosis and PA mean \leq 30 mm Hg

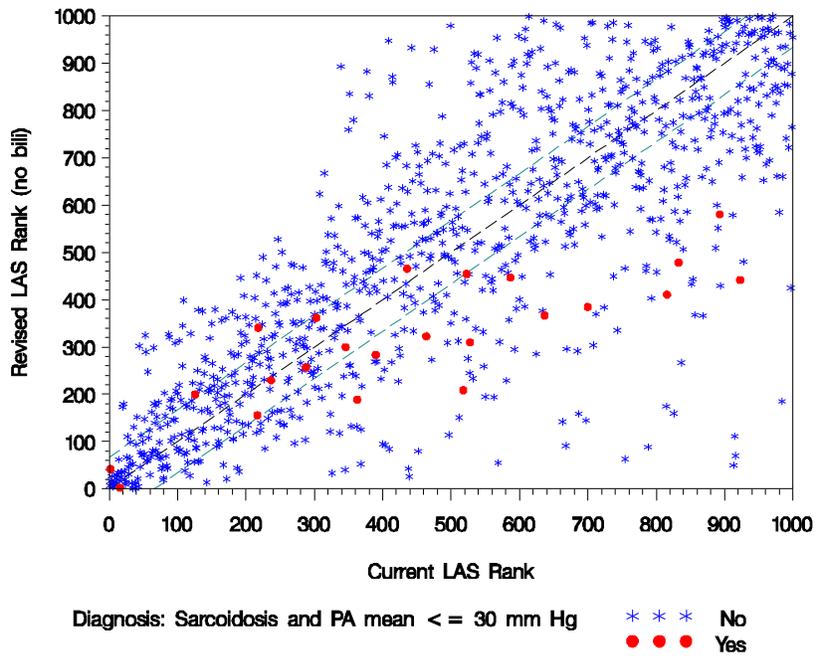


Figure 17: Scatterplot of current vs. revised model LAS rank by body mass index $<$ 20

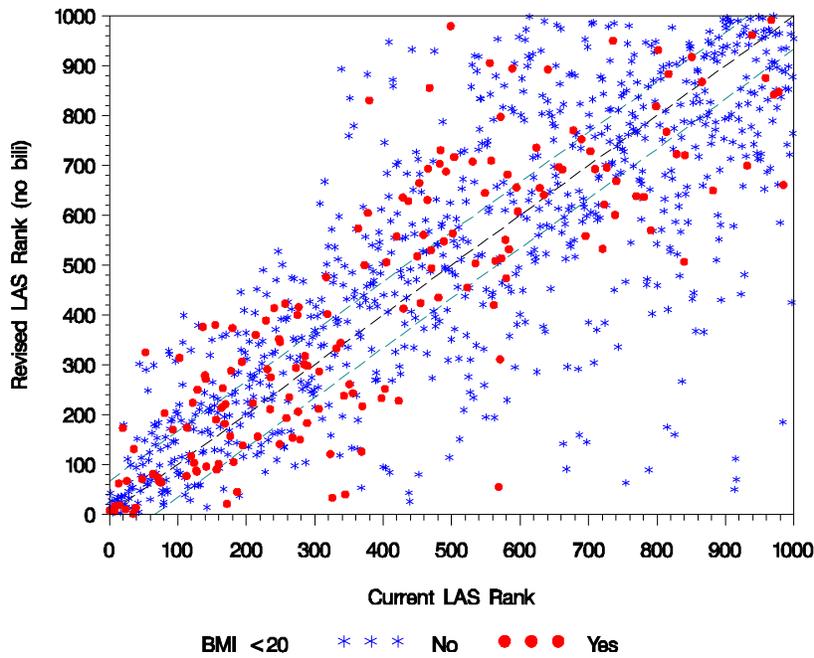


Figure 18: Scatterplot of current vs. revised model LAS rank by six minute walk distance < 150 ft

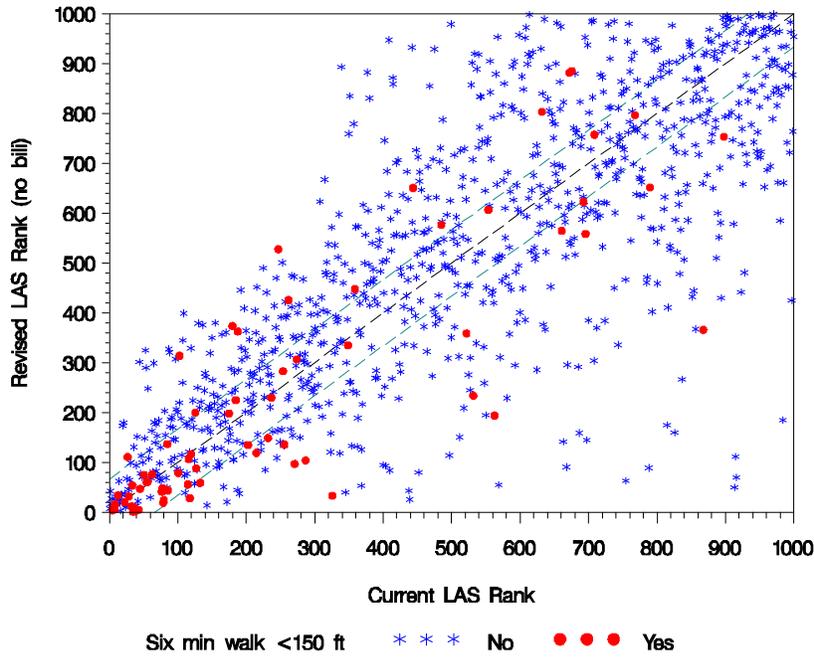


Figure 19: Scatterplot of current vs. revised model LAS rank by six minute walk distance > 1200 ft

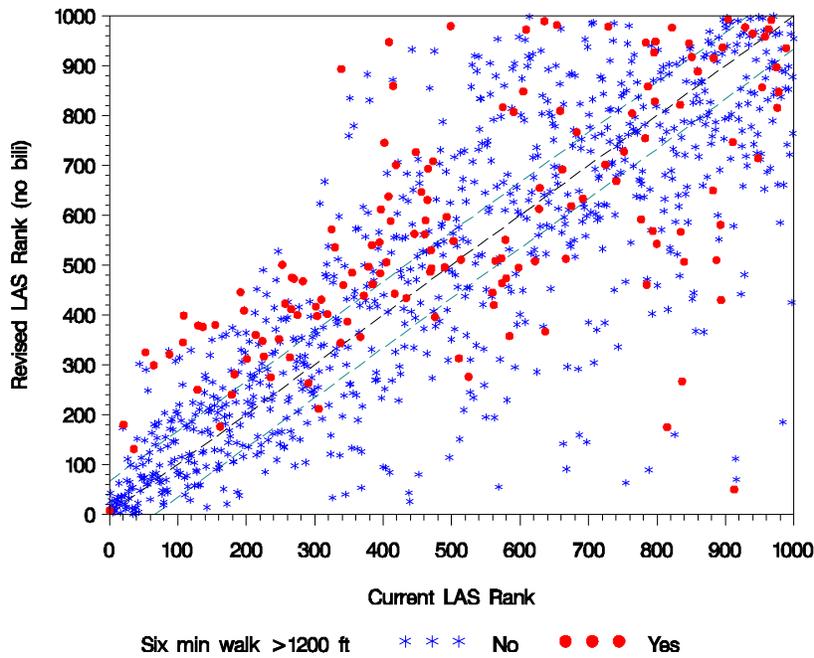


Figure 20: Scatterplot of current vs. revised model LAS rank by cardiac index < 2 L/min/m²

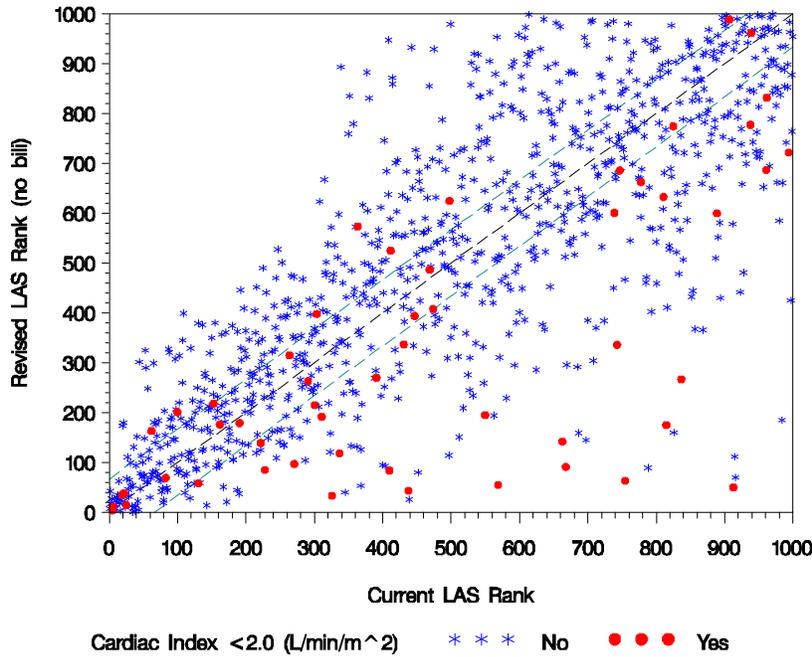


Figure 21: Scatterplot of current vs. revised model LAS rank by serum creatinine > 1.2 mg/dL

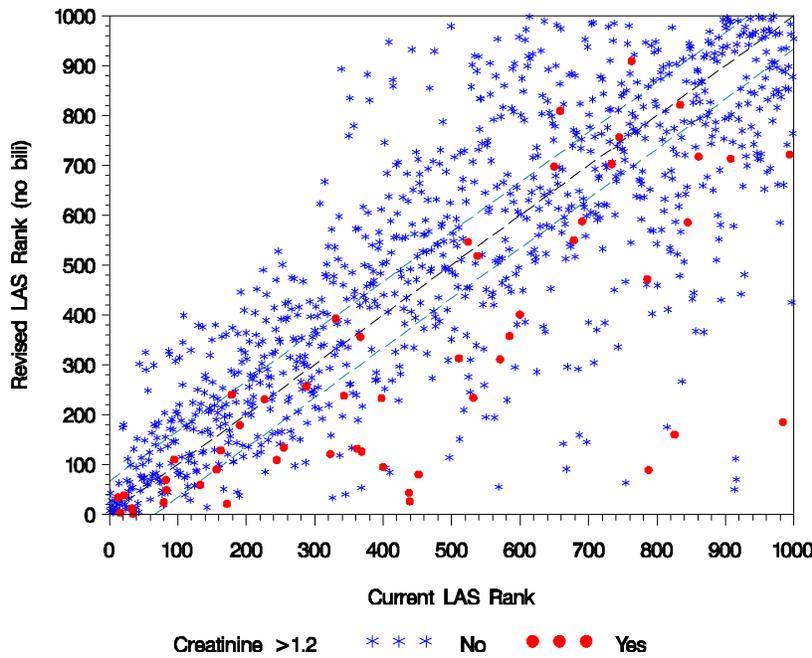




Figure 22: Scatterplot of current vs. revised model LAS rank by CVP > 7 mm Hg (group B only)

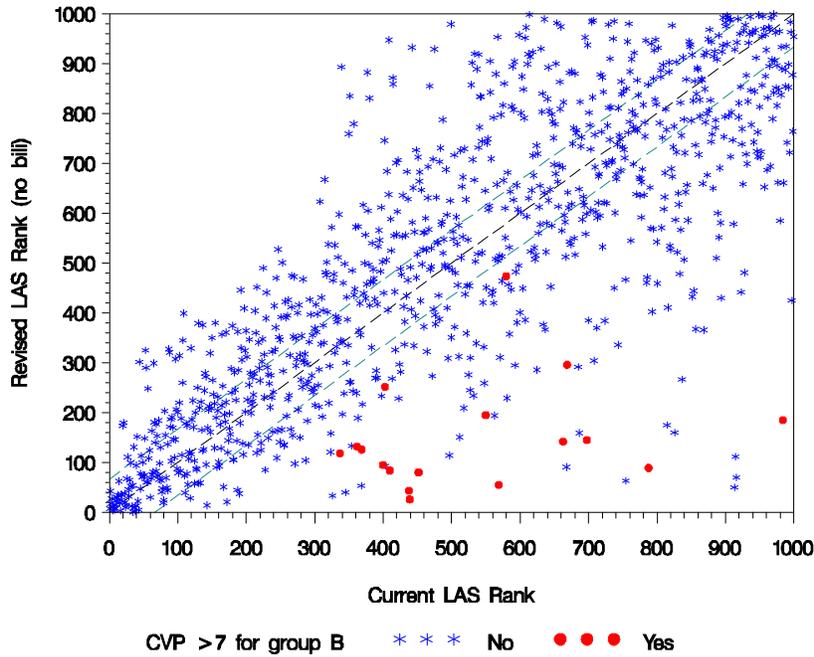


Figure 23: Scatterplot of current vs. revised model LAS rank by systolic PA > 40 mm Hg (group A only)

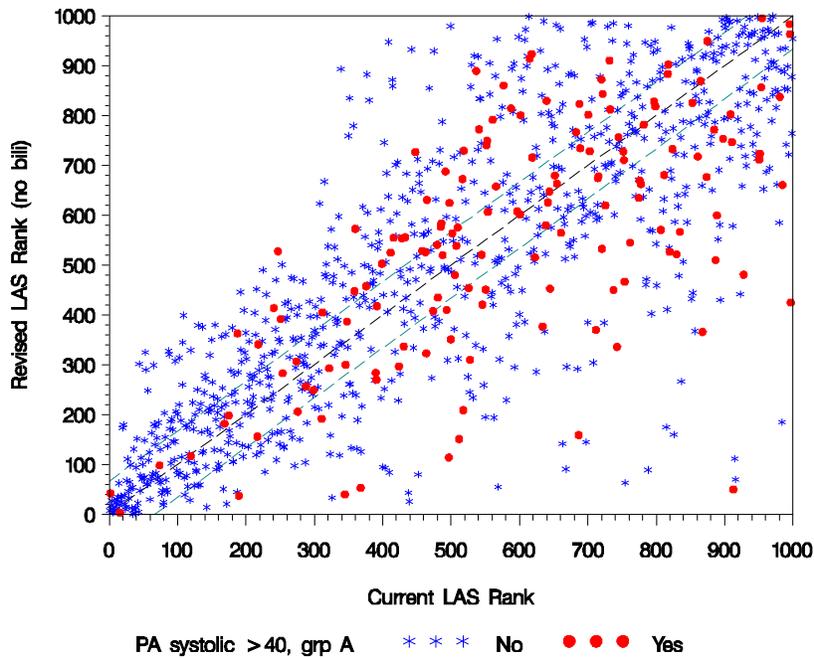


Figure 24: Scatterplot of current vs. revised model LAS rank by PCO₂ increase ≥ 15%

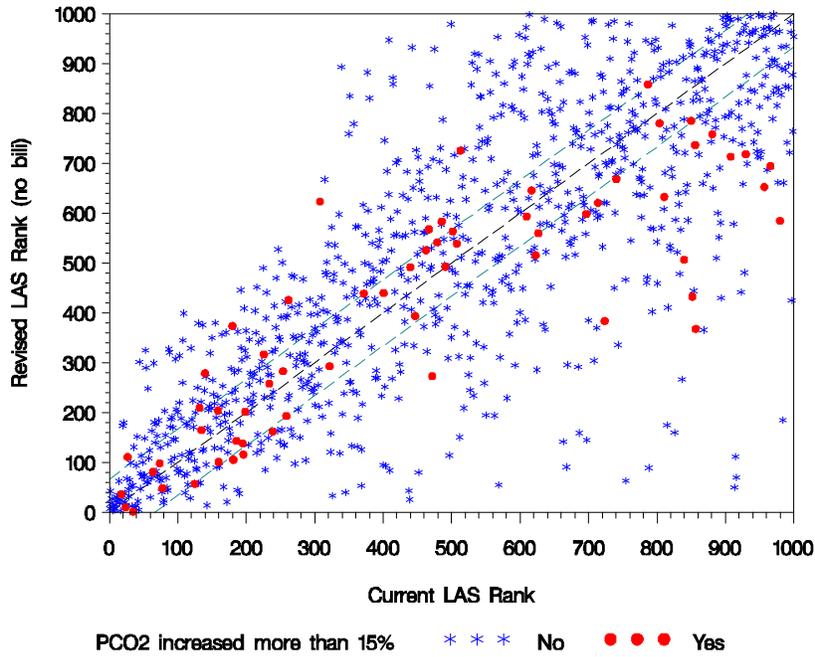


Figure 25: Scatterplot of current vs. revised model LAS rank by continuous mechanical ventilation

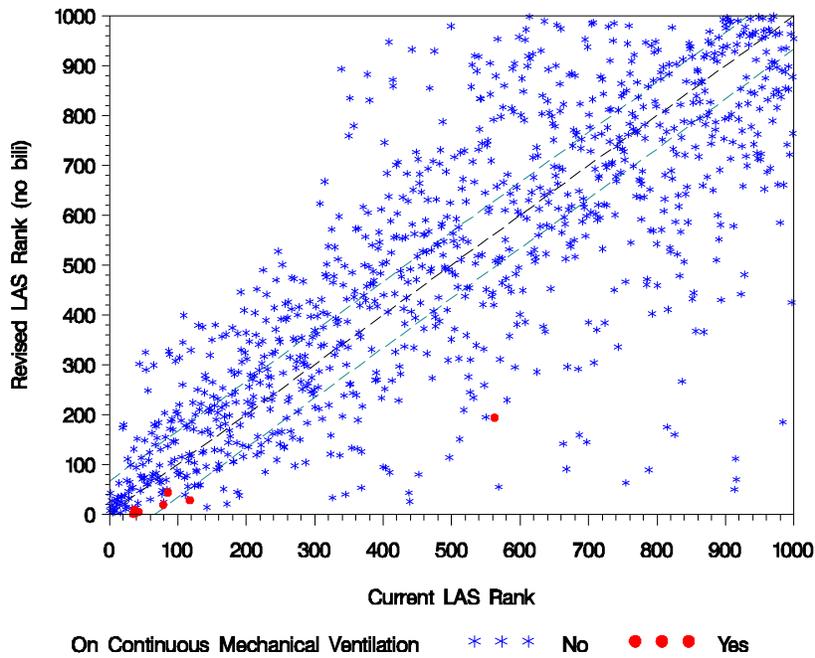


Figure 26: : Scatterplot of current vs. revised model LAS rank by diabetes status

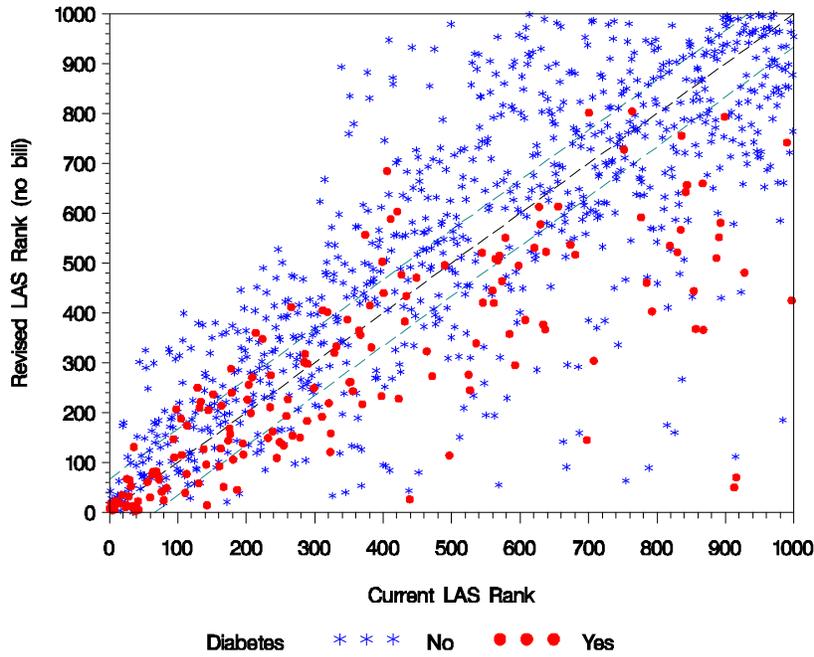


Figure 27: Scatterplot of current vs. revised model LAS rank by functional status (some/total assistance vs. none)

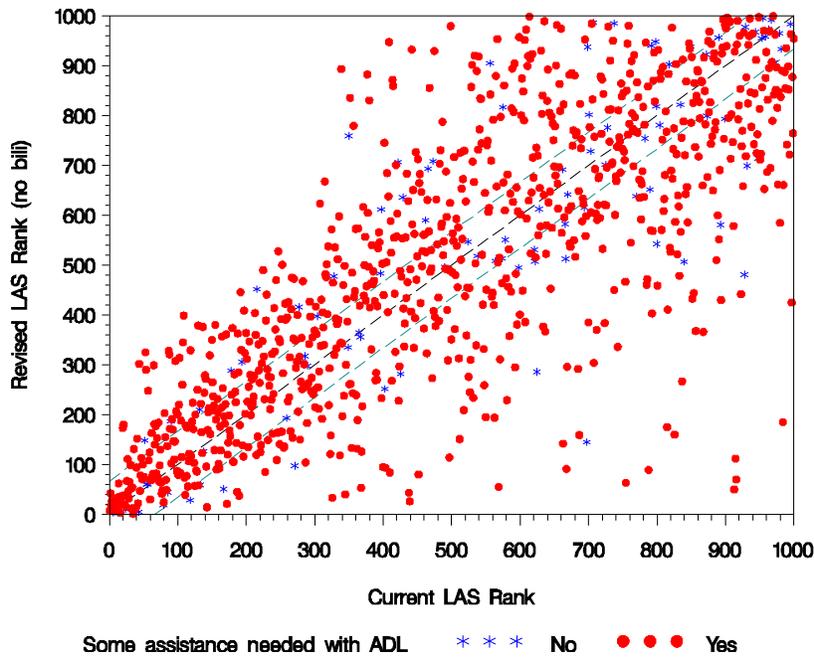




Figure 28: Scatterplot of current vs. revised model LAS rank by FVC > 80% of predicted

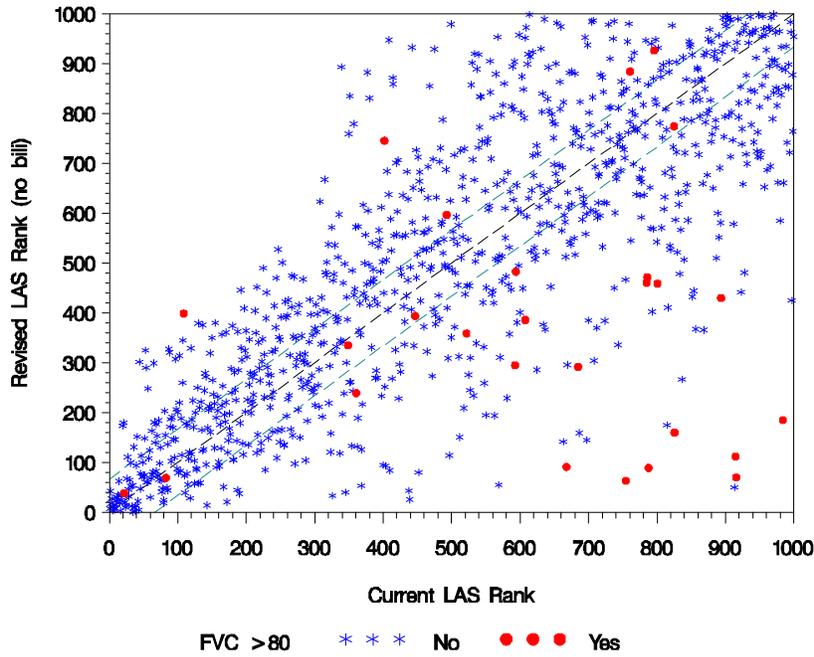


Figure 29: Scatterplot of current vs. revised model LAS rank by resting oxygen requirement, diagnosis groups A and D

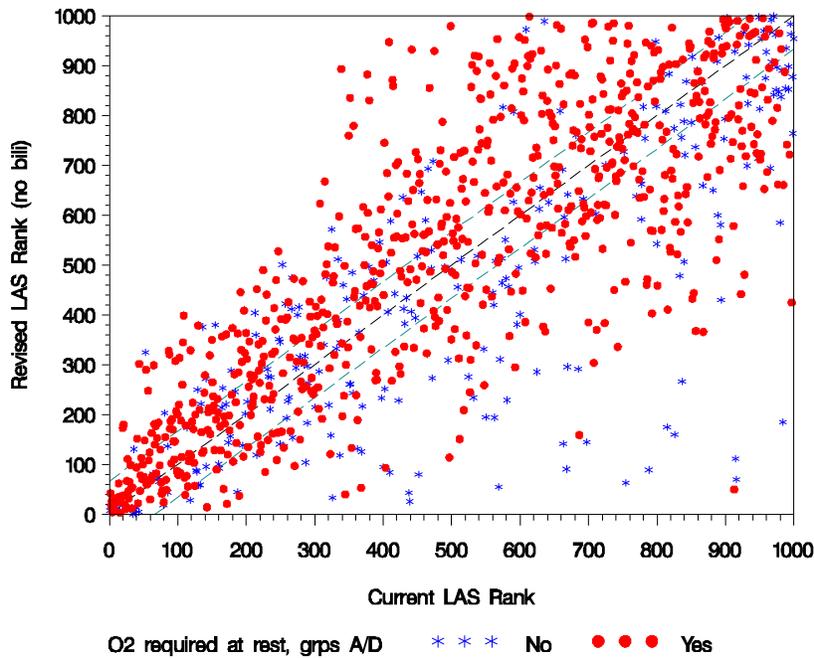


Figure 30: Scatterplot of current vs. revised model LAS rank by resting oxygen requirement, diagnosis group B

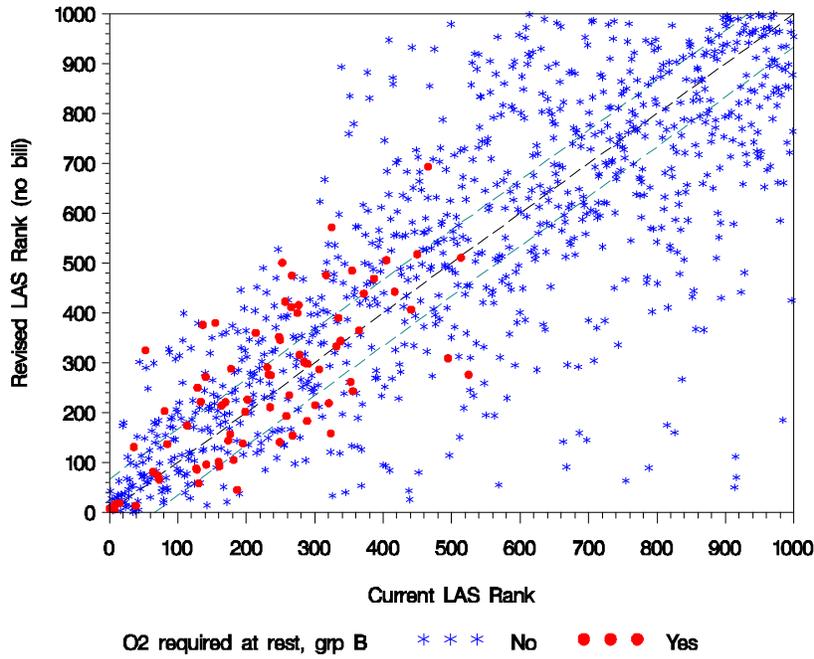
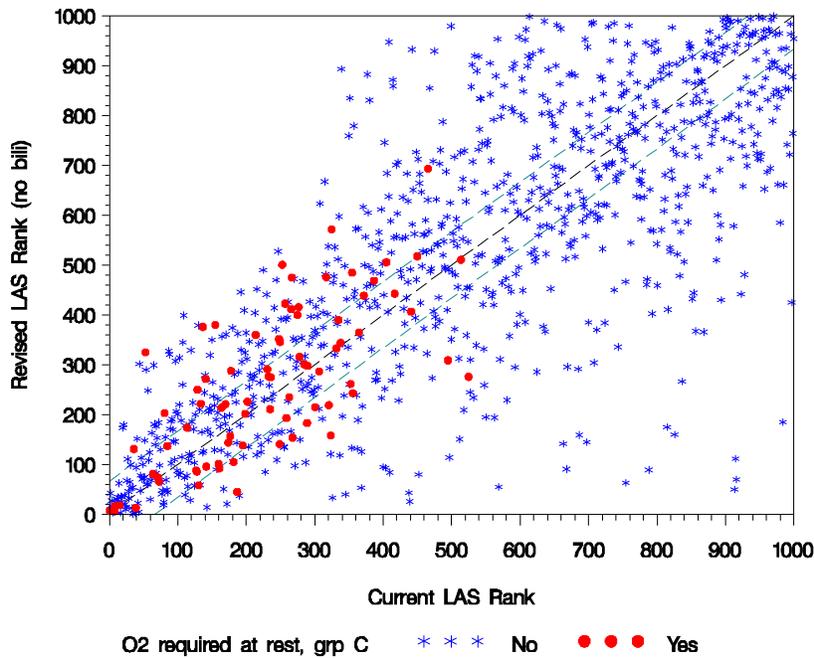


Figure 31: Scatterplot of current vs. revised model LAS rank by resting oxygen requirement, diagnosis group C



Revised Model with and without Bilirubin for LRP cohort

There were 20 patients in the LRP cohort who were in diagnosis group B, and who had a bilirubin increase of at least 50%. Nineteen of the 20 LRP patients with a bilirubin threshold increase were missing at least one LAS-defining parameter, making it impossible to assess the effect of the bilirubin on LAS using traditional methods, since LAS is usually only calculated for patients with all non-missing LAS-defining data.

Because it was essential to assess the effect of the bilirubin increase indicator on LAS, missing data were imputed by substituting missing values with mean values from either all 96 PH patients in the LRP cohort, or mean values from the 20 diagnosis group B patients with bilirubin increase of at least 50% in the previous 6 months.

Five hundred seventy-two lung candidates were included in the analysis. Baseline demographics (without imputed values) are summarized in Table 1.

Table 1. Baseline demographics for lung candidates, revised model and LRP cohorts

Characteristics	2006-2008 Cohort (N=3701)			LRP Cohort (N=572)		
	n	Mean or %	SD	n	Mean or %	SD
Diagnosis Group						
Group A (COPD + others)	1317	35.6%		261	46%	
Group B (iPAH + others)	116	3.1%		110	19%	
Group C (CF)	428	11.6%		72	13%	
Group D (IPF + others)	1840	49.7%		129	23%	
Diagnosis						
Bronchiectasis	60	1.6%		8	1%	
Eisenmenger	2	0.1%		10	2%	
Lymphangioliomyomatosis	14	0.4%		5	<1%	
Obliterative bronchiolitis (non-retransplanted)	23	0.6%		2	<1%	
Pulmonary fibrosis other	192	5.2%		15	3%	
Sarcoidosis and PA mean > 30 mm Hg	81	2.2%		15	3%	
Sarcoidosis and PA mean ≤ 30 mm Hg	55	1.5%		11	2%	
Physiologic Reserve						
Age (yrs)	3701	53.0	14.0	572	47.0	12.34
BMI (kg/m ²)	3701	25.0	4.9	572	24.2	5.36
Diabetes: insulin dependent, non-dependent, dependency unknown	786	21.2%		72	13%	
Functional status						
No activity limitation	425	11.5%		225	39%	
Some assistance needed with ADL	2880	78.1%		323	56%	
Total assistance needed with ADL	384	10.4%		24	4%	
Six-min walk distance (feet)	3639	777.4	446.7	572	9.6	5.53
Severity						
FVC (% predicted)	3654	48.6	17.5	572	54.0	20.94
O ₂ requirement at rest (L/min)	3701	3.9	4.0	572	2.0	1.43
PA systolic (mm Hg)	3466	41.9	16.4	572	48.3	24.43
PCO ₂ (mm Hg)	2759	48.7	13.3	572	46.9	10.59
PCO ₂ increase ≥15% during prior 6-mo period	134	4.9%		33	6%	
Continuous mechanical ventilation	162	4.4%		0	0%	
Cardiac index (L/min/m ²)	3207	2.9	0.90	524	3.0	0.82
Cardiac index < 2 (L/min/m ²)	234	7.3%		42	7%	
Creatinine (mg/dl) age 18+*	3690	0.84	0.3	572	0.9	0.38
CVP (mm Hg)	2293	6.63	4.7	572	5.0	5.90
Bilirubin (mg/dl)	na			572	0.7	0.85

LAS was calculated for the 572 lung candidates in the LRP database, with and without the bilirubin parameters. For patients with bilirubin values less than 1, LAS will not change, because all other parameters used in the calculation of LAS remain the same. In fact, most patients had their LAS increase 5 points or less with the revision to LAS (Figure).

Figure 32. Scatterplot of revised model LAS with and without bilirubin data, in LRP cohort

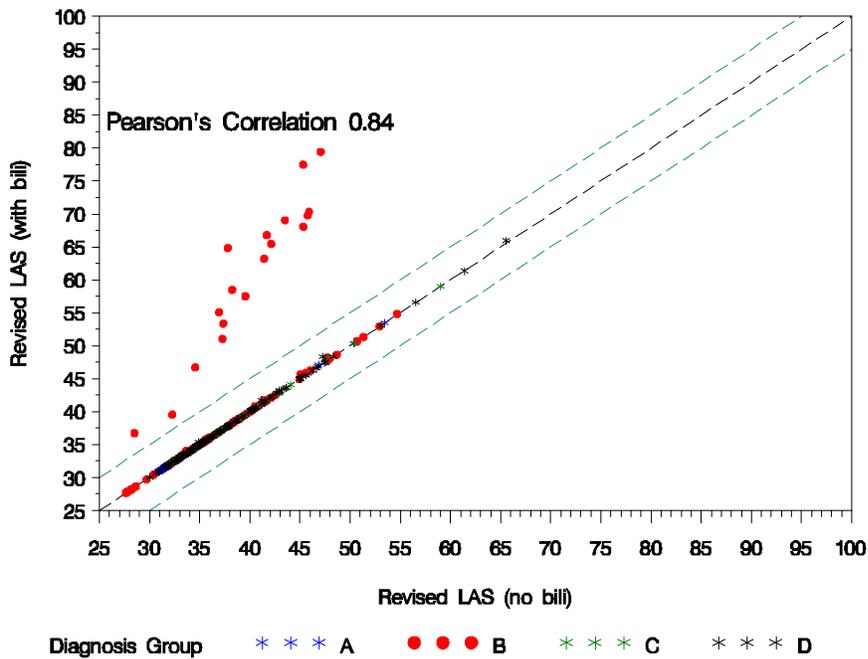


Figure 33: Scatterplot of revised model LAS rank with and without bilirubin, by diagnosis group, in LRP cohort

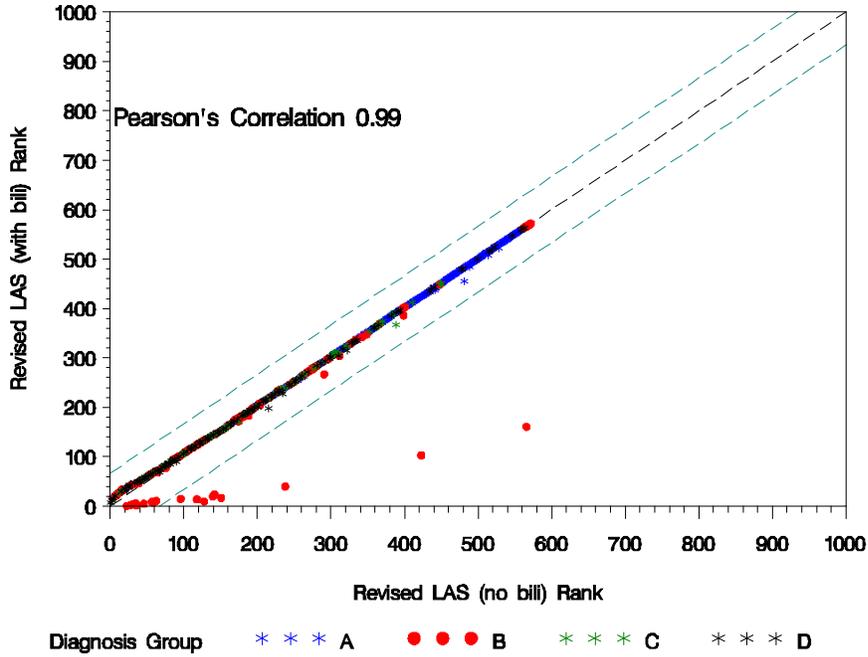


Figure 34: Scatterplot of revised model LAS rank with and without bilirubin, among group B LRP patients with a $\geq 50\%$ bilirubin increase

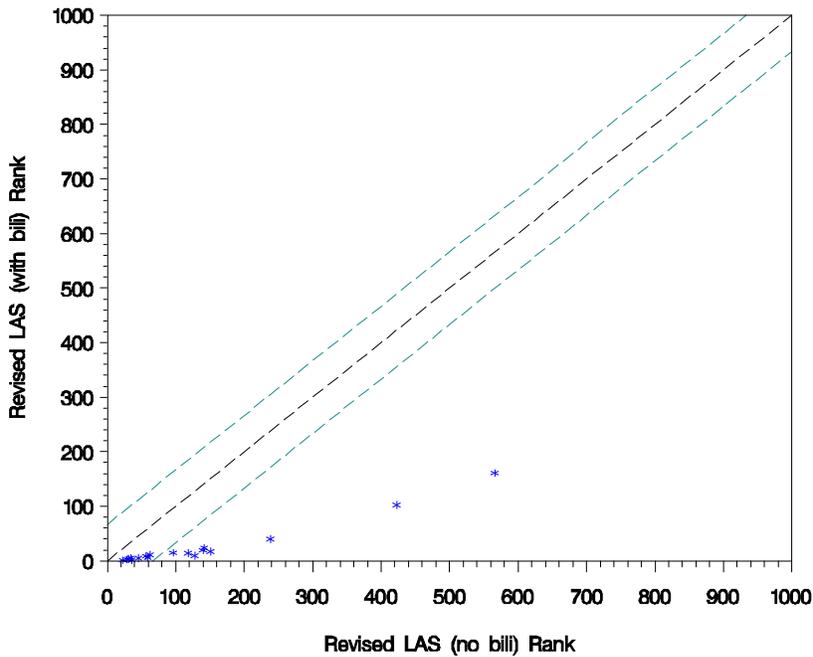


Figure 35: Scatterplot of revised model LAS rank with and without bilirubin, among diagnosis group B patients with $\geq 50\%$ increase in bilirubin

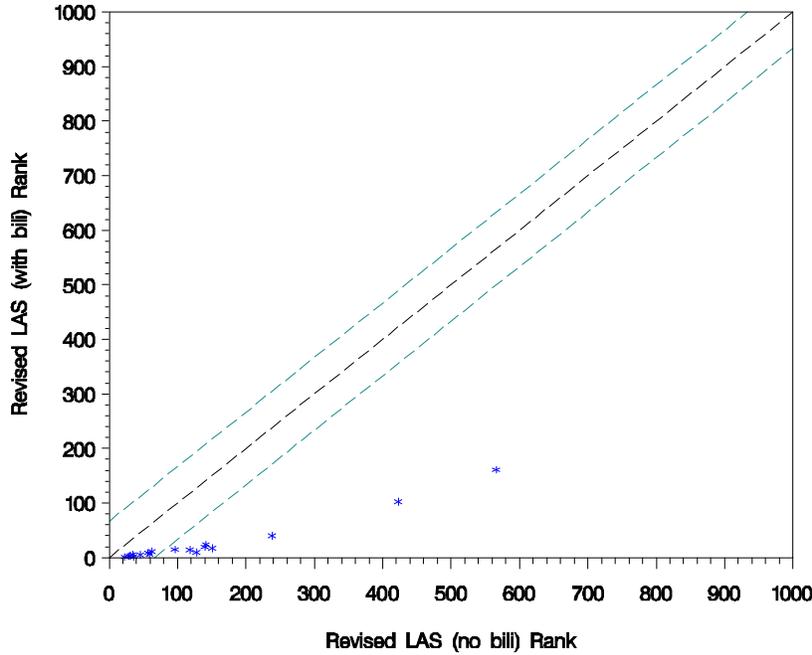


Figure 36: Scatterplot of revised model LAS rank with and without bilirubin, by diagnosis group

