Online Appendices
Online Appendix 1.

In a secondary analysis, we identified one moderation effect between predictors in the preliminary main effects model. In the LOS interaction model shown in **Online Supplemental Table 2**, the main effect of generalized anxiety disorder (GAD) on ED utilization is moderated by hospital LOS (z=-2.82, p=0.005). AUC statistics and a likelihood ratio test (X^2(1)=13.16, p<0.001) suggest that the LOS interaction model provides a better fit than the preliminary main effects model.

In the LOS interaction model, number of trauma types, GAD and hospital LOS continued to predict ED utilization. As shown in **Online Supplemental Figure 1,** the LOS interaction model predicts that patients with no documented trauma have a 5% risk of ED utilization, while patients with 5 documented types of trauma have a 78% risk of ED utilization (a >16-fold increased risk), when holding LOS constant at the observed mean of 14.2 days, in patients with no GAD diagnosis.

As **Online Supplemental Figure 2** demonstrates, GAD moderates the effect of hospital LOS on ED utilization. Specifically, the model predicts that the risk of ED utilization within 30 days of discharge is 2% for patients without a GAD diagnosis and hospital LOS of 1 day, while that risk increases to 95% in patients without a GAD diagnosis and a hospital LOS of 70 days when holding number of trauma types constant at the mean. When holding number of trauma types constant at the mean, the risk of ED utilization within 30 days of discharge is 54% for patients with a GAD diagnosis and LOS of 1 day; this risk decreases to 2% in patients with a GAD diagnosis and an LOS of 70 days. Overall, these results indicate a clinically significant interaction; ED utilization decreases as LOS increases in patients with GAD, whereas this relationship is inverted in clinical subgroups without GAD.

After identifying that GAD moderated the association between LOS and ED utilization, we formulated the *post hoc* hypothesis that GAD might also moderate the association between discharge disposition and ED utilization. This was confirmed by the data (z=-1.98, p=0.048). The interaction between discharge disposition and GAD in the PHP interaction model is illustrated in **Online Supplemental Figure 3**. In the PHP interaction model, patients with a GAD diagnosis who are discharged to home with outpatient therapy have an elevated (51%) risk of ED utilization as compared to those without GAD (8% risk). However, if discharged to home with participation in a PHP, patients with GAD have a 17% risk of ED utilization compared to patients without GAD who have a 15% risk.

Online Supplemental Table 1. Univariate predictors of emergency department utilization within 30 days of discharge

	n	Odds Ratio	OR 95% C.I.			z value	p-value
Demographics							
Sex (reference: male)	116	1.82	1.02	-	3.26	0.85	0.393
Age at admission		1.09	0.96	-	1.23	0.36	0.721
Caucasian (reference: other ethnicities)	115	1.89	1.06	-	3.39	0.93	0.354
Adopted (reference: not adopted)	13	2.67	1.40	-	5.10	1.67	0.095
Admission							
Admitted for harm to self	120	+inf	0.00	-	+inf	0.01	0.989
Admitted for harm to others	26	0.46	0.21	-	1.01	-0.94	0.350
Admitted for functional decline	114	0.63	0.38	-	1.04	-0.90	0.369
History of head injury (reference: no head injury)	20	1.01	0.52	-	1.99	0.01	0.992
Total reported trauma types		1.64	1.30	-	2.06	2.16	0.031
Treatment							
Length of hospital stay		1.04	1.03	-	1.06	2.70	0.007
Partial hospitalization program (reference: no PHP)	68	0.94	0.60	-	1.47	0.18	0.856
Diagnosis							
Mood disorder NOS	18	2.39	1.34	-	4.27	1.49	0.137
Bipolar disorder	14	0.83	0.37	-	1.83	-0.14	0.886
Depressive disorder	94	0.88	0.55	-	1.41	-0.33	0.743
Anxiety disorder	59	1.21	0.77	-	1.89	0.37	0.709
Obsessive-compulsive disorder	7	2.29	0.96	-	5.46	0.95	0.344
Eating disorder	8	0.00	0.00	-	+inf	-0.01	0.991
Schizophrenia or psychotic disorder	2	0.00	0.00	-	+inf	-0.01	0.989
Substance abuse	4	1.86	0.57	-	6.02	0.52	0.605
Neurodevelopmental disorder	38	0.36	0.19	-	0.69	-1.49	0.137
ADHD	27	0.37	0.17	-	0.79	-1.26	0.207
DMDD	6	2.89	1.18	-	7.07	1.17	0.240
Generalized anxiety disorder	22	3.35	2.02	-	5.56	2.20	0.028
Panic disorder	5	0.00	0.00	-	+inf	-0.01	0.989
PTSD	8	1.61	0.70	-	3.71	0.74	0.457
Autism spectrum disorder	11	0.00	0.00	-	+inf	-0.01	0.989
BPRS-C							
Behavior problems		1.09	1.02	-	1.16	1.22	0.223
Depression		1.01	0.94	-	1.07	0.15	0.882
Thinking disturbance		0.85	0.72	-	1.00	-0.89	0.375
Psychomotor		0.94	0.85	-	1.03	-0.48	0.634
Withdrawal		0.99	0.92	-	1.06	0.19	0.852
Anxiety		1.03	0.96	-	1.11	0.43	0.668
Organicity		0.00	0.00	-	+inf	-0.01	0.991

Note: *p<.05

<u>Online Supplemental Table 2</u>. Multivariate logistic regression interaction models predicting emergency department utilization
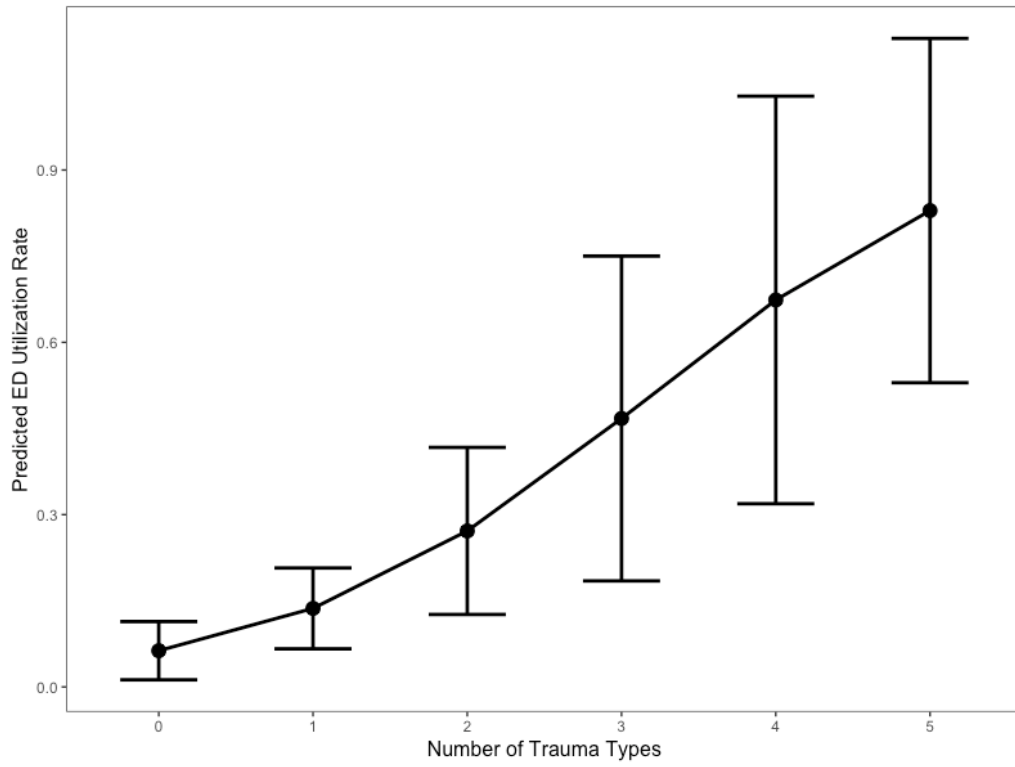
	Odds Ratio	95% C.I.		Z	p-value	AIC	-2LL	AUC	df
		Predictor Statistics				Model Statistics			
LOS Interaction model (n=141)						101.70	-45.85	0.75	136
Number of trauma types	2.35	1.80 -	3.08	3.18	0.001				
GAD	58.69	19.89 -	173.16	3.76	0.000				
LOS	1.10	1.07 -	1.13	3.80	0.000				
LOS*GAD	0.86	0.81 -	0.90	-2.82	0.005				
Intercept	0.01	0.01 -	0.03	-5.95	0.001				
Post hoc interaction model (n=141)						118.02	-54.01	0.69	136
Number of trauma types	1.80	1.41 -	2.29	2.43	0.015				
GAD	11.83	5.32 -	26.31	3.09	0.002				
PHP	2.05	1.14 -	3.68	1.22	0.222				
PHP*GAD	0.10	0.03 -	0.32	-1.98	0.048				
Intercept	0.06	0.03 -	0.10	-5.25	0.001				

*GAD = Generalized anxiety disorder; LOS = Length of Stay; PHP = Partial hospitalization program
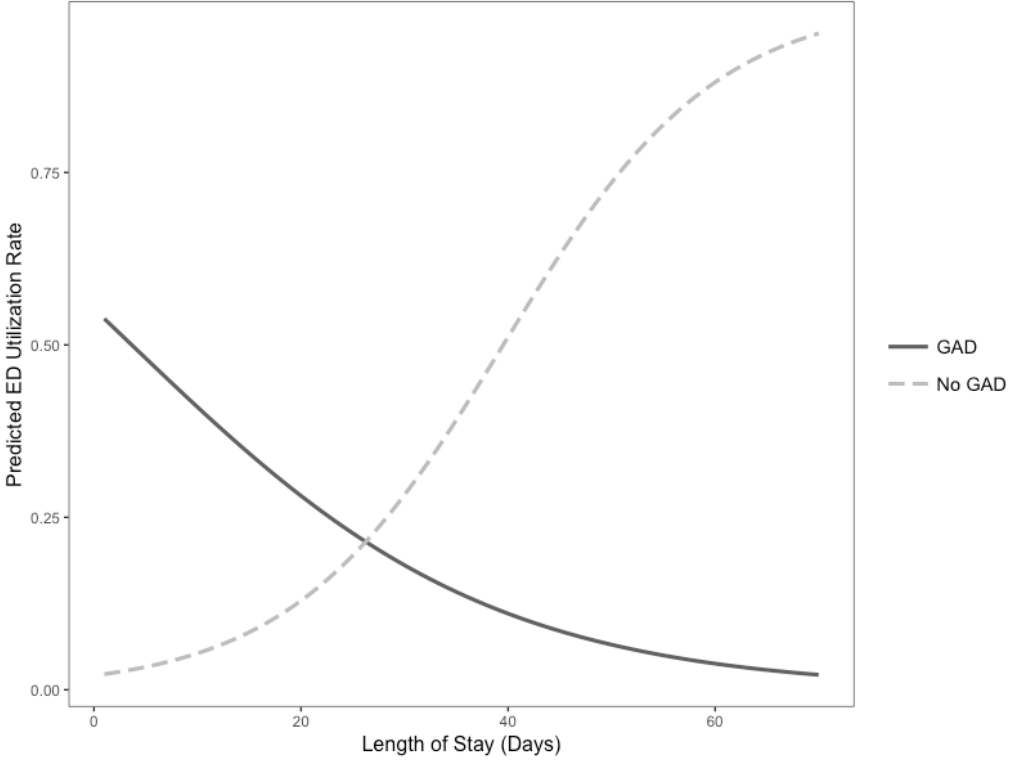
Online Supplemental Table 3. Characteristics of study sample by 30 day completion status

	Complete 30 day survey (n=155)					Incomplete 30 day survey (n=87)					t or X^2	p-value
	n	**%**	**Min**	**Median**	**Max**	**n**	**%**	**Min**	**Median**	**Max**		
Demographic												
Female	116	75%				62	71%				0.21	0.651
Age			8	15	18			7	16	18	0.29	0.770
Caucasian	115	74%				54	62%				3.33	0.068
Black	5	3%				7	8%				1.82	0.177
Asian	8	5%				7	8%				0.38	0.538
Hispanic	7	5%				6	7%				1.18	0.278
Other	9	6%				8	9%				0.53	0.467
Not documented	17	11%				8	9%				0.05	0.830
Adopted	13	8%				8	9%				0.00	1.000
Admission												
Admitted for risk to self	140	90%				74	85%				0.61	0.435
Admitted risk to others	26	17%				11	13%				0.37	0.545
Admitted for functional decline	114	74%				53	61%				3.00	0.083
Number of trauma types			0	1	4			0	0	6	-0.20	0.840
Diagnosis												
Mood disorder	140	90%				72	83%				2.28	0.131
Depressive disorder	107	69%				49	56%				3.39	0.065
Anxiety disorder	65	42%				28	32%				1.85	0.174
Generalized anxiety disorder (GAD)	25	16%				14	16%				0.00	1.000
Comorbid GAD and mood	22	14%				11	14%				0.02	0.887
Neurodevelopmental	40	26%				14	16%				2.50	0.114
Treatment												
Length of stay			1	11	70			2	9	85	-1.23	0.219

Online Supplemental Figure 1. **Number of trauma types predicting emergency department utilization within 30 days with 95% confidence intervals. (LOS interaction model.)**

Online Supplemental Figure 2. GAD moderating Length of stay (in days) on emergency department utilization within 30 days. (LOS interaction model.)

Online Supplemental Figure 3. Discharge disposition moderating GAD on emergency department utilization within 30 days with 95% confidence intervals. (Post hoc interaction model)