# Geography coursework

➢ Investigation into Environmental Quality across the CBD in Walsall.

Introduction

The investigation for this coursework is set in a town in the West Midlands – Walsall. The aim was to investigate the Environmental quality changes across the Central Business District of Walsall. The investigation will take place from the centre Walsall, which is considered to be St. Paul's Church. The environmental quality of a CBD is very important as it can affect the amount of business in the area of a CBD and it is likely that fewer commuters will commute to the CBD if the Environmental quality is not very good.
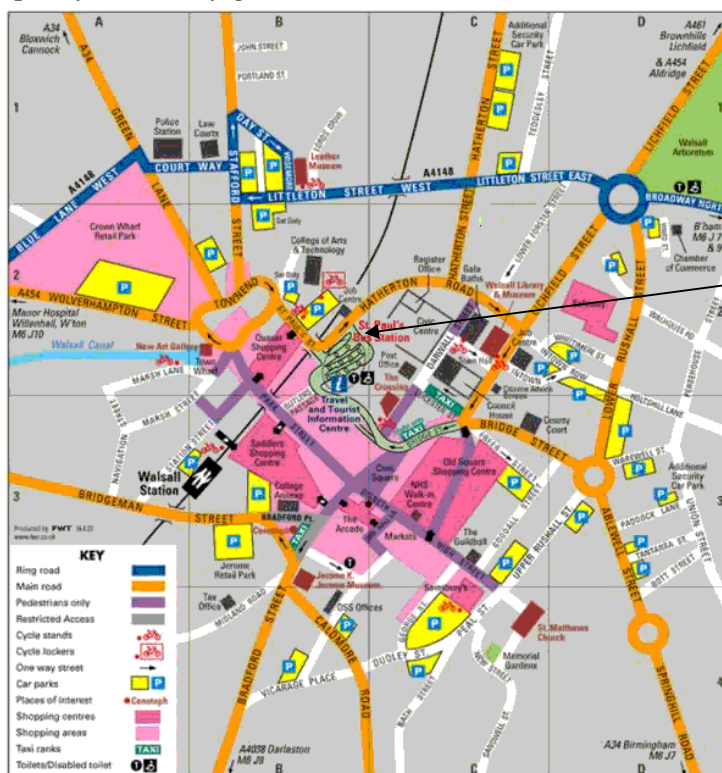
St. Paul's Church is taken as the centre of Walsall for this investigation. St. Paul's Church is near Walsall Bus station.

Aim

I aim to investigate the environmental qualities across Walsall's Central Business District and check if my hypothesis is correct. I also aim to explain anomalies, which I may encounter.

Hypothesis

I hypothesize that as you get further away from the centre of a CBD (St. Paul's Church in Walsall), the quality of the environment will decrease. This is what happens in a normal CBD in UK. This is because the centre of a CBD will normally have fewer cars, as there will not be many roads to give more space for pedestrians therefore the air quality will be better, there will also be more litter bins and therefore less litter. There can be more CCTV for the security of pedestrians. There will probably be all this in the centre because more people will visit that area therefore making the environmental quality better. More people would visit that area often because it is near Walsall Bus station and it is where many people catch the bus from.

Methods of data collection

Random sampling
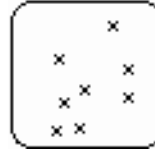These sites are chosen using co-ordinates from a random number table.
E.g. (random numbers)
5,4
2,9
7,2
8,1

Advantages – No bias to the results as all areas have an equal chance in being chosen.
Disadvantages – This can cause clumping with all the sites in one part of the area,
 - The same site could have been chosen twice by random numbers

Stratified sampling
 -This is used when the area that is to be sampled is made up of two or more groups takes into account the amount in each group.
 -A sample from each group is taken and the actual sites are chosen randomly.
E.g. - A car park containing 20 blue cars and 30 red cars (separated from each other)
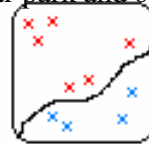 For 10 samples, take 4 blue cars in the car park and 6 of the red cars.
Random numbers:
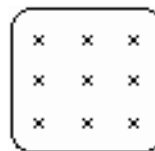1, 9   5, 5   7, 6
2, 7   6, 2   8, 4
1, 2   9, 0   3, 8

Systematic Sampling
These sites are selected regularly across the area or along a transect.

- Quadrat every 5 metres across the area
- Quadrat every 10 metres across a transect

Advantages -Whole area is evenly sampled
 -Prevents personal preference affecting result
Disadvantages -If area already has a natural pattern, the sampling may fit in with this and the bias results.
E.g. Trees planted in rows

 The data collection method used was systematic sampling. This was the right choice, as every single point in Walsall could not be studied practically. The sample should give an accurate interpretation of the results that could be found all over Walsall's Central Business District. Walsall has irregular layout to its CBD therefore having the area evenly sampled was the right thing to do.

The Data Collection

The data collection was done with the whole teaching set. There were groups of 3-4 people in and there were 7 areas in total. The seven areas are shown on the maps wit the EIV's plotted. Each group investigated the environmental quality of an area. After my group investigated the environmental quality of the area and plotted the EIV (Environmental Index Value) correctly EIV from all the other groups had been collected.

Primary Data –   Area 7 – Environmental quality assessment sheet filled in to calculate EIV more easily.
Secondary Data – EIV's from all the other groups on map

On the maps there are 100m gridlines and these were used to help allocate the survey points. At the border the view inside the area is taken into account from the middle of the road, we did not stand in the middle of the road for safety reasons. At times there could be buildings and closed off areas where the survey point could not be used, for that reason the nearest available point is used.

A numerical figure is used to assess the environmental quality, as that is more suitable in producing a better analysis with graphs and results tables. The following is taken into account when producing each EIV:
  ➢ Traffic
  ➢ CCTV/Security
  ➢ Noise
  ➢ Litter and chewing gum splats
  ➢ On street Parking
  ➢ Graffiti
  ➢ Litter bins

Then a table is filled in – Environmental Quality assessment result sheet. The environmental quality assessment criteria sheet is used to help with the completion of each criterion. The total for each location is then used as an EIV. There is only one environmental quality assessment sheet for each group. The other EIV is then taken from the other groups to give all the necessary EIV points for Walsall's CBD in order to investigate the relationship of the Environmental quality of Walsall.

Limitations

There are many limitations to this investigation:

➢ Time of survey
This is a very important factor when doing this investigation as the quality of he environment for each survey point can change for different times and days of the week. The survey took place about 10 00hr to 13 00hr and there would have definitely have been different EIV's if the survey took place for example on a Saturday afternoon where there would have been more pedestrians in Walsall town centre and therefore the would have been more litter, more noise and more traffic. Things like CCTV and litterbins would not have been different, as that would not have changed according to the day or time.

- Quality assessment method
  Most of the criteria require observing and judgment therefore, this is not very accurate in order to produce precise EIV's. For example
  Noise – People will have different opinions to what is a high value for loud noise and what is low.
  CCTV – Not all CCTV cameras might be recognised.

- Typical CBD
  This is an investigation of a typical CBD, and Walsall my not be one, this may therefore not fit the hypothesis stated. There will not be an ideal CBD therefore a stuffy of the whole CBD is necessary.

Classification and presentation of data

Map 1
A map was done with concentric rings round the centre of Walsall CBD – St. Paul's Church, which are 50 metres apart. The average of the EIV's in each concentric ring was taken and plotted onto a graph. This was done, as there will be less anomalous results to deal with.

Results table for 'Map 1'

Distance from centre *(m)*	EIV's	Average of EIV's
0-50	30,28	29.0
50-100	34,32,29,37,30	32.4
100-150	34,41,18,30,34,53,45,41	37.0
150-200	20,28,39,29,33,25,25,24,13,23,33	26.5
200-250	25,20,54,58,25,24,29,39,31,26,25,31,29,41,36	32.9
250-300	30,28,21,22,26,18,21,29,3,33,18,21,14,13,21,27,29,34	22.7
300-350	25,19,28,22,44,25,6,15,3,10,17,19,20,6,24,19,19,21	19.0
350-400	20,42,18,19	24.8
400-450	17,31,22,13,32,21,27	23.3
450+	25,33,24,40,20,23,37,37	29.9

(The graph for 'Map 1' is on 'page 6' of this investigation)

Analysis for Map1
A bar graph is done first as a scatter graph is not necessary for these results of average EIV's from different distances. A pattern cannot easily be seen from bar graph. As there is not line of best fit.
A Graph with a line of best fit is then drawn and two points are not included in this line of best fit, as they seem to be anomalous results, these points are circled on the graph. The graph then proves my hypothesis correct with the environmental quality decreasing as the distance from the centre increases.

> Anomalous result 1 – This could be because of any of the limitations mentioned but as it is the closest to the centre of Walsall and on the map it is the smallest concentric ring (on results table it only includes 2 EIV's), it could be that there was not enough EIV's to get a decent average from. But on the other hand it is a small area and not many EIV' are needed. It could just be that Walsall is not as good of a typical CBD as mentioned.

> Anomalous result 2 – This is the distance furthest away from the centre of Walsall and that is very close to the inner city, there is some re-development accruing there causing the EIV to be high. There is also not as much EIV's there as there should be; it is the largest ring and should have the most EIV's but looking at the results table there are only eight EIV's.

Graphs for 'Map 1'

A bar graph to show the average EIV for Walsall CBD at different distances from the centre
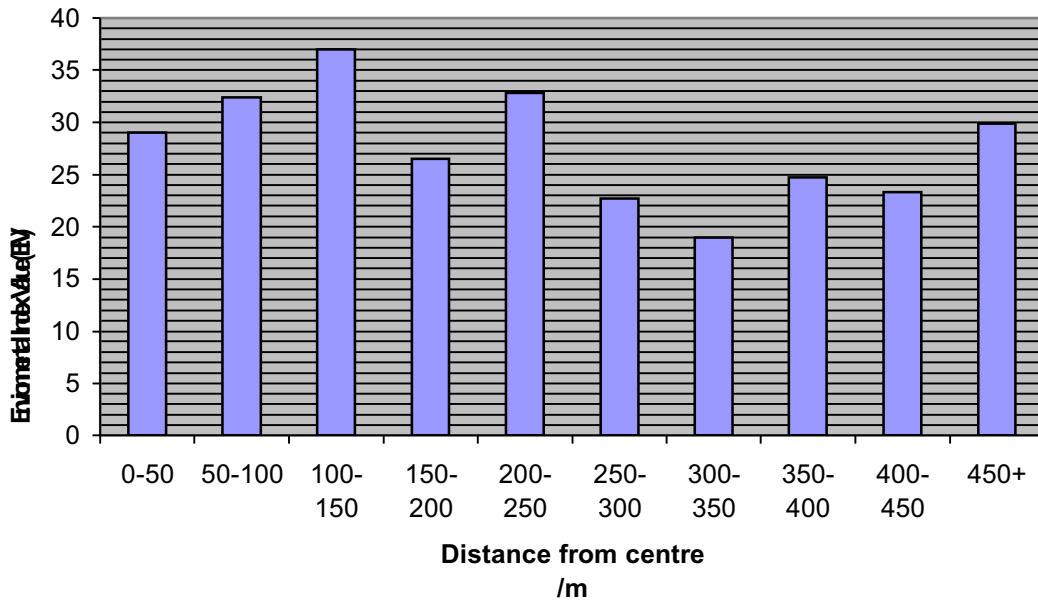
A graph to show the average EIV for Walsall CBD at different distances from the centre
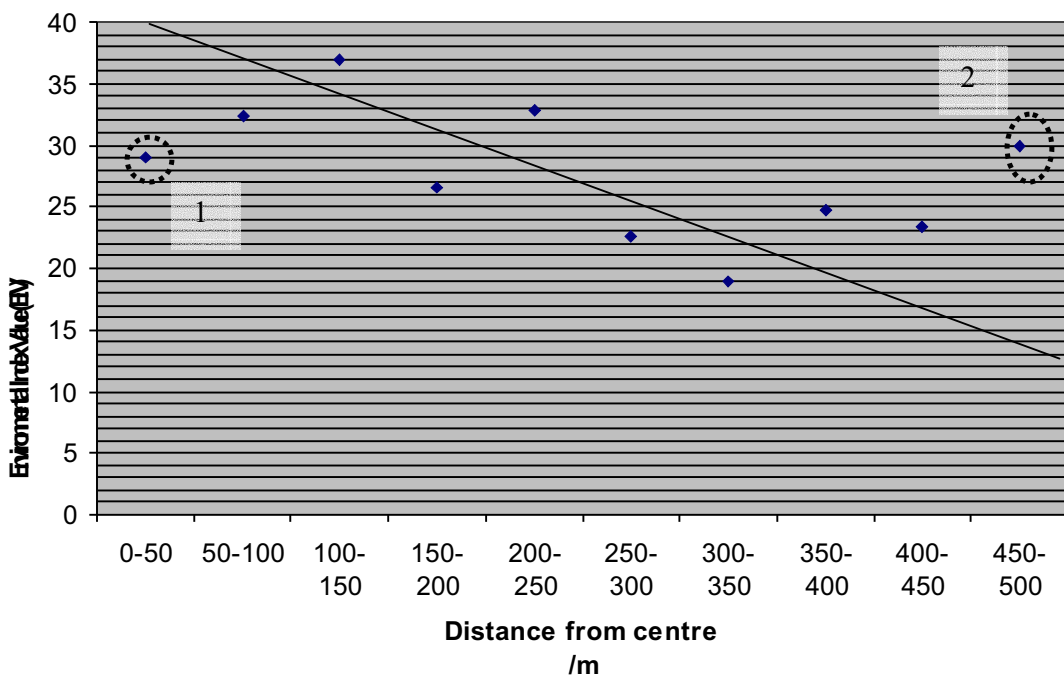
Map 2 and "Environmental Survey & Distance from centre table"

Distance from Centre (m)	EIV	Distance from Centre (m)	EIV
140	54	315	27
260	54	400	27
125	53	465	27
220	45	235	26
345	44	300	26
110	43	185	25
210	43	215	25
370	42	220	25
90	41	320	25
115	41	460	25
225	41	95	24
515	40	185	24
230	39	255	24
260	39	365	24
400	39	460	24
85	38	190	23
210	37	480	23
495	37	275	22
245	36	335	22
125	35	395	22
95	34	430	22
95	34	260	21
255	34	265	21
150	33	270	21
185	33	290	21
285	33	330	21
520	33	140	20
105	32	240	20
145	32	305	20
430	32	380	20
210	31	500	20
215	31	340	19
435	31	340	19
30	30	380	19
95	30	380	19
95	30	395	19
155	30	120	18
210	30	285	18
285	30	385	18
150	29	295	17
260	29	340	17
290	29	430	17
365	29	335	16
425	29	300	15
120	28	365	15
200	28	310	14
270	28	175	13
350	28	430	13
380	28	340	10
380	28	370	6
280	27	320	3