

GIS Assignment

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Geographical Information Systems
(ACCA5027)

Geodemographic Analysis using GIS
Software

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Contents

Introduction	3
Gathering the Necessary Information for Deprivation in Neath Port Talbot	4
Deprivation Areas within Neath Port Talbot	5
Creating a Table including the Vaccination Centres in Neath Port Talbot	5
Adding the vaccination Centre Points	6
Results.....	6
Adding the Area Names for a Cleaner Look.....	7
Results.....	8
The Total Classification of Households in Neath Port Talbot	9
The Total of Households Deprived in 4 Dimension	9
Obtaining the Cars and Vans Data from the UK Data Service	10
The Total Cars and Vans condensed into a Table to Open into MapInfo.....	11
Opening and Geo Coding the Total Vans and Cars per Household	12
Range Values of the Total Number of Cars and Vans per Household	12
Map of No Cars and Vans per Household.....	13
Total Deprivation and Cars Result	13
Number of People who have had their Covid-19 Vaccinations.....	14
Conclusion.....	14
Thematic Maps.....	17
Spatial Queries	18
Importance of Geo Coding.....	19
Hypothesis on the Deprivation within Neath Port Talbot	19
Conclusion.....	22
Reference List.....	23

Introduction

In this assignment, the use of a Geographical Information Systems (GIS) software is to develop how the system could be built to inform healthcare professionals on the uptake of vaccination programmes. The first part of the assignment will show the development of the workspace being created, with the results and a description of each screenshot. And in the second part of the assignment, there will be a report detailing the fundamentals of the GIS software and the resources used to create the workspace.

Part One

Gathering the Necessary Information for Deprivation in Neath Port Talbot



InFuse 2011 Population

Steps: 1 2 3 4

Categories

Show Guidance

Select categories

Clear Categories

Bedrooms, occupancy rating [E][W]

☒ Total: Occupancy rating (bedrooms)

☒ Occupancy rating (bedrooms) of +2 or more

☐ Occupancy rating (bedrooms) of +1

☐ Occupancy rating (bedrooms) of 0

☐ Occupancy rating (bedrooms) of -1

☒ Occupancy rating (bedrooms) of -1 or less

☐ Occupancy rating (bedrooms) of -2 or less

Unit

☒ Households

Selected category combinations

AddRemoveRemove All

2351 - Tenure : Owned outright - Unit : Households

2353 - Tenure : Owned with a mortgage or loan - Unit : Households

2158 - Occ rate bedrooms : Occupancy rating (bedrooms) of -1 or less - Unit : Households

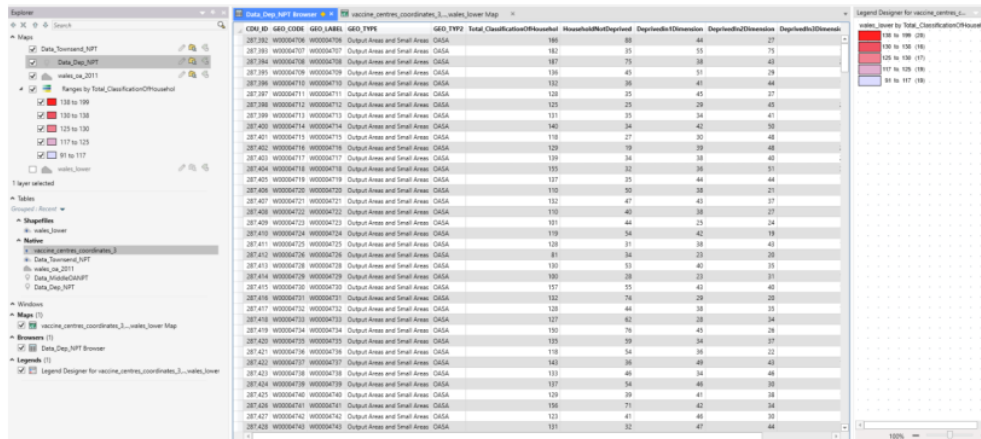
2159 - Occ rate bedrooms : Total: Occupancy rating (bedrooms) - Unit : Households

2164 - Occ rate bedrooms : Occupancy rating (bedrooms) of -2 or less - Unit : Households

You have selected 5 category combinations

To gather the information on the deprivation statistics in Neath Port Talbot, an online service called the Uk Data Service was used, which allows us to add different categories and download the data into an excel file. Here, the screenshot above shows the occupancy rating, which is the number of bedrooms, and the number of occupancies which is -2 or less.

Deprivation Areas within Neath Port Talbot



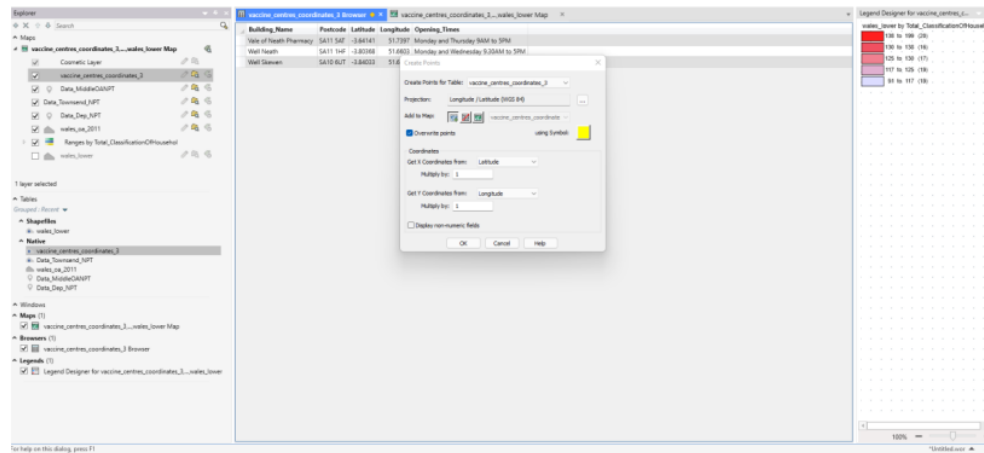
This is then the information broken down into a table, with each column containing the name, the geo code, and the household information broken down into sections, these are households that are not deprived, households that are deprived in one dimension, households that are deprived in two dimensions, etc.

Creating a Table including the Vaccination Centres in Neath Port Talbot

	A	B	C	D	E
1	Building Name	Postcode	Longitude	Latitude	Opening Times
2	Vale of Neath Pharmacy	SA11 5AT	51.7397200	-3.6414100	Monday and Thursday 9AM to 5PM
3	Well Neath	SA11 1HF	51.6603000	-3.803680	Monday and Wednesday 9.30AM to 5PM
4	Well Skewen	SA10 6UT	51.6611700	-3.840330	Monday and Wednesday 9.30AM to 5PM
5					

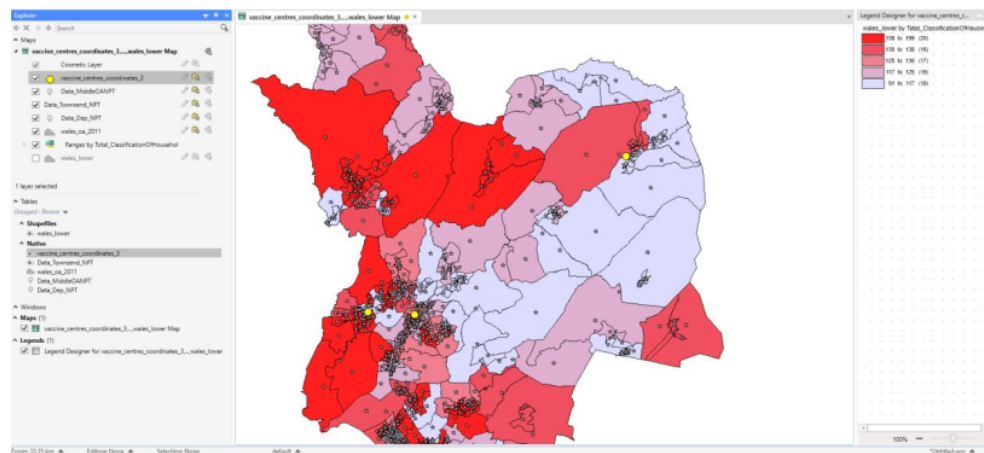
Above, there is a screenshot that shows the names, locations and opening times of the vaccination centres located in Neath Port Talbot. This is an important step in creating this map as it allows us to analyse the locations of these centres, and whether people are able to get to the place in order to get their vaccinations. The longitude and latitude coordinates are important to include as it is the format in which MapInfo is able to identify the location. It is important to geocode this table when it is imported into MapInfo so that it can create a map of the locations.

Adding the vaccination Centre Points



Now that the data has been imported and geocoded, it is important to add the centre points so that it gets added to the Neath Port Talbot map. The symbol has been changed to a circle and is bright yellow so that they are easily identifiable with the deprivation ranges on show.

Results



This is the result of the vaccination centres being added. It is clear to see that there is not much choice for centres, as two are relatively close to each other with the other being far away. It is important to establish distance between the centres so that they are easily accessible by more people. The two that are close together are less thought out and therefore does not make it accessible to the regions further away.

Adding the Area Names for a Cleaner Look

Easy Download

Boundary Data Selector

Postcode Directory

Postcode Data Selector

What and Where?

Format

For help with using the Boundary Data Selector interface, see:

How to use Boundary Data Selector

Select:

Wales

Census

2011 and later

Find

Boundaries

Welsh Built-up Areas, 2011

Welsh Built-up Area Sub-divisions, 2011

Welsh Census Merged Wards, 2011

Welsh Census Output Areas with OAC, 2011

Welsh Census Wards, 2011

Welsh Workplace Zones, 2011

Area(s) of Interest: Welsh Unitary Authorities, 2011 (Derived by aggregating 2011 Output Areas using exact-fit OA to higher geography lookup table)

Gwynedd

Isle of Anglesey

Merthyr Tydfil

Monmouthshire

Neath Port Talbot

Newport

Pembrokeshire

Powys

List Areas

Expand Selection

Previous List

Search Summary:

[Target Geography : Welsh Census Merged Wards, 2011] [Selected Area(s) : Neath Port Talbot]

Data Format:

SHAPE

Archive Method:

Zip

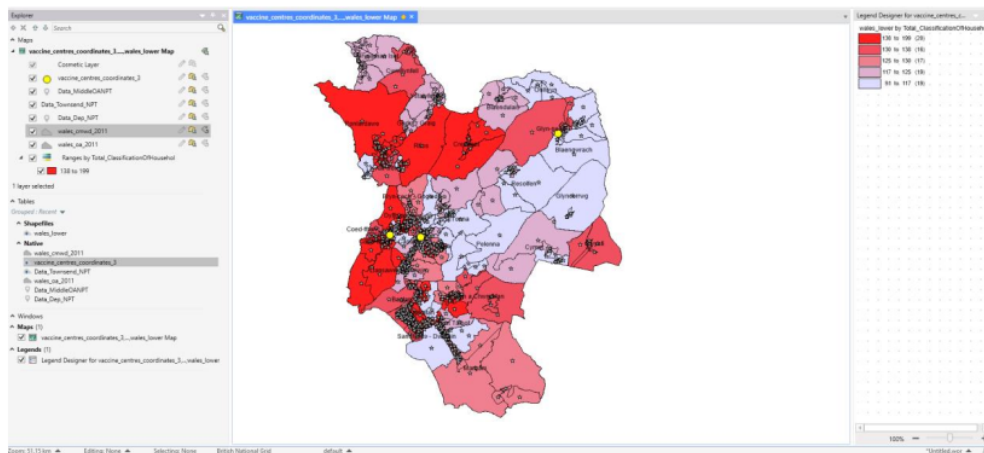
Extract Boundary Data

Here the UK Data Service is being used to identify the names of the villages within Neath Port Talbot. This allows the user to clearly read and understand the map.

idref	address	name	code
W090000172400000474	Winnard Gorseford	Bryn a Chwalen	W09000474
W090000172400000475	Bryn a Chwalen	Bryn a Chwalen	W09000475
W090000172400000476	Bryn-coch - Gorseford	Bryn-coch North	W09000476
W090000172400000481	Coed Rhon - Gorseford	Coed Rhon North	W09000481
W090000172400000482	Cowenall	Cowenall	W09000482
W090000172400000484	Cowenall	Cowenall	W09000484
W090000172400000485	Cymmer	Cymmer	W09000485
W090000172400000486	Dyffryn	Dyffryn	W09000486
W090000172400000487	Dyffryn	Dyffryn	W09000487
W090000172400000488	Dyffryn	Dyffryn	W09000488
W090000172400000489	Dyffryn	Dyffryn	W09000489
W090000172400000490	Dyffryn	Dyffryn	W09000490
W090000172400000491	Dyffryn	Dyffryn	W09000491
W090000172400000492	Dyffryn	Dyffryn	W09000492
W090000172400000493	Dyffryn	Dyffryn	W09000493
W090000172400000494	Dyffryn	Dyffryn	W09000494
W090000172400000495	Dyffryn	Dyffryn	W09000495
W090000172400000496	Dyffryn	Dyffryn	W09000496
W090000172400000497	Dyffryn	Dyffryn	W09000497
W090000172400000498	Dyffryn	Dyffryn	W09000498
W090000172400000499	Dyffryn	Dyffryn	W09000499
W090000172400000500	Dyffryn	Dyffryn	W09000500
W090000172400000501	Dyffryn	Dyffryn	W09000501
W090000172400000502	Dyffryn	Dyffryn	W09000502
W090000172400000503	Dyffryn	Dyffryn	W09000503
W090000172400000504	Dyffryn	Dyffryn	W09000504
W090000172400000505	Dyffryn	Dyffryn	W09000505

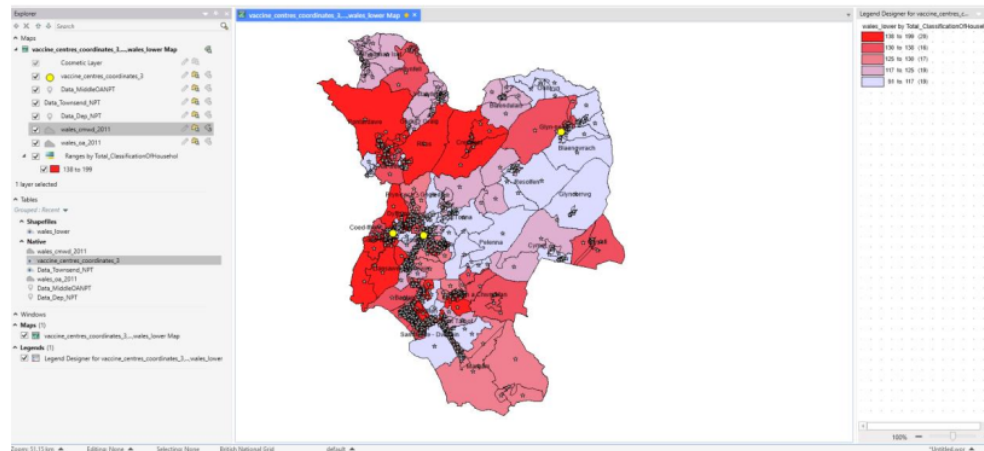
This is the table being imported into MapInfo. It is important to save the excel file as a 97-2003 version as that is the only version MapInfo supports.

Results



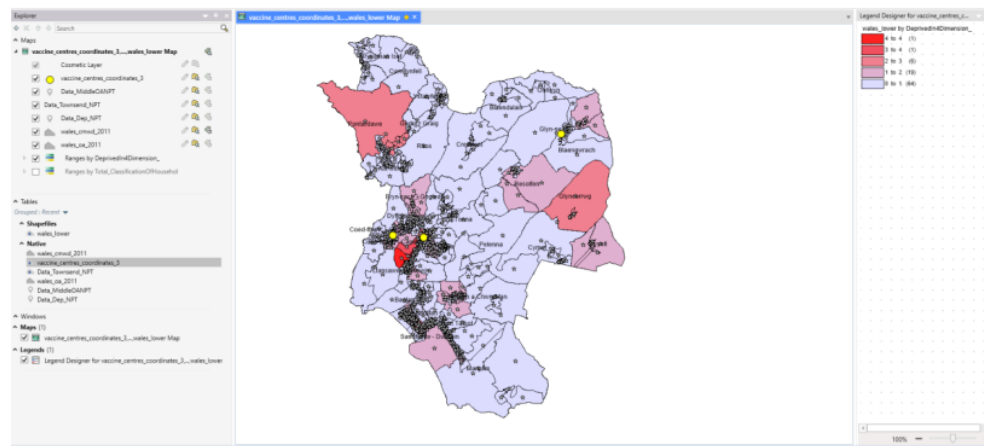
This is a lot more visually appealing to the user's eye, which not only makes it easier to look at but is also easier to read and understand. Without these names, it is hard to identify the place names within Neath Port Talbot.

The Total Classification of Households in Neath Port Talbot



The total classification of households is easier to visualise and comprehend when they are colour coordinated. This is broken down into each place within Neath Port Talbot, which allows us to see which areas are more deprived than others.

The Total of Households Deprived in 4 Dimension



Identifying the total household deprived in 4 dimensions is the governments way of identifying deprived households. The four dimensions are employment, education, health and disability and housing [1]. Employment is determined whether any member of the household is unemployed, excluding full-time students, or on long-term sick. Education in the household is any member who does not acquire a level 2 or higher education, again excluding full time students. Health and disability are established when any member of the household has general health that is 'very bad' or long-term health problems. And lastly housing is calculated whether the housing is overcrowded, an occupancy rating of -1 or less, in a shared dwelling or has no central heating.

Obtaining the Cars and Vans Data from the UK Data Service



InFuse 2011 Population Statistics

Steps: 1 2 3 4

Categories

[Show Guidance](#)

Select categories

Clear Categories

☒ Car or van availability

☒ Total: Car or van availability

☒ No cars or vans in household

☐ 1 car or van in household

☐ 2 cars or vans in household

☐ 3 cars or vans in household

☐ 4 or more cars or vans in household

☐ Sum of all cars or vans

☒ Unit

☒ Households

☐ Cars or vans

Selected category combinations

AddRemoveRemove All

989 - Car or van availability : Total: Car or van availability - Unit : Households

991 - Car or van availability : No cars or vans in household - Unit : Households

You have selected 2 category combinations

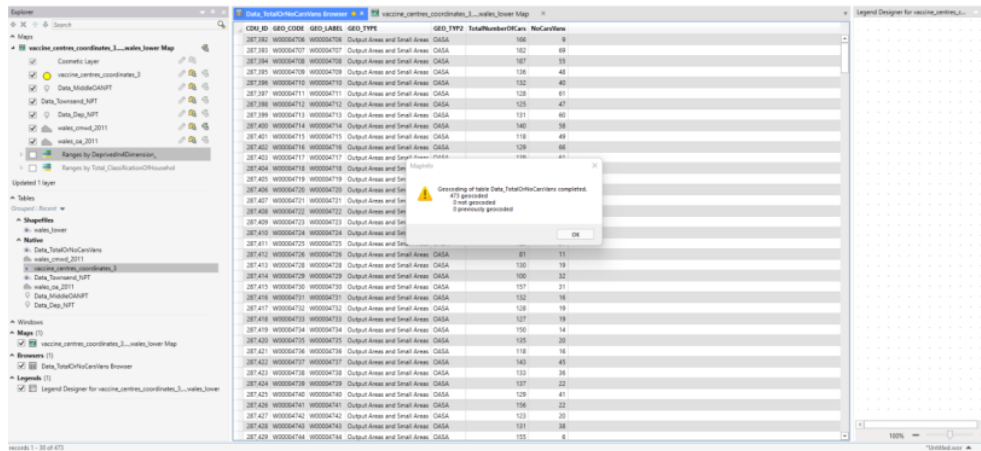
To establish whether people are able to get their own transport to the vaccination centres, it is important to identify whether they have any cars or vans in their households. To do this, we get this information from the UK Data Service, import the table into MapInfo and to Geocode the data so that it is ready for use in the map. The UK Data Service allows us to access information on the total number of cars or vans in each household or whether they have no access to their own transportation.

The Total Cars and Vans condensed into a Table to Open into MapInfo

	A	B	C	D	E	F	G
1	CDU_ID	GEO_COD	GEO_LABEL	GEO_TYPE	GEO_TYP2	TotalNumberOfCars	NoCarsVans
2	287392	W0000470	W0000470	Output	Ar OASA	166	9
3	287393	W0000470	W0000470	Output	Ar OASA	182	69
4	287394	W0000470	W0000470	Output	Ar OASA	187	55
5	287395	W0000470	W0000470	Output	Ar OASA	136	48
6	287396	W0000471	W0000471	Output	Ar OASA	132	40
7	287397	W0000471	W0000471	Output	Ar OASA	128	61
8	287398	W0000471	W0000471	Output	Ar OASA	125	47
9	287399	W0000471	W0000471	Output	Ar OASA	131	60
10	287400	W0000471	W0000471	Output	Ar OASA	140	58
11	287401	W0000471	W0000471	Output	Ar OASA	118	49
12	287402	W0000471	W0000471	Output	Ar OASA	129	66
13	287403	W0000471	W0000471	Output	Ar OASA	139	61
14	287404	W0000471	W0000471	Output	Ar OASA	155	78
15	287405	W0000471	W0000471	Output	Ar OASA	137	70
16	287406	W0000472	W0000472	Output	Ar OASA	110	12
17	287407	W0000472	W0000472	Output	Ar OASA	132	16
18	287408	W0000472	W0000472	Output	Ar OASA	110	13
19	287409	W0000472	W0000472	Output	Ar OASA	101	8
20	287410	W0000472	W0000472	Output	Ar OASA	119	19
21	287411	W0000472	W0000472	Output	Ar OASA	128	31
22	287412	W0000472	W0000472	Output	Ar OASA	81	11
23	287413	W0000472	W0000472	Output	Ar OASA	130	19
24	287414	W0000472	W0000472	Output	Ar OASA	100	32
25	287415	W0000473	W0000473	Output	Ar OASA	157	31
26	287416	W0000473	W0000473	Output	Ar OASA	132	16
27	287417	W0000473	W0000473	Output	Ar OASA	128	19
28	287418	W0000473	W0000473	Output	Ar OASA	127	19
29	287419	W0000473	W0000473	Output	Ar OASA	150	14
30	287420	W0000473	W0000473	Output	Ar OASA	135	20
31	287421	W0000473	W0000473	Output	Ar OASA	118	16
32	287422	W0000473	W0000473	Output	Ar OASA	143	45
33	287423	W0000473	W0000473	Output	Ar OASA	133	36
34	287424	W0000473	W0000473	Output	Ar OASA	137	22
35	287425	W0000474	W0000474	Output	Ar OASA	129	41
36	287426	W0000474	W0000474	Output	Ar OASA	156	22
37	287427	W0000474	W0000474	Output	Ar OASA	123	20

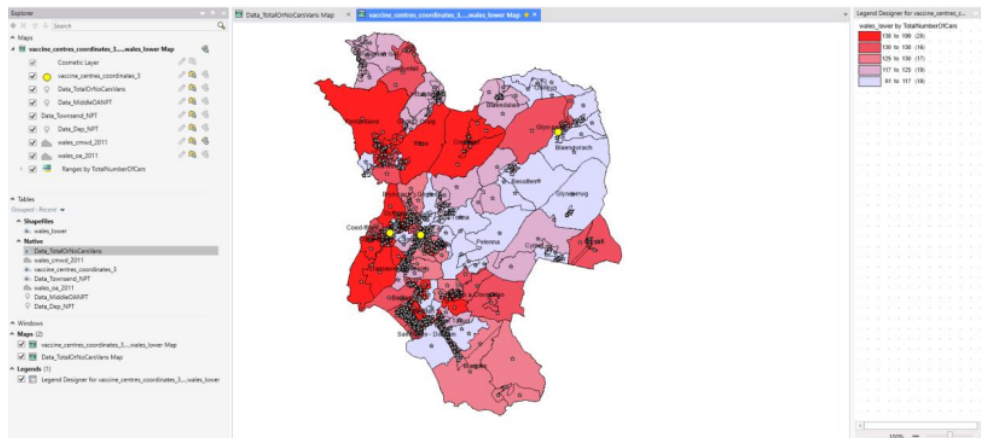
When we first obtain the downloaded file, the labels need to be condensed and change into titles that are more readable and easier to understand. It is also important to save the excel file as a 97-2003 worksheet.

Opening and Geo Coding the Total Vans and Cars per Household



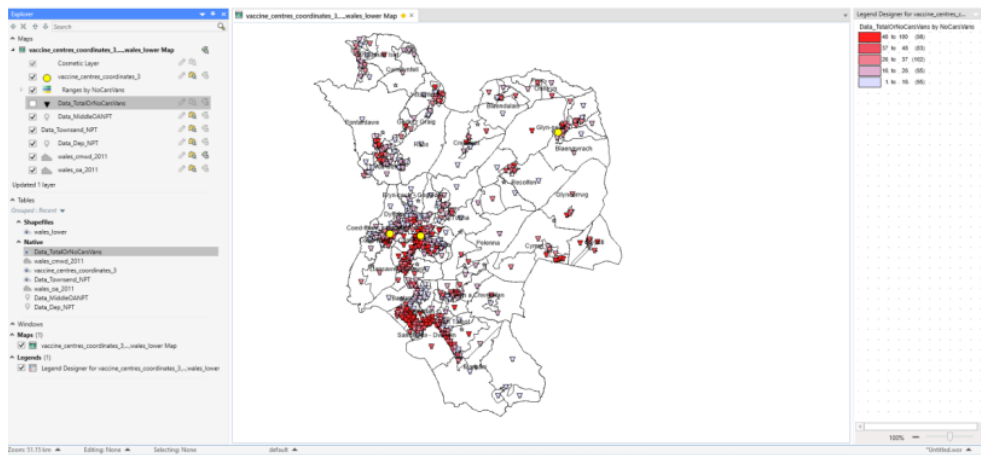
Importing the table into MapInfo is an easy process, in which you click the open table button and file the correct file. Then it is important to geo code the data. Once these steps are established, the data can be brought into the map and used to analyse the total amount of cars or vans per household.

Range Values of the Total Number of Cars and Vans per Household



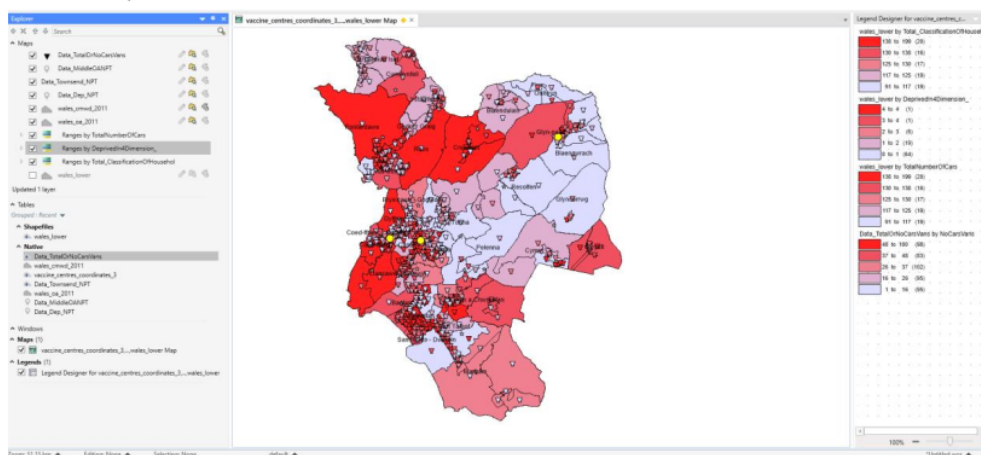
As mentioned above, ranges are created to identify the total number of cars of vans per household and that is condensed into each area within Neath Port Talbot. It is clear to see above that the darker areas have the greatest number of vehicles in their households and the lighter ones have no vehicles, which shows that there is a lot of deprivation within Neath Port Talbot.

Map of No Cars and Vans per Household



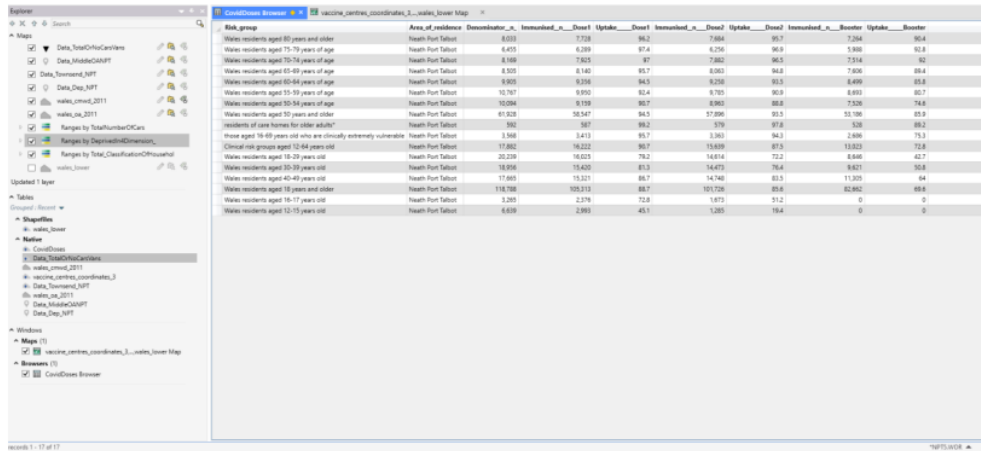
Contrasting the information above, an alternative form of showing the number of areas that have no access to vehicles in households is with symbols rather than highlighting the whole area. Not only is this more accurate, but it is easy to identify the areas in which they have no cars or vans in their households.

Total Deprivation and Cars Result



The above screenshot shows both data results. With the areas highlighted is the total number of cars or vans in each household in Neath Port Talbot, and the symbols displaying the number of households who do not have access to their own transportation.

Number of People who have had their Covid-19 Vaccinations

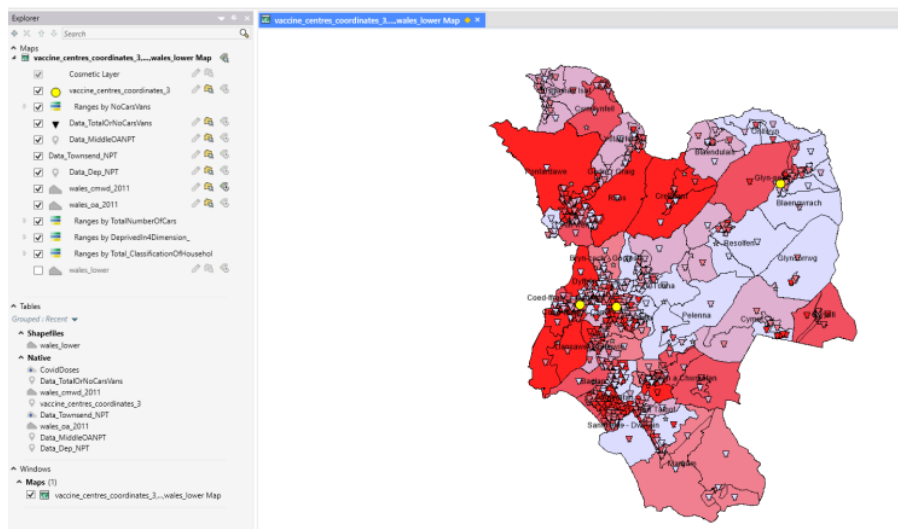


Risk group	Area of residence	Unvaccinated_n	Unvaccinated_n_Dose1	Unvaccinated_n_Dose2	Unvaccinated_n_Booster	Unvaccinated_n_Booster
Wales residents aged 18 years and older	Health Part Talbot	8,113	7,728	862	7,884	96.8
Wales residents aged 75-79 years of age	Health Part Talbot	6,475	6,289	87.4	6,256	96.9
Wales residents aged 75-79 years of age	Health Part Talbot	8,198	7,925	97	7,882	96.5
Wales residents aged 75-79 years of age	Health Part Talbot	6,335	6,140	85.7	6,053	94.9
Wales residents aged 80-84 years of age	Health Part Talbot	9,903	9,358	94.5	9,232	93.3
Wales residents aged 80-84 years of age	Health Part Talbot	10,767	9,950	92.4	9,705	90.9
Wales residents aged 80-84 years of age	Health Part Talbot	10,094	9,198	90.7	8,943	88.4
Wales residents aged 80-84 years of age	Health Part Talbot	61,828	55,547	90.5	57,896	93.5
Wales residents aged 80-84 years of age	Health Part Talbot	982	587	59.2	579	57.8
Wales residents aged 80-84 years of age	Health Part Talbot	3,388	3,413	100.7	3,383	94.3
Wales residents aged 80-84 years of age	Health Part Talbot	17,882	16,222	90.7	15,839	87.9
Wales residents aged 80-84 years of age	Health Part Talbot	20,238	18,035	78.2	16,814	72.2
Wales residents aged 80-84 years of age	Health Part Talbot	18,858	15,482	81.9	14,475	76.4
Wales residents aged 80-84 years of age	Health Part Talbot	17,882	15,321	85.7	14,740	82.3
Wales residents aged 80-84 years of age	Health Part Talbot	118,788	103,313	86.7	101,738	85.4
Wales residents aged 80-84 years of age	Health Part Talbot	2,283	2,279	100.0	2,279	100.0
Wales residents aged 80-84 years of age	Health Part Talbot	6,839	2,993	43.7	3,285	48.2

Here is a table imported into MapInfo, which shows the different age groups who have been vaccinated with their first, second, third and booster doses of their covid-19 vaccinations. It is clear to see that the older generation are a lot more cautious and are vaccinated to prevent the severe symptoms of catching covid-19. In this study, there will be research to establish that people in deprived areas are less likely to be vaccinated. Whether this is related to their lack of transport, the vaccination centres being far away and their lack of funds to get public transportation to the vaccination centres.

Conclusion

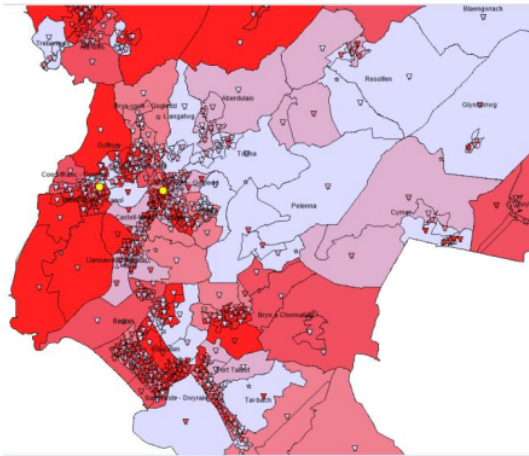
To conclude, it is clear to see the different maps, tables and queries that were used to create a map of the covid data. It is important to remember that when data is downloaded from the UK Data Service, the file type is the latest version of excel. Then, to make modifications to make the labels readable and understandable so that they are not hard to identify. Then when saving it is important to save the table as an excel 97-2003 workbook as it is the only version that MapInfo will accept and identify. Every map starts off as a table and what makes it a map is to geo code it. When this is done it takes the postcodes, names, and coordinates to shape the area and that is when the whole map comes together. Below there will be an image which shows the final workspace and the different tables included.



Part Two

Thematic Maps

The Geographical Information Systems is created using a software called MapInfo Pro. This is a useful tool as it allows the user to create, manage and visualise geospatial data. It allows the user to connect data with geography. There are many benefits to MapInfo, such as allowing the user to import and manage tables within the workspace, its ease of navigation between maps and tables, and allows the user to have multiple maps open at once to allow us to compare the different data sets. [2].



The use of thematic maps is a good way of showing the statistics in a more pleasing, easy on the eye way. It uses colours and symbols to display the data so that it is clear to see what is going on and makes the map a lot less cluttered. On the left-hand side shows how themes are used on the areas of the map to show the deprivation levels within Neath Port Talbot. The darker areas show the deprived areas then the lighter areas display the least deprived areas. Having the names of the places

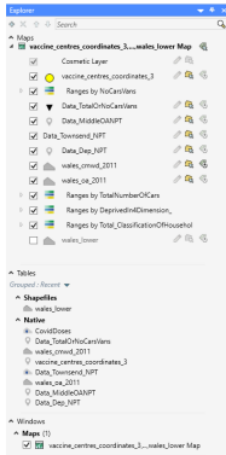
and having them highlighted in colours allows us to see exactly which area is deprived and which area is not. Coed Ffrand and Dyffryn are areas that are massively deprived whereas Tonna and Penma are the least deprived areas. It is rather convenient that the vaccination centres are in a more built-up area, as it means that their safety is better established.

The small triangle symbols show the cars and vans total, with the darker ones showing where there are no cars and vans and the lighter ones showing the ones with cars or vans. They are very much cluttered and harder to see, however it is based off per household. The areas in which that do not have any symbols on are the ones where there is no data to establish whether there are any cars or vans.

It is also important to remember that on the UK Data Service, the data we are basing it off is the 2011 survey, which is 11 years ago. Therefore, this information is not completely accurate as a lot of things can change in this amount of time. Although a survey would have been conducted in 2021, we do not have access to this information yet as it is currently being used by the government for research purposes. Additionally, with the pandemic being in full force since 2020, there has been a delay with every task, work, and research, which shows us the real impact that covid 19 has had on the world.

Spatial Queries

The method of getting a data subset from a map layer by working directly with the map features is known as a spatial query. Data is kept in attribute tables and feature/spatial tables in a spatial database. [6].



For example, the tables, maps, and queries are all sorted into the left-hand side of the workspace. This is sorted into the maps, tables, and windows. The interesting feature of MapInfo is that when a table is important and its use is to be added to the map, you can drag it up. On the first pass, it goes up into a map on its own. Then when it gets dragged up yet again, then it gets added to the pre-existing map so that it is clear to see the data visually.

Another example of spatial queries is when the Neath Port Talbot map being altered to add the names of the regions within Neath Port Talbot. The data was gathered from the UK Data Service, which allowed us to find the names of the areas within Neath Port Talbot.

The boundary data file was downloaded and opened into an excel file. This then got saved as a 97-2003 workbook, which is the only version that is available to open in MapInfo. Then it is important to geocode this table so that it aligns with the map already open, drag up the table twice and the table will then be in the maps native. Then it is important to change the label colour so that the writing is visible, then this is the easiest and best way to show the areas within Neath Port Talbot using spatial queries.

Importance of Geo Coding

Geo coding is used on every table imported into the MapInfo workspace. It is the process of determining geographic coordinates for place names, street addresses and postcodes. [8]. An example of this is that the vaccination centres are listed below. It includes the name of the building, its postcode, the longitude and latitude of the buildings and its opening times. It is important to include the longitude and latitude as it is the most accurate way for MapInfo to identify its location. This table is then saved as an excel 97-2003 workbook, which then gets imported into workspace, and then geo coded into the Neath Port Talbot map. It is also then important to change the symbol shape and size so that it is clear for the user to read and understand. It is rather easy to get the longitude and latitude of the areas when there is a postcode available. There is an online application called free map tools which you simply copy in multiple postcodes at once, click convert and it immediately shows the coordinates. [9]. This is a useful and easy way of identifying the coordinates for the buildings. Another way of doing this is to find the building on google maps and then in the information or in the search bar it will show the longitude and latitude coordinates which allows MapInfo to easily identify the area.

	A	B	C	D	E
1	Building Name	Postcode	Latitude	Longitude	Opening Times
2	Vale of Neath Pharmacy	SA11 5AT	-3.6414100	51.7397200	Monday and Thursday 9AM to 5PM
3	Well Neath	SA11 1HF	-3.803680	51.6603000	Monday and Wednesday 9.30AM to 5PM
4	Well Skewen	SA10 6UT	-3.840330	51.6611700	Monday and Wednesday 9.30AM to 5PM
5					

Hypothesis on the Deprivation within Neath Port Talbot

The map created in the MapInfo highlights the deprivation levels within Neath Port Talbot, whether people have good or bad health and the number of cars that are available per household to travel to the vaccination centres highlighted in the bright yellow circles. The base colour of the map has the region ranges which had the sequential red-light purple RGB colours. This allows us to see that the darker coloured areas are the most deprived regions, which then increases in lightness, showing that they are the least deprived areas within Neath Port talbot. This is calculated by seeing if the household is not deprived or whether it is deprived in four dimensions. The four dimensions are based off employment, education, health and disability and housing [1]. Employment is determined whether any member of the household is unemployed, excluding full-time students, or on long-term sick. Education in the household is any member who does not acquire a level 2 or higher education, again excluding full time students. Health and disability are established when any member of the household has general health that is 'very bad' or long-term health problems. And lastly housing is calculated whether the housing is overcrowded, an occupancy rating of -1 or less, in a shared dwelling or has no central heating.

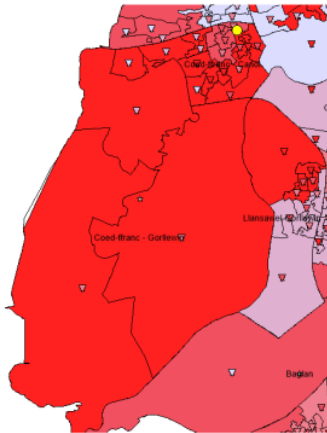
The second sequential red-light purple RGB colours, is defined as little triangle symbols that shows the number of vehicles that are available within each household, whether that be no cars or vans or the total number of cars or vans. This is important to highlight as it allows us to examine whether people can use their own transportation to get to the vaccination centres.

The result of this allows us to make assumptions that the people in the most deprived areas tend to have no access to cars or vans which makes it difficult to access the vaccination centres. The only form of transportation they would rely on would be to either walk, which can be difficult for some if they are disabled or of old age and cannot walk far, or rely on public transport, which can also be difficult if they have no funds to pay for it. This is especially true if they live a fair distance away from the centres, as the longer the journey the more it is going to cost them for public transport. We can also assume that people in less deprived areas have their own means of transportation, allowing them to go to the vaccination centres when they get an appointment, or is a walk-in centre.

From the covid-19 vaccination table, it is clear to see that the older and more vulnerable people within Neath Port Talbot have received their three doses and the booster jab, which will protect them from the severe symptoms that people get when they catch the virus. It is known that if older adults catch the virus, they are more likely to get very sick with it, this could lead to hospitalisation, intensive care, a ventilator to help them breathe and potentially death. [3]. It is also the same unfortunate result if any person, of any age, has an underlying medical condition.

It is difficult to get hard facts of the data when they are so varied, therefore we can hypothesise what the map shows us. For example, we cannot for certain say that every household within deprived areas have no car or van, as this is not correct. However, we can hypothesise our ideas with the data we were given. Also, we cannot say that people in deprived areas are not vaccinated as we have no hard facts of the matter. Whether the people have family members or friends who can drive, they could get a lift with them to vaccination centres. There is not enough covid data available to get hard facts on this as it has only been around and researched for two years. In years to come the research will be so extensive and in depth that the facts we are hypothesising can be turned into hard facts.

Not only this, but people in deprived areas should also not be assumed as unvaccinated as they could be as conscious as to the importance of the vaccination, same as people who are in less deprived areas. Just because they live in deprived areas does not mean they will not get vaccinated, as the people in the most least deprived areas could also be unvaccinated, it is unfair to assume. However, it is clear to see that the means of transport to get to the vaccination centres are limited and therefore reduce their ability to get to these areas.



As you can see on the left, this whole area is deprived with a vaccination centre based at the top near some less deprived areas. This means that everyone in deprived areas must travel a long way to the vaccination centre which makes it less accessible for the people in this Coed Ffranc area. This is such a massively sized deprived area, so it would have been more useful to position a vaccination centre in the middle of the area so that it is in walkable distance for everyone without cars and vans.

According to the office for National Statistics, when they conducted survey visit between 21st of February and 20th of March 2022, that third vaccination rates were lower in the people that lived in deprived areas, along with those who identified being from a non-white ethnic minority, and people who worked outside from the home for more than five days a week or who had previously been affected with covid-19. [4]. Contradicting this information, people aged between 18- and 34-year-olds are more likely to be vaccinated with their third dose in deprived areas. The younger generation are taking precautions to protect the vulnerable against the virus. It is clear to see that the older age groups are less likely to be vaccinated, which is the opposite of expectation as they are the most likely to be vaccinated in less deprived areas. There could be multiple factors for this, such as not having transportation, being unable to leave the house, or even being too paranoid of the virus to get onto public transportation or to even leave the house.

Before covid-19 was around, it was known that people in deprived areas, older and frail people, and people with long term illnesses, were at higher risk of catching any infection. [5]. Given the facts of the vaccinations, it is clear to see that Neath Port Talbot will be at a massive risk of not reaching herd immunity, which is the sole purpose of the vaccination programme. Herd immunity is when a large group of people within a community becomes immune to a disease, whether this be covid 19 or any other illness. The benefit of this is that the disease will be unable to spread from person to person as they would all be immune and therefore the whole community becomes protected against viruses. [7].

Conclusion

In conclusion, it is clear to see the massive impact covid 19 has had on the world and individuals. It is interesting to see the number of people who have been vaccinated and the many factors that impact this. It can depend on the economy, their financial status, the occupancy per dimension, transport, health and wellbeing and many other factors. Although these may not be hard facts, it is easy to hypothesise the reasons behind not being vaccinated and the impact it can have on those people and others.

MapInfo is a fantastic software to use as it allows us to bring in multiple data sets and use the information to visualise the health and deprivation that some people are facing in everyday life. It is fascinating to see how the data can be brought in as a table that is hard to understand and created into something that's easy to read and understand. The use of colours and helps with this. Finally, the use of Geographical Information Systems software demonstrates how a system can be built to inform healthcare professional on the uptake of vaccination programmes. The system highlights areas, within a health authority, where uptake of a vaccination is good or where it may be at risk of not reaching herd immunity.

Reference List

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GIS Assignment

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

Instructor

69 / 100

Generic Assessment Criteria	Marks available	Marks awarded
1. Engagement with Literature Skills		
2. Knowledge and Understanding Skills		
Throughout your data log you have demonstrated a good level of understanding of the software and you've used this well to build your workspace including thematic maps of deprivation, you've explored using point data by placing COVID vaccination centres and different ways of exploring data sets too bring in the visualisation.	25	17

3. Cognitive and Intellectual Skills		
You provided a good mix of data from various sources and you understand the data acquisition process well. It's evident that you have built lots of layers however, you have included some of the COVID data which was the reasoning behind the tasks set but I can't see your usage of that layer within the information you provided.	25	16
4. Practical Application Skills		
You demonstrate a sound knowledge of how the software works and you have built a very good workspace bringing in data in several different formats and from several	40	30

different places. Using the Neath Port Talbot area you have shown his thematic maps point data and cluster data to demonstrate and build a visual pattern of the data that you were trying to discuss within your hypothesis.		
5. Transferable Skills for Life and Professional Practice		
Good signage and presentation throughout the first part of your development log. Divided a clear outline of all your stages as you built your work space for discussion.	10	7

Generic Assessment Criteria	Marks available	Marks awarded
1. Engagement with Literature Skills		
.	25	18

evidence of supporting research have been presented within task 2 you have discussed the merits of geographical information systems and the importance of thematic maps and the visual display that they present. A suitable critical appraisal of the available data for example the UK data services has been discussed and you have thought about the accuracy of the data within your discussion.		
2. Knowledge and Understanding Skills		
you have used your map visuals well and interspersed them through your discussion commenting on their validity under what they bring to your task to discussion. Using a range of thematic maps and thematic point data plus the covered vaccination centres unduly discussing the data ranges provides input to your hypothesis. It was a bit disappointing to not see some cover data overlaid on top of your well planned deprivation data although I can see that you have input from cover data in the form of	20	12

a table you don't seem to use this within the map at all.		
3. Cognitive and Intellectual Skills		
Although we have some great analysis of deprivation data aligned with the location of the covered vaccination centres what I would have liked to have seen here there's some comparisons between the uptake of the vaccination although I can see it in a table format it's not there as a visual.	25	14
4. Practical Application Skills		
Again as in task one you demonstrate sound practical skills you have	20	16

pulled your maps from task one into your discussion and use them well to highlight points of fact and support your hypothesis looking at deprivation and vaccine uptake and this reads really well.		
5. Transferable Skills for Life and Professional Practice		
Good section in and clear layout throughout with some suitable references supporting your points of fact.	10	7

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19

PAGE 20

PAGE 21

PAGE 22

PAGE 23