

SUPPLEMENTARY MATERIAL

Appendix 1: The full regression results, including all co-variates and outcomes considered to measure postoperative outcomes.								
Regressions	Resolve Pain				Resolve Symptoms			
	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF	reference				reference			
CF	0.507	0.158	1.624	0.253	0.574	0.182	1.812	0.344
Age	0.995	0.929	1.066	0.888	0.974	0.910	1.043	0.447
Gender								
Female	reference				reference			
Male	2.425	0.697	8.439	0.164	2.853	0.735	11.076	0.130
Race -- Ethnicity								
Caucasian	reference				reference			
African American	0.459	0.116	1.814	0.267	1.221	0.302	4.935	0.779
BMI (kg/m ²)	0.998	0.904	1.102	0.969	1.092	0.975	1.222	0.128
Smoking								
Current Smoker	reference				reference			
Never or Former Smoked	0.971	0.213	4.436	0.970	2.924	0.569	15.028	0.199
Level Count								
Level count: 1	reference				reference			
Level count: 2	1.131	0.339	3.773	0.841	1.968	0.581	6.665	0.277
Elixhauser Sum	0.930	0.571	1.515	0.771	1.018	0.615	1.685	0.945
Time								
Preop								
<4 Weeks								
>=4, <10 Weeks								
>10 Weeks								
Observations	61				61			
Margins								
ACDF								
CF								
Contrasts								
CF vs. ACDF								
Regressions	Resolve Weakness				Resolve Neuro			
	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF	reference				reference			
CF	0.387	0.020	7.385	0.528	0.522	0.062	4.385	0.549
Age	0.892	0.744	1.069	0.216	0.965	0.852	1.094	0.583
Gender								
Female	reference				reference			
Male	0.837	0.036	19.470	0.912	2.582	0.394	16.910	0.322
Race -- Ethnicity								
Caucasian	reference				reference			

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Appendix 1: (Continued)								
Regressions	Resolve Weakness				Resolve Neuro			
	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
BMI (kg/m ²)	0.957	0.708	1.294	0.776	1.277	0.990	1.647	0.060
Smoking								
Current Smoker	reference				reference			
Never or Former Smoked	2.193	0.048	99.305	0.687	0.778	0.035	17.130	0.874
Level Count								
Level count: 1	reference				reference			
Level count: 2	0.482	0.031	7.440	0.601	0.758	0.094	6.128	0.795
Elixhauser Sum	1.802	0.501	6.482	0.367	1.087	0.489	2.417	0.837
Time								
Preop								
<4 Weeks								
>=4, <10 Weeks								
>10 Weeks								
Observations	31				43			
Margins								
ACDF								
CF								
Contrasts								
CF vs. ACDF								
Regressions	Days to Resolve Pain				Days to Resolve Symptoms			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF	reference				reference			
CF	0.795	0.409	1.545	0.499	0.790	0.373	1.671	0.537
Age	0.998	0.960	1.037	0.915	0.990	0.947	1.035	0.657
Gender								
Female	reference				reference			
Male	1.439	0.631	3.285	0.387	1.702	0.615	4.707	0.306
Race -- Ethnicity								
Caucasian	reference				reference			
African American	0.728	0.293	1.809	0.494	1.183	0.458	3.059	0.728
BMI (kg/m ²)	0.998	0.945	1.055	0.948	1.031	0.971	1.095	0.316
Smoking								
Current Smoker	reference				reference			
Never or Former Smoked	0.972	0.379	2.497	0.954	1.755	0.490	6.288	0.388
Level Count								
Level count: 1	reference				reference			
Level count: 2	1.036	0.524	2.048	0.919	1.326	0.618	2.846	0.469
Elixhauser Sum	0.971	0.716	1.317	0.851	1.029	0.720	1.472	0.874

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Appendix 1: (Continued)								
Regressions	Days to Resolve Pain				Days to Resolve Symptoms			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Preop								
<4 Weeks								
>=4, <10 Weeks								
>10 Weeks								
Observations	61				61			
Margins								
ACDF								
CF								
Contrasts								
CF vs. ACDF								
Regressions	Days to Resolve Weakness				Days to Resolve Paresthesia			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF		reference				reference		
CF	0.937	0.392	2.239	0.883	0.796	0.379	1.675	0.548
Age	0.989	0.935	1.045	0.694	0.995	0.952	1.039	0.807
Gender								
Female		reference				reference		
Male	1.043	0.395	2.753	0.933	1.292	0.561	2.976	0.547
Race -- Ethnicity								
Caucasian		reference				reference		
African American	0.693	0.248	1.936	0.484	1.021	0.385	2.708	0.966
BMI (kg/m ²)	0.996	0.932	1.065	0.908	1.031	0.967	1.100	0.353
Smoking								
Current Smoker		reference				reference		
Never or Former Smoked	1.154	0.281	4.739	0.843	0.929	0.327	2.639	0.890
Level Count								
Level count: 1		reference				reference		
Level count: 2	0.857	0.270	2.720	0.793	0.931	0.405	2.136	0.865
Elixhauser Sum	1.052	0.742	1.491	0.776	1.052	0.768	1.440	0.753
Time								
Preop								
<4 Weeks								
>=4, <10 Weeks								
>10 Weeks								
Observations	31				43			
Margins								
ACDF								
CF								
Contrasts								
CF vs. ACDF								

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Appendix 1: (Continued)								
Regressions	PROMIS PF				PROMIS PI			
	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF		reference				reference		
CF	-2.035	-5.146	1.077	0.200	2.020	-1.070	5.111	0.200
Age	0.130	-0.060	0.320	0.179	-0.099	-0.288	0.089	0.302
Gender								
Female		reference				reference		
Male	4.952	1.430	8.474	0.006	-4.020	-7.515	-0.526	0.024
Race -- Ethnicity								
Caucasian		reference				reference		
African American	-1.649	-5.475	2.176	0.398	1.212	-2.575	4.998	0.530
BMI (kg/m ²)	0.036	-0.235	0.307	0.792	-0.088	-0.356	0.181	0.522
Smoking								
Current Smoker		reference				reference		
Never or Former Smoked	5.870	1.655	10.085	0.006	-5.293	-9.508	-1.078	0.014
Level Count								
Level count: 1		reference				reference		
Level count: 2	-0.486	-3.769	2.797	0.772	-0.295	-3.552	2.962	0.859
Elixhauser Sum	-0.736	-2.039	0.567	0.268	0.488	-0.805	1.780	0.460
Time								
Preop		reference				reference		
<4 Weeks	-2.205	-4.818	0.408	0.098	-2.768	-5.605	0.070	0.056
>=4, <10 Weeks	5.220	2.745	7.696	0.000	-8.855	-11.513	-6.197	0.000
>10 Weeks	4.499	2.162	6.835	0.000	-4.601	-7.114	-2.088	0.000
Observations	180				179			
Margins								
ACDF								
CF								
Contrasts								
CF vs. ACDF								
Regressions	PROMIS DE				PROMIS PF Improvement			
	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF		reference				reference		
CF	3.011	-1.262	7.285	0.167	-2.034	-4.377	0.309	0.089
Age	-0.282	-0.541	-0.023	0.033	0.005	-0.137	0.147	0.946
Gender								
Female		reference				reference		
Male	-5.601	-10.432	-0.771	0.023	1.650	-0.987	4.286	0.220
Race -- Ethnicity								
Caucasian		reference				reference		
African American	4.731	-0.549	10.011	0.079	-1.198	-4.053	1.657	0.411

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Appendix 1: (Continued)								
Regressions	PROMIS DE				PROMIS PF Improvement			
	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Smoking								
Current Smoker	reference				reference			
Never or Former Smoked	-3.068	-8.920	2.783	0.304	2.075	-1.054	5.204	0.194
Level Count								
Level count: 1	reference				reference			
Level count: 2	1.240	-3.283	5.763	0.591	-0.382	-2.843	2.080	0.761
Elixhauser Sum	1.334	-0.464	3.132	0.146	-0.209	-1.178	0.761	0.673
Time								
Preop	reference				reference			
<4 Weeks	-5.293	-7.757	-2.829	0.000	-1.841	-4.321	0.640	0.146
>=4, <10 Weeks	-4.728	-7.042	-2.413	0.000	5.318	2.965	7.671	9.40e-06
>10 Weeks	-3.707	-5.836	-1.577	0.001	5.025	2.795	7.256	0.000
Observations	172				180			
Margins					Estimate (T-Score)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
ACDF					2.95	1.38	4.52	0.000
CF					0.92	-0.77	2.60	0.286
Contrasts					Contrast (T-Score)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
CF vs. ACDF					-2.03	-4.38	0.31	0.089
Regressions	PROMIS PI Improvement				PROMIS DE Improvement			
	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF	reference				reference			
CF	-4.437	-6.722	-2.152	0.000	-1.870	-4.213	0.474	0.118
Age	0.058	-0.081	0.197	0.411	-0.111	-0.251	0.030	0.122
Gender								
Female	reference				reference			
Male	1.482	-1.081	4.045	0.257	0.861	-1.744	3.466	0.517
Race -- Ethnicity								
Caucasian	reference				reference			
African American	-3.746	-6.518	-0.974	0.008	-0.365	-3.195	2.465	0.800
BMI (kg/m ²)	0.254	0.056	0.452	0.012	0.089	-0.118	0.297	0.399
Smoking								
Current Smoker	reference				reference			
Never or Former Smoked	1.964	-1.121	5.048	0.212	2.206	-0.917	5.329	0.166
Level Count								
Level count: 1	reference				reference			
Level count: 2	-0.208	-2.606	2.190	0.865	-0.583	-3.030	1.864	0.640
Elixhauser Sum	-0.464	-1.408	0.480	0.335	-0.486	-1.447	0.475	0.322

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Appendix 1: (Continued)								
Regressions	PROMIS PI Improvement				PROMIS DE Improvement			
	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Est	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Preop	reference				reference			
<4 Weeks	2.992	0.330	5.654	0.028	5.857	3.525	8.188	0.000
>=4, <10 Weeks	8.868	6.369	11.368	3.55e-12	5.257	3.058	7.455	0.000
>10 Weeks	4.553	2.178	6.928	0.000	3.988	1.953	6.023	0.000
Observations	179				171			
Margins	Estimate (T-Score)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Estimate (T-Score)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
ACDF	5.62	4.10	7.14	0.000	3.95	2.39	5.52	0.000
CF	1.18	-0.47	2.84	0.160	2.08	0.39	3.77	0.016
Contrasts	Contrast (T-Score)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Contrast (T-Score)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
CF vs. ACDF	-4.44	-6.72	-2.15	0.000	-1.87	-4.21	0.47	0.118
Regressions	PROMIS PF MCID				PROMIS PI MCID			
	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery								
ACDF	reference				reference			
CF	0.455	0.156	1.325	0.149	0.154	0.045	0.524	0.003
Age	0.987	0.926	1.053	0.694	1.032	0.969	1.099	0.323
Gender								
Female	reference				reference			
Male	3.546	1.018	12.354	0.047	3.658	1.106	12.098	0.034
Race -- Ethnicity								
Caucasian	reference				reference			
African American	0.920	0.264	3.203	0.895	0.328	0.099	1.091	0.069
BMI (kg/m ²)	1.042	0.950	1.142	0.382	1.193	1.032	1.378	0.017
Smoking								
Current Smoker	reference				reference			
Never or Former Smoked	1.098	0.287	4.203	0.891	3.321	0.920	11.994	0.067
Level Count								
Level count: 1	reference				reference			
Level count: 2	0.773	0.258	2.310	0.644	1.172	0.411	3.340	0.766
Elixhauser Sum	0.767	0.490	1.201	0.246	0.856	0.568	1.291	0.458
Time								
Preop								
<4 Weeks	reference				reference			
>=4, <10 Weeks	4.849	1.297	18.130	0.019	4.053	1.089	15.090	0.037
>10 Weeks	5.398	1.584	18.395	0.007	1.917	0.598	6.140	0.273
Observations	116				115			
Margins	Estimate (Prob.)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Estimate (Prob.)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
ACDF	51.44	39.28	63.61	0.000	67.13	56.65	77.61	0.000

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Appendix 1: (Continued)								
Regressions	PROMIS PF MCID				PROMIS PI MCID			
	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Contrasts	Contrast (Prob.)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Contrast (Prob.)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
CF vs. ACDF	-14.04	-32.57	4.48	0.137	-31.28	-47.17	-15.38	0.000
Regressions	PROMIS DE MCID				Length of Stay, Negative Binomial			
	OR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery	reference				reference			
ACDF	0.506	0.058	4.419	0.538	0.670	0.416	1.078	0.099
CF	0.923	0.806	1.057	0.245	1.002	0.974	1.031	0.881
Age								
Gender	reference				reference			
Female	5.666	0.478	67.140	0.169	0.756	0.453	1.263	0.285
Male								
Race -- Ethnicity	reference				reference			
Caucasian	0.850	0.069	10.477	0.899	0.883	0.487	1.600	0.682
African American	1.019	0.847	1.225	0.843	1.004	0.964	1.047	0.832
BMI (kg/m ²)								
Smoking	reference				reference			
Current Smoker	0.438	0.027	7.132	0.562	0.942	0.497	1.784	0.854
Never or Former Smoked								
Level Count	reference				reference			
Level count: 1	1.117	0.122	10.224	0.922	1.137	0.694	1.862	0.610
Level count: 2	0.660	0.264	1.652	0.375	0.924	0.758	1.128	0.438
Elixhauser Sum	reference				reference			
Time	0.272	0.050	1.492	0.134				
Preop	0.180	0.031	1.043	0.056				
<4 Weeks								
>=4, <10 Weeks	109				64			
>10 Weeks								
Observations	Estimate (Prob.)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Estimate (Days)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Margins	46.69	31.76	61.62	0.000	1.41	0.98	1.84	0.000
ACDF	39.34	22.44	56.24	0.000	0.95	0.61	1.28	0.000
CF								
Contrasts	Contrast (Prob.)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Contrast (Days)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
CF vs. ACDF	-7.35	-30.42	15.72	0.532	-0.47	-1.02	0.09	0.099
Regressions	Operation Time, Negative Binomial				Length of Stay, Negative Binomial			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery	reference				reference			
ACDF	0.774	0.659	0.908	0.002	0.670	0.416	1.078	0.099
CF	0.994	0.985	1.004	0.256	1.002	0.974	1.031	0.881

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Appendix 1: (Continued)								
Regressions	Operation Time, Negative Binomial				Length of Stay, Negative Binomial			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Gender	reference				reference			
Female	1.173	0.973	1.413	0.095	0.756	0.453	1.263	0.285
Male								
Race -- Ethnicity	reference				reference			
Caucasian	0.926	0.756	1.134	0.458	0.883	0.487	1.600	0.682
African American	1.016	1.001	1.030	0.031	1.004	0.964	1.047	0.832
BMI (kg/m ²)								
Smoking	reference				reference			
Current Smoker	1.045	0.833	1.311	0.701	0.942	0.497	1.784	0.854
Never or Former Smoked								
Level Count	reference				reference			
Level count: 1	1.400	1.174	1.668	0.000	1.137	0.694	1.862	0.610
Level count: 2	1.049	0.980	1.124	0.168	0.924	0.758	1.128	0.438
Elixhauser Sum								
Time								
Preop								
<4 Weeks								
>=4, <10 Weeks	64				64			
>10 Weeks								
Observations	Estimate (Minutes)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Estimate (Days)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Margins	176.97	156.88	197.07	0.000	1.41	0.98	1.84	0.000
ACDF	136.92	121.44	152.40	0.000	0.95	0.61	1.28	0.000
CF								
Contrasts	Contrast (Minutes)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Contrast (Days)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
CF vs. ACDF	-40.05	-65.43	-14.67	0.002	-0.47	-1.02	0.09	0.099
Regressions	Number of X-Rays, Negative Binomial				Number of CTs, Negative Binomial			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery	reference				reference			
ACDF	0.097	0.055	0.173	0.000	0.338	0.063	1.804	0.204
CF	1.007	0.988	1.027	0.481	0.995	0.893	1.109	0.934
Age								
Gender	reference				reference			
Female	0.994	0.670	1.473	0.974	0.103	0.017	0.610	0.012
Male								
Race -- Ethnicity	reference				reference			
Caucasian	0.901	0.595	1.364	0.622	6.08e-08	0.000	.	0.995
African American	1.001	0.972	1.030	0.962	0.965	0.801	1.163	0.707
BMI (kg/m ²)								
Smoking	reference				reference			

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Appendix 1: (Continued)								
Regressions	Number of X-Rays, Negative Binomial				Number of CTs, Negative Binomial			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Never or Former Smoked								
Level Count	reference				reference			
Level count: 1	1.044	0.721	1.513	0.819	3.553	0.717	17.619	0.121
Level count: 2	0.952	0.825	1.099	0.501	0.815	0.499	1.333	0.416
Elixhauser Sum								
Time								
Preop								
<4 Weeks								
>=4, <10 Weeks	64				64			
>10 Weeks								
Observations	Estimate (Count)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Estimate (Count)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Margins	4.10	3.37	4.84	0.000	0.22	-0.01	0.44	0.059
ACDF	0.40	0.18	0.62	0.000	0.07	-0.01	0.16	0.095
CF								
Contrasts	Contrast (Count)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Contrast (Count)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
CF vs. ACDF	-3.70	-4.47	-2.93	0.000	-0.14	-0.40	0.11	0.265

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Appendix 1: (Continued)				
Regressions	Number of MRIs, Negative Binomial			
	IRR	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery	reference			
ACDF	0.625	0.216	1.809	0.386
CF	1.027	0.956	1.103	0.469
Age				
Gender	reference			
Female	0.214	0.070	0.656	0.007
Male				
Race -- Ethnicity	reference			
Caucasian	0.709	0.174	2.887	0.632
African American	0.925	0.823	1.039	0.188
BMI (kg/m ²)				
Smoking	reference			
Current Smoker	0.594	0.168	2.094	0.417
Never or Former Smoked				
Level Count	reference			
Level count: 1	1.452	0.478	4.405	0.511
Level count: 2	1.189	0.874	1.616	0.271
Elixhauser Sum				
Time				
Preop				
<4 Weeks				
>10 Weeks				
Observations	Estimate (Count)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Margins	0.33	0.11	0.55	0.003
ACDF	0.21	0.05	0.37	0.011
CF				
Contrasts	Contrast (Count)	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
CF vs. ACDF	-0.12	-0.41	0.16	0.390

OR: Odds ratio obtained with logistic regression, Est: Estimated probability obtained with linear regression, IRR: Incidence rate ratio obtained with negative binomial regression, CF: Cervical foraminotomy, ACDF: Anterior discectomy and fusion, CI: Confidence interval, PROMIS DE: Patient-reported outcomes measurement information system depression score, PROMIS PI: Patient-reported outcomes measurement information system pain interference score, PROMIS PF: Patient-reported outcomes measurement information system physical function score, MCID: Minimum clinically important difference

Appendix 2: Regression Results for Time to Improvement with Covariates

	PROMIS PF Time to MCID				PROMIS PI Time to MCID	
	Hazard Ratio	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value	Hazard Ratio	Lower CI ($\alpha=0.05$)
Surgery						
ACDF	reference				reference	
PCF	0.718	0.336	1.531	0.391	0.489	0.235
Age	1.008	0.953	1.065	0.792	1.033	0.980
Gender						
Female	reference				reference	
Male	2.523	0.814	7.824	0.109	2.799	1.122
Race -- Ethnicity						
Caucasian	reference				reference	
African American	1.162	0.434	3.107	0.765	0.700	0.283
BMI (kg/m ²)	1.053	0.985	1.126	0.133	1.095	1.029
Smoking						
Current Smoker	reference				reference	
Never or Former Smoked	0.603	0.225	1.620	0.316	0.814	0.337
Level Count						
Level count: 1	reference				reference	
Level count: 2	0.954	0.442	2.061	0.904	1.726	0.861
Elixhauser Sum	0.890	0.637	1.242	0.492	1.049	0.789
Observations	108				96	
PH Test	0.970				0.656	
	PROMIS PI Time to MCID		PROMIS DE Time to MCID			
	Upper CI ($\alpha=0.05$)	P-Value	Hazard Ratio	Lower CI ($\alpha=0.05$)	Upper CI ($\alpha=0.05$)	P-Value
Surgery						
ACDF			reference			
PCF	1.018	0.056	1.028	0.454	2.331	0.946
Age	1.089	0.225	0.976	0.925	1.030	0.376
Gender						
Female			reference			
Male	6.980	0.027	1.482	0.532	4.125	0.451
Race -- Ethnicity						
Caucasian			reference			
African American	1.730	0.440	1.078	0.399	2.914	0.883
BMI (kg/m ²)	1.165	0.004	1.032	0.963	1.106	0.370
Smoking						
Current Smoker			reference			
Never or Former Smoked	1.970	0.648	0.615	0.221	1.715	0.353
Level Count						
Level count: 1			reference			
Level count: 2	3.460	0.124	1.103	0.491	2.481	0.812
Elixhauser Sum	1.395	0.741	1.029	0.748	1.416	0.858
Observations			94			
PH Test			0.608			