

# Continuous Improvement: Process Improvement Measurement

Solving Problems That Change Lives



Admin  
Minnesota

## Agenda

- Welcome and introductions
- Process overview
- Why measure?
- How do I measure?
- Data Collection Plan
- Tools and Resources
- Your questions



Admin  
Minnesota  
DEPARTMENT OF ADMINISTRATION

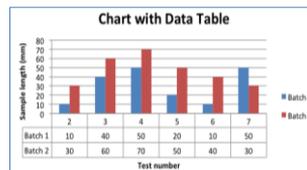
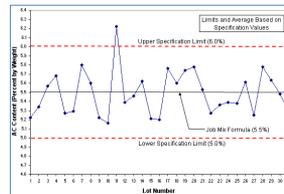
# Learning Objectives



- Understand where measures fit in the improvement cycle
- Describe the importance of process measurement
- Understand how to use data to guide and sustain improvements
- Identify tools for collecting and displaying data to use for continuous improvement



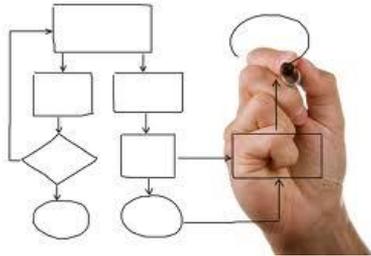
# The Reality: Where are we now?



## Process



- A series of steps or tasks to achieve an end or result.
- Processes have a beginning, an end and clearly identified inputs and outputs.



6

## Examples of work activities that are processes:



- Issue licenses
- House offenders
- Review grant applications
- Hire staff
- Purchase supplies
- Conduct compliance reviews
- Determine client eligibility
- Test specimens
- Train staff



7

# Your processes...





**Send pdf invoice via email on order complete**





8

# Why measure? To...

- understand the process
- identify problems/waste
- inform solutions
- assess if improvement occurred
- verify assumptions
- determine if customer needs are met
- communicate progress
- sustain work




9

## Measurement answers many questions:



- How do I know I have a problem?
- What does the problem look like? How severe is it?
- What do I want to achieve? What does “better” look like?



10

And...Is improvement occurring?



11



*“You can’t manage what you  
don’t measure.”*



*W. Edwards Deming*



12



## Process Improvement Measures...

relate to the performance of your processes and  
have a client/customer focus.



16

## Process Measurement



Example: Inspect worksites

- Time to complete an inspection
- Cost per worksite inspection
- Value (to the customer)
- Accuracy (error rate)
- Completion Rates



17

## Process Improvement Measures



**are not**.....population indicators, such as:

- Obesity rates
- Unemployment rates
- Poverty rates
- Crime rates
- Per capita income
- Graduation rates



18

## Link to Results Based Accountability (RBA)



		Quantity	Quality
<p><b>Effort:</b> How hard did we try?</p>	<u>How much did we do?</u>	<u>How well did we do it?</u>	
<p><b>Effect:</b> Is anyone better off?</p>	<u>Is your customer better off?</u>		


19

## Example:



		Quantity	Quality
<p><b>Effort</b></p>	<u>How much did we do?</u> # of trainees # of trainings	<u>How well did we do it?</u> % of trainees satisfied with training % of trainees reporting taking action after training	
<p><b>Effect</b></p>	<u>Is your customer better off?</u> % of agencies achieving performance goals		


20

# Plan – Do – Study – Act (PDSA)

Admin Minnesota  
DEPARTMENT OF ADMINISTRATION

Continuous Improvement  
Improving Minnesota Government

21

# Where & how does measurement begin?

BASELINE DATA

Admin Minnesota  
DEPARTMENT OF ADMINISTRATION

Continuous Improvement  
Improving Minnesota Government

22

## What Makes a Good Measure?



Easy to Understand	Important to the Customer	Moves People to Act
Is Strategic – Relates to Goals	Is Robust - Meaningful	Provides Quick Feedback for Ease of Use



23

## Data Sources



Voice of the Customer	
Program Data	
Process Data	



24

## Data Sources...another view

Measure                      Measure                      Measure  
Input                              Process                              Output

Information  
 Customer requests  
 Staff  
 Technology      Time  
 Customers

25

## Voice of the Customer:

Who are our customers?  
 What do they need and want?  
 Are we meeting their requirements?

26

How do you know if you are meeting customer requirements?



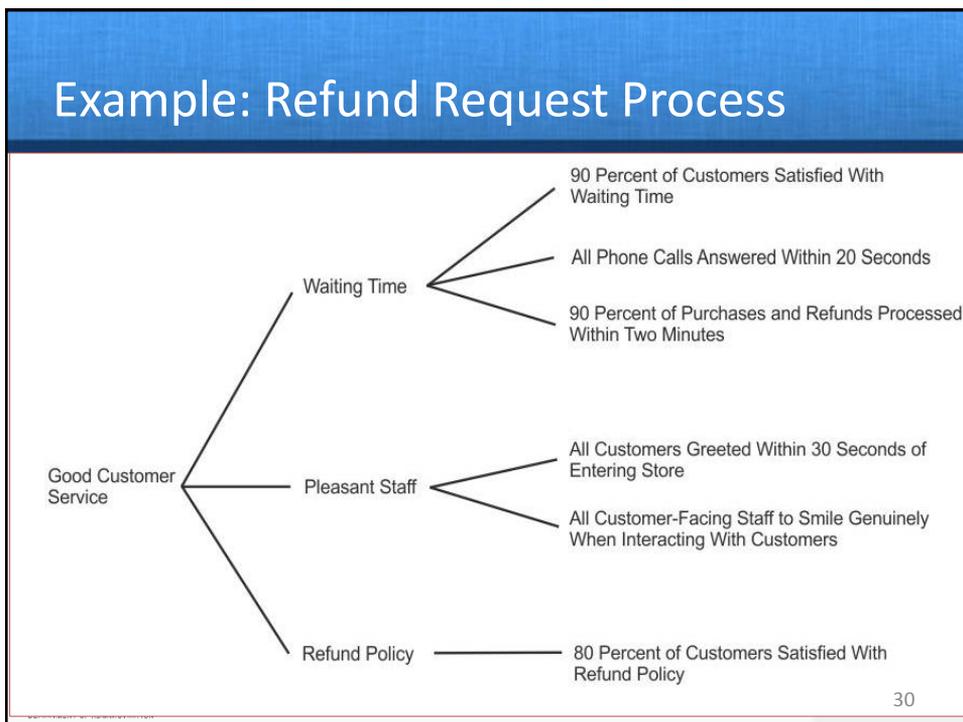
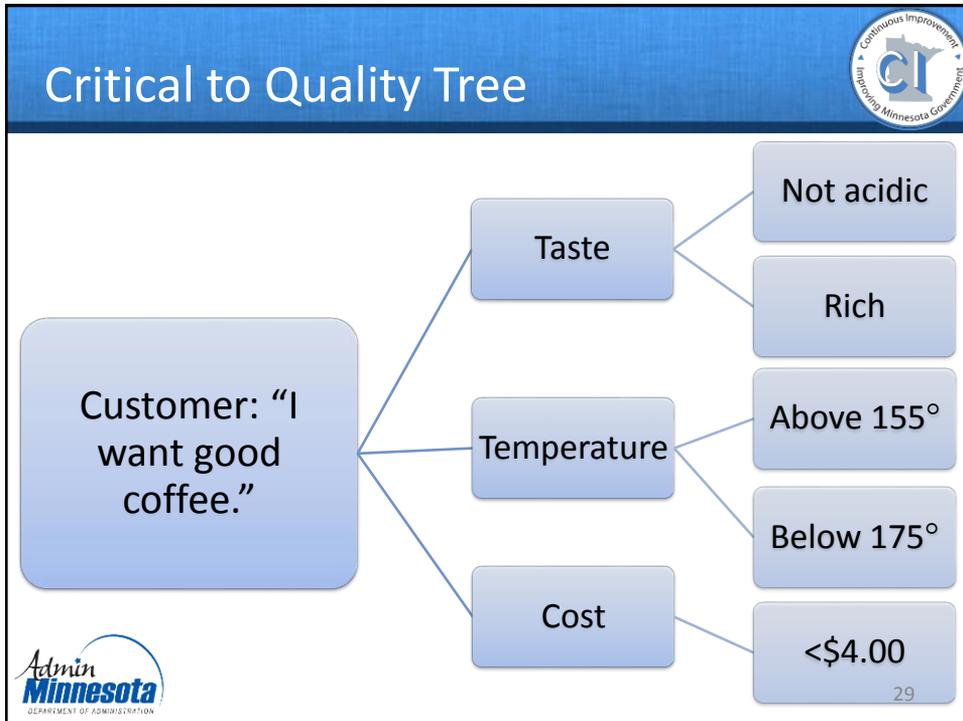
Tool:



### Critical to Quality (CTQ) Tree

**CTQ trees** deconstruct your **customer's needs** into **measurable requirements**.

They align improvement efforts with customer requirements.



## Example of a CTQ Tree:



Process: Training staff

Customer Need: To learn CI methods and tools

Requirements:

Measurable Requirements:



31

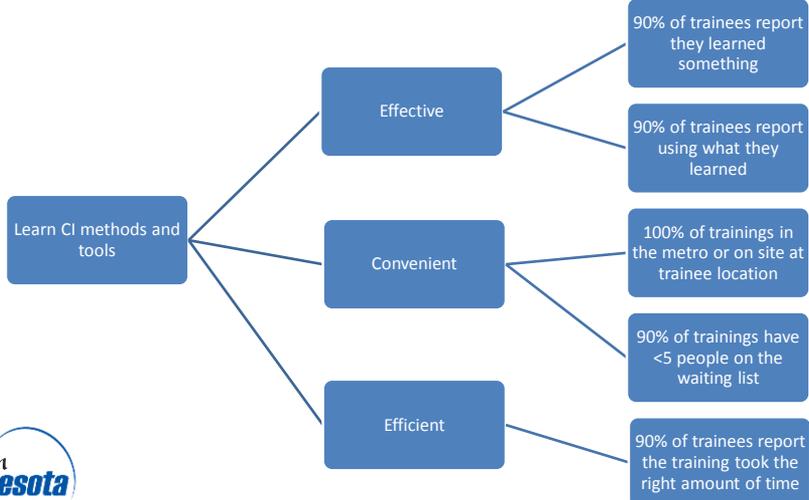
## CTQ Tree for CI Training



Customer  
Need

Major  
Requirements

Measurable  
Requirements



32

# Table Exercise #1:



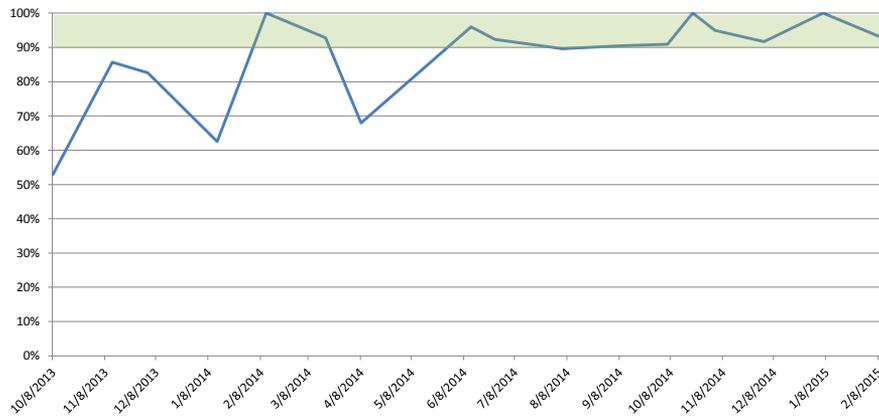
## Critical to Quality Tree

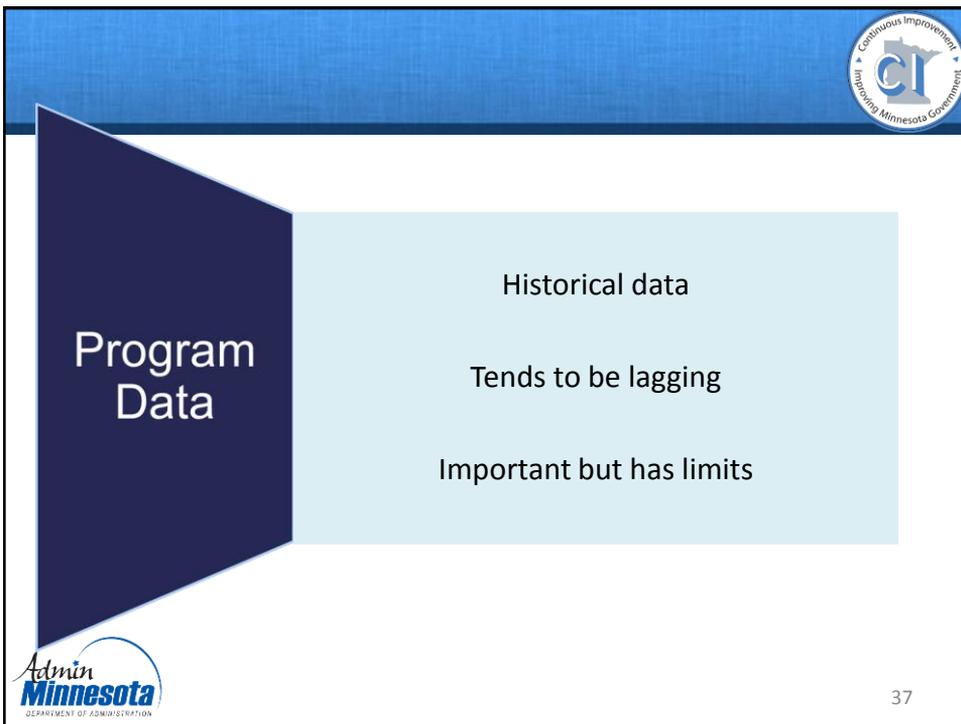
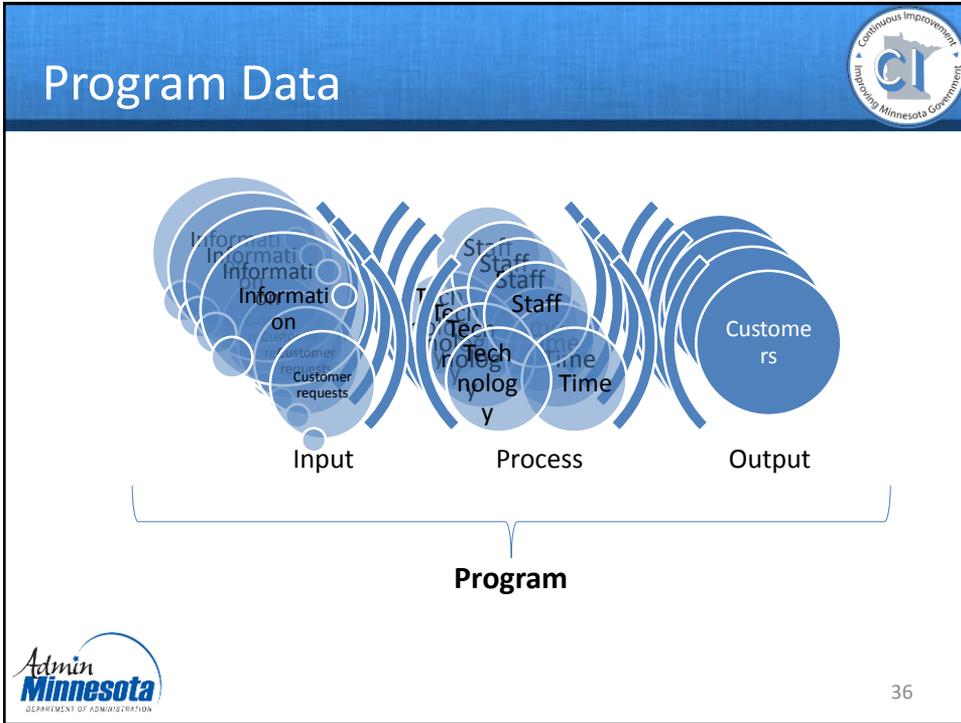


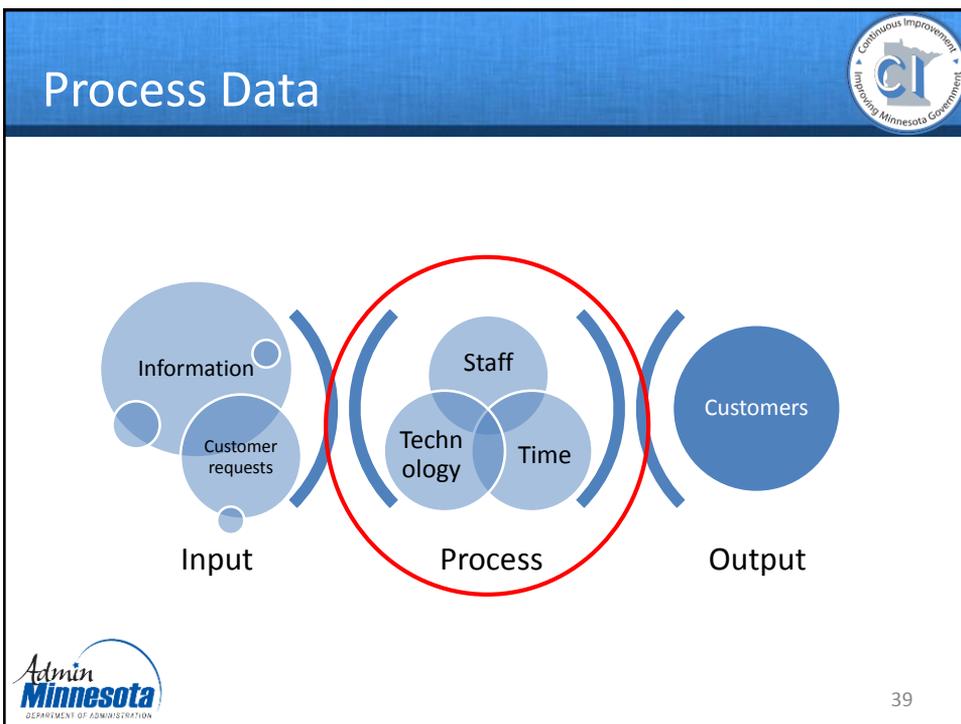
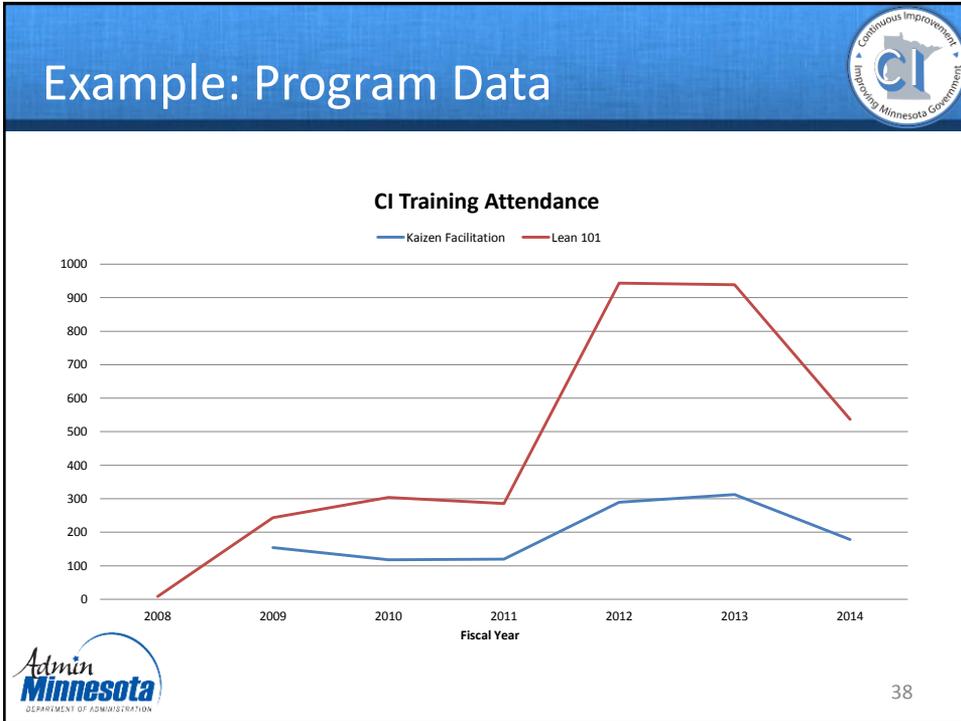
# Example: Training staff



Percent Reporting Gaining New Knowledge or Skills  
(Lean 101 / Intro to CI)









**Process Data**

Describes the efficiency and effectiveness of the process itself.



40



## Process Data – Types of Measures

<p><b>Cost</b></p> <p>What is the cost per unit?</p>	<p><b>Cycle/Time</b></p> <p>How long does the process take?</p>	<p><b>Complexity</b></p> <p>How many steps or handoffs occur in the process?</p>
<p><b>Production</b></p> <p>How many units are produced?</p>	<p><b>Quality</b></p> <p>What is the error rate? What is the customer satisfaction rate?</p>	<p><b>Value</b></p> <p>What is the percent of value-added time or steps in the process?</p>



41

## Potential sources of data about your process:



- Process Maps
- Financial Reports
- Time or Observational Studies
- Data Base/System Reports
- Audits/Quality Assurance Data
- Voice of the Customer
- Check Sheets



## Example: Swim Lane Map





## Example: Data for CI Training



### Quality Measure:

Overall rating of training by trainees in post-training surveys

### Production Measure:

Number of trainees per month

### Cost Measure:

Staff hours per training



46

## Example: Flu Specimen Testing



### Time Measure:

Percent of specimens that take > 6 days to verify

### Quality Measure:

Testing errors

### Process Complexity Measure:

Number of handoffs



47

## What Makes a Good Measure?



Easy to Understand	Important to the Customer	Moves People to Act
Is Strategic – Relates to Goals	Is Robust - Meaningful	Provides Quick Feedback for Ease of Use


48

## Group Exercise #2:



# Understanding Process Performance




51

## Fine Tuning Data Collection



52

## The Data Collection Plan



A document that defines all the data collection details, including how much and what type of data collection is required and when and how it should be collected.

Performance Measure	Operational Definition	Data Source & Location	Sample Size	Who Will Collect The Data	When Will Data Be Collected	How Will Data Be Collected	Other Data that Should be Collected at the Same Time
Course is developed within 10% of industry standard hrs.	1 hour e-Learning developed in no more than 220 hrs 3 hour Workshop developed in no more than 132 hrs	Project Plans	17 (100%) of courses with data	Kalym Islam	6/6 – 6/24	Development hrs will be identified from project plan data	Less than 10% of development time is associated with rework
Less than 10% of development time is associated with rework	No more than 20 rework hours for 1 hour e-learning No more than 12 hours rework for a 3 hour workshop	Project Plans	17 (100%) of courses with data	Kalym Islam	6/6 – 6/24	Rework data will be identified from project plan	N/A



53

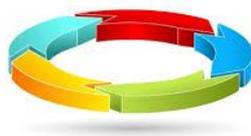
Attributes for Data Collection Plan	
Title	Clear, easy to understand, applicable
Operational Definition	Scope of the measure. What are we talking about?
Purpose	Why are we monitoring this? Does it relate to the problem/issue?
Target (or when do we expect the curve to turn?)	Do we have mandates/standards we are not meeting? What is our goal?
Formula/Calculation	Is there a formula/calculation for this measure?
Frequency	How frequently will the data be collected?
Source	Where will the data come from? How will it be collected?
Responsibility	Who will be responsible for collecting the data? Analyzing? Reporting? Communicating?
	
54	

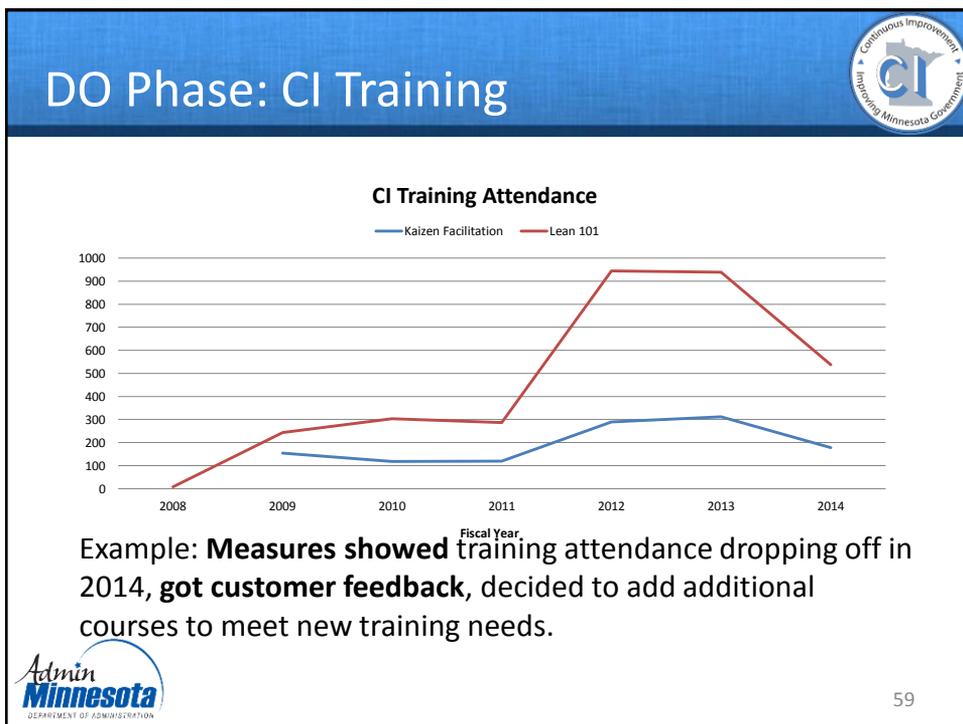
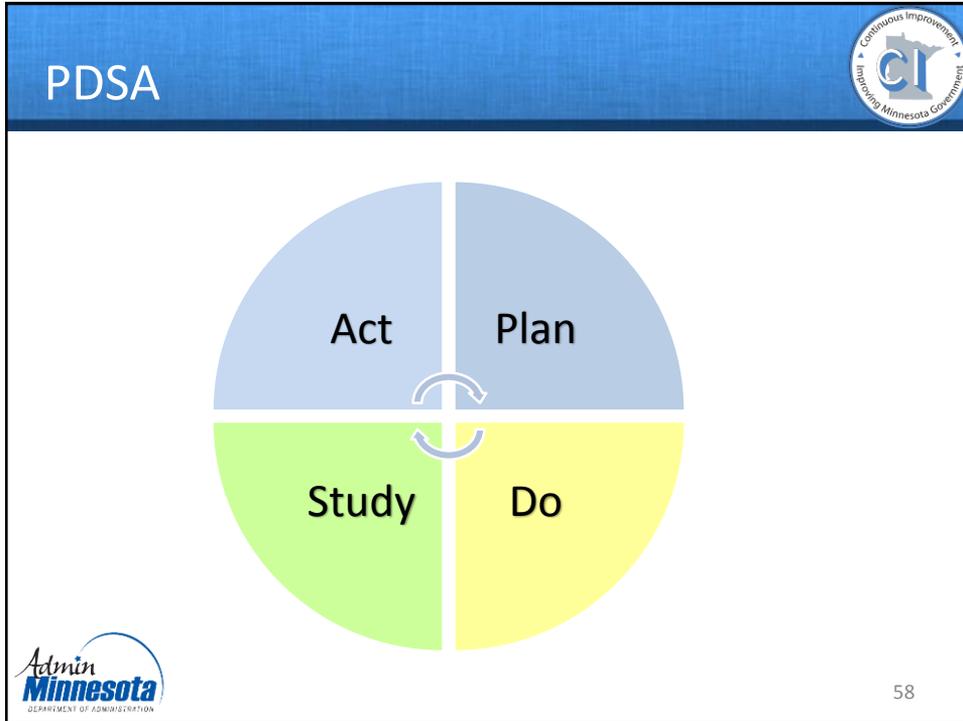
Example: CI Training – Trainees use what they learned	
Title	Trainees use what they learned
Operational Definition	Six months after CI training, trainees report using what they learned at least once
Purpose	Ensure that trainees are using what they learned, report on this
Target	90%+ of trainees should be using what they learned
Formula/Calculation	Percent of respondents to 6-month post-training surveys who report using what they learned at least once
Frequency	Monthly surveys of trainees 6 months prior
Source	6 month post-training survey
Responsibility	Cathy Beil will collect and summarize the data. Cathy will report on the data to the CI team.
	
55	

## Data Collection Plan Exercise

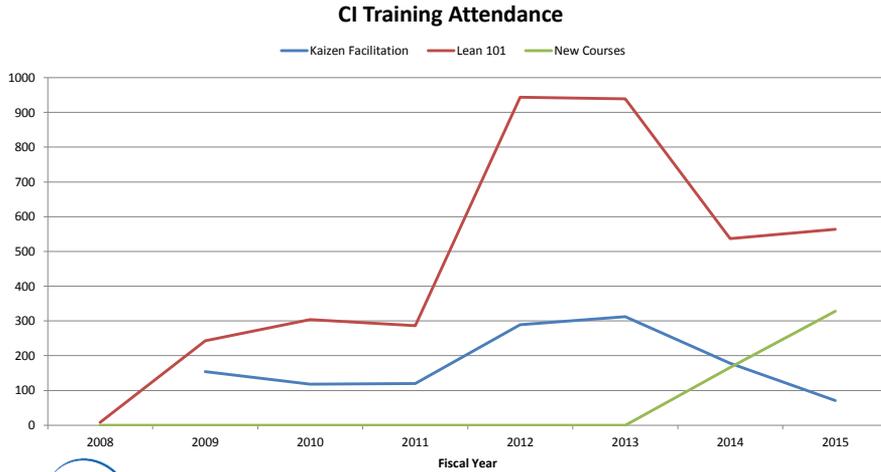


You now have a better understanding of your process. You realize there are performance gaps. Now what?





# STUDY Phase: What are the measures telling us?



60

# PDSA

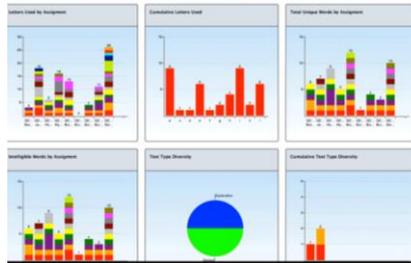


61

## Act: Monitor and Sustain Work



- Use your data collection plan. Be intentional.
- Post Charts on the Wall
- Have check-ins! How is it going?

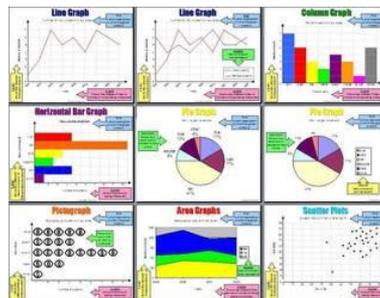


62

## Displaying & Communicating Data



Use the visualization that makes the most sense for your data and audience!



63

## Displaying & Communicating Data



- Box & Whisker Plot
- Check Sheet
- Control Chart
- Histogram
- Pareto Chart
- Run Chart
- Scatter Plot (Scatter Diagram)

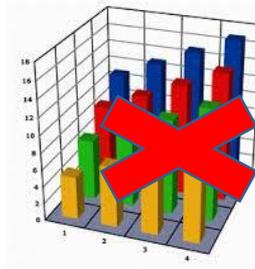


64

## Displaying Measures - Guidelines



- Simplify, simplify, simplify
- Consider when charts or tables are more appropriate
- Include a title and label both the x and y axis
- Do not use 3D
- Use the right chart for the right message
- Charts should be self-explanatory – test them!

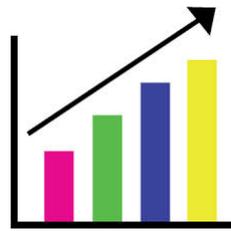


65

## Tips for Successful Measurement



- Be intentional about selecting measures.
- Measures should focus on the process, not people
- Engage process owners



66

## Tips for Successful Measurement



- Share data with the group
- Define the measure
- Analyze and use the data



67

## Tips for Successful Measurement



Customer requirements need to be considered.



68

## Understand your process



- What does the process look like?
- What are the steps?
- How long is it taking?
- Where is the waste?
- What are my customer requirements?



69

## Use data throughout the PDSA cycle

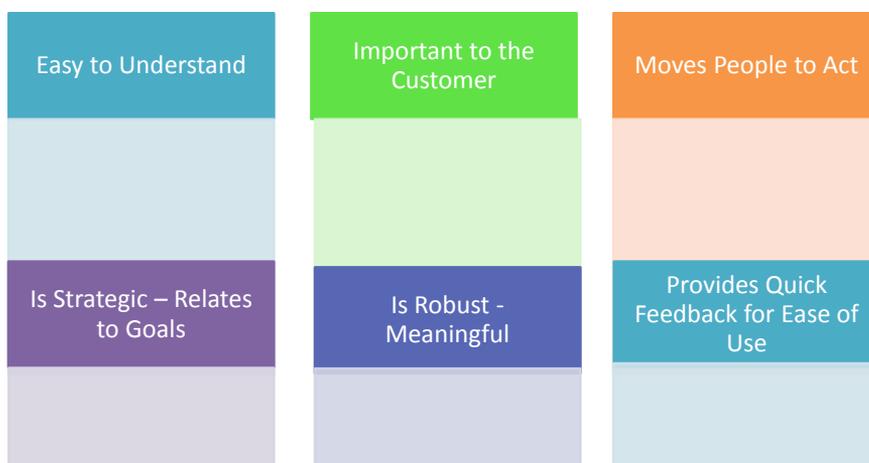


- Collect baseline data on your process.
- Use data to make, assess, & sustain improvements.



70

## What Makes a Good Measure?



71

## Why Should CI Be Important to Me?



CI = Diversity and Inclusion

“We allow our ignorance to prevail upon us and make us think we can survive alone, alone in patches, alone in groups, alone in races, even alone in genders.”

- Maya Angelou



**CI is about Equity, not Equality**



72

## Resources



MDH Office of Performance Improvement (OPI):

QI Toolbox - <http://www.health.state.mn.us/divs/opi/qi/>

American Society for Quality (ASQ): Tools

<http://asq.org/knowledge-center/index.html>

MN Office of Continuous Improvement:

<http://mn.gov/admin/lean/resources/index.jsp>

State of Maine – Department of Health & Human Services

<http://www.maine.gov/dhhs/btc/training-material/Lean-Takt-Time.pdf>



73

## Continuous Improvement



75

## Learn More!



- Website: <http://mn.gov/admin/government/continuous-improvement/>
  - Course catalog, tools, contact information.
- Twitter: CI\_Minnesota
  - First to hear CI news and information, course registrations.
- Newsletter: <http://mn.gov/admin/lean/resources/newsletter/>
- Contact: [CI@state.mn.us](mailto:CI@state.mn.us)
- Cathy Beil: [cathryn.c.beil@state.mn.us](mailto:cathryn.c.beil@state.mn.us), 651.201.2564

Thanks!

