SEMBIT319

Applying basic statistical analysis

Overview

This standard covers the competences required for applying basic statistical analysis, by consulting with the appropriate people and gathering the relevant data for statistical analysis on a Six Sigma project. You will need to use the data gathered to produce descriptive statistics, which cover mean, median, mode, standard deviation, range and variance for the selected representative sample. You will be expected to record the statistics gathered, using a variety of techniques that could include bar charts, histograms, Pareto diagrams, stem and leaf diagrams, box plots and time series charts. You will also be required to produce an action plan as a result of the statistical and graphical analysis undertaken.

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken, and to report any problems with the activities that you can not solve, or that are outside your responsibility, to the relevant authority. You will need to ensure that all the necessary documentation and/or visual representations are completed accurately and legibly. You will be expected to take full responsibility for your own actions within the activity, and for the quality and accuracy of the work that you produce.

Your underpinning knowledge will provide a good understanding of basic statistics, and will provide an informed approach to the analytical techniques and procedures used. You will need to understand the principles and application of basic statistical analysis, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. consult with appropriate people and gather the relevant data for statistical analysis
3. produce data gathering forms or charts to gather information to enable statistical and graphical analysis to take place
4. utilise statistical and graphical analysis on a Six Sigma project
5. produce a normal distribution to assess a population from the representative sample
6. interpret the statistical data collected, in order to validate the pre-determined courses of action
7. produce an action plan as a result of the statistical and graphical analysis undertaken

Knowledge and understanding

You need to know and understand:

1. how to work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. the meaning of `variation', how this can be detected with statistics, and how this variation can affect a process
3. the number of data points needed to draw a statistically valid conclusion
4. why we need to use basic statistics
5. the meaning of the terms population' andsample' when applied to basic statistics
6. distribution curves and the properties of a normal curve
7. how to create and use charts and diagrams
8. how to calculate mean, median, mode, standard deviation, range and variance
9. how to interpret and analyse the collected data
10. the difference between descriptive and inferential statistics
11. the extent of your own authority within the project, and to whom you should report in the event of problems that you cannot resolve

Scope/range related to performance criteria

1. Produce descriptive statistics of data, to include **all** of the following:
   1.1 mean
   1.2 median
   1.3 mode
   1.4 standard deviation
   1.5 range and variance
2. Record the collected data, utilising **three** of the following methods:
   2.1 bar charts
   2.2 histograms
   2.3 Pareto diagrams
   2.4 stem and leaf diagrams
   2.5 box plots
   2.6 time series charts
   2.7 other specific method

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