# Data Interpretation

## Hypothesis 1- Functional zoning

*"There will be less functional zoning of food outlets as you go away from the CBD and PLV"*

In our investigation of this hypothesis we used primary data collection, located all the food outlets in Stratford (figure 3.1), then noted them down on a choropleth map (figure 3.2). We took photographs for annotation, showing examples of functional zoning of restaurants on certain streets (figures 3.4 and 3.5).

We then used this map to produce four different nearest neighbour analysis equations (figure 3.3) to find the correlation between amount of clustering and the functional zone. For the CBD the calculation was 0.65, the inner city was 2.14, the inner suburbs was 2.19 and the outer suburbs was 2.58. As the numbers increase, it shows a clear correlation between amount of clustering and the functional zones. This is because this is where most tourists come so restaurants cluster to attract business. The smallest value was in the CBD (0.65) and the largest (2.58) in the outer suburbs showing that as you leave the CBD, restaurants cluster less. This is because less people visit the outer suburbs so there aren't enough customers to compete for. Also there is more land so the restaurants and food outlets tend to be larger meaning less are needed. These results clearly support our hypothesis and show us that there will be less functional zoning of food outlets as you go through the CBD across the four functional zones.

Despite this, the amount of functional zoning in Stratford is lower than expected; a nearest neighbour figure of 0.65 in the CBD is closer to 1 which suggests the restaurants are randomly positioned. Our choropleth map shows that some streets had much more clustering than others. For instance Henley Street has lots of red touching and is a visual portrayal of how clustered Stratford CBD is in some areas. The same is true for Sheep Street. However, there are large areas of the CBD which don't have any red, and some restaurants such as the lazy cow are on their own.

This is supported by the nearest neighbour analysis which shows restaurants on sheep street (Zizzi, Café rouge, the opposition) have a nearest neighbour of 0. This shows it is perfectly clustered and will attract a large group of customers. This is probably because Stratford is a tourist town and these streets are near to tourist attractions such as the RSC and Shakespeare's birthplace so the restaurants want to exploit some of those tourists. However anomalies such as "Mercure" are situated at a larger distance away (0.6) perhaps due to not being able to get land near the PLV so this affects the result as they are not clustered. Our annotated photographs give examples of functional zoning on Henley Street and Sheep Street, showing the amount and variety of food outlets there.

Therefore this shows that restaurants do cluster more in the CBD than the other functional zones and our hypothesis was correct as we thought there would be less functional zoning as you left the CBD. This is supported by our results; in the inner and outer suburbs, there was a larger area, but only five restaurants with no degree of clustering. However the amount of functional zoning was lower than anticipated especially in the CBD.

This links in with our traffic count as more attractions such as food outlets in the CBD leads to more cars going there than the other functional zones. There will also be more money in the area so a higher level of maintenance and EQI will be found.

## Hypothesis 2- traffic count

*"There will be a decrease in traffic flow the further from the PLV."*

As figure 3.6 shows the first count at the PLV was the third highest at 48 vehicles in a minute, the second count at 0m from the PLV then dropped dramatically to 1 vehicle, from there it

stayed low gradually increasing until sample 6 in the inner city where it jumped to 47 vehicles, it reached the peak at samples 9 and 10; 100 and 800m away, then receded gradually to our final sample at 1800m away of 0 vehicles in a minute.

The count was fairly high at the start due to the fact that near to the PLVI there are lots of our attractions in the town centre for tourists.

The count was highest in the inner city. This is because there are large car parks in this area as there's more land so more people drive here to park. Also as our annotated photo figure 3.9 shows, the major arterial roads connect in the inner city as there's more space, this leads to large junctions where cars build up. Finally there is a large area of urban regeneration in the inner city with the Maybird Shopping Centre. This is an area with lots of amenities; supermarkets, large brands such as Boots and B&Q and lots of clothes and food outlets. It has a very large car park so it attracts lots of shoppers in cars; the count was highest here.

Then in the suburbs the count was very low due to the fact that the only vehicles present were those of residents; few visitors go to the suburbs.

We also recorded the types of traffic in each functional zone and this shows that in the CBD there are more buses and vans (20%) than the suburbs (11%) due to park and ride services and deliveries. This shows that the CBD is harder to get to for cars so more park in the inner city. In the inner city, there was more industrial transport like lorries; it is a large industrial district, especially in areas with large industrial buildings like Jewson's which saw 10 vans.

There were some anomalies ain our results for differing reasons. The first was 50m from the PLVI on Henley Street; we only saw one vehicle. This is a street full of tourist attractions and shops so many of Stratford's tourists gather here. Therefore to prevent traffic and to improve the EQI of the area, it has been pedestrianized (figure 3.10). This means it is hard to access so few vehicles try to drive down there. Our other anomalies were at 700 and 800m from the PLVI as this is at the aforementioned Maybird (figure 3.11)

Our scatter graph (fig 3.8) shows the overall trend of an increase from CBD to inner city, and a decrease through the suburbs. This does not support our hypothesis as we predicted the traffic flow would decrease as you go away from the PLVI. This is because we didn't take into account the major roads that connect outside of the CBD. Our Spearman's Rank result was 0.593 (3d.p) as shown in figure 3.7. This shows an above positive correlation showing there was a link between the traffic count and the distance from the PLVI. It shows that each functional zone of a settlement has a different traffic flow. This does support our hypothesis however there was a much higher traffic count in the inner city than the PLVI, as our scatter graph shows, so our hypothesis is actually inaccurate. If we had done distance from inner city not PLVI in our Spearman's Rank, we would have got a higher correlation so I reject the hypothesis.

This links to both our surveys; there are more food outlets near the PLVI and the EQI was high as they spend more money on this area because it's seen more due to a high number of vehicles there.

## Hypothesis 3- EQI

*"There will be a change in EQI across the four functional zones."*

In this survey we created a survey to measure the EQI of an area; and used a random sampling method within a stratified technique by choosing 10 random points on four maps (figures 3.17-20) to represent each functional zone, and recording our results in a table (figures 3.13-16). We took photographs for annotation. (Fig 21)

There is a change in EQI across the functional zones. This is supported by evidence such as our sphere of influence map where we collated our data and gave a representation of each number as a different sized dot. (Figures 3.17-20) Figure 3.17 in the CBD has very large dots and are all positive and figure 3.20 the outer suburbs has very large dots. On the other hand, the inner city and inner suburbs have some negatives and are smaller dots. This is because the CBD is where most

tourists will visit meaning that the council will spend a large amount of money on this area and it will be well designed as it is near the PLVI. This increases the EQI.

Also, there is a lot more space in the outer suburbs; our table of results (fig 3.16) shows the outer suburbs has the highest results for open spaces and gardens. As figure 21 shows there are more trees and larger houses leading to a higher EQI. In contrast, the inner city is an industrial zone with 19th century housing from the industrial revolution. Therefore it has a lower EQI. The inner suburb was quickly built in the inter war years and has lots of semi-detached houses so it also has a low EQI.

There are anomalies in our results. In the CBD by Natwest bank, there is a very small dot; this is because that area is very busy and has a lot of traffic. Also in the CBD there are three very large dots one on Henley Street and two on waterside. This is because these areas are by popular tourist attractions, the RSC and Shakespeare's birthplace. This leads to an increase in funding and the EQI rises. In the inner city, south of the river (fig 3.18) there are two of the largest dots. This is an example of urban regeneration. The area of Bancroft gardens was redeveloped as it is by the river and the most popular site in Stratford. Also it is on a flood plain so no houses can be built there due to insurance prices etc.

These results shows the different functional zones of a settlement have differing EQIs and that the outmost and inmost layers have the highest. This therefore supports our hypothesis. Links can be drawn between this and the traffic survey as the areas with high traffic (the inner city) had a low EQI as they are unattractive.

*Word Count for interpretation and QWC: 1,334*

# Chapter 5- Evaluation

## Functional zoning

In this survey we counted all the food outlets in Stratford and located them on a map (figure 3.1), enabling us to see if there was any clear evidence of clustering land uses and functional zoning. It also enabled us to perform a nearest neighbour analysis (3.3) for evidence of clustering. This method is good as it gave us a very large amount of data and we didn't require a sampling technique so we had no problems collecting it. It is simple to carry out once you know where the food outlets are.

The problem with this method is that it took a lot of time. It would be easy to miss out a food outlet that we didn't see or a road that we didn't walk down especially in the suburbs. Also when calculating the nearest neighbour analysis on our map it was difficult to accurately measure the distance as our map wasn't perfectly accurate. Therefore our nearest neighbour may have been incomplete and the area of search calculation was difficult to find due to the irregular boundaries between functional zones. The border between the inner city and inner suburbs is very different both sides of the river due to a large industrial district. As a result of this, our nearest neighbour calculation may not have been accurate and we may have had inaccurate data because of this problem with data collection. This weakness in our methodology could have led to our results, and therefore our conclusions being inaccurate and false.

I could improve the data collection methods employed and the reliability of my results by more accurately measuring the area of each functional zone. This would have improved our nearest neighbour analysis and our data. To improve the validity of the conclusions, I would only do restaurants as food outlets is too broad a category; it encompasses a large range of land uses. This therefore puts clustering where there isn't really any and changes the results.

## Traffic Flow

Our traffic counts were taken from the PCVI all the way into the suburbs for a minute each at intervals of 100m in a systematic technique. This provided enough data for a Spearman's rank. It also enabled us to cover a larger area and represent each of the functional zones while doing each in enough detail. It allowed for a significant distance between readings for the count to change. We easily produced a Spearman's Rank which supported our hypothesis.

The problems that occurred with our method were that firstly; we only went from the PCVI in one direction, therefore meaning the data only showed a fraction of the town. Also we took traffic counts at different times as we went through the morning meaning that the traffic was heavier at rush hour 9am and lighter when we finished at 11am. This would especially affect the inner city as this is where lots of roads join so traffic jams would have built up quicker. Therefore the data in figures 6 and 7 may be inaccurate and have false correlations. Our conclusions could be false as we didn't collect data representing the entirety of the four functional zones and the validity could be affected as we had two independent variables: the distance from the PCVI and the time the reading was taken.

If I wanted to improve the results, I should have taken 10 readings going from regular bearings of 036-360 degrees from the PCVI and then taken the mean count for each distance. Also

we could have had a larger group and taken the readings at the same time of day. It would have then had less of an impact on the data. This would have helped the validity of our conclusions.

## EQI

In this survey we used a random sampling pattern within a stratified technique. We split the town into its four functional zones and picked 10 random points in each. This allowed for each functional zone to be represented fairly and also provided a lot of data. This made it easy to see the trends. We produced our own survey to gauge EQI including appearance, traffic and distance from amenities. This provided a balanced and whole representation of EQI.

The problem with this method was that the 10 points in each zone were selected randomly, while this led to a fair representation it meant that a few points were very close together and large areas weren't covered. This weakness in the methodology could have led to weaknesses in our conclusions as the data was distorted due to some anomalies having an amplified effect. For instance three of the inner city locations were close in an area of urban regeneration meaning the overall inner city EQI was higher than it should have been. Furthermore, the survey could be seen to be imbalanced. 29% of it was based on traffic, parking and congestion and therefore areas with high traffic, shown by survey 2 to be the inner city, subsequently got lower EQIs. The survey could therefore be seen to be bias to some functional zones and this would affect the validity of our results. Finally when collecting the data in our EQI survey, some categories were based on opinion; for instance "well designed buildings", this will have changed according to which member of the group filled out the survey; and so the data may be inaccurate and our conclusions invalid.

To increase the accuracy of results I would refine the survey removing opinion based questions. I would turn them into factual questions, such as amount of graffiti, as this doesn't differ. To increase the validity of my conclusions, I would do more surveys in each functional zone for more data and decide which locations to do systematically not randomly so I would get a more even spread.

*Word Count for Evaluation: 747 words*

*Word Count for Chapters 4 and 5: 2081 words*

*Word Count for Chapters 1-3: 908 words*

*Total word count: 2989 words*