Lecture #25
(Workshop #1)

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SPC Software

The software used for the workshops:

PROSIM (used for workshop #1)
TURNSIM (used for workshop #2)
XRCHRT (used to generate control charts)
PROCAP (used for Workshop #2)

Interpretation of Control Charts

Control Chart with 125 samples of size n = 5 will be presented.

The way in which the 125 samples are collected are termed a history. Possible history:

1-27:N(0,2^2); 28-41:N(-2,2^2); 42-85:Stratification;

86-94:N(0,4^2); 95-125:Overcontrol

The process being studied is Out-of-Control due to special cause like:

Mean shift; Variability shifts; Overcontrol; Mixing; Stratification;

Your assignment

Figure out what distributions the 125 samples have been taken from.

Methodology

1. **Generate 125 samples using PROSIM software**
2. **Plot Xbar and R charts using XRCHRT software**
3. **Interpret the control chart using the 8 Rules**
4. **Prepare a report that summarizes your findings**

How is a History Created?

10 Distributions to Choose from:

$N(0,2^2)$	$N(-1,1^2)$
$N(2,2^2)$	$N(1,1^2)$
$N(-2,2^2)$	Stratification
$N(0,1^2)$	Mixing
$N(0,4^2)$	Overcontrol

At least first 25 samples are from $N(0,2^2)$
"N" distributions -- must be at least 5 samples
Others -- must be at least 20 samples

Using PROSIM

Read the instructions explaining how PROSIM works

Asks for a file name to store data: Use a .dat extension (e.g. samples.dat)

125 samples of sample size 5 have been created at random and stored in the specified file (e.g. samples.dat)

Go back to main menu (hit any key) and open XRCHRT

Using XRCHRT

Asks for the file name where data is stored: Use the same name that you stored the data under (e.g. samples.dat)

Asks for name and date: (optional)

Asks for number of data blocks: 1

Asks for the data to be used to calculate control limits: 1 25 (for starters)

Using XRCHRT (cont.)

Asks whether to use the same data for plotting control charts: no (for starters)

Asks for the data to be used to generate control charts: 1 125 (for starters)

Asks whether to skip data dump: probably yes

Asks whether to invalidate any samples: no

Asks whether to send output to a file or printer:
Choose file.

Using XRCHRT (cont.)

Asks for the name of the output file: Use a .out extension (e.g. samples.out)

You may want to give your output files more descriptive names for organizational purposes.

Go back to the main menu (hit any key)

Open up the output file (e.g. samples.out). Use 'Notepad' or some other word processing software. Make sure it uses a block font (e.g. courier)

The Report

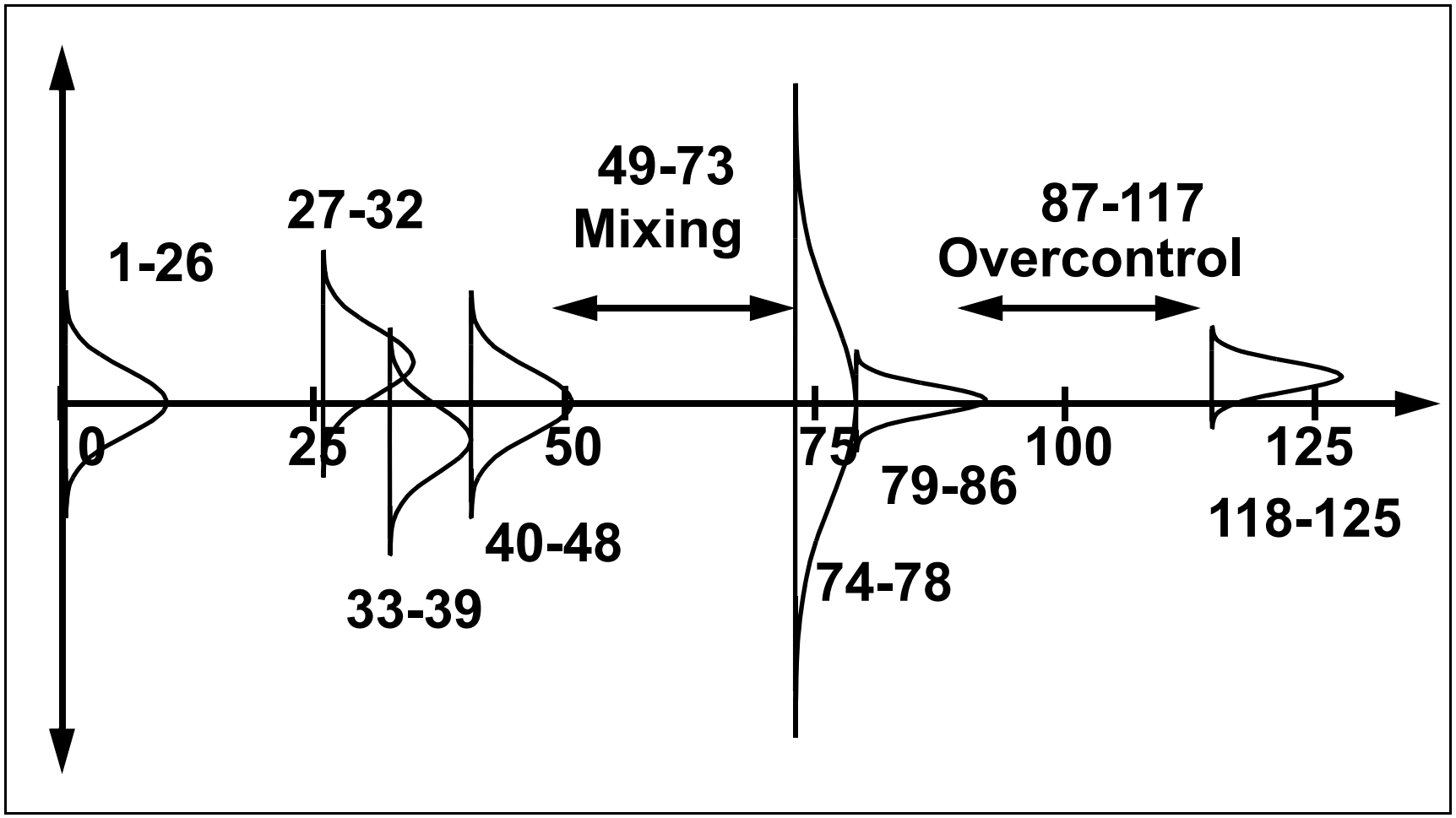
1-page Executive Summary. Summarizes contents and conclusions of the report. Include a table that displays your findings.

Sl. No.	Beginning Sample #	Distribution	Sample Mean	Sample SD
1	1	$N(0,2^2)$	0.02	1.87
2	27	Stratification		
3	49	$N(-1,1^2)$	-0.90	1.01
4				
5				
6				
7				
8				
9				

The Report -- cont.

- **Body of the report**
  - **Introduction**
  - **Procedures -- spell out the logic that you used to make your decisions**
  - **Conclusions - include a graph like that on the next page**

- **Appendix - include all the XRCHRT output**


1-26
27-32
49-73
Mixing
87-117
Overcontrol
0
25
50
75
100
125
79-86
118-125
40-48
74-78
33-39

Assignment

- **Run PROSIM to generate data**
- **Run XRCHRT to construct the charts**
- **Study the charts. There should be a total of 9 unique regions within each set of 125 data points. Based on the statistical signals, identify each region and also where it begins and ends. Prepare a report that summarizes your findings**

Due Date: Nov. 4th, 2005