

Impact assessment for Mental health treatment

BACKGROUND: The New Life Residential Treatment Facility is an NGO that specializes in providing care for teenagers exhibiting signs of mental illness. It offers housing and supervision for teenagers transitioning from psychiatric hospitals back into the community. Given that many of these teenagers have experienced severe childhood abuse and have been involved with the juvenile justice system, behavioural issues are prevalent at New Life. Employee compensation is modest, and staff turnover (attrition) rates are high.

New Life initiated a reengineering program with the objectives of reducing behavioural problems among the teenagers and decreasing employee turnover rates. As part of this effort, the following changes were implemented:

Employee shifts were shortened from 10 hours to 8 hours each day.

Employees were encouraged to become more actively engaged in patient treatments, which included staff-led therapeutic treatment sessions and increased staff input into program changes.

The activities budget was increased.

A facility-wide performance evaluation system was introduced, which rewarded staff participation and innovation.

Management and staff collaborated on a program aimed at raising expectations for appropriate behaviour from the teenagers. This program involved strict compliance with reporting behavioural violations, insistence on participation in therapeutic sessions, and a lower tolerance for even minor behavioural infractions.

To assess the effectiveness of the reengineering effort, a dataset was compiled, encompassing both pre- and post-reengineering periods. The dataset contains two measures of behavioural problems. A critical incident is recorded when a resident leaves the premises without permission (AWOL), damages property (e.g., punching a hole in a wall or breaking windows), is found in possession of street drugs, or engages in assault against other residents or staff members. Temporary removal from the facility occurs when a teenager is sent to jail or back to a psychiatric hospital.

BUSINESS PROBLEM: The objective is to determine whether the reengineering effort had any impact on the incidence of behavioural problems and staff turnover. Specifically, we aim to ascertain whether the reengineering effort led to a change in the critical incident rate. The question at hand is whether there is evidence of an improvement in the critical incidence rate.

Price Quote Comparison

BACKGROUND: In a small manufacturing company, the process of generating price quotes for customer orders is a critical task. Since each order is unique, pricing experts need to create individualized quotes based on various factors such as part number, customer, location, market conditions, and order volume. This process is intricate and labour-intensive. The sales department manager is concerned about the complexity and potential variability in the quoted prices. To address these concerns, an improvement team is assembled to study and enhance the pricing process.

Following interviews with experts to gain a deeper understanding of the existing process, the team designed a study to investigate whether there is variability in the quotes provided by different pricing experts. Specifically, they aim to determine whether distinct pricing experts yield different price quotes. For this study, two pricing experts, Mary and Barry, were randomly selected to independently provide prices for twelve randomly selected orders. Each expert produced a price quote for each of the twelve orders.

BUSINESS PROBLEM: The objective is to assess whether there is a statistically significant difference in the average price quotes provided by Mary and Barry.

DATA AVAILABLE: Price_Quotes.csv The dataset includes order numbers ranging from 1 to 12, along with the price quotes submitted by both Mary and Barry for each order. Each row in the dataset represents the same order, meaning that Mary and Barry each generated quotes for the identical set of orders.