

663 Principles of central limit theorem and confidence intervals in a food environment

SQA Unit Code

H16R 04

Level 3

SCQF Level 7

SCQF Credit value 4

Unit Summary

This unit is about the understanding the principles of central limit theorem and confidence intervals as part of your organisation's drive to achieve excellence in food and drink manufacture and/or supply operations. This is important to the manufacture, processing and supply of food and drink within the food supply chain, where for example food safety is a critical factor.

You will need to understand the principles behind central limit theorem and confidence intervals and the business benefits of using them during an achieving excellence programme. You will need to understand what central limit theorem is and how it can support improvement in achieving excellence. You will need to know how to comply with your company policy for improvement, understand how to take responsibility for your actions, and refer any issues outside of the limit of your authority to others.

This unit is for you if your role requires you to understand the principles of central limit theorem and confidence intervals in food and drink manufacture or supply. You may be a line manager or supervisor and/or have responsibilities for all or part of the production/supply process and for promoting improvements.

In order to be assessed as competent you must demonstrate to your assessor that you can consistently perform to the requirements set out below. Your performance evidence must include at least one observation by your assessor.

You need to know and understand:

Evidence of knowledge and understanding should be collected during observation of performance in the workplace. Where it cannot be collected by observing performance, other assessment methods should be used.

1. How the health, safety and hygiene requirements of a work area can influence central limit theorem
2. What the central limit theorem is and how it can support improvement within food manufacture
3. What is meant by the standard error of the mean
4. How the central limit theorem can be used to reduce measurement error
5. The number of observations that must be made in order to estimate a population mean when the data is not normally distributed
6. How the standard error of the mean is calculated
7. The relationship between the standard error of the mean and sample size
8. How central limit theorem is utilised to reduce measurement system error
9. How to calculate mean, median, mode, standard deviation, range, variance, Cp and

Cpk

10. How confidence intervals are calculated from the standard confidence interval equations
11. The 'mean of means' principle
12. Levels of authority linked to problem resolution

Evidence of performance may employ examples of the following assessment:

- observation
- written and oral questioning;
- evidence from company systems (e.g. Food Safety Management System)
- reviewing the outcomes of work
- checking any records of documents completed
- checking accounts of work that the candidate or others have written