



Students draw statistical diagrams and calculate statistical measures, then write a short report summarising their findings.

They are representing data about applicants for Higher Education who applied through the UCAS system.

Suitability and Time

L3 (Advanced) or L2 (Higher/Intermediate)

Resources and equipment

Student information sheet and worksheet, spreadsheet (optional)

Key mathematical language

Data, line graph, bar chart, pie chart, stem and leaf diagram, histogram, frequency polygon, cumulative frequency diagram, box and whisker plot, percentages, ratios, mean, mode, modal group, median, upper and lower quartiles and inter-quartile range, percentiles, range, standard deviation.

Notes on the activity

The data on the student information sheet are also given in the Excel spreadsheet.

Notes about each dataset are given on the UCAS website at www.ucas.co.uk. It is recommended that you read these before the session so you can answer student questions.

If students don't have access to computers they will find it difficult to work with such large datasets. You may wish to reduce the amount of data by deleting some years or combining groups.

It is assumed that students will already be familiar with a wide range of statistical diagrams and measures. If you start by asking students to discuss the information sheets in groups or the whole class, you can find out what they know and avoid later problems. Asking students to write a report will help you assess how well they carry out statistical methods and interpret the results.

You could use part of the information sheet and spreadsheet with other resources from the Nuffield website to help students learn how to draw statistical diagrams using a spreadsheet. Other Nuffield resources show how to find statistical measures such as the mean and standard deviation on a calculator.

During the activity

Students could work individually, but working in pairs or small groups would help generate discussion about statistical methods. If students work in pairs, you could

ask one student to draw a diagram and calculate relevant statistical measures by hand, and the other to use a spreadsheet; then compare the methods and results.

Points for discussion

Discuss how the choice of statistical diagrams and measures can emphasise different aspects of the data.

Problems may be avoided by asking students to consider what difficulties may arise *before* they try to draw diagrams or calculate statistical methods. If necessary you could remind students of the methods.

At the end of the session students could be asked to present their findings to the rest of the group. Questions at the end of the student sheets and spreadsheet could aid class discussion and help students reflect on their work.

Extensions

More data (for example, clearing numbers and applications for particular universities) are available on the UCAS website at wwwucas.co.uk.

Ask students to select and report on data they find interesting.

Answers

Suggestions for statistical diagrams and measures that could be discussed or used are given below.

Gender

Line graph, bar chart, percentages, ratios.

Age

Line graph, bar chart, pie chart, histogram, frequency polygon, cumulative frequency diagram, box and whisker plot, percentages, ratios, mean, modal group, median, quartiles and inter-quartile range, standard deviation.

Ethnic origin

Line graph, bar chart, pie chart, percentages, ratios.

UK region

Line graph, bar chart, pie chart, percentages, ratios.

Tariff

Line graph, histogram, frequency polygon, cumulative frequency diagram, box and whisker plot, mean, modal group, median, quartiles and inter-quartile range, percentiles, standard deviation.

Education sector

Line graph, bar chart, pie chart, percentages, ratios

Subject groups

Line graph, bar chart, pie chart, percentages, ratios.