Effective Use of Control Charts

Purpose	This tool provides guidelines and tips on how to effectively use control charts to communicate research findings.
Format	This tool provides guidance on control charts and their purposes, and shows examples of preferred practices and practical tips for control charts.
Audience	This tool is designed primarily for researchers from the Model Systems that are funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). The tool can be adapted by other NIDILRR-funded grantees and the general public.

Control Charts

▶ The primary use of Control Charts is to monitor processes, events, and incidents of interest over time and to identify when such occurrences are higher or lower than desired or expected.

▶ The general intention is to reduce the number of undesirable events (or increase the number of desirable events).

▶ Frequently another goal of such monitoring is to reduce the variability of such processes, so as to improve quality.

▶ Control Charting frequently involves an initial period of process monitoring by which the baseline average and variability of the process or item of interest is established, followed by a targeted intervention or training which is intended to reduce the undesirable trends (or reduce the variability of the process), followed by continued monitoring to assure that the new process remains in control – or to seek further improvement in the process.
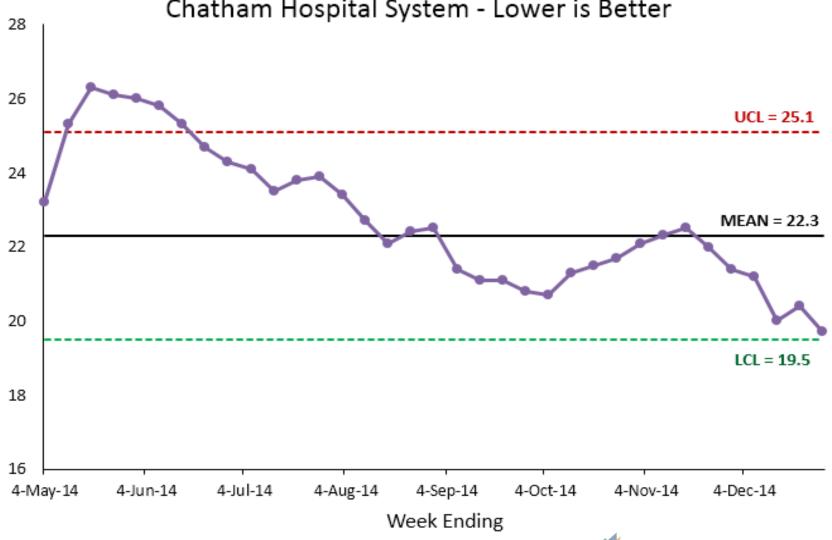
MSKTC
SCI · TBI · BURN

Model Systems
Knowledge Translation
Center

Control Charts

Health related examples of control monitoring include:

▶ Efforts to reduce the number of falls per 1000 hospital inpatient days

▶ Reduction in medically unnecessary low-risk C-sections.

▶ Reducing the rate of hospital acquired infections (or increasing the number of days since the last infection)

▶ Reducing average patient time prior to admission in emergency departments

▶ Reducing hospital blood lab processing times

▶ Reduce hospital re-admissions within 30 days of discharge

MSKTC
SCI · TBI · BURN
Model Systems
Knowledge Translation
Center

Control Charts

▶ Many varieties of control charts exist with slightly different calculations.

▶ But all control charts involve:

▶ Calculation of an average (typically the mean) for the process

▶ Calculation of a measure of variation in the process (typically the standard deviation).

▶ Calculation of the standard error using the standard deviation and sample size.

▶ Calculation of the Upper Control Limit (UCL) and Lower Control Limit (LCL) – typically set at 2 or 3 standard errors above or below the mean.

▶ Data is collected on the process of interest (typically monthly, weekly) and plotted over time – and compared to the baseline mean and the UCL LCL – to detect performance improvement (beyond "normal" variability) or performance deterioration, or variability reduction etc.

MSKTC
SCI · TBi · BURN

Model Systems
Knowledge Translation
Center

Control Charts

C-Sections as a Percent of Low-Risk Deliveries
Chatham Hospital System - Lower is Better

Source: Mock Data

MSKTC | Model Systems Knowledge Translation Center
SCI · TBI · BURN