

Performance Measurement Development

- Public Health Performance Management Centers for Excellence
- May 25, 2011

Today's Learning Objectives

After attending this session, you will be able to:

- Describe how performance measurement contributes to performance management
- Complete a data description form for quantifiable, time framed performance measures
- Demonstrate the use of selected data analysis tools
- Describe the theory of variation and actions to address variation in process
- Describe how to integrate performance measurement into an agency QI program

Answering the “So What?”

- Cannot show the results of work, unless we measure our outcomes
- Must use data to measure the outputs and outcomes of PH programs and activities
- Must establish and monitor quantifiable health status, health risk and social determinants of health indicators
- Feasible to link program outcomes and indicator results through rigorous use of data

Performance Management



PERFORMANCE STANDARDS

- Identify relevant standards
- Select indicators
- Set goals & targets
- Communicate expectations

PERFORMANCE MEASUREMENT

- Refine indicators & define measures
- Develop data systems
 - Collect data

PERFORMANCE MANAGEMENT SYSTEM

REPORTING OF PROGRESS

- Analyze data
- Feed data back to managers, staff, policy makers, constituents
- Develop a regular reporting cycle

QUALITY IMPROVEMENT PROCESS

- Use data for decisions to improve policies, programs & outcomes
- Manage changes
- Create learning organization

Turning Point Performance Management Collaborative, 2003

Performance Standards



PERFORMANCE
STANDARDS

Establish performance standards

- Public Health Accreditation Board (PHAB) standards
- National Public Health Performance Standards (CDC)

Establish and define outcomes and indicators

- Process outcomes
- Health outcomes

Performance Measurement



Monitoring of Performance

- Review of performance (Accreditation/Self-Assessment) results
- Program evaluation results

Monitoring of Indicators and Outcomes

- Process and short-term outcomes
- Health indicators and outcomes

Performance Measurement Definitions

- *Performance measurement* is the “regular collection and reporting of data to track work produced and results achieved”
- *Performance measure* is “the specific quantitative representation of capacity, process, or outcome deemed relevant to the assessment of performance”
- *Performance measurement is NOT punishment*



Performance Management Definition

- *Performance management* is “the use of performance measurement information to help set agreed-upon performance goals, allocate and prioritize resources, inform managers to either confirm or change current policy or program directions to meet those goals, and report on the success in meeting those goals”

Guidebook for Performance Measurement ,
Turning Point Project

Two Primary Uses

Two of the primary uses for the results of performance measurement are for:

- *Making comparisons* of performance levels-By identifying the highest level of performance or outcome (the benchmark), an organization can duplicate those work processes to achieve higher performance overall. And comparison to targets and goals provides information on progress toward desired outcomes.
- *Improving the quality* of the processes and outcomes of the organization-internal monitoring of performance and local accountability are most suitable for supporting the improvement of the organization rather than for comparability among organizations.

Quality Improvement Process

- Establish QI structure and capacity in agency
 - Establishing QI councils and plans
 - Conducting QI teams
- Quality improvement methods and tools
 - Plan-Do-Check/Study-Act cycle
 - Rapid Cycle Improvement (RCI)
 - Improvement collaboratives
 - Lean Six Sigma
 - Adapting or adopting model practices



Reporting Progress

- Performance in standards
- Indicators and outcomes
 - Health indicators
 - Program evaluation data
- Regular data tracking, analysis and review
- Basis for QI efforts

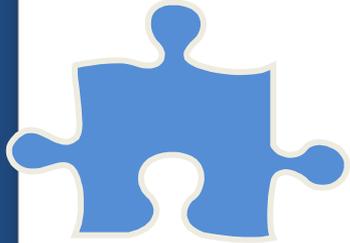


Let's Discuss!

- What is your experience with the four components of performance management in your health department?



Three basic building blocks for improving performance



Health Indicators

How healthy are we?

How does our health compare to others?

What specific problems could we address?

Population level data

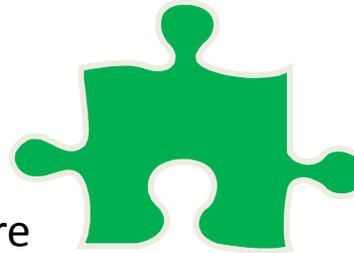
Standards

What should a health department be able to do?

How do we compare to others?

Where do we need to improve?

System/organization level data



Quality Improvement Efforts – Program / Service Based

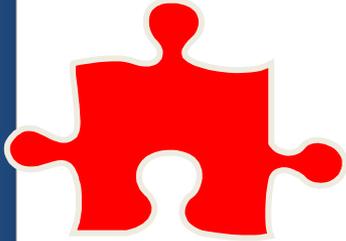
How can we improve the work we do -- that will result in better health or protection?

This is generally applied at the program or service level. There are many distinct programs / services. Examples: TB, Immunizations, WIC, Food safety.

Program level data

An emerging building block?

Activities and Services



Is there a core set of activities and services that every jurisdiction should provide?

What data would we collect on activities and services?

Other important questions?

Agency level data

Putting the pieces together



Identify the weak spots in public health practice.

One Problem: Program evaluation is weak, so we do not routinely measure program impact on health.

One Example: We have not systematically evaluated immunization efforts. Our immunization rates for 2 year olds appear low for the 4th DTAP. We have seen increased pertussis. Can we improve the effectiveness of this service?

Change what is not working

Response: Provide training and tools on evaluation and apply to specific services. Implement strong evaluation. Use the results to make services more effective.

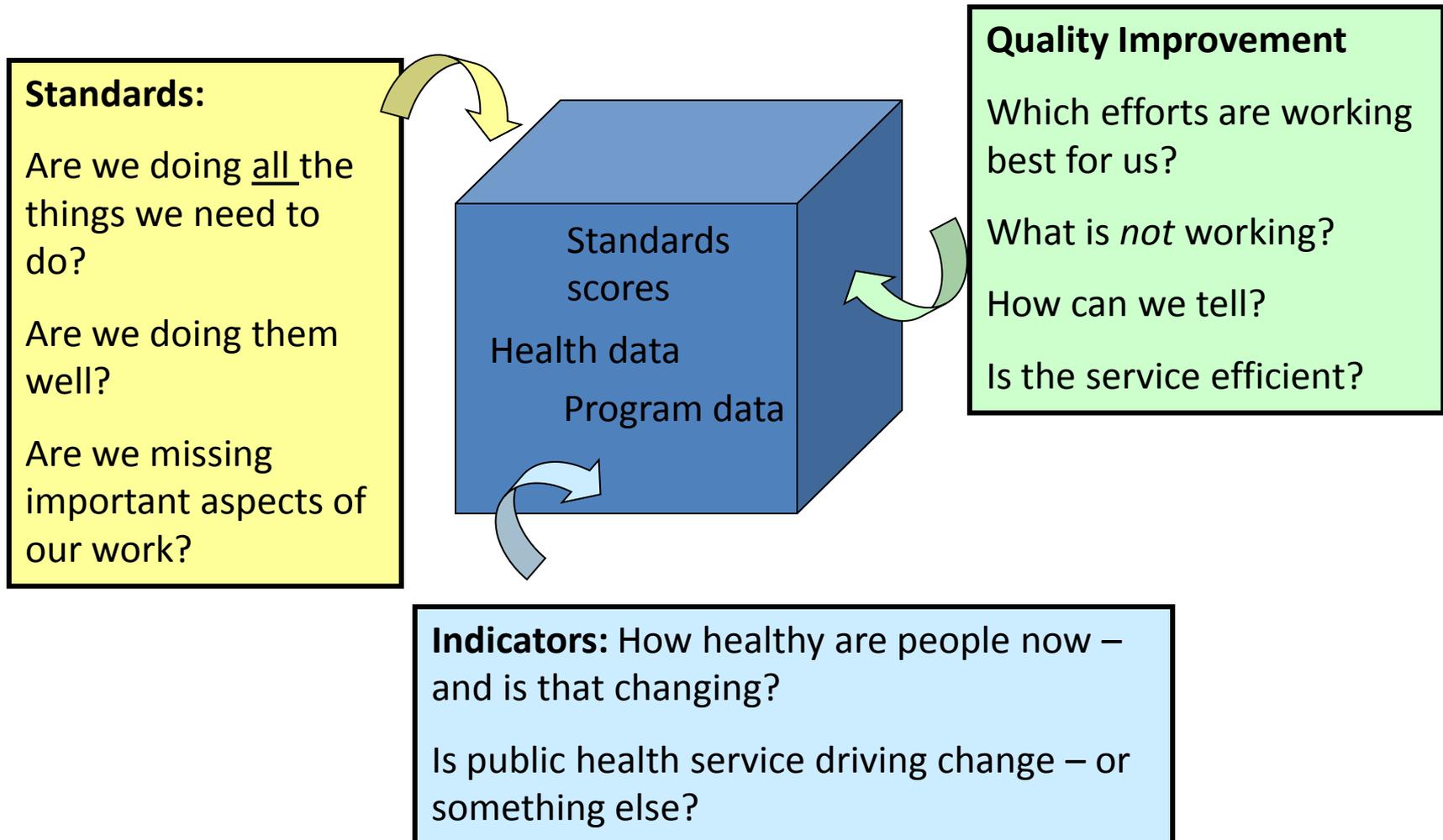
Example: Outreach to medical providers, parents and day care to address immunization. Better data collection. Increased outreach to parents.

Monitor Results

Track rates: Determine if strategies are working

Example: Did the strategies work? Immunization rates up? Pertussis down? If not – why not? Was success achieved one place – and why?

No *single* tool provides all the information needed
A variety of tools provides a full picture

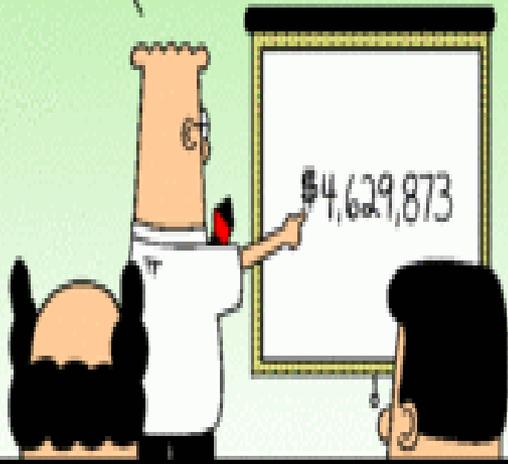


Impacts on Health Take Time

- Chart progress along the way using different types of measures
- Public health programs can have a positive influence – but take time to show results.
 - Many different factors influence health, requiring multiple strategies
 - Behavior change is often slow – and requires consistent, repeated messages
 - Resources are small compared to the magnitude of the problem
 - Strategies are designed for a large population- not individual level experience

Data Management: Collection and Analysis

I DIDN'T HAVE ANY ACCURATE NUMBERS SO I JUST MADE UP THIS ONE.



scottadams@aol.com

www.dilbert.com

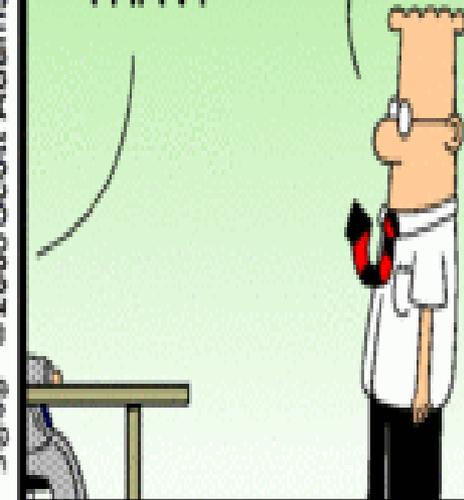
STUDIES HAVE SHOWN THAT ACCURATE NUMBERS AREN'T ANY MORE USEFUL THAN THE ONES YOU MAKE UP.



© 2008 Scott Adams, Inc./Dist. by UFS, Inc.

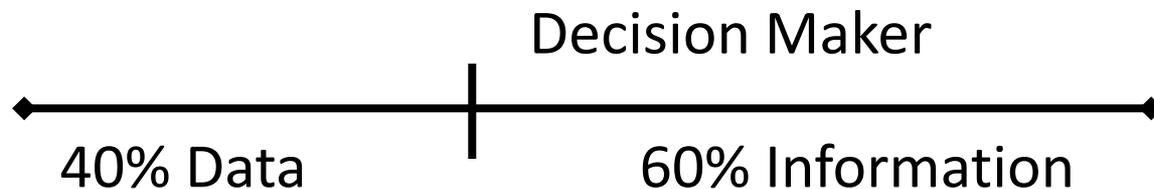
HOW MANY STUDIES SHOWED THAT?

EIGHTY-SEVEN.



Data

- Data by itself has no value – it just shows information.
- Information requires interpretation for it to have value.
- Decision makers add value through interpretation



“Know where to find the information and how to use it – that is the secret of success.”

Albert Einstein

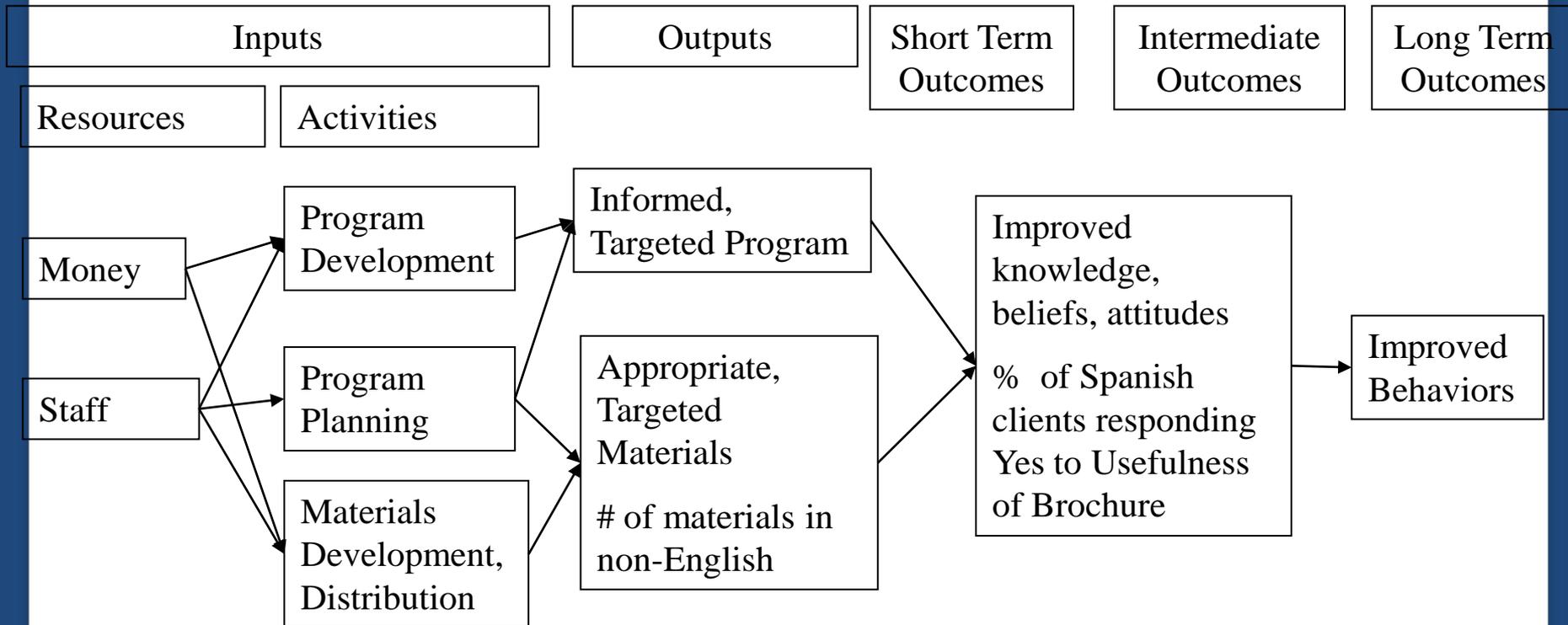
Use S-M-A-R-T Measures

- **S**pecific
- **M**easurable
- **A**ttributable
- **R**elevant
- **T**imebound

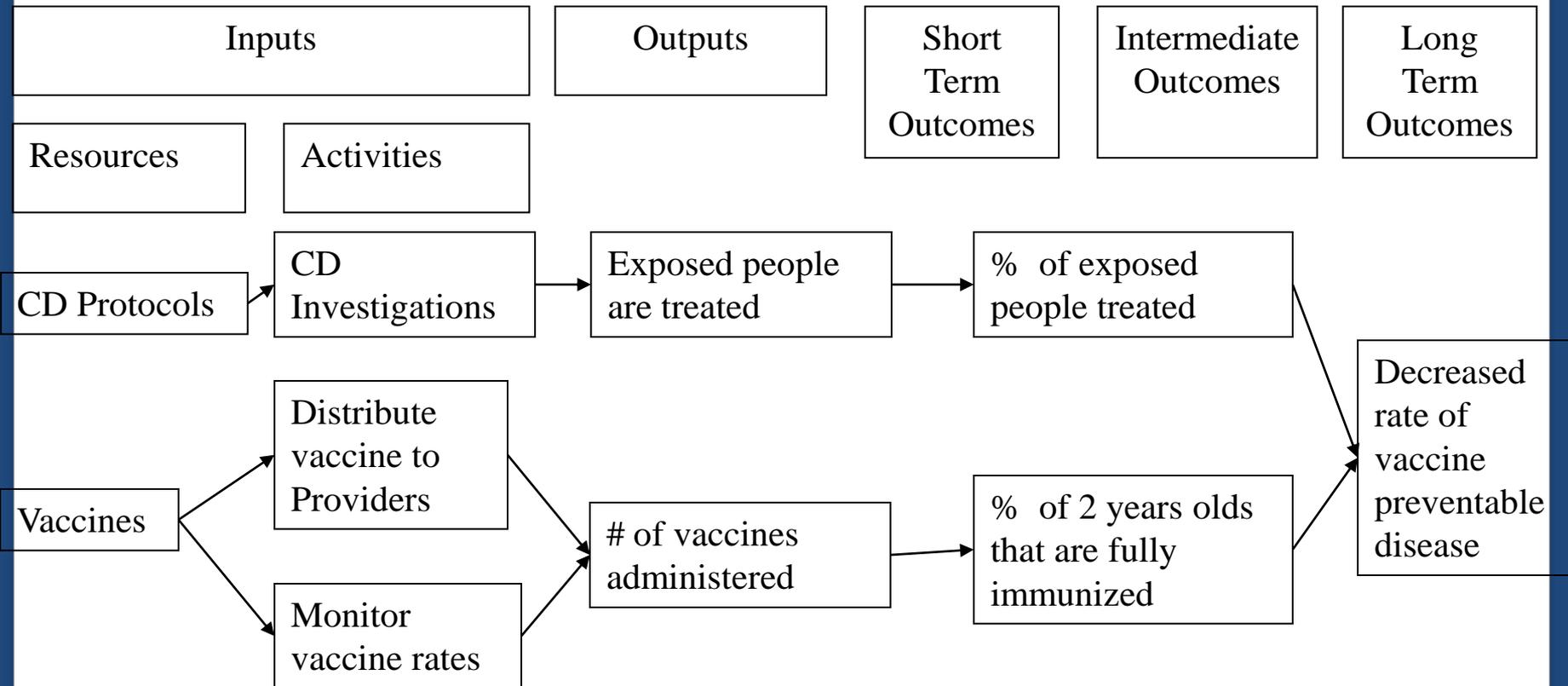
Attributes-Performance Measures

Meaningful	Feasible	Actionable
Important aspect of PH	Precisely specified	under user's control or influence
Population-based	Data available	results interpretable
Valid	Affordable	
Comprehensible	Reliable	

PH Program Logic Model



Programs Contribution to Outcomes



Success can be Measured in Stages

Health Issue / Goal	1. Short term goal "Process"	2. Mid-range goal "Results"	3. Long term Goal "Outcome"
Improve Childhood immunization rates for completion of DTAP series	Mailings to increase provider awareness Improve recall systems and outreach to parents Increase the number of children with records kept in Child Profile	Increase percentage of children completing the series on time	All children complete the series on time – at 24 months Pertussis cases become extremely rare

LHJ Indicators – Communicable Disease

Measure	Measure Type**	County-Actual
Reported STD cases receiving recommended treatment	Process Outcome	96%
Number of needles exchanged in Needle Exchange Program	Process Outcome	84,853
Rate of latent TB cases	Health Status	72%

Establishing Outcome Measures

Data Description and Collection Form

<i>Outcome Measure #1:</i>	
Numerator:	
Denominator:	
Source of data:	
Target or Goal:	
Who will collect this information:	
What tool will be used to collect these data?	
How often will the data be analyzed and reported?	
Baseline measurement dates:	
1 st remeasurement dates:	

Example of Data Description

Statement of Measure	Percent of high risk pregnant women with prenatal visit in 1 st trimester
Target Population	All pregnant women
Numerator:	# of high risk pregnant women with 1 st trimester prenatal visit
Denominator:	# of high risk pregnant women
Source of data:	Clinic visit records
Target or Goal:	95%

Let's Practice!

Outcome Measure	Percent of children 24 months of age with complete immunization series
Target Population	
Numerator	
Denominator	
Source of Data	
Target or Goal	

Establish Targets or Goals

- Use a reliable method to identify and establish targets or thresholds for performance:
 - Industry Benchmarks- Healthy People 2020, County Health Rankings
 - Regulatory Targets or Requirements
 - “Sister” Organizations’ Data
 - Your Own Past Performance

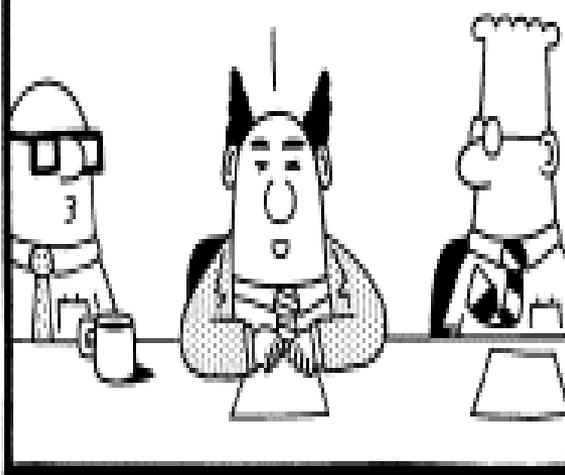
Data Management

ALL OF OUR DATA IS GROSSLY INACCURATE... BUT I NEED DATA IN ORDER TO MANAGE.



www.dilbert.com scottedilbert@aol.com

IF I CONCENTRATE HARD ENOUGH I CAN FORGET THAT THE DATA IS BAD, THEN I CAN USE IT.

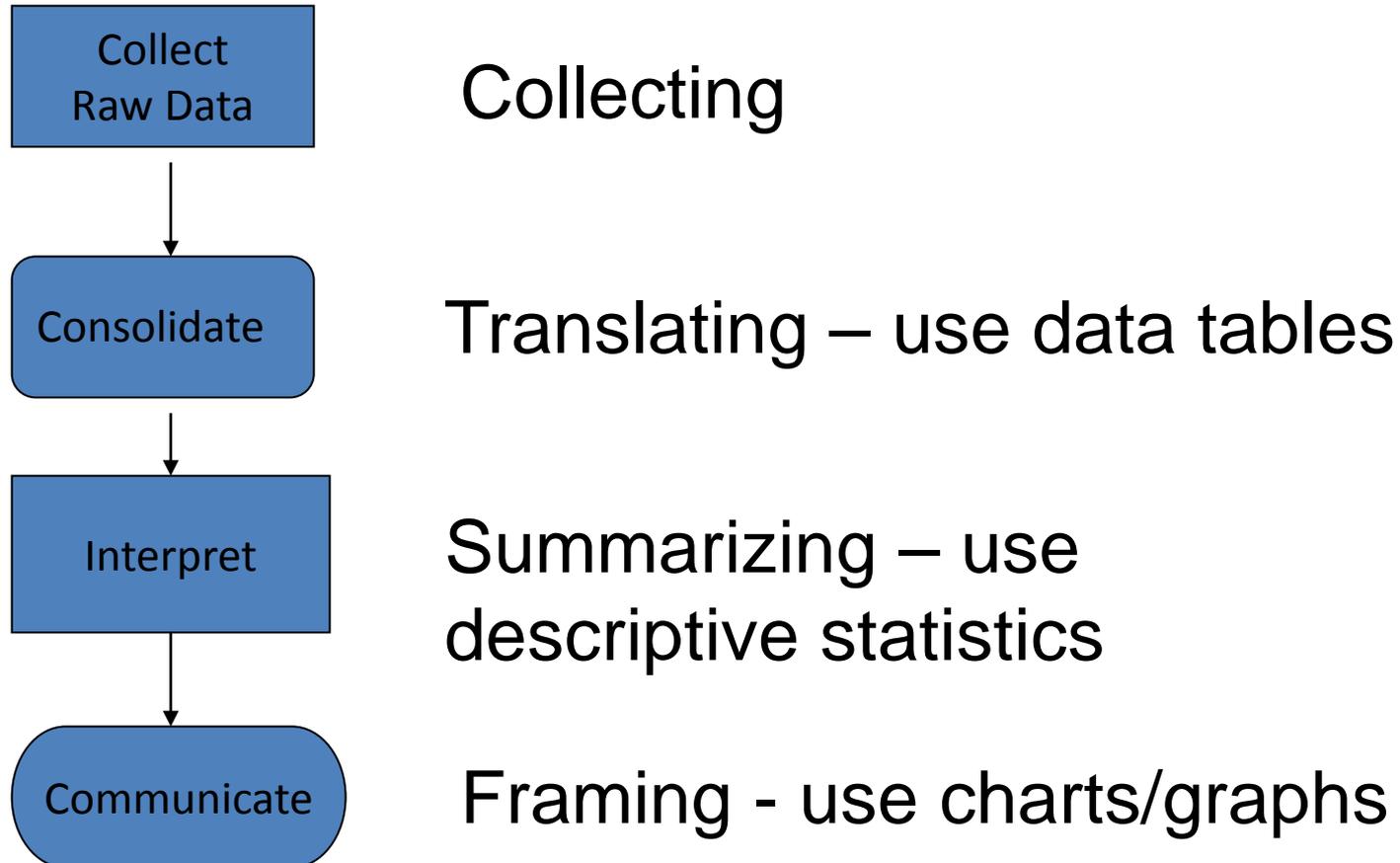


© 2001 United Feature Syndicate, Inc.

I HAVE TO GIVE HIM CREDIT; MANAGING IS HARDER THAN IT LOOKS.



Data Management Strategy



Source: The Public Health Quality Improvement Handbook, R. Bialek, G. Duffy, J. Moran, Quality Press, 2009, p. 146

Data Collection Questions

- Before collecting data we must answer the following questions:
 - What is the purpose for collecting this data?
 - What type of data is going to be collected?
 - Who will collect the data and how frequently?
 - How will they be trained to collect the data?
 - How will we summarize and present the data?

Getting Good Data

- Understand the process being studied – walk it
- Make the collection simple
- Define where the data will be collected – collection points
- Use check sheets and checklists to help
- Minimize the **“other” category** – by good classifications - too often the largest bar on a chart
- Establish collection rules – sampling

Getting Poor Data

- Lack of training on what to do
- Unclear directions
- Ambiguous terminology – need yearly data – fiscal or calendar year?
- Different units of measures – 9/23/99 – Mars spacecraft was a \$125m loss because it missed entry by 100km – NASA used the metric system and Lockheed used the English units – inches versus meters
- Mathematical errors – rounding, calculation, order of calculations, etc

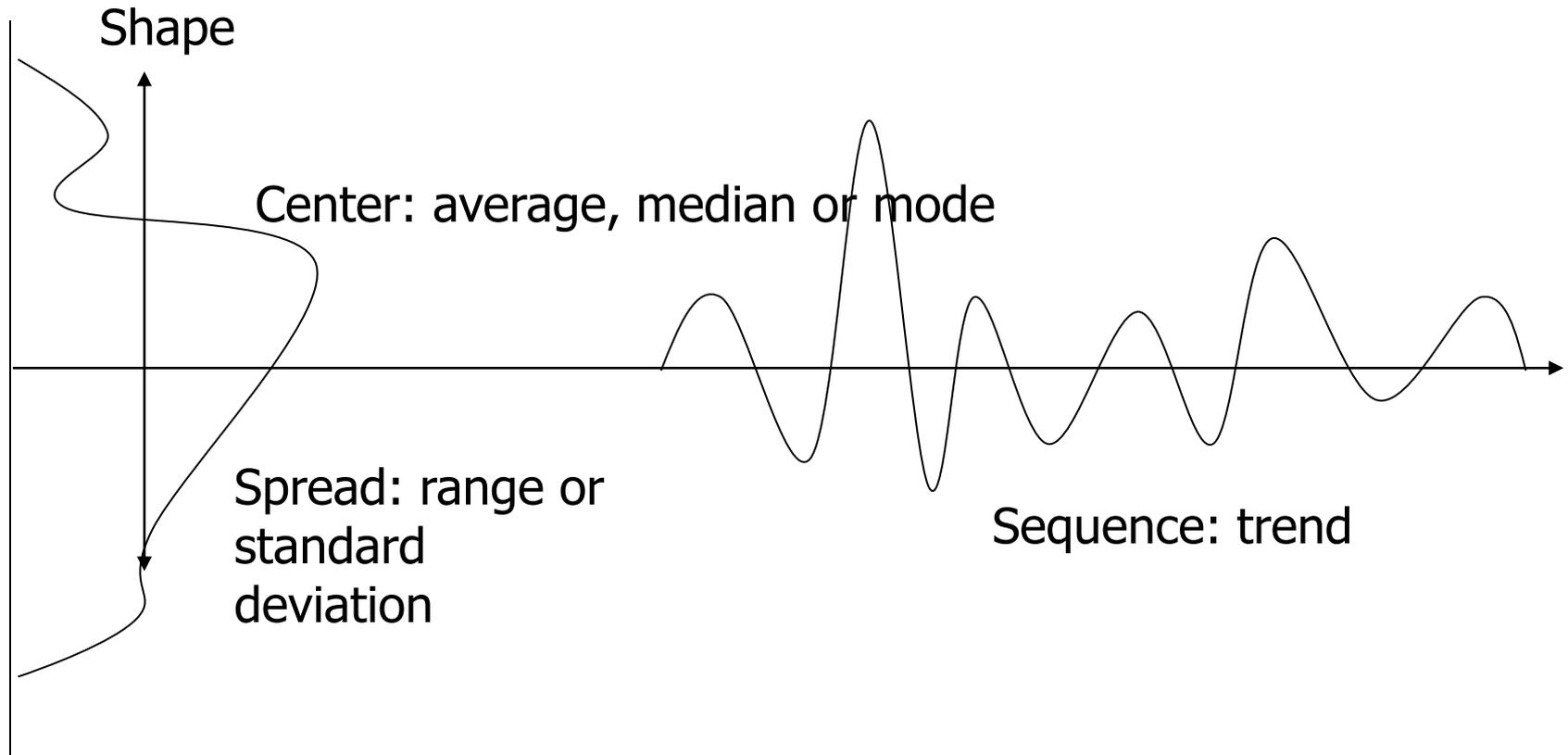
CheckSheets/CheckLists

- Simple data recording form
- Helps in getting useful information to make informed decisions
- Allows for the collection of data in an easy, systematic, and organized manner
- Consists of items and an indicators of how often things occur
- Make collection of new data easier.
- Often used in conjunction with other QI tools

Key Points for Analyzing Data

- The average by itself is not a good summary of data; use a variety of numerical summaries
- Measures of center include:
 - Average/Mean: the total data values divided by the total number of observations
 - Median: the middle value in the data set, half of the data value lie above, half lie below the median
 - Mode: the most frequently occurring values in the set of data
- Use histograms to look at overall variation patterns

The Four Dimensions of Variability



From *Methods and Tools of Quality Improvement*
Institute for Healthcare Improvement

Targeting QI Improvements

- Remember criteria of high risk, high volume and problem-prone
- Use Pareto to identify “vital few” - will get the greatest gain from QI efforts
- Evaluate relevance to population and chose highest relevance that is not achieving goal or target

Identify the “Vital Few”/Highest Leverage

- Pareto Principle - In any group of things that contribute to a common effect, a relative few contributors (20%) will account for the majority (80%) of the effect
 - These few contributors are called the “vital few” while the many other contributors are called the “useful many”
 - The “vital few” hold the greatest potential gain from quality improvement efforts
- Pareto Diagram—A fact based tool for priority setting in quality improvement efforts

Application of Pareto Principle

A few contributors:

- Services
- Process steps
- Culture
- Items
- Reasons
- Theorized causes
- Indications
- Timeframes (hour/day)

Account for majority of effects:

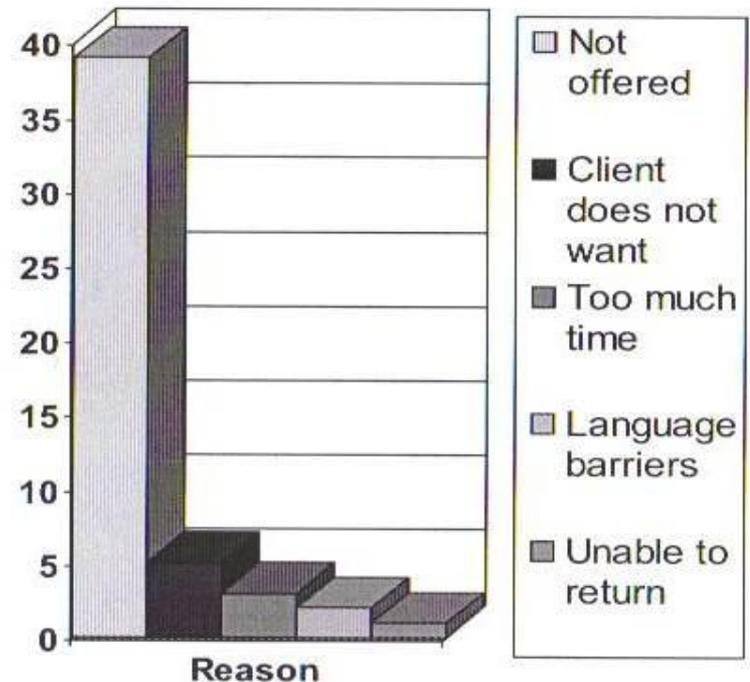
- Problems
- Complaints
- Dissatisfaction
- Rework effort
- Cost of Quality
- Total time
- Errors
- Utilization

Pareto Principle:

20% of sources cause 80% of any problem

Why do fewer clients in clinic B receive HIV tests?

<u>Reasons</u>	<u>#</u>
Too much time	3
Client does not want	5
Not offered	39
Unable to return	1
Language barriers	2

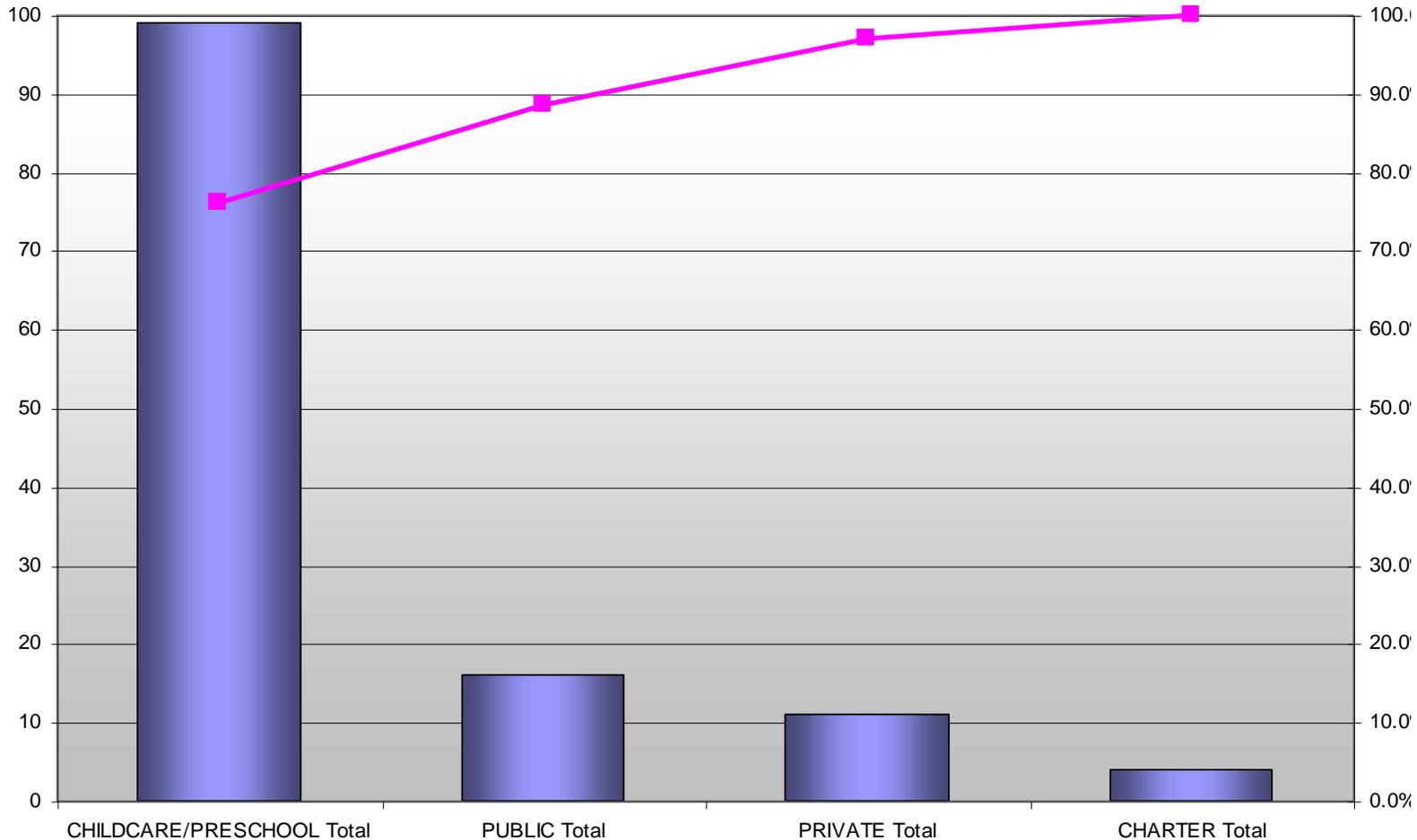


NC Accreditation Collaborative

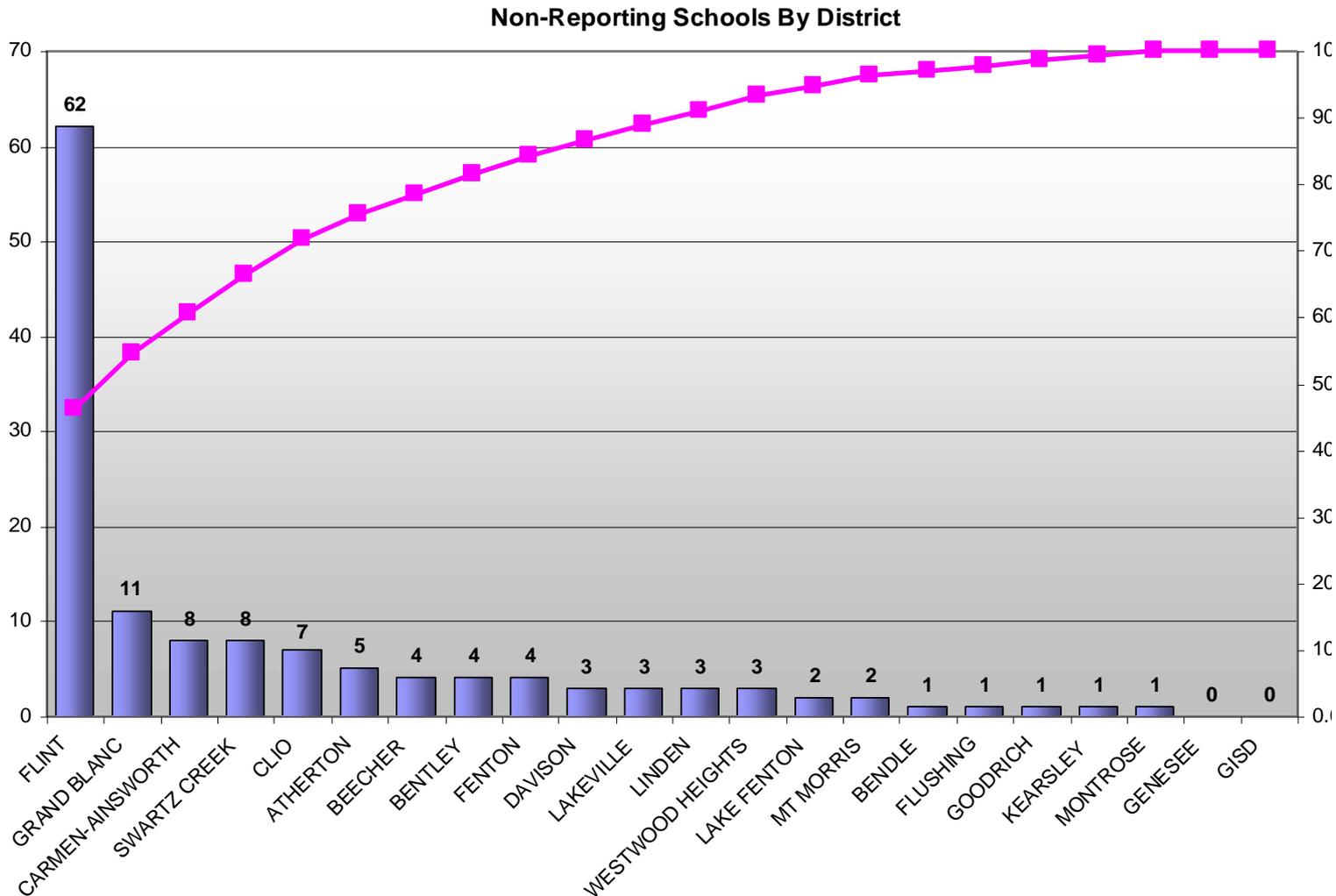
Turn to page 95 in the PH Memory Jogger.

Data Analysis- Pareto Chart

Non-Reporting Facilities by School Type



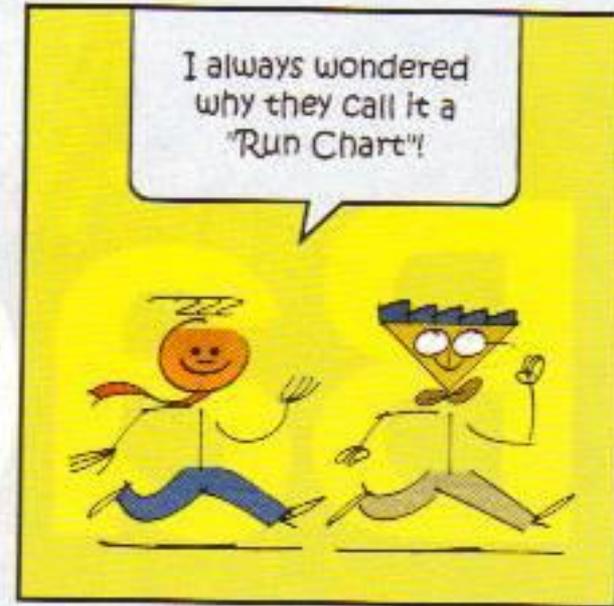
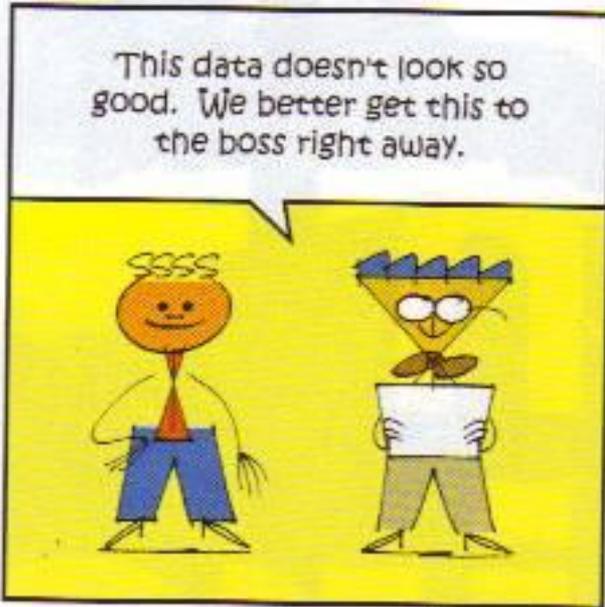
Data Analysis- Pareto Chart



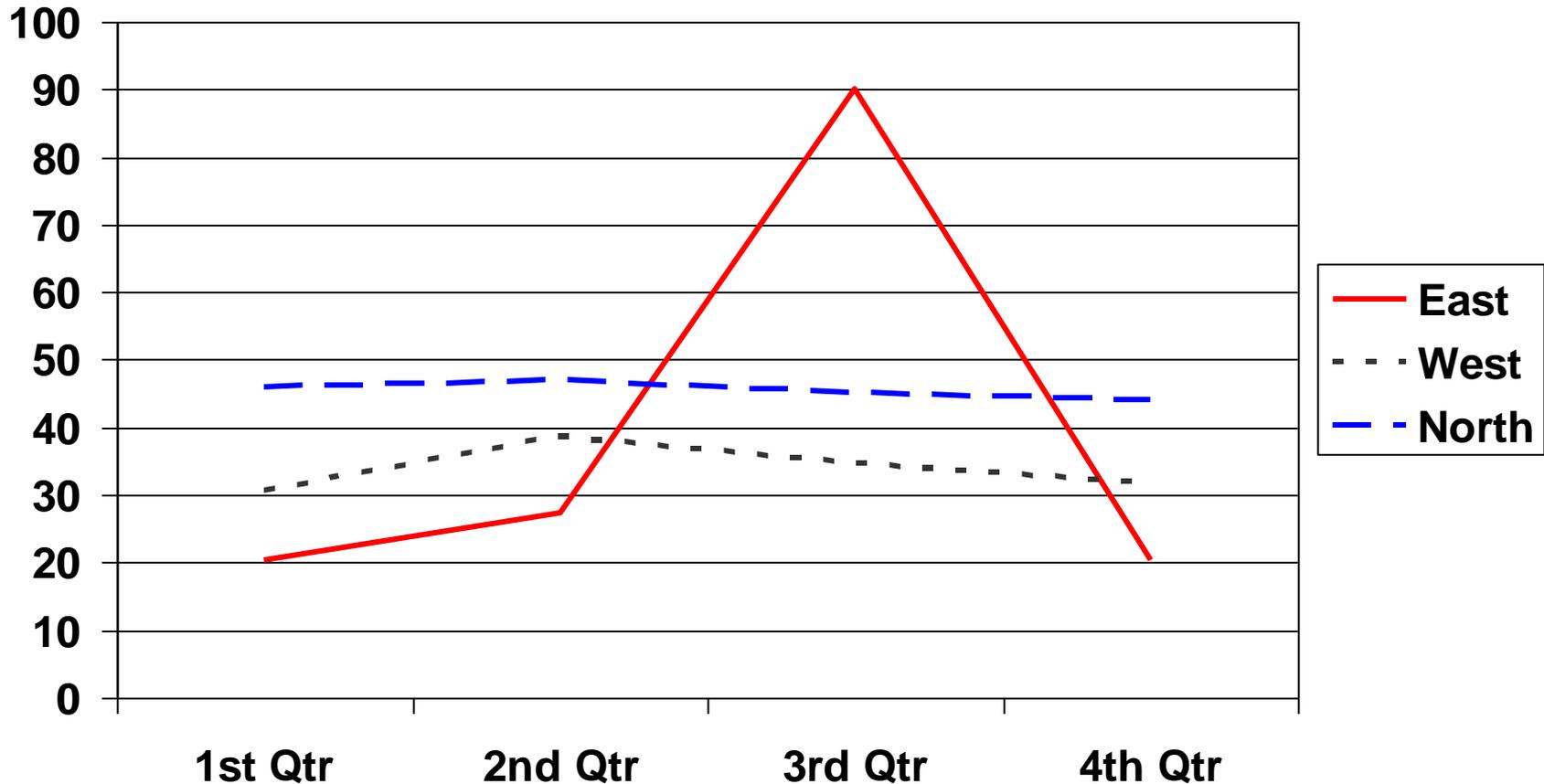
Data Display

- Good data display helps the interpreter understand the data:
 - What it is trying to tell us?
 - What it is trying to say?
 - Where it is pointing?
 - What it is indicating?
 - What action should we take?

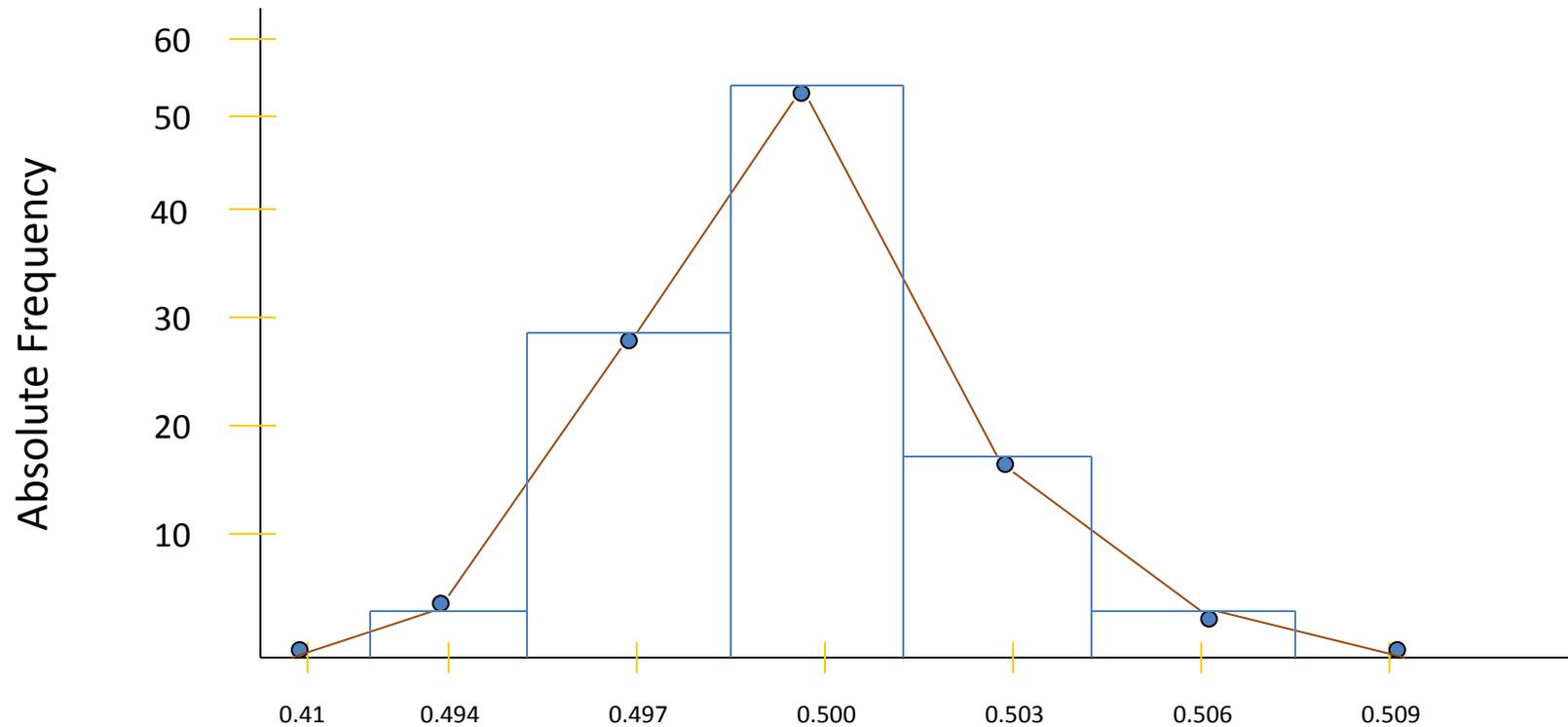
Mr. Pareto Head BY MIKE CROSSEN



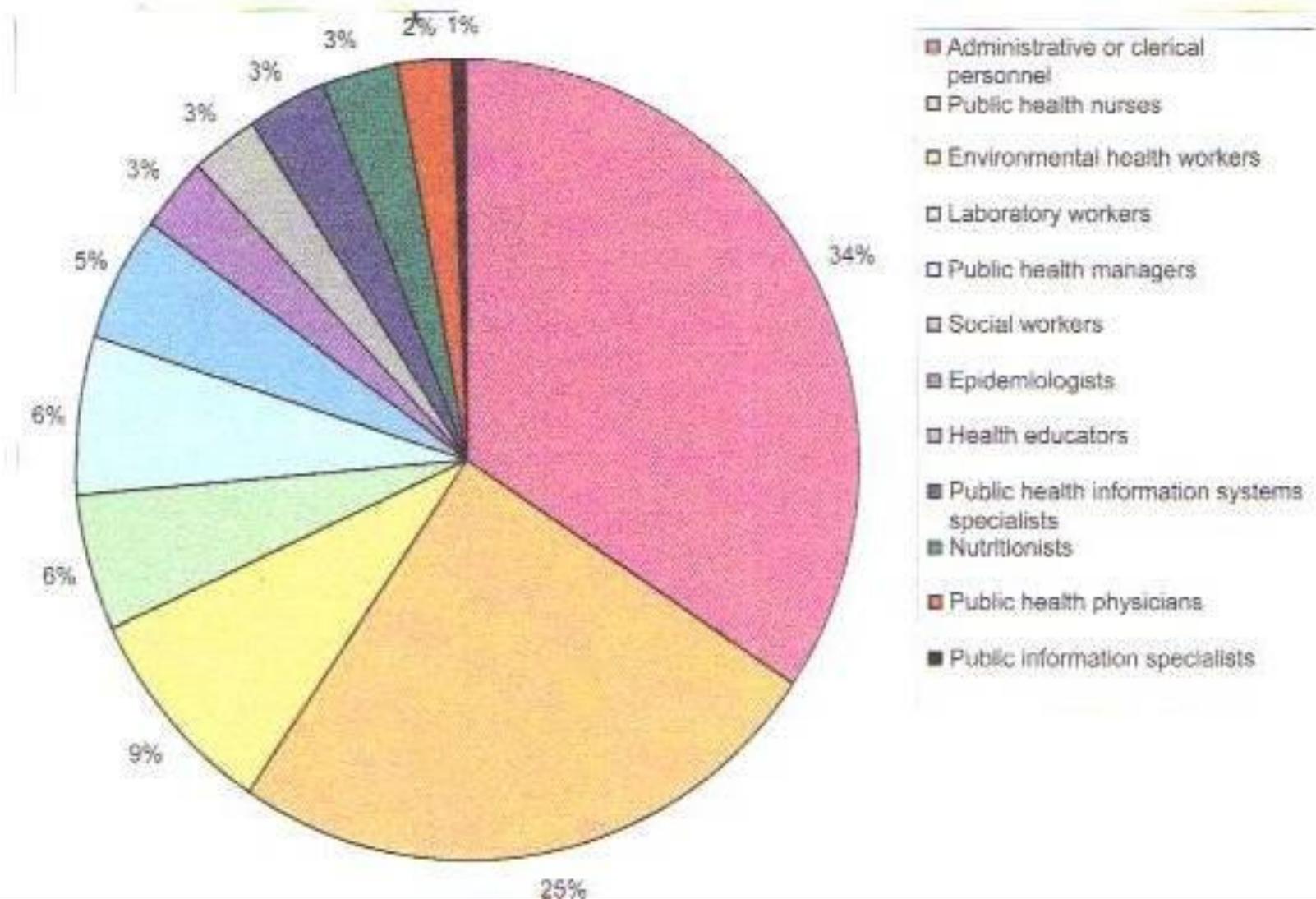
Displaying Data – Run Charts



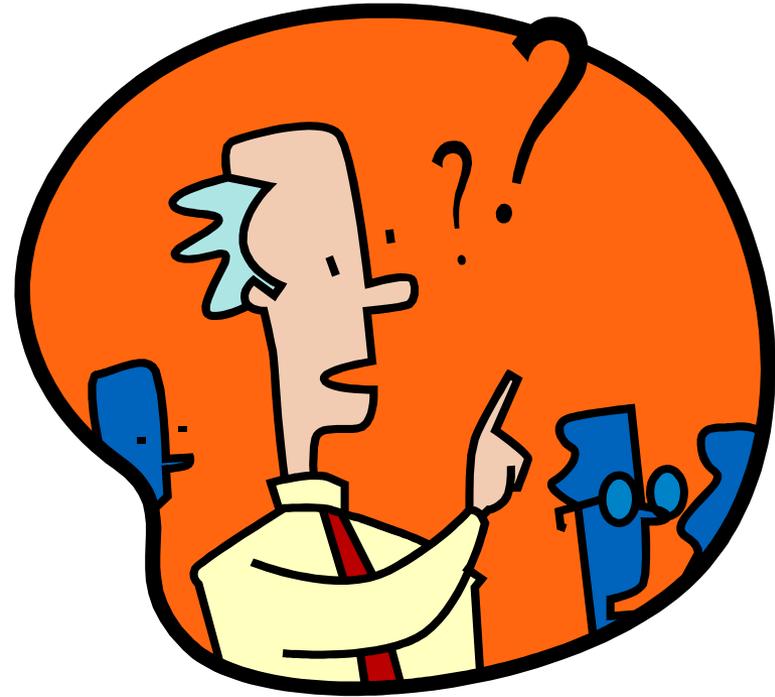
Frequency Polygon & Histogram – Grouped Data



Proportion of specific occupations



What comments and questions do you have?



- **LUNCH BREAK!**

Be back in an hour, please!



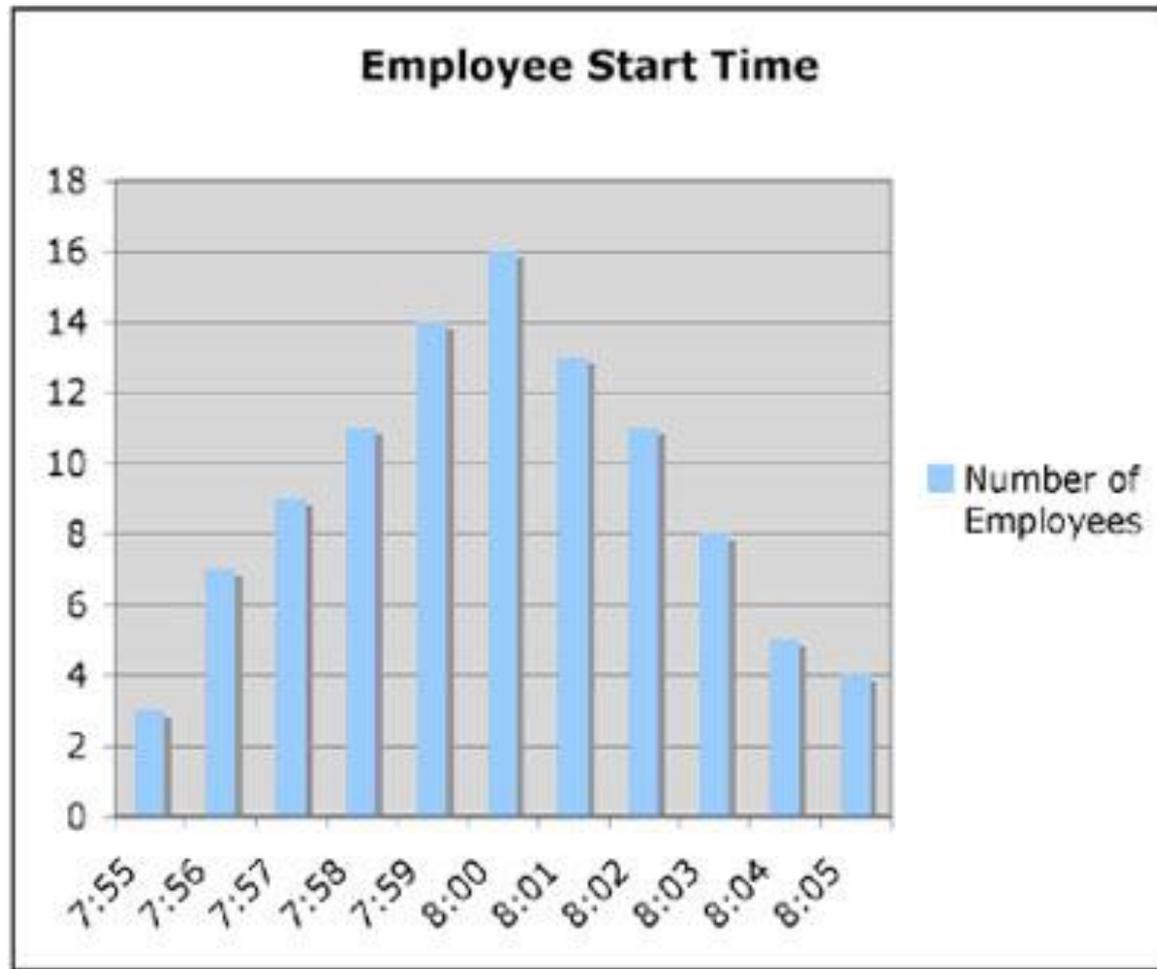
***Example of Data
Analysis:
Why Are Employees
Late For Work?***

Why Are Employees Late For Work?

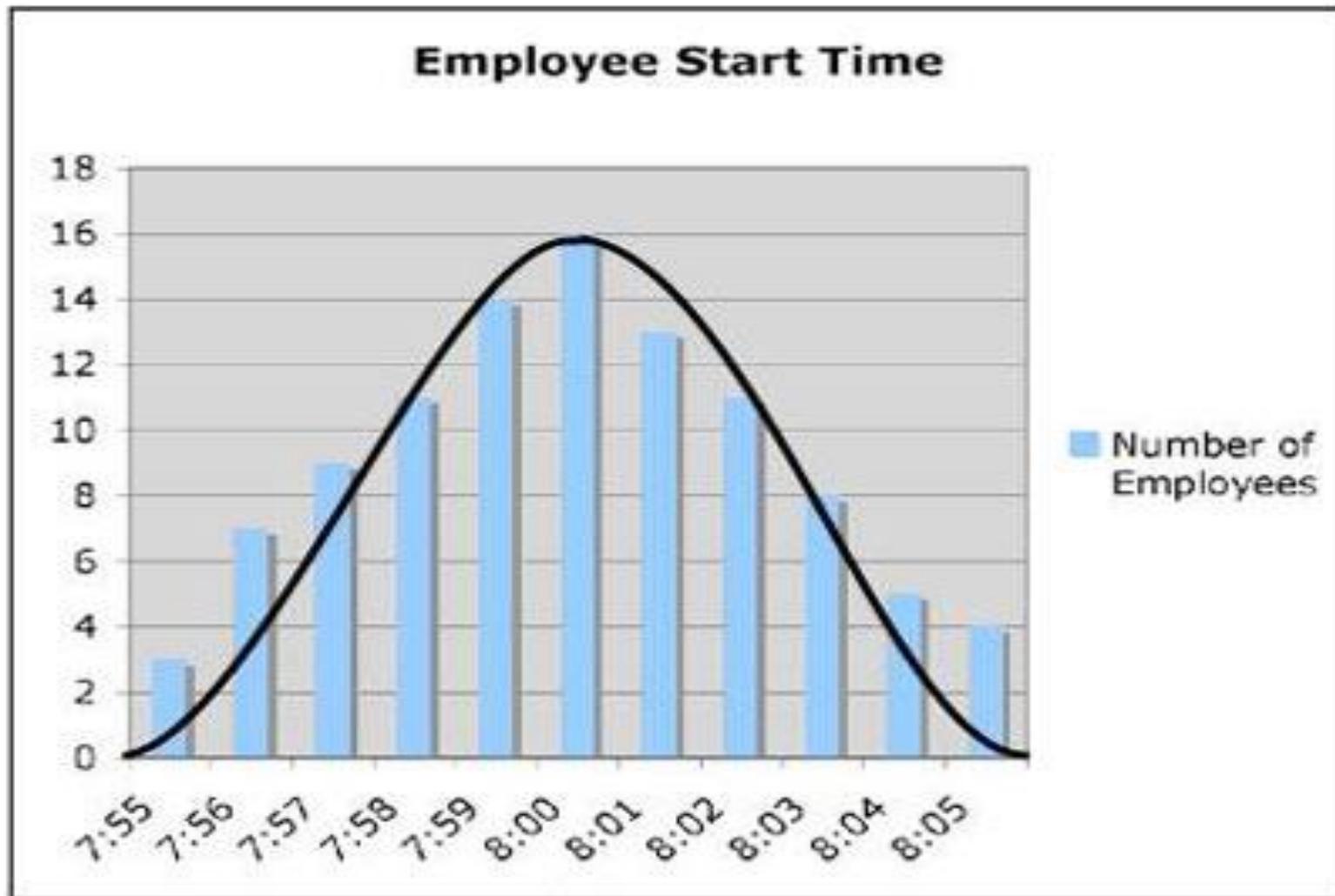
- It is a question that management has wrestled with for a long time.
- Every time we think we have heard all the excuses someone invents another creative one.
- A Health Department decided to track arrival times at work.

Public Health Performance Management Centers for Excellence

Start Time	# Employees At Work
7:55 AM	3
7:56	7
7:57	9
7:58	11
7:59	14
8:00	16
8:01	13
8:02	11
8:03	8
8:04	5
8:05	4



The histogram provides a visual representation of your variation. Notice that the variation is spread out evenly across a range of values. This is called a normal distribution, and the result is a bell-shaped curve.



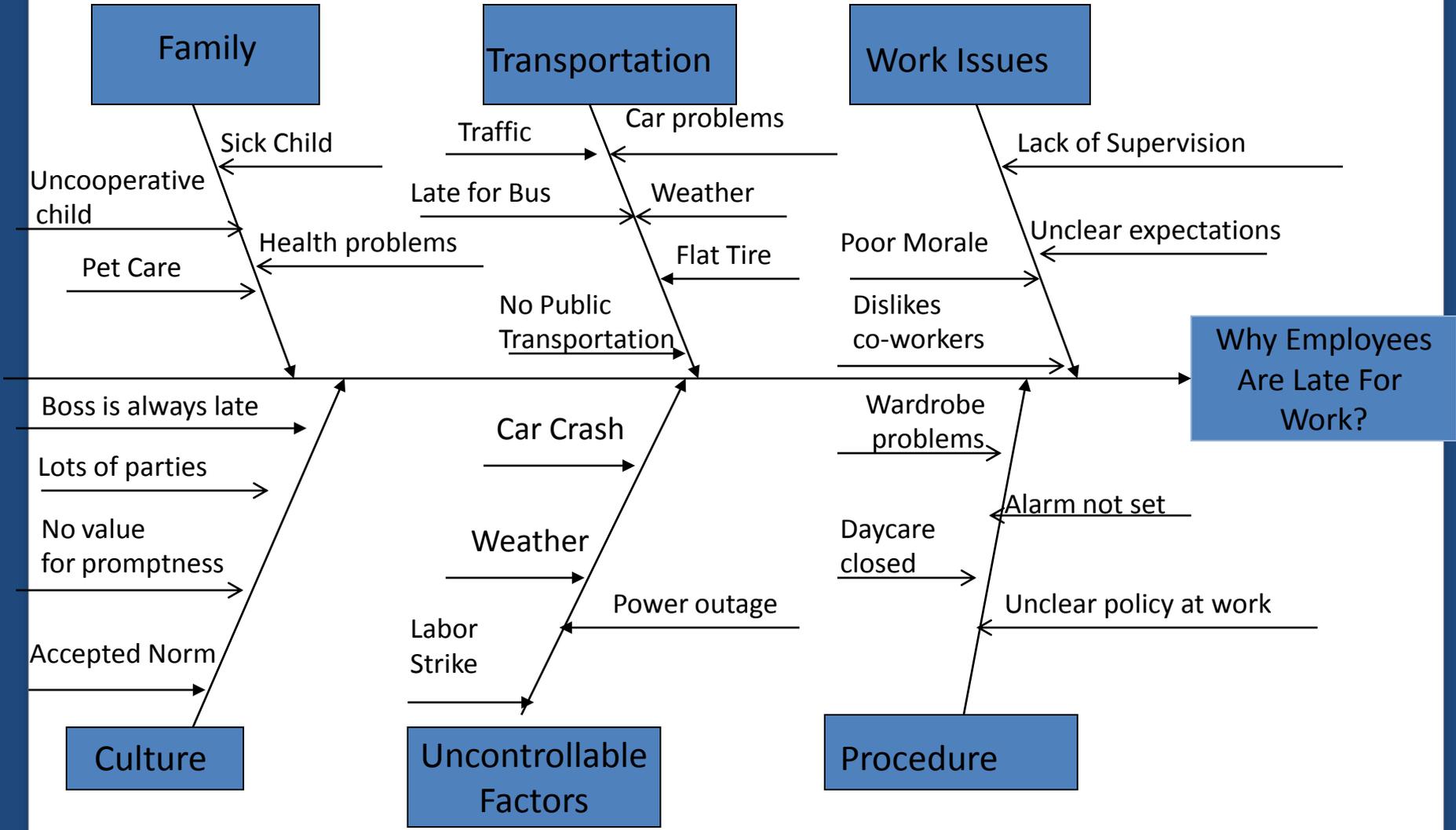
This diagram shows the same distribution with the superimposed bell curve.

Investigating Reasons and Taking Action

- Why Are Employee Late For Work?
- Use a Cause and Effect diagram to understand the causes.
- Data analyzed using Pareto chart.
- Then address the top 3-4 reasons (the vital few) to test and implement interventions that will address a likely “root cause”, thereby creating greater improvement that can be sustained.

Public Health Performance Management Centers for Excellence

Cause and Effect Diagram



Data Collection Step

Data Collection on reason for being late for 60 days

Reason	# of times in 60 days
Child care/sick child	18 (30%)
Car problems	12 (20%)
Wardrobe problems	12 (20%)
Alarm not set	6 (10%)
Weather	3 (5%)
Traffic	3 (5%)
Attended party	3 (5%)
Poor morale	2(3.5%)
No value for promptness	1 (1.5%)

Investigating The Reasons

- Hypothesis: Employee is late due to party attendance (gossip/talking about parties)
- Employee with lateness problem and supervisor create fishbone diagram together
- Employee agrees to collect data for 60 days
- Data analyzed using Pareto chart
- Top 4 reasons to address

Identify the “Vital Few”/Highest Leverage

- Pareto Principle - In any group of things that contribute to a common effect, a relative few contributors (20%) will account for the majority (80%) of the effect
 - These few contributors are called the “vital few” while the many other contributors are called the “useful many”
 - The “vital few” hold the greatest potential gain from quality improvement efforts
- Pareto Diagram—A fact based tool for priority setting in quality improvement efforts

Application of Pareto Principle

A few contributors:

- Services
- Process steps
- Culture
- Items
- Reasons
- Theorized causes
- Indications
- Timeframes (hour/day)

Account for majority of effects:

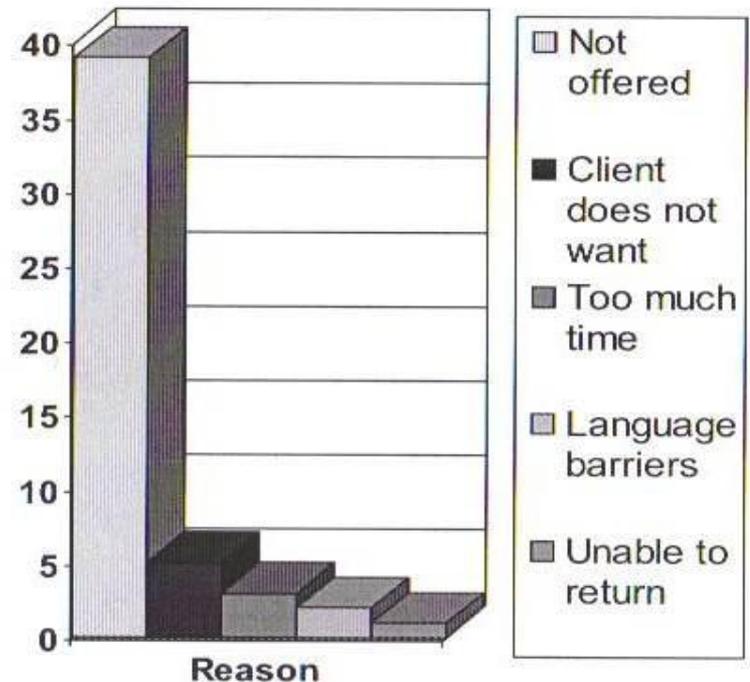
- Problems
- Complaints
- Dissatisfaction
- Rework effort
- Cost of Quality
- Total time
- Errors
- Utilization

Pareto Principle:

20% of sources cause 80% of any problem

Why do fewer clients in clinic B receive HIV tests?

<u>Reasons</u>	<u>#</u>
Too much time	3
Client does not want	5
Not offered	39
Unable to return	1
Language barriers	2

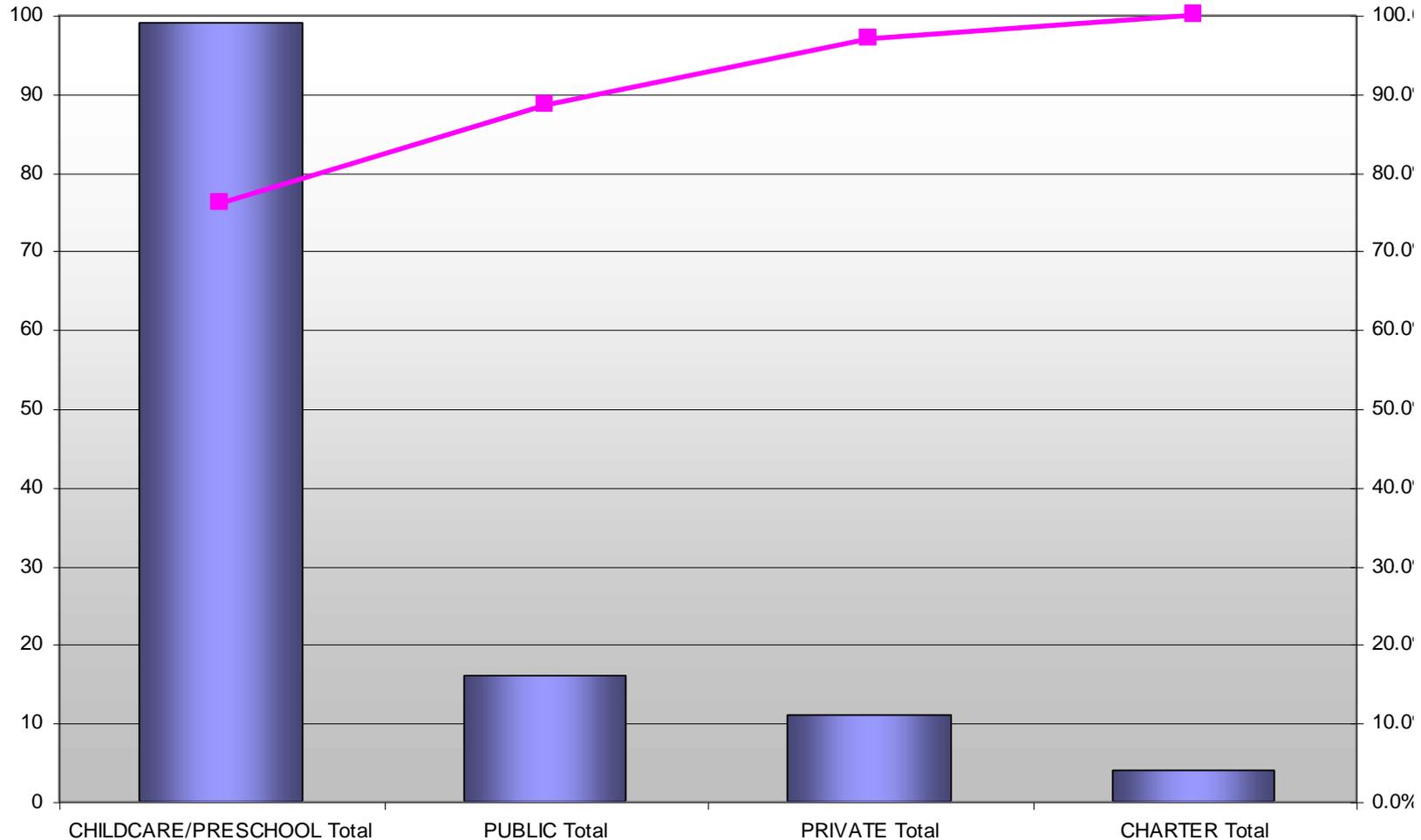


NC Accreditation Collaborative

Turn to page 95 in the PH Memory Jogger.

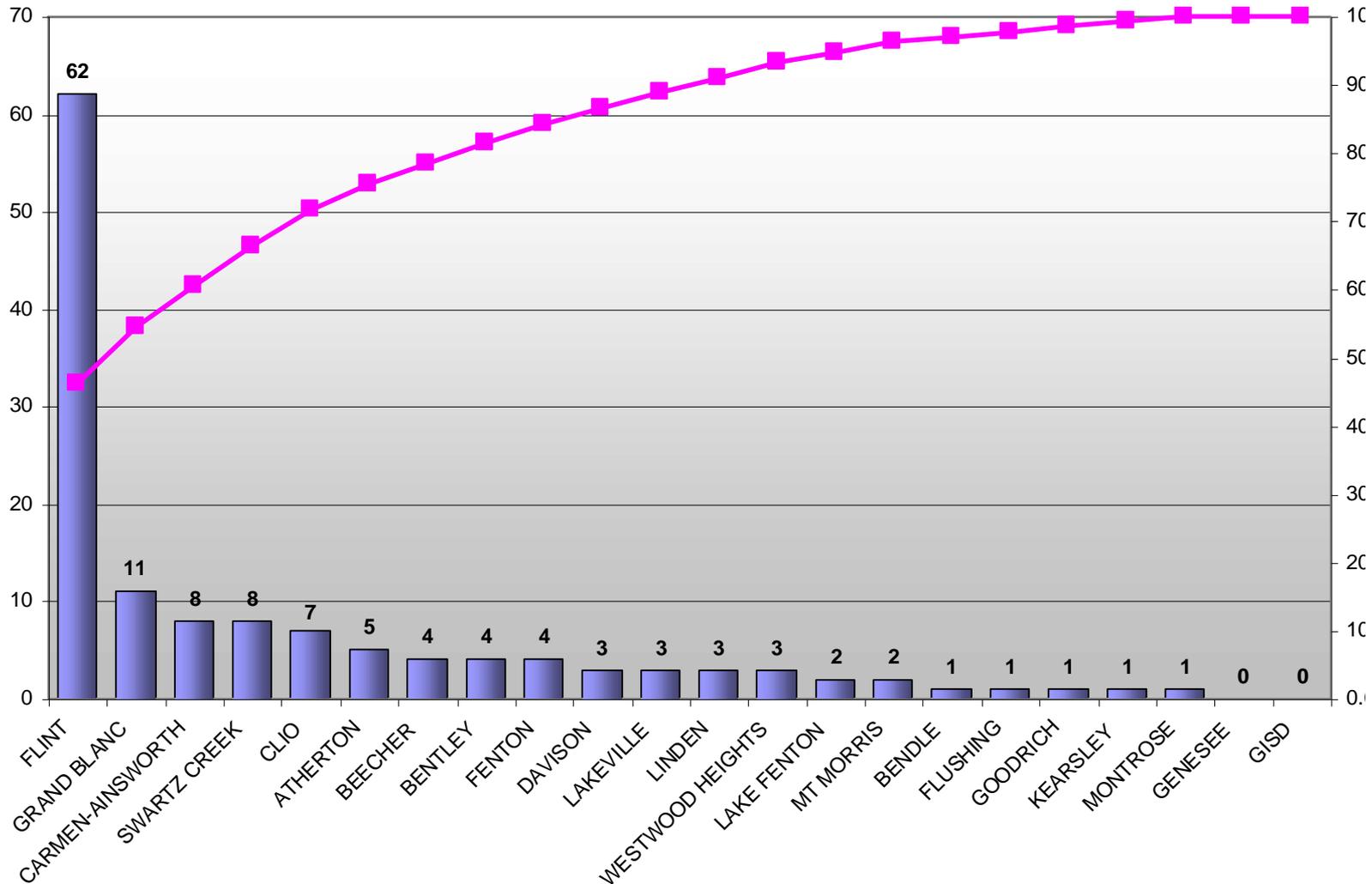
Data Analysis- Pareto Chart

Non-Reporting Facilities by School Type



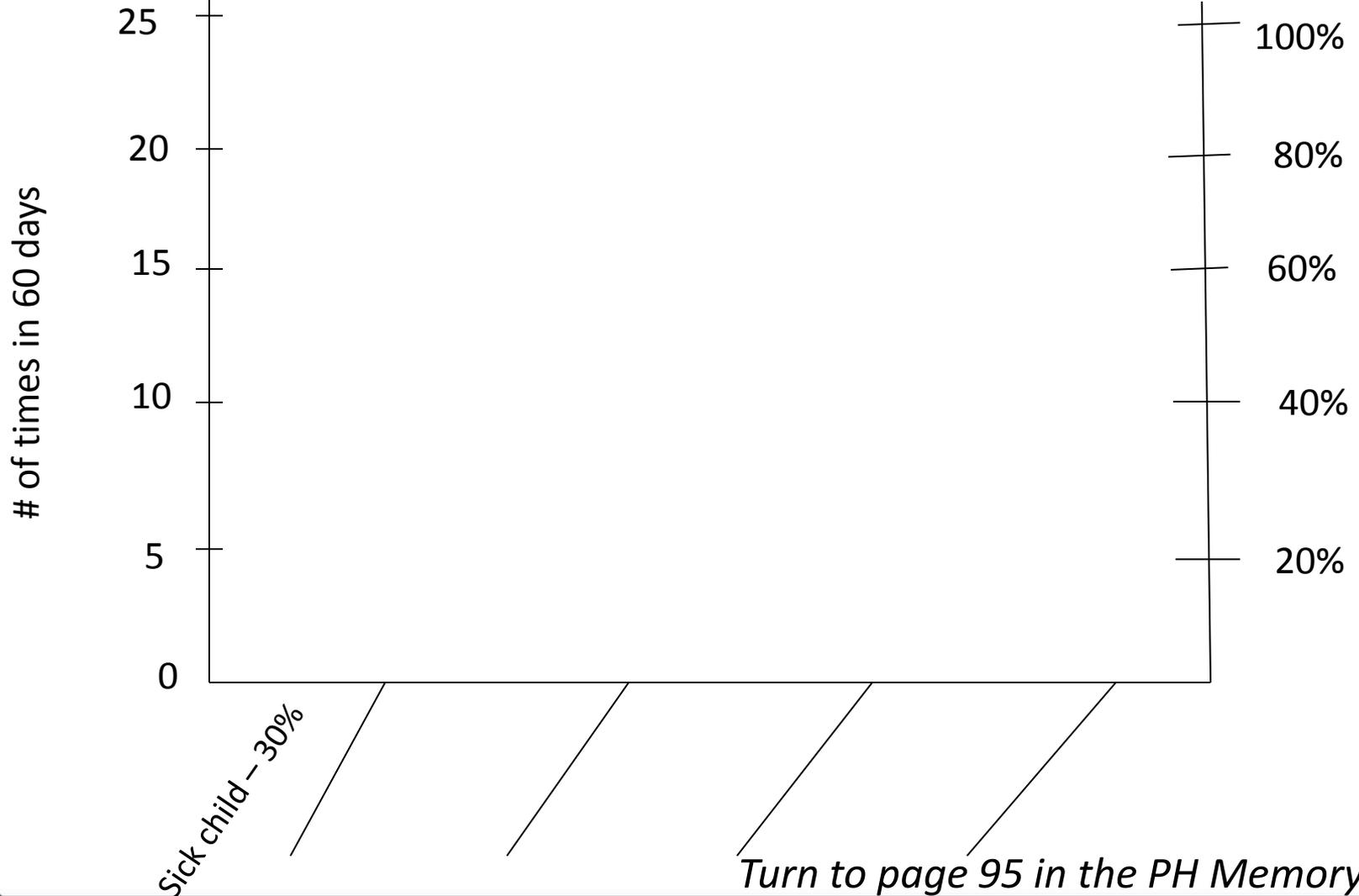
Data Analysis- Pareto Chart

Non-Reporting Schools By District



Pareto Diagram Exercise

Pareto chart from data collection showing top 4 reasons for lateness.

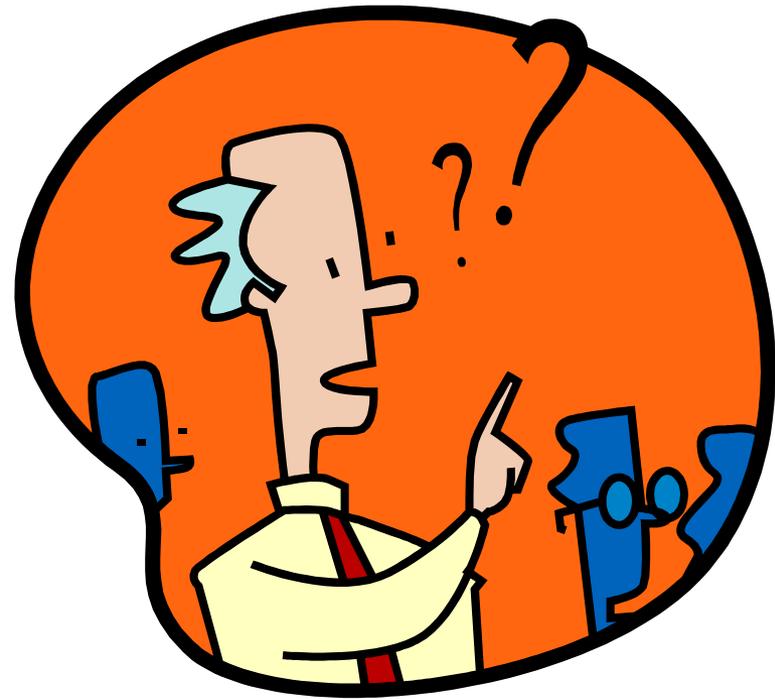


Turn to page 95 in the PH Memory Jogger

Target Improvement Action

- Needs to address car problems, child care, setting alarm and wardrobe issues
- Supervisor thought the primary problem was party attendance, but data disproved this and identified 4 other problems
- Could do Root Cause Analysis on each of these 4 issues to identify root cause

What comments and questions do you have?



Variation in Process: Common and Special Cause

Understand Variation

- Sources of variation include: machines, materials, methods, measurements, people, environment
- Common cause variation occurs if the process is stable— variation in data points will be random and obey a mathematical law—it is said to be in statistical control, with a large number of small sources of variation
- Reacting to random variation in a process that is stable/in statistical control, it is called tampering and leads to further complexity, increasing variation and mistakes

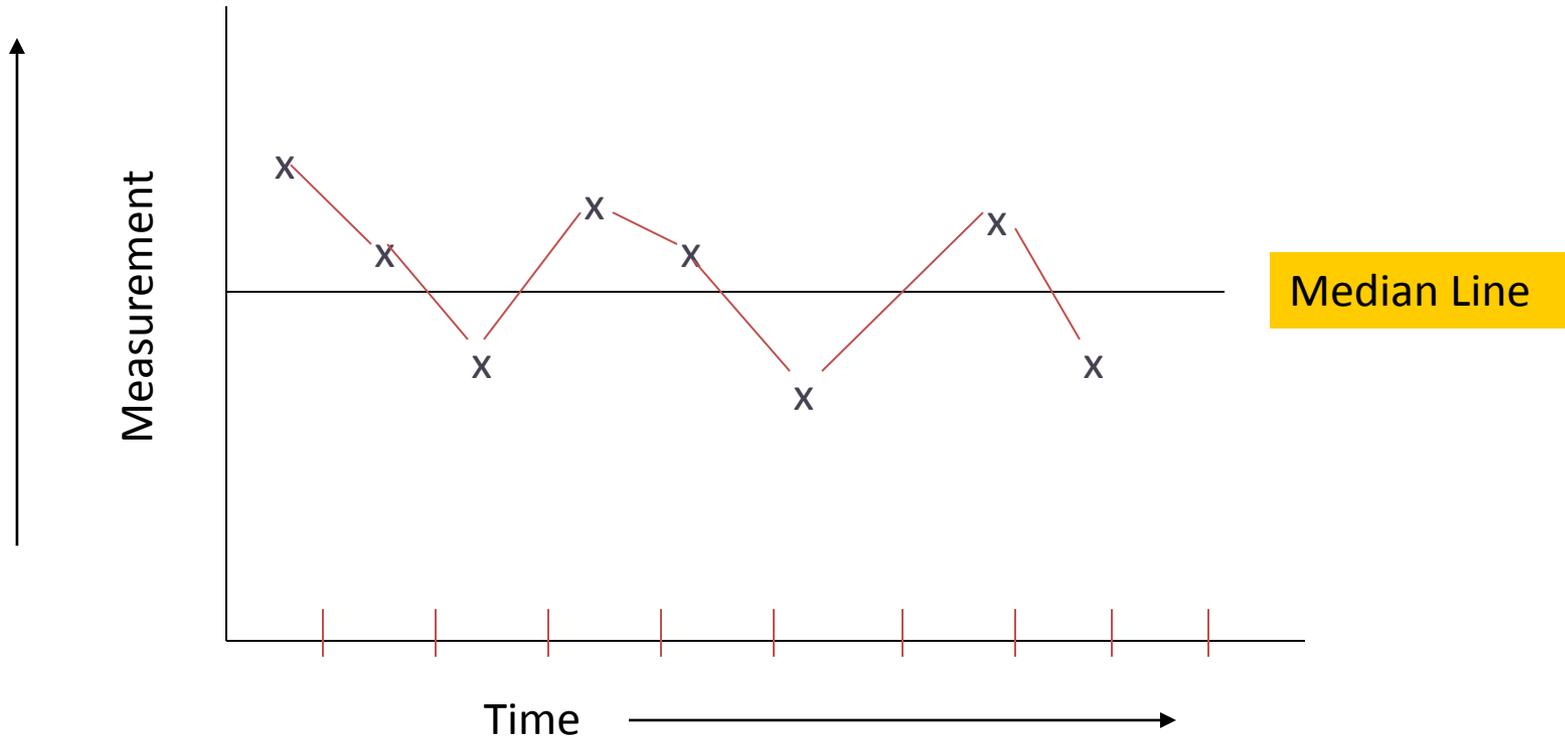
Understand Variation

- Special cause variation arises because of specific circumstances which are not part of the process all the time and may or may not ever recur—if the recurrence is periodic, clues to the root cause may emerge
- Variation can be shown in control charts with mean and standard deviation
- Control charts are pictures of trend data with an extra feature—the range of variation built into the system

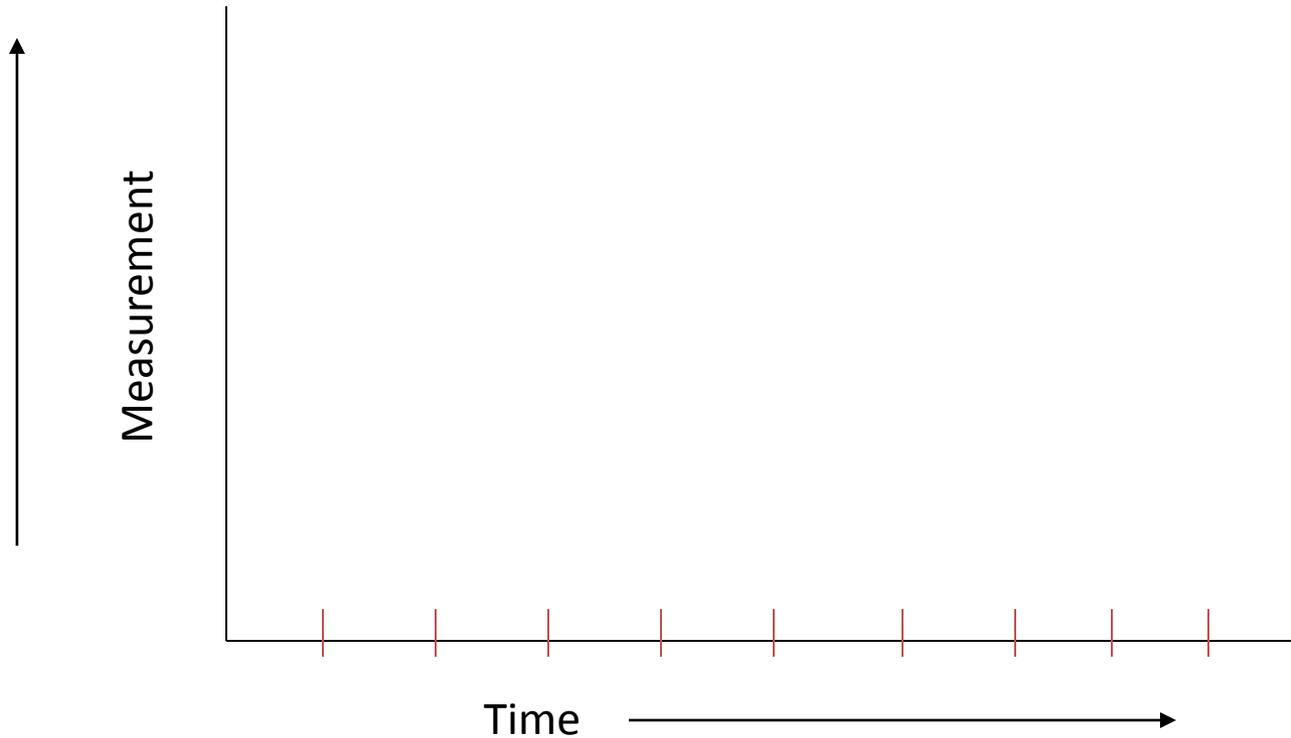
Understand Variation

- A sentinel event is a special cause variation requiring root cause analysis
- Examine specific incident(s) of special cause variation and make changes to a single element only after very careful analysis
- Need to investigate special cause variation before making any conclusions about performance level
- ***Failure to distinguish between common and special cause variation can be hazardous to organizational performance!***

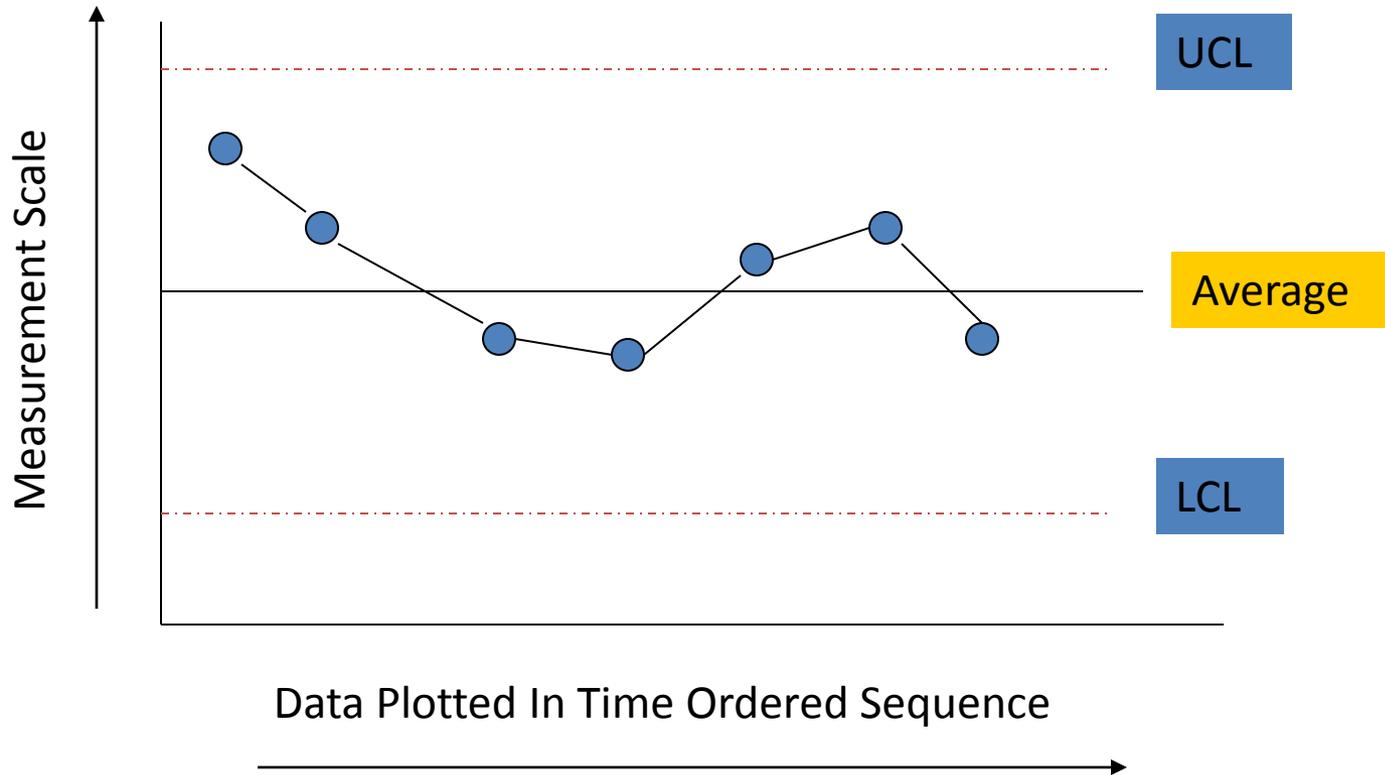
Run Chart



Let's Practice!



Typical Control Chart

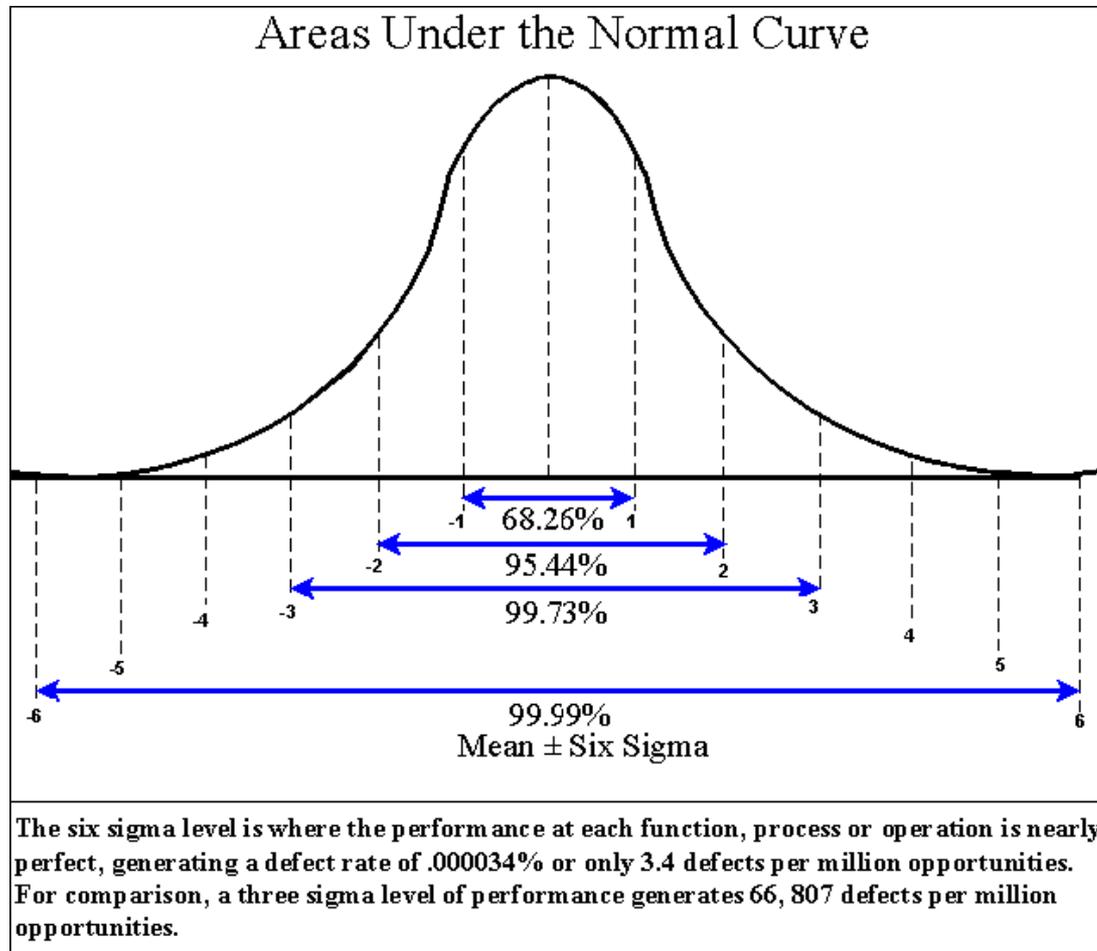


Standard Deviation

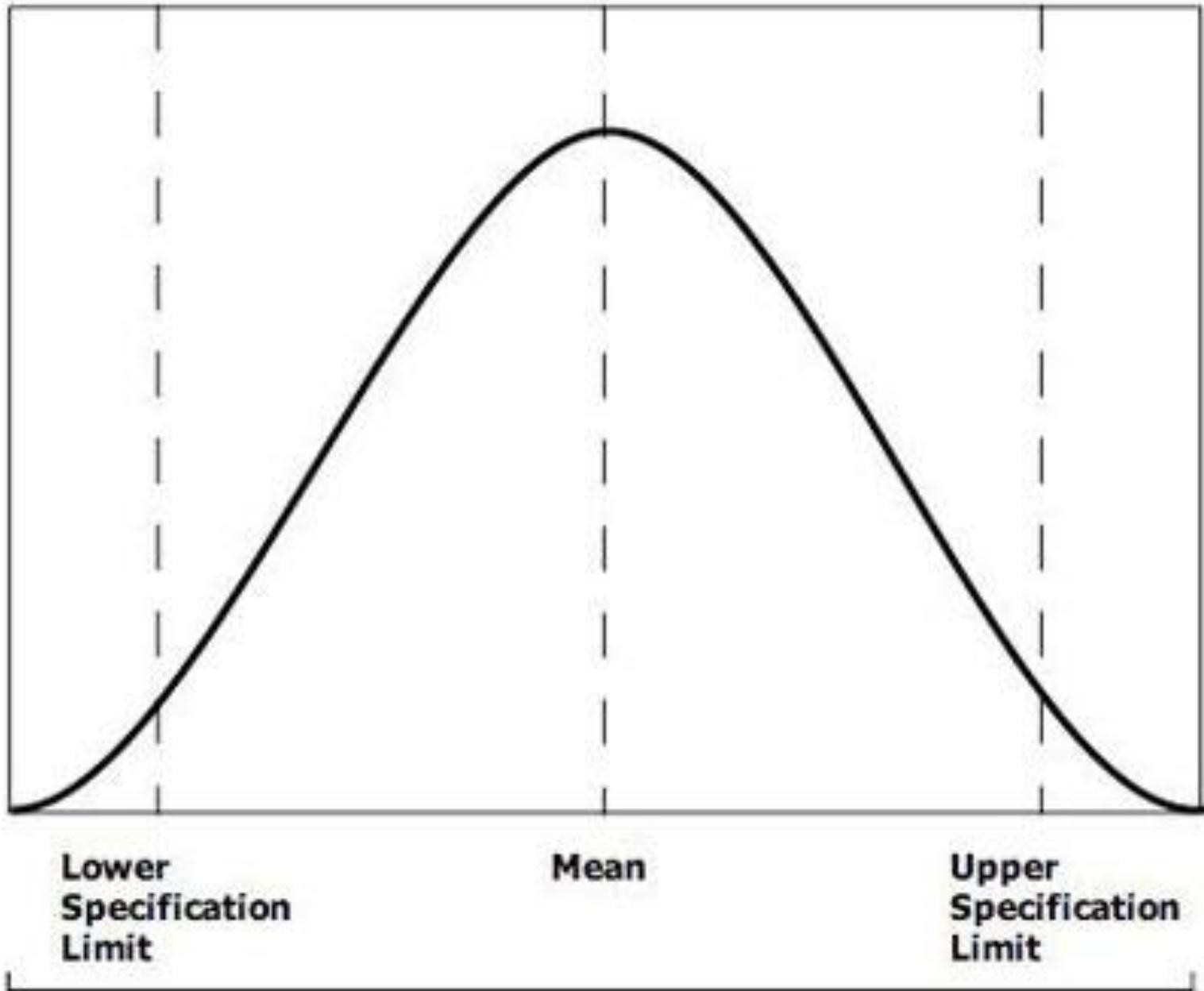
- Represented by the lowercase form of the Greek letter sigma, is a statistic that tells you how tightly the data points are clustered around the mean for a given process.
- This tells you how much variation exists.
 - When data points are tightly clustered around the mean and the bell-shaped curve is steep, the standard deviation and the variation is small.
 - When the data points are spread apart and the bell-shaped curve is flat, the standard deviation and the variation is great.

Standard Deviation

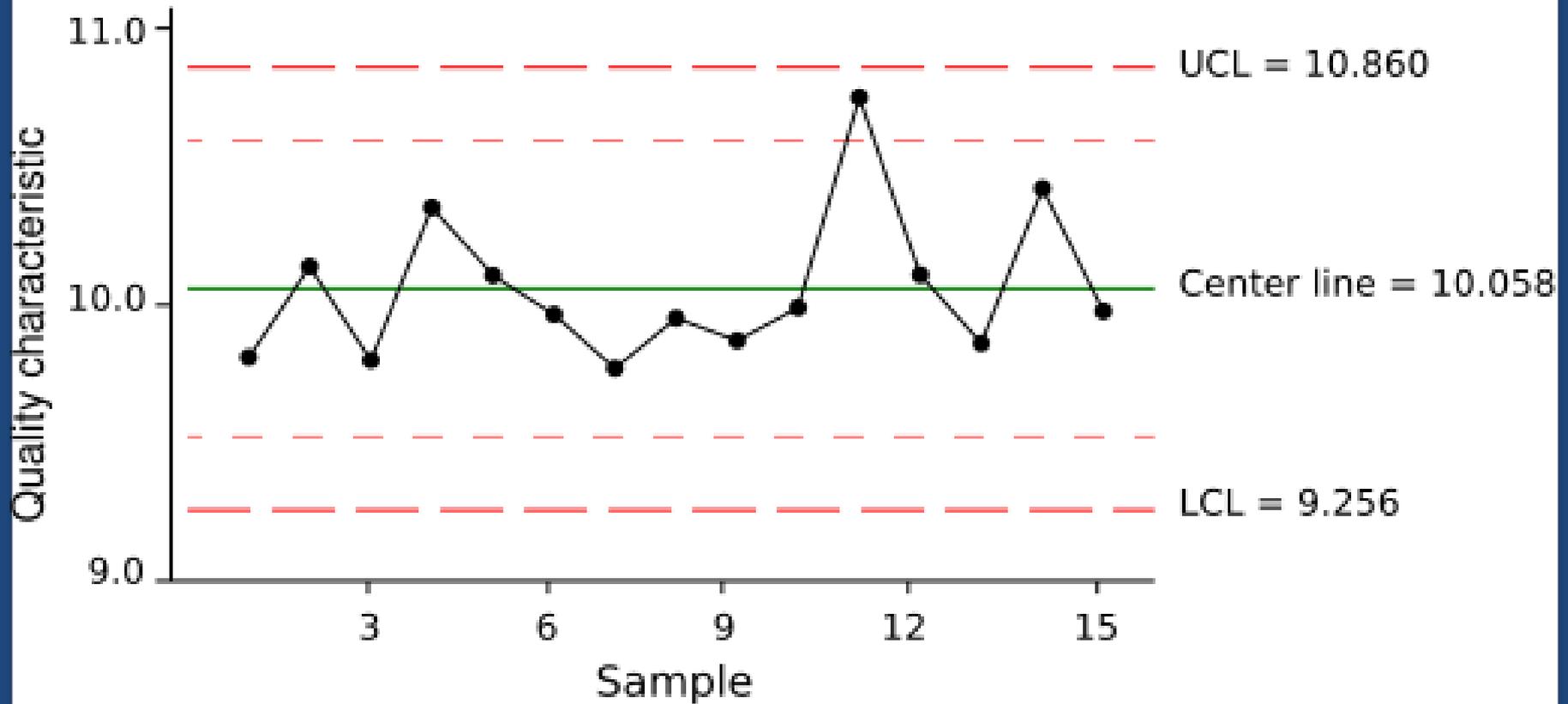
- Statisticians generally talk about the number of standard deviations from the mean.
- One standard deviation in either direction of the mean accounts for 68 percent of the data in the group.
- Two standard deviations account for 95 percent of it.
- Three standard deviations account for 99 percent of the data.



Public Health Performance Management Centers for Excellence

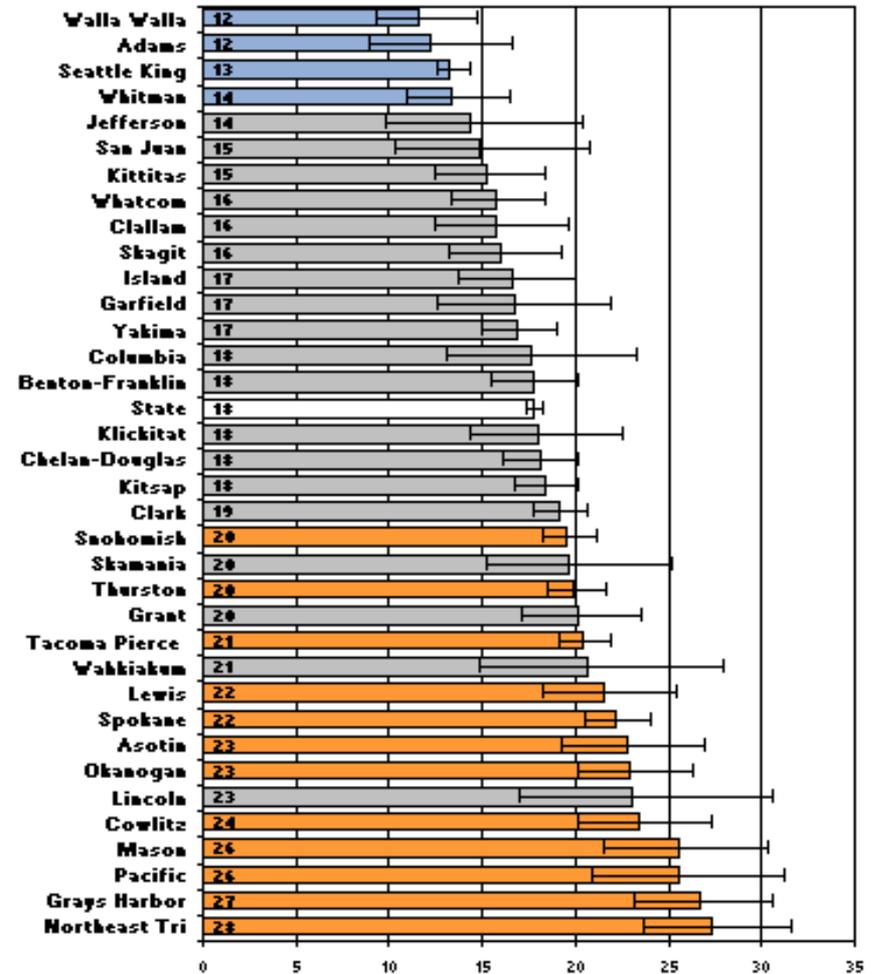


Control Chart



Variation in Indicator Results

- Variation from county to county
- Not meeting targets
- Lower rates statewide



Let's Discuss!

- What is your experience?



Integrating Performance Measurement in QI Culture

Use Data to Make Decisions

- “Symptom” is the indication of a problem, but not a statement of cause
- “Theory” is the preliminary diagnosis about the cause
- “Analysis” includes data that confirms or rules out theories
- “Solution” is the change that will best address the cause
- “Information” is data that confirms whether the solution is having the expected impact

Use Data to Make Decisions

To Show	Use	Data Needed
Simple percentage or magnitude comparisons	Bar charts, pie charts or summary statistics	Simple tallies by category (At least 30 cases)
Trend	Line graphs	Time-ordered measurements (At least 12 sets of data points)
Distributions	Histograms	Forty or more measurements
Correlations	Scatter diagrams	Forty or more paired measurements

From *Methods and Tools of Quality Improvement*
Institute for Healthcare Improvement

Key Follow-Up Strategy

- The most important monitoring action you can take is the development of program-level reports that are made available to every staff person in the organization on a regular basis
- Supervisor and program manager reports that work with the same data elements
- These reports should be used on a regular basis to understand whether the program activities are performing as expected (cost, utilization, outcomes, etc.)

Follow-Up Monitoring

- Every month key statistics should be kept to monitor how things are going, and to identify course corrections along the way

	Weekly Data					Weekly Data			
	12/14/2003	12/21/2003	12/28/2003	01/04/2004	01/11/2004	01/18/2004	01/25/2004	02/01/2004	02/08/2004
Contact									
West	90	69	54	60	74	91	81	73	99
East	89	71	89	66	118	136	118	122	94
Inner East	4	5	10	5	8	4	7	5	5
Outer East	10	4	7	4	8	3	14	6	9
North	10	8	9	3	8	4	9	5	15
	203	157	169	138	216	238	229	211	222
Source									
Police	11	14	11	13	10	11	9	12	14
ED	3	0	5	1	3	15	9	4	5
Crisis Line	63	56	56	47	76	88	81	87	68
Other	126	87	97	77	127	124	130	108	135
	203	157	169	138	216	238	229	211	222
Age									
Adults	83	77	75	66	108	111	89	100	112
Older adults	4	3	2	3	1	8	3	2	0
Children/Families	11	9	6	7	10	4	13	17	7
	98	89	83	76	119	123	105	119	119
Gender									
Male	47	40	41	37	60	65	51	49	59
Female	51	49	43	39	60	58	54	70	60
Unreported	0	0	0	0	0	0	0	0	0
	98	89	84	76	120	123	105	119	119

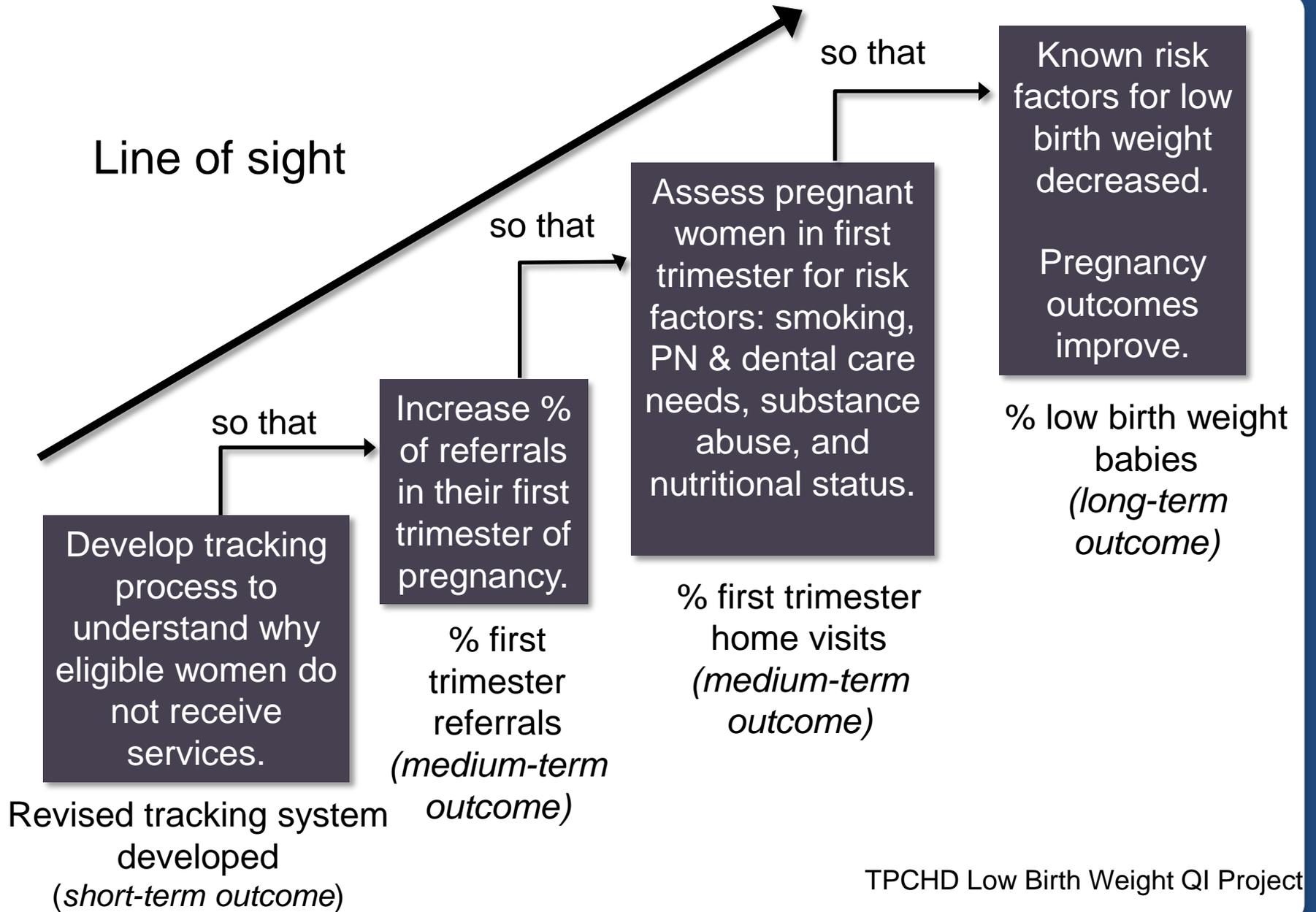
Performance Measures



- Twelve department-level measures
 - Modeled after Healthy People 2010 Leading Health Indicators . . . plus two more
- Approx. 10-20 performance measures per business unit
 - Percent of solid waste complaints responded to within 20 days
 - Reduce the rate of positivity at Infertility Prevention Project (IPP) sites
 - Percentage of Positive Steps clients who engage in services for 30. days or more who have a 10% reduction on three youth violence risk factors

Agency Level Performance Measures

Measure	Indicator	Responsibility
Improve immunization rates	Increase the percentage of kindergarten enrollees that are up to date on their immunizations upon school entry from 86% to 92% by 2014.	
Reduce tobacco use	Decrease the percentage of adult smokers to 16% by 2014.	
Reduce overweight & obese populations	Reduce the rate of increase for adult obesity to 0% by 2014.	
Increase healthy physical activity	Increase the percent of youth who are physically active for at least 60 minutes per day from 16.8% to 18.5% by 2014.	
Reduce substance abuse	Increase the number of adults receiving opiate treatment service by 23% by 2014, to 800 patients.	
Increase responsible sexual behavior	Increase the percentage of sexual partners treated for sexually transmitted diseases by 10% by 2014.	



Quarterly Reporting Form

- Plan Item Name/No.
- Indicator(s)
- Baseline Data (if applicable)
- Quarterly Data
- Data Source
- Methods Notes
- Data Explanation/Other Comments

2007 Work Plan—Quarterly Reporting Form

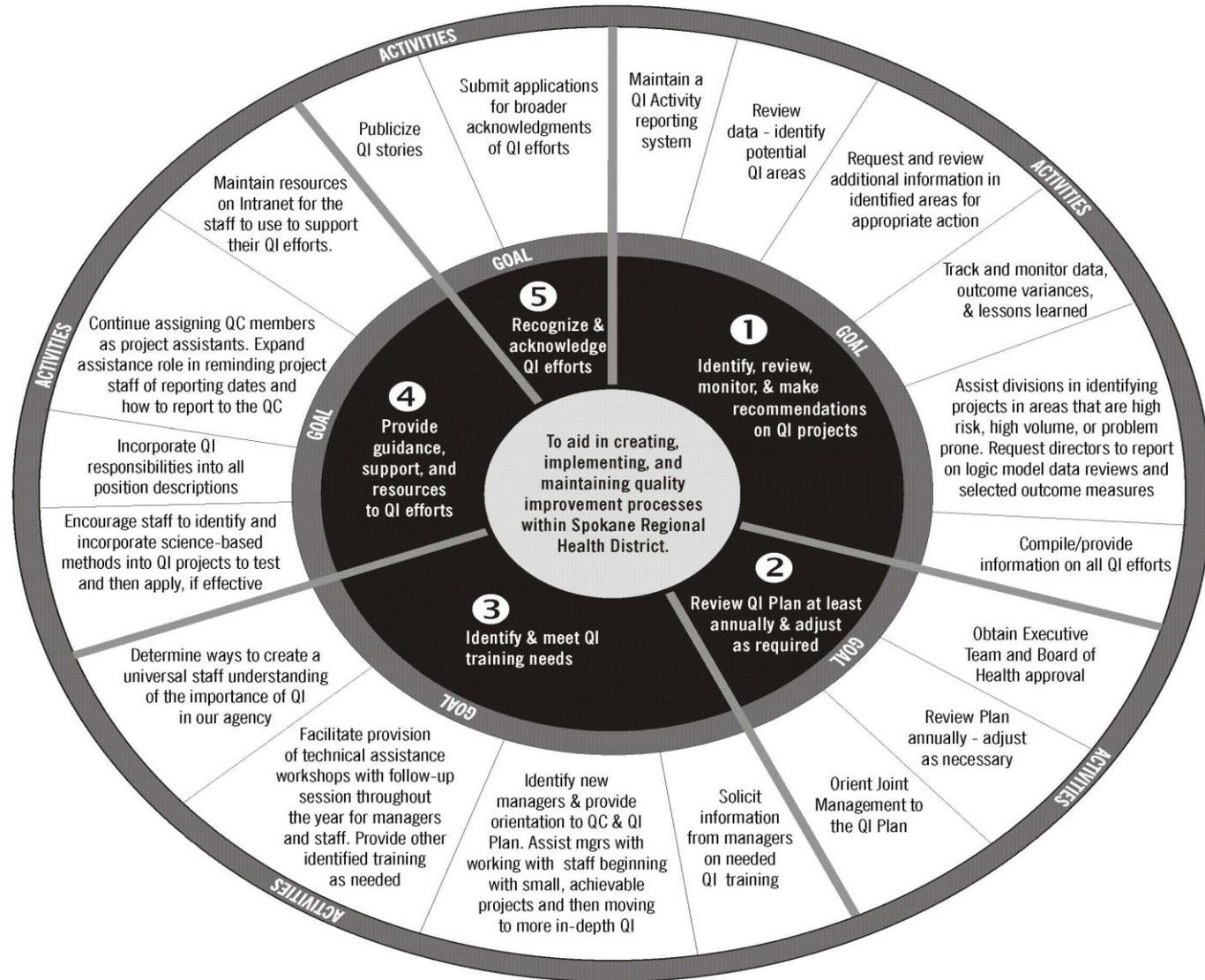
<u>Goal/Objective/Task Name:</u>				
List the plan item # and name of goal/objective/task				
<u>Indicator(s):</u>				
Define the specific indicator(s) selected to measure the goal/objective/task. Describe both the numerator and denominator if the indicator is a rate. Be as specific as possible.				
<u>Baseline Data (if applicable):</u>				
If the goal/objective/task is outcomes-based, provide the most recent baseline data available. Include the time frame for the data.				
<u>Quarterly Data (if available):</u>	Jan-Mar 2007	Apr-Jun 2007	Jul-Sep 2007	Oct-Dec 2007
Provide the data measuring the goal/obj/task in the appropriate quarter. (Should be the same as the data reported on the Excel spreadsheet.)				
<u>Data Source:</u>				
Provide the exact source(s) for data with contact or location information				
<u>Methodological Notes:</u>				
Provide information about the data used to report on the goal/objective task, such as alerts to known data limitations or data availability.				
<u>Explanation of the Data and Other Comments:</u>				
Comment on why the goal/objective/task is or is not being met. Also provide any other comments to help readers interpret or understand the data you provide.				

QI Calendar (TPCHD example)

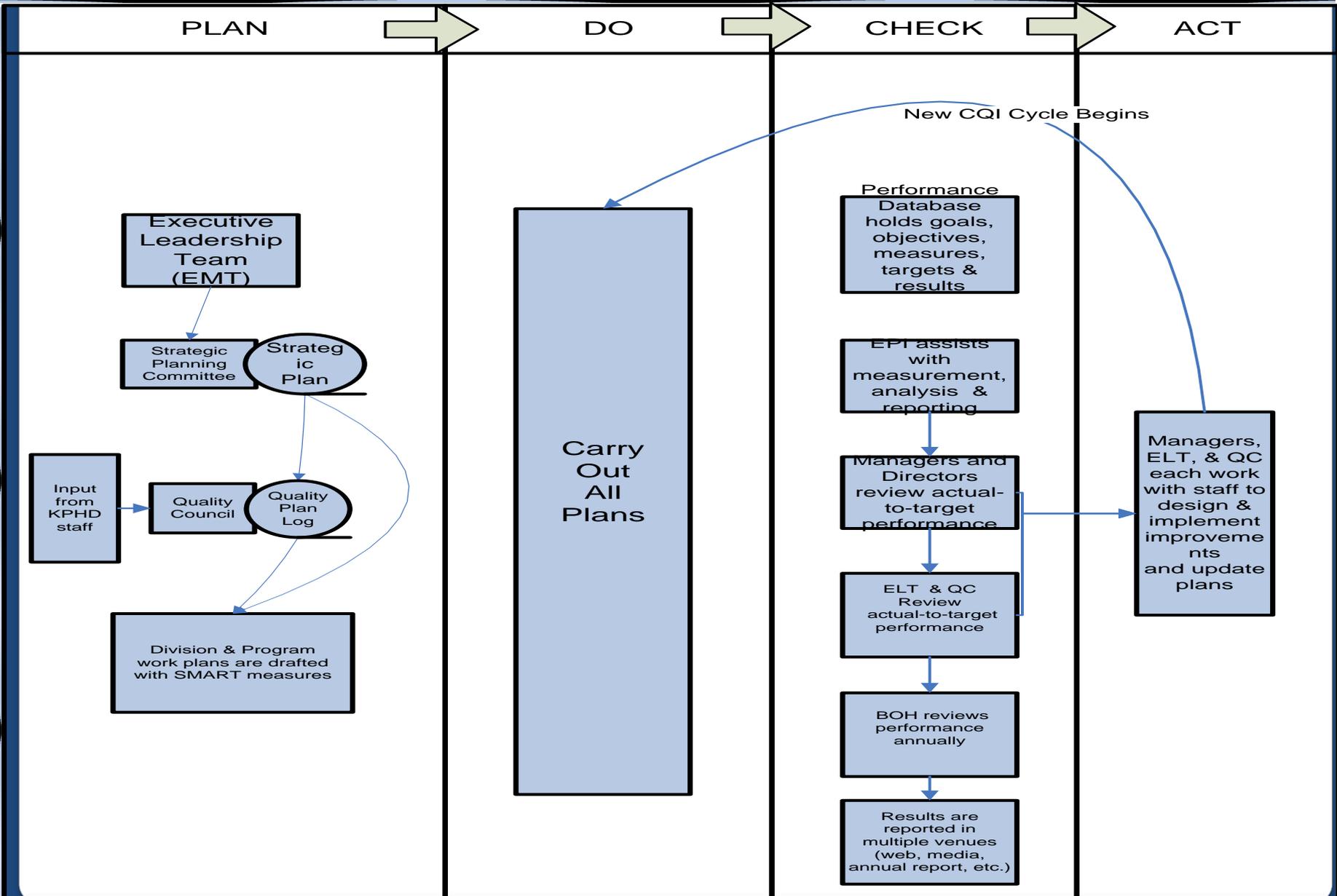
III. 2009 Quality Improvement Council Calendar				
	Staff Responsible	Completion Date	QI Council Review Date	Additional Review Dates
Performance Measures	See Section II B	Jul 31 Oct 31 Jan 31, 2010	Aug 25 Nov 24 Feb 23, 2010	Mar 3, 2010 (BOH)
Program Evaluation Reports				
Menu labeling		May 25	May 26	
MCH home visiting		Oct 26	Oct 27	
Review of Health Indicators				
Three priority indicators		Jul 31* Oct 31 Jan 31, 2010	Aug 25 Nov 24 Feb 23, 2010	Mar 3, 2010 (BOH)

Quality Council Focus

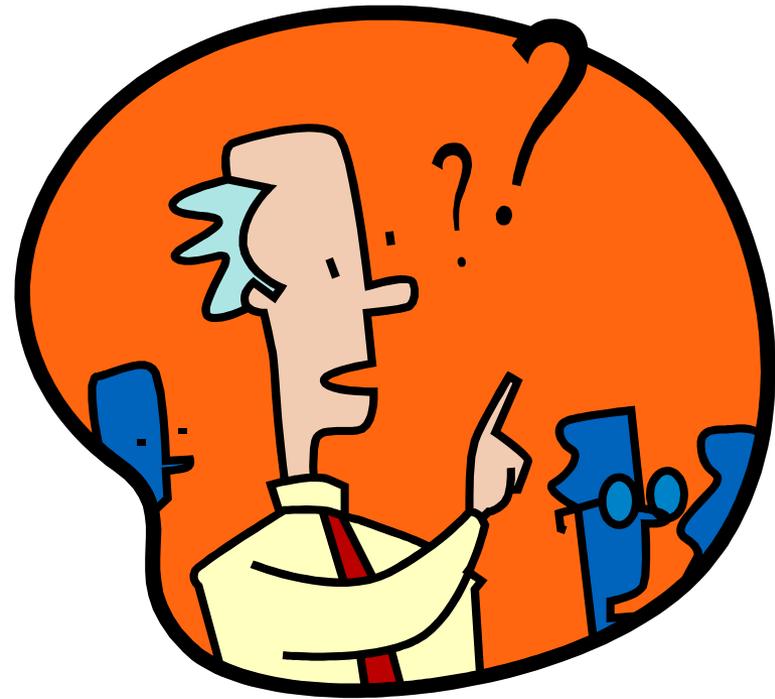
Spokane
Regional
Health District
Quality
Improvement
Plan, page 7



Appendix B: Kitsap Public Health District's Strategic Management System



What comments and questions do you have?



Web site:

[Public Health Performance Management Centers for Excellence](#)