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Using standardised attainment scores to facilitate comparisons between groups of students

Alan Donnelly

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Session Overview and Objectives

- **To explain the use of standardised scores, also known as z-scores**
- **To provide examples of how standardised scores have been applied in institutional research at SHU to compare groups of students**
- **To outline the strengths and limitations of adopting this approach**

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Context

- Attainment gaps have been identified in relation to equality and diversity, for example, the ethnicity degree attainment gap (ECU, 2014; Richardson, 2015).

- Recommendations by Mountford-Zimdars and colleagues (2015) to “Embed monitoring, evaluation and data use at different levels” and to align “data collection and analysis to a strategic question that can be answered using quantitative data (e.g. what is the difference in degree attainment for different groups of students).”

- Act on Richardson’s (2015) suggestion of conducting research on the academic attainment of international students and students whose first language is not English .

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What are standardised scores?

$$\text{Z Score} = \frac{\text{Raw score - Mean}}{\text{Standard deviation}}$$

- Z-scores for a measure show the **direction** and **magnitude** of difference that a value deviates from the population mean, expressed in units of the population standard deviation (Field, 2012).

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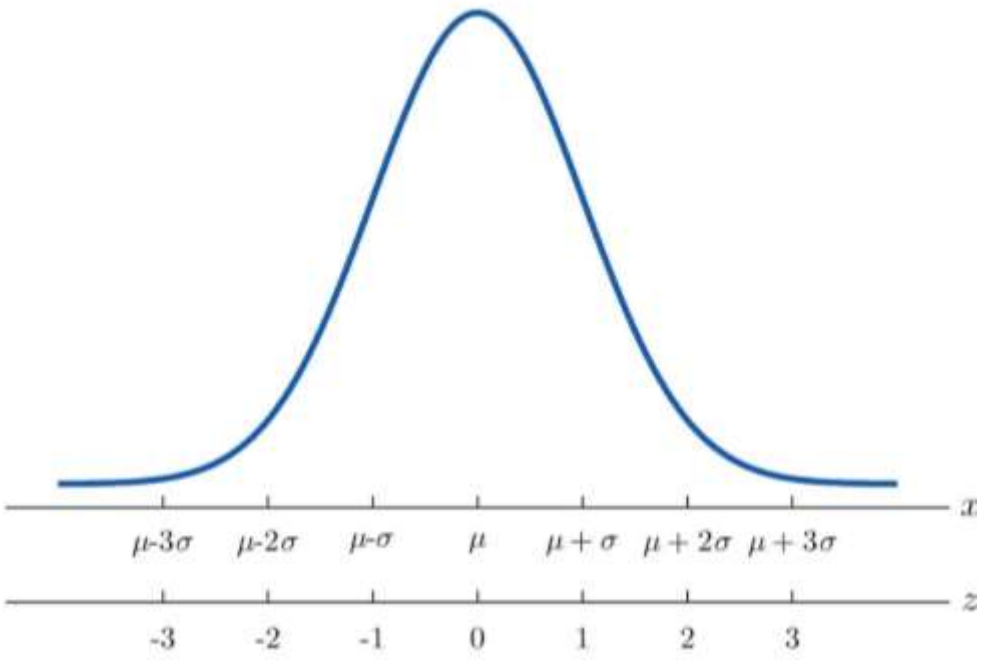
What are standardised scores?



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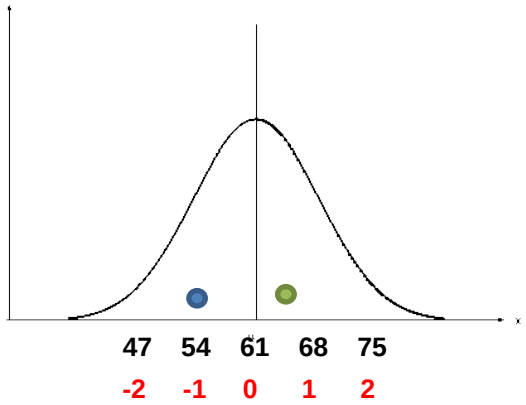
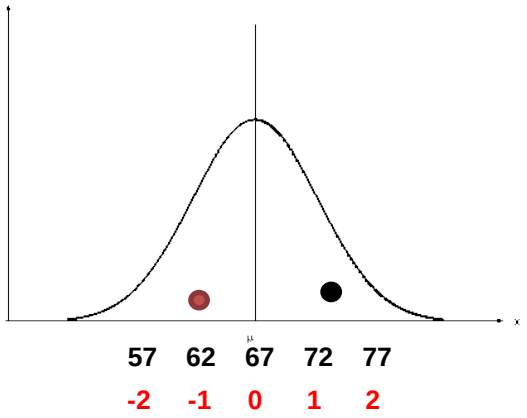
What are standardised scores?

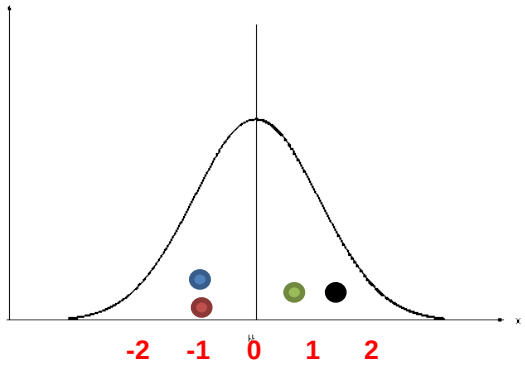
Mean = 61, SD = 7



Mean = 67, SD = 5



Mean = 0, SD = 1



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The advantages of using standardised scores

- The relationship between a raw score and the distribution of scores is made much clearer. It is possible to determine how a score **relates** to scores within the entire group.

- Enables the comparison of scores across courses, subject areas and year groups. The focus of the analysis is on measuring relative progress of individuals or groups within these cohorts.

- Raw scores from different tests can be compared.

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Examples of Use

- Gain knowledge of how well UK-domiciled minority groups of students perform in relation to the cohort.
- Identify courses or subject groups with small and large disparities in the attainment of minority students compared to the cohort.
- Monitor the relative progress of individuals or groups within these cohorts through their University experience, for example, across level of study.
- Examine the academic performance of international students.

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The disadvantages of using standardised scores

- Standardised scores must always assume a normal distribution.
- Potential loss of data.
- Lose the meaningfulness of using raw data.
- Standardised scores not always immediately easy to understand.
- Must be interval data.

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References

- Equality Challenge Unit (2014). Equality in Higher Education Statistical Report, Part 2: Students. London: Equality Challenge Unit.

- Field, A. (2012). *Discovering statistics using SPSS.* Sage publications.

- Mountford-Zimdars, A., Sabri, D., Moore, J., Sanders, J., Jones, S., & Higham, L. (2015). Causes of differences in student outcomes. Chicago.

- Richardson, J. T. (2015). The under-attainment of ethnic minority students in UK higher education: what we know and what we don't know. *Journal of Further and Higher Education*, *39*(2), 278-291.

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Questions and Discussion

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