

Using Run Charts to Evaluate Quality Improvement

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**Burk's Falls Family
Health Team**

**Iroquois Falls Family
Health Team**

Presenter Disclosure

Presenter: Lisa Barnett
Quality Improvement Decision Support Specialist

- Elliot Lake Family Health Team – Host FHT
- Algonquin Family Health Team (Huntsville)
- Blue Sky Family Health Team (North Bay)
- Burk's Falls Family Health Team
- Iroquois Falls Family Health Team

- **Relationships with commercial interests:**
 - Not applicable

Disclosure of Commercial Support

- No commercial support

Mitigating Potential Bias

- Not applicable

Agenda

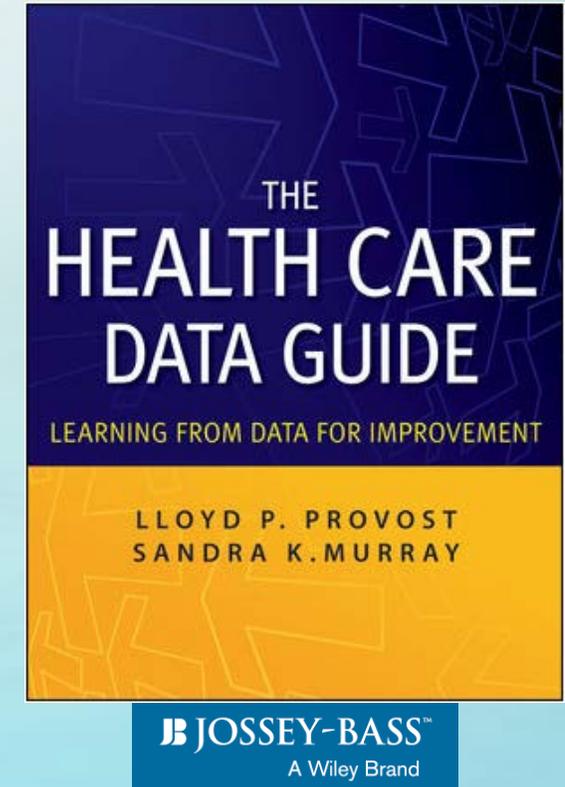
- Introduction
- Resources
- Objectives
- Model for Improvement & Tips for Effective Measures
- Scorecard Transformation
- 4 Rules to Help Interpret Run Charts
- Building a Run Chart: Overview & Step by Step
- Handling Updates

Introduction

- Real-life examples from work at the Algonquin Family Health Team in Huntsville
- Work in progress
- March 2013: Statistical Process Control Workshop
→ lead by Lloyd P. Provost

Resources

- Provost, L., P., Murray, S., K. *“The Health Care Data Guide: Learning from Data for Improvement”*
- Perla, R. J., Provost, L., P., Murray, S., K. *“The Run Chart: A Simple Analytical Tool for Learning from Variation in Healthcare Processes”*
- Provost, Lloyd P. *“Analytical studies: a framework for quality improvement design and analysis”*
- Berwick, Donald M. *“Controlling Variation in Health Care: A Consultation with Walter Shewhart”*
- Solberg L, Mosser G, McDonald S. *“The three faces of performance measurement: improvement, accountability and research”*





Run Charts



**Shewhart
Charts**

I Charts

\bar{x} Charts

P Charts

U Charts

**Median
Charts**

C Charts

Charts

S Charts

R Charts

G Charts

**Prime
Charts**

**Cumulative
Sum Charts**

NP Charts

**Case-Mix
Adjustment**

Charts

T Charts

**Multivariate
Shewhart-
Type Charts**

**Comparison
Charts**

**Case-Mix
Adjustment**

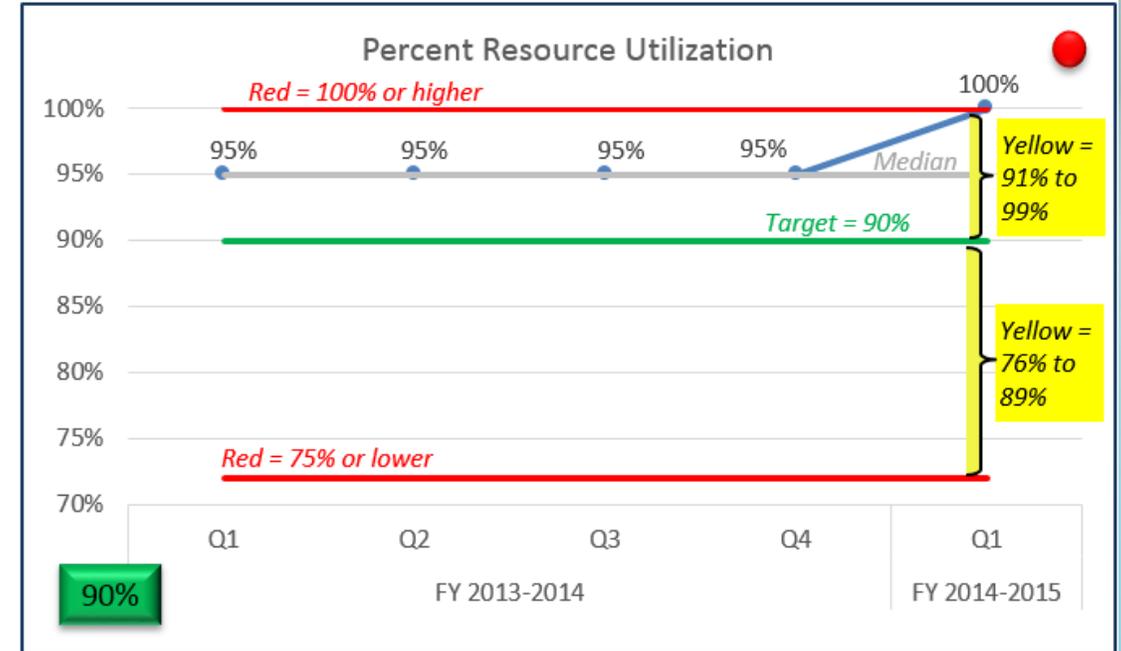
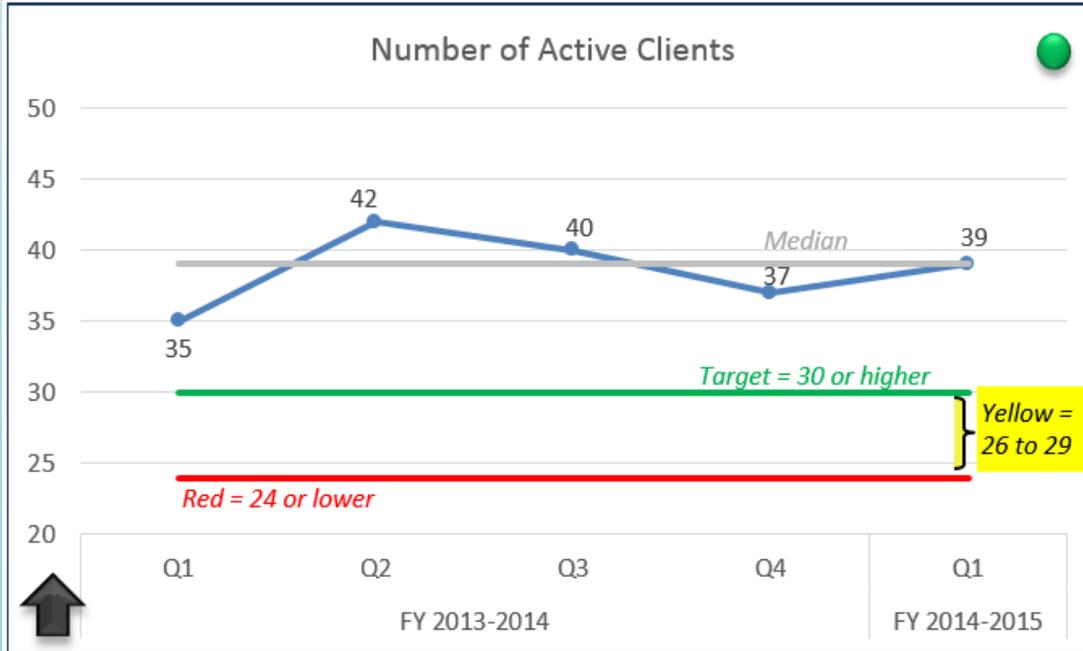
**Moving
Average
Charts**

Exponentially Weighted Moving Average Charts

Question for the Audience

Palliative Care

Results by Quarter: Fiscal Year 2013-2014 & 2014-2015



Does your organization currently use run charts?

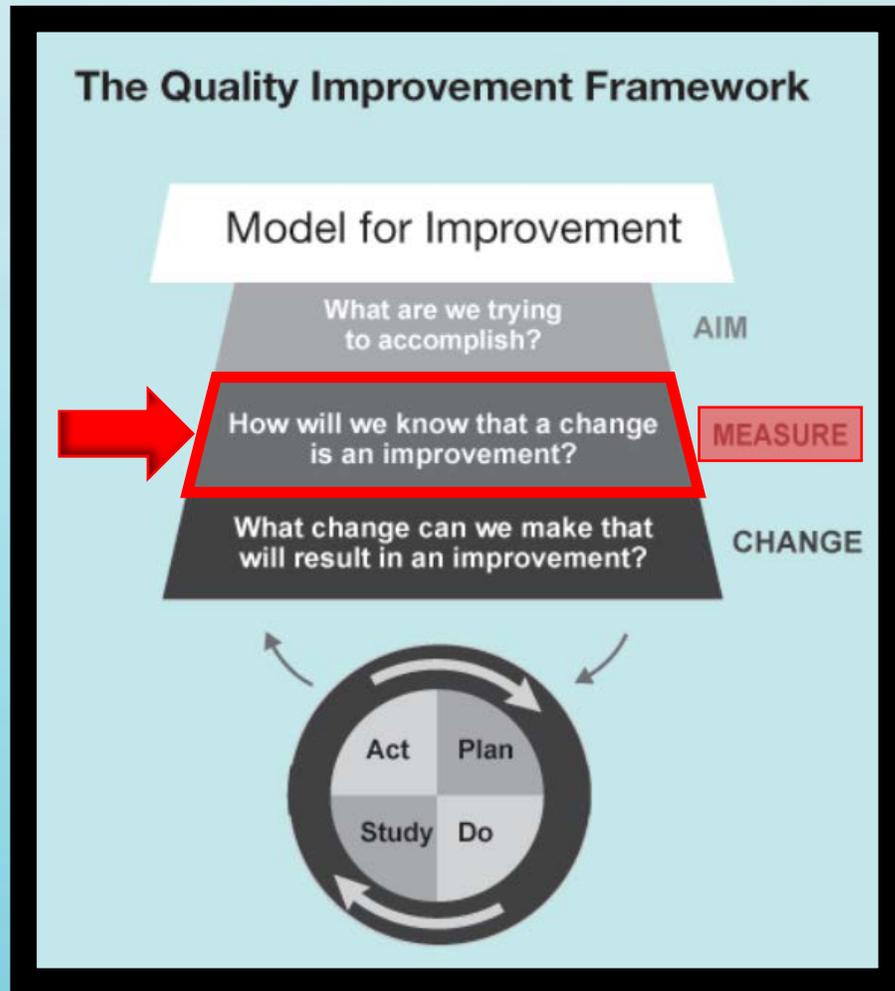


Objectives

1. Explain how to use data to improve health care systems.
2. Plan, construct, and interpret run charts for health care data using Microsoft Excel.
3. Tips & tricks to help your audience quickly interpret the run chart.
4. Using annotations to identify when improvements were initiated.



Model for Improvement



Tips for Effective Measures

1. Plot data over time.
2. Seek usefulness, not perfection.
3. Use sampling.
4. Integrate measurement into the daily routine.
5. Use qualitative and quantitative data.

Source:

<http://www.hqontario.ca/quality-improvement/quality-improvement-framework/model-for-improvement>

Source:

<http://www.ihl.org/resources/Pages/HowtoImprove/ScienceofImprovementTipsforEffectiveMeasures.aspx>

Measurement is NOT the goal, **Improvement** is

Seek
usefulness,
not
perfection.

Aspect	Improvement & Learning	Research	Accountability
Purpose	To bring new knowledge into daily practice	To discover new knowledge	Comparison, choice, reassurance, spur for change
Tests	Many sequential, observable tests	One large "blinded" test	No tests
Biases	Stabilize the biases from test to test (accept consistent bias)	Control for as many biases as possible	Measure and adjust to reduce bias
Data	Gather "just enough" data to learn and complete another cycle (small sequential samples)	Gather as much data as possible, "just in case"	Obtain 100% of available, relevant data
Determining if change is an improvement	Run charts or control charts	Hypothesis tests (T-tests, F-tests, Chi-square), p-value	No change focus

Source: Solberg L, Mosser G, McDonald S. The three faces of performance measurement: improvement, accountability and research. *Joint Commission Journal on Quality Improvement*. 1997;23(3):135-147.

Scorecard ...

Algonquin Family Health Team - Program Quality Initiatives and Targets 2013/14

Template Updated December 2013

Colour Codes: Green: On track Red: Results are consistently 20% or more off the target. Action Plan required Yellow: Results are beginning to go off target. Monitoring required

Program/Aim	MEASURE	Q1	Q2	Q3	Q4	Target	CHANGE : R	
Program/Aim and links to strategic	Objective	Measure/Indicator	Q1	Q2	Q3	Q4	Target for	Root Causes of M

Algonquin Family Health Team - Program Quality Initiatives and Targets 2014/15

Template Updated May 2014

Colour Codes: Green: On track Red: Results are consistently 20% or more off the target. Action Plan required Yellow: Results are beginning to go off target. Monitoring required

Program/Aim	MEASURE	Q1	Q2	Q3	Q4	Target	CHANGE : R	
Program/Aim and links to strategic priority	Objective	Measure/Indicator	Q1	Q2	Q3	Q4	Target for 2014/15	Root Causes of M

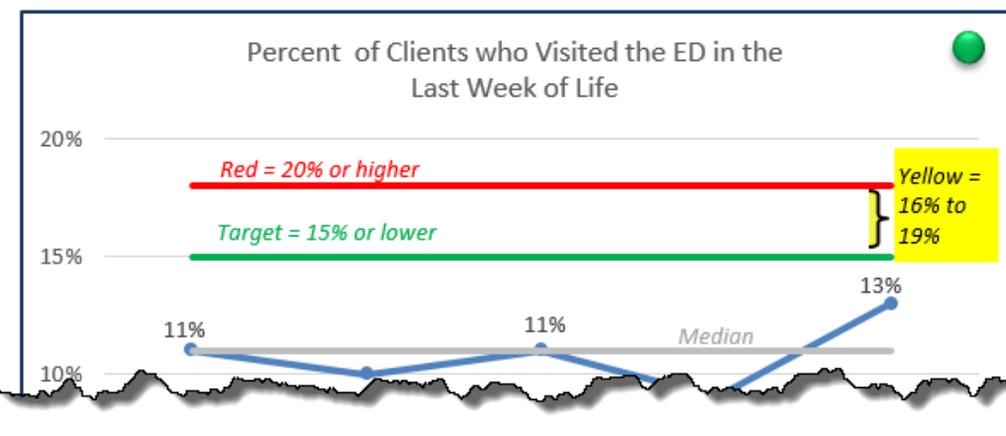
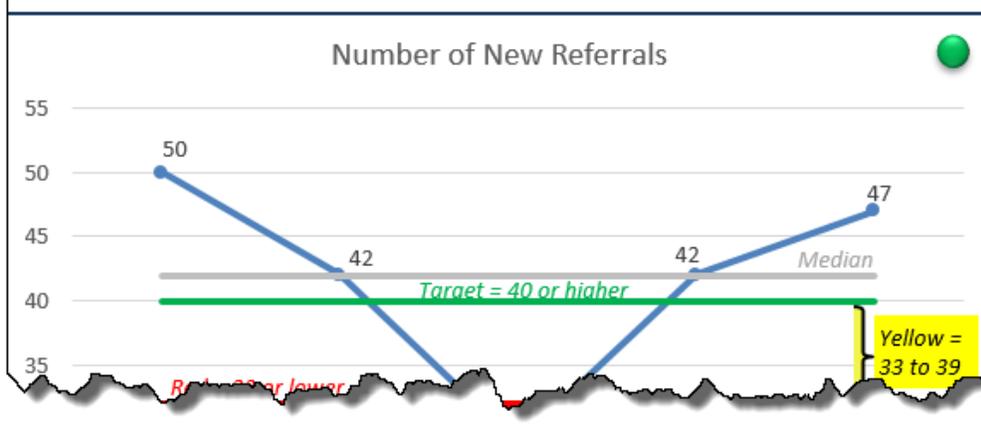
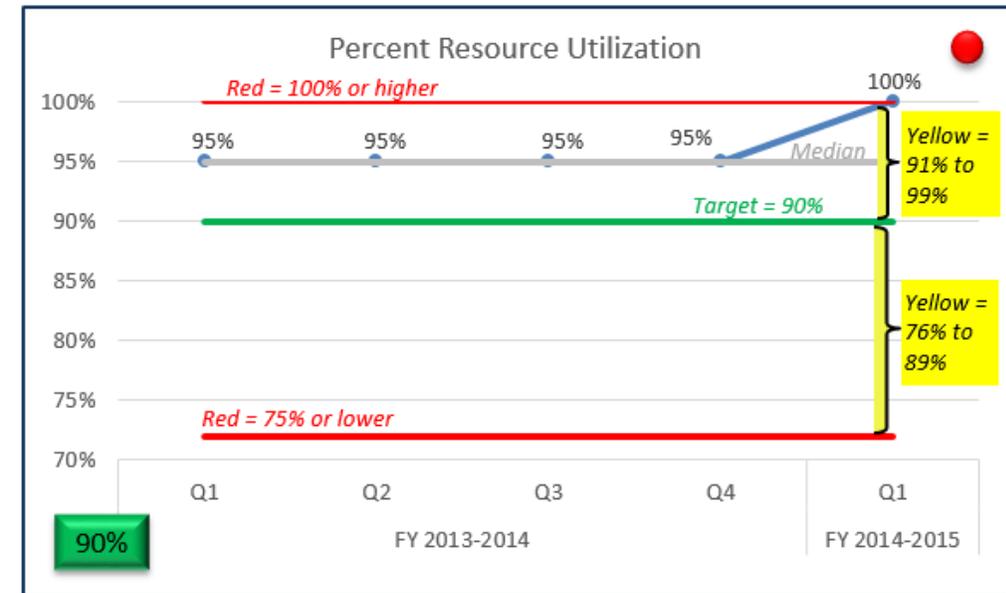
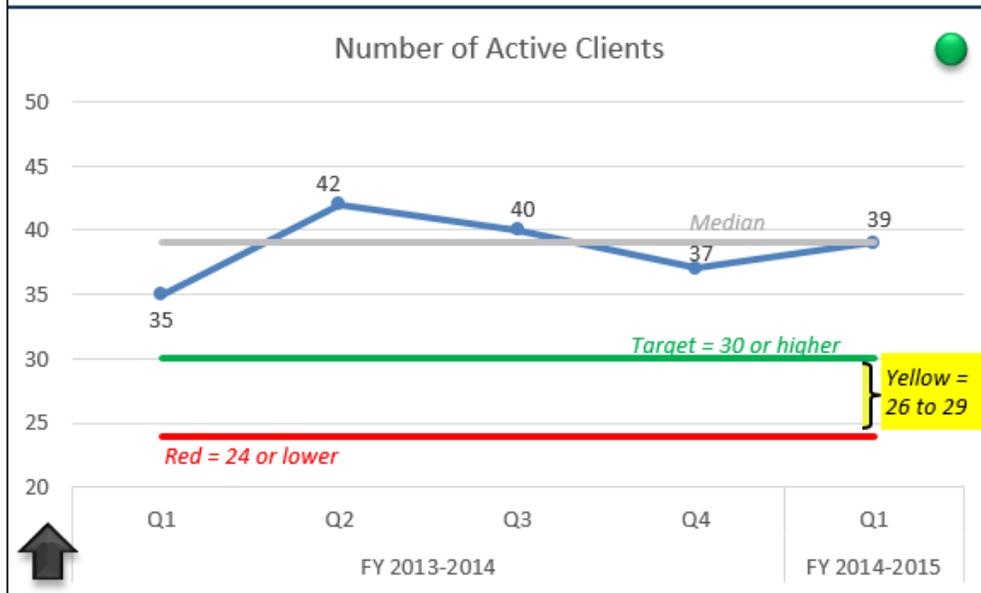
Palliative Care - Patient Centered Care (links to Improve Access to Care and Effective Collaboration with Community Organizations strategic initiatives)	Program resources at 90% utilization of available time	Current number of active clients: caseload is a general indicator of resource utilization - utilization varies with distribution of clients based on PPS scale	39				30	
		Percent resource utilization: varies with distribution of clients on PPS scale	100%				90%	
		Number of new referrals: the number of new referrals in the reporting period	47				40	
	Clients die in location of choice	Percent of clients who died in the place of their choice	95%				90%	
		Percent of clients who died at home or in hospice (and not in an acute care setting)	79%				TBD	
	ED Visit Reduction	Percent of clients who visited the ED in the last week of their life	13%				15%	
	Caregiver Satisfaction	Percent patient/caregiver satisfaction achieved: percent of clients/caregivers who score satisfaction as "good" or "excellent"	100%				90%	



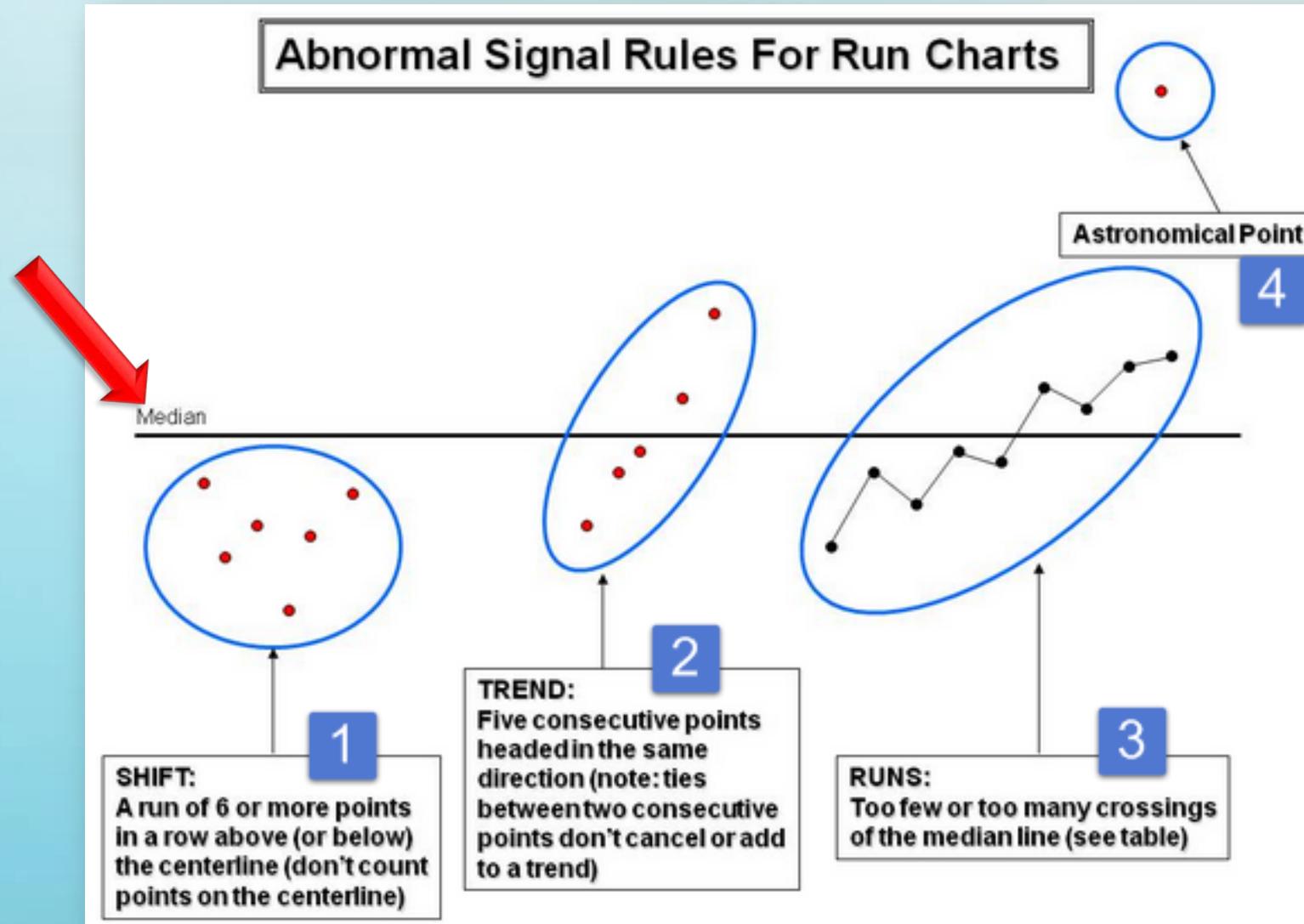
... Transformation

Palliative Care

Results by Quarter: Fiscal Year 2013-2014 & 2014-2015



4 Rules to Help Interpret Run Charts



Building a Run Chart: Overview

1. Identify the data
 - a. What are we measuring?
 - number, %, rate, etc.
 - b. How frequently are we measuring?
 - daily, weekly, monthly, quarterly, annually
 - c. What is our target?
2. Create a template in Excel
 - a. Need to capture all data (*see #1 above*)
 - b. Include a column for the median
3. Create the chart
4. Add visual cues
 - a. Arrow
 - b. Status (Red, Yellow, Green)
 - c. Annotations



Step 1: Identify the data

Algonquin Family Health Team - Program Quality Initiatives and Targets

2013/14

Template Updated December 2013

Colour Codes:		Green: On track	Red: Results are consistently 20% or more off the target. Action Plan required	Yellow: Results are beginning to go off target. Monitoring required					
Program/Aim	MEASURE			Q1	Q2	Q3	Q4	Target	
Program/Aim and links to strategic priority	Objective	Measure/Indicator			Q1	Q2	Q3	Q4	Target for 2013/14
Palliative Care - Patient Centered Care (links to Improve Access to Care and Effective Collaboration with Community Organizations strategic initiatives)	Program resources at 90% utilization of available time	Current number of active clients: caseload is a general indicator of resource utilization - utilization varies with distribution of clients based on PPS scale			35	42	40	37	30

Algonquin Family Health Team - Program Quality Initiatives and Targets

2014/15

Template Updated May 2014

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Step 2: Create a template in Excel

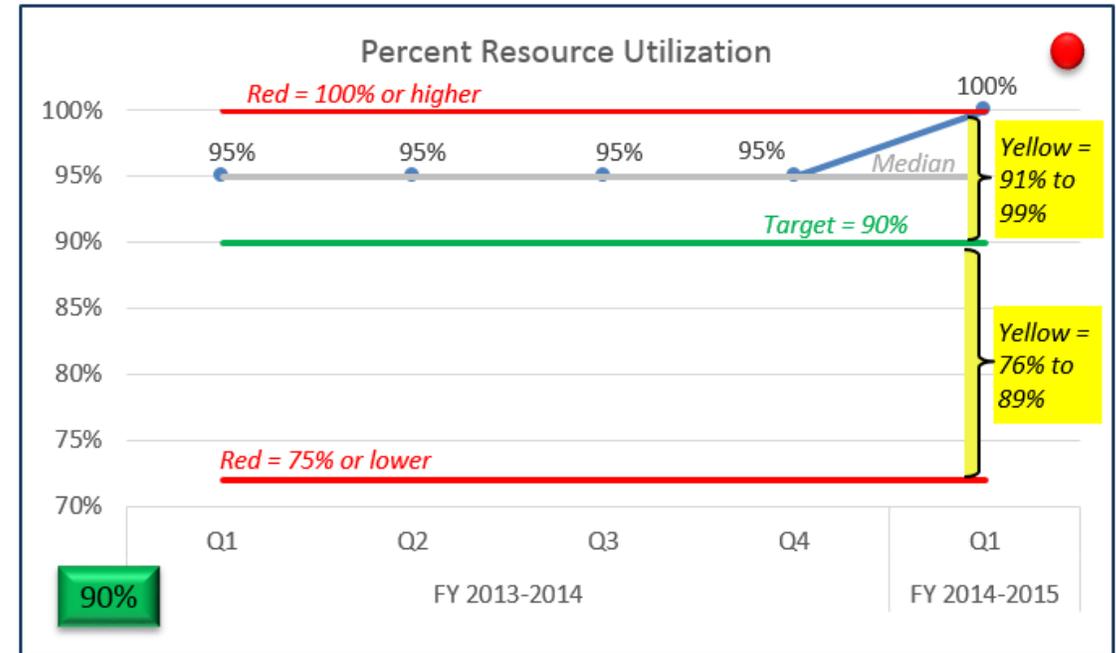
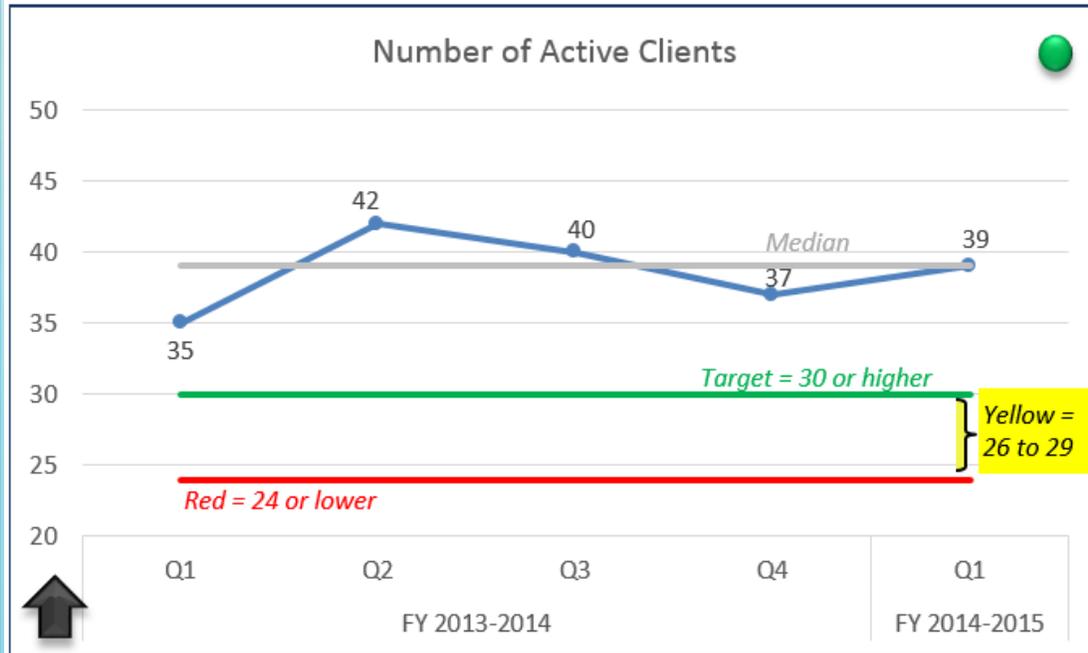
MEASURE							
	Measure/Indicator	Result	Target	Red / Lower Red	Upper Red	Median	Notes
Palliative Care		Current number of active clients					
FY 2013-2014	Q1	35	30	24		39	
	Q2	42	30	24		39	
	Q3	40	30	24		39	
	Q4	37	30	24		39	
FY 2014-2015	Q1	39	30	24		39	
	Q2		30	24			
	Q3		30	24			
	Q4		30	24			
		Percent resource utilization					
FY 2013-2014	Q1	95%	90%	72%	100%	95%	
	Q2	95%	90%	72%	100%	95%	
	Q3	95%	90%	72%	100%	95%	
	Q4	95%	90%	72%	100%	95%	
FY 2014-2015	Q1	100%	90%	72%	100%	95%	
	Q2		90%	72%	100%		
	Q3		90%	72%	100%		
	Q4		90%	72%	100%		
		Number of new referrals					
FY 2013-2014	Q1	50	40	32		42	
	Q2	42	40	32		42	



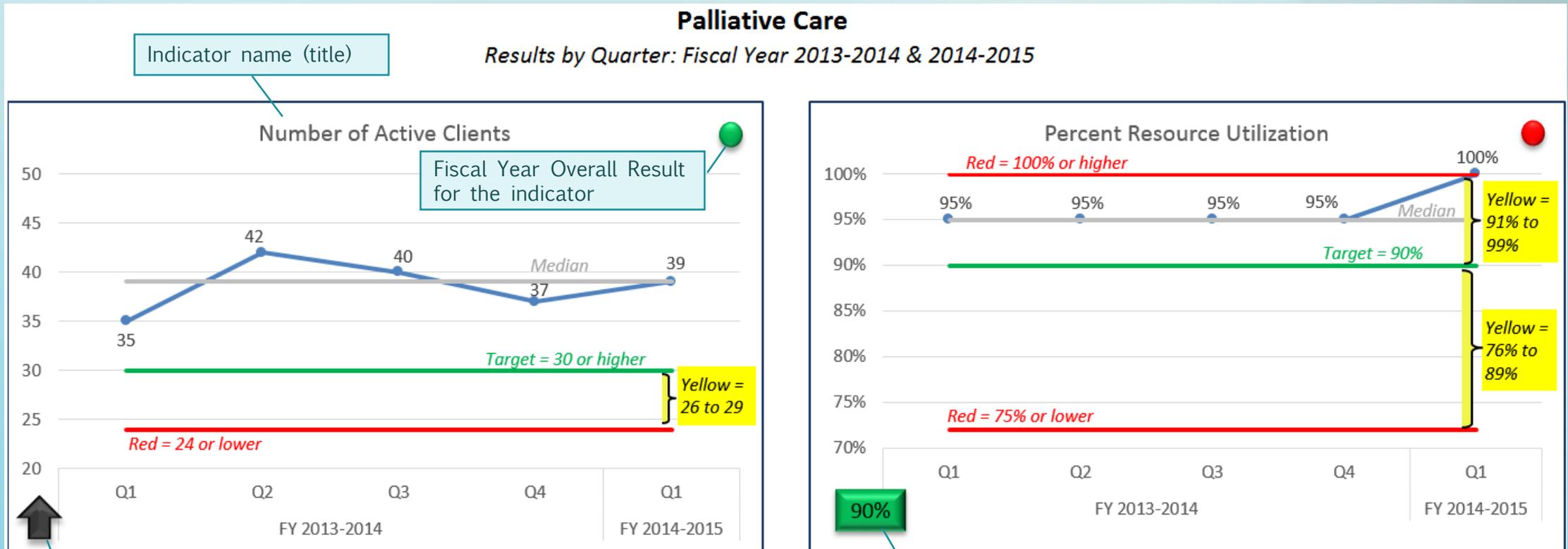
Step 3: Create the chart

Palliative Care

Results by Quarter: Fiscal Year 2013-2014 & 2014-2015



Step 4: Add visual cues



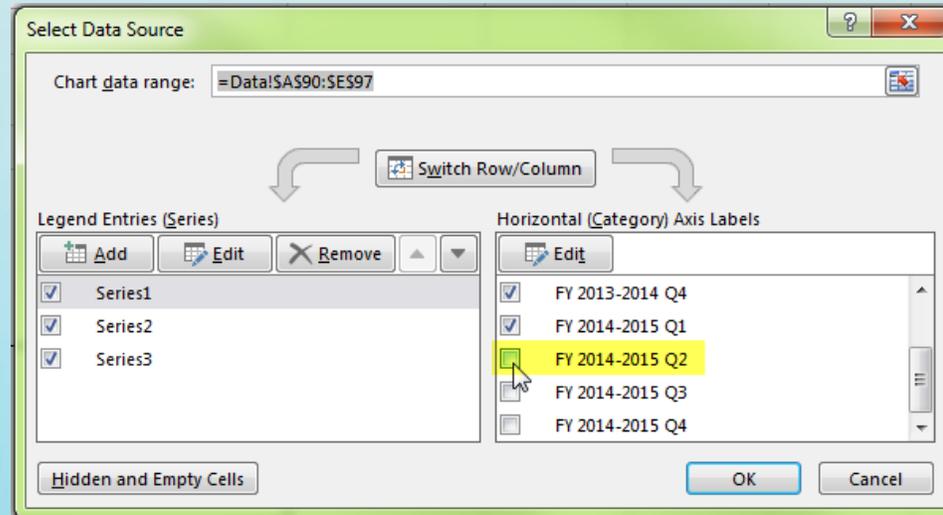
Desired Direction:
 Up arrow = Up is good
 Down arrow = Down is good

Target:
 This value replaces the up or down arrow as the red zone includes both an upper and lower limit.

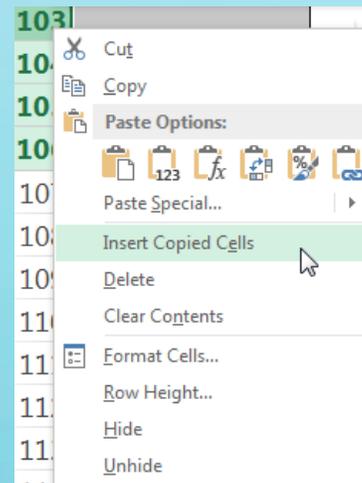


Handling Updates

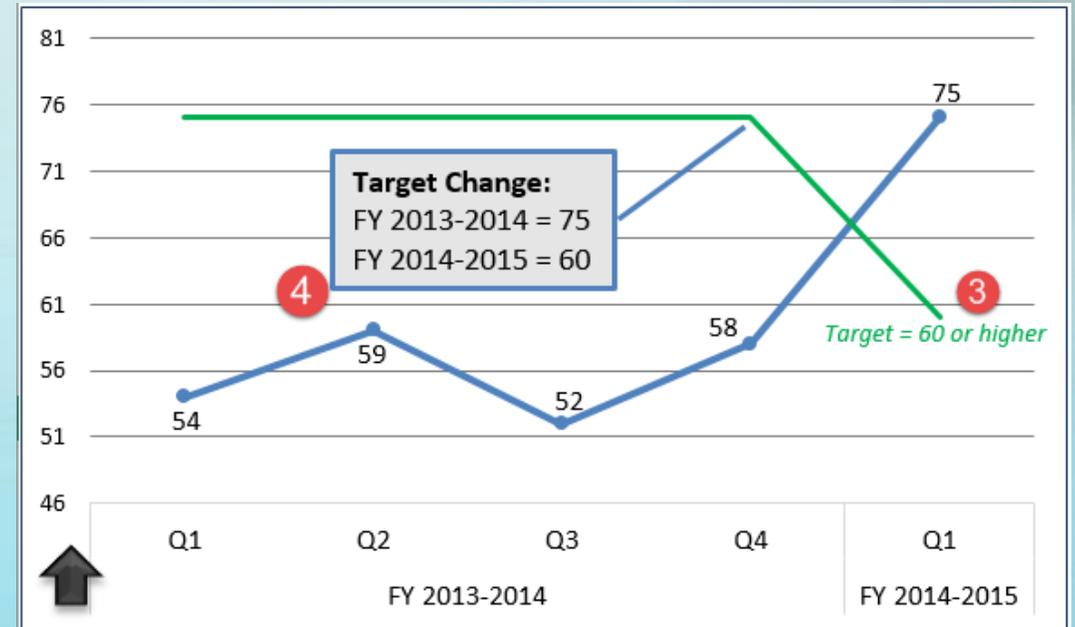
1. Displaying data for a new quarter on the chart



2. Adding a new fiscal year to a chart



3. Changing the target value



4. Annotating a chart





& Questions?