

Introduction

- Extended length of stay (eLOS) is defined as being hospitalized for over seven days, and it has proven to be higher in mental disorders compared to other conditions.¹
- The United States records a mean length of stay of 8.2 days within psychiatry but is around 4.6 days for all other diagnoses.¹
- Extended length of stay can lead to numerous negative consequences within psychiatric units such as increased closure of psychiatric hospital beds and patient dissatisfaction.²
- Previous studies linked eLOS to demographic and clinical factors (in Figure 1), but there is inadequate information in the United States with large sample size.³
- We hypothesize that inpatients will experience an extended length of stay if they lack social support such as unemployment and homelessness, experience psychosis, and belong to minority groups such as female and low-income groups.

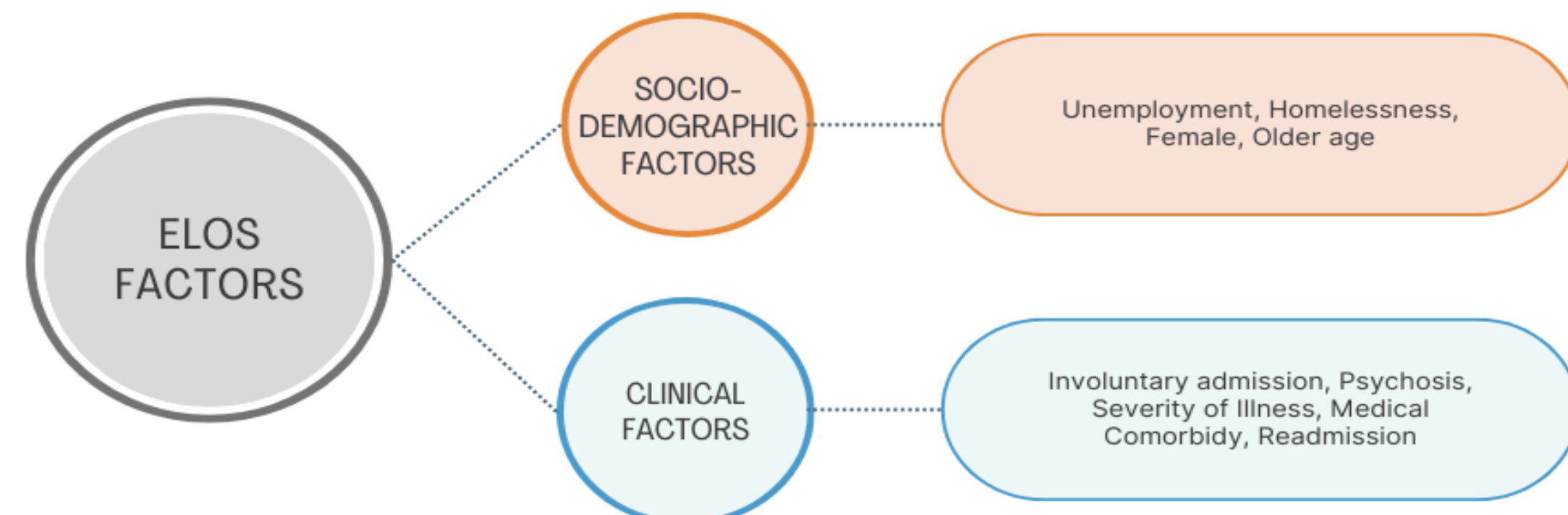


Figure 1. Flowchart illustrating factors that contribute to eLOS

Methods

Study Design and Participants. This is a cross-sectional, observational study analyzing retrospective data using patient records obtained from Kekela, an inpatient psychiatric unit, at Queen's Medical Center. The study population consisted of adult patients (ages 18+) who were admitted into the Inpatient Psychiatry Unit between January 2019 and December 2023. Participants were excluded from the analysis if the given information contained missing data when analyzing that certain variable.

Data. The patient data used in this study was extracted from CareLink Epic, an electronic medical record system, in which the data was recorded by providers. The extraction was done in collaboration with the Queen's Health System analytics team, Analytic Center of Excellence (ACE) using an SQL coding method.

STATA Analysis. A summary of the sociodemographic characteristics and clinical characteristics of the study population were created using descriptive statistics. Continuous variables were reported as means with standard deviation, while frequencies and percentages were used for categorical variables. A comparative analysis was conducted between bivariate data using t-test for categorical data presenting with only two categories and one way ANOVA tests for variables with three or more categories. The post-hoc test, Scheffe's Test was used.

Ethical Considerations. Prior to commencement, the study protocol was reviewed and approved by the Research and Institutional Review Committee (RIRC) of the health system from which patient records were sourced. Ethical principles and guidelines were carefully followed throughout the duration of the study. Efforts were made to ensure the confidentiality and privacy of each patient as the data that was used in this study was Non-PHI. Given the retrospective nature of the study and the use of de-identified patient data, the requirement for informed consent and HIPAA considerations for data collection were waived by the IRB.

SOCIO-DEMOGRAPHIC		CLINICAL	
Sex		has PCP	
Financial Class		Intellectual Disability	
Age		Psychosis	
Education		CSSRS	
Marital Status		Illicit Drug Use	
Race		Ethanol Use	
Employment		Psychotherapeutics	
Houselessness		Cannabis	

Figure 2. Categorical diagram of all covariates being analyzed

Results

Figure 3. Length of Stay by Sociodemographic Characteristics of Study Population, N=17,257

Sociodemographic Characteristics	Mean(SD)	p-value
Sex, n=17,254		0.005*
Female	5.7(11.7)	
Male	5.2(12.9)	
Age, n=17,257		
18-24	4.2(6.2)	<0.0001*
25-34	4.4(8.7)	
35-44	4.6(11.2)	
45-54	5.4(9.7)	
55-64	7.3(19.3)	
65+	10.5(21.3)	
Employment, n=17,017		<0.0001*
Full-time	3.5(5.4)	
Part-time	3.8(4.7)	
Retired	9.2(19.8)	
Not employed	5.7(13.1)	
Race, n=17,254		<0.0001*
American Indian or Alaska Native	4.9(5.3)	
Asian	6.3(10.9)	
Black or African American	4.9(10.2)	
Native Hawaiian/Other Pacific Islander	5.2(13.0)	
White	5.0(13.6)	
Not Reported	4.4(7.0)	
Marital Status, n=17,060		0.03*
Married	5.1(11.1)	
Divorced/Separated	5.6(10.3)	
Single	5.4(13.0)	
Widowed	7.1(12.2)	
Other	2.8(1.6)	
Houselessness, n=17,247		0.006*
Yes	6.1(15.9)	
No	5.3(11.4)	
Medicaid/Medicare, n=17,257		<0.0001*
Yes	5.9(13.7)	
No	4.0(6.8)	

Note: Missing is not reported on this table, but the n differs for each variable. The statistics are displayed in days. *p-value<0.05, t-test and ANOVA were used to calculate statistical significance

Figure 4. Length of Stay in days by Clinical Characteristics of Study Population

Clinical Characteristics	Mean(SD)	p-value
Has PCP ^b , n=17,257		<0.0001*
Yes	5.6(13.2)	
No	4.5(7.6)	
Intellectual Disability, n=17,257		0.002*
Yes	9.0(1.2)	
No	5.3(11.6)	
CSSRS ^c , n=8,350		<0.0001*
Low	7.2(16.8)	
Moderate	4.2(4.7)	
High	4.4(7.3)	
Use of Illicit Drugs ^d , n=10,671		<0.0001*
Yes	2.9(3.1)	
No	5.5(13.8)	
Cannabis, n=9,662		<0.0001*
Yes	3.9(4.9)	
No	6.2(16.6)	
Mood Stabilizers ^e , n=17,257		<0.0001*
Yes	7.6(12.1)	
No	5.4(12.4)	
Antidepressants ^e , n=17,257		<0.0001*
Yes	5.8(5.6)	
No	5.4(12.4)	
Anti-anxiety ^e , n=17,257		<0.0001*
Yes	9.0(18.6)	
No	5.2(11.7)	
Antipsychotics ^e , n=17,257		<0.0001*
Yes	7.2(15.0)	
No	3.3(7.6)	
Ethanol ^f , n=9,769		<0.0001*
Minor effect (<0.08)	2.7(2.8)	
Serious impairment (>0.07)	2.4(3.0)	
Traumatic effects (>0.30)	2.2(1.9)	
Negative	6.0(15.1)	

Note: Missing is not reported on this table, but the n differs for each variable. The statistics are displayed in days.

^a List of psychotherapeutics prescribed in current encounter

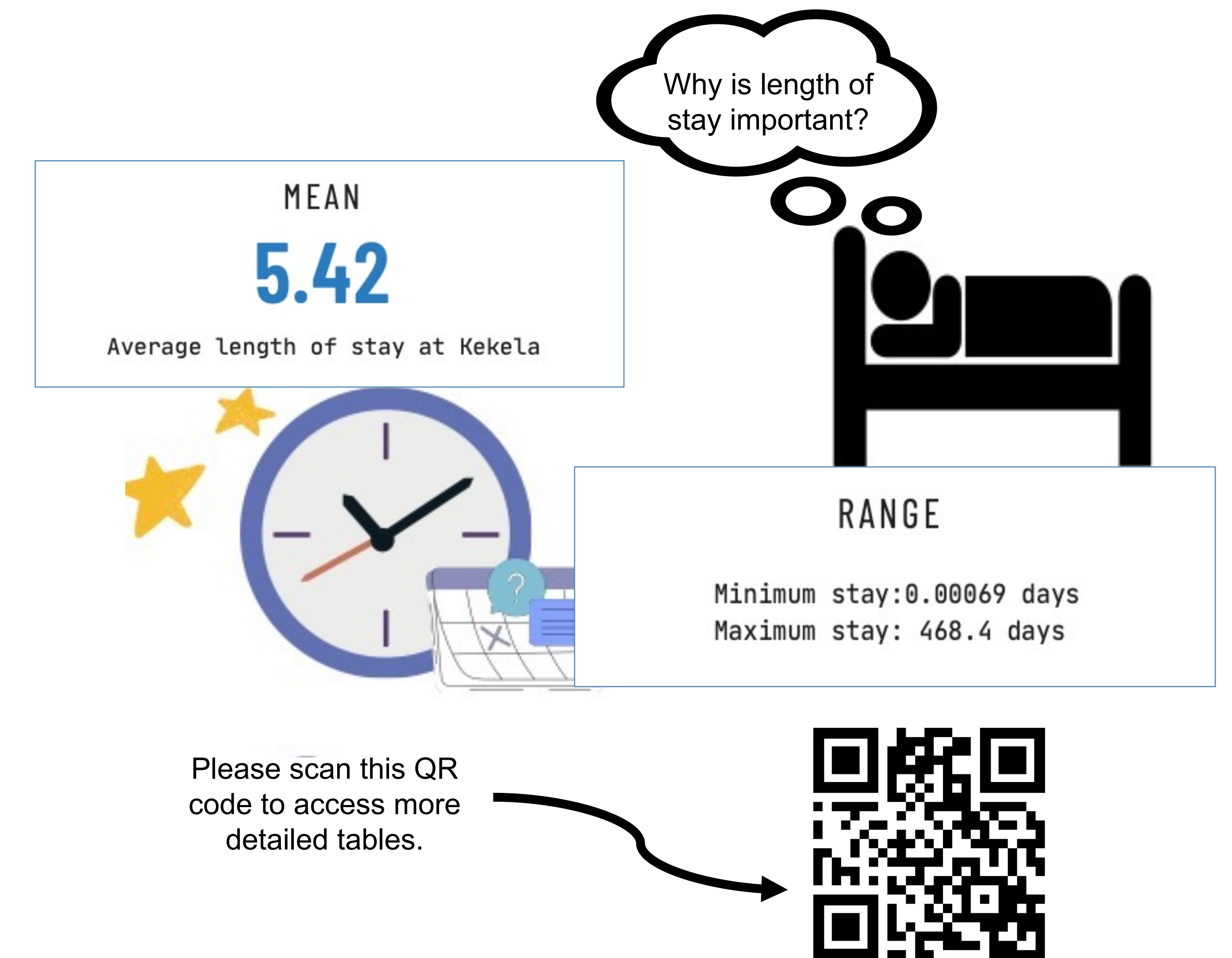
^b PCP= Primary Care Provider

^c Columbia Suicide Severity Rating Scale

^d Reflects the frequency and percentage of participants testing "positive" to any of the following types of drugs: amphetamine, barbiturate, benzodiazepine, cocaine, methadone, opiates, phencyclidine, hydrocodone, oxycodone, fentanyl

^e p-value<0.05, t-test and ANOVA were used to calculate statistical significance

^f Levels of ethanol were tested through a blood alcohol (BAC) test



Discussion

The primary objective of this retrospective study was to identify factors associated with extended length of stay in 17,257 psychiatric inpatients within a tertiary hospital in Honolulu.



Figure 5. Diagram displaying the association between factors and longer LOS

References

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- 3.Newman L, Harris V, Evans LJ, Beck A. Factors Associated with Length of Stay in Psychiatric Inpatient Services in London, UK. Psychiatr Q. 2018;89(1):33-43. doi:10.1007/s11126-017-9498-7

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