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DP 07/2008: Building an evidence base on alcohol supply points: A pilot project to generate intelligence for managing areas with licensed premises

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The Applied Criminology Centre,
The University of Huddersfield

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University of
HUDDERSFIELD

ACC
Applied Criminology Centre

Executive Statement

Introduction

This report presents the findings of a twelve month study conducted by the Applied Criminology Centre, University of Huddersfield. This pilot project sought to generate intelligence for managing areas with licensed premises by building an evidence base on alcohol supply points (ASPs). For the purposes of this project, ASPs are considered any licensed premises that can sell alcohol for consumption on and/or off the premise, for example public houses, bars, nightclubs, restaurants, corner shops, off licenses, hotels, cinemas, and social clubs.

Despite substantial efforts towards multi-partnership working, data collection and intelligence sharing to tackle alcohol-related crime and disorder in areas with ASPs, the capture of data on ASPs is fragmented. Intelligence gathering often occurs in isolation except for sporadic multi-agency enforcement visits to premises. This impairs attempts to gain a strategic overview of the timing and location of the availability of alcohol, the proximity of the various outlets to each other, and their relationship to crime and disorder. This evidence base is a necessary foundation for making informed decisions about the management of areas with licensed premises, including: the granting and renewal of licensing applications; the development of local crime prevention and harm reduction strategies; and targeting policing and other enforcement activities.

The aim of this project was to address this deficiency by piloting the creation of an ASPs database in three case study areas, and to explore possible relationships between alcohol supply and crime and disorder in local contexts. There was an identified need for consistent and reliable data on ASPs that could be shared between relevant organisations, and for local areas to develop intelligence on alcohol supply tailored to their needs. Any system developed should be simple, user friendly, relevant, and add value to what currently exists.

Methodology

One of the intentions of this project was to work closely with relevant agencies, experts and relevant data providers. To achieve this, a Project User Group (PUG) was established for the duration of this project, comprising those who were considered key stakeholders in efforts to prevent and reduce alcohol related crime and disorder. Their expertise and knowledge was critical in providing advice and steer to the project and in facilitating access to practitioners and data (see Appendix One for details of membership).

This study was carried out in three phases, each of which involved consultation with the PUG. The first phase of this research consisted of a total of 28 semi-structured interviews conducted in the three case study areas with a number of stakeholder organisations, including representatives from police forces, local authorities, Primary Care Trusts (PCTs), hospital Accident and Emergency (A&E) departments,

ambulance trusts, trading standards, and other relevant organisations. The purposes of phase one was to ascertain which data sets were currently collected, for what purpose, how these data were stored, analysed and shared, how these data sets were used to inform decision making at the local level, and how this process might be improved through the creation of a single, consistent, multi-purpose database.

The second phase of this research set out the specification and functions of the single database, and identified core datasets, based on the findings of the interviews with key stakeholders, a review of relevant literature, and discussions with the PUG. Once the minimum requirements of a single database were established, data sharing agreements were devised and negotiations were made for access to these data (for the purposes of research) for each of the three case study areas.

The final phase of this research was to test the usability of the pilot databases and to demonstrate the potential added value of such a system for the management of areas with licensed premises. A number of research questions were drawn up in consultation with the PUG in order to examine the benefits and insights that a single database might offer. Due to difficulties in accessing the minimum datasets required in each case study area, only two case study areas were analysed for the final phase of this research. A Geographical Information Systems (GIS) was used to allow the team to match individual ASPs to a number of different spatial units including electoral wards and Output Areas (OAs) from the 2001 Population Census. These were then used to answer a number of the research questions.

Findings

This section discusses the findings from each of the three phases of the research:

Phase One

Key findings from the phase one interviews were as follows:

A number of actions were identified to improve the quality of information available to decision-makers at the local level, and the standards of data analysis. These included:
- a need for more comprehensive and consistent data collection;
- increased sharing of data between partner agencies;
- the nature of information sharing was generally ad hoc and relied on individuals, although occasionally at partnership meetings aggregated/analysed information was shared regularly;
- improved standards of analysis to inform policy enforcement, implementation of prevention strategies, deployment of resources, and for monitoring and evaluation; and
- improved access, suggested by several stakeholders, to information from hospital attendances and ambulances responses.

A number of stakeholders agreed that a single multi-purpose database would be highly beneficial. However, a number of concerns and obstacles to achieving this

were identified both organisationally and in terms of resources. The following concerns were identified:

Organisational concerns:
- agencies collect data for a variety of reasons other than for the management of areas with licensed premises;
- comprehensive capture of these data would be resource intensive;
- current systems do not easily allow data to be exported;
- there are limitations in current data collection techniques;
- some organisations store their data on more than one system, therefore obtaining information relevant to ASPs from their systems would be far from straightforward and time consuming;
- there are legislative and cultural barriers to sharing individual level data (data protection).

Resource constraints:
- the cost needed to develop such a system;
- the extent and level of training required;
- a lack of time and resources to interrogate the data; and
- the task would be too complicated and might not contribute sufficient added value to justify the effort.

Phase Two
Key findings from phase two of the research included the following:
- The key sources of data identified for the construction of a single database/system were licensed premise data, police recorded crime data, trading standards data, A&E data, and ambulance data.

A number of functions were identified for the development of a single database, and these can be classified as short-term operational responses, mid to longer-term strategic policy decision making, and research functions. Key functions of the database identified were:
- to administer licensing applications;
- to monitor individual premises, individual persons (both irresponsible managers and repeat offenders), and areas with high concentrations of premises;
- to compile evidence for licensing hearings and reviews;
- to identify, prioritise and carry out targeted enforcement activity;
- to corroborate and share knowledge; and
- to remove duplication of effort.

There were a number of difficulties encountered during the creation of the pilot databases. As stated previously, it was not possible to acquire all data sources for each of the three case study areas as some organisations were unwilling or unable to share disaggregate data (even with personal information removed). Indeed, only two case study areas could be used for the final analysis and the key obstacles faced here were that:

- A&E data and ambulance data could not be acquired for any of the three case study areas during the time frame of this research (reflecting the concerns expressed by practitioners in phase one about the sharing of health data). This is particularly important when considering the known the under reporting of crime to police; and
- In addition to this, several of the datasets required time-consuming manual processing to prepare them for analysis due to the format in which they were currently produced. This stage of the process added considerable time (several weeks) to the creation of the pilot databases.

Phase Three

In order to test the usability of the pilot database a number of research questions were generated in conjunction with the PUG. These included an examination of:
- the spatial relationship between ASPs, trading hours and crime;
- the relationship between ASP density and crime;
- the spatial relationship between ASP density by type and crime;
- the extent to which specific combinations of licensed premises explain the variations in the different types of crime; and
- the extent local enforcement (trading standards) matched concentrations of licensed premises and crime.

Key findings from this analysis were as follows:

Concentrations of ASPs:
- ASPs are spatially concentrated (in one of the wards in the case study areas the density was found to be 7 households per ASP).
- The number of ASPs and levels of crime in these areas of concentrated drinking were disproportionately higher than their share of the residential population.
- Therefore, the residential population (currently used as the denominator to construct crime rates) may not be the most appropriate measure; for example in the case of violent crime, the 'total number of licensed premises' or 'land area in hectares' might be better denominators to use.

The relationship between ASPs and crime:
- Correlation analyses were used to produce a more systematic examination of the relationships between crime and ASPs.
- In both case study areas, higher numbers of ASPs (taking into account both the densities of ASPs in a ward, and the population rate) were associated with higher crime rates (supporting the findings of previous studies).
- The strongest correlations revealed that higher levels of violent crime were statistically more likely in the areas with higher numbers of ASPs and longer trading hours.
- Indeed, in the two case study areas, the correlation between ASPs and violence against the persons was 0.905 and 0.775.

The relationship between ASPs type and crime:
- The overall mix of premise types (based on all ASP types in each ward) appeared not to be related to the ward's crime rate; that is wards with an equal share of ASPs in each category did not register higher crime than elsewhere.
- However, regression analyses were used to explore how far specific combinations of ASP types explained variations in crime rates.
- This analysis suggested that certain combinations of ASPs accounted for a large proportion of the variation in crime rates.
- Pubs, bars and nightclubs were the strongest predictors of variations in crime
- The only other ASP categories to predict variations in crime were 'Takeaways' in one case study area and 'Stores and off-licences', and 'Members/social clubs' in the other.
- Therefore, neither restaurants, supermarkets, nor other types of licensed premise were strong enough to be predictors of crime in either case study area.

Implications

A number of policy recommendations were formulated on the basis of these findings. Some of the key suggestions are:
- There is a need for improved intelligence for the management of licensed premises. A preliminary step is to improve current databases and systems used by the organisations.
- Core datasets should include information from licensing authorities, the police, trading standards, accident and emergency departments, and ambulance trusts.
- Some of the key barriers that exist to developing a single multi-purpose system at present are resource issues (time, cost and training), problems with exporting data between proprietary systems (that are not designed to export information in a consistent fashion), cultural barriers to sharing information, concern about data protection, and cultural barriers to data sharing.
- Licensed premise data should be stored electronically in a system that is easily updateable and can easily be queried. Key features to be captured are: unique identifiers for each premise (that can be linked to other organisations datasets); a geocoded consistent address; opening hours and permitted trading hours by time of day and day of week; capacity (for on licensed premises); type of premise (a standardised classification should be devised for this); information on permitted activities, licensing conditions and temporary events.
- Further analysis is required by local areas to better understand the relationships between ASP types, ASP density, trading hours, and levels of crime.

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Introduction

This report presents the findings of a 12 month study conducted by the Applied Criminology Centre at the University of Huddersfield, and funded by the Alcohol and Education Research Council.

This project developed from previous research findings that demonstrated the absence of consistent and comprehensive data on licensed premises represents a major gap in the evidence base on the geography and timing of alcohol supply in our towns and cities. For the purposes of this project, Alcohol Supply Points (ASPs) are considered any licensed premises that can sell alcohol for consumption on and/or off the premise, for example public houses, bars, nightclubs, restaurants, corner shops, off licenses, hotels, cinemas, and social clubs.

Numerous studies have previously highlighted the link (although not necessarily causal) between alcohol supply and crime and disorder. At present there is no single, timely and consistent data set on the location, type of establishment, opening and trading hours, and size of outlets that supply alcohol. In the absence of this it is virtually impossible for local authorities, community safety partnerships, the police, and local health services to gain a broader strategic overview of: the timing and location of the availability of alcohol; the proximity of the various outlets to each other (pubs, corner shops, restaurants, etc); how these relate to land use and demographics (e.g. transport routes, deprived areas); and significantly, crime and disorder. Therefore decisions are made about premises and their surroundings in the absence of a robust evidence base. The purpose of this research was to explore ways of improving the information that is available and in particular to consider the potential benefits of creating a single database.

Several individuals and organisations are involved in the management of licensed premises and their surroundings. This project sought to demonstrate how the creation of a consistent useable database on alcohol supply points can be used: to inform decisions about whether licensing applications should be granted or renewed; for targeting resources for crime prevention; for informing policing and enforcement activities; and informing educational and social awareness marketing strategies. One major advantage of developing a shared information system is that it removes the over-reliance on relationships between key individuals within organisations for sharing information that is evident in much partnership working. If individuals leave such organisations these links are often lost and not maintained.

This project used a case study approach in three areas (towns and cities) across the North of England. These areas were selected to provide a mix of case study areas (one town, one city and one seaside resort), and due to the research teams links with practitioners in the area and proximate locations to the University. It was not thought that using only northern cites would bias the results in any way. The areas have been anonymised due to the access to individual data and to anonymise individual practitioners working in these areas who were interviewed.

One of the intentions of this project was to work closely with relevant agencies, experts and data providers in this area. Therefore, a 'Project User Group' (PUG) was established for the duration of this project; those who were considered key stakeholders in efforts to prevent and reduce alcohol related crime and disorder. Their expertise and knowledge was critical in advising and participating in the project and facilitating access to practitioners and data. Details of members can be seen in Appendix One.

The aim of this project was to tackle this deficiency in the alcohol supply evidence by piloting the creation of a data base on alcohol supply points through local case studies. The intention was to identify relevant stakeholders and end users of information on alcohol supply points and to involve them, through interactive workshops, in the design of the database, in the ways in which it should be used and in the evaluation of its effectiveness in monitoring, planning and intervening in the night time economy. More specifically, the objectives of the project were:

- to identify gaps in the evidence base that could potentially be filled through the creation of comprehensive and consistent data on alcohol supply points;
- to define a minimum core dataset on alcohol supply points to support the monitoring, regulation, harm reduction and policing of areas with licensed premises;
- to generate an alcohol supply points database that conforms to minimum requirements;
- to demonstrate how data on alcohol supply points can be linked to data on land use, socio-demographics and crime using a geographical information system;
- to define research questions, hypotheses and scenarios for testing using the database;
- to explore possible relationships between alcohol supply, local context and crime/disorder;
- to identify what works best, what is promising and what is less than satisfactory in the specification and use of the database;
- to implement refinements to the data base;
- to re-test and re-evaluate database utility and performance; and
- to identify priorities for further research, development and national roll out.

This project addressed these objectives through a three strand approach.

The first stage of this project was to identify whether there was a need for a consistent single information source on alcohol supply points, and to examine what data is currently collated, analysed and shared between relevant partners. A series of semi-structured face-to-face interviews were carried out with practitioners from relevant organisations in each case study region. These agencies were identified with the assistance of the PUG. The interviews were conducted using a semi-structured questionnaire and explored respondents' roles, responsibilities and decision making scenarios, the availability, quality and timeliness of data and suggestions for improvements. A total of 28 interviews were carried out with practitioners from police forces, local authorities (community safety & town planning), Primary Care Trust (PCTs), Accident and Emergency (A&E) departments,

ambulance trusts, trading standards, and other relevant organisations within the three selected case study areas.

The second stage of this project was to capture data from each of the case study areas, by identifying a minimum core dataset on alcohol supply points to support the monitoring, regulation, harm reduction and policing of areas with licensed premises. These were selected based on the interviews with key stakeholders, the literature review, and discussions between the research team and the PUG.

The final stage of this project was to explore possible relationships between alcohol supply and local context and crime/disorder, and to identify how the information gathered in phase two could be used to inform the management of areas with licensed premises. Again research questions were devised in consolation with the PUG. From this, priorities for further research, development, and policy implications for users and stakeholders were identified.

Background and Content

This section of the report discusses the importance of alcohol supply points for the management of areas with licensed premises. It highlights the reasons why it is important to gain a better understanding of the influence of alcohol supply points for effective management of licensed premises areas and reduction of alcohol related crime, disorder and harm.

This section includes a detailed examination of the literature of the influence of alcohol supply point density, which was considered critical to this research project. One limitation identified was that previous studies that had examined the influence of alcohol supply point density had not considered how the relative mix and density of different types of alcohol supply may influence alcohol related crime and disorder. This section is critical as it informs research questions developed and tested in phase three.

This report does not discuss in detail the links between alcohol and crime, as this has been covered in many previous studies (Olsson and Wikstrom, 1982; Rush et al, 1986; Edwards et al, 1994; Chikritzhs and Stockwell, 2002; Goodacre, 2005; Hadfield, 2006; Hadfield, 2009). There is a wide consensus that the pharmacological effects of ingesting alcohol can only be viewed as one of a range of contributory factors, including situational, personal, inter-personal, and cultural variables. Indeed, Maguire and Hopkins (2003) suggest that management of alcohol-related violence in the NTE should not focus on causality (deciding if an offence was or was not due to alcohol consumption) and should instead focus on the location and timing of offences. This enables those faced with management of the NTE to develop practical measurements of the extent of their problem at the local level. Such an approach is highly relevant to the Licensing Act 2003, local enforcement strategies, the development of cumulative impact policies, and the need for analysis and monitoring of crime and disorder at both the 'micro' level (inside, or at licensed premises) and the 'meso' scale (when looking at areas with large concentrations of licensed premises).

This approach is subject to criticism, for example research on the application of alcohol policy for the Alcohol Education and Research Council (AERC) has found fears expressed among criminal justice, youth work, and health practitioners that this type of person-directed and spatially targeted approach may not best serve vulnerable groups, for example with respect to duty of care, whereby those with metal incapacities may be ordered by the police to simply leave an area. Thus, any such database and analysis from this at the local level should consider the policy implications of this type of analysis on vulnerable groups for example. However, notwithstanding this, there is need for a consistent reliable information system that can be used as part of the partnership working process system to inform evidence based decision making at the local level, to better inform decisions around management of areas with alcohol supply points.

Alcohol Related Crime and Disorder and Alcohol Supply

Numerous studies have demonstrated a propensity for violence and disorder to occur in or around alcohol supply points (e.g. Bromley and Nelson, 2002; Lister et al, 2000). A thorough literature review by Green and Plant (2007) revealed that a variety of features of alcohol supply points appear to be associated with greater levels of violence and disorder. These included internal physical characteristics of the outlet (e.g. smoky atmosphere, dull lighting and high noise levels), the organisation of the establishment (e.g. inadequate staffing levels and cheap drink promotions) and external characteristics (e.g. the outlet being located in the city centre, an area of lower socio-economic status, or an area with a high concentration of alcohol supply points).

It is not surprising that the reduction of violence and disorder in and around alcohol supply points has been a key concern for many organisations, which in turn has lead to an abundance of preventative strategies and legislation for licensed premises. In England and Wales recent key activities have been introduction of the Licensing Act (2003), and the inclusion of priorities to reduce serious violent crime (NI15) and perceptions of drunk and rowdy behaviour (NI41), and hospital admissions for alcohol related harm (including violent injury, illness and accidents (NI39) within Local Area Agreements (LAAs).

There are several examples internationally of countries that have limited the number or length of available hours for premises permitted to sell alcohol, in an attempt to reduce alcohol-related harm (Livingston, Chikritzhs and Room, 2007, p.557). Consequently the impact of the number of alcohol supply points, and in particular the concentration of supply points in specific geographic areas on violence and disorder has received considerable empirical attention. The number of studies in this area has increased rapidly over recent years due to advances in methodology and analytical techniques. An important stage of this research was to conduct a thorough literature review to establish what was known about the influence of alcohol supply on crime and disorder.

The Influence of License Premise (Alcohol Supply Point) Density on Crime and Disorder

A detailed literature review was conducted into the impact of licensing density on crime and disorder. Due to its substantive nature this is included as Appendix Two for this research. The key findings from this are below.

Key Findings from Literature Appraisal

- There have been significant advances in the methodology and analytical techniques employed in the exploration of potential links between alcohol supply point density and violence and disorder.
- It is evident that it is important to examine smaller geographical units and analytical techniques as analysis at a wider scale may mask important localised trends.
- There were a number of limitations evident in these studies, most notably:
  - difficulties obtaining complete and accurate information about alcohol supply points thus limiting the accuracy of geographic mapping; and
  - the failure to include other potential crime attractors as confounding variables; and the likely underestimation of rates of violence and disorder.
- Most studies show a positive relationship between the density of at least one type of alcohol supply point (on-premise, off-premise or general outlets) or the total density of all supply points and measures of violence and disorder.
- It was impossible to conclude that one type of alcohol supply point or the total density of all supply points had a greater association with rates of violence and disorder than the others. Instead there appeared to be an interaction between a number of factors including:
  - the specific geographic area under consideration;
  - the type of alcohol supply point;
  - the time of day and week;
  - whether the supply point was located in a rural or suburban area;
  - the economic status of the local population and
  - the typical alcohol consumption of the victim of violence.
- Factors that appear to influence violence and disorder should be taken into account when designing bars, planning town centres and reviewing licenses.
- In England and Wales there is an absence of a useable database containing information relating to characteristics of alcohol supply points on which to base these decisions.

Methodology

This section of the report described the methodology adopted for this study. This was divided into three sections and each of these is explained below.

Stage 1: Interviews with Key Stakeholders

The first stage of this research was to identify agencies and organisations that have a stake in or are responsible for the management of licensed premises and their surroundings. Through analysis of previous literature on alcohol related harm, alcohol related crime and disorder, and policy and licensing legislation, and through discussion with the PUG a list of potential stakeholders was drawn up. This is depicted in Table One below.

Table 1: Potential 'Stakeholders' in the Research

Ambulance Service/Trust	Alcohol and Tobacco Units
British Beer and Pub Association (BBPA)	Breweries
British Transport Police	Businesses and Retailers
Community Safety Teams (CSP/CDRPs)	Child Protection
CCTV Control Room Staff	Council Elected Members
Drug Action Teams (DAAT)	Domestic Violence Units
Environmental Services (Local Authority)	Fire and Rescue Service
Licensees	Local Authority Licensing
Local Businesses	Local Education Authorities
Licensed premises staff (for example managers, bar staff and door supervisors)	Planning and Regeneration (Local Authorities)
Police (including local licensing teams and local neighbourhood policing teams)	Primary Care Trust and NHS (including hospital A&E departments and regional public health observatories)
Probation	Public Transport Operators and Regulators (including local taxi firms)
Registered Charities and Support Agencies	Registered Social Landlords
Social Services	Tourism Boards
Trade Bodies	Trading Standards
Street Wardens	Supermarkets
Universities and Colleges	Youth Services (YOT)
Voluntary Organisations (e.g. 'Pub Watch')	Other

An important feature of this research was that it was guided by key stakeholders and end users, thus bearing in mind the needs of its potential customers. Due to the financial resources of this study, it was not possible to speak to all organisations across each of the three case study areas. Thus the PUG and research team discussed the above organisations and 10 individuals in each case study area were identified and prioritised for semi-structured interviews, and these are depicted below in Table Two. A total of 28 semi-structured interviews were conducted with representatives from relevant organisations in three case study areas.

Table 2: List of organisations interviewed by case study area

	Case Study Area 1	Case Study Area 2	Case Study Area 3
Police Licensing	Yes	Yes	Yes
Local Authority Licensing	Yes	Yes	Yes
CDRP	Yes	Yes	Yes
PCT	Yes	Yes	Yes
Trading Standards	Yes	Yes	Yes
Town Centre Manager/ Planning	Yes	Yes	
Ambulance Trust	Yes		Yes
Environmental Services	Yes	Yes	
Police Neighbourhood Team	Yes		
Local Pub Watch	Yes	Yes	Yes
Other	Fire and Rescue	Fire and Rescue	CCTV

The purpose of these interviews was to ascertain what information is currently being used to assist with the management of licensed premises and their surroundings, and also to gather opinions about how sources of information could be improved, including what additional desirable and essential information is not currently available. The interview schedule is provided in Appendix Three.

These interviews were recorded and transcribed, and then coded into themes for further qualitative analysis. The results of this analysis are discussed later in this report.

Stage 2: Generating the Database: Minimum System Requirements and Minimum System Functionality

Based on the results of the interviews with stakeholders, the findings from the literature review on the influence of licensing density, and discussion with the PUG, a core set of information were identified that should be collected for the purposes of this research.

Five sources of data were selected as priorities for each of the three case study areas. The datasets suggested and the reasons for this are shown below in Table Three. A more comprehensive dataset that goes beyond the scope of this report is presented in Appendix Four.

Table 3: Data indentified as priority for this research

Source	Description
Licensed Premise Data (Local Authority)	Premise name, address, geo-referenced location, a unique ID, permitted trading hours for alcohol sales and opening hours (by day of week), licensing conditions, details of temporary events, type of premises (for example supermarket, off-licence, pub, bar, nightclub, restaurant, hotel), the licensing fee/band, capacity limit (if available).
Police Recorded Crime Data	Times and locations of crime, especially violent crime and criminal damage. May contain markers or flags such as alcohol-related, public place, and licensed premise (these should be used with caution due to inconsistencies in the completion of these fields).
Accident and Emergency Data/ Ambulance Data	Alcohol-related AED admissions data (ICD10); Hospital Episode Statistics, National Indicator 39: Physical Assault Report Form (PARS) administered by the NHS Security Management Service identifies assaults on staff
Ambulance Data (Local Ambulance Trusts)	Incident Response Records. Identifying key fields relating to types and severity of injuries (to be identified by spatial location and temporal data). Physical Assault Report Form (PARS) administered by NHS Security Management Service identifies assaults on staff
Trading Standards Data	Collects data on test purchases for under-age sales and visits for other purposes on licensed premises.

For each area, contact was established with individuals who could supply the required data, and data sharing protocols were drawn up between the research team and individual organisations where they were willing to provide data.

Minimum/Core Data Requirements

For the purposes of this research, it was deemed essential to obtain data at the individual or raw level rather than pre-aggregated and/or pre-analysed data. It was also necessary to try to obtain this data as electronic databases where available rather than paper based records, due to the time constraints of this project, and, additionally, to demonstrate how this approach could be adopted by other areas. However, it was not possible to acquire data for all sources across all three case study areas as organisations were not willing or unable to share the data in this format. More information on this is provided in the results section alongside a more detailed discussion of the minimum requirements for the core dataset and the minimum functionality of the system.

A further stage of the data capture was data cleaning. This process was necessary to check the consistency and accuracy of the data sources obtained.

Data Capture and Data Cleaning

Licensed Premise Data

Licensed premises data was supplied for two case study areas, one in electronic format and one as paper based records. Two areas were in the process of producing an electronic information system to record licensed premises license details. One area had already moved to a system for doing this known as LALPAC. This allows the information to be updated and held on a web based system. This allowed for different levels of access, a public interface, and a more detailed interface for the local authority containing more sensitive information. However, one of the limitations of this was that although the data could be exported into Excel (it was necessary for the supplier to assist with this as this could not be done automatically) there was a need for a large amount of processing of this data to produce it in a form suitable for analysis. There were a number of difficulties experienced in the two case study areas were licensed premises data was made available. This was a manually intensive process that took approximately 30 days of researcher time to clean this data into a format suitable for analysis. Some of the problems are now discussed in more detail.

Case Study Area Two:
- Information was supplied as both the online licensing register (LALPAC) which only displayed active licenses, and exported Excel files which contained both active and expired licenses.
  There were discrepancies between the number of premises in the two systems that could not be explained by the above. Some expired premises appeared in the online register.
- Data in the Excel file was not contained in single cells, but span across several cells, rows and columns, in a non standardised format, thus making it difficult to export the data into a file suitable for the purposes of analysis for this research.
- For some premises there was more than one application, and sometimes it was not immediately obvious which was the most recent application (that

superseded older applications). Some applications were missing dates, and applications did not always appear in chronological order.

- In several cases there appeared to be information missing from applications, either in the Excel files or on the online licensing register. This included the application type, the permitted activities, the opening hours, and whether the license permitted consumption of alcohol on or off the premise.
- It was necessary to manually extract addresses into a consistent format to allow accurate matching of addresses to determine the geographic locations (OS co-ordinates, or easting and northing of each area).
- It was difficult to extract the opening hours into a format that contained both the opening and closing hour by each day of week. This was necessary to extract total opening and permitted trading hours per day and per week for each premise.
- A total of 2265 premises or venues had a licence of some kind. Data concerning permitted activities and opening hours was only recorded for premise or club licenses, not temporary licences. Given that many premises or venues had more than one temporary licence, recording all of this extra information would have been extremely time consuming.

Case Study Area One:
- Information on licensed premises in this area was gathered from more than one data source. Information on opening hours and license types was gathered from paper based records of licensing provided as pdf files. In addition, the addresses of each licensed premise and premise type were supplied by the local authority (with address matched geo-referenced co-ordinates). These two files were merged to provide information on the licensed premises in this area. Again there were a number of difficulties in collating this data as the two files did not always match as they were produced at different time periods by different organisations. Again this required intensive manual processing.
- Further difficulties for this area were missing information and data, difficulties in identifying the differences between permitted trading hours and opening hours, the need to create new variables for opening hours and closing hours by each day of the week and total opening and trading hours per day and per week.

Classification of the license type:
At present no simple classification exists on types of licensed premises, except for on license, off license, and off and on license. For the purposes of this analysis, licensed premises were broken down into classifications by the ACC research team in discussion with the PUG. As no standardised classification exists, 24 categories (see Appendix Five) were originally selected that related to both case study areas. This was then simplified into 8 categories which were:
- wine bar/ bar/ pub/ public house/ inn/ gay bar/ strip club/ lap dance club/ nightclub
- restaurant
- fast food/ takeaway/ cafe/ coffee shop
- hotel/ guest house/ b&b/ hostel
- supermarket

- department store/ high street store/ convenience store/ off licence/ newsagents/ chemist/ pharmacy/ post office
- members club
- all other premise types

Trading Standards Data

Trading Standards data was obtained for Case Study Area 2, which included information on test purchases and complaints. Attempts were made to indicate which premises in the licensing database had attracted the attention of Trading Standards. When attempting to cross reference the Licensing Data with the Trading Standards data, it became apparent that premises were named differently in the two data sets, for example 'Beaumont Arms' and 'C S Soor and Sons' in Trading Standards data and 'The Beaumont Arms' and 'Soor Off Licence' in the Licensing data. This required manual processing of premises between the two databases.

Police Recorded Crime Data

The police recorded crime data was supplied by each of the three forces in the case study areas, after data sharing protocols had been drawn up. Three categories of police recorded crime data were used for this research, namely:
- Violence against the person
- Criminal damage
- Drugs offences

In addition to these categories, these data were supplied with a number of fields. Those standardised across the three case study areas examined were:
- Crime number
- Date and time of offence (reported and committed)
- HO code (crime type)
- BCU/OCU identifier
- Offence location (full address including postcode)
- Easting and northing (grid reference)

This data was then validated and cleaned using a number of procedures to identify any inconsistencies, anomalies or missing data. Steps were then taken to cleanse the data to improve the quality and utility of the data analysis. This included data capture and cleaning to standardise the date and time fields to enable merging of files from different sources, and also to standardise the crime classifications. The next process was to identify and validate any extreme values and to identify the completeness of fields (test amount of missing data). A random sample of crime records was tested for accuracy by cross referencing the police identified geo-referenced co-ordinates (easting and northings) and the police identified addresses (house or property name and number, postcode and street) with the location of properties identified using the digital OS maps and the OS address point data. The research team were satisfied with the quality of this data for the purposes of the analysis.

Stage 3: Database Usability and Research Questions: Added Value and Functionality

The final phase of the research examined how the creation of a single database/system for the management of licensed premise areas could add value to what stakeholders were currently doing in terms of alcohol related crime, disorder and harm prevention and reduction. With the help of the PUG, the research team defined the research questions, hypotheses and scenarios for testing the database. An additional aspect of this was to explore possible relationships between alcohol supply, local context and crime/disorder. In order to do this for each case study area, a number of software packages were used.

All datasets that were obtained were captured into a Geographical Information System (GIS) and the software used was ArcGIS9.3. These datasets were then cross referenced using the GIS join (intersect) command. This allowed for a number of different datasets to be intersected for further analysis. This software enabled the creation of a single database for each of the three case study areas, and also for a number of new variables to be constructed. It also allowed cross-referencing of these by a number of different spatial units, for example census ward area and output area. In addition the statistical package Predictive Analytics SoftWare Statistics (PASW 17, and formerly Statistical Package for the Social Sciences or SPSS) was used to examine the relationships between alcohol supply and local context and crime/disorder.

A series of new variables were constructed at the ward level for further analysis to examine the spatial concentrations of alcohol supply, premises and trading hours at the census ward area. These are shown in Appendix Six. Bivariate correlations and regression analysis were also performed to examine the relationship between these. The results of this analysis are presented in the final section of this report.

Results

This section of the report discusses the results obtained from this study. It is subdivided into three sections. Section one examined the findings from the interviews with stakeholders and review of the literature. These were then used in consultation with the PUG and research team to inform the findings of section two, which examines the generation of the pilot database, and the data identified and prioritised for this research. Finally section three describes the usability of this information, to determine how it can add value to the management of areas with alcohol supply points, the limitations that currently exist, and steps for further research.

Summary of Key Results

- The results are presented by the three phases of research, namely:
- Interviews with key stakeholders
    - To ascertain what information they collect, analyse, share, the purposes of this, and their views on developing a single database for the management of areas with alcohol supply points.
- Generation of the database
    - This includes system requirements and specification, functionality and information prioritised as core for this project. It also discusses the difficulties in obtaining many of the core datasets
- Testing the usability of the database and research questions.
    - This describes research questions that were constructed for testing, analysis of findings, the added value of a single system, the limitations of the current research, and potential future research steps.

Phase 1: Interviews with Stakeholders

- Although alcohol was a focus, the key concern of stakeholders varied: Local Authority Licensing are primarily concerned with Licensing Legislation; police with reducing crime and disorder; and Trading Standards in reducing under-age sales. These relate to many national performance indicators of these organisations.
- The nature of information sharing was generally ad hoc and relied on individuals, although occasionally at partnership meetings aggregated/analysed information was shared regularly.
- There were a number of reasons for the data collection and analysis but this could be grouped into short-term operations responses, mid to longer-term strategic policy decision making, and research functions. There was less information sharing for the longer term strategies and research functions.
- Some stakeholders suggested it was difficult to get information from hospital attendances and ambulances responses.

- There were a number of obstacles to information sharing identified including; limitations in the way information is collected at source; some organisations store their data on more than one system, therefore obtaining information relevant to ASPs from their systems would be far from straightforward and time consuming; lack of resources; and cultural barriers to sharing.
- A number of stakeholders agreed that a single system would be very beneficial. However, some concerns were expressed including: the cost needed to develop such a system; the amount and level of training time required; a lack of resource time to interrogate the data; and that it would be too complex and add nothing new/of added value.
- Many of the findings from these interviews from 3 case study areas in the North of England corroborated with a recent report into sharing A&E data in London (Jacobson and Broadhust, 2009)

Phase 2: Generating the Database: Minimum System Requirements and Minimum System Functionality

- A number of key functions/system requirements were identified:
  - To administer licensing applications
  - To monitor individual premises and areas with clusters (high concentrations) of premises
  - To compile evidence for licensing hearings and reviews
  - To identify, prioritise and carry out targeted enforcement activity
  - To corroborate and share knowledge
  - To remove duplication of effort
- Four core datasets can be indentified for this analysis that should be obtained in raw/disaggregate formats
  - Licensed Premises; Police Crime; Trading Standards Visits; Ambulance Logs and Hospital A+E data (see Table 4)
- A number of potential obstacles were identified including:
  - Unwillingness to share raw data; data being collected for differing purposes; data is not collected as a requirement of licensing applications; it is resource intensive; legislative barriers to sharing (data protection)

Phase 3: Database Usability and Research Questions: Added Value and Functionality

- It was only possible to obtain minimum datasets for analysis at two case study areas (1 and 2). A&E and ambulance data could not be obtained for any of the case study areas.
- Research questions identified (using available data and discussion with the PUG) were to examine:
  - the spatial relationship between ASPs, trading hours and crime;
  - the relationship between ASP density and crime;
  - the spatial relationship between ASP density by type and crime;
  - the extent to which specific combinations of licensed premises explain the variations in the different types of crime; and
  - the extent to which local enforcement (trading standards) matched concentrations of licensed premises and crime.

Key findings from this analysis were as follows:

Concentrations of ASPs:
- ASPs are spatially concentrated (in one of the wards in the case study areas the density was found to be 7 households per ASP).
- The number of ASPs and levels of crime in these areas of concentrated drinking were disproportionately higher than their share of the residential population.
- Therefore, the residential population (currently used as the denominator to construct crime rates) may not be the most appropriate measure; for example in the case of violent crime, the 'total number of licensed premises' or 'land area in hectares' might be better denominators to use.

The relationship between ASPs and crime:

- Correlation analyses were used to produce a more systematic examination of the relationships between crime and ASPs.
- In both case study areas, higher numbers of ASPs (taking into account both the densities of ASPs in a ward, and the population rate) were associated with higher crime rates (supporting the findings of previous studies).
- The strongest correlations revealed that higher levels of violent crime were statistically more likely in the areas with higher numbers of ASPs and longer trading hours.
- Indeed, in the two case study areas, the correlation between ASPs and violence against the persons was 0.905 and 0.775.

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The relationship between ASP type and crime:

- The overall mix of premise types (based on all ASP types in each ward) appeared not to be related to the ward's crime rate; that is wards with an equal share of ASPs in each category did not register higher crime than elsewhere.
- However, regression analyses were used to explore how far specific combinations of ASP types explained variations in crime rates.
- This analysis suggested that certain combinations of ASPs accounted for a large proportion of the variation in crime rates.
- Pubs, bars and nightclubs were the strongest predictors of variations in crime.
- The only other ASP categories to predict variations in crime were 'Takeaways' in one case study area, and 'Stores and off-licences' and 'Members/social clubs' in the other.
- Therefore, neither restaurants, supermarkets, nor other types of licensed premise were strong enough to be predictors of crime in either case study area.

Stage 1: Interviews with Key Stakeholders

Key Findings: Interviews with Stakeholders

- All stakeholders identified reduction of 'alcohol related problems' as one of their top priorities. This was expected due to those selected but reassuring that the appropriate persons were interviewed. However, the key focus was different for individual organisations. This does not mean they are only interested in the below but it is their primary interest.
  - Local Authority Licensing were concerned mainly with Licensing Legislation
  - The police were focussed on reducing crime and disorder
  - Trading Standards were primarily interested in reducing under-age sales
  - The ambulance trust were very concerned with physical assaults on staff
- Many of the organisations faced external pressures to return national performance indicators and to meet nationally prescribed targets
- Information collected was shared between a number of stakeholders interviewed. However, this was not always a formal process, often it was due to ad hoc requests from individuals, and was often aggregated and disseminated at monthly or quarterly partnership meetings
- Information collected was primarily used for the following:
  - Case management/compliance/enforcement
  - Responding to/dealing with complaints
  - Problem solving/problem orientated responses
    - These focussed on problematic premises, individuals who repeatedly caused problems, and problematic areas
- Resource and intervention targeting
- Leverage to work with licensees and to review rather than revoke licenses where possible
- Strategic decision making
- A number of organisations were producing long term strategy documents. However, there were no links here with other organisations
- Some additional data sources that stakeholders reported they would like access to included information on hospital admissions and ambulance data.

- A number of factors were identified that were viewed as an obstacle to sharing data. These included:
  - Limitations in the way information is collected at source (data collection and data entry)
  - Limitations in the storage and distribution of data (some still paper files)
  - Organisations have their own disparate data systems and do not hold relevant information on a single system
  - Lack of resources (including time, organisational capacity, skills, and finance)
  - Barriers between agencies. Examples cited include:
    - Legal/contractual barriers
    - Ethics and confidentiality
    - Reluctance to share
- A number of stakeholders agreed that a single system would be very beneficial. However, some concerns were expressed:
  - Organisations struggle to share data within their own organisation (when they have a number of systems in operation)
  - Such systems already existed (despite the problems that stakeholders voiced around having access to necessary information)
  - There was also concern about:
    - the cost needed to develop such a system
    - The training time required
    - A lack of resource time to interrogate the data
    - That it would add nothing new

This section of the report presents the findings of the interviews with key stakeholders involved with tackling alcohol related crime and disorder. The methodology for this was presented earlier in the report. This section is split into several sub-sections.

It begins by outlining the stakeholders identified for interviews, why they were identified for interview, and the organisations that they represent. Following on from this, the report examines what the stakeholders consider their priority areas, and how tackling alcohol related crime and disorder and managing alcohol supply points fits within this. It also discusses the overlap and differences between these priority areas for the different agencies.

It then identifies what data these organisations collect, and who they share this information with, and who shares information with them. It then goes on in part four to discuss how this information is used, and how it informs decision making within their organisation and in partnership working.

The final section considers what data the organisations do not have access to but would like to assist them with their job, and the final parts of this section consider the barriers to information sharing and the perceived benefits of a single consistent database.

Stakeholders and their priorities

Interviewees highlighted that they were required to provide information and data to a number of national bodies for the purpose of performance monitoring. For example, from Case Study Area 1, a member of the PCT reported that they were required to provide the Department of Health with figures concerning the number of alcohol-related hospital admissions, and a member of Trading Standards stated that they were required to provide The Food Standards Agency with information about their inspections and test purchases.

Several interviewees reported that they experienced *'massive external pressures'* to meet nationally prescribed targets (Case Study Area 1 Trading Standards) or stated that they were *'mostly target orientated'* (Case Study Area 1 Police Licensing).

This undoubtedly has an impact on the individual agencies' own priorities. Several interviewees reported that the reduction of alcohol-related problems was one of their top priorities. According to a representative from Trading Standards in Case Study Area 1 *"Alcohol is one of our top four priorities"* and a member of the PCT in Case Study Area 1 stated that *"Alcohol is recognised as the second or third priority after cancer and smoking"*.

However, the precise nature of the problems they endeavoured to reduce varied across the individual agencies. Local Licensing Authorities were most concerned that licensed premises complied with legislation, Trading Standards with the reduction of alcohol sales to underage persons, and Police Licensing Teams with the reduction of alcohol-related violence and disorder.

"…to help implement the new licensing act; partly to carry the caseload of new applications" (Case Study Area 3 Local Licensing Authority).

"Our objective really was just to reduce the availability of alcohol to young people, by reducing underage sales directly, and there was another element to that, the proxy sales element which is in relation to adults buying alcohol [for underage persons]" (Case Study Area 1 Trading Standards).

"…to reduce alcohol related nuisance, disorder and crime right across the division. We want well run licensed premises where alcohol is retailed responsibly" (Case Study Area 1 Police Licensing Team).

Interviewees from the PCT in Case Study Areas 1 and 3 also cited the importance of reducing alcohol-related violence in order to reduce the number of individuals requiring medical attention.

"…to reduce the number of harmful drinkers in [the city] that end up needing treatment" (Case Study Area 3 PCT).

In Case Study Areas 1 and 3, members of the Ambulance Service commented that one of their top priorities was to reduce the number of alcohol-related assaults on ambulance staff and paramedics working within the night time economy, a large proportion of which remain unreported.

It also seemed that alcohol was a priority for those working within the daytime economy, especially since the introduction of 24-hour licensing. One interviewee discussed the importance of preventing alcohol-related disorder having a negative impact on trade.

"Drinking is not just a night-time thing anymore, it's open all hours now, there is an impact on the daytime that needs to be well managed too" (Case Study Area 1 Town Centre Management).

"Alcohol doesn't just affect the night-time economy now, it affects the clean-up operations following it and with later opening there is a smaller time window to get everything cleaned up ready for the morning" (Case Study Area 2 Town Centre Management).

"We do have individuals who come into the town centre on a daily basis, weekly basis, who consume a large volume of alcohol quite openly on the street…we make sure it doesn't impact on people's perceptions of [the town] itself and its not affecting the traders, if you have someone outside drinking it's going to put someone off coming through your doorway" (Case Study Area 1 Town Centre Management).

Other priorities included ensuring that licensed premises do not pose any fire safety hazards (Case Study Area 1 Fire Service) and preventing the retail of alcohol having a negative impact on the environment (Case Study Area 2 Environmental Services).

Information systems and information sharing

Interviewees reported that they used their own data and data from other agencies to satisfy their priorities and meet nationally prescribed targets. Interviewees most frequently reported obtaining access to other agencies information via partnership forums. Interviewees reported circulating reports containing pre-analysed data, usually aggregated at the postcode level to other agencies within the same partnership forum. This was usually done on a monthly or quarterly basis via email.

> *"We get information from the Community Safety Team, part of the Crime and Disorder Reduction Partnership, usually in the format of quarterly reports"* (Case Study Area 3 PCT).

> *"The data we receive through the Community Safety Partnership is usually pre-analysed by the organisation sharing it. We normally present data in summary tables et cetera to the Crime and Disorder Reduction Partnership executives on a quarterly basis"* (Case Study Area 1 PCT).

> *"We need to share information with Trading Standards to avoid duplication of work, ensure co-ordination of test purchases, we send each other monthly spreadsheets of our test purchases"* (Case Study Area 2 Police Licensing Team).

Interviewees also described attending partnership meetings which usually occurred monthly or quarterly. These provided the opportunity to share additional information or intelligence, and discuss problems and potential solutions.

> *"[Partnership forums] allow intelligence and problems to be shared and multi-agency solutions to be created. You can ask specific questions in relation to specific issues. It works well"* (Case Study Area 2 Town Centre Management).

> *"If we're having particular problems with one individual then we can talk and share information…there might be something we don't know about and vice versa"* (Case Study Area 3 Ambulance Service).

Aside from sharing pre-analysed aggregated data, interviewees also reported sharing more specific data with partners, but this was typically done on an ad hoc basis following an email or telephone request relating to a particular problem.

> *"We send out generic information to an email list…invariably we get a phone call saying can we have more information on such and such"* (Case Study Area 2 Trading Standards).

> *"Potentially we would share information with the police, but on an ad hoc basis, and normally in response to specific complaints, talking to people as and when problems emerge"* (Case Study Area 2 Environmental Services).

How information informs the management of licensed premises and their surroundings

This section highlights some of the key ways that partners used data and intelligence in the management of licensed premises and their surroundings. These are divided as follows: (i) case management, compliance and enforcement; (ii) complaints; (iii) intelligence; and (iv) problem orientated approaches.

(i) Case management, compliance and enforcement

Licensing Authorities most frequently reported using data to case manage licensed premises. This included processing new applications and applications for variations to existing licenses as per relevant legislation. Part of the case management process was the monitoring of premises to ensure compliance with legislation and to support enforcement of the legislation where necessary. A range of activities were undertaken to ensure that premises were compliant with legislation including: receiving complaints and intelligence about premises; visiting premises to conduct inspections or test purchases; and drawing up action plans in conjunction with premises and ongoing monitoring of these.

In most cases agencies recorded these activities using their own independent systems which utilised a mixture of bespoke and off the shelf spreadsheets (e.g. Excel), and paper based records. A member of the Local Licensing Authority in Case Study Area 1 was one of several who cited the benefits of recording such information in identifying non-compliance:

> *"We know where the problems are due to the number of visits we have done…if a premise has had a series of visits in succession with non-compliance then we look at them quite heavily".*

> *"When we look at our record of inspections, we maybe spot a new licensee who has come to town who is not quite aware of what the rules and regulations are".*

As highlighted by a few interviewees, the Licensing Act 2003 states that all actions taken against licensed premises must be evidence based. Where activity at a licensed premise caused one or more partners to request a licensing review these records provided supporting evidence.

> *"It's been most helpful certainly for doing reviews, we can pull out a premise file, every visit that has taken place is there dated and timed and has an officer name by it…what we've found when doing the reviews is if we can provide a full chronological history of maybe 12 months of issues at a premise the review committee are better informed to make a decision on how this premise is run"* (Case Study Area 1 Local Licensing Authority).

(ii) Complaints

Licensing Authorities, Police Licensing Teams and Trading Standards all reported receiving a high volume of complaints about licensed premises that helped them to identify potential non-compliance. Interviewees stated that complaints were received

from a variety of people including members of the public, other licensees and taxi drivers.

> *"It's constantly ringing with people complaining"* (Case Study Area 2 Police Licensing Team).

> *"We have information coming in from neighbours, a lot of whistle blowing does take place, we have a sort of confidential whistle blowing line as well"* (Case Study Area 1 Local Licensing Authority).

Several interviewees reported an awareness of the vulnerability of licensees to complaints from aggrieved members of the public, this included individuals who may for example have been barred from the premise. Interviewees also reported receiving complaints from other aggrieved licensees:

> *"We do get a lot of sour grapes where we prosecute one person and then we get information from them saying what about X, Y, Z, they're doing the same thing"* (Case Study Area 1 Local Licensing Authority).

Consequently both Police Licensing Teams and Trading Standards reported that they looked for supporting evidence for a complaint before taking further action, which may come from the aforementioned information held on databases or a partner agency. Interviewees cited benefits of sharing such information with partners, for example a representative from Town Centre Management in Case Study Area 1 stated that their data provided "*Civil Side evidence".* Interviewees also reported that they might conduct an inspection or test purchase at a premise in order to gain supporting evidence, but the selection of premises to test purchase is discussed in greater detail later.

(iii) Intelligence

Interviewees described receiving intelligence from partner agencies that alerted them to potential non-compliance. According to a member of Trading Standards in Case Study Area 3 they got "*intelligence reports saying these are the problem premises".*

Rather than direct data sharing of complaints and intelligence, interviewees indicated that they relied on channels of communication and partnership working to ensure that they reached the relevant agency.

> *"We tend to get intelligence about premises, if it's about underage drinking I'll email it to Trading Standards, if it's criminality to the Police Licensing"* (Case Study Area 3 Local Licensing Authority).

(iv) Problem orientated approaches

The above methods perhaps reflect a problem-centred approach whereby a problem with a premise is identified via a complaint or intelligence and then supporting information is sought afterwards. However there are limitations with this approach. Firstly if nobody recognises or reports the problem, or agencies fail to pass on the complaint or the intelligence to the appropriate partner then no action will be taken.

"If it's not upsetting anyone nobody reports it" (Case Study Area 2 Police Licensing Team).

"There would be elements of members of the public not knowing who to call, in theory they could contact the police, they could contact ourselves, they could contact the licensing authorities, they could contact CrimeStoppers, so the list of agencies they could contact is fairly wide" (Case Study Area 2 Trading Standards).

"I would hope that, within our partnership, they would know to report that sort of problem to us" (Case Study Area 2 Trading Standards).

Secondly, a problem may be recognised for which no helpful data has been collected or recorded in advance. A few interviewees stated that not all of the information they received was recorded.

"…generally we don't record intelligence on the electronic database, but we will use intelligence to inform visits and make a record of visits, we don't enter everything we hear about a premise" (Case Study Area 1 Local Licensing Authority).

Identifying problems

It is apparent that intelligence and data was used extensively to identify potential non-compliance with legislation. Interviewees also reported using information and data to identify problematic premises, areas or individuals, often for their association with crime and disorder. Interviewees commented that a disproportionately large amount of crime and disorder occurred within areas highly populated with drinking establishments and at key premises within these areas.

"Unfortunately a lot of violent crime is centred around the night-time economy, occasionally specific premises are involved, although a lot of violence does take place on the street" (Case Study Area 3 Local Licensing Authority).

There were perhaps three key problems identified: (i) problem premises; (ii) problem areas; and (iii) problem individuals. It should be noted that these are not necessarily mutually exclusive.

(i) Problem premises
A representative from the Fire Service in Case Study Area 1 commented that he received email alerts from the Local Licensing Authority each time a property was granted a variation in their licence which enabled him to identify potential fire hazards. Another interviewee described how she manually searched databases to identify premises that seemed to be associated with crime and disorder:

"We trawl the police computer system every morning for anything that's happening in licensed premises or that could be attributed to licensed premises…even if it's not a crime, if it's a nuisance call that will help us to

understand the anti-social behaviour there" (Case Study Area 1 Police Licensing Team).

Similar to above, this was dependent on the individuals concerned spotting any potential problems:

> *"If we didn't comment on something that they expected us to they'd let us know. If they had concerns they will certainly let us know"* (Case Study Area 1 Fire Service).

In all three Case Study Areas representatives from the Police Licensing Team reported combining information on licensed premises with crime data to identify problem premises. In Case Study Areas 1 and 3 this process was conducted using the InnKeeper system, and in Case Study Area 2 police divisional analysts prepared 'analysis packages' relating to each premise. In Case Study Areas 2 and 3 officers identified the 10 establishments with the highest levels of recorded crime and anti-social behaviour, whereas in Case Study Area 1 premises were graded premises as: "*Red; Amber; and Green*".

> *"I can use InnKeeper and at the push of a button I can say the top ten premises for violence in the last two week, or the top ten premises for theft"* (Case Study Area 3 Police Licensing Team).

> *"We operate a top ten system, the divisional analysis unit produce statistics on licensed premises with the highest levels of crime and disorder"* (Case Study Area 2 Police Licensing Team).

> *"We generate figures regarding wounding and assault without injury and we also generate these figures around specific locations and licensed premises, whether they're committed inside or outside. We have a robust system where all of our licensed premises are graded red amber and green, the red premises number may 6 or 7 and they will be the problematic premises"* (Case Study Area 1 Police Licensing Team).

Similarly, a member of the PCT in Case Study Area 3 reported using data collected from individuals attending A&E for alcohol-related assaults to identify the top ten problematic premises:

> *"We do have information that identifies where people had their last drink…we do actually target premises where there appears to be hotspot problems…we have our top ten premises and that changes on a monthly basis".*

Interviewees stated that this data was often supplemented with paper documentation relating to communications with the premises and intelligence received from partner agencies.

(ii) Problem areas
Less frequently interviewees described how data could be used to identify problematic areas.

> *"[We use the A&E data for] identifying wards with the highest number of alcohol-related admissions and attendances"* (Case Study Area 1 PCT).

> *"We sometimes get [police data] about the number of crimes in a particular area that are alcohol related…whether they committed a drink related crime or were intoxicated at the time of committing the crime, if we get postcode details we may be able to say that's a particularly problematic area that we need to target"* (Case Study Area 3 PCT).

(iii) Problem individuals

Interviewees also reported using data to identify the perpetrators of violence and disorder, often with the aim of protecting other patrons and those working within the night time economy. As part of the PubWatch partnership licensees recorded details of incidents that happened in or around their premise, which when collated often revealed individuals who were persistently problematic. Interviewees spoke positively about changes in legislation which now allowed them to impose civil banning orders on such individuals.

> *"If anyone is violent or not well behaved in premises, licensees fill in this report form, that forms comes to us and we get four or five people together from the steering group, and then a decision is made based on how much information we have about them"* (Case Study Area 1 Town Centre Management).

> *"If a member of the ambulance service is called to a licensed premise to treat a patient and they are subject to verbal abuse, threatening behaviour or they are physically assaulted then the PubWatch members can record this and vote to bring in a civil banning order"* (Case Study Area 3 Ambulance Service).

Less frequently interviewees described using data to indentify people who worked within the night-time economy that seemed to be contributing to some of the problems. For example, a member of the Police Licensing Team in Case Study Area 3 reported using InnKeeper to keep a historical record of premise owners and Designated Premise Supervisors (DPS) which enabled him track whether certain individuals were repeatedly associated with premises linked to high levels of crime and disorder.

With reference to the management of the daytime economy, a member of Town Centre Management in Case Study Area 1 reported that she used data to identify individuals who frequently consumed alcohol on the streets and engaged in disorderly behaviour. Interviewees cited that they preferred to give such individuals support rather than enforcing legislation.

> *"I use NBIS to break down figures, for example patterns of individuals and when they could be a problem, such as what days they come out, wardens relay this information back to the community……It's not just about moving people on, it's making sure we are offering the correct service to them so if*

they are homeless pointing them the right way, offering them all of the different referral systems" (Case Study Area 1 Town Centre Management).

Identifying causes

Data has occasionally been used to establish causes of the problem, as described by a member of the Community Safety Team in Case Study Area 2:

"We've done some work where we have looked at [Bar] that had a series of problems, at one stage e were looking at whether it was to do with the music that lead to the clientele which led to the culture, which led to the potentially gangster clientele, so we looked at other potential places that could be a crime promoter. What comes first the atmosphere or the music(?)".

This interviewee emphasised the importance of not only identifying problematic premises, but also identifying the situational characteristics that cause them to be problematic.

"You really wanted to use the information in a productive way to address some of the situational aspects of the pub, just knowing that it is happening in a particular pub is not enough, it's almost as if you need to go into the pub itself and identify if there is a problem in the pub, what is it or where is it in the pub that is problematic".

Resource/intervention targeting

Interviewees from all three case study areas described how they used information and data to inform effective targeting of resources and interventions. This included selecting which premises to approach with concerns or target with further investigation (e.g. test purchasing):

"Once something appears on radar we start to deal with it. By doing this regularly we can determine if a premise about to come on radar, once it does this that is the first stage when we will meet with them…and say this is the problem so on and so forth" (Case Study Area 3 Police Licensing Team).

"Originally premises for test purchasing were pulled off a list from database with no intelligence or targeting, but random selection is a waste of resources...now we only target premises where we have our own intelligence or intelligence from other agencies" (Case Study Area 2 Trading Standards).

A representative from the Police Licensing Team in Case Study Area 1 also described how they used data pertaining to *"crime hot-spots"* and information about forthcoming events to guide the deployment of officers within the city.

"Every weekend we have a city plan, we put officers in strategic locations…statistically that area has the highest rate of crime, the highest rate of assaults".

> *"Not only do we discuss problems with individual premises but we set out our plans and predictions for events that will include alcohol, or are mainly alcohol lead in the coming month or fortnight".*

However, one interviewee reported that policing the areas surrounding licensed premised had become more difficult since the introduction of 24-hour licensing because it was difficult to establish when the transition between daytime and night-time took place.

> *"The problem we've had since the licensing changed is there is no sort of flashpoint where all the premises close and the trouble starts...the early day shift starts at 5, 6, 7 o'clock and they're still turning out...how do you police that"* (Case Study Area 2 Neighbourhood Policing Team).

Several agencies described how they had invested a lot of time and money into developing training days, education packages and manuals to increase premises' compliance with legislation. Interviewees reported that they used data to determine who would benefit from attending such courses.

> *"We would use [trading standards test purchasing data] to identify within an area if there appeared to be a problem with underage sales so we would put in some responsible retailers training"* (Case Study Area 2 Community Safety Team).

> *"We identify who needs to come onto these courses when we look over our records, we maybe spot a new licensee who has come to town who is not quite aware of what the rules and regulations are and then encourage them to come on these courses"* (Case Study Area 1 Local Licensing Authority).

As highlighted by a member of the PCT in Case Study Area 1, data was also used to target interventions designed to educate young people about alcohol consumption:

> *"Trading standards info is very useful to us...if a particular pub in a particular area, or off-license is constantly selling to under 18s that can influence the work we will do with under 18s in their education, which areas to target".*

It is apparent that data was used extensively to guide the work done with and around licensed premises. It was also used to inform interventions designed to protect ambulance staff and paramedics from assaults whilst working within the night time economy. For example, a member of the Ambulance Service in Case Study Area 3 reported using data to *"flag"* situations where staff members should request police support before attending a call-out. They also described how they used intelligence gained via the PubWatch partnership concerning premises and areas associated with violence and disorder to guide the placements of posters designed to increase awareness of the consequences of assaulting NHS staff.

> *"If it's an assault which has taken place in somebody's house we might need to look at whether that address needs to be flagged...we can flag that person*

as someone who is frequently under the influence of alcohol…we can then advise crew do not enter the property without the police".
"We had 200 posters printed and within four days we had them up within 50 of the high profile pubs and clubs in [the] city centre, and we had three banners produced which we had in the high profile areas".

A member of the Ambulance Service in Case Study Area 1 described how data received from the police revealed that there was no alignment between assaults that the ambulance service and the police were aware of, indicating under-reporting to both agencies. This discovery instigated a programme of education and awareness-raising to increase the likelihood that assaults were reported.

Leverage

In all three case study areas representatives Trading standards and Licensing Authorities stated that they would rather review a premise's license than revoke it. Similarly, members of Police Licensing Teams stated that they preferred to work with premises with their consent to alleviate problems rather than go through a review process. Interviewees highlighted that a high number of reviews or prosecutions does not necessarily indicate success; it may be preferable to get fewer as this is an indication of greater compliance with legislation.

"The focus is on licensing review, not prosecution" (Case Study Area 1 Trading Standards).

"I found the review process quite useful…it's not about taking away businesses now, it's not about taking away people's jobs, it's about putting in sanctions to make the premise promote the licensing objectives" (Case Study Area 3 Local Licensing Authority).

"We aim to get premises up to a good standard without sanctions, every six months we look back on the previous action plan to look at how they've done, where they could improve, if we can do it voluntarily that's better, if they don't comply at least we can show the history of what we tried to do" (Case Study Area 2 Police Licensing Team).

"…let's say for arguments sake we are expected to get 100 prosecutions a year, if you get 100 you're doing well, if you get less you are also doing well because you can argue compliance is improving" (Case Study Area 1 Trading Standards).

"*A review is a sign of failure…if we can turn a struggling premise around into a successful establishment where alcohol is retailed responsibly it is better…otherwise if we go to a review and it is closed down, sold on, gets a new owner and new license, but the same problems"* (Case Study Area 1 Police Licensing Team).

Members of Police Licensing Teams reported that *"hard evidence"* could be very persuasive in securing a licensees' voluntary involvement. In many cases it seemed

that landlords were unaware of the wider problems associated with their establishment.

> *"We use statistics to manoeuvre people into a position where they are willing to be educated, using stats to say look you have a problem here and the answer to it is probably we believe… yes will cost you money but the alternative is a formal review"* (Case Study Area 1 Police Licensing Team).

> *"...particularly around mobile phone theft, because the victims won't even report it to the premises... like this one pub in the town centre...all of their assaults were committed between 10 and 11 o'clock at night, and [the licensee] said "oh well that's my busiest hour, I'm on a circuit and at that time I'm so busy that I remove all of the furniture to get more people in" and he was really shocked that he'd had that much disorder but he reduced his capacity …. the crimes fell away and he was actually awarded one of the winners in the Best Bar Non scheme"* (Case Study Area 2 Police Licensing Team).

Strategic decision making

Several interviewees emphasised the importance longer-term strategic decision making in reducing alcohol-related harm that occurs within the night time economy.

> *"There is that third arm missing which is the investment and strategic planning, you can't just bash, bash, bash and expect things to change, you need to put other things in"* (Case Study Area 1 Local Licensing Authority).

> *"Strategy is more about looking at and ensuring we have long term plans, as far regeneration goes how we integrate the regeneration work in with the support and delivery features around that, like when developing a new area where is the taxi rank going to go, do we limit how many pubs there are, where is the drop in centre and how long is that open, or do we post a paramedic there on standby"* (Case Study Area 1 PCT).

Interviewees discussed how they had or intended to use data to inform strategic decision making.

> *"We've got to try and determine what actions we need to take to make them change and also to prove that what we've done has actually made a change…we're just on the beginning of the path to try and indentify the data we need to collect to do this"* (Case Study Area 3 PCT).

> *"We have a saturation policy here…we helped to compile the evidence, linked to crime and got a saturation policy on four wards for off licenses"* (Case Study Area 1 PCT).

> *"We get wider strategic information, for example about the new gateway development at Talbot, what it is likely to be like, when it's likely occur, premises it's likely like to attract and knock down and close through compulsory purchasing, so we have a degree of longer term planning"* (Case Study Area 1 Police Licensing Team).

Data that is desirable but currently unavailable

Interviewees from all three case study areas reported that there was some data that was currently unavailable that would assist with the management licensed premises and their surroundings. Interviewees most frequently cited that improved access to NHS data would be advantageous. Firstly, interviewees stated that they would like data concerning the number of alcohol-related hospital admissions or attendances as this would allow them to 'fill the gap' in offences that were not reported to the police.

> "We would like more data around hospital admissions, in terms of what percentage of alcohol-related- crimes do we not hear about, how many of certain different groups end up in hospital as a result of alcohol, particularly those involving juveniles" (Case Study Area 1 Police Licensing Team).

Secondly, interviewees stated that data concerning ambulance call-outs and A&E data relating to where individuals purchased their last drink would help them to identify problematic premises.

> "Ambulance data would help us, if they are attending a premise three or four times a weekend but the pub doesn't record or report those instances to the police that rings massive alarm bells" (Case Study Area 2 Police Licensing Team).

> "A&E don't record alcohol related issues. We can't get TIIG to operate in [town], although we are signed up to it, we are the last ones in [the county] not to use it. If we could source where they got their last drink from and where the violence took place we can then build our intelligence" (Case Study Area 1 PCT).

> "They trialled [TIIG] in [hospital], and they identified a lot of problems with [Nightclub] in [city], they tried that over here but it never got going, it's a shame that because it would be good" (Case Study Area 2 Police Licensing Team).

Perhaps the next most frequently cited was up-to-date and accurate information concerning licensed premises themselves. A representative from the Police Licensing Team in Case Study Area 3 stated that he was interested in knowing whether premises were actually using the licensing conditions they had been granted, such as extended opening hours and permission for patrons to consume alcohol outdoors. Other desirable information included premise capacity, door policy, dress code and accurate contact details.

> "It would be helpful if every pub provided us with current information about their door policy, dress code, music, occupancy, CCTV systems et cetera…..and also up-to-date contact details. Try to get a phone number for a pub and 60% are wrong due to changes in licensees" (Case Study Area 2 Police Licensing Team).

"I don't have a reliable source of licensing times and capacity data for licensed premises which would be useful" (Case Study Area 3 Community Safety Team).

Other information that interviewees felt would be useful was quite varied but included: perceptions of alcohol-related crime and disorder at smaller geographical units than the currently available ward-level data (Case Study Area 2 Community Safety); drinking patterns and habits of different population groups which could prove useful when targeting campaigns to reduce alcohol-related problems (Case Study Area 3 PCT); and the number of visitors in the city centre during the night as derived by the "footfall cameras" currently used to record the number daytime shoppers (Case Study Area 2 Community Safety Team).

Obstacles to data access and sharing

From the interviews it emerged that there were three main reasons why desirable data (not just NHS data) was unavailable: limitations in data collection, storage or distribution; a lack of resources; and barriers that prevented agencies from sharing data.

Data related obstacles

Several interviewees described situations where useful information was not collected or where it was stored in a manner that made it difficult or even impossible to extract. Interviewees also reported instances where information was not shared with them and commented that the way in which most data was distributed between agencies made it less useful.

(i) Collection
A member of the PCT in Case Study Area 3 cited statistics estimating that information was only collected from 20% of the patients attending A&E departments for alcohol-related assaults, for example where they purchased their last drink. Interviewees acknowledged that A&E staff members perhaps do not have the opportunity to collect detailed data from patients, and that data collection is unlikely to be their main priority.

"If you've got a queue of people with blood dripping out of them, and you're collecting this data, you'd be thinking well is this part of the work I am doing… ultimately I can see that it is something that is seen as secondary to the core data they need to collect and that probably has an impact on the quality and the completeness of the data" (Case Study Area 2 Community Safety Team).

"I think our biggest bug bear is around the information we try to get from hospitals, and particularly around A&E, where it would be really nice to get a lot of information around alcohol related problems, but on the other hand you've got to understand their first and foremost is to stop people dying so data is very much secondary" (Case Study Area 3 PCT).

One interviewee expressed concerns that members of the ambulance service had little opportunity to record assaults committed against them whilst working within the night-time economy.

"I know paperwork can sometimes put people off, however much we emphasise the importance of telling us about things that have happened they do not do it…often they have to go back to base after their shift has finished to do the paperwork, when they just want to go home" (Case Study Area 3 Ambulance Service).

It appeared that difficulties in collecting relevant data were not limited to the NHS, as highlighted by a member of the Police Licensing Team in Case Study Area 1:

"I think a lot of it is do officers actually have time to tick the appropriate boxes? If you look at a PC in the field who is busy taking details of an assault it's not the end of the world if he forgets to tick the box to say they are both drunk".

Interviewees also described instances where other agencies failed to collect data that was compatible with their own and highlighted the importance of agencies within a partnership forum employing consistent data collection techniques:

"[The Fire Service] collected in a format that wasn't compatible, they collected information about substance misuse which included drugs, which was not helpful. It is necessary to standardise the data that is collected so that it is useful to everyone and they can benchmark against each other" (Case Study Area 3 PCT).

(ii) Data entry
Several interviewees reported problems with the reliability and consistency of data entry onto electronic systems, which made it difficult to establish which offences were alcohol-related or extract data regarding specific licensed premises.

"Every call is dissected and if that call says it's related to alcohol that is flagged, but your data is only as good as the inputter" (Case Study Area 2 Neighbourhood Policing Team).

"*The main problem is identifying how many offences are actually alcohol related…although they have this little flag on the police system it's not used very well"* (Case Study Area 2 Community Safety Team).

"If I was to go on our own in-house system… I could find nine different entries for the same premise because officers have entered it again and again rather than checking if it is there to start off. So to get a full informed picture of what's gone on for that premise you have to go through all nine separate entries" (Case Study Area 1 Trading Standards).

For this reason interviewees recognised the importance of quality assuring data but unfortunately this seemed to be lacking in some areas.

"There isn't any quality assurance, the system is shambolic, it's been built up over the years, and unfortunately nobody is going to grasp it and reduce it

because it would take months and maybe even years to get it right" (Case Study Area 1 Trading Standards).

"At the moment we're not in a position to share our own information because we haven't set up our own effective or robust review process…if we take a particular address off we have to make sure that other people who share our data with also take it off their systems as well" (Case Study Area 3 Ambulance Service).

(iii) Data storage

Most agencies reported that they stored the majority of their data in an electronic format, but a few reported that they still relied primarily on paper records. Either way interviewees reported problems with the retrieval of data.

"There are some problems with our crime recording systems, I could not press a button and tell you how many assaults occurred between 4am and 5am, but I can tell you how many occurred on the 29th August last year between 11pm and 7am, it is only periods of daytime, evening and night-time available" (Case Study Area 1 Police Licensing Team).

"The system we use does not allow us to pull out how many assaults were related to alcohol... I have my own excel spreadsheet which is more up-to-date and allows this" (Case Study Area 3 Ambulance Service).
"The information is there but it is retrieving the information that is an issue because we haven't got a licensing system. To retrieve the information you have to physically go to a file, take the file out of a drawer and interrogate that file" (Case Study Area 3 Local Licensing Authority).

(iv) Sharing of data

A few interviewees described instances where partner agencies simply neglected to share important information or did not share it in a timely manner.

"Even environmental services who we have a good relationship with, we'll mention a licensed premise and they'll say "oh yeah we've been having problems with them for the last 18 months" and we'll think well why haven't they told us. So it does fall down from time to time" (Case Study Area 2 Police Licensing Team).

"We are meant to get a TIIG report every month but the last few months we have not been getting it" (Case Study Area 3 PCT).
"Police data is usually quarterly, but some of the restricted stuff is spasmodic…but we do need a set of data which is consistent and time orientated so we can see the rises and falls" (Case Study Area 3 PCT).

Interviewees commented that the sharing of pre-analysed data aggregated at the post-code level often prevented them from identifying problematic premises or areas, and limited the possibility for any extra analysis. A member of the PCT in Case Study Area 3 stated that he believed *"If we had access to the raw data we could better produce strategic needs information".*

With reference to A&E data: *"Say if the purpose was to identify a particular premise, you're not going to be able to do that, you're not even going to be able to identify a postcode, the best you would get is HD2 2 and that's it. I think it's collected at the right level but when it's released the last two digits are taken off"* (Case Study Area 2 Community Safety).

"With the A&E data we try to add it onto violent crime to get a better idea of hot-spots… but I haven't found [the A&E data] to be that brilliantly useful because it's already been analysed and they reckon that a lot of it isn't already crimed but you can't really tell which is and which isn't. It would be better to get the raw data and remove what is already crimed, we could do more with it and get a better idea of what is going on" (Case Study Area 3 Community Safety Team).

A few interviewees expressed concerns about the reliability of other agencies' data, due to inconsistent and unreliable data entry for example. However, interviewees highlighted that the sharing of pre-analysed aggregated data meant that it was unlikely they would be able to perform any kind of quality assurance on it.

"The A&E data has already been aggregated…we take that at face value and just use it, the police data we kind of take at face value but we can double check things, you've got all the data there, it's in an excel spread sheet so you can do what you want with it basically (study area 3 Community Safety Team).

System related obstacles

A few interviewees reported that networking limitations prevented them accessing or relating certain data sets.

"The council haven't got one complete ICT system, it's a bit of everything, there are dozens of systems and they don't interrogate each other and they don't inter-link with each other, and you only have access to the one you work with (Case Study Area 1 Trading Standards).

"As far as I am aware all of [the county), apart from [city] use LALPAC which links into each other, so people cannot see what is going on with premises in [city]" (Case Study Area 2 Police Licensing Team).

"The only problem with Inn Keeper is that we have been used to a share lock or sleuth based system that is internet based and all of our systems link across to each other, now we are in a position where Inn Keeper doesn't link in to each other, it's currently a stand-alone system" (Case Study Area 1 Police Licensing Team).

One interviewee stated that their own networking limitations meant that other agencies were reluctant to share their data.

"A lot of agencies won't share data with us because we haven't got a secure internet system…we don't have secure emails" (Case Study Area 3 Trading Standards).

Resources

Interviewees occasionally referred to the impact of resource availability on data collection and analysis, and the ability of partners to share data. Here the issues raised can be grouped into the following: (i) time; (ii) organisational capacity

(i) Time

As discussed above, interviewees recognised that some staff members working within the night-time economy had a limited opportunity to collect relevant data. A few interviewees spoke negatively about the time it took for requests for data analysis to be fulfilled, presumably due to individuals' availability to complete the task. One interviewee suggested that if agencies had direct access to each others' databases it would alleviate the need to make requests for analysis, thus reducing the time it takes to obtain desired information

"The analyst is at the other end of this corridor, there are just time issues with any specific request for analysis" (Case Study Area 1 PCT).
"We like to overlay reported incidents of crime against locations of premises…you have to get on the phone and go through this whole unruly process of telling somebody that we've got some information regarding members of the public who have been telling us there is an issue around this premise and can you plot this for me, and then you wait a week or so until you get the information...what I would want is a computer system that all partners have access to so you can type in a search criteria and you get a representation in front of you" (Case Study Area 1 Trading Standards).

(ii) Organisational capacity

Several interviewees commented that the sharing of information was dependent on good relationships with partner agencies. Overall it seemed that interviewees had good relationships with most of their partners but felt there were instances where they could be improved.

"Access to all data that is required is a result of good working relationships with all of the partners. We have a good working relationship with all of our partners, if we want something we ring them up and they will give it to us it straight away" (Case Study Area 2 Police Licensing Team).

"We generally have good relationships with the police...we have more problem with customs and in particular inland revenue; they have no desire to share the info at all, they come to the meetings, gather information, don't share, just deal with it in isolation" (Case Study Area 1 Trading Standards).

The sharing of information often seemed to rely on certain individuals within an agency. However, interviewees reported problems when certain individuals left agencies or when organisational structures changed so that previous roles no longer existed. The latter seemed to be a particular problem with the Fire Service.

"With one premise it was actually a doctor within [hospital] that alerted us that he'd had a series of young males with stab wounds who told him they'd been robbed, if he hadn't told us we wouldn't have known about it" (Case Study Area 2 Police Licensing Team).

"It takes time to build relationships and for people to get to know each other, and in licensing and retail people come and go so much, you just start to build a relationship with someone, and then they're gone, so it takes a while to get it all back up" (Case Study Area 1 Town Centre Management).

"*There's all sorts of problems where people move from one area to another, we have to regularly liaise with them to make sure we get the right people"* (Case Study Area 2 Trading Standards).

"The Fire Service are there if we need them...although they are not as proactive as they used to be, they've changed the structure, I suspect they don't have the right people anymore" (Case Study Area 1 Police Licensing Team).

"The fire brigade used to have a licensing officer and I worked for him about 8 years really, we used to go out on double agency visits, and whilst we were working on one issue he'd be looking at the fire doors and the fire safety issues, but they've had some change in their legislation and we don't really do that anymore, which is a shame really… they might pick up on something we haven't (Case Study Area 2 Police Licensing Team).

(iii) Skills

A few interviewees discussed how a lack of skills could prevent useful data being recorded and subsequently extracted. This perhaps links to how straightforward recording systems were to use.

"A&E don't record alcohol related issues…they have an old triage system and also need training of staff" (Case Study Area 1 PCT).

"The divisional analysts will trawl all through the system if we ask them to look at a particular premise for us. Although we have access to all of the systems we do not have the expertise to do it ourselves" (Case Study Area 2 Police Licensing Team).

"We didn't have staff with the skills needed to analyse intelligence, although this should improve now as we have better qualified analysts as opposed to systems administrators" (Case Study Area 3 Trading Standards).

(iv) Finance

The majority of agencies reported that there was a cost associated with collecting, monitoring and analysing data but not with sharing data with partners. However there were a couple of exceptions to this in Case Study Area 3, an interviewee from Trading Standards highlighted that they could not afford access to certain electronic

systems and thus were unable to receive data from partner agencies, and a member of the PCT stated that he believed there was a cost associated with sharing data but careful planning could keep it to a minimum.

> *"There is a cost in respect of monitoring and maintaining the system and having the analyst"* (Case Study Area 3 Trading Standards).
> *"All agreements are in place now…everything tends to be done by secure email now so there is no need for any cost when sharing data"* (Case Study Area 1 PCT).
>
> *"There's always a cost with sharing data and that's why I think it is important to streamline the data that is needed, to get it right, and to get it in the right format will save a lot of time and effort. So there is a cost but it can be reduced"* (Case Study Area 3 PCT).

Barriers to Sharing

There was also some indication that legislation, ethics and a reluctance to share data had an impact on what was available to partners. The areas outlined were: (i) legal/contractual barriers; (ii) ethics and confidentiality; and (iii) a possible reluctance to share.

(i) Legal/contractual barriers

Interviewees stated that legislation, especially the Data Protection Act sometimes meant that they were unable to share their own data or had been denied access to other agencies data. However, a few interviewees reported that if an individual cited the appropriate sections of the Data Protection Act (DPA) they would be obliged to divulge typically restricted information.

> *"The other concern we have is the Enterprise Act because we have a lot of information on individuals and commercial businesses and we have to restrict access because we don't want to become liable under the Enterprise Act, if we give out something which is commercially sensitive and has an impact on business we can become liable"* (Case Study Area 3 Trading Standards).
>
> *"…when we publish a license summary we don't not put the personal address on of the license holder or the DPS for obvious reasons, if they quote the DPA then we will provide it, but they do need to quote that"* (Case Study Area 3 Local Licensing Authority).

However, a member of the Ambulance Service in Case Study Area 1 said that she believed they had been denied access to another agencies data because they had either misinterpreted legislation or the legislation itself was illogical. They reported that the police provided them with information when a member of the ambulance crew was assaulted in an individual's home but they argued that there was no *"legal gateway"* allowing them to provide information about assaults in public places.
A member of the PCT in Case Study Area 3 suggested that such problems could be alleviated if the agencies concerned established data protection agreements when the partnership was initially formed:

"Data protection is a problem because people don't understand it, I think if you put the right things in place data protection is not a problem, we created data protection agreements and guidelines so people can understand it".

One interviewee highlighted that they were not permitted to share information concerning ongoing criminal investigations, and another reported being denied access to data because it was not part of the contractual agreement:

"Reasons we would not share...it could be that there is an ongoing criminal investigation into something" (Case Study Area 3 Police Licensing Team).

"I get more problems from my providers that I commission to provide data as they say it's not part of the contract, things like community work" (Case Study Area 1 PCT).

(ii) Ethics and confidentiality

Interviewees stated that they were less likely to share their own data or be permitted access to another agencies data if doing so would have a negative impact on the individuals concerned. This seemed to be particularly true of NHS patient data and police offender data. However some interviewees commented that in their opinion it was appropriate to share such data in an anonymous format.

"If the outcome of sharing it could have an impact on the health of the person we wouldn't share it, there is a very delicate balance between health and criminal justice" (Case Study Area 1 PCT).

"We talked about having access to InnKeeper but the police were not happy with that, possibly as it holds additional incident and offender information" (Case Study Area 3 Local Licensing Authority).

"If it's anonymised then I don't see any reason why we shouldn't share with partners, and particularly when people can ask for a lot of information under the freedom of information act" (Case Study Area 3 PCT).

"Because data from the police can be annonymised it's generally ok for them to share it" (Case Study Area 1 PCT).

(iii) Reluctance to share

A few interviewees cited suspicions that some agencies, particularly the NHS were simply reluctant to share their own data.

"You do get people with it's my data mentality, NHS were a bit like that" (Case Study Area 2 Police Licensing Team).

"Health services are particularly reluctant to share information, think we are quite good here, but there is still an obstacle between the NHS and police in both directions" (Case Study Area 1 PCT).

"Sharing with the NHS is very difficult, I don't know whether that is to do with confidentiality issues, or whether it's a result of issues with their data collection, I'm told the latter is the case, I'm not convinced though" (case study 1 Police Licensing Team).

Towards a single shared database

A few interviewees indicated that they were aware of proposals to create a single database that was accessible to all agencies within a partnership, whereas others required prompting to discuss this possibility. One interviewee recommended that if such a database became available, agencies should have varying levels of access according to their requirements.

"We are supporting a move to one system whereby it would be selected levels of access for different services" (Case Study Area 1 Trading Standards).

There appeared to be mixed opinions as to whether shared database would be beneficial or not. A few interviewees said they believed that it would alleviate some of the difficulties in obtaining useful information and thus would allow them to better manage licensed premises and their surroundings.

"If we could just click on a database and get other agencies data it would be so much easier…now when we access the police systems there's all sorts of passwords and it times out after 40 minutes, it's so annoying" (Case Study Area 2 Police Licensing Team).

"We want a common database, to get things into good melting pot, it would make targeting more effective" (Case Study Area 1 Trading Standards).

"A useful thing if we did have a national database would be if someone was coming to us we could day what was this person like when they were in your area, how did they manage their premises, then we can be ready for them when they come, that does happen occasionally but it is only on a sort of ad hoc basis" (Case Study Area 2 Police Licensing Team).

However, one interviewee stated that in his opinion a shared database was unnecessary. Interviewees also expressed concerns that it would reduce the likelihood that partners actually talked to each other, require more time to interrogate it, and not have some of the beneficial features of current databases.

"The one to one is ample enough, to have another database would be crazy, I don't think that there's a need for it, we get tracking updates from the licensing authority a few times a week, so we get updates on every property that has received a variation, so if we have any concerns we can identify it ourselves" (Case Study Area 1 Fire Service).

"…get enough info via the partnership to identify what I need to, and many of the benefits from actually taking to people may taken away if we had a shared database" (Case Study Area 1 Fire Service).

"The downside of a shared database would be having the time to interrogate it, I wouldn't have the time personally to access such a system it would need someone who's role it was to integrate the system" (Case Study Area 2 Town Centre Management).

"It would be fantastic, the only downside is that already we use a system called LALPAC, it records everything, you can scan documents onto it, objections and comments can be made electronically" (Case Study Area 2 Police Licensing Team).

Accident and Emergency Data Sharing in London

A recent report by Jacobson and Broadhurst (2009) examined the sharing of A&E data in London. It is worthwhile commenting on this as some of this is complementary to the interviews conducted by our research team. For this research similar agencies were interviewed to this study, and similar findings were produced. This report identified and described the data systems held by the relevant agencies followed by a summary of the obstacles they encountered. Some of the key and consistent findings were:

- The ultimate objective is to reduce alcohol-related violence and associated A&E attendances.
- If A&E departments share data with Crime and Disorder Reduction Partnerships (CDRPs) it can enhance targeted policing, enforcement activity and strategy development.
- A&E data is likely to be beneficial because many violent incidents are not reported to the police.

Government Office London (GOL) made a successful bid to the Home Office to partially replicate the 'Cardiff model' in London. In 2000 Cardiff A&E departments began sharing data within violence reduction partnerships. This was reported to improve the effective management of alcohol-related violence and contribute to a decrease in associated A&E attendances. GOL selected approximately ten boroughs and their hospitals for the project, with the aim of them eventually acting as examples to the rest of the city. Coincidentally many of these boroughs were also involved in the Tackling Knives Action Programme (TKAP) sponsored by the Home Office, which also promotes sharing of A&E data. This research examines the 'early adopter' sites' progress in establishing data sharing systems. Interviews were conducted with the police, hospitals, PCTs and community safety teams from the adopter sites and some additional boroughs who were showing signs of innovative or promising practice. The initial aim of the review was to produce guidance on how best to share data, but it became apparent that sites were still in the very early stages of setting up data sharing systems. The report documented the challenges that the sites had encountered and how government agencies could help to overcome them.

The reports begins by detailing the data collected by the hospitals, what recording systems they were using, and steps taken towards establishing data sharing channels within partnerships. It does not describe the data collected or the systems

used by the police and local authorities. The main challenges identified were grouped into three main categories:

1. Issues relating to process

Staff do not have time to collect the data, staff turnover, staff skills, difficulties modifying A&E systems to record information concerning alcohol-related violence, A&E data systems not compatible with other agencies' systems, difficulties ensuring the data was made anonymous, deciding whether to send other agencies reports via secure email or give them direct access to the systems.

2. Partnership working

CDRPs have historically struggled to engage health agencies in their work, different working cultures and practices, mistrust and suspicion, concerns about patient confidentiality, hospitals not seeing any benefit for them, sharing dependent on good relationships and key individuals.

3. Policy content

Local policy vastly influenced by regional policy, some policy over-complicated, too many different bodies involved, a need for improved co-ordination with other local authorities.

It should be noted that those problems reaffirm and support the findings from our analysis, particularly those in categories one and two and to a lesser extent category three.

Accident and Emergency Data Sharing in the North East

In the North East of England there have been efforts towards developing a system for sharing A&E data with Community Safety Partnerships (CSPs) (Clark, 2009). This has been advanced through the Government Office for the North East (GONE) with support from the regional Director of Public Health.

This system has been piloted in the Stockton area and after consultation between a number of relevant organisations, a working group was formed that included analysts, A&E manager, reception staff, a consultant, information security, and an IT specialist.

Data sources were identified that were required and that were already collected at A&E. These included: patient demographics (age, gender, ethnicity, and address at Census Output Area and Ward level); date of presentation to A&E; mode of arrival; severity of injuries/ diagnosis; referral source; discharge code; and an indicator of repeat victimisation (anonymised patient ID).

Further data sources were identified that were currently not collected as standard. These included: the location of assault; the name of the licensed premises; a sub type of location (inside, outside, street, home); the role of alcohol/ drugs (for both patients and offenders); any weapon used; a domestic violence marker (offender relationship); and a marker for if the patient reported the assault to the police.

For the purposes of this pilot the IT specialist identified some fields on the current system that were not in use and decided to amend the current system rather than create new stand alone system. Therefore the system was set up at no financial cost to any partner. There was £20,000 funding spent on additional reception staff on weekend evenings. This project went live on 1st May 2009.

At present data is passed from the A&E unit to Sub-regional Data Observatory to be cleansed & geocoded to census output area for both coded Patient address and the assault location and analysts receive data each month via secure online storage facility called the Vault. To date (as of December 2009) the data that has been provided has been quite poor, in particular data that has been captured in triage. The location field is often missing or incomplete. Triage staff are not going back to update electronic system with assault details. This is thought to be a resource, training and awareness issue.

Key lessons from this model are (Clark, 2009):
• Involve IT & Information governance from the very beginning;
• Alter existing recording system if possible within the Trust or consider a standalone system;
• Get an advocate to champion the project within hospitals, preferably a Consultant;
• Avoid free text fields & make fields mandatory;
• Link to an address database if possible;
• Involve sub-regional data observatory;
• Make use of existing data sharing protocols where available; and
• Continually review data quality and return to the project group for new ideas.

This model shows steps can be made to improve the current level of data sharing between community safety partnerships, the police, and A&E departments. For this research it was not possible to obtain A&E data in the required format from any of the three case study areas, thus the team were unable to demonstrate how it can be incorporated into improving local decision making and intelligence.

Stage 2: Generating the Database: Minimum System Requirements and Minimum System Functionality

Generating the Database: Minimum System Requirements and Minimum System Functionality

- A number of key functions/system requirements were identified, including:
    - To administer licensing applications;
    - To monitor individual premises and areas with clusters (high concentrations) of premises;
    - To compile evidence for licensing hearings and reviews;
    - To identify, prioritise and carry out targeted enforcement activity;
    - To corroborate and share knowledge; and
    - To remove duplication of effort.
- Four core datasets were indentified for this analysis that should be obtained in raw/disaggregate formats:
    - Licensed Premises
    - Police Crime
    - Trading Standards Visits
    - Ambulance Logs and Hospital A&E data
- A number of potential obstacles were identified for developing a single database for managing areas with alcohol supply points:
    - Despite sharing protocols it can be difficult to share data
    - Analysis of different datasets may produce inconsistencies
    - Agencies have different objectives and collect data for different purposes
    - Pre-analysed data in aggregated form is not always useful to enhance intelligence
    - Capacity data is not collected as a requirement of licensing applications
    - Not all local authorities will support the development of cumulative impact policies and gathering the necessary evidence to establish such policies is resource intensive
    - There is often heavy reliance on working relationships between particular individuals in partner agencies rather than the establishment of wider and more formal links
- Further obstacles may exist for those seeking to develop a single information system. These might include:
    - System Cost - who will pay for the system?
    - System Design - can existing/corporate systems be adapted?
    - System Maintenance - who will maintain information and how? Who will update the system, as input may be required on a daily/weekly basis?
    - System Training - specialised training may be required for analysts
    - System Security - Any system will need to adhere to the requirements of the Data Protection Act and European EU Personal Data Protection and Privacy Laws.

This section of the report discusses the specification and creation of the database and/or information systems to be piloted in each of the three case study areas. This specification is based upon the results of the interviews with stakeholders, the review of literature on licensing density and crime, and discussion between the research team and PUG. The key findings from the database generation are:

System Requirements

There are a number of areas that can be identified as the key tasks faced by those who are involved with the management of areas with licensed premises. These could be classified as short-term operations responses, mid to longer-term strategic policy decision making, and research functions. Therefore system requirements of a database created could include:

- To administer licensing applications
- To monitor individual premises and areas with clusters (high concentrations) of premises
  - To monitor whether premises adhere to their licensing conditions
  - To identify problematic 'premises' (for example, the top 10 premises for violence/disorder, introducing a red/amber/green system/"3 strikes and you're out") over an agreed time period
  - Monitoring the status of particular premises (are the premises currently of interest to a particular organisation? If so, this would operate in a similar fashion to a flagging system), or monitoring the number of inspection visits/amount of enforcement action over a specified period
- To provide representation at hearings
  - To compile evidence for Licensing Reviews and Appeal hearings
- To identify, prioritise and carry out targeted enforcement activity
  - To carry out targeted test purchases (under age sales)
  - To co-ordinate multi-agency responses
  - Education, formal warning, prosecution, license review
- To corroborate and share knowledge
- To remove duplication of effort (for example avoiding dual visits by different agencies)

Core Requirements

In order to develop a single system with the above functionality, the following information can be identified as core requirements to produce an information system on alcohol supply points to support the monitoring, regulation, harm reduction and policing of areas with licensed premises:

- Geo-referenced licensed premises database (location, opening and trading hours, capacity, type of premise, licence conditions)
- Crime and disorder data that is referenced by location and time
  - From police recorded crime (offence); police incident (calls for service) data; police intelligence; hospital A&E and ambulance data; and other sources as suggested in Table Three and Appendix Four. In relation to hospital A&E data it is recommended that admissions data be supplemented by consistently recorded attendance data.

- Local contextual data
  - For example, location of late-night taxi ranks, public transport interchanges, land use, and socio-demographic characteristics of areas.
- Local policy responses
  - For example, police deployment, education awareness schemes, general conditions imposed on licensed premises, trading standards test purchases, cumulative impact zones, and other relevant policy.

Data accessible for this research project

As a result of this a number of organisations were approached to obtain data required to pilot a database in each of the three case study areas. Table Four lists the datasets that were obtained for this analysis and those that could not be (despite concerted efforts made by the research team).

Table Four: Datasets obtained for research (at the disaggregate level)

	Case Study Area 1	Case Study Area 2	Case Study Area 3
Licensed Premises	Yes	Yes	
Police Crime	Yes	Yes	Yes
Trading Standards Visits	Yes		
Ambulance Logs and Hospital A+E data			
Local Contextual Data: Census Data (households and population) Output Area Classification (OAC)	Yes	Yes	Yes

Limitations in developing a single database

A range of potential obstacles to developing a local information system/partnership working forum for targeting crime and disorder in the night time economy were identified during this research. These can be summarised below, and include:
- Despite sharing protocols it can be difficult to share data
- Analysis of different datasets may produce inconsistencies (for example, errors in analysing location or attributing crime incidents to individual premises)
- Agencies have different objectives, thus collect data for different purposes

- Pre-analysed data in aggregated form is not always useful to enhance intelligence
- Capacity data is not collected as a requirement of licensing applications
- Not all local authorities will support the development of cumulative impact policies and gathering the necessary evidence to establish such policies is resource intensive
- There is often heavy reliance on working relationships between particular individuals in partner agencies rather than the establishment of wider and more formal links

Further obstacles may exist for those seeking to develop a single information system. These might include:
- System Cost - who will pay for the system?
- System Design - can existing/corporate systems be adapted?
- System Maintenance - who will maintain information and how? Who will update the system, as input may be required on a daily/weekly basis?
- System Training - specialised training may be required for analysts.
- System Security - Any system will need to adhere to the requirements of the Data Protection Act and European EU Personal Data Protection and Privacy Laws.

Data Sharing and Data Protection

There is an extensive legislative framework that governs the collection, storage, exchange and deletion of personal data. Within the legislation, there is also legal provision for sharing data for the purposes of crime prevention, detection and the apprehension of offenders (Chenery and Rogerson, 2004):
- Section 29 of the Data Protection Act 1998 exempts data processed for crime prevention, detection and the apprehension of offenders from certain provisions of the Act.
- Section 115 of the Crime and Disorder Act 1998 allows the disclosure of personal information to the police, local authorities, probation and health authorities for any legitimate activity associated with the reduction of crime. This section provides an express statutory gateway to share personal data for crime prevention. However, it is a permissive not a mandatory gateway.

Despite these provisions, the legal context is undoubtedly complicated and may give rise to a situation where the problems presented by legislation are more perceived than real. Bichard (2004) observed that uncertainty regarding the legislation and a lack of education regarding data protection has fed the 'climate of fear, which too easily surrounds the data protection legislation'. A tendency to adopt a stance of extreme caution has developed to the extent that 'some data protection officers interpret data protection so restrictively that the community safety enterprise is compromised' (Brookes, Moss and Pease 2003).

A recent report (Chainey 2010) provides guidance to Community Safety and Crime and Disorder Reduction Partnerships (CSPs and CDRPs) so that they can improve their data sharing and feel more confident that they are making informed decisions

and responding to situations appropriately. It highlights the need to prioritise what is shared and divides data into 'core' data that should be processed and shared routinely and 'peripheral' data that should be processed and shared as and when needed. This is similar to the strategy used in this report between essential data (Table Three) and desirable data (Appendix Four). However, in this report hospital data was deemed to be 'peripheral' because processes for recording and sharing data were still in the early stages of development, and the author suggested they could not be elevated to 'core' until routine methods were established. However, as a result of our interviews and a number of studies including a recent report by Jacobson and Broadhurst (2009) it is argued that A&E attendance data is essential for the management of alcohol related crime and disorder, particularly in terms of finding out about incidents not reported to the police. It should be noted the Chainey report was not focussed specifically on alcohol related crime and disorder.

Stage 3: Database Usability and Research Questions: Added Value and Functionality

The final stage of this research was to develop research questions for testing the functionality and usability of a database on alcohol supply points developed using the acquired data. Unfortunately as many datasets were not accessible for this research, despite consistent efforts by the research team, the available analysis was restricted. This section discusses the research questions identified, the findings of the analysis, and the limitations of the research findings.

Key Findings: Database Usability and Research Questions: Added Value and Functionality

- It was not possible to obtain much of the data required for the analysis. In Case Study Areas 1 and 2 data on licensed premises and crime were obtained which was sufficient for minimal analysis. In Case Study Area 2 trading standards data was also supplied and is incorporated into the analysis. A&E and ambulance data could not be obtained for any of the case study areas.
- A series of research questions were identified based on the availability of data and discussion with the PUG:
  - What is the relationship between the spatial concentration of licensed premises, trading hours and crime?
  - What is the relationship between premise density and crime?
  - What is the relationship between mix of premise type and crime?
  - What is the spatial relationship between alcohol supply density by type of premise and crime by type of crime?
  - How far do specific combinations of licensed premises explain the variations in the different types of crime?
    To what extent does local enforcement (trading standards) match the concentrations of licensed premises and crime?

The key findings are as follows:

- Spatial comparisons of the concentration of premises, trading hours and crime by ward level at the two case studies found:
  - In Case Study Area 1, 55% of all premises were in 2/21 wards, and 86% of premises (and 96% of all trading hours) were in 5/21 wards. These wards experienced 50% of all crime examined, and 56% of all violent crime. These wards represent 25% of the case study areas population.
  - In Case Study Area 2, 52% of premises and 54% of trading hours were in 9/24 wards. These wards experienced 42% of all crime[1] and 44% of violent crime. These wards represent 36% of the case study areas population.
- In Case Study Area 1 the distribution of licensed premises was more concentrated than in Area 2.
- It is suggested that the use of the residential population may not be the most appropriate measure for constructing crime rates for some crime types, in the case of violent crime, for example, the total number of licensed premises or land area in hectares might be better denominators to use.
- Case Study Area 1 had a licensed premise density ten times that of Area 2. In two wards in Area 1 there was a density of 7 households per licensed premise. The ward with the highest density of premises in Case Study Area 2 had 28 households per premise.

- The Index of Heterogeneity showed that wards in Area 2 had a significantly greater mix of licensed premises than in Area 1.
- There was no statistically significant correlation between the index of heterogeneity for licensed premises and each of the crime types examined. This suggests that the **overall mix** of premise types in each ward appeared not to be related to the ward's crime rate.
- The number of licensed premises (expressed both as a population rate and as a density measure) mostly correlated significantly with crime in both Case Study Area 1 and Case Study Area 2
- In both Areas, the significant correlations were, without exception, positive indicating that a higher density of licensed premises was associated with higher crime rates.

- In Case Study Area 1, the strongest correlation was between licensed premises, trading hours and violent crime. There was a correlation of 0.905 between density of licensed premises and the prevalence of violent crime. In Area 2 this correlation (removing temporary licenses) was 0.775
- Overall, it is clear from this analysis that licensed premises were more strongly and consistently associated with different categories of crime in Case Study Area 1 than in Area 2.
- Regression analysis revealed a number of relevant findings:
    - In Area 1, a combination of takeaways and cafes plus pubs, bars and clubs explained 88% of the variation in the total crime rate and 91% of the variation of violent crime
    - In Area 2, stores and off-licences, social clubs and pubs, bars and clubs explained 84% of the variation in total crime and 87% of violent crime.
    - The only strong predictor for criminal damage in Area 1 was takeaways and cafes. In Area 2 stores and off-licences and members and social clubs were the best predictors for criminal damage.
    - Pubs, bars and night clubs were a strong predictor of drugs offences in Area 1, accounting for 95% of the variation. In Area 2, only stores and off-licences emerged as a best predictor of drugs related offences but only accounted for 65% of the variation.
    - The most common predictor of crime types were pubs bars and nightclubs appearing five times in the analysis and present in both Case Study Areas.
    - Takeaways only predicted variations in crime in Area 1, and stores and off-licences, and members/social clubs, were only predictors of crime in Area 2.
    - Neither restaurants, supermarkets, nor other types of licensed premise were strong enough to be predictors of crime in either case study area.

- It is evident from this analysis that for each case study area the presence and density of particular types of alcohol supply points influenced different types of crime.
- It is suggested that further analysis is required by local areas to explore reasons for these trends:
    - For example, pubs, bars and nightclubs correlate with total crime and violence in both case study areas.
    - However, in Area 1 pubs, bars and nightclubs combined with takeaways and cafes explained the greatest variation in violent crime, yet in Area 2 this was pubs, bars and clubs combined with hotels and guest houses and member clubs.

This section of the report discusses the utility of a single database for informing local based decisions on the management of areas with licensed premises. Unfortunately, across the three case study areas it was not possible to obtain the data required to fully examine the utility of such a database. Indeed, as described in Table Four, it was not possible to obtain all necessary datasets in any of the case study areas. In Case Study Area 1, four of the key datasets were obtained, and in Case Study Area 2 three were obtained. As a key information source in Case Study Area 3 was not made accessible, this has been removed from the analysis.

If all data sources had been available, there are a number of potential analytical techniques that could have been used to interrogate the data. These would have assisted with the system functionality identified in the previous section. A list of potential analysis is presented below.

1. Alcohol Supply Point Centred Analyses
This analysis would focus on individual alcohol supply points. This analysis could be used to monitor licenses, to enforce licensing conditions, to gather evidence for license prosecution and review, to direct and target resources (for example, policing or trading standards), and to identify problematic premises and interventions. This would require information from a number of organisations that was recorded at the level of individual premise. It could also be used to target individuals who were recorded on the system at individual premises, and if a unique reference was used, this could be tracked across different premises to identify problematic individuals.

2. Alcohol Supply Point Context Analyses
This analysis would examine the links between alcohol supply points and local land use and context, to determine the relationship between these. Questions here may focus, for example, on the distance between alcohol supply points and transport routes or other infrastructure features.

3. Alcohol Supply Point and Crime Analyses
This analysis would be useful for short term strategic decision making, and also mid to longer term decision making. It would enable the analysis of the extent to which areas with high densities of alcohol supply points coincide with crime hot spots, how this relationship varies by type of supply point and type of crime, and how important the mix of alcohol supply points is in explaining variations in violence against the person.

4. Alcohol Supply Points and Policy Responses
This analysis could be used to identify how alcohol supply relates to policy decisions, to identify where taxi marshals might be needed, to identify where to place street furniture, to inform the location of alcohol awareness posters, to suggest the location of additional CCTV cameras, or to identify where ASP density might cause traffic and safety problems. It would enable the mapping of current policy responses to current alcohol supply points and crime levels.

Due to the information available, this research can only address some of the above issues. The following research questions were designed, in conjunction with discussion with the PUG, to pilot the use of a single database for the management of

areas with a concentration of licensed premises to better inform local decision making.

Research Questions

- What is the relationship between the spatial concentration of licensed premises, trading hours and crime?
- What is the relationship between premise density and crime?
- What is the relationship between mix of premise type and crime?
- What is the spatial relationship between alcohol supply density by type of premise and crime by type of crime?
- How far do specific combinations of licensed premises explain the variations in the different types of crime?
- To what extent does local enforcement (trading standards) match the concentrations of licensed premises and crime?

The results of this analysis for case study areas One and Two are now presented below.

Spatial Concentration of Licensed Premises, Trading Hours and Crime at Ward Level

The concentration of licensed premises was examined in each of the two case study areas. This was done by calculating the percentage of all licensed premises within the case study area falling into each individual census ward. The wards were then ranked in descending order of the level of licensed premise concentration so that the wards with the greatest concentration of licensed premises appeared at the top of the table.

In addition to licensed premise concentration, the concentration of trading hours and crime within each ward was also calculated so that the concentration of both could be compared with that of licensed premises.

The cumulative concentration of licensed premises, trading hours and crime was also calculated. The cumulative concentration can be used to identify not only how many of the licensed premises, but also how many trading hours and how much crime can be accounted for by grouping together the wards with the highest concentrations of licensed premises.

The results of this analysis appear in Tables Five and Six. In each table, the wards have been ranked in descending order of their concentration of licensed premises.

In Case Study Area 1 (Table Six), crime, licensed premises, and trading hours were far more geographically concentrated than in Case Study Area 2. In Case Study Area 1, 55% of all licensed premises were concentrated in just 2 of the 21 wards (Table Six); thus in Case Study Area 1 there were considerably more licensed premises in far fewer wards than in Case Study Area 2. The two wards with 55% of all licensed premises accounted for 29.5% of all crime but just under one third of

Case Study Area 1's violent crime (violence against the person). If we extend the number of wards to include those that contained 86% of all licensed premises (5 out of the 21) these contained 96% of all trading hours (a disproportionately large number), 50% of all crime and 56% of violent crime, both disproportionately lower than the concentration of premises and hours.

This suggests that half of all the offences in Case Study Area 1 examined in this research were committed outside of areas of concentrated drinking.

It is also worthwhile noting that these 5 areas of concentrated drinking represent only 25% of the total residential population of Case Study Area 1, yet have a disproportionate amount of licensed premises (96%), total crime (50%) and violent crime (56%). Again this suggests that the denominator used for many crime rates (currently per 1000 residential population) may not be the most appropriate measure, and indeed violence per unit of premise density or violence per number of trading hours (alcohol purchase opportunity) may provide a more insightful measure of crime rates for certain crime types.

In Case Study Area 2, just over half of all licensed premises (52.6%) were concentrated in 9 of the 24 wards (Table Five). These 9 wards, contained 53% of the district's trading hours, (more or less in proportion to its share of licensed premises) and just over two fifths (42.4%) of all crime and 44.3% of violent crime within Case Study Area 2. This indicates that there was roughly 10% more of the Case Study Area 2's licensed premises and trading hours concentrated in these wards than their share of all crime categories used in this analysis and 8% more than violent crime. In other words, in Case Study Area 2, crime was not disproportionately concentrated relative to that of licensed premises and alcohol trading hours. It is also worth noting that these nine wards contained 36% of the Case Study Area 2's population, therefore there is a disproportionately greater amount of licensed premises than residential population and crime. This suggests that premise density and trading hours might be a more representative measure of some crime types than per 1000 population as is employed as the current standard denominator for crime rates.

Table Five: Case Study Area 2: Concentration of Licensed Premises and Crime

Rank	Ward	Licensed Premises Concentration %	Licensed Premises Cumulative %	Trading Hours	Trading Hours Concentration %	Trading Hours Cumulative %	Total Crime Concentration %	Total Crime Cumulative %	Violent Crime Cumulative %
1	Ward 10	12.35	12.35	21841	14.60	14.60	10.24	10.24	12.58
2	Ward 22	6.87	19.22	10440	6.98	21.58	5.49	15.73	19.00
3	Ward 21	5.32	24.54	8072	5.40	26.98	6.32	22.05	24.62
4	Ward 7	5.10	29.64	7504	5.02	31.99	2.12	24.17	26.66
5	Ward 17	4.88	34.51	6677	4.46	36.46	1.82	25.99	28.16
6	Ward 12	4.82	39.33	7112	4.75	41.21	7.49	33.48	35.94
7	Ward 14	4.65	43.98	6678	4.46	45.68	3.42	36.89	38.85
8	Ward 15	4.32	48.31	5610	3.75	49.43	3.65	40.54	42.67
9	Ward 18	4.32	52.63	5740	3.84	53.26	1.91	42.45	44.31
10	Ward 5	4.21	56.84	6207	4.15	57.41	3.98	46.43	48.10
11	Ward 6	4.16	60.99	5867	3.92	61.34	3.79	50.22	52.09
12	Ward 11	3.88	64.87	5485	3.67	65.00	1.46	51.68	53.53
13	Ward 3	3.60	68.47	5454	3.65	68.65	6.54	58.22	60.75
14	Ward 2	3.43	71.91	5510	3.68	72.33	3.97	62.19	65.40
15	Ward 13	3.38	75.29	4909	3.28	75.61	6.60	68.79	71.94
16	Ward 19	3.27	78.55	4603	3.08	78.69	2.39	71.18	73.98
17	Ward 16	3.16	81.71	4531	3.03	81.72	1.92	73.11	75.49
18	Ward 20	3.16	84.87	4803	3.21	84.93	2.93	76.04	77.78
19	Ward 9	2.94	87.81	4460	2.98	87.91	3.52	79.56	80.84
20	Ward 23	2.94	90.74	4737	3.17	91.08	4.43	83.99	84.85
21	Ward 8	2.77	93.51	3865	2.58	93.67	4.21	88.20	88.72
22	Ward 24	2.44	95.95	3675	2.46	96.12	3.97	92.17	92.97
23	Ward 4	2.16	98.11	3406	2.28	98.40	4.12	96.30	97.00
24	Ward 1	1.88	100.00	2392	1.60	100.00	3.70	100.00	100.00

Table Six: Case Study Area 1: Concentration of Licensed Premises and Crime

Rank	Ward	Licensed Premises Concentration %	Licensed Premises Cumulative %	Trading Hours	Trading Hours Concentration %	Trading Hours Cumulative %	Total Crime Concentration %	Total Crime Cumulative %	Violent Crime Cumulative %
1	Ward 3	27.89	27.89	29107	34.17	34.17	12.887	12.88	14.34
2	Ward 17	27.16	55.05	22717	26.67	60.84	16.622	29.50	32.89
3	Ward 5	13.91	68.97	11538	13.54	74.38	13.714	43.22	48.99
4	Ward 21	11.19	80.16	11677	13.71	88.09	4.7685	47.98	53.84
5	Ward 20	6.41	86.57	7392	8.68	96.76	2.5986	50.58	56.11
6	Ward 2	2.24	88.81	1693	1.99	98.75	1.2993	51.88	57.20
7	Ward 19	1.88	90.68	164	0.19	98.94	4.6597	56.54	61.33
8	Ward 15	1.75	92.44	435	0.51	99.46	1.8843	58.43	63.01
9	Ward 12	1.09	93.53	100	0.12	99.57	2.7822	61.21	65.36
10	Ward 8	1.03	94.56	0	0.00	99.57	3.4863	64.69	68.82
11	Ward 4	0.79	95.34	0	0.00	99.57	6.0474	70.74	74.09
12	Ward 6	0.79	96.13	0	0.00	99.57	4.9148	75.66	78.22
13	Ward 10	0.54	96.67	0	0.00	99.57	3.323	78.98	81.60
14	Ward 11	0.54	97.22	0	0.00	99.57	3.3094	82.29	84.45
15	Ward 14	0.54	97.76	0	0.00	99.57	5.7515	88.04	90.36
16	Ward 16	0.54	98.31	0	0.00	99.57	1.619	89.66	91.92
17	Ward 1	0.42	98.73	182	0.21	99.79	1.4047	91.06	93.06
18	Ward 18	0.42	99.15	82	0.10	99.88	3.17	94.23	94.99
19	Ward 7	0.30	99.46	0	0.00	99.88	2.3571	96.59	97.00
20	Ward 13	0.30	99.76	102	0.12	100.00	1.3231	97.91	98.15
21	Ward 9	0.24	100.00	0	0.00	100.00	2.0782	100.00	100.00

Ward Density Measures

Tables Seven and Eight give, for each ward, the rate of licensed premises per thousand households, a measure of licensed premises density, namely, the number of licensed premises per thousand hectares and the number of households per licensed premise.

Licensed premise density in Case Study Area 1 was 10 times that of Case Study Area 2. In the former there were 446 licensed premises per thousand hectares compared with 44 in Case Study Area 2. This translated into 39 households for every licensed premise in Case Study Area 1 compared with 92 in Case Study Area 2.

Within Case Study Area 1, three wards had very high densities of licensed premises per 1,000 hectares. In Ward 17, there were 3295 premises per thousand hectares, in Ward 3 3287 and in Ward 5 2297. This translated into seven households for each licensed premise in Ward 3 and Ward 17, and 15 households per licensed premise in Ward 5 (Table 7).

In Case Study Area 2, densities were much lower but in Ward 22 there were 307 licensed premises per 1,000 hectares, amounting to 57 households per premise.

Interestingly, in Ward 10, which had the greatest number of licensed premises in Case Study Area 2, the density was 221 licensed premises per 1,000 hectares with 28 households per licensed premise.

Not a single ward in Case Study Area 2 approached even the average density of licensed premises per thousand hectares for the whole Case Study Area 1.

Table Seven: Case Study Area 1: Rates and Densities

Ward	Number of Licensed Premises	Licensed Premises per 1,000 Ha	Licensed Premises Per 1,000 Households	Households per Licensed Premise
Ward 1	7	83.0	2.2	454
Ward 2	37	238.2	13.8	73
Ward 3	461	3287.2	145.1	7
Ward 4	13	57.3	3.8	263
Ward 5	230	2297.2	65.8	15
Ward 6	13	63.2	4.2	240
Ward 7	5	25.7	1.7	581
Ward 8	17	165.7	5.4	187
Ward 9	4	9.2	1.4	728
Ward 10	9	68.5	2.9	347
Ward 11	9	38.2	2.9	348
Ward 12	18	92.6	6.1	164
Ward 13	5	12.6	1.8	556
Ward 14	9	75.0	2.9	347
Ward 15	29	314.9	10.7	94
Ward 16	9	63.2	3.2	314
Ward 17	449	3295.2	134.8	7
Ward 18	7	68.4	2.3	433
Ward 19	31	167.7	10.2	98
Ward 20	106	746.3	36.8	27
Ward 21	185	995.2	63.4	16
Total	*1653*	*446.1*	*25.9*	*39*

Table Eight: Case Study Area 2: Rates and Densities

Ward	Number of Licensed Premises	Licensed Premises per 1,000 Ha	Licensed Premises Per 1,000 Households	Households per Licensed Premise
Ward 1	34	57.2	5.8	171.0
Ward 2	62	83.9	8.9	113.0
Ward 3	65	129.4	8.5	117.5
Ward 4	39	56.8	6.1	163.1
Ward 5	76	56.9	10.0	100.0
Ward 6	75	66.4	11.0	90.9
Ward 7	92	15.7	14.8	67.6
Ward 8	50	70.9	7.1	141.2
Ward 9	53	49.8	7.5	132.6
Ward 10	223	221.6	35.0	28.6
Ward 11	70	14.7	9.3	107.8
Ward 12	87	141.2	12.8	78.1
Ward 13	61	85.5	8.3	120.7
Ward 14	84	93.9	11.2	89.3
Ward 15	78	75.0	10.7	93.7
Ward 16	57	16.4	8.3	120.1
Ward 17	88	14.5	11.9	84.3
Ward 18	78	18.0	11.7	85.3
Ward 19	59	66.5	8.3	120.9
Ward 20	57	52.4	8.3	120.1
Ward 21	96	135.0	14.7	67.8
Ward 22	124	307.0	17.4	57.4
Ward 23	53	61.1	7.5	133.1
Ward 24	44	31.4	6.8	146.7
Total	*1805*	*44.2*	*10.8*	*92.2*

The Index of Heterogeneity (IoH)

The Index of Heterogeneity (IoH) is a measure of how mixed areas are in terms of their social and demographic composition, the presence of different ethnic groups, different types of household structure and housing, and the distribution of different types of buildings, properties and premises. A common use of the index in social science research has been to derive indices of ethnic heterogeneity in order to identify ethnically mixed and ethnically homogenous communities (Blau, 1977). When applied to population groups, the index is a measure of the chance expectation that two randomly chosen persons do not belong to the same group taking into account both the number of groups in the distribution of the population among them.

The index can be applied to any distribution made up of mutually exclusive categories that collectively account for an entire population. Values on the index range from 0 to 1.0 and the closer the values on the index are to 1.0, the higher the heterogeneity. Very low values on the index indicate the dominance, within an area, of one or perhaps two of the categories under examination.

In this research the index of heterogeneity has been used to produce a summary statistic of the mix of licensed premises in each electoral ward in Case Study Area 1 and in Case Study Area 2. Applying the index to licensed premises is an innovation and generates a measure that can be used to identify how areas differ in their mix of premise types and to explore how the extent of this mix relates to outcomes such as levels of violent crime.

Wards in which licensed premises fall almost entirely into one category, for example, pubs and bars, would register a low value on the index indicating a homogeneity of alcohol supply points in that area (e.g. a dominance of one type of outlet). An area that has an 'equal share' of licensed premises in each category (e.g. five categories with 20% of the ward's licensed premises in each) would register maximum heterogeneity on the index, indicating equal representation of each type of outlet.

The formula for the index is:

$$1-\sum Pi^2$$

Where Pi = the proportion of premise in group i (e.g. the proportion of licensed premises that are pubs and bars). This is then squared and summed for all of the categories and then deducted from one.

Index of Licensed Premise Heterogeneity

The mix of licensed premises across the different categories was examined by deriving the index of licensed premise heterogeneity for every ward in Case Study Area 1 and in Case Study Area 2. Two tables were produced for each area. Table Nine is for Case Study Area 1 showing the mix of licensed premises with wards ranked in descending order of the Index. Table Ten presents equivalent information for Case Study Area 2.

Wards with very low heterogeneity, tended to have one or perhaps two types of licensed premise dominate the scene, whereas, as the index increased towards the value of one where licensed premises were more widely spread across the district.

In Case Study Area 1, for example, Ward 20 and Ward 9 had low values on the IoH which meant that each of these wards tended to be dominated by one or two categories of licensed premise (Table Nine). In Ward 20, for example, 83% of all licensed premises were hotels and guesthouses. In Ward 9, 75% of all licensed premises were off-licences and small shops and in Ward 3, 76% of all licensed premises were hotels and guesthouses. At the other extreme, wards such as Ward 12 and Ward 15 had very high values on the IoH. In these wards there was more of an even spread. In Ward 12, for example, 22% of all licensed premises were bars and pubs, 22% off-licences and small shops, 11% were social clubs and 27% were other types of premise. In Ward 15, 10% were social clubs, 17% hotels and guesthouses are only 3% were pubs and clubs. 20% of all licensed premises in Ward 15 in Case Study Area 1 were restaurants.

Table Nine: Case Study Area 1: Mix of Licensed Premises (Ranked by Increasing Heterogeneity)

Ward	Pubs & Bars	Restaurants	Takeaways, cafes	Hotels Guest Houses	Supermarkets	Off Licenses small shops	Social / Members Clubs	All Others	Total %	Index of Hetero-geneity
Ward 20	3.8	1.9	6.6	83.0	0.0	1.9	0.9	1.9	100	0.30
Ward 9	25.0	0.0	0.0	0.0	0.0	75.0	0.0	0.0	100	0.38
Ward 3	5.2	1.7	8.9	76.8	0.2	3.0	2.2	2.0	100	0.40
Ward 21	3.2	4.3	8.1	76.2	0.0	2.2	1.1	4.9	100	0.41
Ward 17	12.0	8.9	9.8	61.5	0.2	3.6	1.8	2.2	100	0.59
Ward 5	12.6	4.3	12.6	60.9	0.4	5.7	2.2	1.3	100	0.59
Ward 18	14.3	0.0	0.0	14.3	0.0	57.1	14.3	0.0	100	0.61
Ward 11	0.0	11.1	11.1	0.0	0.0	55.6	22.2	0.0	100	0.62
Ward 13	0.0	0.0	0.0	20.0	0.0	40.0	40.0	0.0	100	0.64
Ward 2	10.8	21.6	2.7	54.1	0.0	5.4	5.4	0.0	100	0.64
Ward 16	11.1	0.0	11.1	0.0	0.0	11.1	55.6	11.1	100	0.65
Ward 4	23.1	0.0	7.7	0.0	0.0	46.2	15.4	7.7	100	0.70
Ward 8	5.9	5.9	35.3	0.0	0.0	35.3	11.8	5.9	100	0.73
Ward 7	0.0	20.0	40.0	0.0	0.0	20.0	0.0	20.0	100	0.76
Ward 1	0.0	14.3	14.3	28.6	14.3	28.6	0.0	0.0	100	0.78
Ward 19	3.2	6.5	25.8	6.5	3.2	29.0	19.4	6.5	100	0.79
Ward 6	7.7	0.0	23.1	0.0	23.1	30.8	0.0	15.4	100	0.79
Ward 14	0.0	0.0	0.0	0.0	0.0	33.3	22.2	44.4	100	0.84
Ward 10	22.2	11.1	0.0	0.0	11.1	22.2	0.0	33.3	100	0.88
Ward 12	22.2	5.6	5.6	5.6	0.0	22.2	11.1	27.8	100	0.88
Ward 15	3.4	20.7	13.8	17.2	0.0	10.3	10.3	24.1	100	0.88

Table Ten: Case Study Area 1: Mix of Licensed Premises (Ranked by Increasing Heterogeneity)

Ward	Pubs & Bars	Restaurants	Takeaways, cafes	Hotels Guest Houses	Supermarkets	Off Licenses small shops	Social / Members Clubs	All Others	Total %	Index of Hetero-geneity
Ward 4	30.8	2.6	10.3	2.6	0.0	35.9	10.3	7.7	100	0.75
Ward 6	37.3	4.0	17.3	4.0	0.0	14.7	13.3	9.3	100	0.78
Ward 8	24.0	0.0	12.0	4.0	0.0	32.0	12.0	16.0	100	0.78
Ward 23	30.2	7.5	7.5	7.5	0.0	30.2	13.2	3.8	100	0.78
Ward 2	35.5	12.9	17.7	1.6	0.0	8.1	14.5	9.7	100	0.79
Ward 18	32.1	3.8	9.0	0.0	2.6	12.8	19.2	20.5	100	0.79
Ward 10	32.3	12.1	17.9	1.8	3.6	17.0	4.5	10.8	100	0.8
Ward 11	31.4	8.6	7.1	1.4	0.0	15.7	12.9	22.9	100	0.8
Ward 1	11.8	2.9	11.8	2.9	2.9	26.5	17.6	23.5	100	0.81
Ward 7	26.1	6.5	13.0	1.1	0.0	18.5	22.8	12.0	100	0.81
Ward 5	22.4	11.8	15.8	2.6	1.3	27.6	11.8	6.6	100	0.82
Ward 9	24.5	5.7	18.9	1.9	1.9	22.6	15.1	9.4	100	0.82
Ward 13	24.6	3.3	18.0	6.6	1.6	24.6	11.5	9.8	100	0.82
Ward 14	26.2	8.3	14.3	1.2	2.4	21.4	15.5	10.7	100	0.82
Ward 17	25.0	17.0	8.0	2.3	0.0	14.8	12.5	20.5	100	0.82
Ward 20	26.3	12.3	15.8	1.8	0.0	17.5	15.8	10.5	100	0.82
Ward 21	24.0	8.3	15.6	2.1	0.0	22.9	12.5	14.6	100	0.82
Ward 15	19.2	6.4	25.6	7.7	1.3	10.3	19.2	10.3	100	0.83
Ward 16	21.1	8.8	10.5	3.5	1.8	22.8	15.8	15.8	100	0.83
Ward 19	25.4	11.9	10.2	1.7	3.4	18.6	10.2	18.6	100	0.83
Ward 22	21.0	11.3	24.2	2.4	0.8	14.5	13.7	12.1	100	0.83
Ward 24	20.5	2.3	15.9	4.5	2.3	20.5	18.2	15.9	100	0.83
Ward 3	18.5	7.7	16.9	10.8	7.7	20.0	12.3	6.2	100	0.85
Ward 12	19.5	10.3	12.6	8.0	4.6	20.7	9.2	14.9	100	0.85

This mix of alcohol supply points can be seen in Figure One for Case Study Area 1. This figure ranks wards in with maximum heterogeneity at the top of the graph through to minimum heterogeneity or 'licensed premise homogeneity' at the bottom of the graph. In this figure, Ward 15 and Ward 12 are shown to have a variety of different types of licensed premises, some in each of the categories, whereas, in Ward 20, at the bottom of the graph, Licensed premises were dominated by hotels and guesthouses with very few in the other categories.

In Ward 9, there was the dominance of small shops and off-licences with very few licensed premises across the other categories.

The mix of licensed premises graph for Case Study Area 2 is also ranked in descending order of heterogeneity (Figure Two). The top of the graph shows Ward 12 and Ward 3 where there is a good mix of different types of licensed premise corresponding to the high figure for the IoH.

As one moves down the list, it becomes apparent that one of two types of licensed premise tend to dominate. In Ward 4, for example, it can be seen that about 25% were pubs and bars; a similar number of off-licences and small shops with a representation of social and members clubs and other forms of alcohol supply points.

Wards in Case Study Area 2 had a significantly higher mix of licensed premises than wards in Case Study Area 1. This is reflected in the borough-wide value on the IoH. In Case Study Area 2 this was 0.82, implying almost a total mix of premises compared with 0.58 in Case Study Area 1, which reflected greater homogeneity in different areas in terms of the alcohol supply point composition.

Crime mix in terms of violence, criminal damage, drugs related offences and arson were plotted in each ward in Case Study Area 1 and can be seen in Figure Three. Wards with a higher share of violence appear towards the bottom of the graph.

Some of these wards, Ward 5, Ward 17 and Ward 3, were those with the highest concentrations of alcohol supply points.

A similar graph, showing crime mix in Case Study Area 2 has also been produced as Figure Four. This time the categories of crime are slightly different. In Case Study Area 2, the bar chart shows the share, in each ward, of violent crime, criminal damage, robbery, drugs-related crime and sexual offences and the very small number of homicides expressed as a percentage of all of these offences. Ward 10 appears towards the bottom of the graph. This has the highest share of violent crime in Case Study Area 2 and also is the ward with the highest concentration of licensed premises.

Figure One: Mix of Alcohol Supply Points in Case Study Area 1

Case Study Area 1: Mix of Alcohol Supply Points
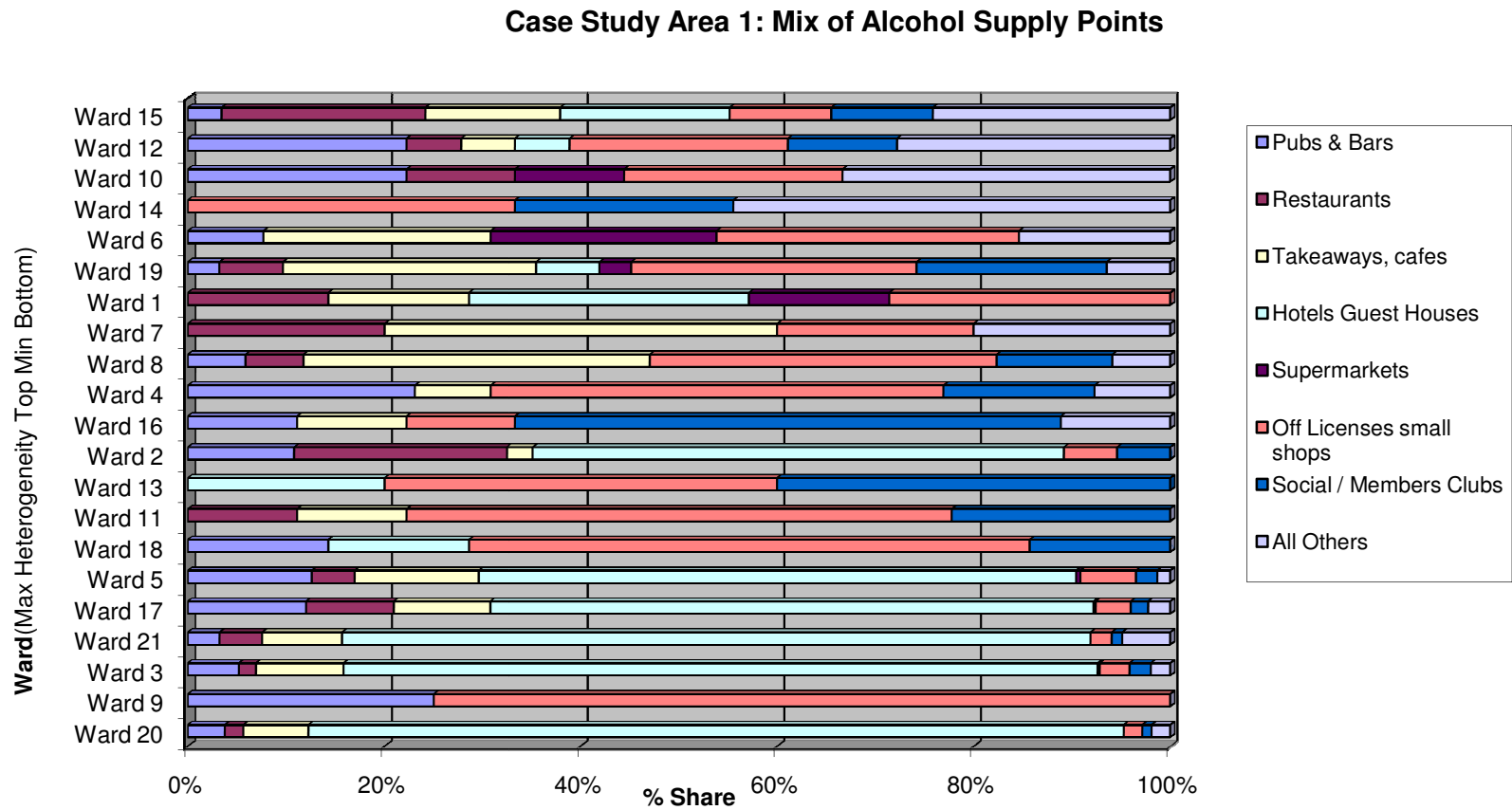
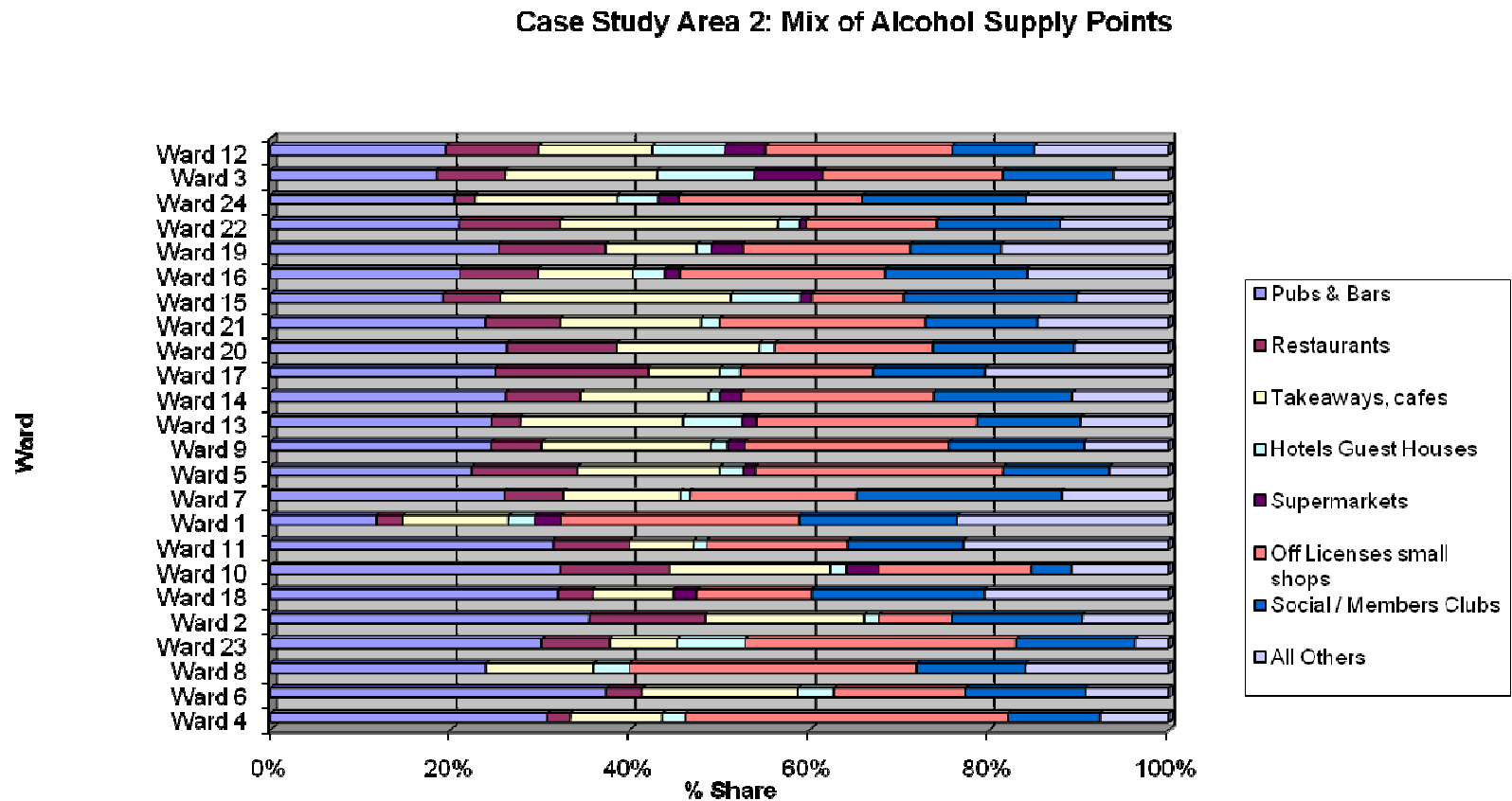Figure Two: Mix of Alcohol Supply Points in Case Study Area 2

Case Study Area 2: Mix of Alcohol Supply Points

Figure 3: Crime Mix in Case Study Area 1

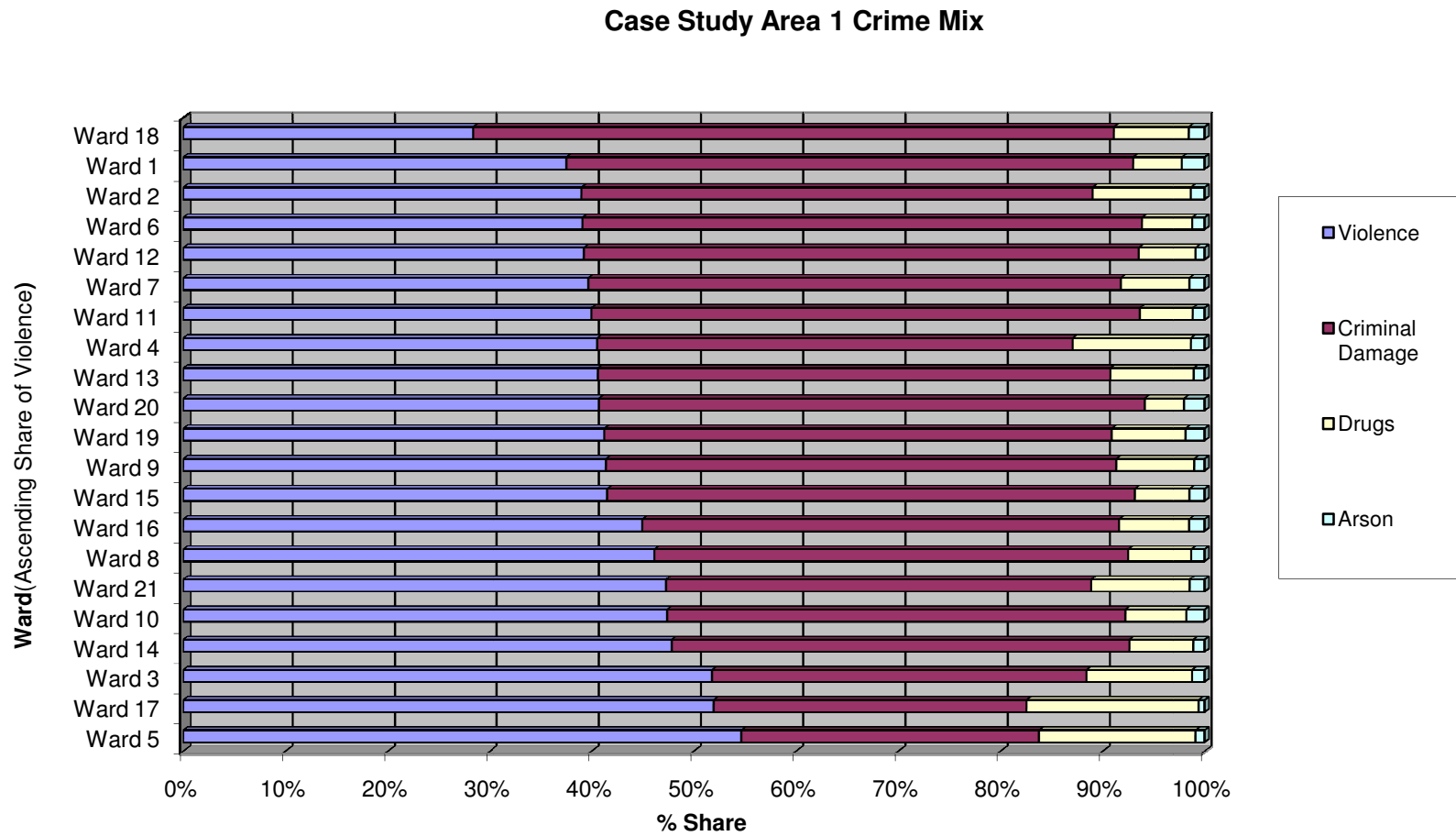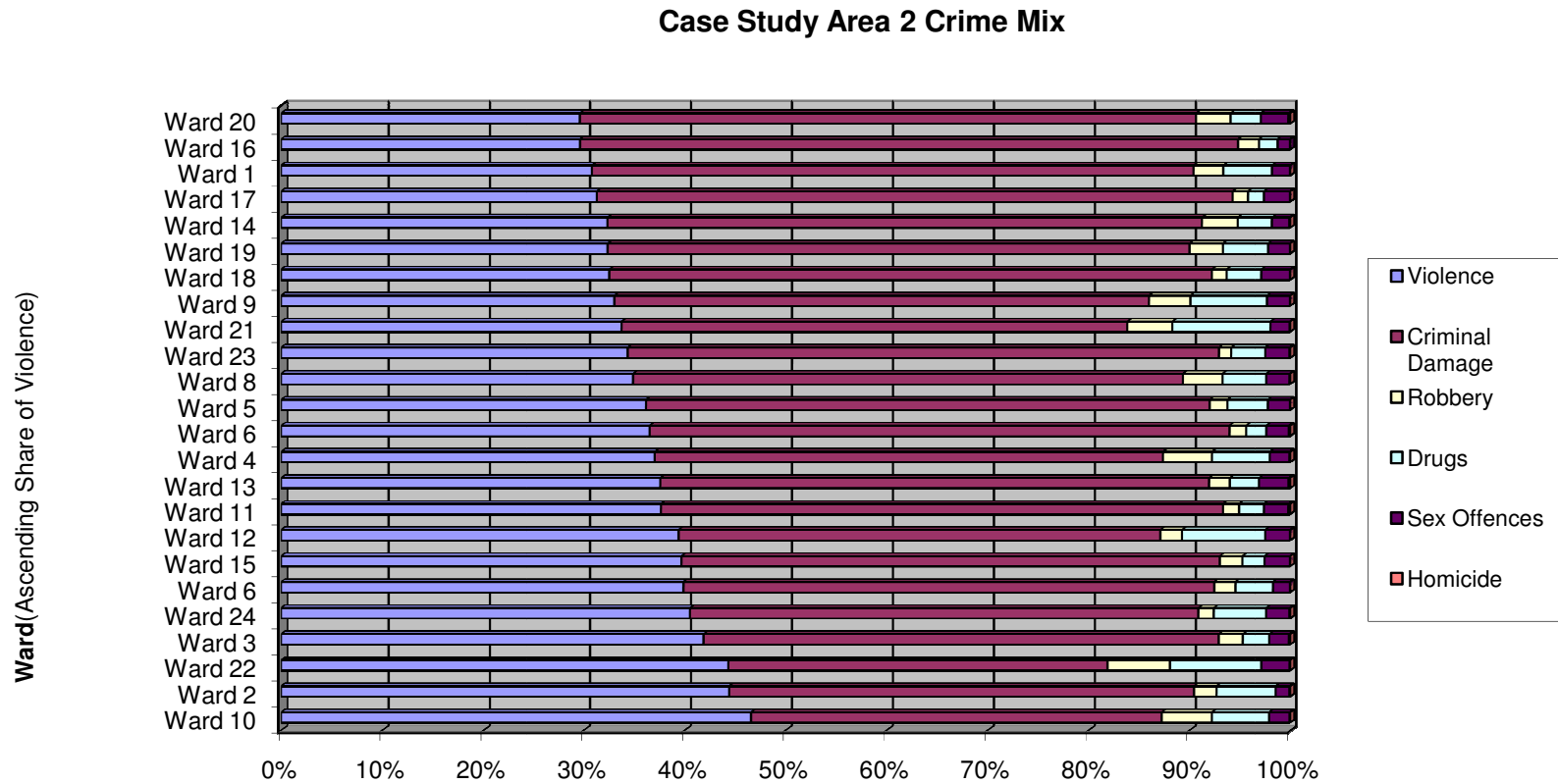Case Study Area 1 Crime Mix

Figure 4: Crime Mix in Case Study Area 2

Case Study Area 2 Crime Mix

Correlation Analysis

Correlation analysis enables a more systematic picture to be produced of the relationships between crime types and licensed premises. Table Eleven, below, summarises correlations between the index of heterogeneity(see definition, above), different measures of licensed premise density using land area (in hectares) and population as the denominator and the number of hours which alcohol is available (trading hours). More variables are available for Case Study Area 2 and these include a subset of all licensed premises where temporary licences have been excluded.

Both in Case Study Area 1 and in Case Study Area 2, there was no statistically significant correlation between the index of heterogeneity for licensed premises and each of the crime types examined. This suggests that the overall mix of premise types in each ward appeared not to be related to the ward's crime rate. This was the case for crime rates that were calculated using the total population as the denominator (that is the number of criminal offences per thousand population) and for crime density rates where the number of crimes was expressed per thousand hectares. It should be emphasised here that the index provides just a general indication of premise mix and does not distinguish which combinations of premise types are present within in each area.

Interestingly, although not significant, the correlation between the index and crime was negative in Case Study Area 1 and positive in Case Study Area 2. This suggests that in Case Study Area 1, the more an area had a mix of premises, the lower the levels of crime, whereas, in Case Study Area 2, a greater mix of premises was associated with higher levels of crime. This is likely to reflect the different functions and roles of these two areas; Case Study Area 1, for example, being a seaside resort with a high concentration of licensed premises in just a few wards and a larger number of areas dominated by one or two types of premise (overall lower values on the index of heterogeneity). Case Study Area 2, on the other hand, contains several towns with a more evenly distributed range of premises and a higher value on the index of heterogeneity. However the failure of the index to reach statistical significance indicates that these were relatively minor influences.

The number of licensed premises expressed as a population rate and as a density measure, mostly correlated significantly with crime in both Case Study Area 1 and Case Study Area 2 (see Table Eleven). In both case study areas the significant correlations were, without exception, positive indicating that a higher prevalence or density of licensed premises was associated with higher crime rates. These results do not contradict the index of heterogeneity findings because the two sets of variables measured different things. Heterogeneity is the overall mix of premise types which appears not to be significantly related to crime, whereas, the licensed premise rate, is the volume of alcohol supply points relative to population size and land area, which was significantly related to crime.

The correlation results can be summarised as follows:

- In Case Study Area 1 the strongest relationship was between licensed premises, trading hours and violent crime. A particularly high correlation of 0.905 was registered between the density of licensed premises (per 1,000 hectares) and the prevalence of violent crime within the population.

- Although still significant, Case Study Area 1 registered lower correlations between licensed premises, trading hours and the density measure for criminal damage

- In Case Study Area 2, most, but not all, correlations were significant. For example, the licensed premises rate (within the population) did not correlate significantly with the density measure for all crime (.339). The correlation between the licensed premises rate and the density measure for criminal damage was even weaker (.204) and there was no significant correlation between trading hours and drugs related offences per thousand hectares (.378) and a correlation that just reached significance between the latter and the population rate for licensed premises (.420, significant at the 0.05 level).

- **Overall it is clear from this analysis that licensed premises were more strongly and consistently associated with different categories of crime in Case Study Area 1 than in Case Study Area 2.**

- The ability in Case Study Area 2 to differentiate between licensed premises with and without temporary licences produced some interesting results in the correlation analysis. Re-running the correlation analysis with temporary licences removed, changed the statistically insignificant correlations with crime, reported above, into highly significant correlations in every case. By narrowing down the number of licensed premises to include those more focused on regular alcohol supply, raised the correlation between licensed premises and all crime from .339 to .861, and that between licensed premises and criminal damage from .204 to a significant correlation of .725. Other examples can be found in the table.

Table Eleven: Correlation Analysis

Crime Variable	Case Study Area 1				Case Study Area 2				
	Index of Heterogeneity	Licensed premises per 1,000 Ha	Licensed premises per 1,000 Pop	Trading hours	Index of Heterogeneity	Licensed premises per 1,000 Ha	Licensed premises per 1,000 Pop	Licensed premises per 1,000 Ha (excluding temporary)	Trading hours
All Crime:									
Per 1,000 Population	-.237	.898**	.878**	.829**	.250	.848**	.733**	.810**	.738**
Per 1,000 Hectares	-.263	.817**	.782**	.730**	.250	.848**	.339	.861**	.339
Violent Crime:									
Per 1,000 Population	-.247	.905**	.887**	.839**	.056	.796**	.792**	.775**	.804**
Per 1,000 Hectares	-.268	.856**	.825**	.773*	.251	.885*	.418*	.882**	.423*
Criminal Damage:									
Per 1,000 Population	-.199	.839**	.823**	.786**	.069	.646**	.608**	.648**	.615**
Per 1,000 Hectares	-.244	.681**	.644**	.606**	.244	.731**	.204	.725**	.212
Drug-related Offences:									
Per 1,000 Population	-.239	.876**	.849**	.776**	.117	.777**	.644**	.776**	.617**
Per 1,000 Hectares	-.235	.825**	.789**	.716**	.233	.867**	.420*	.859**	.378

Regression Analysis

Further analyses were conducted to explore how far specific combinations of licensed premises explained the variations in the different types of crime in Case Study Area 1 and Case Study Area 2 as measured per thousand hectares and as a prevalence rate per thousand population. The method of choice was Stepwise Linear Regression which enables the researcher to identify which combinations of variables (in this case, different types of licensed premise) explain most of the variation in crime rates across the wards within Case Study Area 1 and Case Study Area 2.

The stepwise method looks for the single most predictive variable and then examines each of the remaining variables in order to identify the second most predictive and third most predictive and so on until all of the variables have been considered. In some cases, there may be only one variable accounting for differences in crime across the area; in others there may be three or four which collectively relate to crime. These combinations are not apparent from the correlation analysis.

The stepwise regression analyses suggest that some combinations of licensed premises appear to be associated with specific crime types and not others. This was the case both in Case Study Area 1 and Case study Area 2. The pattern of relationships changed according to whether crime was expressed per thousand population or as a density measure per thousand hectares. The licensed premise data in every case was expressed as a density measure.

A summary of the results from this analysis can be found in Tables Twelve and Thirteen. The most informative findings are summarised here. Starting with the analysis of crime rates based on population, the following patterns emerged:

- In Case Study Area 1, a combination of just two types of licensed premise, namely, takeaways and cafes plus pubs, bars and clubs explained 88% of the variation in the total crime rate. These were the only two variables to explain variations in violent crime and in this case, they accounted for 91% of the variation across the wards in Case Study Area 1.

- In Case Study Area 2, a combination of three types of licensed premise, namely, stores and off-licences, social clubs and pubs, bars and clubs explained 84% of the variation in the total crime rate. A slightly different pattern emerged with violent crime where the strongest predictor was pubs bars and nightclubs (this was in third place with total crime) followed by members and social clubs and hotels and guesthouses.

- The only strong predictor for criminal damage in Case Study Area 1 was takeaways and cafes. In Case Study Area 2, stores and off-licences emerged as the best predictor for criminal damage followed by members and social clubs. Jointly they explained 75% of the variation in criminal damage across Case Study Area 2's wards.

- Finally, for drugs related offences, only pubs bars and night clubs emerged as a strong predictor in Case Study Area 1, accounting for 95% of the variation across the wards in drugs-related offence rates. This is a very strong and significant relationship

- In Case Study Area 2 only stores and off-licences emerged as the best predictor of drugs related offences accounting for 65% of the variation in the borough.

The most common predictor across the piece were pubs, bars and nightclubs appearing five times in the analysis and present in both Case Study Area 1 and Case Study Area 2. Takeaways only predicted variations in crime in Case study Area 1 and stores and off-licences, together with members and social clubs, were only predictors of crime in Case Study Area 2**. Neither restaurants nor other types of licensed premise were strong enough to be predictors of crime in Case Study Area 1 and Case Study Area 2.**

The picture changes somewhat when the density of crime is the dependent variable (Table Thirteen). The results of this analysis were as follows:

- In Case Study Area 1, take aways and cafes emerged as the strongest predictor of total crime density, violent crime density, and criminal damage density explaining 73%, 83% and 46% of the in each offence type, respectively. In common with the analysis of population crime rates, pubs, bars and nightclubs alone accounted for variations in drug-related offences explaining 88% of the variance.

- In Case Study Area 2, store and off-licence density and hotels and guesthouse density were the only two predictors of overall crime density (92% of the variance). Stores and off-licences were also the best predictor for violent crime and criminal damage followed by hotels and guesthouses. Pubs bars and nightclubs were third in line is predictors for violent crime in Case Study Area 2 but did not appear at all as predictors of criminal damage or drugs related offences. The first-time restaurants emerged as a predictor for criminal damage in Case Study Area 2.

Table Twelve: Summary of Stepwise Regression Results using Population Rates

	Case Study Area 1		Case Study Area 2
	Best predictors of Total crime (population rate)		Best predictors of Total crime (population rate)
1	Take aways and cafes	1	Stores and Off-Licences
2	Pubs, bars and nightclubs	2	Members and social clubs
		3	Pubs, bars and nightclubs
	88% of variance explained		84% of variance explained
	Best predictors of violent crime (population rate)		Best predictors of violent crime (population rate)
1	Take aways and cafes	1	Pubs, bars and nightclubs
2	Pubs, bars and nightclubs	2	Members and social clubs
		3	Hotels and guesthouses
	91% of variance explained		87% of variance explained
	Best predictors of criminal damage (population rate)		Best predictors of criminal damage (population rate)
1	Take aways and cafes	1	Stores and off-licences
		2	Members and social clubs
	69% of variance explained		75% of variance explained
	Best predictors of drug offences (population rate)		Best predictors of drugs offences (population rate)
1	Pubs, bars and nightclubs	1	Stores and off-licences
	95% of variance explained		65% of variance explained

Table Thirteen: Summary of Stepwise Regression Results using Hectares (density)

	Case Study Area 1		Case Study Area 2
	Best predictors of Total Crime (Density measure)		Best predictors of Total crime (Density Measure)
1	take aways and cafes	1	Stores and off-licences
		2	Hotels and guesthouses
	73% of variance explained		92% of variance explained
	Best predictors of violent crime (Density Measure)		Best predictors of violent crime (Density Measure)
1	Take aways and cafes	1	Stores and off-licences
		2	Hotels and guesthouses
		3	Pubs bars and nightclubs
	83% of variance explained		93% of variance explained
	Best predictors of criminal damage (Density Measure)		Best predictors of criminal damage (Density Measure)
1	Take aways and cafes	1	Stores and off-licences
		2	Hotels and guesthouses
		3	Restaurants
	46% of variance explained		89% of variance explained
	Best predictors of drug offences (Density Measure)		Best predictors of drugs offences (Density Measure)
1	Pubs, bars and nightclubs	1	All other premises
	88% of variance explained		82% of variance explained

Analysis of Trading Standard Visits, Licensed Premises, and Crime

One of the advantages of creating a single system database for the management of areas with alcohol supply points is it enables the analysis of how policy enforcement relates spatially to the distribution of licensed premises and in turn crime and disorder. Unfortunately this analysis could only be performed in Case Study Two which supplied the necessary data for this. Here, the location of trading standards visits can be compared with the distribution of licenses (by type of premise) and the distribution of crime. Here the unit of analysis was again the census wards.

The results of this analysis are presented in Table Fourteen. This shows a strategic overview by ward level of the total number of visits made by trading standards, and this is also broken down by test purchases (for under age sales of alcohol) and by complaints for U18 sales. These can then be compared with the number of licensed premises (for this analysis pubs and bars and stores and off licenses were selected) across each ward. Additionally, for each ward, comparisons can be made between trading standards visits, the concentration of premises, and levels of crime. In Table Fourteen the distribution by ward is shown for all crimes (violence against the person, criminal damage and drugs) per 1000 premises and violent crime per 1000 premises.

The results show that for certain wards with more trading standards visits these correlate with higher levels of premises and or crime, for example ward 10. However, ward 18 has relatively high levels of violence per bar and club but few visits from trading standards.

This type of analysis allows a strategic overview of the relationship between policy enforcement and the distribution of offences and premises. If additional information were added this could be taken further using more datasets. Furthermore, analysis could be at different units of aggregation, for example high crime areas, or by individual premises identified as problematic.

Table Fourteen: Trading Standards Visits, Alcohol Supply Points and Crime

	All Visits	Alcohol Test Purchase	Complaint - Under 18 alcohol sales	pubs bars and clubs	stores and off-licences	total crimes per thousand premises	violent crime per thousand premises	total crimes per thousand pubs bars and clubs	total crimes per thousand stores and off-licences
Ward 5	33	19	12	17	21	22	8	10	12
Ward 10	26	3	1	72	38	20	9	16	9
Ward 11	24	17	5	22	11	9	3	35	18
Ward 3	22	10	7	12	13	43	18	4	5
Ward 13	19	8	8	15	15	47	17	5	5
Ward 14	18	11	5	22	18	17	6	15	12
Ward 22	18	8	5	26	18	19	8	11	8
Ward 24	13	9	3	9	9	39	16	5	5
Ward 15	12	4	4	15	8	20	8	10	5
Ward 4	10	3	0	12	14	45	17	7	8
Ward 9	10	6	2	13	12	29	9	9	8
Ward 12	10	3	4	17	18	37	15	5	6
Ward 19	10	9	0	15	11	17	6	15	11
Ward 21	10	5	1	23	22	28	10	8	8
Ward 1	9	6	1	4	9	47	14	3	6
Ward 2	9	2	1	22	5	28	12	13	3
Ward 8	9	7	1	12	16	36	13	7	9
Ward 16	9	5	4	12	13	15	4	15	16
Ward 17	8	7	1	22	13	9	3	28	17
Ward 18	8	7	0	25	10	11	3	30	12
Ward 6	6	1	2	28	11	22	9	17	7
Ward 7	6	4	0	24	17	10	4	26	19
Ward 20	3	1	0	15	10	22	7	12	8
Ward 23	3	1	1	16	16	36	12	8	8

Limitations

There are a number of limitations with the current analysis, which go beyond the difficulties experienced in obtaining some of the necessary data for this research. However, some of the key limitations are:

- Police recorded crime figures are known to be subject to under-reporting creating the so-called 'dark figure' of crime, wherein approximately 59% of all crimes are thought to go unrecorded. This figure varies by crime type and Home Office estimates suggest that 65% of 'assaults without injury' and 67% of 'vandalism' cases may go unreported This data is also limited in that it is influenced by changes to the rules governing the recording of data, the systems in place, and operational decisions on the allocation of resources.
- It was anticipated that A&E data and Ambulance data could be used to fill in some of the gaps presented by the under-recording of crime. However, it was not possible to access this data at the required format for the purposes of this research.
- This analysis is focussed on ward level only, and there may be subtle variations in crime hot spots and the locations of licensed premises within wards that are not picked up by this analysis.
- There is no means to account for the different sizes of licensed premises with the data available.
- There is no analysis of crime by time of day, day of week, or even differences between weekend and weekday crime, and its relationship to the opening and trading hours of licensed premises.
- There is no information on licensed premises that distinguishes different licensed premises except by type (for example bar versus restaurant). Fields on permitted activities were obtained for one case study areas, but these were often not completed and the licensing activities were perhaps not conducive to understanding crime and disorder. For example, if a premise can play live music, or show sporting events.
- There is no information on the micro management of premises to distinguish how the design and layout of premises, the training of door supervisors and staff, and how other features may influence crime and disorder inside and just outside licensed premises.

Overall Findings and Discussion: Policy Implications and Future Direction

This report has consisted of three phases, and each phase was carried out with consultation with the PUG.

Phase 1: This identified the current levels of information available for managing areas with alcohol supply points in three case study areas, using semi-structured interviews. It examined how this information is analysed, used, and shared to inform decision making, and identified potential gaps. It also reviewed the literature that examined the influence of alcohol supply point density on crime and disorder.

Phase 2: This outlined the requirements and functionality required for a single database or system that could be used to inform evidence-based decision making for the management of areas with alcohol supply points. It identified core information required, and sought to obtain this information for the three case study areas. It also identified potential obstacles to developing such a system.

Phase 3: This outlined the analysis that could be delivered with the information made available for this research. Unfortunately despite concerted efforts many of the core datasets could not be obtained. Nevertheless, for two of the three case study areas research questions were identified and analysis carried out to pilot the use of such a single database.

This section now discusses the policy implications that have arisen from this research, outlines what limitations exist and what obstacles need to be overcome, and identifies directions for future progress.

Policy Implications

This project has identified that a single system or database for the management of areas with licensed premises (alcohol supply points) would be considered by many stakeholders and potential users as very advantageous. This single database could have particular relevance to implementation of the Licensing Act 2003, local enforcement strategies, the development of cumulative impact policies, and the need for analysis and monitoring of crime and disorder.

The Need for a Single Database/System

Present systems (and partnership working) are fragmented, there are a number of barriers to data sharing (especially of non-aggregated data at the level of individual premise or person), when data is shared it relies on individual relationships between persons from different organisations (and often breaks down when people leave jobs), and aside from regular partnership working meetings data is not shared on a

regular basis nor in a consistent format. There are several reasons for this but major apparently factors are resource issues (time, cost and training), problems with exporting data between proprietary systems that are not designed to export information in a consistent fashion, cultural barriers to sharing information, and concern about data protection and legal barriers to data sharing. However, as outlined in this report, there is a legitimate basis to share information for the purposes of community safety, and, considering the priority of alcohol as a concern for the majority of organisations interviewed, it is suggested that these are not insurmountable barriers.

System Requirements/Functions

The main functions that can be identified for a single system for the management of areas with alcohol supply points are for short-term operations and responses, mid to longer-term strategic policy decision making, and research functions. More specifically, these could be:

- To administer licensing applications
- To identify the nature and type of alcohol related problems
- To monitor individual premises, areas with clusters (high concentrations) of premises, or individuals (this could be persons who are repeatedly causing problems in premises, or licensees who have a history of poor management of premises)
- To compile evidence for hearings, reviews and appeals
- To identify, prioritise and carry out targeted enforcement activity
- To corroborate and share knowledge
- To remove duplication of effort (for example, avoiding dual visits by different agencies)
- Responses can then be led by the agency considered to have most impact, or to be the most relevant to a particular challenge
- For ongoing monitoring of the strategies implemented

In order for such system to be developed, it is crucial that the core data required is supplied at the individual level. On the basis of the research findings from phase 3, it is essential that all information can be related back to a single entity and perhaps the most common entity here is the alcohol supply point. Certainly, if all information is spatially referenced (i.e. given a geographic co-ordinate) and has a time attached to it then all information can be cross referenced by location and time, and indeed proximity to alcohol supply point. This is of high practical value to those faced with managing areas with licensed premises. The core datasets that can be identified for this database are presented below.

Core Information

Geo-referenced licensed premises database
- location, opening and trading hours by day of week, capacity for on premise licenses (**not consistently available**), type of premise (**at present no standard definition exists for this**), and licence conditions.

- At present, licensing data is not currently collected in a consistent format and licensing hours are difficult to monitor, for example, when factoring in the influence of temporary events and fluctuations in the actual closing times of premises which may differ from those permitted on their licence.
- the capacity of on-licensed premises is no longer recorded as part of the standard licensing conditions as had previously been the case for venues holding a Public Entertainment Licence for 'music and dancing'.

Alcohol related crime and disorder data (recorded offences and reported incidents) **that is referenced by location and time**
- from police recorded crime; police incident (calls for service); police intelligence; hospital A&E and ambulance data; trading standards; and other sources as suggested Appendix Four.
- where possible this can be flagged to individual premises but care should be taken not to black list premises to avoid under-reporting. Flags should only be used when compiling evidence for appeals, hearings and reviews of licenses and all offences have been carefully reviewed on an individual basis.

There are a number of additional sources of data. However, with the difficulties in obtaining and sharing the above data consistently it is thought that the above should be prioritised. As violent incidents are known to be subject to under-reporting, it is essential to include supplementary information from hospitals and A&E data to get a better handle on problems occurring locally.

Partners should be identified locally, but are likely to include Local Authority Licensing, all Responsible Authorities, including those who may make representations to licensing authorities (the Police, Fire Service, Health and Safety Agency, Environmental Health Department, Planning Department, and Social Services Department). Additional representation should include health and treatment services, and other interested parties (for example local residents' organisations and businesses).

These assessments of impact need to be performed in a manner that is coherent and systematic, with close attention paid to the detailed examination of trends and patterns occurring within small scale geographically identifiable drinking areas, rather than simply at a broad city, or borough-wide level.

Potential Obstacles

There are many potential obstacles to developing such a system and some of the key issues are highlighted below:
- Despite sharing protocols it can be difficult to share data
- Analysis of different datasets may produce inconsistencies
- Agencies have different objectives and collect data for different purposes
- Pre-analysed data in aggregated form is not always useful to enhance intelligence
- Capacity data is not collected as a requirement of licensing applications

- Not all local authorities will support the development of cumulative impact policies and gathering the necessary evidence to establish this is resource intensive
- There is often heavy reliance on working relationships between particular individuals in partner agencies rather than the establishment of wider and more formal links
- System Cost - who will pay for the system?
- System Design - can existing/corporate systems be adapted?
- System Maintenance - who will maintain information and how? Who will update the system, as input may be required on a daily/weekly basis?
- System Training - specialised training may be required for analysts
- System Security - Any system will need to adhere to the requirements of the Data Protection Act and European EU Personal Data Protection and Privacy Laws.

Research Implications: The Influence of Alcohol Supply Point (type, mix and density)

From the literature review, it was evident that despite a number of research studies that have examined and demonstrated the link between high densities of licensed premises (alcohol supply) and levels of crime and disorder, few have actually examined the influence of the mix (type) and density of this mix on crime and disorder. Although some studies have examined variations in crime by on and off premise licenses, most have focussed on licensed premises as a whole, or on a few individual types or premises (for example pubs and bars, or stores and off licenses).

The analysis for this project examined the spatial concentration of alcohol supply points, trading hours and crime across two case study areas. Some of the key findings were that:
- Alcohol supply points are concentrated spatially (in one case study they were highly concentrated and the density in one ward was found to be 7 households per licensed premise).
- Alcohol supply points and levels of crime in these concentrated drinking areas were disproportionately higher than the residential population of these areas.
- Alcohol supply points and trading hours were more strongly correlated with crime (particularly violent crime) than population density (suggesting that violence per 1000 persons might not be an appropriate measure, and that violence per 100 premises might be more informative for local targeting of prevention activity).
- Higher densities of licensed premises were associated with higher crime rates (this supports the findings of previous studies). Strong correlations were found for violent crime and licensed premises.
- There was no statistically significant correlation between the index of heterogeneity for licensed premises and each of the crime types examined, suggesting that the overall mix of premise types in each ward was not related to crime. However, regression analysis suggested that certain combinations of premises accounted for a large proportion the variation in crime rates across wards (although this varied by study area and crime type)

- The most common predictor of crime types were pubs, bars and nightclubs, particularly for violent crime
- In one area takeaways and cafes also explained the variation in violent crime, whereas in the other areas, stores and off-licences, and social clubs explained more variation of violent crime
- Neither restaurants, supermarkets, nor other types of licensed premise were strong enough to be predictors of crime in either case study area.

Future Recommendations

There are a number of recommendations from this study that can be broken down into recommendations for developing a single database for the management of areas with licensed premises, for improving current data sources, for additional data sources, for enforcement, and for future research.

Future Steps for Developing a Single Database

It is suggested that in order to develop such a system at the local level, the following three stages are necessary:

1. To emphasise and demonstrate the benefits of sharing data to partnership agencies. The information shared should be regular, timely, fit for purpose, accurate, compatible and complete. This may require training of individual staff within organisations about the data they record, why it is recorded and the benefits of doing this.
2. To establish a legal basis for sharing information (information sharing protocols); and to work with partners to ensure that data are transferred and stored securely.
3. To ensure that those interrogating the data/system are appropriately trained, that there is quality assurance of the data, and that the system is designed to be user friendly and flexible.

It should be noted that some of the concerns about such systems existing already, that such a system would add nothing new, and about concern with sharing data are all obstacles that, it is argued, can be classed as cultural. This research has shown that data sharing is possible, that at present, no system exists that can perform all the functionality detailed above, and that perhaps the key limitations at present are those that exist with the actual way that information is currently recorded, and stored, and, moreover, the systems these are captured on. These are generally proprietary software systems that are not set up to export data in a consistent and reliable format. Furthermore, they are not designed in a way that allows interrogation of the data both horizontally and vertically. It is suggested that database design is a critical area for any future development to take place.

Future Steps for Improving Current Data Sources

Licensed premise data should be stored electronically in a system that is easily updateable, retains records of former licenses (for tracking change over time) and

can easily be queried. Key features that should be recorded in a consistent format are:

- To maintain an individual identification number or code for each alcohol supply point (so this can be cross referenced with other data sources)
- To be geo-referenced (geographic co-ordinates matched to local address point or national land property gazetteer; NLPG)
- To hold opening hours and permitted trading hours by time of day and day of week (including daily and weekly trading and opening hours totals)
- To hold information on capacity (for on license premises)
- To hold on information on type of premise (a standard classification should be devised, for example hotel, pub, bar, restaurant, with more specific sub categories of this were needed)
- To hold information on permitted activities and licensing conditions
- To hold information on temporary events
- To contain other information pertinent to licensing legislation
- To have a flag so agencies can highlight this as of interest to their agency (linked to data sets across multiple agencies)

Police recorded crime and incident data should have consistent flags for alcohol related and licensed premise related offences. These need not identify causality but provide a proximate indicator for resource targeting.

There should be exploration into the use of an additional flag for a premise name that should be included (and linked to the name of code from the licensing database) for offences that have been investigated and that the police are satisfied links to a particular premise (for example when gathering information for hearings or review). Some police forces use InnKeeper to generate their intelligence for this, although this system does not lend itself to exporting and sharing information.

At present there are few examples of ambulance and accident and emergency data being routinely shared between agencies at a level that adds value to the analysis currently undertaken (i.e. disaggregated data/raw data). Some examples are found with the TIIG system in the North West, some recent developments in London, and some examples in the North East. However, steps should be taken to develop information sharing between police, local authority licensing, trading standards, and local NHS and PCT systems.

Additional Data Sources

Beyond the information identified as core for this system, there are additional key sources of information not covered in this report. In addition to trading standards activity, there are likely to be a number of local schemes in effect aimed at reducing and tackling alcohol related crime, disorder and harm. Extra police deployment or changes in police shifts, for example, may well have influenced levels of recorded crime, whilst broader national strategies such as the Alcohol Misuse Enforcement Campaign (AMEC), the Tackling Violent Crime Programme (TVCP), and other local initiatives within the early years of the 2003 Licensing Act may well have played some (incalculable) role in influencing crime and disorder outcomes. Educational

programmes may be in force, and there may be a wider range of other prevention schemes in operation. It is important that such information is captured in a consistent, reliable format so that current policy or prevention dosage can be included as part of the informed decision making process. This may even be applied to individual premises already adopting good practice measures for alcohol related crime, disorder and harm prevention.

Future Enforcement

Whilst it is beyond the scope of this report, it is evident that enforcement activity between different agencies is often fragmented. A single database would enable identification of problems, and then prevention schemes to be adopted and led by the agency whose primary function is to tackle this. It would enable police and trading standards to coordinate responses more efficiently, for ambulance and police to share best practice and intelligence, and for hospital A&E departments and the police to work closer to identify problems in their local areas and best responses to these. A recent report (Hadfield and Newton, 2010) highlights some of the key difficulties in enforcement currently, the lack of consistent information available, and difficulties in monitoring and evaluating the success of any prevention measures adopted.

Future Research Questions

There are a number of further research areas that are highlighted by this study.
- Further research is warranted into the spatial relationship between the mix of trading hours, alcohol supply density and mix, and their relationship to crime (in other case study areas and at areas smaller than ward level, for example in the identification and analysis of hot spot areas).
- Analysis should also examine this by time (focussing specifically at small scale areas and investigating the trading times of different types of premises, and the density and mixture of premises trading at these hours, and their relationship with different types of crime at that time of the day.
- Further analysis of micro place management is required (to examine how the management and design of bars influences crime) and how this relates to the mix, density and type of premises in small areas.
- Studies should also incorporate the analysis of key physical infrastructure (for example transport routes and other related land use features).

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Appendix One

The members of the Project User Group whose contribution was invaluable to this project were:

Cathy Burger: Town Centre Manager
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Appendix Two

Literature Review: The influence of premise density of premise density on crime and disorder

This review was conducted using a number of electronic databases such as Swetswise, Web of Science, Science Direct and Google Scholar. Various combinations of search terms were used including alcohol, liquor, availability, outlet, licensed premise, density, crime, violence and disorder. The search was limited to English language papers only. Potentially relevant papers before sourcing complete papers either electronically or in paper format via an inter-library loan service. Articles were excluded if the only dependent variables were alcohol consumption, motor vehicle incidents, partner violence, child neglect or maltreatment, or negative health outcomes such as sexually transmitted infections or liver cirrhosis. A total of 30 studies were deemed appropriate for inclusion. Selected studies were allocated to one of seven categories based on their methodological and analytical techniques

Methodological and analytical features of selected studies

Methodological and analytical features	Number of studies	Studies
Cross-sectional studies across large geographic areas (macro scale)	6	Donnelly et al (2006); Reid, Hughey and Peterson (2003); Weschler et al (2002); Gorman et al (1998); Scribner, Mackinnon and Dwyer (1995); Sitt and Giacopassi (1992)
Cross-sectional studies across small geographic areas (meso or micro level)	6	Theall et al (2009); Speer et al (1998); Roncek and Maier (1991); Gyimah-Brempong (2006); Gyimah-Brempong (2001); Scribner et al (1999)
Cross-sectional studies accounting for spatial autocorrelation	10	Pridemore and Grubesic (unpublished); Roman et al (2008); Britt et al (2005); Gruenewald et al (2006); Zhu, Gorman and Horel (2006); Gorman, Zhu and Horel (2005); Zhu, Gorman and Horel (2004); Lipton and Gruenewald (2002); Gorman et al (2001); Costanza, Bankston and Shihadeh (2001)
Cross-sectional studies using inverse distance weighted measures	1	Branas et al (2009)
Cross-sectional studies examining non-linear relationships	2	Livingston et al (2008a); Gyimah-Brempong and Racine (2006)
Natural experiments	2	Yu, Li and Scribner (2009); Yu et al (2008)

Studies over time	3	Livingston et al (2008b); Gruenewald and Remer (2006); Norstrom (2000)

Research Methodologies

The purpose of this section is to highlight some common methodological features of the research into the density of licensed premises. Studies generally acquired data regarding the number and location of alcohol supply points and incidents of violence and disorder from local licensing authorities and police departments respectively. Exceptions to this were studies which gathered information regarding supply points via telephone interviews (Weschler et al, 2002) and incidents of violence and disorder via telephone interviews (Theall et al, 2009; Weschler et al, 2002), hospital admissions data (Gruenewald and Remer, 2006; Gruenewald et al, 2006; Lipton and Gruenewald, 2002) or national crime surveys (Donnelly et al, 2006). Alcohol supply points and incidents were then assigned to a defined spatial unit, often with the assistance of geocoding software and geographical information systems (GIS).

A few studies used the absolute number of supply points and incidents (Branas et al, 2009; Livingston, 2008b; Weschler et al, 2002; Roncek and Maier, 2001), but most calculated the density of supply points and rates of incidents as a ratio of some other factor. This was typically the size of the local population as indicated by census data. However, two studies determined the density of supply points relative the size of the geographic area (Pridemore and Grubesic, unpublished; Roman et al, 2008), five relative to the number of miles of roadway in the local area (Yu, Li and Scriber, 2009; Yu et al, 2008; Gruenewald et al, 2006; Gruenewald and Remer, 2006; Lipton and Gruenewald; 2002), two relative to both population size and miles of roadway (Theall et al, 2009; Scribner et al, 1999), and one relative to the number of households (Costanza, Bankston and Shihadeh, 2001). One study determined the rate of violence and disorder in relation to the size of the geographic area (Pridemore and Grubesic, unpublished).

Scribner et al (1999, p.310-311) and Pridemore and Grubesic (unpublished, p.12-13) provided a concise summary of the arguments for calculating supply point density relative to population size versus miles of roadway or the size of the geographic area. Nevertheless, two studies have demonstrated that this made little difference to the resulting relationship between supply point density and measures of violence and disorder (Scribner et al, 1999; Theall et al, 2009).

The relationship between the density of alcohol supply points and rates of violence and disorder was consistently assessed via regression analysis that controlled for various population characteristics derived from census data (e.g. age, gender, ethnicity, nationality, home ownership, household income and employment status). Unless otherwise stated, all relationships referred to in this review were positive; as the density of alcohol outlets increased the rate of violence and disorder increased.

Although the literature used varying terminology to classify alcohol supply points these were redefined into three consistent categories for the purpose of this review: on-premise outlets for consumption of alcohol within the establishment (e.g. bars and restaurants); off-premise outlets for consumption outside the establishment (e.g.

supermarkets and off licenses); and general outlets for consumption either on or off the premises (e.g. hotels).

Cross-Sectional Studies across Large Geographic (macro level) Areas

The majority of studies adopted a cross-sectional design whereby the relationship between alcohol supply point density and rates of violence and disorder was assessed using data from a single point in time. A telephone survey of adults from 461 households across America revealed that residents who lived in close proximity to colleges reported a significantly greater number of alcohol supply points and significantly higher levels of noise and disturbance, vandalism, drunkenness, and public vomiting and urination in their neighbourhood than those who did not live nearby colleges (Wechsler et al, 2002). Furthermore, amongst those who lived nearby colleges, there was a significant relationship between the reported number of supply points and levels of disorder.

Donnelly et al (2006) utilised the responses of over 9,300 residents of New South Wales to the National Crime and Safety Survey (NCSS). The only feasible way to relate the data concerning the location of alcohol supply points and survey responses was to use Statistical Local Areas (SLAs). SLAs are geographical areas defined for the purpose of conducting the survey, which resembled the size of a Local Government Area (LGA) or council. Residents who lived in an area of high total alcohol supply point density were more likely to report problems with drunkenness in their neighbourhood than those who lived in areas with low total supply point density. However, there appeared to be no association between total outlet density and reported property damage.

A study of Kansas City revealed a significant association between the density of alcohol supply points and four types of violent crime: criminal homicide; forcible rape; aggravated assault; and robbery (Reid, Hughey and Peterson, 2003). Unfortunately Wechsler et al (2002), Donnelly et al (2006) and Reid, Hughey and Peterson (2003) did not distinguish between individual types of establishments (on-premise, off-premise and general outlets) as research presented elsewhere in this review demonstrated that this mediates the association between alcohol supply point density and rates of violence and disorder (e.g. Livingston, 2008a; Gruenewald and Remer, 2006; Zhu, Gorman and Horel, 2004).

When analysing data from 50 American states, Sitt and Giacopassi (1992) revealed varied relationships between different types of alcohol supply points and different types of alcohol-related offences. There was a positive relationship between the density of on-premise and general outlets and arrests for disorderly conduct but a negative relationship between the same types of outlets and arrests for drunkenness. Although not significant, there was also a negative relationship between off-premise outlet density and drunkenness and disorderly conduct. In the case of negative relationships, as the density of alcohol outlets increased the rate of arrests decreased.

Sitt and Giacopassi's findings suggest that efforts to restrict the number of alcohol supply points in order to reduce the number of alcohol-related offences may be futile; resulting in an increase in some offences but a decrease in others. The researchers

offered two possible explanations for the negative relationships. Firstly, the community's attitudes towards alcohol consumption may impact on the number of alcohol supply points and enforcement policies so that anti-alcohol attitudes may result in fewer supply points and higher arrest rates for alcohol-related offences. Secondly, alcohol consumption in communities with anti-alcohol attitudes and fewer alcohol supply points may stimulate deviant or anti-social drinking behaviours.

A study of 74 cities in Los Angeles County revealed a significant association between the density of alcohol supply points and four types of violent offences: criminal homicide; forcible rape; robbery; and aggravated assault (Scribner, Mackinnon and Dwyer, 1995). The relationship was most pronounced for total supply point density, than off-premise outlet density, and then on-premise outlet density. Although New Jersey employed a slightly different licensing system of on-premise, off-premise and general outlets, an attempt was made to replicate the aforementioned study (Gorman et al, 1998). Analysis revealed no significant relationship between total supply point density or density of individual types of outlets and the same four violent offences across 223 municipalities. The researchers suggested that the inability to replicate the Los Angeles study may have arose due to the two areas differing on a number of factors: the system for classifying outlets; the density of each type of outlet; the rate of violent offences; and population characteristics.

Cross-Sectional Studies across Small Geographic Areas (micro and meso level)

Research based on large geographic areas such as whole states or cities has received criticism for neglecting the possibility that the influence of alcohol supply point density on rates of violence and disorder may vary across smaller subsets of the area (e.g. Zhu, Gorman and Horel, 2004, p.369; Gyimah-Brempong, 2001, p.4). For example, the impact of supply point density on rates of violence and disorder may not be the same in a densely populated urban area as in a sparsely populated rural area (Gyimah-Brempong, 2001, p.4). Gyimah-Brempong (2001, p.4) also highlighted that alcohol supply points tend not to be distributed uniformly across a large geographic area, rather they often cluster in particular localities.

Britt et al (2005) and Speer et al (1998) offered such weaknesses as a potential explanation for the inconsistent findings produced in the previously discussed Los Angeles and New Jersey studies (Scribner, Mackinnon and Dwyer, 1995; Gorman et al, 1998 respectively). Indeed Speer et al (1998) demonstrated that when New Jersey was subdivided into smaller geographic areas known as census tracts (subdivisions of geographic areas used when taking a population census) there was a significant relationship between total alcohol supply point density and violent offences. With the exception of a study conducted by Norstrom (2000), research presented here onwards used smaller geographic units, such as postcodes or census tracts.

Unfortunately the following two studies only examined one type of premise. Roncek and Maier (1991) revealed a significant association between the number of on-premise outlets and four types of violent crime (murder, rape, robbery and aggravated assault) across 4,396 neighbourhood blocks in Cleveland. Roncek and

Maier argued that it was appropriate to use the absolute number of premises and violent incidents rather than calculating the ratio of each to population size because incidents do not necessarily take place on blocks were the individuals concerned reside.

A telephone survey conducted across 217 census tracts in Louisiana revealed a significant association between the density of off-premise outlets and residents' reports of heard, witnessed or personally experienced violence in their local neighbourhood in the past six months (Theall et al, 2009). There was some indication that this relationship was mediated by self-reported alcohol consumption but no specific details were provided.

Although this particular study did not distinguish between different types of alcohol supply points, analysis of 315 census tracts in the city of Detroit revealed a significant relationship between total alcohol supply point density and the rate of 'total crime', violent crime, property crime and homicide (Gyimah-Brempong, 2001). 'Total crime' is an aggregate of the other three types of crime. Subsequent research using the same data revealed that this relationship was more pronounced in low income neighbourhoods than in high income neighbourhoods (Gyimah-Brempong, 2006).

Scribner et al (1999) revealed a significant association between off-premise outlet, but not on-premise outlet or total alcohol supply point density and rates of homicide across 155 census tracts in New Orleans.

Researchers have also pointed out that a number of studies have failed to consider the possibility of spatial auto-correlation or 'spillover effects' whereby there is an association between alcohol supply point density or population characteristics in adjacent geographical areas and rates of violence and disorder in the target area (e.g. Britt et al, 2005, p.413; Zhu, Gorman and Horel, 2004, p.24; Gyimah-Brempong, 2001, p.11). As highlighted by Gyimah-Brempong (2001, p.11) the possibility of 'spillover' is perhaps a greater concern when using data pertaining to small geographic areas rather than large geographic areas; it is probably more likely that an individual will purchase and consume alcohol in one census tract and then become involved in violence and disorder in another census tract than it is across cities.

Returning to the contrasting findings produced in the Los Angeles and New Jersey studies (Scribner, Mackinnon and Dwyer, 1995; Gorman et al, 1998 respectively), Gorman et al (1998, p.97) highlighted that cities in Los Angeles are clustered close together and the possibility for cross-boundary alcohol purchases is greater than in New Jersey where the municipalities are distributed across a larger area, thus introducing potential bias into the Los Angeles study.

All but one study (Gyimah-Brempong and Racine, 2006) presented here onwards tested for 'spillover' effects and where necessary employed analytical techniques that controlled for them. With the exception of Gorman et al (2001) they all revealed a significant association between population characteristics and/or the density of

alcohol supply points in adjacent areas and rates of violence and disorder in the target area.

Although the following two studies did not distinguish between different types of outlet, they did reveal a significant association between total alcohol supply point density and eight types of violent crime (homicide, rape, robbery, aggravated assault, burglary, motor vehicle theft and arson) across 79 neighbourhoods in Minneapolis (Britt et al, 2005) and four types of violent crime (criminal homicide, forcible rape, robbery and aggravated assault) across 98 neighbourhood blocks in New Jersey (Gorman et al, 2001).

A study of 302 neighbourhood blocks in Cincinnati revealed a significant association between total supply point, on-premise and off-premise outlet density and simple and aggravated assault, although the relationship was more pronounced for off-premise than on-premise outlets (Pridemore and Grusebic, unpublished). Contrastingly, Zhu, Gorman and Horel (2004) revealed a significant association between total alcohol supply point density, but not on-premise or off-premise outlets and four types of violent crime: murder; rape; robbery; and aggravated assault across 451 census tracts from two cities in Texas. Also, off-premise outlet but not on-premise outlet or total supply point density was associated with the same four types of crime across 439 census tracts in the city of Houston (Gorman, Zhu and Horel, 2005; Zhu, Gorman and Horel, 2006[1]) and robbery and violent assaults across 278 neighbourhood blocks in Louisiana (Costanza, Bankston and Shihadeh, 2001).

Roman et al (2008) examined the relationship between alcohol supply points calls for service for 'social disorder' and aggravated assault across 431 census blocks in Columbia. Overall, there was a significant association between the density of on-premise and off-premise outlets and social disorder, and a significant association between the density of on-premise but not off-premise outlets and assault. When on-premise outlets were broken down into taverns, restaurants and nightclubs the relationship became more complex: there was a significant relationship between taverns but not nightclubs or restaurants and aggravated assault; and a significant positive relationship between taverns and social disorder but a significant negative relationship between nightclubs and social disorder; and no relationship between restaurants and social disorder. When time of day was taken into account, the density of on-premise outlets was significantly associated with aggravated assault and social disorder during the daytime and night-time at the weekend but not on weeknights. However, there was no significant relationship between off-premise outlets and aggravated assault or social disorder at any of the three time periods.

Lipton and Gruenewald et al (2002) revealed a significant relationship between off-premise outlet and bar density, but not restaurant density and the rate of violent assaults that resulted in at least one overnight hospital stay across 776 zip codes in the state of California. An extension of this study to cover 1637 zip codes in California revealed a significant relationship between off-premise outlet density, but

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[1] These two studies used the same data; the former conducted an ordinary least squares analysis whereas the latter adopted a hierarchal Bayesian model

not total supply point, restaurant or bar density and the rate of hospital stays (Gruenewald et al, 2006). However, when household income was taken into account, it became apparent that bar density was positively associated with the rate of hospital stays in poor areas and negatively associated with the rate of hospital stays in wealthy areas. Once again suggesting that reducing the number of premises licensed to sell alcohol may be counter-productive.

Branas et al (2009, p.909) expressed concerns that the geographical areas used in many studies were designed for some other purpose and may not necessarily correspond to 'lived space' or have 'edge effects' whereby a particular case is located on the boundary of a geographical area and may be more influenced by their neighbouring areas than their own areas. Branas et al opted to use Inverse Distance Weighted (IDW) Measures; continuous geographical areas that do not employ any kind of boundaries; rather each individual alcohol supply point and incident of violence is allocated its own individual geographic area. By using IDW Measures the issue of 'spillover' effects is eliminated.

When applying this technique to the city of Philadelphia, Branas et al (2009) revealed no significant difference in the number of shootings in areas with a high and low number of alcohol supply points overall or on-premise outlets. However, individuals were about twice as likely to be shot and four times as likely to be fatally shot in an area with a high number of off-premise outlets compared to an area with a low number of off-premise outlets. Furthermore, individuals who were heavy drinkers were about nine times as likely to be shot in an area with a high number of off-premise supply point density compared to non-drinkers or light drinkers. As noted by the researchers the off-premise outlets tended to have comparatively lower staffing levels and fewer security measures, and were generally located in more deserted areas.

A few researchers have noted that most studies have only allowed for the possibility of a linear relationship in their analysis: as the density of alcohol supply points varies the rate of violence and disorder varies proportionately (e.g. Livingston, 2008a, p.620; Livingston, Chikritzhs and Room, 2007, p.562). These researchers highlighted the possibility of a non-linear relationship where there may be 'obvious threshold points after which increases in alcohol outlet density lead to marked in increases in associated harms, or saturation points, where any further increases have less or no effect' (Livingston, 2008a, p.620).

Livingston (2008a) attempted to demonstrate this point by examining the relationship between alcohol supply point density and alcohol-related assaults in 217 postcodes in Melbourne. The number of violent assaults recorded by the local police authority between the hours of 8pm and 6am on Friday and Saturday was taken as an indication of alcohol-related assaults. Consistent with previous research, there was a significant linear relationship between the density of general and on-premise outlets (but not off-premise outlets) and alcohol-related assaults. When examining non-linear relationships, it became apparent that up until 30 general outlets there was a steady increase in alcohol-related assaults, but after 30 each additional outlet was associated with a sharp increase in assaults. There was no noticeable non-linear relationship for on-premise or off-premise outlets and assaults.

Using the same data from Gyimah-Brempong's 2001 study, Gyimah-Brempong and Racine (2006)[2] demonstrated that as total alcohol supply point density increased up to ten there was a steady increase in 'total' crime rate, then each additional outlet from 11-25 was associated with a dramatic increase in 'total' crime rate, after which 'total' crime rate stabilised. Due to the relatively small number of individual crime types (violent crime, property crime and homicide) it was difficult to establish whether there was a non-linear relationship with the density of supply points.

Natural Experiments

As identified by Livingston (2008b, p.1074) most studies have examined the association between alcohol supply point density and violence and disorder at a single point in time and have not established what happens when the density of supply points changes. An exception to this is a natural experiment conducted in Los Angeles (Yu et al, 2008; Yu, Li and Scribner 2009[3]). Natural experiments take advantage of naturally occurring phenomenon, in this particular study, the temporary closure of approximately 250 alcohol supply points and permanent closure of approximately 150 supply points in Los Angeles due to damage caused during riots in 1992. Analysis of 480 surrounding census tracts revealed a significant non-linear relationship between the closure of alcohol supply points and decreases in violent assaults. The decrease in assaults was most pronounced after the first year with the effect lasting for approximately five years.

Studies over Time

Livingston, Chikritzhs and Room (2007, p.559) expressed concerns that natural experiments tended to involve a sudden and dramatic change in outlet density, rather than a more gradual change over time that is probably more common within communities. These studies over time explore the association between steady changes in alcohol supply point density and rates of violence and disorder over a long period of time. Furthermore, unlike cross-sectional studies, these studies allow the direction of the relationship to be inferred; alcohol supply point density directly contributes to rates of violence and disorder rather than high crime areas somehow attracting a greater number of supply points (e.g. Britt 2005, p.423; Livingston 2008b, p.1074; Speer et al, 1998, p.314).

A study spanning a six year period revealed a significant association between the density of off-premise outlets and bars and the rate of violent assaults that resulted in at least one overnight stay in hospital across 581 zip codes in the state of California (Gruenewald and Remer, 2006). There was no significant relationship between the total alcohol supply point density or the density restaurants and violent assaults.

Over a nine year period, Livingston (2008b) examined the relationship between the number of alcohol supply points and the number of alcohol-related assaults (assaults between 8pm and 6am on Friday and Saturday) in five postcode clusters in

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[2] Note this study did not account for 'spillover' effects
[3] These two studies used the same data; the former implemented a hierarchical Bayesian model and the latter a hierarchical additive model

Melbourne. Livingston (2008b) opted to use the number rather than the ratio to the population as he identified that there were likely to be notable differences between the resident population and the number of people actually in Melbourne because it is known to receive a lot of visitors for business and leisure purposes. Across all five postcode clusters together, there was a significant association between the total number alcohol supply points (but not the number of on-premise, off-premise and general outlets alone) and alcohol-related assaults. However, there was an interaction between outlet type and postcode cluster: the number of general outlets was significantly related to assaults in the inner city; and the number of off-premise outlets significantly related to assaults in the suburban areas.

A Norwegian study spanning a 35 year period revealed a significant association between the density of on-premise outlets and violent crimes investigated by the police, and an almost significant relationship between on-premise outlets and actual convictions for violent offences (Norstrom, 2000)[4]. Unfortunately Nostrom did not explore the relationship between total alcohol supply point or off-premise outlet density and violent offences.

Limitations

This section aims to highlight the main limitations which seemed to affect a number of the studies. Firstly all of the studies were conducted in specific geographic areas in either America or Australia and the extent to which the findings could be confidently generalised to other locations with varying social norms and legislation concerning alcohol consumption is questionable. Although several studies conducted in England have recognised the importance of 'clustering' of alcohol supply points in particular geographic areas (e.g. Humphreys and Eisner, 2010; Newton and Hirschfield, 2009), there has been no specific exploration of the influence of the density of alcohol supply points on violence and disorder.

Secondly, a few of studies described difficulties in obtaining complete addresses for alcohol supply points and up-to-date information concerning which supply points were currently trading, thus reducing the accuracy with which active outlets could be geographically mapped (e.g. Donnelly et al, 2006, p.3 Scribner, Mackinnon, Dwyer, 1995, p.336)[5]. Furthermore, each study controlled for a range of population characteristics in their analysis but the proximity of alcohol outlets to other potential 'crime attractors' such as convenience stores, bus stops and large intersections was not accounted for (Gorman, Zhu and Horel, 2005, p.12; Zhu, Gorman and Horel, 2004, p.374; Gorman et al, 1998, p.99).

The third limitation relates to the way in which incidents of violence and disorder were measured. All but two studies (Theall et al, 2009; Donnelly et al, 2006; Wechsler et al, 2002) used either police records or data concerning overnight

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[4] This study should be considered in light of the limitations of using large geographical areas
[5] See Hay et al (2009) for an in-depth description of the difficulties in obtaining information concerning alcohol supply points and offences and the impact this has on the accuracy of geographical mapping. Although this study was conducted in New Zealand and caution should be taken before drawing inferences about the quality of other countries' data, the datasets studied were similar in nature to those used in the research cited in this review.

hospital stays. It is well known that not all offences are reported to the police (e.g. Walker et al, 2009, p.5) and presumably some violent incidents do not result in injuries that warrant an overnight stay in hospital. Furthermore only three studies (Livingston, 2008a; Livingston 2008b; Sitt and Giacopassi, 1992) attempted to establish the proportion of offences that were attributable to alcohol consumption, thus it is unknown whether incidents were alcohol-related and it assumes a reasonably equal contribution of alcohol to violent offences across different geographical areas which may not necessarily be the case. One group of researchers highlighted that they had used data pertaining to area of arrest which may not necessarily correspond with where the incident took place (Costanza, Bankston and Shihadeh, 2001, p.76).

Fourthly, most studies used the resident population of the local area to calculate the density of supply points and the rate of violence and disorder. As identified by a few researchers, the number of people residing in an area may vary considerably to the number of people actually in the area, particularly when considering the number of people visiting leisure and entertainment districts in the evening (Livingston, 2008b, p.1076; Britt et al, 2005, p.423; Sitt and Giacopassi, 1992, p.272). Britt et al (2005, p.423) highlighted the need for some kind of night time census of leisure districts.

Finally, most studies classified alcohol supply points in terms of general, on-premise and off-premise outlets, although three studies (Roman et al, 2008; Gruenewald et al; 2006, Gruenewald and Remer, 2006) did divide on-premise outlets into bars, restaurants and nightclubs. To-date no study has examined the influence of further subdivisions of alcohol supply points (e.g. off-licences, supermarkets and hotels). Nor did the studies consider the potential influence of a mixture of different types of premises on violence and disorder; after all it is likely that a range of different types of outlets are located in one geographic area.

Appendix Three

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15th May 2009

Improving Intelligence for Managing Areas with Licensed Premises

Dear Sir/Madam

The Applied Criminology Centre at the University of Huddersfield is conducting innovative research, funded by the Alcohol Education Research Council (AERC), into improving the intelligence available to assist in managing areas with licensed premises. This letter provided some additional information about the project and the nature of the study. Thank you for reading this. I hope you will feel able to take part in the research.

What is the purpose of this study?

Outlets that supply alcohol to the public should be an important part of the evidence base on alcohol-related crime and disorder but very little is known about them at a strategic level (e.g. pan city, county-wide). At present a single, consistent and reliable source of information on the characteristics of licensed premises (for example type of premise, opening hours, capacity, location, and licensing conditions) simply does not exist. As a result, little is known about the relationships between licensed premises (their proximity to each other, the density of establishments) or the areas in which they are concentrated (e.g. the demographics, land use, the physical infrastructure, and transport facilities).

This type of evidence base alongside robust analyses of crime and disorder data is crucial if informed decisions are to be made about the granting and renewal of licensing applications, for targeting crime prevention and harm reduction strategies, and to direct policing and other enforcement strategies.

This one year pilot project, funded by the AERC, aims to create a consistent useable database on alcohol supply points in three case study areas (Liverpool, Blackpool, and Huddersfield). It will demonstrate how such information can be used to support decision-making by licensing authorities and other agencies. An important feature of this research is that it will be guided by key stakeholders and end users, thus the intention is to develop this project through the service needs of its potential customers.

Why have you been chosen?

You are being sent this letter, as your agency has a key role to play in the running of areas with Licensed Premises and in maintaining the safety of participants of Night Time Economy. In each area we are conducting short interviews with representatives from relevant organisations. We would like to find out more about alcohol supply information that is already being used and to gather opinions regarding how the evidence base could be improved, including what additional desirable and essential information is not currently available. We would like to interview you as we feel you have an important role to play in this.

Do I have to take part?
It is completely up to you to decide whether or not to take part. If you do take part, you will be free to end the interview at any point without giving a reason. Deciding to take part, or deciding not to take part, will make no difference at all to you. If you do take part, you will be asked to sign an agreement form at the time of the interview, giving your consent for the interview to take place.

Will your participation in this study be kept confidential?
All the information collected from you will be kept strictly confidential – any information you provide will not be traced back to you. Your agreement form will be kept in a locked cabinet. The audio-tape will be destroyed after it has been typed up and the written transcription of the interview will be completely anonymised (code numbers will be used instead of your name). Additionally, if you wish to go 'on the record' and allow your name to remain in the data, then this is acceptable, although you will need to provide written consent for this.

What will happen to the results of the study?
The results of the study will be published in a report and other academic publications during 2009/2010, subject to approval from the Alcohol Education Research Council. People and organisations who take part in the research will not be identified or identifiable in any way in these publications. You will be able to read about the results in this published research.

Who is organising the research?
I am part of an independent research team carrying out this study, as part of the Applied Criminology Centre, based at the University of Huddersfield. Team members include myself, Professor Alex Hirschfield, Director of the Applied Criminology Centre, and Michelle Rogerson. The interviews will be carried out either myself or Michelle Rogerson.

What is the next step if I agree to take part?
Interviews are being conducted by myself and my colleague Michelle Rogerson. One of us will contact you shortly (if we have not already) to discuss the project and hopefully arrange a convenient time for interview. In the meantime please feel free to contact us if you have any questions about the project.

Yours sincerely,

Dr Andrew Newton.

Agreement to participate

Title of the project: Improving Intelligence for Managing Areas with Licensed Premises

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without my legal rights being affected.

3. I understand that information from the interview will be treated in confidence and that no individual will be identified in research publications.

4. I understand that all direct quotes used in the research publications shall remain anonymous.

5. I understand that if I wish to go 'on the record' and allow my name to remain in the data, then I will provide written consent for this.

6. I agree to take part in the study.

_____
Name   Date   Signature

_____
Researcher   Date   Signature

Confidentiality agreement

STATEMENT OF CONFIDENTIALITY

I, [name   ], undertake to ensure that the use and publication of any material from your interview will be done in such a way as to protect your identity.

Signed...

Date...

AGREEMENT TO THE MATERIAL BEING PUBLISHED

I, ... agree to take part in the research study, Improving Intelligence for Managing Areas with Licensed Premises, undertaken by the Applied Criminology Centre, University of Huddersfield. I agree to material from the interview being used in reports or any other research publications, providing that the statement about confidentiality is honoured.

Signed..

Date...

REQUEST FOR COPY OF THE RESEARCH FINDINGS

I,…………………………………….wish/do not wish (please delete as appropriate) to receive a copy of the research findings. I understand that I may, at any time in the future, request a copy of the research findings from the Applied Criminology Centre, University of Huddersfield.

Signed…………………………………….

Date…………………………………….

Interview Schedule

<u>Contextual Information</u>
1. How many years have you worked in you current role?
2. Please briefly describe some of the main activities/duties in your role (relevant to management of NTE)

Section A: Primary Data (information you collect/record)

<u>Information on Licensed Premises/the Night-Time Economy</u>
(All data/information refers to that which could be usefully used to manage/monitor the NTE)
3. What information about the Night-Time Economy does your organisation collect/record? (in none go to section B)
4. For what purposes is this information collected/recorded?
5. How is this information collected/recorded?
6. What quality assurance/control (if any) of this information is carried out?
7. How is this information stored (paper records/electronic records/secure serves/non secure pc etc)
8. Do you routinely collect/record this information, and if so how regularly? If not is this information collected sporadically/as a response to specific requests/for other purposes?
9. How often is this information updated?
(Please repeat 4 to 9 for each type of information/source of data)

<u>Analysis of Data and Intelligence</u>
10. Do you perform in house analysis of this data/information?
11. Who does this/do they have and specialist skills?
12. Is this data analysed by external experts (if so who, and for what purpose)?
13. Do you analyse this data for a specific purpose? If so what?
14. Do you/your organisation routinely analyse this information, or only for specific purposes? If specific, what?
15. How is the information analysed presented, for what purposes, and to who?

<u>Strategic and Tactical Decision Making</u>
16. What decisions do you/your organisation have to make (about managing NTE)?
17. What drives policy making?
18. How does this vary by strategic (long term) decision making and tactical (short term) decision making
19. How much of a priority are problems of alcohol related crime to your organisation?
20. What external pressures does your organisation face?
21. What (if any) performance indicators influence your decision making?
22. How do you use your in house intelligence/information to inform these decisions?

Access and Information Sharing
  23. With whom do you share your information/intelligence? Is this done on a
      regular basis or as a response to specific requests?
  24. What obstacles exist to sharing data/information?
  25. Is there a cost associated with sharing your data/information?
  26. Is data protection a problem for sharing data/information?
  27. For what other reasons might you not share your data with other
      organisations?

Limitations
  28. What are the main limitations/deficiencies with the information you currently
      hold?
  29. What are your suggestions for improving these?
  30. What are the main obstacles to this?
  31. What other information would you like that would enable you to do your job
      better?

Section B: Secondary Data (Information not collected by your organisation)

Information on Licensed Premises/the Night-Time Economy
  32. Does your organisation receive information on the Night-Time Economy from
      other organisations? (If no go to question 52)
  33. For what purposes is this information obtained?
  34. What quality assurance (if any) of this information is carried out?
  35. Do you routinely collect/record this information, and if so how regularly? If not
      is this information collected sporadically/as a response to specific requests/for
      other purposes?
  36. Is this free or is there a cost associated?

Analysis of Data and Intelligence
  37. In what format is this information supplied?
  38. Do you do any of your own analysis of this data, or just use it in the format it is
      supplied in?
  39. If analyse, who does this/do they have and specialist skills, and for what
      purpose?
  40. How is this information used?

Strategic and Tactical Decision Making (if answered in section A only ask question
47)
  41. What decisions do you/your organisation have to make (about managing
      NTE)?
  42. What drives policy making?
  43. How does this vary by strategic (long term) decision making and tactical (short
      term) decision making
  44. How much of a priority are problems of alcohol related crime to your
      organisation?
  45. What external pressures does your organisation face?
  46. What (if any) performance indicators influence your decision making?

47. How do you use your in this supplied intelligence/information to inform short term and longer term decision making?

Access and Information Sharing
48. What obstacles exist to getting hold of data/information you need
49. Is there a cost associated with getting this data/information/intelligence
50. Is data protection a problem for accessing information?

Limitations of Current Information
51. What are the main limitations/deficiencies with the information you currently receive
52. What are your suggestions for improving these?
53. What are the main obstacles to this?
54. What other information would you like that would enable you to do your job better?

Organisations Interviewed (not necessary to repeat in answered in Section A)
55. We are arranging interviews with the following organisations: Police Licensing; Local Authority Licensing; CDRP/Citysafe; PCT/PHO/A+E; Ambulance Trust; Trading Standards; Local Pubwatch Chair (Licensee); Environmental Services; Town Centre Manager/Planning; CCTV/Fire and Rescue/Public Transport:

   Are there other relevant organisations you feel we should interview for the purposes of   this research?

Other Information
56. Is there any other information you would like to provide that you feel we have not covered in this interview on this topic?

Appendix Four

Sources of Data for Managing Areas with Licensed Premises

Source	Description	Essential / Very Desirable/ Desirable
Licensed Premise Data (Local Authority)	See Table Three	Essential
Recorded Crime Data and Calls for Service (Incident Data) (Police)	See Table Three	Essential
Accident and Emergency Data and Ambulance Data (PCT/NHS/ Public Health Observatories)	See Table Three	Essential
Trading Standards Data (Local Authority?)	See Table Three	Essential
Fire Service	Should hold records on the capacity of licensed premises.	Essential
CCTV incident logs (Police/Local Authority/ Private/Local business)	The logged times and locations of incidents provide indicators of alcohol-related crime and disorder.	Highly Desirable
British Transport Police	Times and locations of crime, especially violent crime and criminal damage. May contain markers or flags such as alcohol-related (these should be used with caution due to inconsistencies in the completion of these fields)	Highly Desirable
Local Public Transport Services	Local bus/train/tram services or Public Transport Executives (PTEs) may collate records of incidents of crime and disorder (which should contain location and temporal indicators). They make reference to alcohol if relevant (but care should be taken with use of subjective flags)	Highly Desirable

Other Police Data (Custody, Police Intelligence, Police National Computer (PNC)	Custody records provide information on an arrestee's condition, including signs of intoxication, although this may introduce a degree of subjectivity based upon police officers' appraisals. Other police data sources such as the PNC and intelligence data may contain information on alcohol-related offences or incidents.	Highly Desirable
Social Services / Care	Assessment files may contain (where relevant and disclosed), information relating to alcohol misuse and either victimisation or offending.	Desirable
Housing Departments	May provide information on homelessness case records (alcohol may be disclosed as being a relevant), may also contain information on domestic violence and its links to alcohol	Desirable
Local authorities/ Police/ Registered Social Landlords (RSLs)	Anti-social Behaviour Orders (ASBOs); Acceptable Behaviour Contracts (ABCs) Information relevant to ASBOs or ABCs may include reference to whether alcohol was recorded as a relevant factor.	Desirable
Local Intelligence (Licensees Forums/ Pub Watch	May contain local sources of information such as the identities of persistent offenders and information on the time and location of incidents	Desirable
Voluntary organisations	For example, Domestic Violence Support and Sexual Assault Referral Centre Case files. These may record whether the victim or perpetrator (according to the victim) was intoxicated at the time of an alleged offence.	Desirable
Consultation/ Surveys/ Local Research Facilities	Commissioned surveys by consultants (eg., the Big Drinks Surveys), CDRP surveys, and commissioned observational studies may contain relevant information on perceptions of alcohol-related crime and disorder in the local area.	Desirable
Other sources	Services which also may hold local information include: Planning; Town Centre Management; Education	Desirable

Appendix Five

Premise Classification 24 Type

wine bar/ bar/ pub/ public house/ inn
gay bar/ strip club/ lap dance club
nightclub
members club
casino/ bingo hall/ amusement arcade
cinema/ theatre
restaurant
fast food/ takeaway
cafe/ coffe shop
hotel/ guest house/ b&b/ hostel
public building
educational institute
performing arts studio/ art gallery/ concert hall
gym/ swimming pool/ health spa/ sports centre/ sports hall/ leisure centre
supermarket
department store/ high street store
convenience store/ off licence/ newsagents/ chemist/ pharmacy/ post office
petrol station/ service station
farm shop/ garden centre/ delicatessen/ health food store
market stall/ market place/ market hall
cash & carry
temporary/ occasional license
other

Premise Classification 8 Type

wine bar/ bar/ pub/ public house/ inn/ gay bar/ strip club/ lap dance club/ nightclub
restaurant
fast food/ takeaway/ cafe/ coffee shop
hotel/ guest house/ b&b/ hostel
supermarket
department store/ high street store/ convenience store/ off licence/ newsagents/ chemist/ pharmacy/ post office
members club
all other premise types

Appendix Six

List of new variables created for the analysis

Variable	Name	Case Study Area 1	Case Study Area 2
V1	all licensed premises by Ward	Yes	Yes
V2	pubs bars and clubs by Ward	Yes	Yes
V3	restaurants by Ward	Yes	Yes
V4	take away some cafes	Yes	Yes
V5	hotels and guesthouses	Yes	Yes
V6	supermarkets	Yes	Yes
V7	stores and off-licenses	Yes	Yes
V8	members clubs	Yes	Yes
V9	all other premises	Yes	Yes
V10	all licensed premises excludes temporary	No	Yes
V11	all licensed premises excludes temporary and no alcohol	No	Yes
V12	all licensed premises with trading hours	Yes	Yes
V13	concentration all licensed premises with trading hours	Yes	Yes
V14	index of heterogeneity all licensed premises	Yes	Yes
V15	index of heterogeneityall licensed premises with trading hours	No	Yes
V16	trading hours per premise	Yes	Yes
V17	premise/hours ratio	Yes	Yes
V18	total population	Yes	Yes
V19	total households	Yes	Yes
V20	Hectares	Yes	Yes
V21	all licensed premises per 1000 population	Yes	Yes
V22	all licensed premises per 1000 households	Yes	Yes
V23	all licensed premises per 1000 hectares	Yes	Yes
V24	all licensed premises excluding temporary per 1000 population	No	Yes
V25	all licensed premises excluding temporary per 1000 households	No	Yes
V26	all licensed premises excluding temporary 1000 ha	No	Yes
V27	all licensed premises per 1000 population excluding temporary and no alcohol	No	Yes
V28	all licensed premises per 1000 households excluding temporary and no alcohol	No	Yes

V29	all licensed premises per 1000 ha excluding temporary and no alcohol	No	Yes
V30	pubs bars and clubs per thousand hectares	Yes	Yes
V31	restaurants per thousand hectares	Yes	Yes
V32	take aways and cafes per thousand hectares	Yes	Yes
V33	hotels and guesthouses per thousand hectares	Yes	Yes
V34	supermarkets per thousand hectares	Yes	Yes
V35	stores and off-licences per thousand hectares	Yes	Yes
V36	members clubs or 1000 ha	Yes	Yes
V37	other premises per thousand hectares	Yes	Yes
V38	total crimes per thousand premises	Yes	Yes
V39	criminal damage per thousand premises	Yes	Yes
V40	violent crime per thousand premises	Yes	Yes
V41	robbery per thousand premises	No	Yes
V42	total crimes per thousand pubs bars and clubs	Yes	Yes
V43	total crimes per thousand restaurants	Yes	Yes
V44	total crimes per thousand take aways and cafes	Yes	Yes
V45	total crimes per thousand hotels and guesthouses	Yes	Yes
V46	total crimes per thousand supermarkets	Yes	Yes
V47	total crimes per thousand stores and off-licenses	Yes	Yes
V48	total crimes per thousand members clubs	Yes	Yes
V49	total crimes per thousand other premises	Yes	Yes
V50	total crimes per thousand hectares	Yes	Yes
V51	criminal damage per thousand hectares	Yes	Yes
V52	violent crime per thousand hectares	Yes	Yes
V53	robbery per thousand hectares	No	Yes
V54	drugs offences per thousand hectares	Yes	Yes
V55	sexual offences per thousand hectares	No	Yes