T Level Technical Qualification in Digital Business Services

Occupational specialism assessment (OSA)

Data Technician

Task 3 - Distinction

Guide standard exemplification materials

T Level Technical Qualification in Digital Business Services
Occupational specialism assessment

Guide standard exemplification materials

Data Technician

Task 3

Contents

Introduction

The material within this document relates to the Data Technician occupational specialism sample assessment. These exemplification materials are designed to give providers and students an indication of what would be expected for the lowest level of attainment required to achieve a pass or distinction grade.

The examiner commentary is provided to detail the judgements examiners will undertake when examining the student work. This is not intended to replace the information within the qualification specification and providers must refer to this for the content.

In task 3, part A, the student must use the provided datasets to produce a dashboard using appropriate software. The dashboard will include a summary and will highlight relevant trends and patterns appropriate to the brief. Students must also keep a written decision-making log, which is similar to task 2, where progress and decision-making is recorded.

In part B, students must perform an appropriate statistical test and explain their findings to the client within the written log.

After each live assessment series, authentic student evidence will be published with examiner commentary across the range of achievement.

Task 3:

Time limit and marks available

Maximum time allowed = 8 hours (you can use this time how you want during each session, but task 3 must be completed within this time limit).

(40 marks)

Instructions for students

Part A

Tony has provided you with some internal and external datasets. You have been provided with clean, individual datasets and a single joined dataset.

Tony requires you to produce a dashboard for your client. You are not being asked to join the data but may use each dataset how you wish, to help build the dashboard. The dashboard will be presented to the board of directors so must be easy to interact with, be professionally formatted and have obvious variable names and values.

The dashboard should be created using appropriate software and will typically include graphs, tables, and filters.

You should automate the dashboard where possible, creating pivot tables and pivot charts, which allow the user to interact with the data as they please.

The client wishes to identify trends and patterns in their in-house data and demographic data to help them meet their objectives.

Some of the things the client has told you they are interested in include, but are not limited to:

- high level sales statistics by various customer attributes:
    - o the popularity of different products by age
    - o sales by postcode area and postcode sector
- appropriate demographics of areas they may wish to target - this may include:
    - o size of the houses
    - o the age distribution of a neighbourhood
    - o the distribution of property type

You will also need to keep a written decision-making log, that similar to task 2, where you must keep a record of the following:

- justification of your choices of the type of visualisation you included

- an explanation of the insights each visualisation provides

- an explanation of how the visualisations are appropriate to the client's objectives

Part B

Your client has also asked if there is a correlation between average house price and percentage of houses with more than 5 bedrooms in a given postcode sector. Perform an appropriate statistical test and explain your findings to the client within the written log. Make sure you reference any appropriate evaluation metric. Explain the reason you chose the statistical test that you performed.

Resources

You will have access to the following resources for both parts of the task, plus the original brief:

- task 3 data sets (provided by NCFE):
    - Client_data_personal
    - Client_data_sales
    - Client_product_list
    - HHDemographics
    - Single_set
- software applications to clean and blend data, and create dashboard information
- word processing and spreadsheet software

Evidence required for submission to NCFE

- a dashboard for your client containing detailed information, including trends and patterns you have identified, which help the client towards their business objectives
- a written log containing decisions about selected data to represent, insights and how it relates to the clients' brief
- evidence that an appropriate statistical test has been completed

Student evidence

Please see the following file for student evidence for task 3:

- task 3 evidence

Part A

The following charts are on the dashboard that I have created. I intend to do the following for each chart:

- justify the choices of the type of visualisation I included
- explain the insights of each visualisation
- explain how the visualisation aligns with the company's objectives

Popularity of products by age
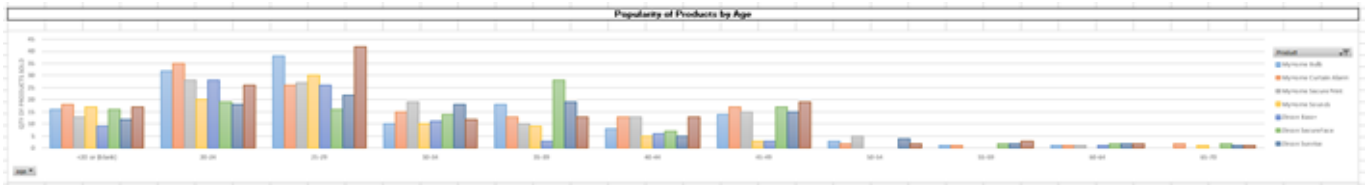
This chart was selected in order to showcase side by side the different age groups against the new product range. This does indeed agree with the original brief in that the products are not very popular with people over the age of 55, however, it could be said from this graph that their products are not popular with people over the age of 50.

This visualisation allows the management team to easily see and identify which age groups have the highest sales, and from this they are able to filter and break down this data and look at an individual group or groups, as seen
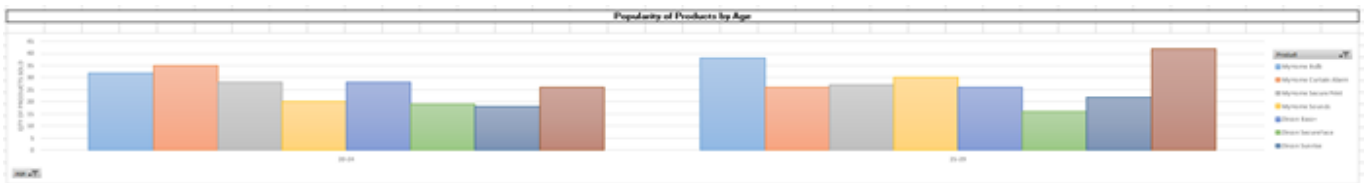

below:

This meets the requirement for the management team as they are able to identify the popularity of different products by age at a glance, whilst being able to drill down into the detail. This level of detail should also support the following organisations overall objectives for the coming year:

- increase sales of their 8 recently launched products
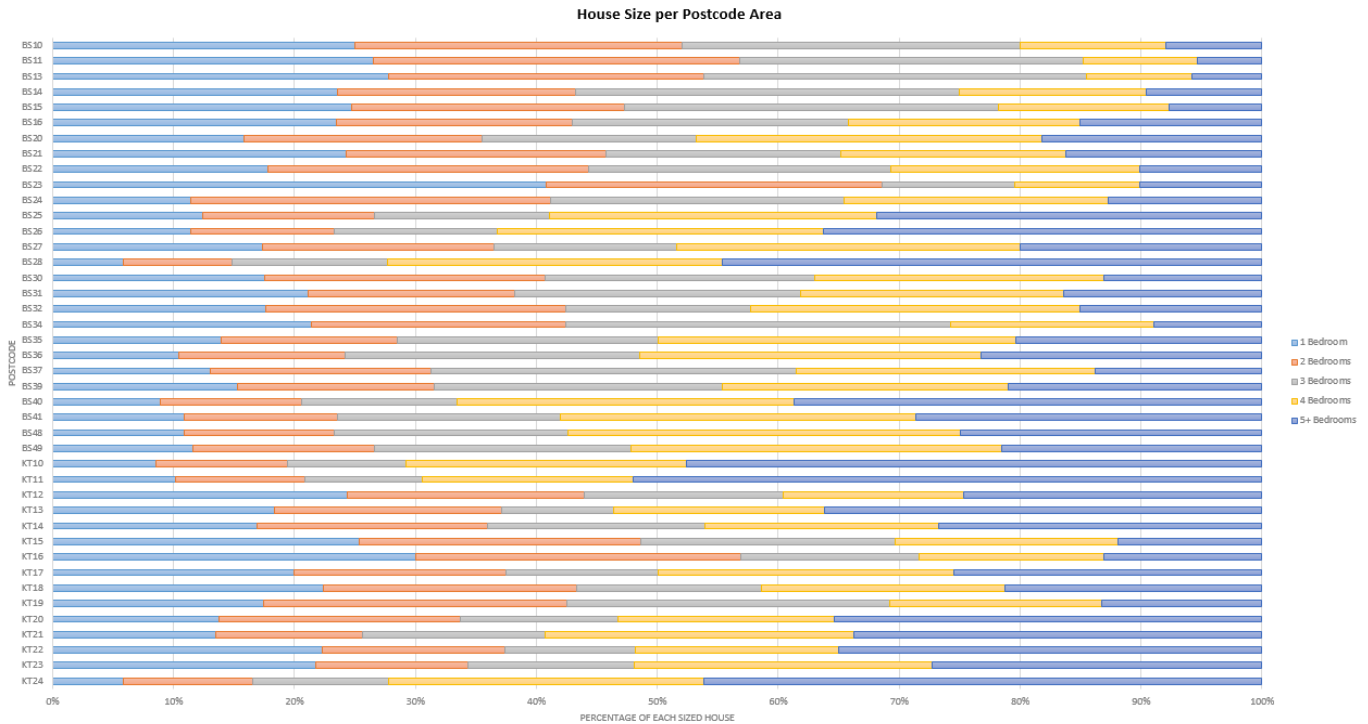- increase sound system sales

These 2 objectives should be supported due to the sales team now being able to identify age groups and products so that they can look to use targeted marketing against these elements.

Sales of products by postcode sector
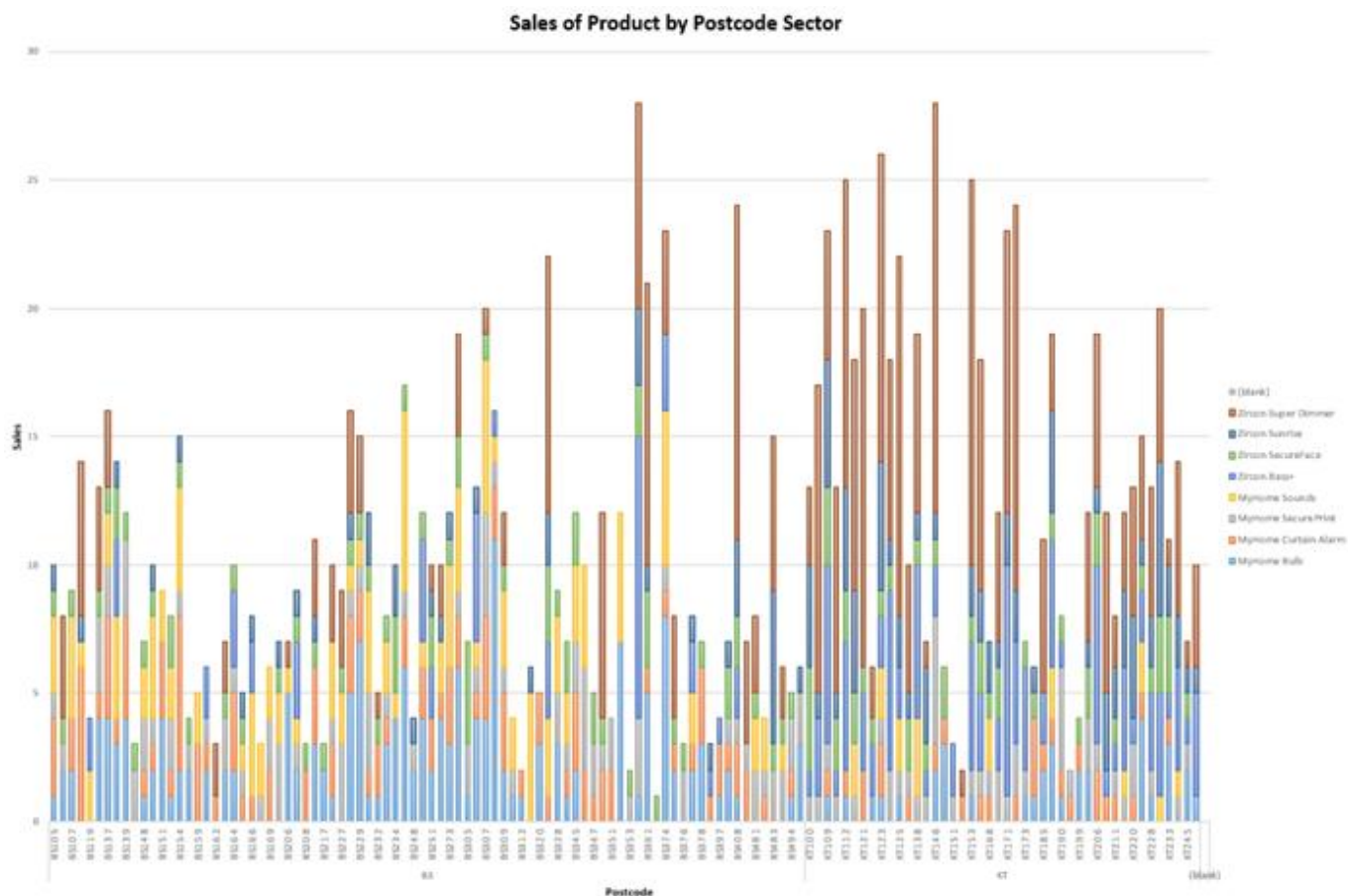
This chart was selected to meet the requirement of the management team being able to identify the "sales by postcode area and postcode sector". This chart allows the management team to identify which postcodes have higher levels of sales; however, whilst looking at this, it can be difficult to identify which particular products. The filter on the right-hand side allows them to filter by each product to dive into the further detail, as shown below:

This can also be filtered by postcode area if they wanted to drill down more into an individual area, as seen below:

These insights should allow the management team to efficiently market the products that they need to for the correct postcodes where products are selling well. We can see from the overview chart that the best sales overall can be identified within the "BS35 4" and "KT14 6" areas; however, there are many that fall close behind. In comparison, there are some areas that have had very little sales, such as the BS15/BS16 areas; however, we will cover that more in Task 4.

This should support 2 of the 4 business objectives for the next year:

- increase sales of their 8 recently launched products
- increase sound system sales

House size per postcode area

This stacked chart was selected using percentages to ensure that it gave an overall view; postcodes are not often broken down equally, hence the need to use percentages here, using the information that the "customers with larger houses usually buy more products". This would allow the marketing team to target the areas where there is a higher percentage of houses with 5+ bedrooms, for example KT1 1 has the highest percentage of houses with 5+ bedrooms, this could be an area for one of the stores. Overall, the KT area does appear to have a higher number of houses with 5+ bedrooms, this could be used for target marketing.

This information on its own would not be sufficient, however, combined with some of the other information on this dashboard this should support the longer-term marketing plan of the organisation, supporting 2 of the company's business objectives for the next 12 months:

- increase sales of their 8 recently launched products
- increase sound system sales
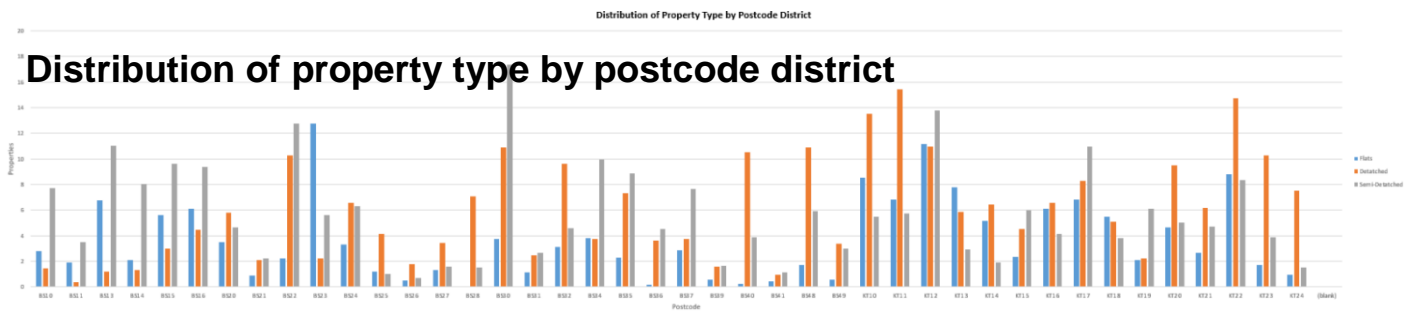
Age groups by postcode sector
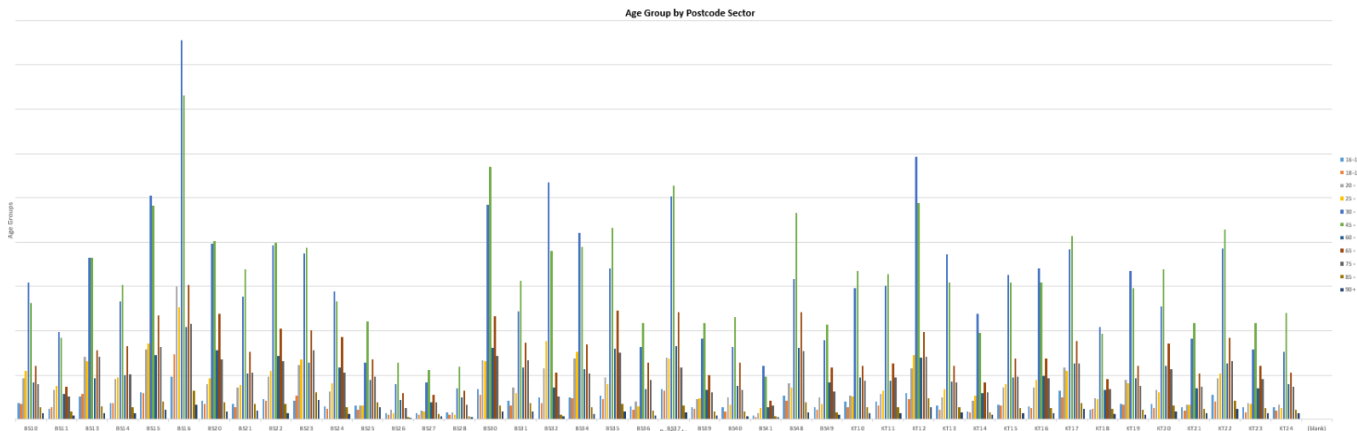
This graph is here to support the client's request to understand the age distribution of the neighbourhoods; whilst this is a difficult graph to understand in its general overview, it is possible to understand the colours here, and with the use of the filter (bottom left) you can dive into the specific areas and investigate more, as shown below:
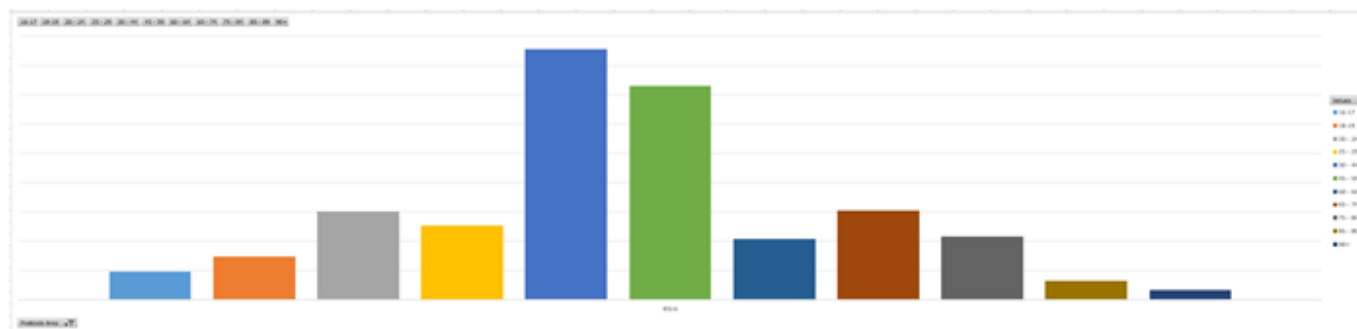
As you can see from the graphs, I have not included any data for children as they are not listed in the client data, as it would not be expected that a child would purchase the products, however, I have selected to start from age 16 to 17 as this is a suitable age, and the company has clients aged 17.

This should again support the marketing team to perform targeted marketing based upon their earlier research into which products sell well with each age group. This, combined with other data on the dashboard, should support the company over the next 12 months to achieve the following objectives:

- increase sales of their 8 recently launched products
- increase sound system sales

Distribution of property type by postcode district


Distribution of Property Type by Postcode District

This clustered column was selected in order to demonstrate the breakdown of different types of properties in each postcode area, this includes all data in one chart and is quite easy to follow due to only having 3 different values, and the colours chosen contrast well which allow it to be read clearly. However, the filter has still been included and the management team can delve into the various postcodes as they wish.

This information on its own would not be sufficient, however, combined with some of the other information on this dashboard this should support the longer-term marketing plan of the organisation, supporting 2 of the company's business objectives for the next 12 months:

- increase sales of their 8 recently launched products
- increase sound system sales

Customer demographics
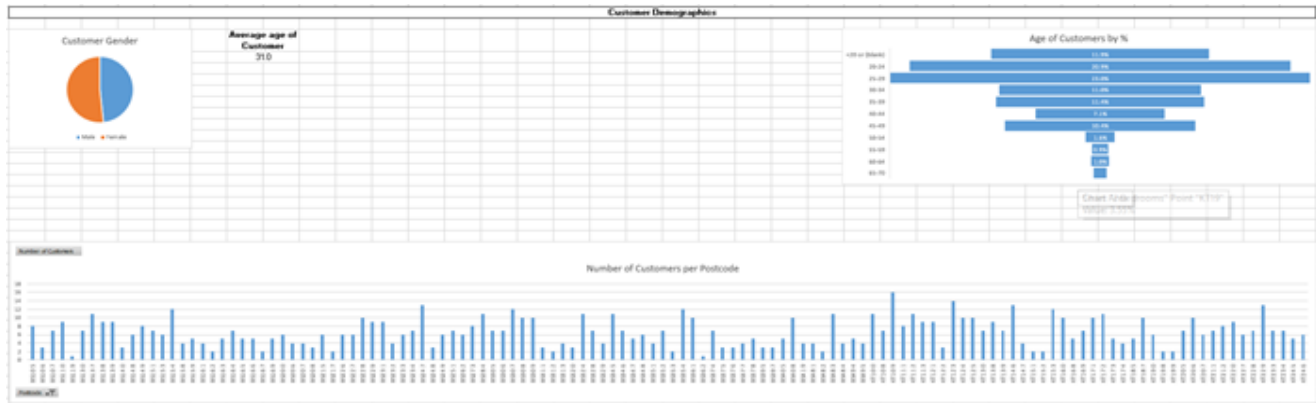
I will cover each of these individually below:

Customer gender

This information could be used to support yet more targeted marketing; the more data that the marketing team have, the more they can attempt to target the correct customers which would therefore increase the likelihood that a potential customer turns into a sale. This would ultimately support the business's goals to increase sales.
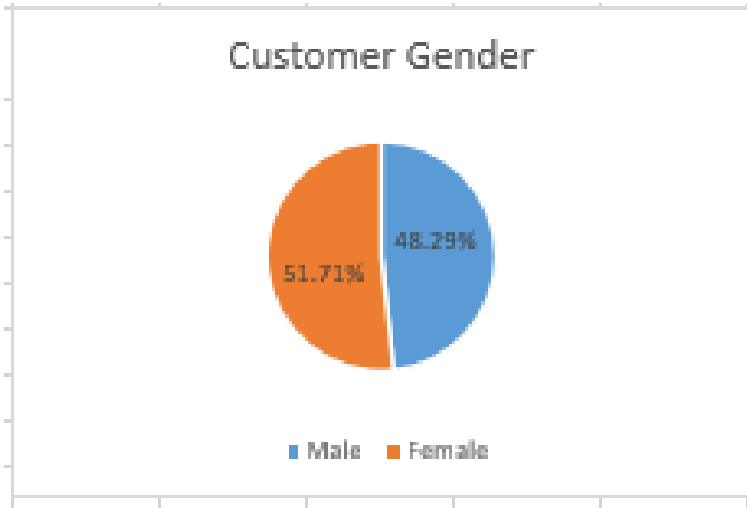

Average age of customer
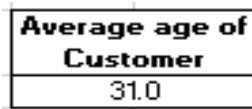
As discussed previously, the more information that the management team have, the more they can do with it, and this data was readily available, so I provided this for the team. This could be a useful insight to show how over time their customer base has changed, but also to support them aiming at a particular target market.

Age of customers by percentage
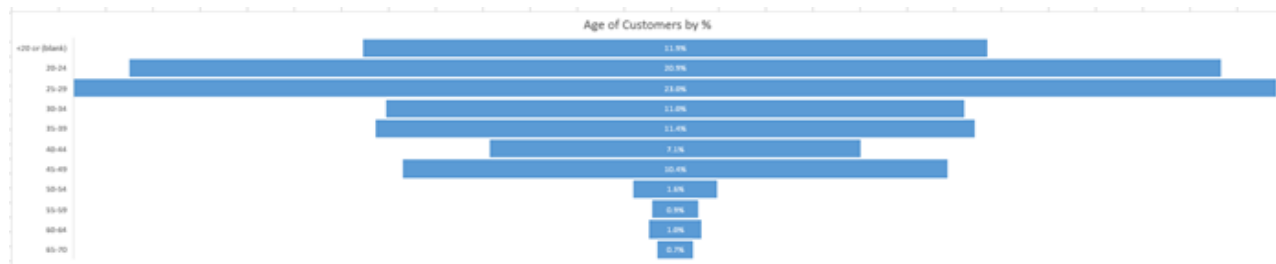
This chart was chosen so that the management team could see where their customer base fits in relation to age. This does indeed confirm that the information given in the brief was correct, however, it would also suggest that the brief was slightly inaccurate – this may be due to changes since the client last looked at the data, this would suggest that only 4.2% of their customer base was over the age of 50, rather than the previous 55 years of age mentioned by the client.

Number of customers by postcode

Whilst not the easiest to read, this graph gives further insight to the company regarding which postcodes their sales

are in, this again with other data should support their marketing team to create more targeted marketing.

Conclusion

The information shown on the dashboard should be easy to navigate and designed in a way that enables the management team to easily explore the information relating to their sales, which will enable their marketing/business development spend to be applied in the most effective way. This data analysis should support 2 of the 4 objectives that the client has set for the next 12 months.

This data suggests that their initial brief is relatively accurate, however, having access to this data should be now even more useful for them to target the relevant potential customers. This new information should support the client and their growth objectives.

Part B

In order to meet the client's requirement to demonstrate if there is a correlation between the average house price and the percentage of houses with 5 or more bedrooms per postcode sector, I used a PivotTable which compared the average house cost per postcode against the percentage of houses with 5+ bedrooms, then sorted this data from lowest to highest on cost. Then by creating a line graph, I was able to demonstrate that this correlation was in fact true.
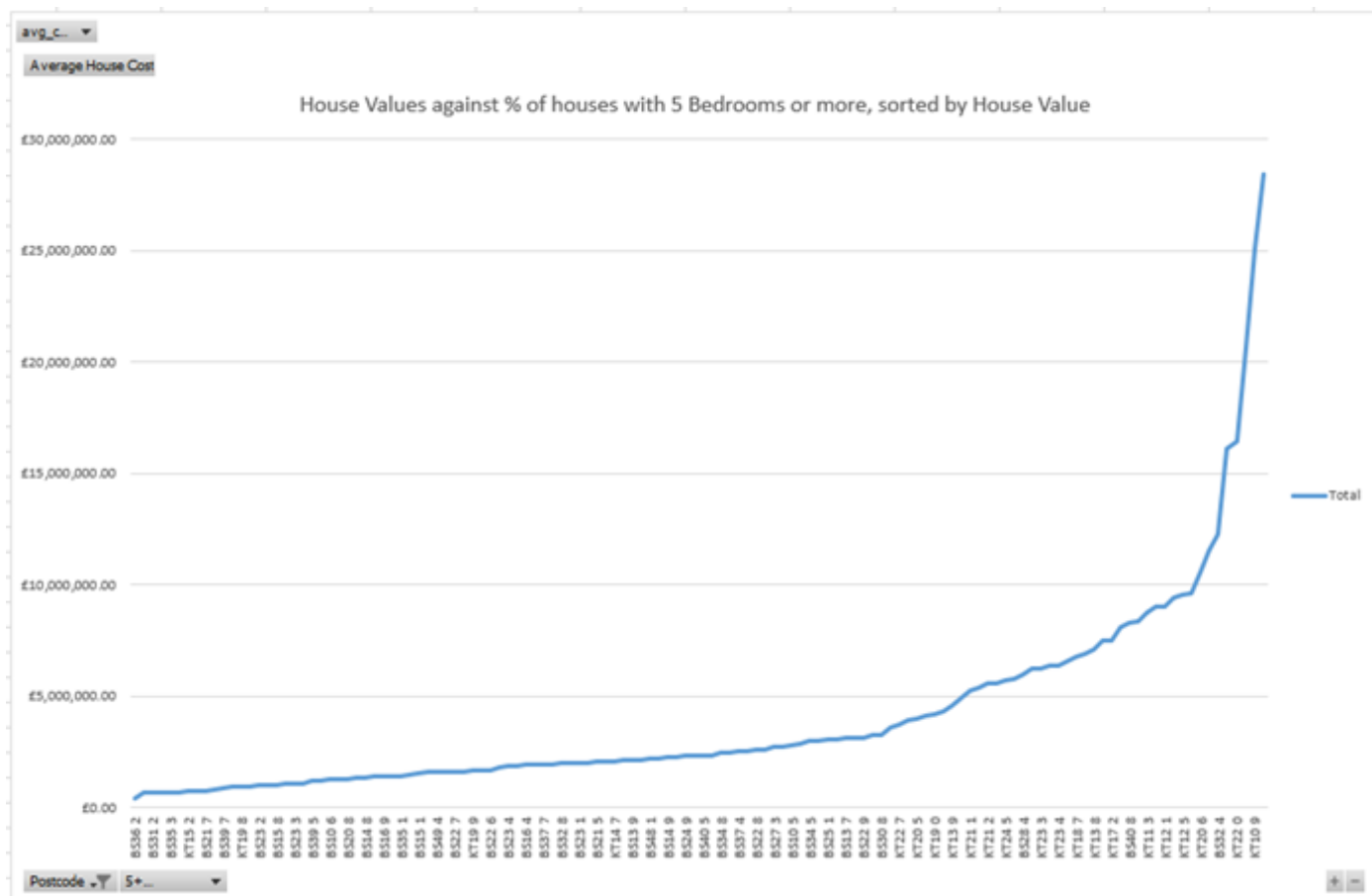
You can see from the graph above that there is a definite correlation, as the average value of the houses goes up, the value of the percentage rises significantly.

This is confirmed by the use of the CORREL function in Excel which has given us a correlation score of 75.4% showing the relationship to be statistically strong.

I chose the CORREL function as this seemed to be the most practical method, for the usage, to confirm what I had visually identified as shown in the graph above. I did consider using the manual method of confirmation, using the mean values of each, however as I was doing this electronically and had a visual confirmation of a correlation it made much more sense to use the Excel function than a manual process. The instructions for the manual process can be found here - How to Calculate a Correlation - dummies

This would suggest that the number of houses with more bedrooms is significantly higher and could be a very valuable section of the market for the client.

Examiner commentary

The student has produced a dashboard which provides a detailed picture of the issues affecting the business. They have used the statistical technique of correlation but have not commented on the specific method used, nor have they used the best approach to this technique. They have used an algorithm to undertake a clustering analysis, although the results of this have not been built into the dashboard or commented on. This dashboard demonstrates a good grasp of the techniques to allow data to be stored on various different worksheets and allow a user to navigate through them, with explanations on each page.

In the student's log, they have explained the significance of the data analysed and how it contributes to the objectives of the business in the scenario. They have demonstrated their ability to undertake complex and non-routine analysis tasks with minimal supervision, reflecting a secure grasp of the knowledge and skills needed by a worker in this sector.

The student has shown understanding of legislation and has been able to discuss the relevance of findings to the business in their log, showing an understanding of the professional principles that are relevant to this data analysis task.

In the use of heading and titles on the dashboard and in the accompanying log, the student has communicated clearly, with an understanding of their audience. Their use of charts and graphs is mostly appropriate to the data communicated and is relevant to the scenario, showing that they have a somewhat detailed understanding of communication and visualisation techniques that are relevant to the task in hand.

The student has explained in their log how the reliability and validity of their data has been considered and they have been able to show critical thinking in relation to the relevance of their analysis to the needs of the scenario business. The lack of evidence of the use of corroborative sources in confirming the validity and reliability of their data is a key omission, but this does not detract from the fact that, overall, the student has given a detailed explanation of how to select and evaluate data.

Grade descriptors

The performance outcomes form the basis of the overall grading descriptors for pass and distinction grades.

These grading descriptors have been developed to reflect the appropriate level of demand for students of other level 3 qualifications and the threshold competence requirements of the role and have been validated with employers within the sector to describe achievement appropriate to the role.

Grade	Demonstration of attainment
Pass	The evidence is logical and displays the basic knowledge and skills expected of an employee in this sector in the context of the set brief.
	The student demonstrates theoretical knowledge of the sources, foundations, usage, and quality of data that is used for analysis. They are able to carry out routine administrative and analytical tasks using simple datasets.
	The student demonstrates an understanding of data blending techniques and is able to carry out routine data blending tasks.
	The student is able to give a simple explanation of how and why data is analysed by a business. They are able to follow the data process in order to build and test a dataset.
	The student is able to demonstrate an understanding of visualisation and communication techniques. They are able to provide evidence of communicating data which is relevant to stated business objectives.
	The student is able to state legal and professional principles that are relevant to the manipulation of data. They are able to carry out routine tasks using data in a way that complies with relevant laws and professional standards.
	The student is able to explain how appropriate sources of information can be selected and evaluated. They are able to search for relevant information and can assess the reliability of the knowledge that they generate.
Distinction	The evidence produced in response to the brief is precise and logical, displaying a secure grasp of the knowledge and skills that would be expected of a new recruit in the industry.
	The student demonstrates a thorough understanding of the sources, foundations, usage, and quality of data that is used for analysis. They are able to carry out complex and non-routine administrative and analytical tasks with minimal supervision, using both simple and complex datasets.
	The student demonstrates a secure understanding of a range of data blending techniques and is able to carry out both routine and non-routine data blending tasks competently.
	The student is able to demonstrate a detailed understanding of the reasons why a range of businesses might analyse data. They are able to use their own initiative to follow the data process with minimal supervision in order to build and test a complex dataset in response to a specified business problem.
	The student is able to demonstrate a detailed understanding of a range of visualisation and communication techniques that might be appropriate to a range of organisational needs. They are able to work collaboratively to communicate and visualise data, showing links to business objectives in the materials that they produce.
	The student is able to explain the legal and professional principles that are relevant to a

	range of different data manipulation tasks. They are able to consistently carry out both routine and non-routine tasks in a way that complies with legal requirements and professional standards.
	The student is able to give a detailed explanation of how to select and evaluate a range of different sources of information for a specific task. They are able to search for data that is appropriate to a given task and can corroborate their findings using appropriate methods to evaluate the suitability of data and making appropriate recommendations for improvements in the collation of data for future tasks.

Document information

The T Level Technical Qualification is a qualification approved and managed by the Institute for Apprenticeships and Technical Education.

Copyright in this document belongs to, and is used under licence from, the Institute for Apprenticeships and Technical Education, © 2020-2021.

'T-LEVELS' is a registered trade mark of the Department for Education.

'T Level' is a registered trade mark of the Institute for Apprenticeships and Technical Education.

'Institute for Apprenticeships & Technical Education' and logo are registered trade marks of the Institute for Apprenticeships and Technical Education.

Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Published final version.		May 2021
v1.1	NCFE rebrand		September 2021