Introduction to Sigma Magic software (Version 6.1)
AGENDA

1. Sigma Magic software overview

2. Create graphs
   - Histogram
   - Probability Plot
   - Dot Plot
   - Individual Value Plot
   - Box Plot
   - Time Series Plot
   - Run Chart
   - Scatter Plot
   - Bar Chart
   - Pie Chart
   - Pareto Chart

Theory: 2 hours, Exercise: 2 hours, Total: 4 hours
Sigma Magic Overview

- Why do I need Sigma Magic, I already have Excel?
  - Excel is not designed for statistical analysis
  - Sigma Magic extends Excel’s capabilities (built on top of Excel)
  - Easy to use and understand since it is based on templates
  - Sigma Magic makes your job easier and faster!

Sigma Magic is designed for statistical and graphical analysis of your data!
How to use Software

- Create a new workbook for each project and for each analysis you want to perform add the appropriate template.

- Enter the data in the dialog box by clicking on Update Inputs and enter the data in the input area of worksheet.

- Click on Compute Outputs to generate the analysis results.

- Review analysis results – notes and graphs.

1: Add Template, 2: Update Inputs, 3: Compute Outputs
How to use Software

- To open the Sigma Magic software, open Excel and locate the Sigma Magic software menu in the main toolbar.

- Click on the Sigma Magic menu to open the main menu of the Sigma Magic software.

Sigma Magic software available only after successful installation.
Sigma Magic Overview

Four main groups of Sigma Magic menus:

- Manage Files: Open and save excel files, export to Power Point.
- Add Templates: Add template based on analysis you want to perform.
- Update Worksheet: Show input dialog box or update the calculations.
- Miscellaneous: Manage licenses, change the software options, help etc.

Important Areas: Add Templates and Compute Outputs
Software Overview: Manage Files

- **New:** Add a blank Excel workbook (example for a new project)
- **Open:** Open an existing Excel workbook (Ctrl + O)
- **Save:** Save the currently active workbook (Ctrl + S)
- **Examples:** Open the folder containing example workbooks
- **Print:** Open the Print dialog to either print active workbook
- **Export:** Export the analysis results to Power Point file.

Use the file format *.xlsm to save new workbooks (saves macros)
Software Overview: Add Templates

- Select the template you want to add to the workbook.

- This template depends on what you want to do:
  - Project templates (generic project related work)
  - Lean templates (templates related to lean deployment)
  - Stats templates (templates related to statistical analysis)
  - Graph templates (templates related to graphical analysis)

- Each template is added as a new worksheet. If the same template is added twice, then numbering is incremented.

- You can rename or color code the tab if required.
Software Overview: Add Templates

Sigma Magic Templates

- C&E Matrix
- Control Plan
- Communication Plan
- Design Scorecard
- Financial Report
- Fishbone Diagram
- FMEA
- Force Field Analysis
- Implementation Plan
- Kano Analysis
- Process Map
- Project Charter
- Project Closure Report
- Project Filter
- Pugh Analysis
- QFD Analysis
- SIPOC Analysis
- Solution Selection Matrix
- Stakeholder Analysis
- Tree Diagram

- 5 Why Analysis
- SS Audit
- A3 Report
- SMED Analysis
- Create VSM
- Kaizen Report Form
- OEE Metric
- TAKT Time
- Time Study
- Work Combination
- Workload Balance

- Basic Stats
- Compare Data Sets
- Control Charts
- Customer Survey Analysis
- Design of Experiments
- Distribution Identification
- Generate Random Numbers
- Measurement Systems Analysis
- Monte Carlo Simulation
- Normality Analysis
- Probability Calculations
- Process Capability Analysis
- Regression Analysis
- Sample Size Analysis
- Time Series Analysis
- Transform Data

- Bar Chart
- Box Plot
- Dot Plot
- Histogram
- Individual Value Plot
- Interval Plot
- Pareto Chart
- Pie Chart
- Probability Plot
- Run Chart
- Scatter Plot
- Time Series Plot

Standard templates defined in Template Library
Software Overview: Update Worksheet

- Update Inputs: Click on Update Inputs to open the dialog box to enter data for that template.

- Compute Outputs: Click on Compute Outputs to update the analysis results.

- You will need to click on Compute Outputs each time you change the inputs or the contents of the dialog box.

- You can also clear all the worksheet contents, copy data into memory or paste memory contents into worksheet.

Check the left hand top corner of worksheet to see if inputs have changed
Software Overview: Enter Data

- When adding data to the template:
  - Type in the values directly in Excel worksheet
  - Copy and paste from other worksheets in Excel
  - Copy and paste from any other application.

- When pasting into the template to preserve template formatting, it is better to paste as values (Ctrl + V)

If template is corrupted, just add new template and copy data again!
Software Overview: Miscellaneous

- **About**: Describes the current version of the software

- **Help**: Opens the help dialog box.

- **License**: Manage licenses and check for software upgrades.

- **Wizard**: Guided analysis to select the right template or analysis

- **Options**: Change some of the optional values for software analysis

- **Feedback**: Provide feedback on the software to the service provider

For context sensitive help, click on F1
Sigma Magic Help

- **Launch Help**
  - Click on F1 to launch the help file
  - Click on the Help button on the dialog box
  - Click on the Help button on the Miscellaneous group of menus
  - Use the Wizard to open the help file

- **Discussion Forum**
  - Open the discussion forum [http://www.sigmamagic.com/forum/](http://www.sigmamagic.com/forum/)

You can view local help of help on website. Use Options menu to select the location where you want to view the help files.

(c) Rapid Sigma Solutions LLP
Sigma Magic Error Handler

- Standard error dialog box contains:
  - Error Code (Ex: 50258)
  - Line Number (Ex: 1080)
  - Module Name (Ex: Generate Groups)
  - Error Description (Ex: No data…)

- Some system generated error also give you an option of submitting the error to Sigma Magic helpdesk.
  - No user information is transmitted. Hence, it would help if you could manually email the Excel worksheet that is causing you the problem.

Contact Sigma Magic support if you are unsure of how to resolve the error.
Graphical Analysis

Continuous Data
- Determine Distribution
  - Histogram
  - Probability Plot

- Compare Groups
  - Dot Plot
  - Individual Value Plot
  - Box Plot
  - Interval Plot
  - Scatter Plot
  - Time Series Plot
  - Run Chart
  - Bar Chart
  - Pie Chart
  - Pareto Chart

Attribute Data
- Compare Groups
- Vital Few

To add these templates click on Graph > Name of Template
Histogram: Application

Data:
- Continuous data
- Larger sample sizes (N > 50)

Analysis:
- Determine the shape of the distribution (example Normal?)
- Understand central location and variability
- Gaps in data
- Symmetric nature of distribution

Also known as a frequency domain plot
Histogram: Add Template

- To add this template to workbook
  Graph > Histogram

Can also arrive at this template through Wizard
Histogram: Input Data

- **Dialog Box Inputs**
  1. Specify if data is continuous or discrete.
  2. Name of the distribution you want to superimpose on the histogram.
  3. Number of bins for plotting the histogram.
     - Auto: System will pick the bins for you
     - Manual: Specify min, max, and bin width

- **Worksheet Inputs**
  1. Specify the group column (text input, optional)
  2. Specify the data column (numeric input, mandatory)
  3. All blank rows are skipped

To reopen input dialog box, click on Update Inputs
Only copy values not formatting when you paste data into worksheet

(c) Rapid Sigma Solutions LLP
Histogram Examples

Histogram with Normal Fit

Histogram with Normal Fit

Histogram with Bi-modal Distribution

Histogram with Uniform Distribution

Some sample types of histograms with and without fit

(c) Rapid Sigma Solutions LLP
Histogram Exercise

- Data (Use one of the following):
  - Write down the time it takes to drive to work.
  - Write down the height of everyone in the class.
  - Use the data in the file Exercise > Histogram 1.xlsm.

- Analysis:
  - Create a histogram of the given data set

- Questions:
  - Is the data normally distributed?
  - What is the central value of the data?
  - How much variation is present in the data?

There can be more than one graph/analysis to answer these questions
Probability Plot: Application

- **Data:**
  - Continuous data
  - At least 15 data points

- **Analysis:**
  - Check if the data follows a given distribution
  - Sigma Magic uses Q-Q plot
  - Comparing two distributions by comparing quintiles
  - If the two distributions are similar then the points on the plot will line on the 45 degree line $y = x$.

Visual check for type of distribution. Use Distribution Identification for statistical analysis
Probability Plot: Add Template

- To add this template to workbook
  Graph > Probability Plot

Can also arrive at this template through Wizard

(c) Rapid Sigma Solutions LLP
Probability Plot: Input Data

- **Dialog Box Inputs:**
  - Specify the name of the distribution.

- **Worksheet Inputs:**
  - Specify the group information if any (text input, optional)
  - Specify data to create probability plot (numeric, mandatory)
  - All blank rows are skipped

To reopen input dialog box, click on Update Inputs
Only copy values not formatting when you paste data into worksheet

(c) Rapid Sigma Solutions LLP
Probability Plot Examples

Probability Plot with Normal Fit

Probability Plot with Triangular Fit

Probability Plot with Exp. Distribution

Probability Plot with Uniform Distribution

Quantile Estimates

Data

8.64 9.14 9.64 10.14 10.64 11.14 11.64

8.64 9.64 10.64 11.64

Quantile Estimates

Data

0 2 4 6 8 10 12 14

0 5 10 15

Quantile Estimates

Data

0 5 10 15

0 2 4 6 8 10 12

0 2 4 6 8 10 12 14

Use the fat pencil test to determine if the data follows the distribution

(c) Rapid Sigma Solutions LLP
Probability Plot Exercise

Data (Use one of the following):
- Write down the time it takes to drive to work.
- Write down the height of everyone in the class.
- Use the data in the file Exercise > Probability Plot 1.xlsx.

Analysis:
- Create a probability plot of the given data set

Questions:
- Is the data normally distributed?
- Is the data uniformly distributed?
- If you break up the data by gender (men/women) what are your answers to the above questions?

There can be more than one graph/analysis to answer these questions
Dot Plot: Application

Data:
- Continuous data
- Smaller sample sizes (N < 50)

Analysis:
- Understand central location and variability
- Look at each individual data point
- Check if there are outliers in the data set
- Gaps in data
- Compare groups

Dot Plot is comparable to Histogram with no bins
Dot Plot: Add Template

- To add this template to workbook
  
  Graph > Dot Plot

You can also arrive at this template through the Wizard
Dot Plot: Input Data

- There is no input dialog box for this template.
- Specify the worksheet data:
  - Specify the group information if any (text input).
  - Specify data to create dot plot (numeric input, mandatory).
  - All blank rows are skipped.

You can copy and paste values into the worksheet (use Copy Values).
Each dot represents one data point. Multiple data points at the same value are stacked vertically.
Dot Plot Exercise

- **Data (Use one of the following):**
  - Write down the time it takes to drive to work.
  - Write down the height of everyone in the class.
  - Use the data in the file Exercise > Dot Plot 1.xlsm.

- **Analysis:**
  - Create a dot plot of the given data set

- **Questions:**
  - What is the central value of the data?
  - How much variation is present in the data?
  - Create a dot plot by grouping variable gender.

There can be more than one graph/analysis to answer these questions
Individual Value Plot: Application

- **Data:**
  - Continuous data
  - Smaller sample sizes (N < 50)

- **Analysis:**
  - Understand central location and variability
  - Look at each individual data point
  - Check if there are outliers in the data set
  - Gaps in data
  - Compare groups

*Individual Value Plot is comparable to Dot Plot with axis interchanged*
Individual Value Plot: Add Template

- To add this template to workbook
  Graph > Individual Value Plot

You can also arrive at this template through the Wizard
Individual Value Plot: Input Data

- There is no input dialog box for this template
- Specify the worksheet data
  - Specify the group information if any (text input)
  - Specify data to create dot plot (numeric input, mandatory)
  - All blank rows are skipped

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Notes</td>
</tr>
<tr>
<td>Data*</td>
<td>Graphs</td>
</tr>
</tbody>
</table>

You can copy and paste values into the worksheet (use Copy Values)
Individual Value Plot Example

Each dot represents one data point. Multiple data points at the same value are stacked horizontally.
Individual Value Plot Exercise

- **Data (Use one of the following):**
  - Write down the time it takes to drive to work.
  - Write down the height of everyone in the class.
  - Use the data in the file Exercise > Dot Plot 1.xlsm.

- **Analysis:**
  - Create an individual value plot of the given data set

- **Questions:**
  - What is the central value of the data?
  - How much variation is present in the data?
  - Create an individual value plot by grouping variable gender.

There can be more than one graph/analysis to answer these questions
Box Plot: Application

Data:
- Continuous data
- Larger sample sizes

Analysis:
- Understand central location and variability
- Check if there are outliers in the data set
- Compare groups
- Determine if the data is symmetric

Box Plot is good to compare multiple groups of data
Box Plot: Theory

- Determine the median (Q2), first quartile (Q1) and third quartile (Q3)
- Draw a box between Q1 and Q3 and a median line at Q2
- Determine the extreme limits for the whiskers:
  - The lower whisker is plotted till the maximum of the minimum value of the data points or until the data points less than Q1 – 1.5*(Q3-Q1).
  - The upper whisker is plotted till the minimum of the maximum value of the data points or until the data points less than Q3 + 1.5*(Q3-Q1).
- If any data points are outside the whiskers, plot them as outliers (*).

Max Whisker: 1.5*(Q3-Q1)

Outlier

The box contains 50% of the data points between Q1 and Q3

(c) Rapid Sigma Solutions LLP
Box Plot: Add Template

- To add this template to workbook
  [Graph > Box Plot]

You can also arrive at this template through the Wizard

(c) Rapid Sigma Solutions LLP
Box Plot: Input Data

- **Dialog box inputs**
  - Specify if you want to plot the mean on the box plot

- **Worksheet data inputs**
  - Specify the group information if any (text input, optional)
  - Specify data to create box plot (numeric input, mandatory)
  - All blank rows are skipped

To reopen input dialog box, click on Update Inputs

Only copy values not formatting when you paste data into worksheet

(c) Rapid Sigma Solutions LLP
Box Plot Example

South group has less variation compared to North group

(c) Rapid Sigma Solutions LLP
Box Plot Exercise

- **Data (Use one of the following):**
  - Write down the time it takes to drive to work.
  - Write down the height of everyone in the class.
  - Use the data in the file Exercise > Box Plot 1.xlsm.

- **Analysis:**
  - Create a box plot of the given data set

- **Questions:**
  - What is the central value of the data?
  - How much variation is present in the data?
  - Create a box plot by grouping variable gender.
  - Are there any outliers in the given data set.

There can be more than one graph/analysis to answer these questions
Time Series Plot: Application

- **Data:**
  - Continuous data
  - Data collected in a time sequence

- **Analysis:**
  - Determine the stability of the data
    - Mean Shift
    - Trends
    - Outliers
  - Understand central location and variability

Also known as a time domain plot
To add this template to workbook

Graph > Time Series Plot

You can also arrive at this template through the Wizard
Time Series Plot: Input Data

- **Dialog box inputs**
  - No dialog box for this graph

- **Worksheet data inputs**
  - Specify the group information if any (text input, optional)
  - Specify the x axis data to create time series plot (increasing numeric or dates, optional)
  - Specify the y axis data to create time series plot (numeric, mandatory)
  - All blank rows are skipped

Only copy values not formatting when you paste data into worksheet

(c) Rapid Sigma Solutions LLP
Time Series Plot Example

Data looks relatively stable (visually no outliers, mean shifts, trends). Central value around 7 and variation between 5-8.
Time Series Plot Exercise

- **Data (Use one of the following):**
  - Determine the time it takes to walk a block. Repeat the above process 20 times. Write drive to sequence of times in a time series.
  - Use the data in the file Exercise > Time Series Plot 1.xlsx.

- **Analysis:**
  - Create a time series plot of the given data set

- **Questions:**
  - What is the central value of the data?
  - How much variation is present in the data?
  - Are there any outliers in the given data set.
  - Is the data set stable?

There can be more than one graph/analysis to answer these questions
Run Chart: Application

Data:
- Continuous data
- Data collected in a time sequence

Analysis:
- Determine if any patterns exist in the data
  - Trends (constantly increasing or decreasing)
  - Oscillations (up & down)
  - Clusters (groups of data)
  - Mixtures (mixed data from two different populations)

Similar to control chart but not as powerful
Run Chart: Add Template

- To add this template to workbook
  Graph > Run Chart

You can also arrive at this template through the Wizard
Run Chart: Input Data

- **Dialog box inputs**
  - No dialog box for this graph

- **Worksheet data inputs**
  - Specify the group information if any (text input, optional)
  - Specify the x axis data to create time series plot (increasing numeric or dates, optional)
  - Specify the y axis data to create time series plot (numeric, mandatory)
  - All blank rows are skipped

<table>
<thead>
<tr>
<th>Group</th>
<th>Data*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Only copy values not formatting when you paste data into worksheet

(c) Rapid Sigma Solutions LLP
Run Chart Example

**Input Summary**
- Rows: 23, Groups: 1
- Confidence: 95%

**Analysis Results**
- N: 23, Median: 6.29
Analysis of runs about median and up/down...

<table>
<thead>
<tr>
<th>Item</th>
<th>P Value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clusters</td>
<td>0.145</td>
<td>No</td>
</tr>
<tr>
<td>Mixtures</td>
<td>0.855</td>
<td>No</td>
</tr>
<tr>
<td>Trends</td>
<td>0.939</td>
<td>No</td>
</tr>
<tr>
<td>Oscillations</td>
<td>0.061</td>
<td>No</td>
</tr>
</tbody>
</table>

**Conclusion**
Data is Random. No patterns observed!

Green line is the median. Notes section contains information on different types of pattern
Run Chart Exercise

Data (Use one of the following):
- Determine the time it takes to process an order. Repeat the above process for 20 orders. Write drive to sequence of times in a time series.
- Use the data in the file Exercise > Run Chart 1.xlsm.

Analysis:
- Create a run chart of the given data set

Questions:
- What is the central value of the data?
- How much variation is present in the data?
- Are there any patterns in the data set?

There can be more than one graph/analysis to answer these questions
Scatter Plot: Application

Data:
- Continuous data for two variables
- Data collected in pairs

Analysis:
- Determine if any relationship exists between the two variables
  - Positive relationship ($X$ increasing $\Rightarrow$ $Y$ increasing)
  - Negative relationship ($X$ increasing $\Rightarrow$ $Y$ decreasing)
  - No relationship between $X$ and $Y$

For statistical analysis of relationship look at correlation or regression
Scatter Plot: Add Template

- To add this template to workbook
  Graph > Scatter Plot

You can also arrive at this template through the Wizard

(c) Rapid Sigma Solutions LLP
Scatter Plot: Input Data

- **Dialog box inputs**
  - No dialog box for this graph

- **Worksheet data inputs**
  - Specify the group information if any (text input, optional)
  - Specify the x axis data to create time series plot (numeric, mandatory)
  - Specify the y axis data to create time series plot (numeric, mandatory)
  - Need same number of rows of data for both X and Y axis.
  - All blank rows are skipped

---

Only copy values not formatting when you paste data into worksheet
Each group of data shown in a different color. Data set a seems to be positively correlated while data set b seems to be negatively correlated.
Scatter Plot Exercise

- **Data (Use one of the following):**
  - Collect the height-weight data from people in your class
  - Collect the years of work experience vs. time to drive to work
  - Use the data in the file Exercise > Scatter Plot 1.xlsx.

- **Analysis:**
  - Create a scatter plot of the given data set

- **Questions:**
  - Is there any relationship between the two variables?
  - Is it positive or negative relationship?

There can be more than one graph/analysis to answer these questions.
Bar Chart: Application

- **Data:**
  - Discrete data

- **Analysis:**
  - Determine the most frequently occurring group
  - Compare groups

For statistical analysis of relationship proportion or chi-square tests
Bar Chart: Add Template

- To add this template to workbook
  
  Graph > Bar Chart

You can also arrive at this template through the Wizard

(c) Rapid Sigma Solutions LLP
Bar Chart: Input Data

- Dialog box inputs
  - Specify if you want the bar chart as horizontal or vertical

- Worksheet data inputs
  - Specify the group information if any (text input, mandatory)
  - Specify the frequency of the group (numeric, integer, optional)
  - If frequency column is skipped, then it is assumed to be 1
  - All blank rows are skipped

Only copy values not formatting when you paste data into worksheet
Most frequency occurring group is scratch which has a frequency of 55%.
Bar Chart Exercise

- **Data (Use one of the following):**
  - Select any product or service. Identify the different type of defects. Collect defect data for each defect type for a period of 1-3 weeks.
  - Use the data in the file Exercise > Bar Chart1.xlsm.

- **Analysis:**
  - Create a box plot of the given data set

- **Questions:**
  - What are your conclusions?
  - Which defect type is the most frequent?

There can be more than one graph/analysis to answer these questions
Pie Chart: Application

- **Data:**
  - Discrete data

- **Analysis:**
  - Determine the most frequently occurring group
  - Compare groups
  - View data in terms of relative frequency (portion of pie)

For statistical analysis of relationship proportion or chi-square tests

(c) Rapid Sigma Solutions LLP
Pie Chart: Add Template

- To add this template to workbook
  
  Graph > Pie Chart

You can also arrive at this template through the Wizard
Pie Chart: Input Data

- **Dialog box inputs**
  - No dialog box for this graph

- **Worksheet data inputs**
  - Specify the group information if any (text input, mandatory)
  - Specify the frequency of the group (numeric, integer, optional)
  - If frequency column is skipped, then it is assumed to be 1
  - All blank rows are skipped

<table>
<thead>
<tr>
<th>Group*</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Only copy values not formatting when you paste data into worksheet
### Inputs

**Notes**

- **Pie Chart Example**

**Graphs**

- **Pie Chart of Group**

### Analysis Results

<table>
<thead>
<tr>
<th>Group Name</th>
<th>Sub Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>scratch</td>
<td>11</td>
<td>55%</td>
</tr>
<tr>
<td>break</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>shine</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>discolored</td>
<td>2</td>
<td>10%</td>
</tr>
</tbody>
</table>

### Conclusion

Pie Chart created with 4 groups

---

Most frequency occurring group is scratch which has a frequency of 55%.

---

(c) Rapid Sigma Solutions LLP
Pie Chart Exercise

Data (Use one of the following):
- Select any product or service. Identify the different type of defects. Collect defect data for each defect type for a period of 1-3 weeks.
- Use the data in the file Exercise > Pie Chart1.xlsm.

Analysis:
- Create a Pie Chart of the given data set

Questions:
- What are your conclusions?
- Which defect type is the most frequent?

There can be more than one graph/analysis to answer these questions
Pareto Chart: Application

- Data:
  - Discrete data

- Analysis:
  - Determine the most frequently occurring group
  - 80-20 rule
  - Determine the vital few vs. trivial many

For statistical analysis of relationship proportion or chi-square tests
Pareto Chart: Add Template

- To add this template to workbook

  Graph > Pareto Chart

You can also arrive at this template through the Wizard
Pareto Chart: Input Data

- **Dialog box inputs**
  - No dialog box for this graph

- **Worksheet data inputs**
  - Specify the group information if any (text input, mandatory)
  - Specify the frequency of the group (numeric, integer, optional)
  - If frequency column is skipped, then it is assumed to be 1
  - All blank rows are skipped

Only copy values not formatting when you paste data into worksheet
To attack about 75% of the problems you need to address scratch & shine.
Pareto Chart Exercise

- **Data (Use one of the following):**
  - Identify the different reasons for coming late to work. Poll the class the determine frequency of occurrence for the last few months.
  - Use the data in the file Exercise > Pareto Chart 1.xlsm.

- **Analysis:**
  - Create a Pareto Chart of the given data set

- **Questions:**
  - What are your conclusions?
  - How many different categories must you address to solve 80% of the problem?

There can be more than one graph/analysis to answer these questions
Graphs Exercise

- Data file: graph exercise 1.xls from the examples library.
- Primary metric: Order processing time
- Create different types of graphs and draw the appropriate conclusions OR answer the following questions:
  - Is the order processing time normal?
  - Is the order processing time stable?
  - Does procedure impact order processing time?
  - Does department impact order processing time?
  - Does installation time impact order processing time?
  - Create a pie chart of the customer category.
  - What are the vital few causes of poor customer NPS?

You have 30 minutes to complete this exercise
Conclusion

- Sigma Magic software overview
- How to enter data into the template
- Different type of graphs