

Table DS1 Descriptive statistics of modelled variables with univariate associations with self-harm rates												
Variable	Source	Type	Mean or %	(s.d.)	Lowest	Highest	Univariate association with self-harm ^a			Standardised to ward size	Level entered	Entered as z-score
							<i>r</i>	<i>P</i>				
Patient domain												
Proportion of admissions male	PCC-SR	Numeric	0.49	0.26	0.00	1.00	-0.152	0.078		No	Ward	Yes
Proportion of admissions with schizophrenia	PCC-SR	Numeric	0.32	0.15	0.05	0.81	-0.034	0.696		No	Ward	Yes
Proportion of admissions under 35 years of age	PCC-SR	Numeric	0.47	0.13	0.11	0.87	0.375	<0.001		No	Ward	Yes
Proportion of admissions detained under Mental Health Act	PCC-SR	Numeric	0.30	0.15	0.03	0.74	0.302	<0.001		No	Ward	Yes
Proportion of patients admitted for risk of harm to self	PCC-SR	Numeric	0.61	0.12	0.19	1.00	0.015	0.867		No	Ward	Yes
Proportion of patients admitted for risk of harm to others	PCC-SR	Numeric	0.32	0.15	0.06	0.75	0.354	<0.001		No	Ward	Yes
Proportion of admissions White	PCC-SR	Numeric	0.67	0.25	0.18	1.00	-0.581	<0.001		No	Ward	Yes
Proportion of admissions Irish	PCC-SR	Numeric	0.03	0.05	0.00	0.22	0.291	0.001		No	Ward	Yes
Proportion of admissions Caribbean	PCC-SR	Numeric	0.11	0.12	0.00	0.46	0.640	<0.001		No	Ward	Yes
Proportion of admissions African	PCC-SR	Numeric	0.05	0.07	0.00	0.31	0.411	<0.001		No	Ward	Yes
Proportion of admissions Asian	PCC-SR	Numeric	0.07	0.07	0.00	0.31	0.167	0.052		No	Ward	Yes
Proportion of admissions other ethnicity	PCC-SR	Numeric	0.05	0.06	0.00	0.33	0.273	0.001		No	Ward	Yes
Index of Multiple Deprivation	PCC-SR	Numeric	33.68	12.08	11.30	69.73	-0.012	0.888		No	Ward	Yes
Social Fragmentation Index	PCC-SR	Numeric	0.55	0.64	-0.51	2.45	0.200	0.020		No	Ward	Yes
Patient approval of containment	ACMQ	Numeric	35.33	2.69	25.40	42.33	-0.304	<0.001		No	Ward	Yes
Service environment domain												
Admissions during shift	PCC-SR	Numeric	0.35	0.65	0.00	3.00	0.109	<0.001		No	Shift	Yes
Rate of admissions per day	Ward manager	Numeric	0.71	0.33	0.17	2.50	0.217	0.011		No	Ward	Yes
Ward served by crisis intervention team	Ward manager	Categorical	65%				0.141	0.103		No	Ward	No
Ward served by home treatment team	Ward manager	Categorical	52%				-0.134	0.119		No	Ward	No
Ward served by assertive outreach team	Ward manager	Categorical	82%				-0.051	0.553		No	Ward	No
Ward served by early intervention team	Ward manager	Categorical	45%				0.032	0.716		No	Ward	No
Number of beds (ward size)	Ward manager	Numeric	21.05	3.79	11.00	30.00	-0.339	<0.001		No	Ward	Yes
Number of patients with length of stay >3 months	Ward manager	Numeric	4.50	3.58	0.00	15.00	-0.144	0.095		No	Ward	Yes
Psychiatric intensive care unit access	Ward manager	Categorical	86%				0.035	0.686		No	Ward	No
Seclusion room access	Ward manager	Categorical	51%				-0.024	0.784		No	Ward	No
Physical environment domain												
Proportion of beds in single rooms	Researcher	Numeric	0.51	0.36	0.00	1.00	0.289	0.001		No	Ward	Yes
Windows in doors of single rooms (some or all)	Researcher	Categorical	91%				0.069	0.423		No	Ward	No
Index of Ward Observability	Researcher	Numeric	9.10	3.32	3.00	26.00	-0.112	0.193		No	Ward	Yes
Physical environment quality	Researcher	Numeric	35.64	3.80	25.00	44.00	-0.145	0.093		No	Ward	Yes
Patient routines domain												
Community meetings held regularly	Ward manager	Categorical	87%				0.044	0.613		No	Ward	No
Number of sessions of planned patient activity/week	Ward manager	Numeric	7.75	6.7	0	30	0.037	0.678		No	Ward	Yes

Table DS1 (continued)												
Variable	Source	Type	Mean or %	(s.d.)	Lowest	Highest	Univariate association with self-harm ^a		Standardised to ward size	Level entered	Entered as z-score	
							<i>r</i>	<i>P</i>				
Conflict domain												
Verbal aggression	PCC-SR	Numeric	0.77	1.50	0.00	18.33	0.007	0.127	Yes	Shift	Yes	
Physical aggression against objects	PCC-SR	Numeric	0.15	0.57	0.00	15.71	0.028	<0.001	Yes	Shift	Yes	
Physical aggression against others	PCC-SR	Numeric	0.11	0.51	0.00	14.29	0.029	<0.001	Yes	Shift	Yes	
Smoking in non-smoking area	PCC-SR	Numeric	0.82	1.64	0.00	15.71	0.025	<0.001	Yes	Shift	Yes	
Refusing to eat	PCC-SR	Numeric	0.29	0.58	0.00	10.48	-0.003	0.469	Yes	Shift	Yes	
Refusing to drink	PCC-SR	Numeric	0.13	0.43	0.00	11.58	-0.006	0.181	Yes	Shift	Yes	
Refusing to attend to personal hygiene	PCC-SR	Numeric	0.42	0.86	0.00	10.48	-0.004	0.334	Yes	Shift	Yes	
Refusing to get out of bed	PCC-SR	Numeric	0.22	0.61	0.00	13.75	-0.010	0.038	Yes	Shift	Yes	
Refusing to go to bed	PCC-SR	Numeric	0.15	0.52	0.00	11.00	0.010	0.030	Yes	Shift	Yes	
Refusing to see workers	PCC-SR	Numeric	0.06	0.31	0.00	13.75	0.023	<0.001	Yes	Shift	Yes	
Alcohol misuse (suspected or confirmed)	PCC-SR	Numeric	0.11	0.39	0.00	9.00	0.008	0.081	Yes	Shift	Yes	
Substance misuse (suspected or confirmed)	PCC-SR	Numeric	0.10	0.40	0.00	9.57	0.002	0.686	Yes	Shift	Yes	
Attempting to abscond	PCC-SR	Numeric	0.22	0.70	0.00	12.22	0.012	0.008	Yes	Shift	Yes	
Absconding (missing without permission)	PCC-SR	Numeric	0.10	0.36	0.00	10.00	0.020	<0.001	Yes	Shift	Yes	
Absconding (official report)	PCC-SR	Numeric	0.06	0.27	0.00	6.00	0.020	<0.001	Yes	Shift	Yes	
Refused regular medication	PCC-SR	Numeric	0.29	0.56	0.00	13.75	0.003	0.532	Yes	Shift	Yes	
Refused PRN medication	PCC-SR	Numeric	0.10	0.35	0.00	10.00	0.002	0.615	Yes	Shift	Yes	
Demanding PRN medication	PCC-SR	Numeric	0.37	0.83	0.00	11.11	0.004	0.351	Yes	Shift	Yes	
Containment domain												
Banned items	Ward manager	Numeric	34.88	4.24	25.00	48.00	0.174	0.043	No	Ward	Yes	
Searching intensity	Ward manager	Numeric	15.21	1.93	11.00	22.00	0.203	0.018	No	Ward	Yes	
Restrictions on patients	Ward manager	Numeric	16.79	3.20	11.00	24.00	0.082	0.345	No	Ward	Yes	
Drug/alcohol sensitivity and monitoring	Ward manager	Numeric	20.60	2.44	14.00	28.00	0.035	0.682	No	Ward	Yes	
Door security	Ward manager	Numeric	7.65	1.24	6.00	12.00	0.128	0.139	No	Ward	Yes	
Alarms	Ward manager	Numeric	11.54	1.54	8.00	14.00	0.162	0.059	No	Ward	Yes	
Guards	Ward manager	Numeric	2.49	0.64	2.00	4.00	-0.014	0.868	No	Ward	Yes	
CCTV used on ward	Ward manager	Categorical	15%				0.131	0.127	No	Ward	No	
CCTV used on unit	Ward manager	Categorical	29%				0.142	0.098	No	Ward	No	
PRN medication	PCC-SR	Numeric	0.72	1.04	0.00	12.22	0.032	<0.001	Yes	Shift	Yes	
Intramuscular medication (enforced)	PCC-SR	Numeric	0.05	0.22	0.00	4.29	0.017	<0.001	Yes	Shift	Yes	
Sent to psychiatric intensive care unit or area	PCC-SR	Numeric	0.01	0.13	0.00	6.67	0.005	0.258	Yes	Shift	Yes	
Seclusion	PCC-SR	Numeric	0.02	0.19	0.00	10.53	0.010	0.035	Yes	Shift	Yes	
Special observation (intermittent)	PCC-SR	Numeric	1.70	2.40	0.00	13.75	-0.047	<0.001	Yes	Shift	Yes	
Special observation (constant with engagement)	PCC-SR	Numeric	0.35	0.73	0.00	11.25	0.004	0.357	Yes	Shift	Yes	
Special observation (constant without engagement)	PCC-SR	Numeric	0.09	0.51	0.00	15.71	-0.001	0.776	Yes	Shift	Yes	
Show of force	PCC-SR	Numeric	0.09	0.44	0.00	12.22	0.018	<0.001	Yes	Shift	Yes	
Manually restrained	PCC-SR	Numeric	0.06	0.32	0.00	13.75	0.023	<0.001	Yes	Shift	Yes	
Time out	PCC-SR	Numeric	0.10	0.55	0.00	12.94	0.023	<0.001	Yes	Shift	Yes	

(continued)

Table DS1 (continued)

Variable	Source	Type	Mean or %	(s.d.)	Lowest	Highest	Univariate association with self-harm ^a			Standardised to ward size	Level entered	Entered as z-score
							<i>r</i>	<i>P</i>				
Staff demographics domain												
Regular qualified nurses on duty	PCC-SR	Numeric	1.99	0.96	0.00	7.27	0.012	0.008		Yes	Shift	Yes
Regular unqualified nurses on duty	PCC-SR	Numeric	1.55	0.99	0.00	6.67	-0.026	<0.001		Yes	Shift	Yes
Bank/agency qualified nurses on duty	PCC-SR	Numeric	0.33	0.66	0.00	6.67	0.045	<0.001		Yes	Shift	Yes
Bank/agency unqualified nurses on duty	PCC-SR	Numeric	0.65	0.90	0.00	6.67	-0.013	0.007		Yes	Shift	Yes
Student nurses on duty	PCC-SR	Numeric	0.33	0.73	0.00	9.09	0.019	<0.001		Yes	Shift	Yes
Consultant psychiatrists in post	Ward manager	Numeric	3.40	1.94	0.00	11.00	-0.011	0.899		No	Ward	Yes
Other doctors in post	Ward manager	Numeric	3.70	3.43	0.00	21.00	0.004	0.966		No	Ward	Yes
Occupational therapists in post	Ward manager	Numeric	0.67	0.83	0.00	4.00	0.110	0.204		No	Ward	Yes
Clinical psychologists in post	Ward manager	Numeric	0.13	0.38	0.00	2.00	0.200	0.020		No	Ward	Yes
Number of consultant psychiatrist locums	Ward manager	Numeric	0.71	0.95	0.00	5.00	-0.235	0.006		No	Ward	Yes
Nursing vacancy rate	Ward manager	Numeric	0.15	0.12	-0.28	0.48	0.098	0.255		No	Ward	Yes
Proportion of staff male	MBI	Numeric	0.35	0.20	0.00	0.86	0.259	0.002		No	Ward	Yes
Proportion of staff over 30 years of age	MBI	Numeric	0.76	0.16	0.22	1.00	0.165	0.055		No	Ward	Yes
Proportion of staff White	MBI	Numeric	0.63	0.35	0.00	1.00	-0.566	<0.001		No	Ward	Yes
Proportion of staff Irish	MBI	Numeric	0.03	0.06	0.00	0.29	0.109	0.208		No	Ward	Yes
Proportion of staff African	MBI	Numeric	0.18	0.24	0.00	1.00	0.476	<0.001		No	Ward	Yes
Proportion of staff Caribbean	MBI	Numeric	0.05	0.09	0.00	0.46	0.311	<0.001		No	Ward	Yes
Proportion of staff Asian	MBI	Numeric	0.03	0.08	0.00	0.57	0.222	0.009		No	Ward	Yes
Proportion of staff other ethnicity	MBI	Numeric	0.08	0.12	0.00	0.67	0.278	0.001		No	Ward	Yes
Staff group and attitude domain												
Mean MLQ score	MLQ	Numeric	9.09	1.44	3.75	13.10	0.075	0.386		No	Ward	Yes
Mean TCI score	TCI	Numeric	3.58	0.37	2.62	4.73	0.175	0.042		No	Ward	Yes
Mean WAS score	WAS	Numeric	6.58	0.92	4.18	8.54	0.264	0.002		No	Ward	Yes
(programme clarity and order and organisation)												
WAS score (staff control)	WAS	Numeric	1.76	0.76	0.14	4.34	0.197	0.022		No	Ward	Yes
APDQ (total score)	APDQ	Numeric	20.22	1.55	16.56	26.50	0.134	0.119		No	Ward	Yes
Mean MBI Score	MBI	Numeric	11.80	3.49	4.69	23.58	0.117	0.176		No	Ward	Yes
(emotional exhaustion and depersonalisation)												
MBI score (personal accomplishment)	MBI	Numeric	35.77	3.06	28.09	45.14	0.166	0.054		No	Ward	Yes
Mean ACMQ	ACMQ	Numeric	39.51	1.82	34.80	43.73	-0.018	0.834		No	Ward	Yes
ACMQ, Attitude to Containment Measures Questionnaire; APDQ, Attitude to Personality Disorder Questionnaire; CCTV, closed-circuit television; MBI, Maslach Burnout Inventory; MLQ, Multifactor Leadership Questionnaire; PCC-SR, Patient-staff Conflict Checklist - Shift Report; PRN, prescription required as needed; TCI, team Climate Inventory; WAS, Ward Atmosphere Scale. a. Pearson correlation of standardised rate of self-harm with standardised variables where applicable.												