Finding the Right Tool for your Purpose

Using Data to Show Improvement and the Need for Improvement

Data

- Why does it matter?
- Why do we use it?
- Why don’t we use it?
- How can we make the most of it?

What is the story that you want to tell?

- What kind of data do you need to tell that story?
  - Incremental data over time
  - Point-in-time snapshot
  - Exact measures or averages or ranges

Using data to drive improvement

- What is the problem?
- How do you know that it’s a problem?
- Is the problem obvious to everyone?
- Is the problem important and relevant?
- Can you prove that it’s a problem?

Using data to illustrate the problem

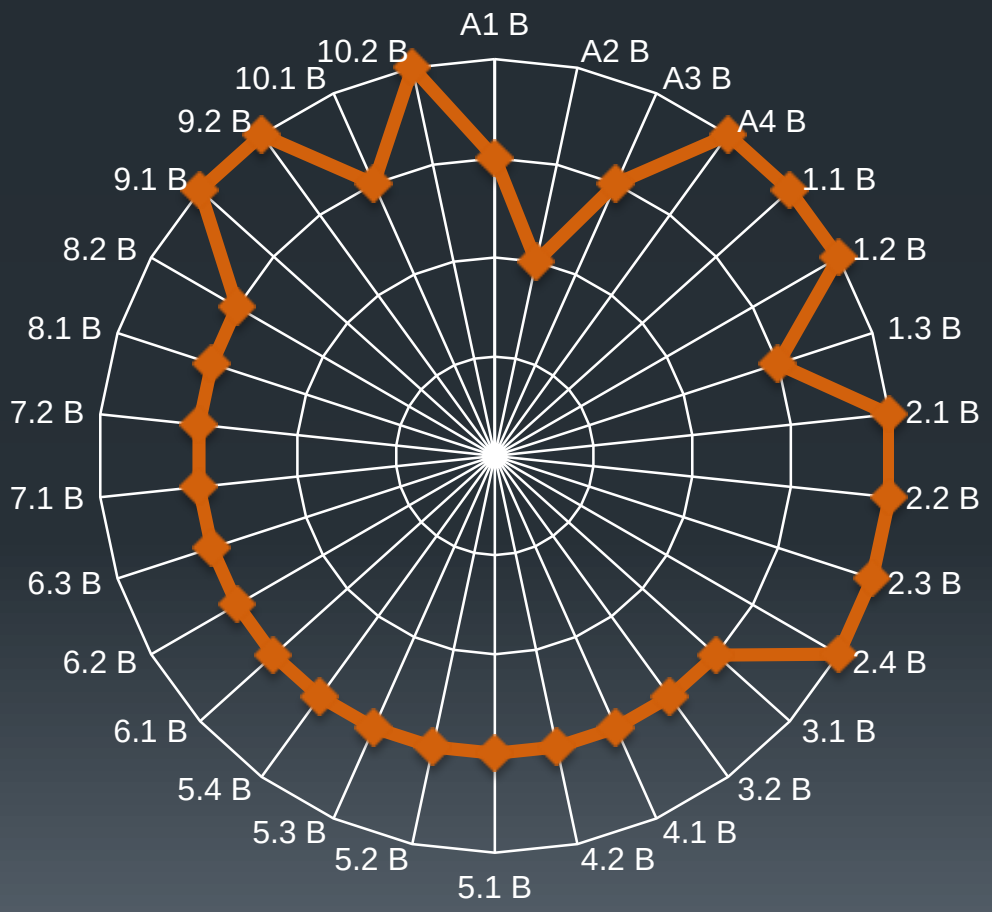
- What do you know?
- What do you want others to know?
- What do you want others to decide?

Selecting the right tool

- Radar Charts
- Pareto Diagrams
- Histograms

Radar Chart

The Measures Capture the Important Components of the Standards



What does it do?

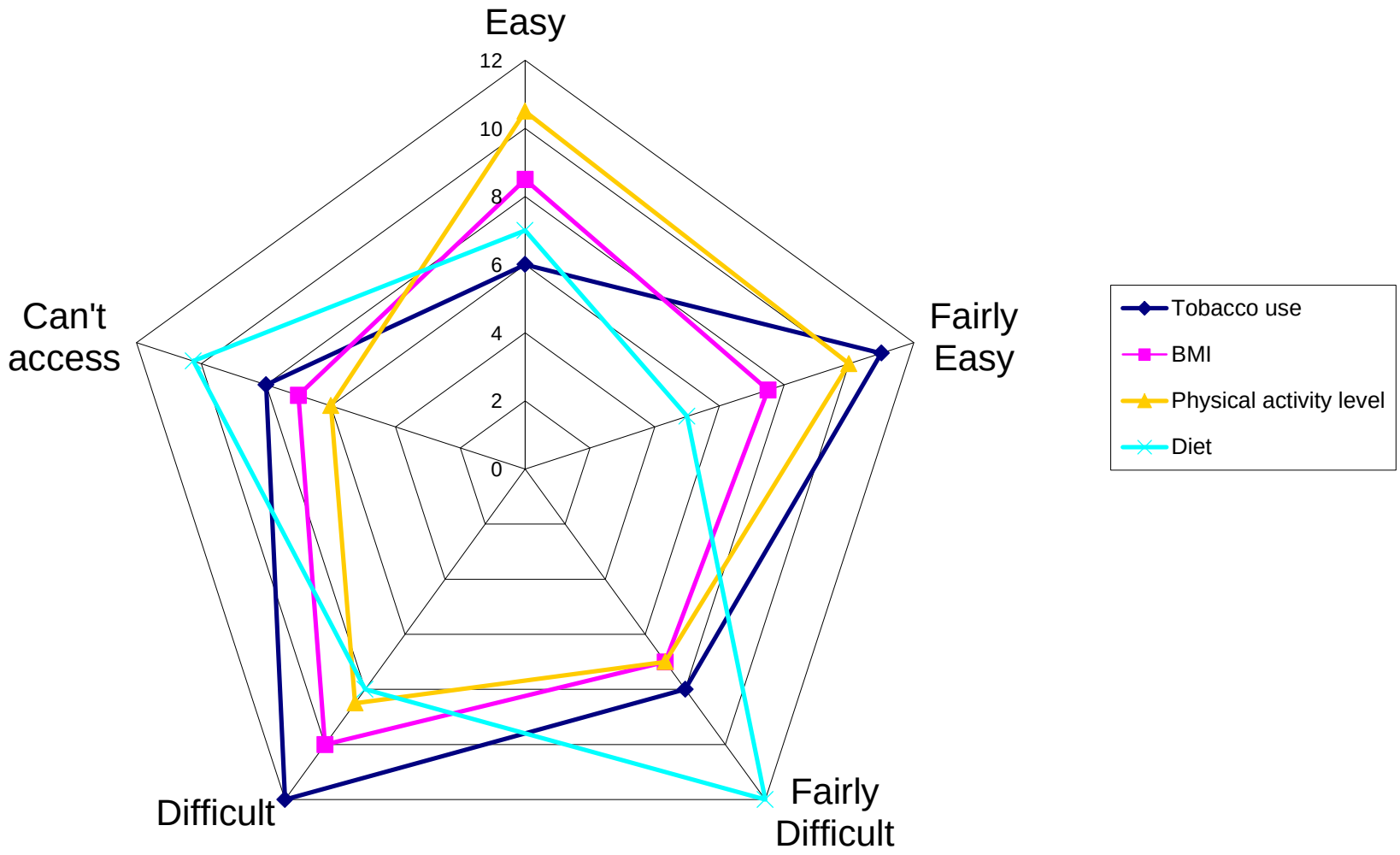
- Displays important categories of performance
- Defines full performance for each category
- Shows gaps between current and full performance
- Captures range of perceptions about performance
- Provides data to support priorities for improving performance

How to do it?

- Assemble the right team
- Select and define rating categories
- Rate each category
- Connect the team ratings
- Create the Chart (Excel will do it for you)

	Easy	Fairly Easy	Fairly Difficult	Difficult	Can't access
Tobacco use	9.75	11	8.25	7.5	8
BMI	8.5	7.5	10	10	7
Physical activity level	10.5	10	7	8.5	7.5
Diet	7	9.25	11.5	11	10.25

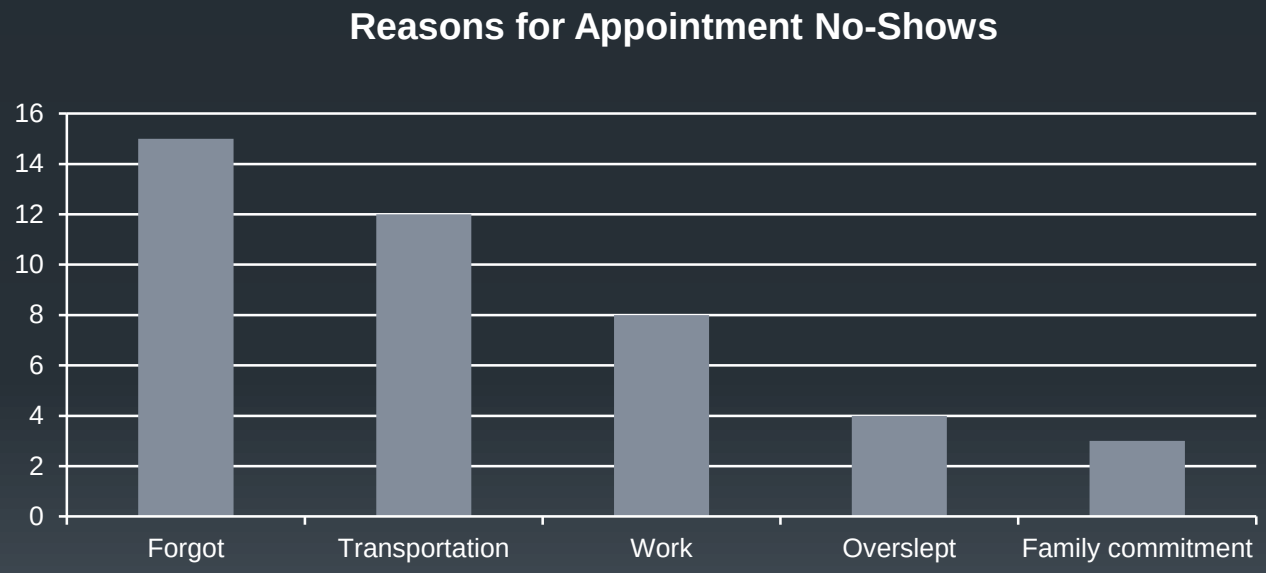
During routine clinical or home visits, how easy is it to access the following patient information



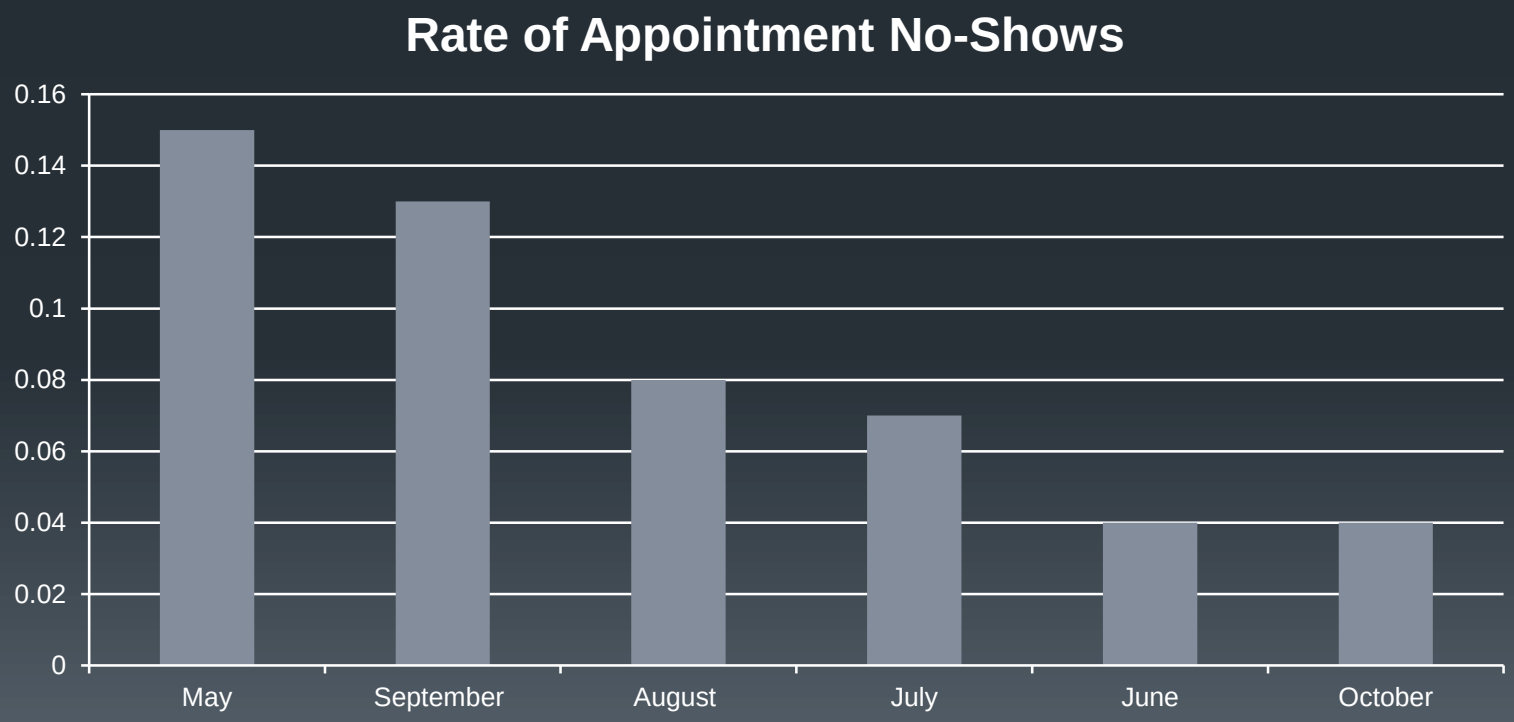
Interpretation

- Identify the biggest gaps in performance
- Identify the most critical categories of performance
- Focus on the biggest gaps in the most critical categories

Pareto Diagrams



Pareto Diagrams



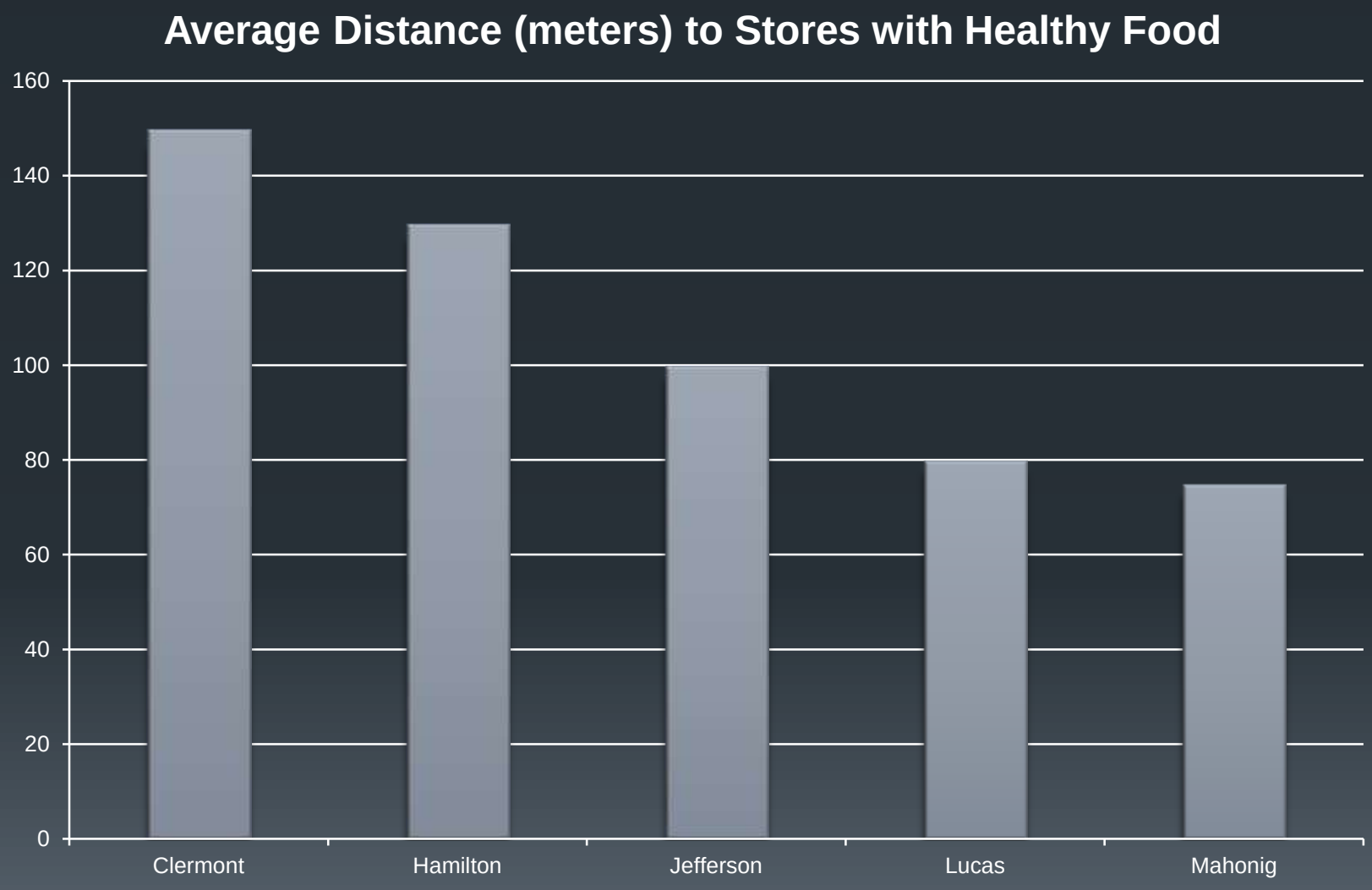
What does it do?

- Focuses attention on most significant causes
- Displays relative importance of different causes
- Prevents shifting the problem to other causes
- Allows for ongoing measurement of progress

How to do it?

Average Distance (meters) to Stores with Healthy Food	
Clermont	150
Hamilton	130
Jefferson	100
Lucas	80
Mahonig	75

- Identify the problem
- Select the aspect of the problem that will be reviewed
- Choose the most meaningful unit of measurement
- Decide on the time period for the measurement
- Compile the data
- Create the chart (Excel will do it for you)

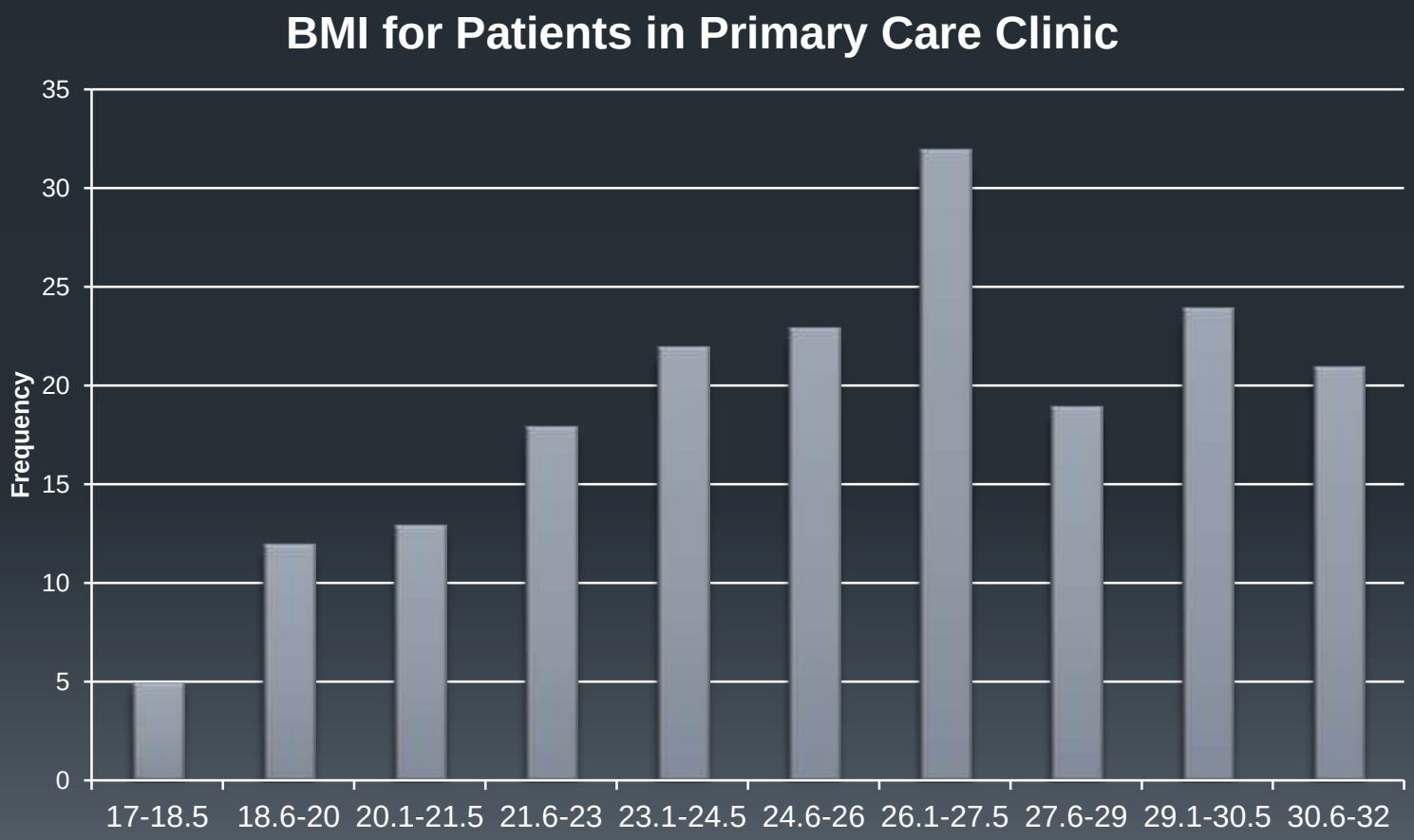

Average Distance (meters) to Stores with Healthy Food
160
140
120
100
80
60
40
20
0
Clermont
Hamilton
Jefferson
Lucas
Mahonig

Before and after

Interpretation

- Tallest bars indicate the biggest contributors to the overall problem (as a general rule)
- Focus your improvement strategy on what will make the biggest difference to your audience or stakeholders

Histograms


BMI for Patients in Primary Care Clinic
Frequency
35
30
25
20
15
10
5
0
17-18.5
18.6-20
20.1-21.5
21.6-23
23.1-24.5
24.6-26
26.1-27.5
27.6-29
29.1-30.5
30.6-32

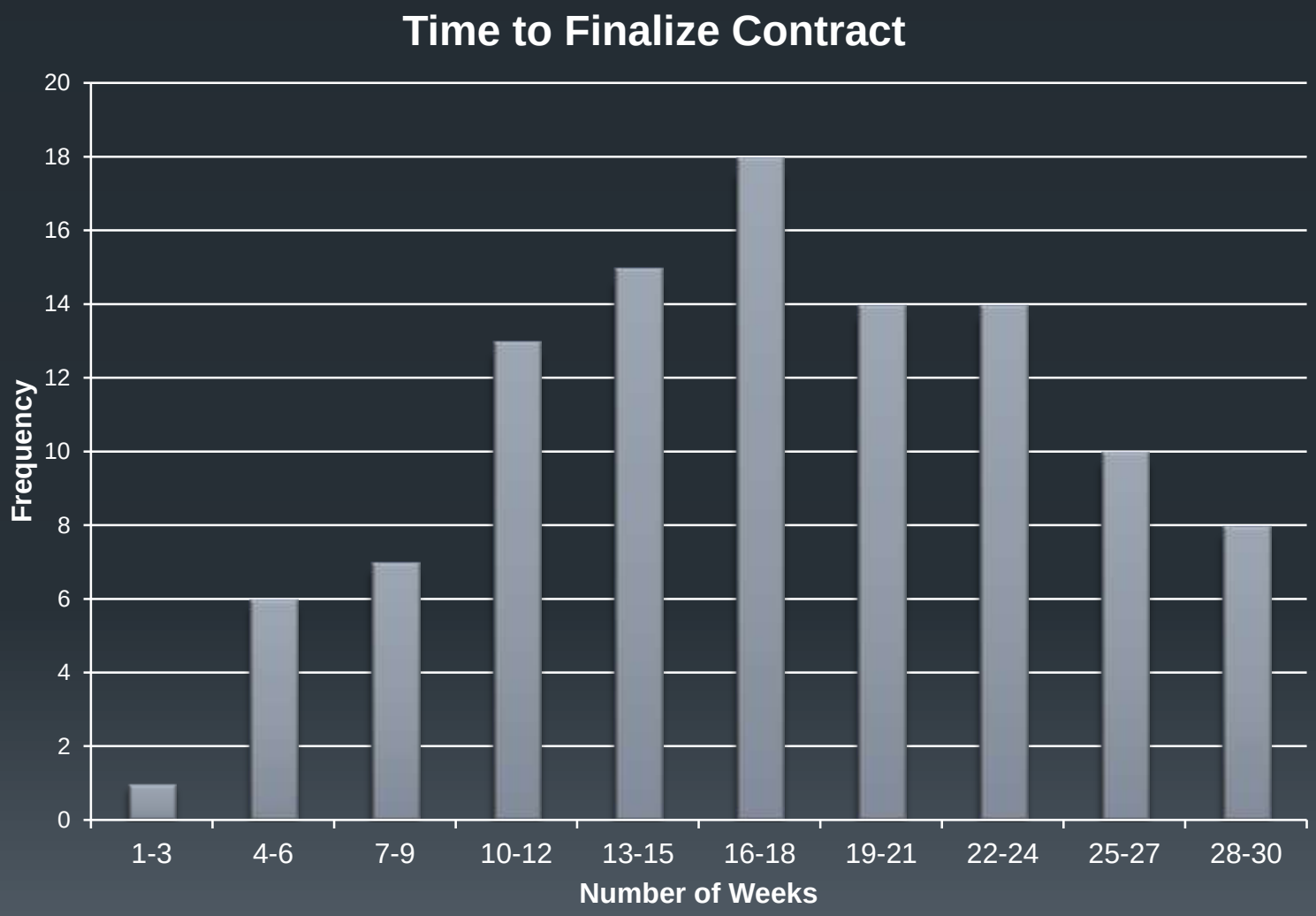
What does it do?

- Displays large amounts of data in visual format
- Shows relative frequency of various data values
- Illustrates underlying distribution of the data
- Provides information for predicting future performance
- Reveals the shape and variation of the data

How to do it?

- Decide on the indicator to be measured
- Collect at least 50 data points
- Prepare a frequency table from the data
- Group the data into intervals
- Create the histogram

Time to Finalize Contract	
Number of weeks	Frequency
1-3	1
4-6	6
7-9	7
10-12	13
13-15	15
16-18	18
19-21	14
22-24	14
25-27	10
28-30	8


Time to Finalize Contract
Frequency
20
18
16
14
12
10
8
6
4
2
0
1-3
4-6
7-9
10-12
13-15
16-18
19-21
22-24
25-27
28-30
Number of Weeks

Interpretation

- Consider where the distribution is centered
- Analyze the variation and spread of the data
- Look at the shape of the distribution
- Consider these factors in the context of targets

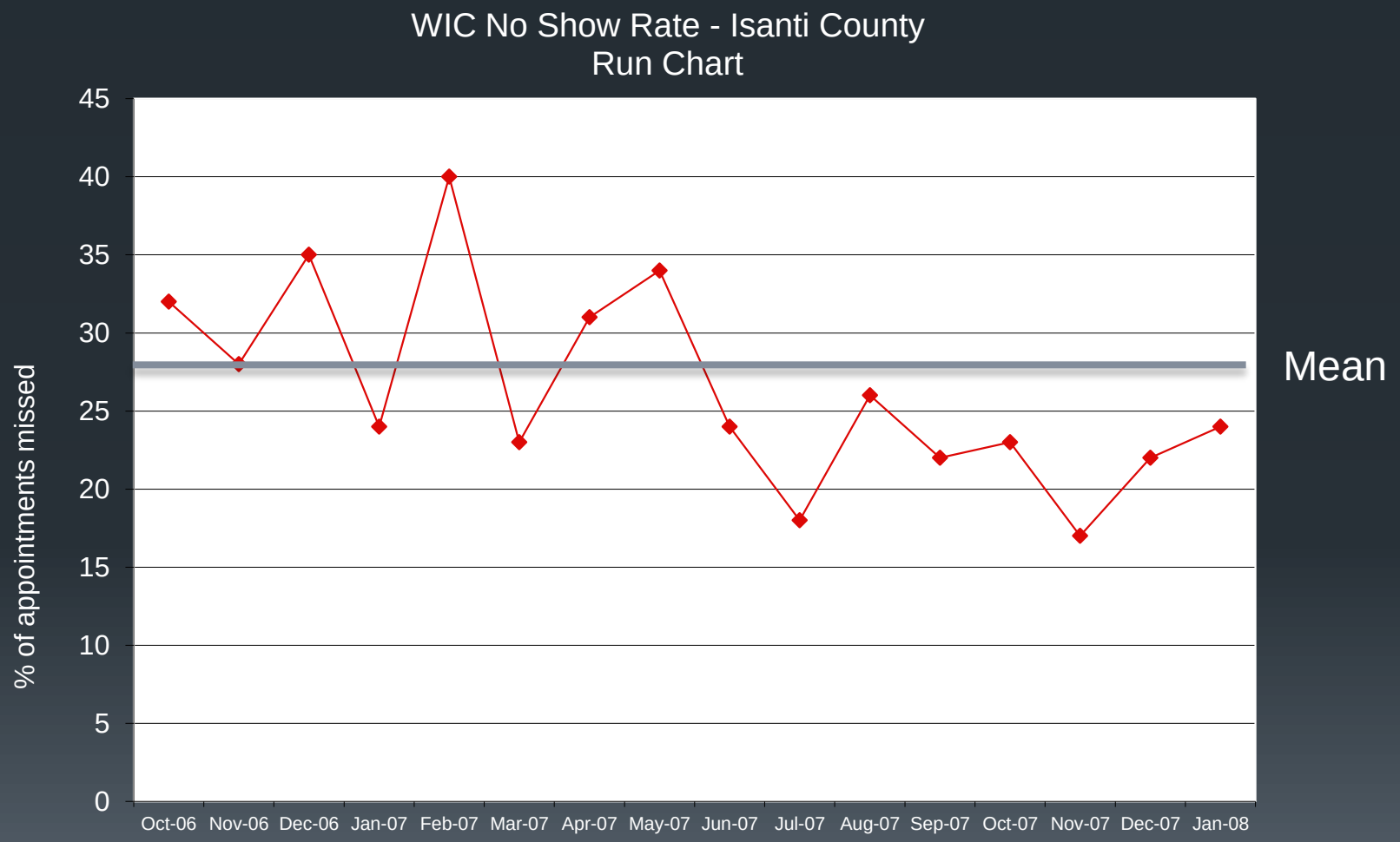
Using data to measure improvement

- How will you know that change is improvement?
- When will you know that the improvement is real?

Selecting the right tool

- Run Charts
- Control Charts
- Histograms

Run Chart


WIC No Show Rate - Isanti County
Run Chart
% of appointments missed
45
40
35
30
25
20
15
10
5
0
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Mean

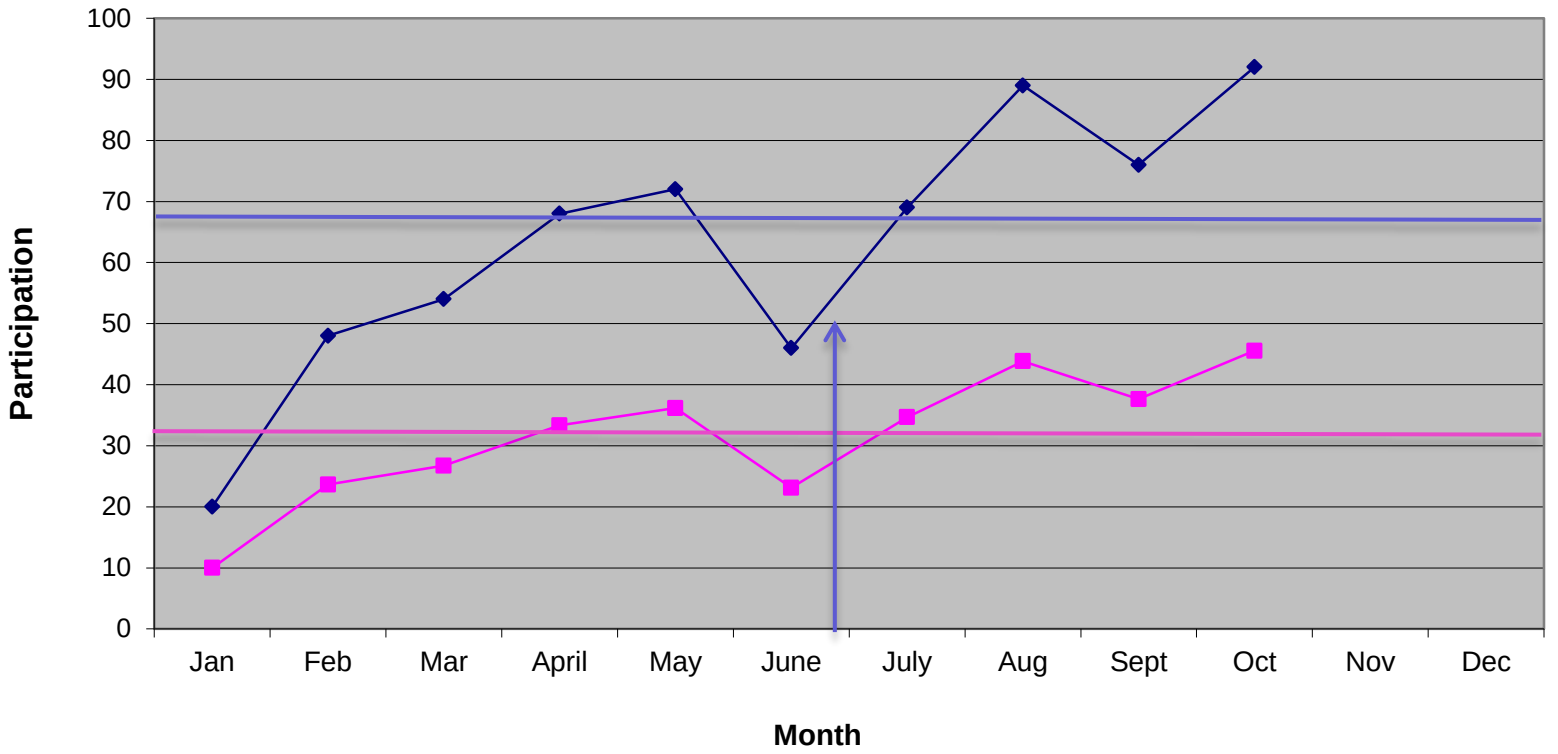
What does it do?

- Monitors performance over time
- Allows for comparison of measurement before and after implementation of an intervention
- Tracks information for predicting trends

How to do it?

- Select the indicator to be measured
- Collect the data
- Create the graph
- Plot the data

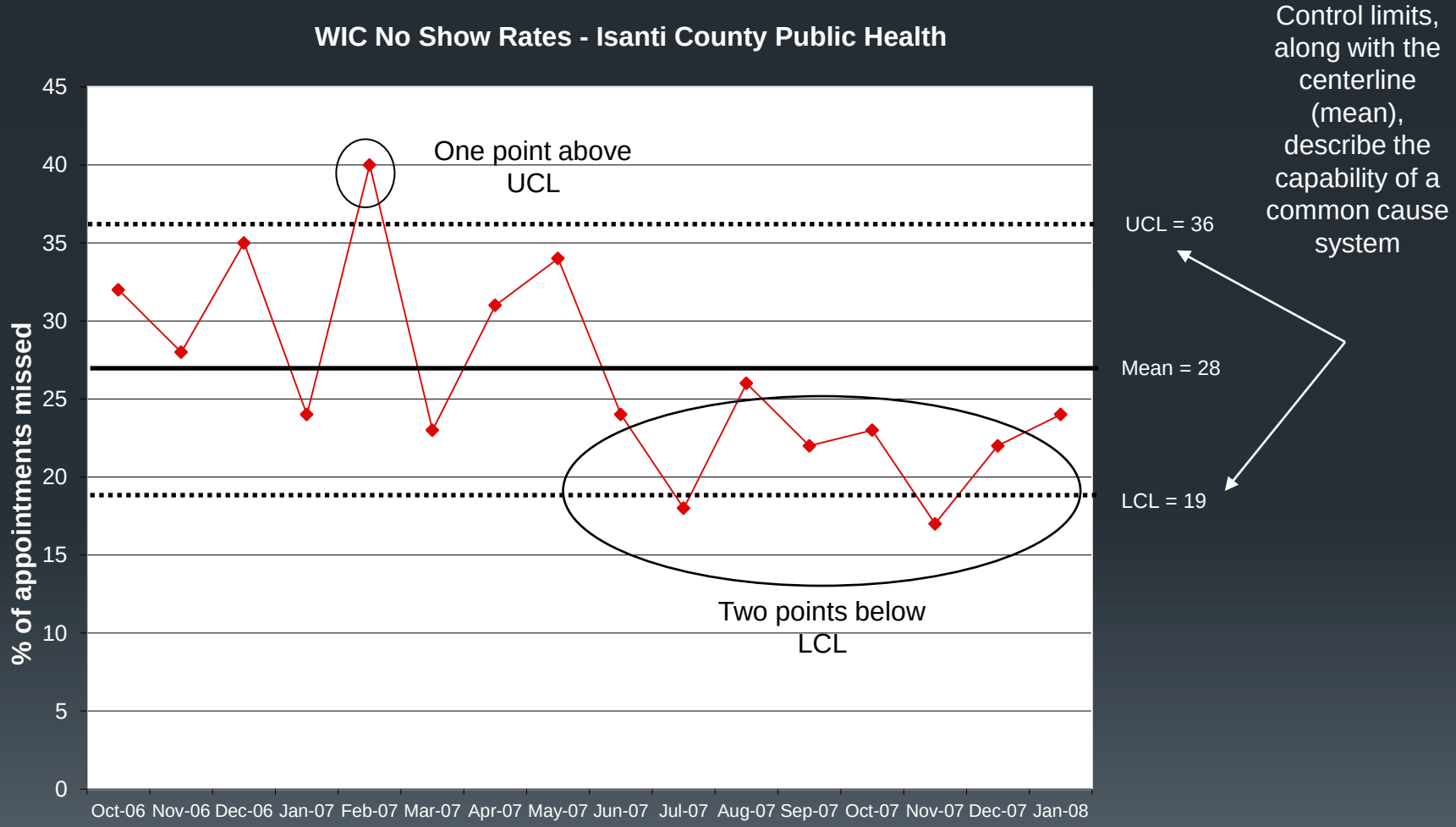
Participation in Employer Sponsored Physical Activity Programs



Interpretation

- Look for obvious patterns or trends
- Consider the position of the average value
- Do not assume that all variation is important

Control Charts



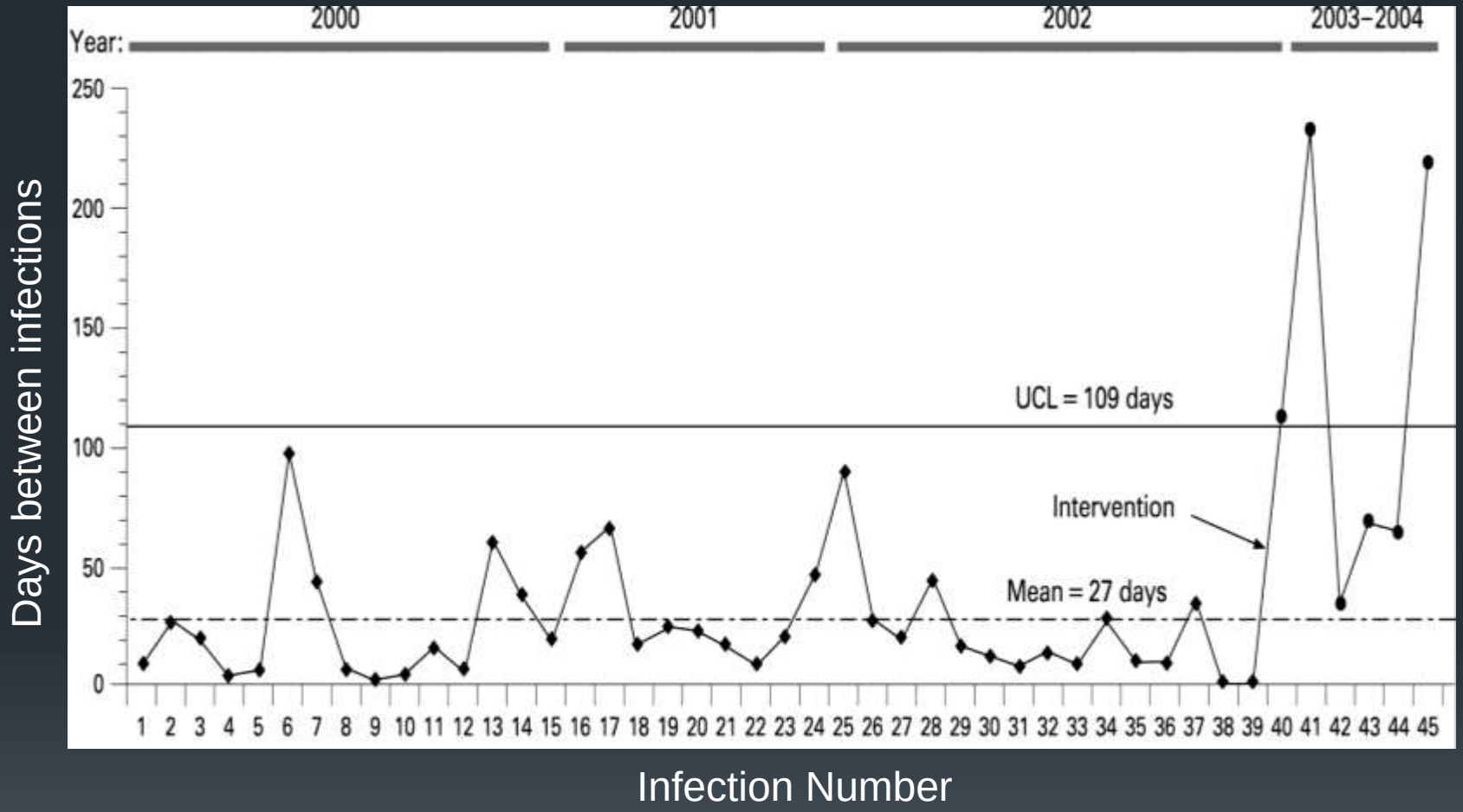
Control limits, along with the centerline (mean), describe the capability of a common cause system

What does it do?

- Detect and monitor process variation over time
- Distinguish between special and common cause of variation
- Serves as a tool for ongoing control of a process
- Helps improve a process to perform consistently and predictably

How to do it?

- Select the process to be charted
- Determine sampling method and plan
- Initiate data collection
- Calculate the appropriate statistics (standard deviation, mean, median)
- Calculate the control limits
- Construct the Control Chart



Ogrinc G et al. Qual Saf Health Care 2008;17:i13-i32

©2008 by BMJ Publishing Group Ltd

Interpretation

- Analyze the data relative to the control limits
- Distinguish between Common causes and Special causes of variation.
  - Common cause: variation results from factors inherent to the process. This variation can only be affected by changing that process.
  - Special cause: variation caused by external influences such as human errors, unplanned events, or unusual occurrences. Special causes should be eliminated.
- The amount of variation from special causes is usually much greater than it is for common causes.

Driving to work each day

- Average time: 14 minutes
- Common causes of variation:
  - Miss or make the traffic lights
  - Amount of traffic on the road
  - Weather – wind, sun, rain

Driving to work each day

- Special causes of variation:
  - Flat tire
  - Parade or protest on your route
  - Speeding ticket

Interpretation

- A special cause is indicated when
- One or more points are outside the UCL or LCL
- Two out of three successive values are: a) on the same side of the centerline, and b) more than two standard deviations from the centerline.
- Eight or more successive values fall on the same side of the centerline.
- Six or more values in a row are steadily increasing or decreasing.

Data Tracking and Display

- Integrate data collection into daily routine whenever possible
- Simple graphs and charts can help tell your story - a picture can be worth a thousand words
- Keep your audience in mind
- Consider your message
- Label clearly

Questions?

Kim McCoy
Office of Performance Improvement
Minnesota Department of Health
651-201-3877
Kim.mccoy@state.mn.us