Liverpool Unintentional Injury Prevention Audit

Final report

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Executive summary

Liverpool has one the highest rates of hospitalised unintentional injury in the region. Injury prevention can therefore play an important role in improving the health of the population and reducing the burden placed on local health and other services. This audit was commissioned by Liverpool Primary Care Trust (PCT) to provide an in-depth understanding of the current situation for injuries across the Trust. It aimed to identify strategies to increase injury intelligence and further develop the prevention efforts being currently implemented across Liverpool. The audit was designed to determine: the availability, accessibility and quality of injury data; the types of injuries that occur and their locations; groups of people most at risk; prevention strategies currently in place across Liverpool PCT; and effective, evidence-based prevention strategies reported in the scientific literature. This was approached using a variety of methods, which included mapping and analysing available datasets, interviews with practitioners, and academic literature searches.

Availability, accessibility and quality of data

Availability of unintentional injury data was good; nine data sources were identified that covered the Liverpool PCT area. Seven of these datasets were accessible within the time frame of the report, and access to one (North West Ambulance Service [NWAS] data) was under discussion at the time of writing. Only one dataset proved more difficult to access (General Medical Practitioner [GMP] data) due to the lack of a central data collection point or provider. The quality and content of available datasets varied considerably. In general, datasets provided limited information on the location and circumstance of unintentional injuries. Although data from Walk in Centres (WICs) / Minor Injury Units (MIUs) was accessible, more exploratory work is needed with this dataset before its use as part of a surveillance system can be assessed.

Unintentional injury levels in Liverpool

Overall, levels of unintentional injuries in Liverpool have increased between 2004 and 2007. However, differences in trends were found by injury type; levels of road traffic accidents (RTAs) and fire-related injuries decreased over the same period. For the majority of injury types, males experienced larger proportions of injury than females. Differences were also found across age groups; higher levels of injury were found among older people for all injuries, falls, and fire-related injuries, while young people were most affected by RTAs, poisonings and sports-related injuries. Those living in the most deprived areas experienced higher rates of unintentional injury than those in more affluent locations. Furthermore, lifestyle groups most affected by injuries were those categorised as Urban Challenge and Multicultural Centres (see Appendix 1), two of the most deprived classifications.

Current unintentional injury prevention initiatives and multi-agency working

This audit highlighted a wide range of prevention strategies currently in place across Liverpool PCT that addressed unintentional injuries in children, road safety, health and safety in the workplace, and injuries in the home (including falls among the elderly). However, these were rarely evaluated. While all agencies were involved in multi-agency work, practitioners highlighted a general lack of awareness of prevention activities implemented by other agencies and concerns about possible duplication of efforts.

Evidence-based injury prevention interventions

The scientific literature contained a large amount of evaluated national and international interventions for injury prevention. For RTAs, the most effective included traffic calming measures, the provision and promotion of bicycle helmets, and multi-component community interventions that combined education with traffic calming measures. For home and community injuries, there was evidence for the effectiveness of improved playground layout to reduce childhood injuries, and exercise and multi-component programmes to prevent falls among older people.

Based on the findings of the audit, we make a number of key recommendations to help further develop unintentional injury prevention in Liverpool PCT.

Key recommendations

1. Establish a multi-agency steering group for unintentional injury prevention

A multi-agency steering group should be set up to ensure that a joined up approach to unintentional injury is implemented, and to enable the sharing of good practice. If required, smaller, specialised steering groups could be set up covering specific injury groups/age groups to improve the effectiveness and functionality of co-ordinated action.

2. Develop an unintentional injury prevention strategy

Based on current data, a prevention strategy should be drawn up by the steering group to help co-ordinate the prevention work being carried out in the PCT. The strategy should set out the roles of the different agencies involved in injury prevention, agreed targets to reduce unintentional injuries, and planned strategies to achieve these goals.

3. Monitor and evaluate prevention initiatives

Agencies should be encouraged to consider evaluation in the initial stages of intervention planning, to ensure thorough evaluations are carried out for all prevention activities. The provision of home safety devices, a commonly utilised intervention throughout Liverpool, should be evaluated in terms of injury reductions.

4. Promote injury prevention initiatives among local agencies

Information on any prevention initiatives that are being (or have been) carried out within Liverpool should be shared with other relevant agencies via the steering group. This will ensure all agencies are aware of current practice and prevent duplication of efforts.

5. Target interventions at high risk groups

Initiatives should be targeted at those individuals most at risk of injury (e.g. deprived populations) to help reduce inequalities in injury burden. Families and communities that rarely come in to contact with local services are a particular target group, since most current prevention initiatives are service based.

6. Develop the consistency and quality of accident and emergency department datasets

Liverpool PCT and the Injury Prevention Steering Group should work closely with the Trauma and Injury Intelligence Group (TIIG) to encourage more comprehensive and consistent data collection across accident and emergency departments (AEDs). Key developments should include the expansion of location information to include places in the home. This could be used to inform the development of prevention initiatives for home settings, including the prevention of falls among the elderly.

7. Assess the feasibility of a central data collection point for GMP data

Work should be carried out to assess the feasibility and usefulness of setting up a central data collection point for GMP data. An audit of the data could determine what is currently collected, what extra information could be collected, whether such data would be useful to agencies, and how data could be accessed.

8. Explore the use of MIU/WIC data further

Further work should explore MIU/WIC data more thoroughly to assess its use as part of a surveillance system.

9. Develop a routine monitoring system

A routine monitoring system should be put into place to enable unintentional injuries to be observed more regularly and thoroughly. Such a system would allow any emerging problems to be identified and addressed quicker and prevention efforts to be evaluated easier. This system could be located within the existing TIIG injury surveillance system.

Injury specific recommendations

1. All unintentional injuries

Prevention initiatives should be developed, implemented and targeted towards high risk groups. These are: males, those aged 65 years and over, residents living in the most deprived areas, and those living in Urban Challenge and Multicultural Centre lifestyle classification areas across Liverpool. In particular interventions should be targeted in the following MSOA areas of Liverpool, E02001370, E02001360, E02001389, E02001369 and E02001374.

2. Road traffic accidents

The steering group should liaise with Merseyside Road Safety Partnership and support local initiatives and road safety strategies where relevant. Interventions should be targeted at children and young drivers living in the most deprived areas of Liverpool, particularly the MSOAs of E02001385, E02001385 and E02001354 Traffic calming and multi-component road safety interventions should be initiated in hotspots contained within Speke, Liverpool City Centre and Kensington.

3. Fire-related injuries

The steering group should liaise with Merseyside Fire and Rescue Service and support local initiatives and fire safety strategies where relevant. Interventions should be targeted at older communities and the most deprived areas of Liverpool, particularly the MSOAs of E02001374, E02001379 and E001360.

4. Fall-related injuries

A comprehensive strategy and plan of action to prevent falls amongst those over 65 years of age should be developed and monitored by the steering group. Interventions implemented should be evidence-based and include, for example, exercise programmes for older people and multi-component programmes to prevent falls. Interventions should be targeted at older communities and the most deprived areas of Liverpool, particularly the MSOAs of E02001360, E02001389, E02001370, E02001369 and E02001368

5. Poisoning

Research should be conducted to understand why females and those aged 15-24 years have the highest rates of hospital admissions for poisoning. Safe-use of prescription and over the counter drugs needs to be promoted particularly in the 15-24 age group and in the most deprived areas of Liverpool, including the MSOAs of E02001370, E02001369, E02001364, E02001374 and E02001389.

6. Sports injury

More investigative work is required to understand the causes of sports injury and its prevention.

7. Childhood injuries

The steering group should liaise with colleagues from Alder Hey AED, children centres and local schools to further understand the causes of childhood injury and support the development of childhood injury prevention initiatives. Interventions should be targeted at the most deprived areas of Liverpool, particularly the MSOAs of E02001390, E02001389, E02001360.

Table A: Summary of injury data by injury type

Injury type	Hospital admissions / mortality data	Other data sources
All unintentional injuries	➢ 31,134 hospital admissions between April 2004 to March 2008 ➢ 459 deaths between 2004 and 2007 ➢ During this time, admissions increased by 9% and deaths by 22% ➢ Just over half of admissions (52%) and deaths (55%) male ➢ People aged 75 years and over were more likely than any other age group to be admitted ➢ The most deprived areas, and those classed as Urban Challenge, had the greatest rates of admissions and deaths	N/A
Road traffic accidents	➢ 2,542 hospital admissions between April 2004 to March 2008 ➢ During this time, admissions decreased by 11% ➢ 67% male ➢ People aged between 5 and 19 years of age were more likely than any other age group to be admitted ➢ The most deprived quintile, and areas classed as Multicultural Centres, had the greatest rates of admissions	***Aintree and the Royal Liverpool AED*** ➢ 13,884 attendances between April 2004 to March 2008 ➢ 58% male ➢ People aged 15 to 24 years of age (30%) were more likely than any other age group to attend these AEDs ➢ 5% admitted to hospital ***STATS 19 data*** ➢ 11,205 casualties between 2004 and 2007 ➢ During this time, casualties decreased by 25% ➢ RTAs involving males were more likely than those involving females to be serious or fatal (14.3% compared with 9.1%) ➢ The severity of injury was most likely to be serious or fatal if they were a pedestrian (26%) or a motor cycle (up to 125cc) rider or driver (30%)
Fire-related injuries	➢ 214 hospital admissions between April 2004 to March 2008 ➢ The most deprived areas had the greatest rates of admissions	***Merseyside Fire and Rescue Service*** ➢ 684 fire-related injuries recorded between April 2004 and March 2008 ➢ During this time, recorded injuries decreased by 46% ➢ 57% male ➢ People aged 50 and above are at the greatest risk of experiencing a fire-related injury ➢ The most common ignition method for fires that resulted in a fire-related injury were a cooker/oven (22%), matches (17%) or smoking materials (14%) ➢ The majority of fire-related injuries were sustained in a fire in a residential dwelling (82%)
Falls	➢ 17,803 hospital admissions between April 2004 to March 2008 ➢ During this time, admissions increased by 12% ➢ 54% female ➢ People aged 75 years and over were more likely than any other age group to be admitted ➢ The most deprived areas, and those classed as Urban Challenge and Senior Neighbourhood, had the greatest rates of admissions	***Aintree and the Royal Liverpool AED*** ➢ 29,036 attendances between April 2004 to March 2008 ➢ 59% female ➢ People aged 65 years and over (42%) were more likely than any other age group to attend these AEDs ➢ 19% admitted to hospital

Injury type	Hospital admissions / mortality data	Other data sources
Poisonings	➢ 3,611 hospital admissions between April 2004 to March 2008 ➢ During this time, admissions increased by 16% ➢ 58% female ➢ People aged between 15 and 24 years (32%) were more likely than any other age group to be admitted ➢ The most deprived areas, and those classed as Multicultural Centres and Urban Challenge, had the greatest rates of admissions	N/A
Drowning	➢ Only nine hospital admissions between April 2004 to March 2008. No further analyses were made	N/A
Sports injuries	➢ 334 hospital admissions between April 2004 to March 2008 ➢ During this time, admissions increased by 45% ➢ Over eight in ten (86%) were male and 39% were aged 10 to 19 years	***Aintree and the Royal Liverpool AED*** ➢ 4,301 attendances between April 2004 to March 2008 ➢ During this time, attendances increased by 43% ➢ 91% male ➢ People aged 15 to 25 years (57%) were more likely than any other age group to attend these AEDs ➢ 31% admitted to hospital
Events of undetermined intent	➢ Only 187 hospital admissions between April 2004 to March 2008. No further analyses were made	N/A
Child injuries (0-17)	***Unintentional or deliberate injuries*** ➢ 7,205 hospital admissions between April 2004 to March 2008 ➢ 62% female ➢ Children aged 10-14 years (31%) were more likely than any other age group to be admitted ➢ The most deprived areas, and those classed as Urban Challenge and Multicultural Centres, had the greatest rates of admissions	***Alder Hey AED*** ➢ Between April 2004 and March 2008, 681 attendances for bites and stings, 680 for accidental-ingestion injuries, 614 for deliberate ingestion, 1,152 for RTAs and 55,926 for accidents grouped as other ➢ Males at higher risk for most injuries, except deliberate injuries ➢ Those aged 10-14 years were most at risk of injuries, with the exception of accidental ingestion injuries (higher risk for those under the age of 5)
Injuries in the workplace	N/A	***RIDDOR*** ➢ 5,969 injuries recorded between April 2004 to March 2008 ➢ 68% male ➢ Employees injured were mainly aged between 35 and 49 years (43%) ➢ The majority of injuries were over-3-day injuries, and only a very small proportion was fatal ➢ The majority of injuries were caused by slips, trip or fall (29%)

1. Introduction

The World Health Organization defines injury as: the physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance – or else the result of a lack of one or more vital elements, such as oxygen (Peden et al., 2008). Injuries can be unintentional (e.g. falls, burns) or intentional (e.g. assault). Whilst both place huge burdens on the public's health the focus of this audit is on unintentional injury. Throughout the report the term unintentional injury is used rather than accidents, as the latter implies that incidents are inevitable and unavoidable, however many incidents can be prevented.

Unintentional injury places a huge burden on individuals and their families, local health and other public services, and the wider community. In 2007 it was estimated that there were 11,809 deaths due to unintentional injury in England and Wales (ONS, 2008). However fatal unintentional injuries are just the tip of the iceberg - in England alone in 2006/2007 there were over 600,000 hospital admissions for unintentional injuries (HES, 2009); many more will have resulted in healthcare treatment via general practitioners, walk-in-centres, and accident and emergency departments (AEDs), for example. In addition to initial health treatment, follow-up care is often required, while for patients injuries can lead to long-term disability, especially in the elderly, that not only affects physical health but also mental health and social functioning (e.g. employment, mobility).

The elderly are just one group that are at a greater risk of having an unintentional injury. Children, particularly boys or those with low socio-economic status, are also at greater risk (Towner et al., 2005). At-risk groups vary depending on the type of unintentional injury. For instance sports injuries are more common in males, whilst falls predominantly affect the over 75s (Lyons et al., 2003; Towner et al., 2005). Risk is also related to deprivation status with those living in the most deprived areas being at greatest risk (Lyons et al., 2003).

Impacts on business and education include lost days at work or school. Further effects may be experienced by family and friends who may have to care for the injured individual. In more severe cases, lasting disability caused through being injured requires long-term care (Department of Health, 2002). In the UK, it is estimated that disability from injury is responsible for a considerably greater burden of potential healthy life-years lost than from cancer, or heart disease and stroke (BMA, 2001). Furthermore, these lost healthy life-years primarily relate to people of working age (BMA, 2001).

Costs are also placed on public services and society. Whilst a national total for the cost of unintentional injury is not available, a number of sources highlight the magnitude of the problem. For example, in 2000/01 the costs to the National Health Service as a result of all injuries (including intentional) were estimated to be £2.2 billion (Department of Health, 2002). One study has estimated that falls occurring in the over 60s cost the UK Government £1 billion annually, including cost to health and social services (Scuffham et al., 2003).

The situation in Liverpool

Liverpool is one of the most deprived areas in the North West of England and also has the highest rate of hospitalised unintentional injury incidence in the region (NWPHO, 2009). Thus preventing unintentional injury is critical in improving the public's health and reducing the burden placed on local health and other services. Consequently, Liverpool Primary Care Trust (PCT) has set the following target in relation to unintentional injury prevention:

'By 2011, to reduce deaths from accidents by 20% in under 75s, compared to 2004'

A range of other targets have been set locally and nationally to reduce unintentional injury including, for example, to reduce hospital attendances. However, to effectively prevent unintentional injury, local agencies need to be aware of the types of injuries occurring in their communities and the

impact these place on public services, in order to allow them to develop appropriate interventions. Furthermore, key at-risk groups and communities need to be identified to ensure resources are targeted at those most at risk. Thus, Liverpool PCT has commissioned the Centre for Public Health at Liverpool John Moores University (LJMU) to conduct an unintentional injury audit for the Liverpool area. This audit provides valuable information for local policy makers and practitioners in employing and developing local strategies and prevention initiatives to tackle unintentional injury in the optimal manner.

2. Audit aims and objectives

Aim: To carry out an audit on incidence and demography of unintentional injury in Liverpool in order to inform injury prevention initiatives.

Objectives:

- To investigate the availability and accessibility of unintentional injury data in Liverpool;
- To understand the extent, nature and location of unintentional injuries occurring in Liverpool;
- To explore the demographic profile of those experiencing unintentional injury to identify at-risk groups and communities and associated impacts on health inequalities;
- To explore the outcomes of unintentional injury, looking specifically at long-term care and disability;
- To investigate unintentional injury prevention strategies that are currently in place;
- To review national and international research on interventions and policy to prevent unintentional injury in at risk-groups; and,
- To develop and enhance the sharing of unintentional injury data between Liverpool PCT and local agencies.

3. Methods

The methods that have been used for the audit have been divided into two individual stages, which are discussed below.

a) Mapping and data capture

Secondary data collection and analysis

The Centre for Public Health, LJMU, hosts the Trauma and Injury Intelligence Group (TIIG) and the North West Public Health Observatory (NWPHO), offering access to a range of unintentional injury data sources. The Merseyside TIIG injury surveillance system holds injury data for the Royal Liverpool, Aintree and Alder Hey AEDs and Merseyside Fire and Rescue Service (MFRS). The NWPHO holds a range of national and regional data sources, including Hospital Episode Statistics (HES), mortality data and geodemographic data for population profiling. Data for Liverpool from all these sources have been accessed for the audit, with a specific focus on:

- Road traffic accidents (RTAs);
- Fire-related injuries;
- Sports injuries;
- Drowning;
- Falls; and,
- Events of undetermined intent.

In addition, data from Walk in Centres (WICs) and Minor Injury Units (MIUs) has been gathered from Liverpool PCT; STATS 19 data (police recorded road traffic accidents) through the UK Data Archive; and Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) from the Health and Safety Executive. Where possible, data has been extracted back to 2004 to permit trends in unintentional injuries to be identified; particularly regarding Liverpool's key target areas (e.g. reduce deaths from accidents by 20% by 2011).

Interviews with practitioners

Semi-structured interviews were conducted with practitioners working throughout Liverpool who have a role in preventing unintentional injury or providing care or support for injured people. These include practitioners from: Liverpool PCT (Older Peoples Preventative Services); MFRS (Community Fire Safety Manager); Liverpool City Council (Children's Centre Co-ordinator, Environmental Health Officers [Commercial and Healthy Homes Programme]), Health at Work and a local children's hospital (Health Promotion). These interviews cover: practitioners' and their agencies' role in unintentional injury prevention; their views on the burden of unintentional injury in Liverpool; current and past unintentional injury prevention initiatives and their perceived and measured effectiveness; gaps in services; and recommendations for improvements in unintentional injury prevention in Liverpool. Where possible, information on local unintentional injury data sources and their accessibility was gathered, along with key contacts.

Data analysis

Hospital Episodes Statistics (HES) data

HES admission data for residents of Liverpool Local Authority were extracted for the last four available years (April 2004 to March 2008) and were collected individually using the external cause[1], ICD10 (International Classification of Diseases) codes V01-Y34. The extract included patient area of residence at the Lower Super Output Area[2] (LSOA) level. LSOA population data were downloaded from National Statistics online for calendar years 2004 to 2007 for use as a dominator for unintentional injury rates. For each LSOA a deprivation measure was added using the Index of Multiple Deprivation (IMD) 2007 (Box 1) to calculate an IMD quintile rank for each LSOA within Liverpool Local Authority area. In addition the geodemographic ecological classification People and Places 2 (P^2) (Beacon Dodsworth Ltd, 2005) was also used to identify what types of communities are at risk of unintentional injury (Box 1). Pooled data 2004/05 to 2007/08 was used to calculate directly standardised rates for each viable unintentional injury group at Middle Super Output Area[3] (MSOA) using the European Standard Population. Directly standardised rates for MSOA of residence within Liverpool Local Authority were mapped using the Arc View geomapping programme.

Box 1: Index of Multiple Deprivation and P^2 geodemographic classifications

The Index of Multiple Deprivation (IMD) 2007 provides a composite multiple deprivation score for LSOAs developed from seven distinct domains: health deprivations and disability; employment; income; education, skills and training; living environment; and barriers to housing and services.

P^2 uses Census information to cluster together local areas (using LSOA data) where resident populations have very similar characteristics. There are 14 classifications in total based on socio-economics (see Appendix 1 for definitions). Throughout the report, these classifications have been ordered according to their poverty index, where Mature Oaks are the most affluent classification and Urban Challenge the poorest.

[1] Episodes grouped according to secondary diagnosis codes that describe causes of morbidity. www.hesonline.nhs.uk
[2] Lower Super Output Areas are geographical areas set after the 2001 census, covering an average population of 1500.
[3] Middle Super Output Areas are geographical areas set after the 2001 census, covering an average population of 7200.

Accident and emergency department (AED) data
Alder Hey Children's Hospital data accessible through TIIG was used for analysis of unintentional injuries in children aged 0 to 17 years of age for the period April 2004 to March 2008. Pooled data 2004/05 to 2007/08 were used to calculate crude rates per 100,000 for different injury types for MSOAs of residence within Liverpool Local Authority. The Royal Liverpool Hospital and University Hospital Aintree AED data was accessed through TIIG for the period April 2004 to March 2008. Data from the two AEDs were combined for the following injury groups: RTAs; sports injuries; and falls. These were the only injury groups that could be matched between the datasets. Pooled data 2004/05 to 2007/08 for each AED were used to calculate crude rates per 100,000 for different injury types for MSOA of residence within Liverpool Local Authority. All AED data were mapped using the Arc View geomapping programme.

Public Health Mortality Dataset
Mortality data for residents of Liverpool Local Authority were extracted for the last four available calendar years (2004 to 2007) and were collected individually using the original underlying cause of death, ICD10 codes V01-Y34. The extract included patient area of residence at the LSOA level. Crude rates were calculated for each IMD quintile rank and P^2 classification. Directly standardised rates could not be calculated for each MSOA due to low numbers.

STATS 19
STATS 19 data for RTAs occurring in Liverpool Local Authority were extracted for the last four available calendar years (2004 to 2007). Casualty data for accidents were then used for demographic and accident locations (e.g. public crossing / easting and northing location) analysis.

Merseyside Fire and Rescue Service
MFRS data for recorded fire-related injuries occurring in Liverpool Local Authority were accessed through TIIG for the period April 2004 to March 2008. Pooled data 2004/05 to 2007/08 were used to calculate crude rates per 100,000 for MSOA. These were then mapped.

RIDDOR
RIDDOR data covers major injuries and injuries resulting in three day absence occurring within a commercial workplace. Data on incidents occurring within workplaces located in Liverpool Local Authority area during April 2004 to March 2008 were analysed.

Minor Injury Unit / Walk in Centre data
Data from the four MIU/WICs in Liverpool were provided by Liverpool PCT for the purposes of this audit. A total of 126,866 visits were recorded by the centres over a one year period (2007/08). However, data provided did not include information on type of injury or injury cause. It was not possible within the audit time scales to further explore how many of the centre attendances were unintentional injury. For this reason, MIU/WIC data was not included in the analyses.

b) Literature search

To identify effective unintentional injury prevention strategies, a search of international, national and local literature has been conducted using academic databases such as Pubmed, Web of Knowledge, Medline and Academic Search Premier, alongside grey literature sources.

Ethical practice
Ethical approval for all elements of the project was obtained from Liverpool John Moores University Research Ethics Committee.

4. Report findings

This section includes: the assessment of unintentional injury data availability, accessibility and data quality and findings from analysis of the STATS 19, MFRS, Public Health Mortality Dataset, AED, RIDDOR, MIU/WIC and HES datasets. Information gathered from practitioner interviews is also included covering; current and past prevention strategies, targets, multi-agency working, barriers to unintentional injury prevention and areas for improvement. The completed review of national and international research on interventions and policy to prevent unintentional injury in at-risk groups is also provided.

4.1 Availability, accessibility and quality of unintentional injury data in Liverpool

In order for agencies in Liverpool to implement unintentional injury prevention campaigns access is needed to good quality data on the demography, underlying causes and location of unintentional injury. Such data are crucial in developing and targeting injury prevention initiatives and assessing their effectiveness. A key part of this audit is to assess the types of injury data sources available across Liverpool and their accessibility. Key data sources identified include: local AEDs; HES; North West Ambulance Service (NWAS); STATS 19; MFRS; Public Health Mortality Dataset; WIC/MIUs; General Medical Practitioner (GMP) datasets; and (RIDDOR) data (see Table 1).

Of these data sources, access was secured for AED and MFRS data from the TIIG, and HES and mortality data through the NWPHO. STATS 19 data were downloaded from the UK Data Achieve website, RIDDOR data was secured through a freedom of information request from the Heath and Safety Executive, and WIC/MIU was made available by an independent request to Liverpool PCT.

Through discussions with local injury prevention practitioners, it was highlighted that GMP data are difficult to access on a Liverpool-wide basis due to the lack of a central data collection point/provider. This was confirmed through contact with Liverpool PCT IMT (Information Management and Technology) team, who confirmed that an independent data request for GMP data could take up to six months. Furthermore, they noted that as codes used to record injuries may differ between GP practices (meaning they are not comparable), and that whilst injury type may be recorded, the recording of injury cause is less likely. Thus, to ensure this audit can be completed in the required timescales, such data will not be sought.

A data request was sent to the NWAS to access their data via the TIIG. TIIG previously had access to ambulance data for Cheshire and Merseyside. However due to the ambulance services amalgamation into a North West service new data sharing agreements are required. This matter is currently being discussed but was not resolved at the time of writing.

Data quality

Each of the datasets collected so far have been assessed for their quality and detail. Through this assessment it is evident that the quality and type of data collected by different partners varies considerably, even sometimes within the same type of dataset. For example, there are differences in the type of data collected in AEDs. Royal Liverpool AED collect data for injury categories including falls and sports injuries, yet these categories are not collected at Alder Hey Children's Hospital AED, making it impossible to combine AED datasets without losing some specific injury data. It is not only the injury group that varies between the AEDs but almost all data fields vary in some format. AED data allow identification of the type of injury (e.g. a fracture) using diagnosis codes and initial complaint data collected at reception; however, there is often limited information on the cause of injury. These types of problems were highlighted by interviewees, who stressed that limited data availability has hindered action on injury prevention in Liverpool (e.g. for falls) and limited the ability to develop an evidence base for prevention campaigns, with some based on anecdotal evidence only. In contrast, good quality data are available from a number of datasets for specific injury groups such

as RTAs. All AEDs have an injury grouping for RTA, the STATS 19 dataset covers all RTAs attended by the police, and MFRS also collects RTA data.

Table 1: Unintentional injury data sources accessed for the audit

Data type	Description	Source / lead agency	Accessible
Accident and emergency department attendances	AED attendance data collected within the department, relating to patient demography and arrival method, injury group, and discharge. April 2004 to March 2008	Trauma and Injury Intelligence Group, LJMU	Yes – aggregated data available to all local agencies www.tiig.info
Hospital Episodes Statistics	Admissions to hospital: ICD10 coded data; external causes code is used to identify unintentional injuries. Includes demographic and discharge information. April 2004 to March 2008	North West Public Health Observatory, LJMU	Yes – aggregated data available to all local agencies www.nwpho.org.uk
Public Health Mortality Dataset	Database containing information about deaths within different health authority boundaries. January 2004 to December 2007	North West Public Health Observatory, LJMU	Yes – aggregated data available to all local agencies www.nwpho.org.uk
Merseyside Fire and Rescue Service	Recorded fire-related injuries by type. Covers demography, incident location, type of dwelling, and ignition cause. April 2004 to March 2008	Trauma and Injury Intelligence Group, LJMU / Merseyside Fire and Rescue Service	Yes – aggregated data available to all local agencies www.tiig.info
STATS 19	Data on RTAs recorded by the police. Including accident, casualty and vehicle information. January 2004 to December 2007	UK Data Archive	Yes – raw data downloadable through the UK Data Archive http://www.data-archive.ac.uk/
RIDDOR	Data on reported injuries occurring in the workplace. Includes some demographics, injury type and industry type. April 2004 to March 2008	Health and Safety Executive	Yes – data accessible through independent request under FOI[4] https://www.hse.gov.uk/forms/foi/index.htm
Walk in Centre / Minor Injury Unit data	Data on treatment given to patients attending the centres. Includes age, sex and location of residence. April 2004 to March 2008	Liverpool PCT	Yes – data accessible through independent request to Liverpool PCT

With the exception of STATS 19, datasets provide very little information on the location and circumstance of unintentional injury. For instance, within the HES and mortality datasets, injury location is identified through the 4th digit of ICD10 codes. However, upon assessment of this data, analyses show that over half are classified as an unspecified place. Thus, such data have not been used for the purposes of this audit as it is likely to provide an inaccurate picture of the location of incidents requiring hospital treatment or leading to death. Similarly the quality and consistency of collection of ethnicity data in all datasets is variable, therefore it was decided ethnicity data would not be included in the audit.

The Healthy Homes Programme has had similar problems when using AED data to identify the location of unintentional injuries within the home because none of the AEDs covering Liverpool Local Authority collect this level of detail. Conversely, Arrowe Park AED department located on the Wirral do collect these data (e.g home, living room), which has allowed Wirral PCT and Sure Start

[4] FOI – Freedom of Information

to use data provided by TIIG to target unintentional injury prevention to specific locations within the home. Interviewees also felt there was an issue with underreporting for certain injuries, for instance those occurring in the work place.

"The hospitals need to set in motion for certain information to be gathered as people come into hospitals, because many things are not being recorded and that's where the gap is" Healthy Homes Programme

"When it comes to the true picture about where, when, how and why older people fall we do not have that information" Liverpool PCT

"We need more knowledge around what the cause of accidents are and how we can respond to them more effectively" Children's Centre

4.2. Past and current data sharing agreements across Liverpool

Merseyside is served by the TIIG which has developed an injury surveillance system (ISS) for the routine collection of intentional and unintentional injury data from a range of agencies, specifically AEDs, the fire and rescue service, ambulance services and other local injury data sources. TIIG have signed data sharing protocols with data providers allowing TIIG access to raw, yet depersonalised, injury data. These agreements allow TIIG to share such data in an aggregated form to local agencies, and this provides a central location for agencies to access injury data. TIIG promotes the use of data provided through the ISS amongst local agencies by publishing and distributing monthly reports, along with a range of themed reports. There is also a data request form that agencies can use for accessing more specific information (www.tiig.info).

The NWPHO holds 10-year datasets of hospital episodes, mortality and birth statistics data. Using a range of geographic and geodemographic data they produce local area health profiles which look at regional and national indicators to help monitor local trends and health inequalities. They also produce regular synthesis reports and their online data tools allow local agencies to access data in an easy and flexible way (www.nwpho.org.uk).

Interviews with service providers identified a number of good examples of data sharing especially between social services and the MFRS, and the local children's hospital and Children's Centres. This has allowed the MFRS to identify individuals and householders at risk of injury, especially in deprived areas, so they can receive home visits and safety checks. Children's Centres have used local children's hospital data so they can monitor national targets relating to childhood injuries. The Commercial Unit of Liverpool City Council works closely with the Health and Safety Executive using both RIDDOR and the Labour Force Survey, to help identify businesses that pose a high risk for work-related injuries and monitor trends.

4.3 Unintentional injuries in Liverpool

This section provides information from the datasets accessed and analysed. Findings are grouped by the unintentional injury types: all unintentional injuries: RTAs; fire-related injuries; falls; poisonings; drowning; and sports injuries. Three extra groupings were also decided upon and have been included in this section: injuries to children aged 0 – 17 years of age; work place injuries; and events of undetermined intent. Trend and demographic analysis has been carried out for each dataset. Data are provided either for residents of Liverpool Local Authority area or incidents occurring within the area, depending upon the dataset. Throughout this section analyses are presented at MSOA level. Ward[5] level analyses are available in the appendices. Additional detail on age and gender are also available in the appendices.

[5] Census Area Statistics Wards (2001) have been used in the analyses.

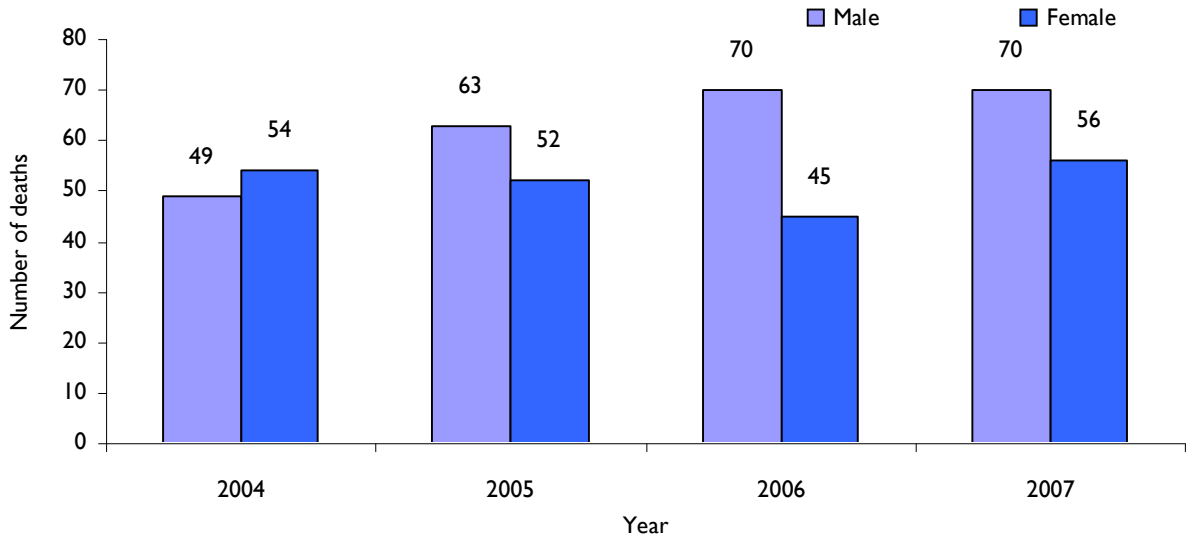
4.3.1 All unintentional injuries (ICD10 Codes V01 to X59)

This section contains mortality data from the Public Health Mortality Dataset January 2004 to December 2007 and HES data from April 2004 to March 2008. All unintentional injury data have been extracted from these datasets using ICD10 codes V01 to X59.

Public Health Mortality Dataset

Between 2004 and 2007 there were 459 deaths caused by unintentional injury in Liverpool Local Authority. The number of deaths has been increasing on a yearly basis, resulting in an increase of 22%[6] over this period (Figure 1). As Figure 1 shows the majority of deaths caused by unintentional injury occurred in males (55%). Nearly two thirds (65%) of females who died were over 75 years of age compared to 32% of males.

Figure 1: Number of deaths caused by unintentional injury for residents of Liverpool Local Authority, by gender and year, 2004 to 2007 combined



A relationship was found between the Index of Multiple Deprivation and rate of deaths for unintentional injury by Liverpool Local Authority residents. The most deprived quintile (quintile 5) had the greatest rate of deaths (33.10 per 100,000) (Table 2). People and Places geodemographic classifications have been used to understand what type of individuals are worst affected by unintentional injuries (Table 3). LSOAs categorised as Urban Challenge within Liverpool Local Authority have the greatest rate of deaths for unintentional injury (40.22 per 100,000).

Table 2: Mortality crude rate for unintentional injury per 100,000 population, Liverpool Local Authority residents only, by residential quintile of multiple deprivation, 2004 to 2007 combined

Crude rates/100,000 and 95% confidence intervals (CI)	Index of Multiple Deprivation quintile					
	1 (Least)	2	3	4	5 (Most)	All
Rates	15.31	20.76	30.17	33.06	33.10	26.29
Lower CI	11.56	16.27	24.67	27.27	27.23	23.94
Upper CI	19.88	26.10	36.52	39.72	39.86	28.81

[6] Throughout this report figures have been rounded to the nearest whole number, thus totals may not add up to 100%.

Table 3: Mortality crude rate for unintentional injury per 100,000 population, Liverpool Local Authority residents only, by People and Places geodemographic classification, 2004 to 2007 combined

People and Places geodemographic classifications: Tree classification	Crude rate/100,000 and 95% confidence intervals (CI)		
	Rate	Lower CI	Upper CI
Mature Oak	16.23	6.99	31.99
Blossoming Families	16.36	7.05	32.25
Country Orchards*	N/A	N/A	N/A
Rooted Households	10.70	5.84	17.95
Senior Neighbourhoods	30.87	17.63	50.14
Qualified Metropolitans**	N/A	N/A	N/A
Suburban Stability	20.02	13.60	28.42
New Starters	25.47	18.28	34.56
Urban Producers	28.31	21.38	36.76
Weathered Communities	28.49	22.49	35.61
Multicultural Centres	30.98	16.92	51.99
Disadvantaged Households	20.87	16.07	26.65
Urban Challenge	40.22	33.60	47.75

*There are no Country Orchard LSOAs in Liverpool Local Authority

**There were no mortalities for Qualified Metropolitans in Liverpool Local Authority, 2004 to 2007

Hospital Episode Statistics

During the period April 2004 to March 2008 there were 31,134 hospital admissions[7] for unintentional injuries, by residents of Liverpool Local Authority. HES data show an increase in hospital admissions from 7,376 in 2004/2005 to 8,033 in 2007/2008; an increase of 9%. As Figure 2 shows, there was only a small difference in the gender (Male=52%) of hospital admissions for unintentional injury. People aged 75 years and above (25%) were more likely than any other age group to be admitted to hospital due to an unintentional injury.

Table 4 shows the directly standardised rates per 100,000 population for hospital admissions for unintentional injury by residents of Liverpool Local Authority, by MSOA. The MSOA of E02001370, covering the area around Breckfield Road South, had the highest rate of hospital admissions for unintentional injury, at 2,661.29 per 100,000 population. This was followed by the MSOA E02001360, covering the Kirkdale area, at 2,553.64 per 100,000 population (see Figure 3).

Analysis of the relationship between Index of Multiple Deprivation and hospital admissions for unintentional injury by Liverpool Local Authority residents found a positive correlation with quintile of deprivation. The most deprived quintile (quintile 5) had the greatest rate of hospital admissions (2,405.67 per 100,000) (Table 5). LSOAs categorised as Urban Challenge within Liverpool Local Authority have the greatest rate of hospital admissions (2,360.01 per 100,000) for unintentional injury (Table 6).

[7] Admissions are not the number of people admitted because a person could be admitted more than once.

Figure 2: Number of hospital admissions for unintentional injuries, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

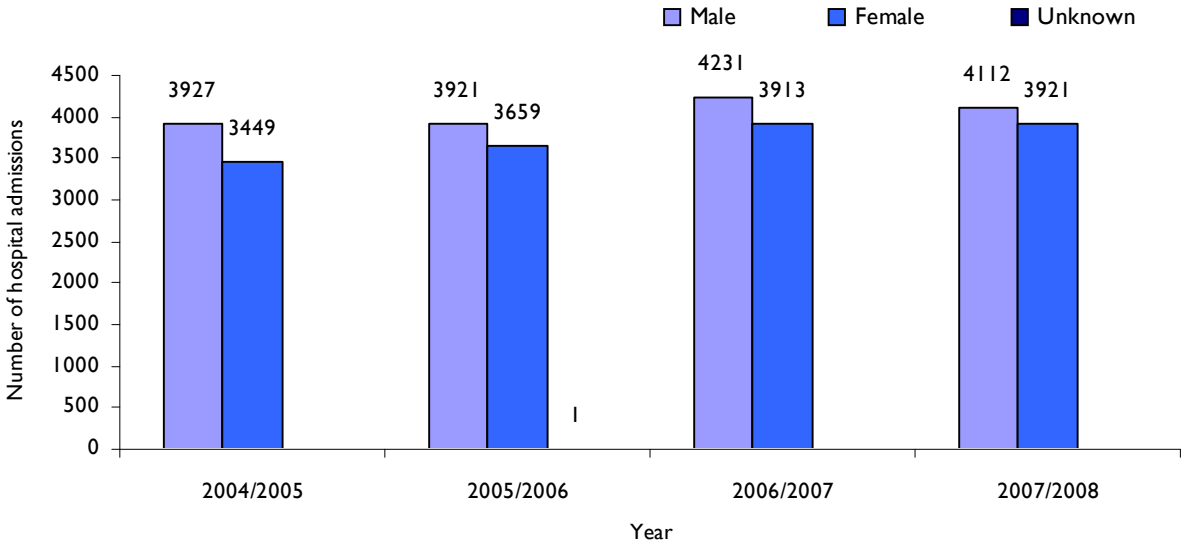


Table 4: Top five Middle Super Output Areas for unintentional injury hospital admissions, Liverpool Local Authority residents only, directly standardised rate per 100,000 population, 2004/05 to 2007/08 combined

MSOA code	General location	N	Directly standardised rate/100,000 (-+ 95% confidence intervals)
E02001370	Breckfield Road South area	672	2661.29 (2449.61 - 2872.98)
E02001360	Kirkdale	809	2553.64 (2376.79 - 2730.50)
E02001389	Princes Park	596	2532.57 (2313.87 - 2751.28)
E02001369	Everton, Shaw Street area	575	2427.87 (2222.72 - 2633.03)
E02001374	Fairfield Wavertree	710	2312.34 (2140.98 - 2483.69)

Table 5: Crude rate per 100,000 population for unintentional injury hospital admissions, Liverpool Local Authority residents only, by residential quintile of multiple deprivation, 2004/05 to 2007/08 combined

Crude rate/100,000 and 95% confidence intervals (CI)	Index of Multiple Deprivation quintile					
	1 (Least)	2	3	4	5 (Most)	All
Rate	1200.98	1501.22	1758.19	2109.21	2405.67	1783.37
Lower CI	1165.73	1460.99	1714.41	2061.01	2353.45	1763.61
Upper CI	1237.02	1542.28	1802.80	2158.25	2458.74	1803.29

Table 6: Crude rate per 100,000 population for unintentional injury hospital admissions, Liverpool Local Authority residents only, by People and Places geodemographic classification, 2004/05 to 2007/08 combined

People and Places geodemographic descriptions: Tree classification	Crude rate/100,000 population and 95% confidence intervals (CI)		
	Rate	Lower CI	Upper CI
Mature Oaks	1144.34	1051.83	1242.81
Blossoming Families	1131.23	1038.89	1229.57
Country Orchards*	N/A	N/A	N/A
Rooted Households	1141.77	1084.60	1201.18
Senior Neighbourhoods	1705.64	1595.04	1821.89
Qualified Metropolitans**	1198.80	937.95	1509.72
Suburban Stability	1454.36	1394.90	1515.69
New Starters	1550.63	1490.39	1612.68
Urban Producers	1710.66	1653.51	1769.29
Weathered Communities	1821.68	1771.14	1873.29
Multicultural Centres	2022.80	1893.76	2158.30
Disadvantaged Households	1946.70	1897.63	1996.73
Urban Challenge	2360.01	2307.34	2413.57

* There are no Country Orchard LSOAs in Liverpool Local Authority
** The confidence intervals are extremely wide due to a count of <10

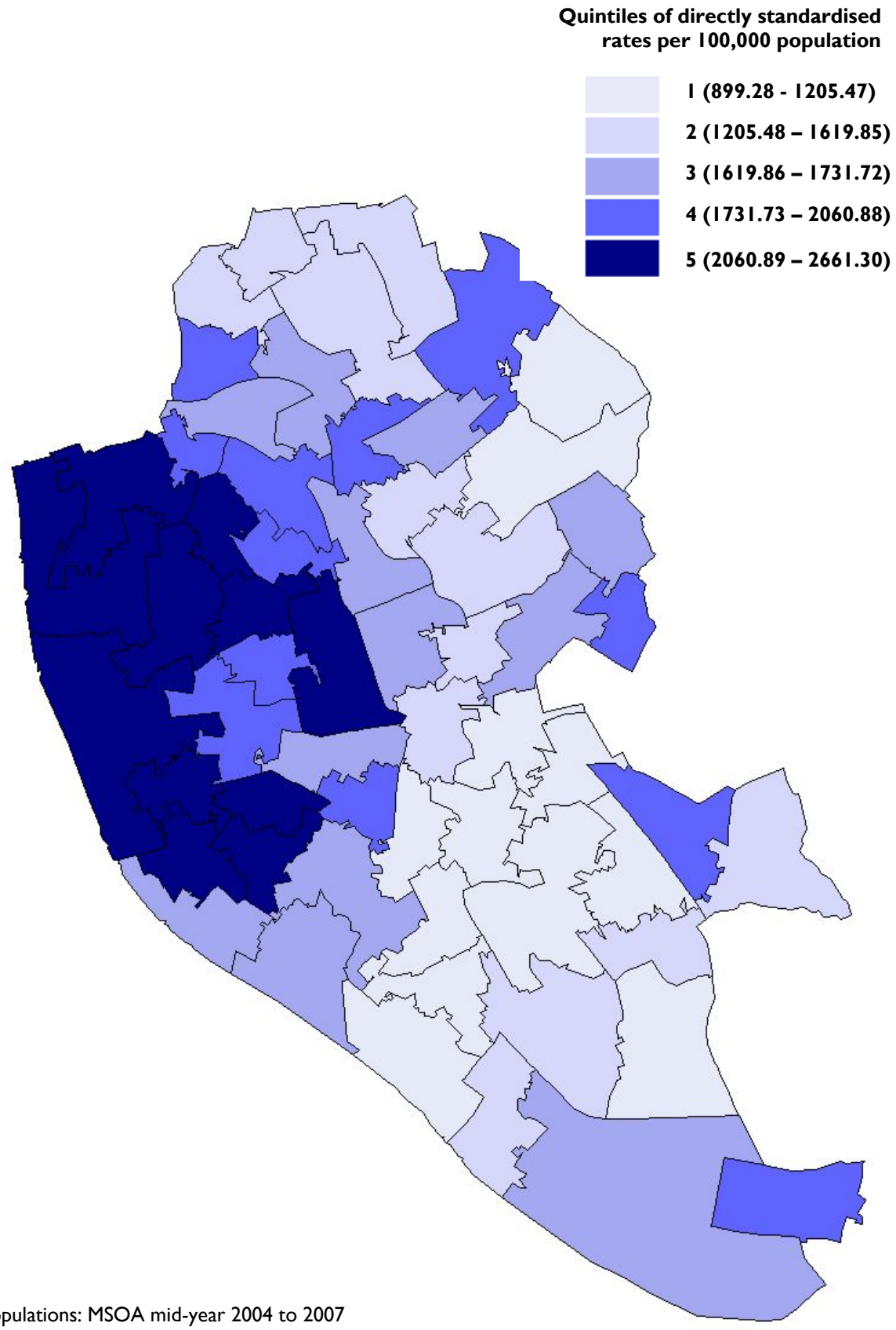
All unintentional injuries: summary

- **All datasets showed an increase in unintentional injuries over time**
- **Hospital admissions and deaths for unintentional injury were higher for males and older people (aged 65+)**
- **Hospital admissions for unintentional injury were higher for those living in the most deprived areas, and for those in the Urban Challenge lifestyle classification**

Recommendation

- **Prevention initiatives should be developed, implemented and targeted towards high risk groups. These are: males, those aged 65 years and over, residents living in the most deprived areas, and those living in Urban Challenge lifestyle classification areas across Liverpool**
- **In particular interventions should be targeted in the following MSOA areas of Liverpool, E02001370, E02001360, E02001389, E02001369 and E02001374**

Figure 3: Middle Super Output Area of residence for patients admitted to hospital for unintentional injuries, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

4.3.2 Road traffic accidents

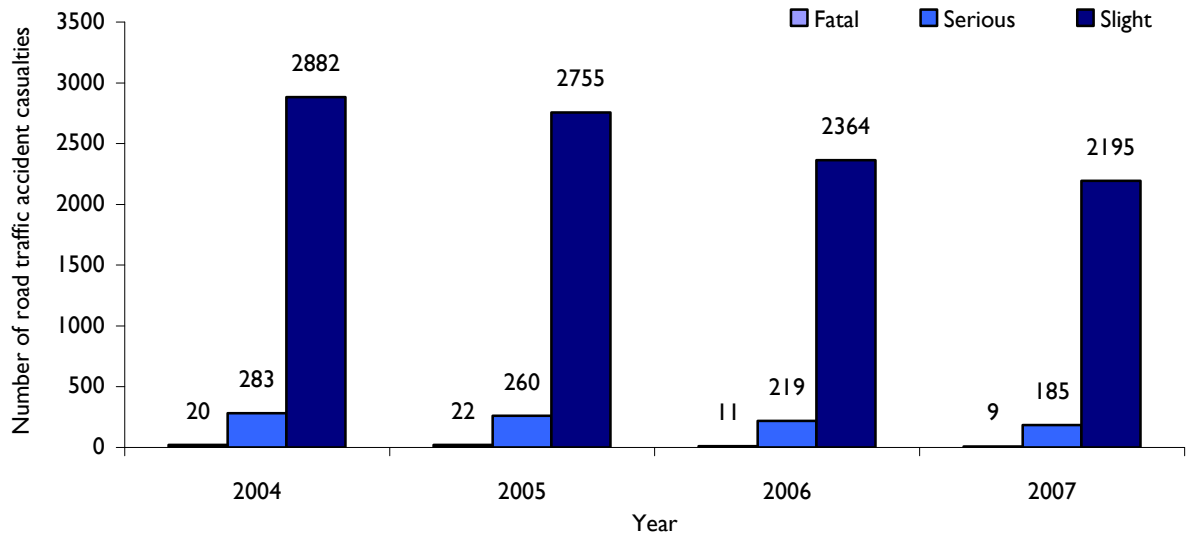
This section contains STATS 19 RTA data from January 2004 to December 2007 and HES and AED data from April 2004 to March 2008. RTA data have been extracted from the HES dataset using ICD10 codes V01 to V99.

STATS 19 data

Casualties

Data were analysed for all RTAs occurring in Liverpool Local Authority area resulting in a casualty[8]. Between 2004 and 2007 there were 11,205 casualties from RTAs. The number of casualties has been decreasing on a yearly basis resulting in a decrease of 25% between 2004 and 2007 (Figure 4). Over the same period the number of fatal casualties have halved (-55%) and the number of serious casualties decreased by a third (-34%). More males than females were casualties in RTAs (57%) and fifteen to twenty nine year olds represented 35% of RTA casualties (Table 7).

Figure 4: Number of casualties resulting from RTAs occurring in Liverpool Local Authority area, by casualty severity and year, STATS 19 data, 2004 to 2007



Using data from January 2005 to December 2007[9] RTAs involving males were more likely than those involving females to be serious or fatal (14% compared with 9%) (X^2=50.49, p<0.05). Similarly males were significantly more likely than females to be seriously injured in an RTA (X^2=50.26, p<0.05) (Figure 5).

[8] Casualty denotes anyone who was injured in a police recorded RTA

[9] At-risk group analyses only used data from 2005 to 2007 because the dataset content changed in 2005.

Table 7: Casualties resulting from RTAs occurring in Liverpool Local Authority, by age group and gender, STATS 19 data, 2004 to 2007 combined

Age group	Male		Female		Total	
	N	%	N	%	N	%
0 - 4	105	1.6	76	1.6	181	1.6
5 - 9	226	3.5	174	3.6	400	3.6
10 - 14	370	5.8	253	5.2	623	5.6
15 - 19	693	10.9	474	9.8	1167	10.4
20 - 24	807	12.7	741	15.3	1548	13.8
25 - 29	682	10.7	512	10.6	1194	10.7
30 - 34	647	10.2	414	8.6	1061	9.5
35 - 39	640	10.0	434	9.0	1074	9.6
40 - 44	622	9.8	402	8.3	1024	9.1
45 - 49	405	6.4	324	6.7	729	6.5
50 - 54	367	5.8	278	5.8	645	5.8
55 - 59	263	4.1	204	4.2	467	4.2
60 - 64	187	2.9	149	3.1	336	3.0
65 - 69	130	2.0	118	2.4	248	2.2
70 - 74	101	1.6	110	2.3	211	1.9
75 plus	129	2.0	168	3.5	297	2.7
Total	6374	100.0	4831	100.0	11205	100.0

The severity of injury was most likely to be serious or fatal if they were a pedestrian (26%) or a motor cycle (up to 125cc) rider or driver (30%). Of the pedestrian casualties, over half (52%) had been crossing a carriageway not at a designated crossing point. These pedestrians also made up 60% of all fatal pedestrian casualties. As Table 8 shows, the majority of casualties were car occupants (62%).

Figure 5: The severity of injuries sustained in RTAs in Liverpool Local Authority area by gender, STATS 19 data, 2005 to 2007 combined

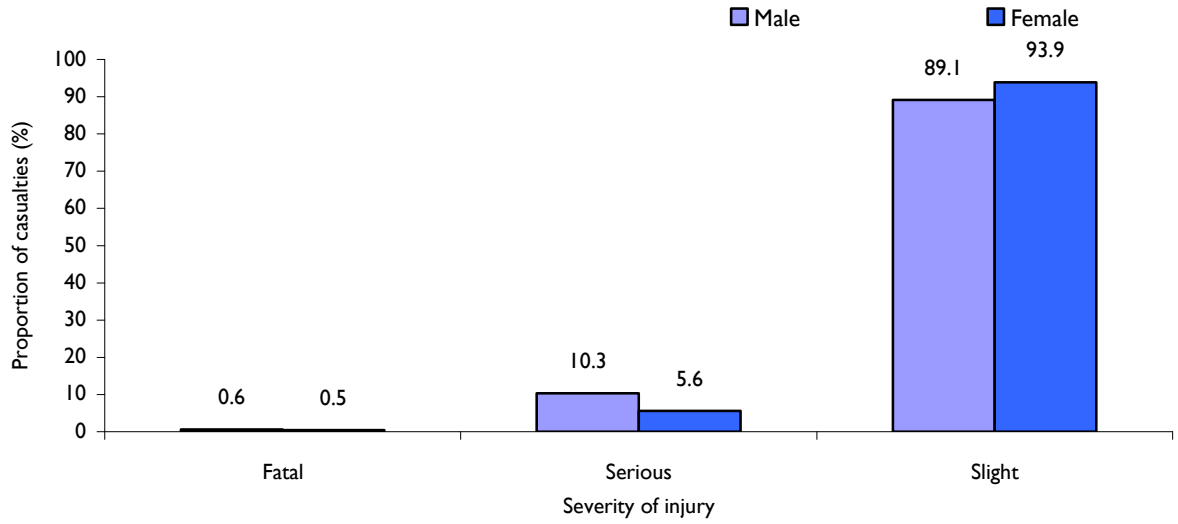


Figure 6 and Figure 7 show the location of RTAs occurring within Liverpool Local Authority area. The MSOAs that cover Kensington, Liverpool City Centre and Speke had the greatest numbers of RTAs.

Figure 6: The location of RTA casualties for incidents occurring within Liverpool City Centre, STATS 19 data, 2005 to 2007 combined

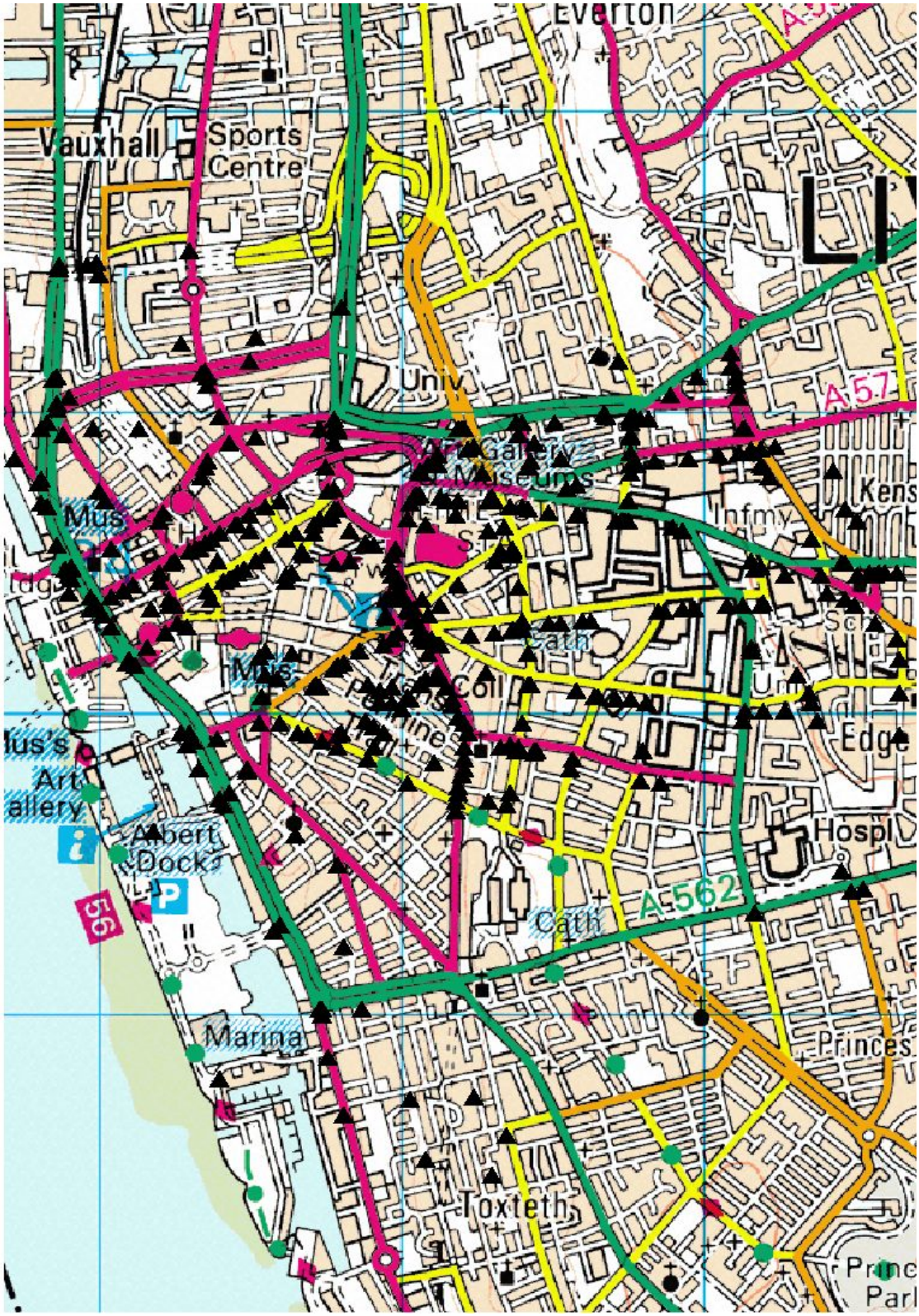


Figure 7: The location of RTA casualties for incidents occurring in and around Speke, STATS 19 data, 2005 to 2007 combined

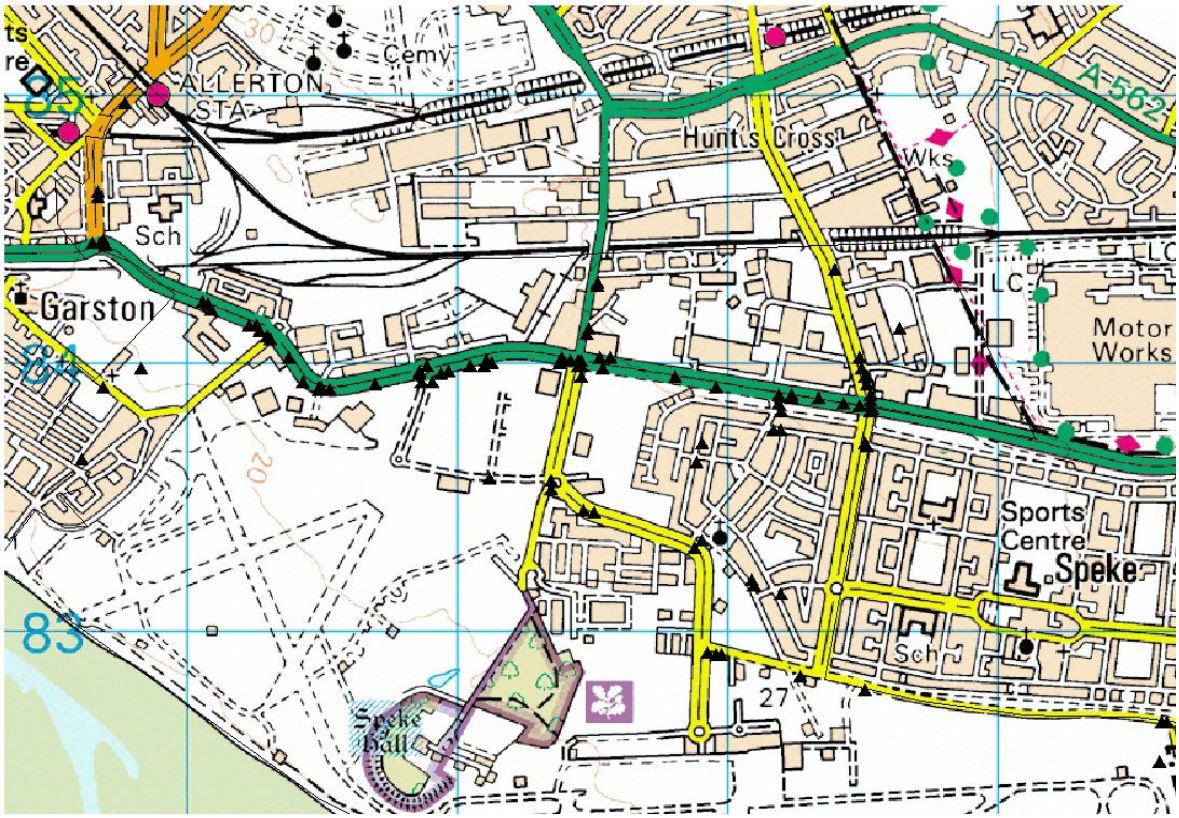


Table 8: The type of casualty involved in RTAs in Liverpool Local Authority area, STATS 19 data, 2005 to 2007 combined

Casualty type	N	%
Car occupant	4974	62.0
Pedestrian	1271	15.8
Bus or coach occupant	540	6.7
Taxi occupant	408	5.1
Cyclist	302	3.8
Goods vehicle (up to 3.5t. mgw) occupant	125	1.6
Motor cycle (over 500cc) rider or passenger	109	1.4
Motor cycle (up to 125cc) rider or passenger	90	1.1
Other motor vehicle occupant	56	0.7
Moped rider or passenger	45	0.6
Motor cycle (126cc to 500cc) rider or passenger	33	0.4
Minibus occupant	25	0.3
Goods vehicle (> 3.5t.,< 7.5t.) occupant	18	0.2
Goods vehicle (7.5t. and over) occupant	14	0.2
Other non - motor vehicle occupant	10	0.1
Total	8020	100.0

Hospital Episode Statistics

During the period April 2004 and March 2008 there were 2,542 hospital admissions for RTAs, by residents of Liverpool Local Authority. As with STATS 19 data, HES data show a reduction in hospital admissions from 650 in 2004/2005 to 577 in 2007/2008; a reduction of 11%. As Figure 8 shows, the majority of RTA admissions were male (67%). People aged between 5 and 19 years of age were more likely than any other age group to be admitted to hospital due to a RTA.

Figure 8: Number of hospital admissions for RTAs, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

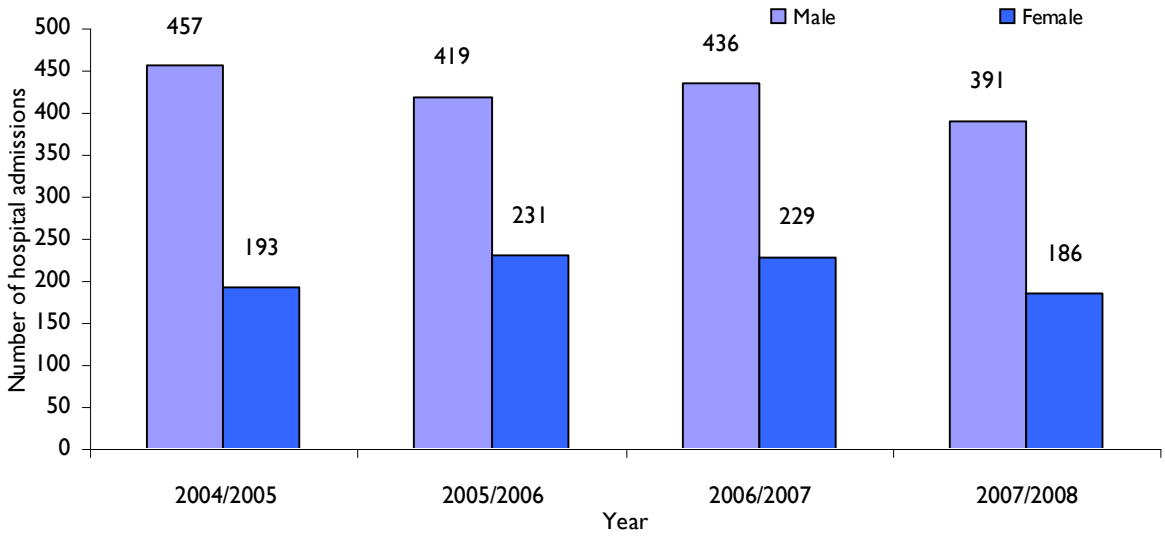


Figure 10 shows the directly standardised rates per 100,000 population for RTA hospital admissions for residents of Liverpool Local Authority, by MSOA. The MSOA of E02001385, covering the area around Princes Avenue, had the highest rate of RTA hospital admissions, at 274.82 per 100,000 population. This was followed by the MSOA E02001358, covering the Brewster Street/Hale Road area of Bootle, at 240.84 per 100,000 population (Table 9).

Table 9: Top five Middle Super Output Areas for RTA hospital admissions, Liverpool Local Authority residents only, directly standardised rate per 100,000 population, 2004/05 to 2007/08 combined

MSOA code	General location	N	Directly standardised rate/100,000 (-+ 95% confidence intervals)
E02001385	Princes Avenue, Princes Park	73	274.82 (209.23 - 340.42)
E02001358	Brewster St, Hale Road in Bootle	70	240.84 (183.89 - 297.78)
E02001354	A580, Walton	67	225.59 (170.57 - 280.62)
E02001357	Townsend Avenue, Norris Green	61	205.75 (153.38 - 258.12)
E02001390	A561,Toxteth	62	204.66 (153.22 - 256.10)

Analysis of the relationship between Index of Multiple Deprivation and hospital admissions for RTAs by Liverpool Local Authority residents found a positive correlation with quintile of deprivation. The most deprived quintile (quintile 5) had the greatest rate of hospital admissions (193.22 per 100,000) (Table 10).

People and places geodemographic classification has been used to understand what type of communities are most affected by RTAs. Those living in LSOAs categorised as Multicultural Centres have the greatest rate of hospital admissions (239.02 per 100,000) and those living in Mature Oaks have the lowest rate of hospital admissions (89.27 per 100,000) for RTAs (Table 11).

Table 10: Crude rate per 100,000 population for hospital admissions for RTAs, Liverpool Local Authority residents only, by residential quintile of multiple deprivation, 2004/05 to 2007/08 combined

Crude rate/100,000 and 95% confidence intervals (CI)	Index of Multiple Deprivation quintile					
	1 (Least)	2	3	4	5 (Most)	All
Rate	95.66	118.02	149.39	176.61	193.22	145.61
Lower CI	85.90	106.93	136.82	162.86	178.62	140.00
Upper CI	106.23	129.94	162.80	191.21	208.68	151.38

Table 11: Crude rate per 100,000 population for hospital admissions for RTAs, Liverpool Local Authority residents only, by People and Places geodemographic classification, 2004/05 to 2007/08 combined

People and Places geodemographic descriptions: Tree classification	Crude rate/100,000 population and 95% confidence intervals		
	Rate	Lower CI	Upper CI
Mature Oaks	89.27	64.86	119.85
Blossoming Families	104.33	77.67	137.17
Country Orchards*	N/A	N/A	N/A
Rooted Households	109.29	92.11	128.74
Senior Neighbourhoods	90.68	66.63	120.59
Qualified Metropolitans**	149.85	68.38	284.48
Suburban Stability	107.85	92.11	125.51
New Starters	124.87	108.20	143.38
Urban Producers	137.50	121.64	154.85
Weathered Communities	149.49	135.27	164.81
Multicultural Centres	239.02	196.07	288.58
Disadvantaged Households	176.77	162.19	192.29
Urban Challenge	171.38	157.40	186.26

* There are no Country Orchard LSOAs in Liverpool Local Authority
** The confidence intervals are extremely wide due to a count of <10

AED data (Royal Liverpool Hospital and University Hospital Aintree)

During the period April 2004 and March 2008 there were 13,884 AED attendances for RTAs by residents of Liverpool Local Authority to Aintree and the Royal Liverpool. Data show that the number of attendances to these two AEDs per year have remained relatively consistent with 3,382 in 2004/2005 and 3,492 in 2007/2008. As figure 9 shows, the majority of RTA attendances were made by males (58%). People aged 15 to 24 years of age (30%) were more likely than any other age group to attend these AEDs due to a RTA (Table 12). Out of all the RTA attendances only 5% were admitted to hospital.

Figure 9: RTA attendances to Aintree and the Royal Liverpool AEDs, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

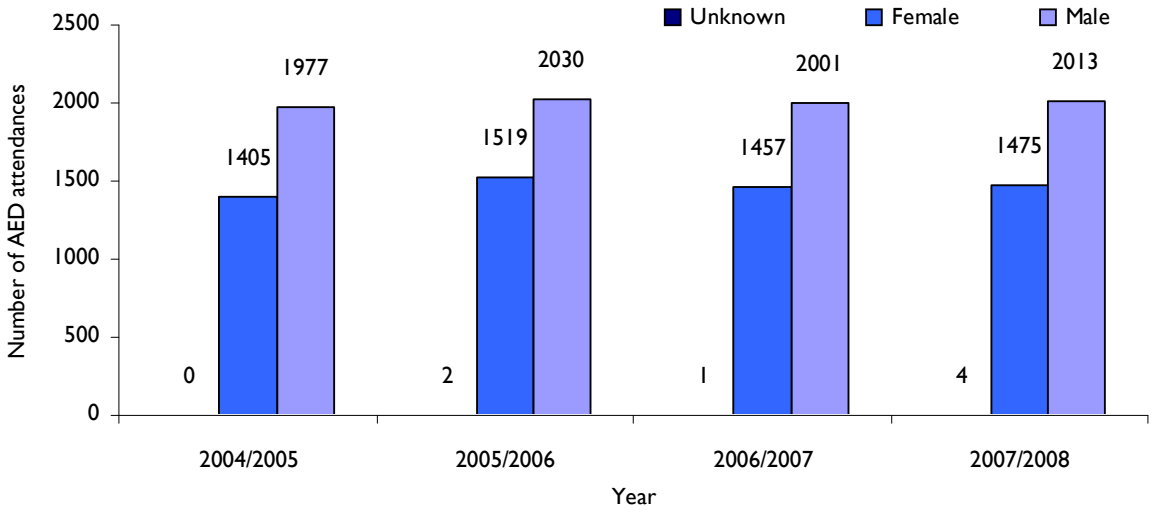


Table 12: RTA attendances to the Royal Liverpool and University Hospital Aintree AEDs, Liverpool Local Authority residents only, by age group and gender, 2004/05 to 2007/08 combined

Age group	Unknown		Female		Male		Total	
	N	%	N	%	N	%	N	%
0 - 4	<5	0.0	76	1.3	74	0.9	150	1.1
5 - 9	<5	0.0	50	0.9	66	0.8	116	0.8
10 - 14	<5	14.3	66	1.1	59	0.7	126	0.9
15 - 19	<5	0.0	723	12.3	1004	12.5	1727	12.4
20 - 24	<5	28.6	1045	17.8	1334	16.6	2381	17.2
25 - 29	<5	14.3	719	12.3	1098	13.7	1818	13.1
30 - 34	<5	14.3	565	9.6	889	11.1	1455	10.5
35 - 39	<5	14.3	597	10.2	821	10.2	1419	10.2
40 - 44	<5	0.0	497	8.5	765	9.5	1262	9.1
45 - 49	<5	0.0	391	6.7	569	7.1	960	6.9
50 - 54	<5	14.3	333	5.7	449	5.6	783	5.6
55 - 59	<5	0.0	266	4.5	331	4.1	597	4.3
60 - 64	<5	0.0	169	2.9	201	2.5	370	2.7
65 - 69	<5	0.0	119	2.0	148	1.8	267	1.9
70 - 74	<5	0.0	84	1.4	95	1.2	179	1.3
75 plus	<5	0.0	156	2.7	117	1.5	273	2.0
Total	7	100.0	5856	100.0	8020	100.0	13883	100.0

Area of residence data have been analysed separately for the Royal Liverpool Hospital AED and University Hospital Aintree AED. This is due to the nature of AED attendances. The majority of individuals attending AEDs live close to the AED; those living further away are more likely to treat themselves or visit their local GP.

Table 13 shows the MSOA of E02001369 (Everton, Shaw Street area) had the highest rate of attendance for RTAs to the Royal Liverpool AED, at 1,196.66 per 100,000 population. This was followed by the MSOA E02001370, covering the Breckfield Road South area, at 1,005.31 per 100,000 population (see also Figure 11).

Table 14 shows the MSOA of E02001354 (Walton Hall Avenue, Walton area) had the highest rate of attendance for RTAs to Aintree AED, at 1,176.11 per 100,000 population. This was followed by the MSOA E02001347, covering Fazakerley, at 1,165.64 per 100,000 population (see also Figure 12).

Table 13: Top five Middle Super Output Areas of attendances for RTAs to the Royal Liverpool AED, Liverpool Local Authority residents only, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001369	Everton Shaw Street area	272	1196.66
E02001370	Breckfield Road South area	227	1005.31
E02001376	Kensington	285	914.84
E02001385	Princes Avenue	225	856.10
E02001368	Vauxhall	211	855.91

Table 14: Top five Middle Super Output Areas of attendances for RTAs to University Hospital Aintree AED, Liverpool Local Authority residents only, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001354	Walton, Walton Hall Avenue	338	1176.11
E02001347	Fazakerley	358	1165.64
E02001351	Fazakerley, University Hospital Aintree	394	1109.46
E02001357	Clubmoor/Norris Green	288	1011.62
E02001350	Croxteth	305	999.48

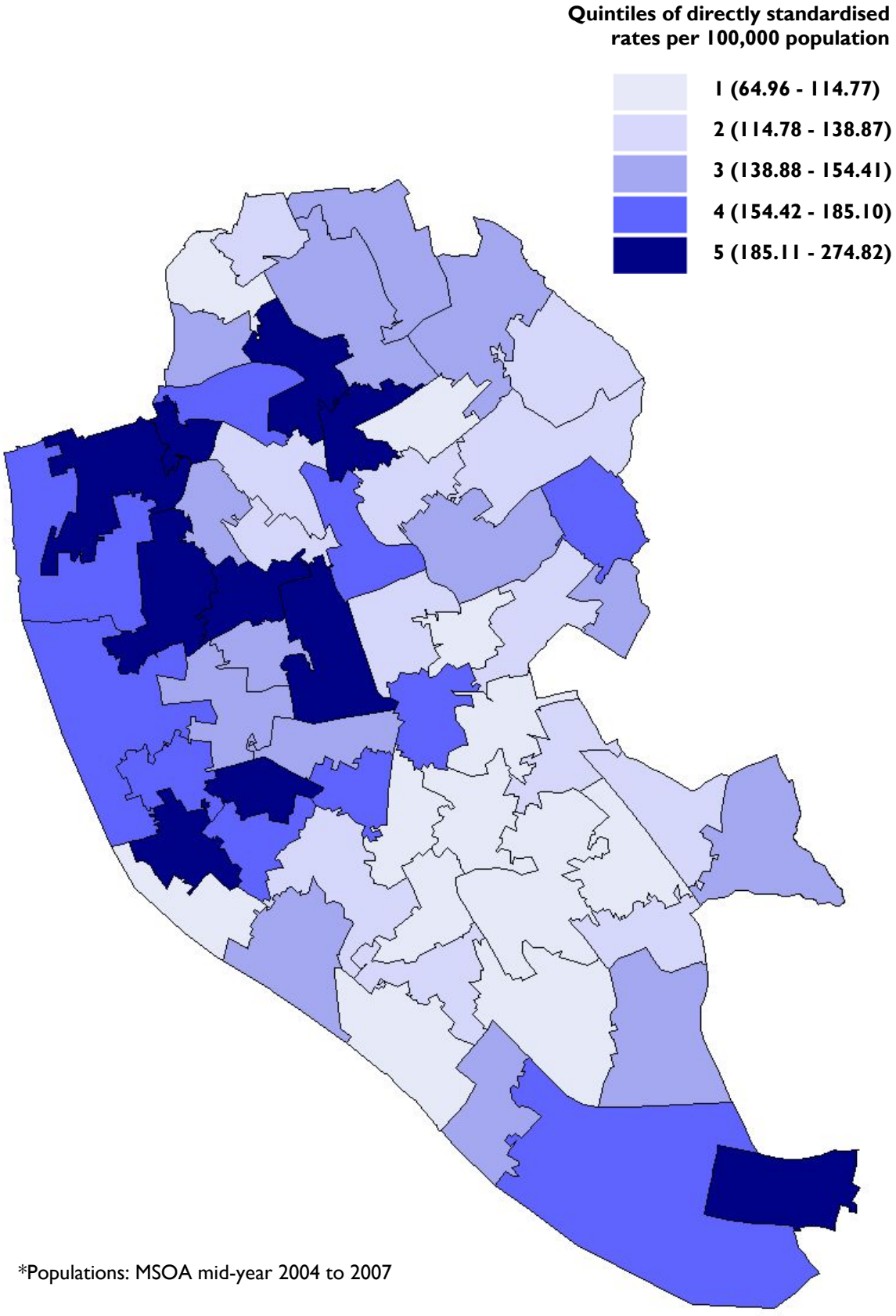
Road traffic accidents: summary

- **There was a reduction in RTAs over time**
- **More males were involved in RTAs than females**
- **RTAs involving men were more likely to be serious or fatal than those involving women**
- **Hospital admissions and AED attendances for RTAs were higher for younger people (aged 5-19 for hospital admissions and 15-24 for AED attendances)**
- **Hospital admissions for RTAs were higher for those living in the most deprived areas, and for those in the Multicultural Centres lifestyle classification**

Recommendation

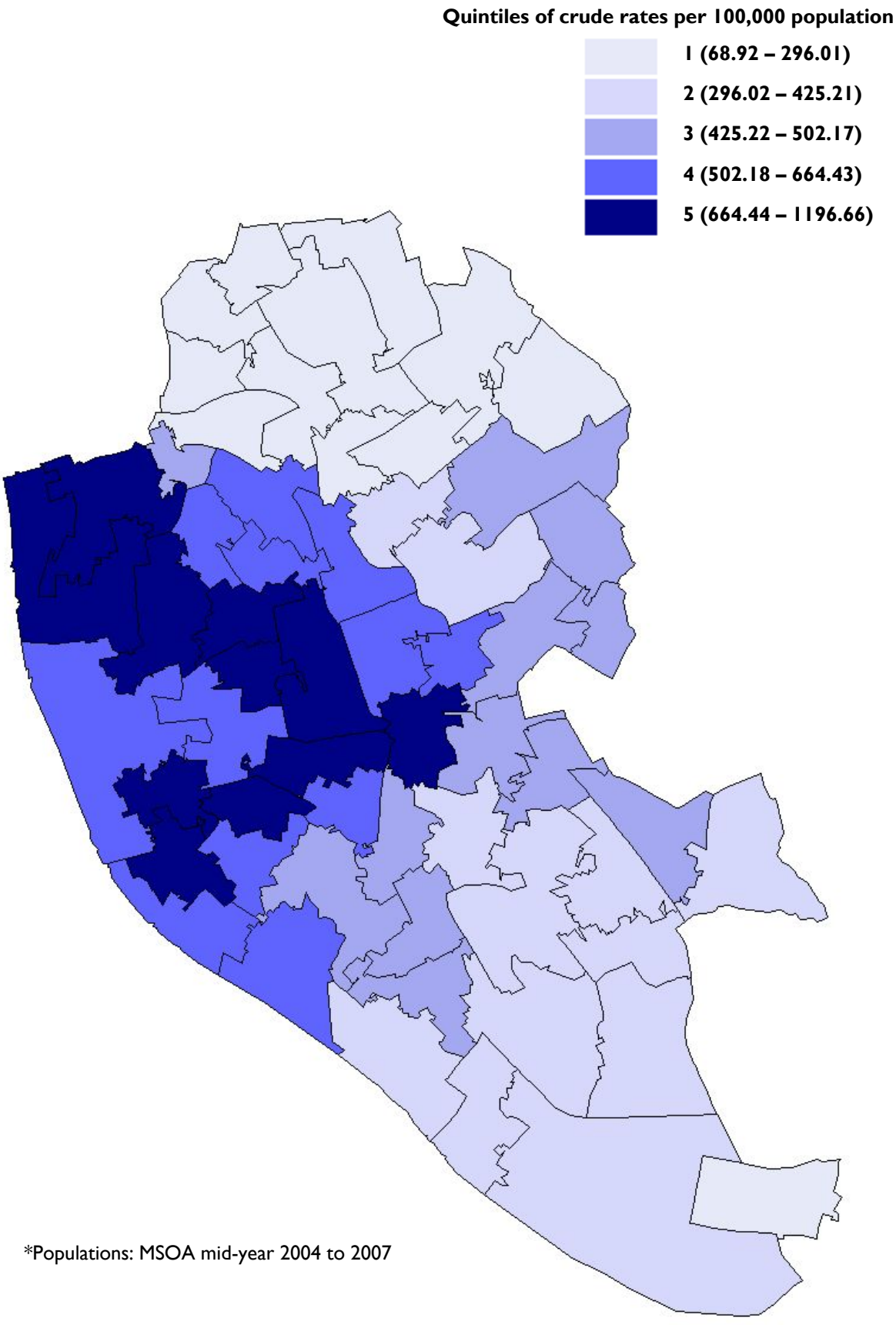
- **The steering group should liaise with Merseyside Road Safety Partnership and support local initiatives and road safety strategies where relevant**
- **Interventions should be targeted at children and young drivers living in the most deprived areas of Liverpool, particularly the MSOAs of E02001385, E02001385 and E02001354**
- **Traffic calming and multi-component road safety interventions should be initiated in hotspots contained within Speke, Liverpool City Centre and Kensington**

Figure 10: Middle Super Output Area of residence for patients admitted to hospital for RTA, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



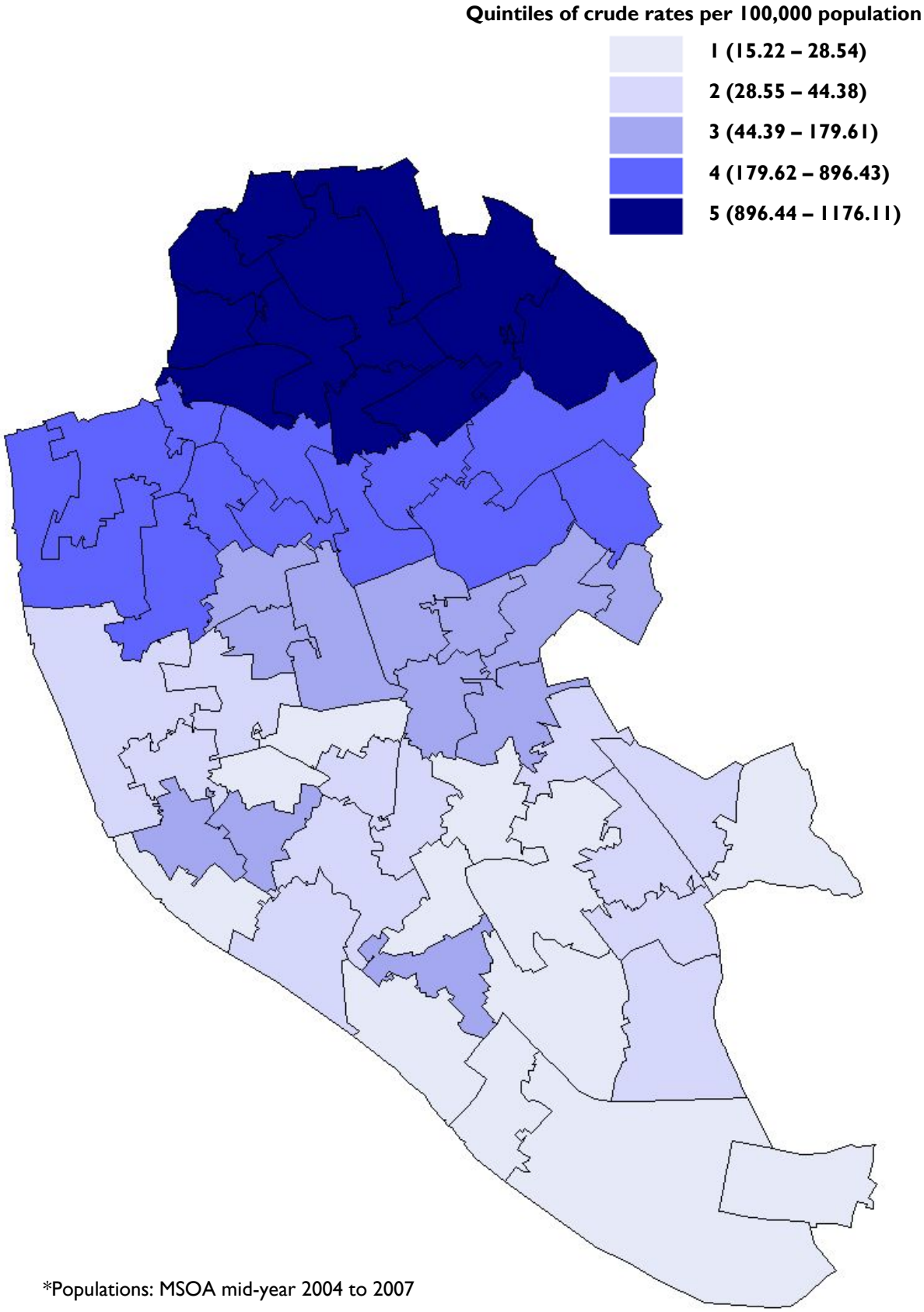
*Populations: MSOA mid-year 2004 to 2007

Figure 11: Middle Super Output Area of residence for patients attending the Royal Liverpool Hospital AED for RTAs, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

Figure 12: Middle Super Output Area of residence for patients attending University Hospital Aintree AED for RTAs, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

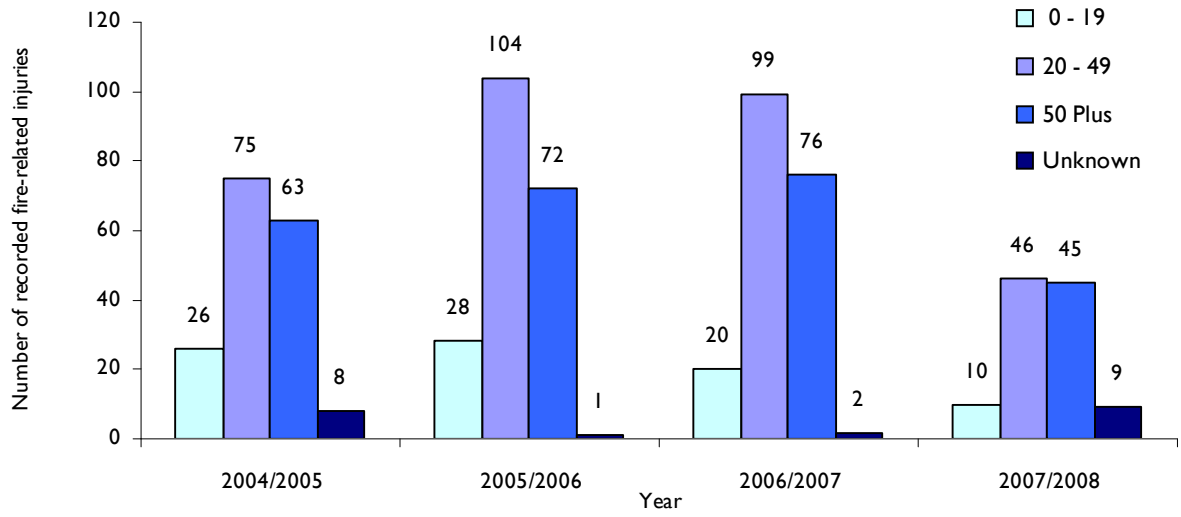
4.3.3 Fire-related injuries

This section contains information on fire-related injuries recorded by MFRS and HES from April 2004 to March 2008. Fire-related injury data has been extracted from the HES dataset using ICD10 codes X00 to X09 (exposure to smoke, fire and flames).

Merseyside Fire and Rescue Service

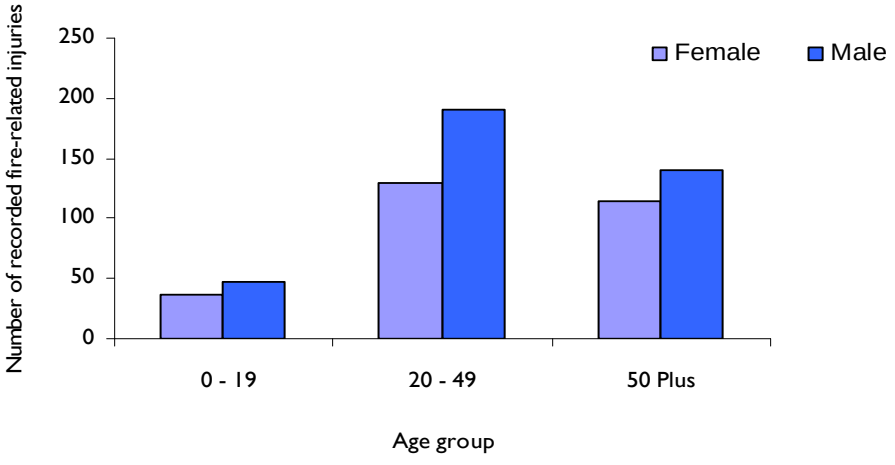
Between April 2004 and March 2008 there were 684 fire-related injuries recorded by MFRS occurring in Liverpool Local Authority area. Fire-related injuries peaked in 2005/06 at 205 but have since decreased by 46% to 110 in 2007/08 (Figure 13).

Figure 13: Number of fire-related injuries occurring in Liverpool Local Authority area recorded by Merseyside Fire and Rescue Service, by age group and year, 2004/05 to 2007/08 combined



Over the four year period significantly more males (57%) experienced a fire-related injury than females. Although the number of fire-related injuries was highest in the 20-49 age group (Figure 14), people aged 50 and above are at the greatest risk of experiencing a fire-related injury (although this figure did not reach significance), at a rate of 47.58 per 100,000 population (Table 15).

Figure 14: Number of fire-related injuries occurring in Liverpool Local Authority area recorded by Merseyside Fire and Rescue Service, by sex and age group, 2004/05 to 2007/08 combined*



* Excludes 20 injuries for which age group was unknown.

Table 15: Crude rate per 100,000 population for fire-related injuries occurring in Liverpool Local Authority area recorded by Merseyside Fire and Rescue Service, by age and gender, 2004/05 to 2007/08 combined

Age group	Female (-+ 95% confidence intervals)	Male (-+ 95% confidence intervals)	All (-+ 95% confidence intervals)
0 - 19	17.84 (12.56 - 24.59)	21.72 (15.96 - 28.88)	19.82 (15.81 - 24.54)
20 - 49	32.47 (27.11 - 38.59)	49.39 (42.63 - 56.91)	41.33 (36.95 - 46.08)
50 plus	39.39 (32.52 - 47.29)	57.29 (48.22 - 67.56)	47.58 (41.93 - 53.78)
Total	31.34 (27.78 - 35.23)	44.63 (40.25 - 49.35)	38.03 (35.20 - 41.04)

The most common ignition method for fires that resulted in a fire-related injury was a cooker/oven (22%), matches (17%) or smoking materials (14%). The majority of fire-related injuries were sustained in a fire in a residential dwelling (82%). The MFRS also record the presence and functionality of a detector/alarm, and of those fire-related injuries that were sustained in a residential dwelling, 42% had no domestic fire alarm. As Table 16 shows, the majority of recorded fire-related injuries just involved the individual receiving a precautionary check-up (45.2%). Nearly a quarter (23.8%) were recorded as being overcome by gas, smoke or toxic fumes, or asphyxiation.

Table 16: Type of recorded fire-related injury outcome sustained in fires occurring in Liverpool Local Authority area recorded by Merseyside Fire and Rescue Service, 2004/05 to 2007/08 combined

Injury outcome	N	%
Precautionary check-up	309	45.2
Overcome by gas, smoke or toxic fumes, asphyxiation	163	23.8
Burns or scalds	63	9.2
Shock (inc Adult Respiratory Distress Syndrome)	48	7.0
Physical injuries (e.g. cuts, bruises, dislocation, sprains, fractures)	35	5.1
Combination of burns and overcome by gas/smoke (codes A & B)	29	4.2
Unknown/not specified	21	3.1
Other specified injury	16	2.3
Total	684	100

Figure 15 shows the crude rate per 100,000 population for fire-related injuries occurring in Liverpool Local Authority area recorded by MFRS, by MSOA. The MSOA of E02001374, covering the area of Fairfield/Wavertree, had the highest rate of fire-related injuries, at 163.63 per 100,000 population. This was closely followed by the MSOA E02001379, covering Liverpool City Centre/docks area, at 140.54 per 100,000 population (Table 17).

Table 17: Top five Middle Super Output Areas for fire-related injuries occurring in Liverpool Local Authority area recorded by Merseyside Fire and Rescue Service, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001374	Fairfield/Wavertree	50	163.63
E02001379	City Centre/docks	57	140.54
E02001360	Kirkdale	43	140.35
E02001364	Breckfield/Stanley Park	32	119.32
E02001352	Rice Lane	26	102.65

Hospital Episode Statistics

Between April 2004 and March 2008 there were 214 hospital admissions for exposure to smoke, fire and flames by residents of Liverpool Local Authority. Admissions were highest in 2004/2005 (65) and dropped by 23% to 50 in 2007/2008. These figures are too small to carry out analysis by MSOA location. Similar to MFRS data, more males (66%) and individuals aged 50 and over were admitted to hospital for exposure to smoke, fire and flames.

Analysis of the relationship between Index of Multiple Deprivation and hospital admissions for exposure to smoke, fire and flames by residents of Liverpool Local Authority found a positive correlation with quintile of deprivation. The most deprived quintile (quintile 5) has a significantly greater rate of hospital admissions (25.05 per 100,000) than all the other quintiles (Table 18).

Table 18: Crude rate per 100,000 population for hospital admissions for exposure to smoke, fire and flames, Liverpool Local Authority residents only, by residential quintile of multiple deprivation, 2004/05 to 2007/08 combined

Crude rate/100,000 and 95% confidence intervals (CI)	Index of Multiple Deprivation quintile					
	1 (Least)	2	3	4	5 (Most)	All
Rate	4.37	6.54	11.78	14.50	25.05	12.26
Lower CI	2.50	4.14	8.45	10.76	19.98	10.67
Upper CI	7.10	9.81	15.98	19.12	31.01	14.02

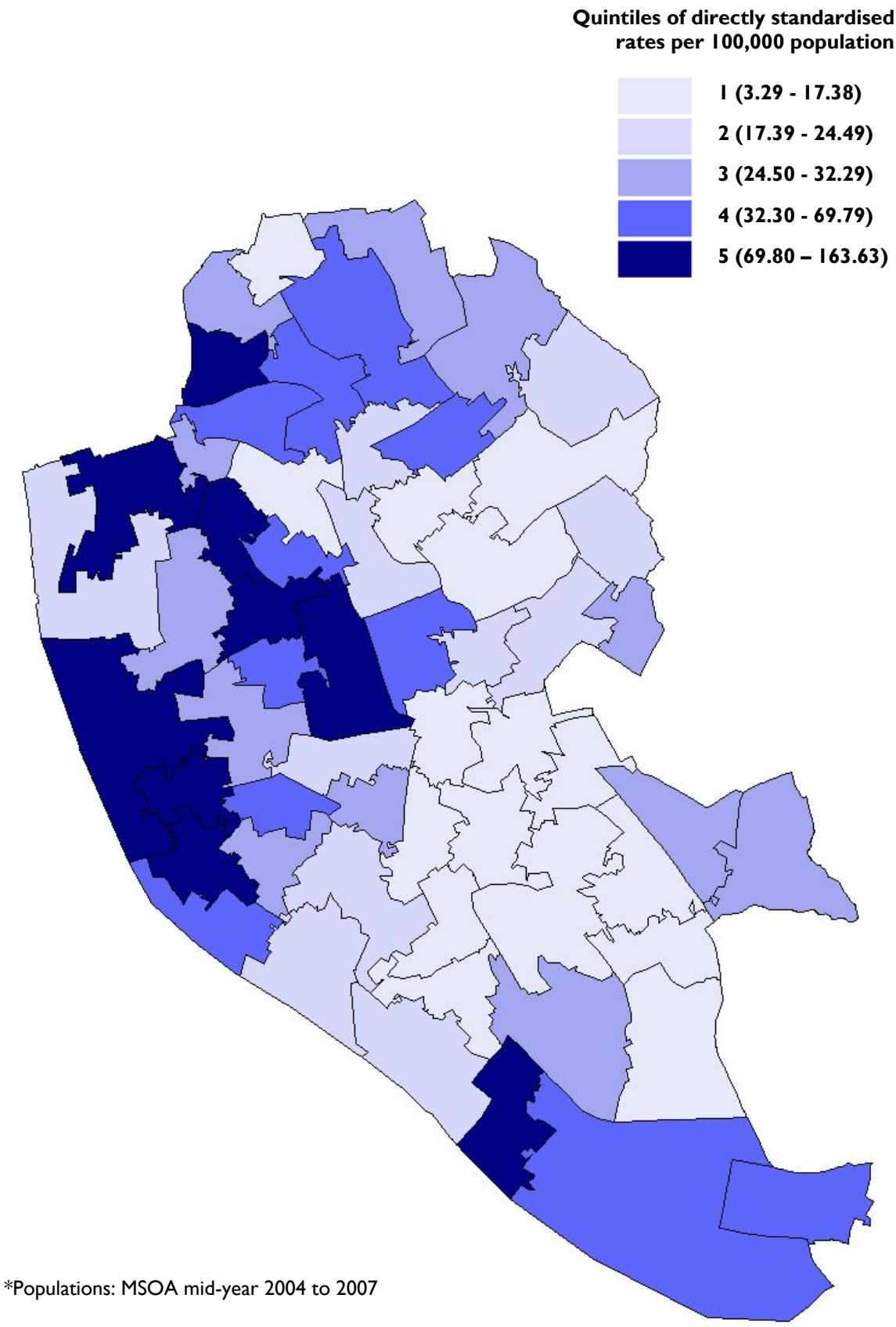
Fire-related injuries: summary

- **Datasets showed a reduction in fire-related injuries over time**
- **Fire-related injuries, and hospital admissions for fire-related injury, were higher for males and people aged over 50**
- **Hospital admissions for fire-related injuries were higher for those living in the most deprived areas**

Recommendation

- **The steering group should liaise with Merseyside Fire and Rescue Service and support local initiatives and fire safety strategies where relevant**
- **Interventions should be targeted at older communities and the most deprived areas of Liverpool, particularly the MSOAs of E02001374, E02001379 and E001360**

Figure 15: Middle Super Output Area location of fire-related injuries occurring in Liverpool Local Authority area recorded by Merseyside Fire and Rescue Service. Quintiles of crude rate per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

4.3.4 Falls

This section contains information on hospital admissions and AED attendances for falls from April 2004 to March 2008. Falls data have been extracted from the HES dataset using ICD10 codes W00 to W19.

Hospital Episode Statistics

During the period April 2004 and March 2008 there were 17,803 hospital admissions for falls by residents of Liverpool Local Authority. HES data show a 12% increase in hospital admissions from 4,186 in 2004/2005 to 4,686 in 2007/2008. As Figure 16 shows, the majority of fall admissions were female (54%). People aged 75 years of age and over (40%) were more likely than any other age group to be admitted to hospital due to a fall.

Figure 16: Number of hospital admissions for falls, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

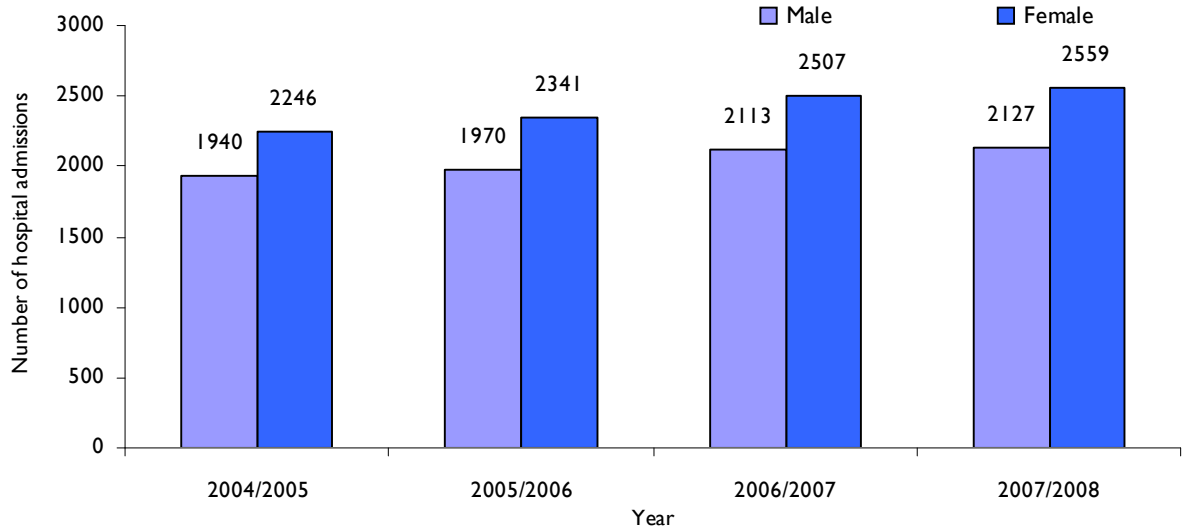


Figure 18 shows the directly standardised rates per 100,000 population for hospital admissions for falls for residents of Liverpool Local Authority, by MSOA. The MSOA of E02001360, covering the area of Kirkdale, had the highest rate of fall-related hospital admissions, at 1,396.55 per 100,000 population. This was closely followed by the MSOA E02001389, covering the Princes Park area, at 1,320.67 per 100,000 population (Table 19).

Table 19: Top five Middle Super Output Areas for hospital admissions for falls, Liverpool Local Authority residents only, directly standardised rate per 100,000 population, 2004/05 to 2007/08 combined

MSOA code	General location	N	Directly standardised rate/100,000 (-+ 95% confidence intervals)
E02001360	Kirkdale	465	1396.55 (1268.31 - 1524.79)
E02001389	Princes Park	328	1320.67 (1167.18 - 1474.16)
E02001370	Breckfield Road South area	371	1247.54 (1110.92 - 1384.16)
E02001369	Everton, Shaw Street area	309	1176.34 (1037.94 - 1314.74)
E02001368	Vauxhall	352	1169.96 (1040.68 - 1299.23)

Analysis of the relationship between Index of Multiple Deprivation and hospital admissions for falls by Liverpool Local Authority residents found a positive correlation with quintile of deprivation. The most deprived quintile (quintile 5) had the greatest rate of hospital admissions (1,278.27 per 100,000) (Table 20).

Table 20: Crude rate per 100,000 population for hospital admissions for falls, Liverpool Local Authority residents only, by residential quintile of multiple deprivation, 2004/05 to 2007/08 combined

Crude rate/100,000 and 95% confidence intervals (CI)	Index of Multiple Deprivation quintile					
	1 (Least)	2	3	4	5 (Most)	All
Rate	772.13	886.40	990.85	1196.27	1278.27	1019.76
Lower CI	743.92	855.55	958.05	1160.04	1240.29	1004.84
Upper CI	801.14	918.08	1024.48	1233.35	1317.12	1034.86

People and Places geodemographic classification has been used to understand what type of communities are worst affected by falls. LSOAs categorised as Urban Challenge (1,328.64 per 100,000) and Senior Neighbourhood (1,232.92 per 100,000) had a significantly greater crude rate of hospital admissions for falls than any other classification (Table 21).

Table 21: Crude rate per 100,000 population for hospital admissions for falls, Liverpool Local Authority residents only, by People and Places geodemographic classification, 2004/05 to 2007/08 combined

People and Places geodemographic classifications: Tree classifications	Crude rate/100,000 and 95% confidence intervals (CI)		
	Rate	Lower CI	Upper CI
Mature Oaks	748.69	674.24	829.12
Blossoming Families	715.97	642.91	795.05
Country Orchards*	N/A	N/A	N/A
Rooted Households	711.51	666.53	758.72
Senior Neighbourhoods	1232.92	1139.17	1332.34
Qualified Metropolitans**	666.00	475.74	906.93
Suburban Stability	919.63	872.48	968.67
New Starters	799.54	756.45	844.45
Urban Producers	1032.26	987.97	1078.03
Weathered Communities	1061.63	1023.13	1101.20
Multicultural Centres	894.10	809.03	985.69
Disadvantaged Households	1028.31	992.72	1064.84
Urban Challenge	1328.64	1289.20	1368.99

* There are no Country Orchard LSOAs in Liverpool Local Authority
** The confidence intervals are extremely wide due to a count of <10

AED data

During the period April 2004 and March 2008 there were 29,036 AED attendances for falls by residents of Liverpool Local Authority to the Royal Liverpool and Aintree. AED data show a 2% increase in AED attendances to these two departments from 7,322 in 2004/2005 to 7,456 in 2007/2008. As Figure 17 shows, the majority of fall attendances were female (59%). People aged 65 years of age and over (42%) were more likely than any other age group to attend these AEDs due to a fall (Table 22). The outcome of an AED attendance for a fall varied with age, out of all the attendances 19% were admitted to hospital and of those admitted 71% were over 65 years of age.

Figure 17: Fall attendances to the Royal Liverpool and Aintree AEDs, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

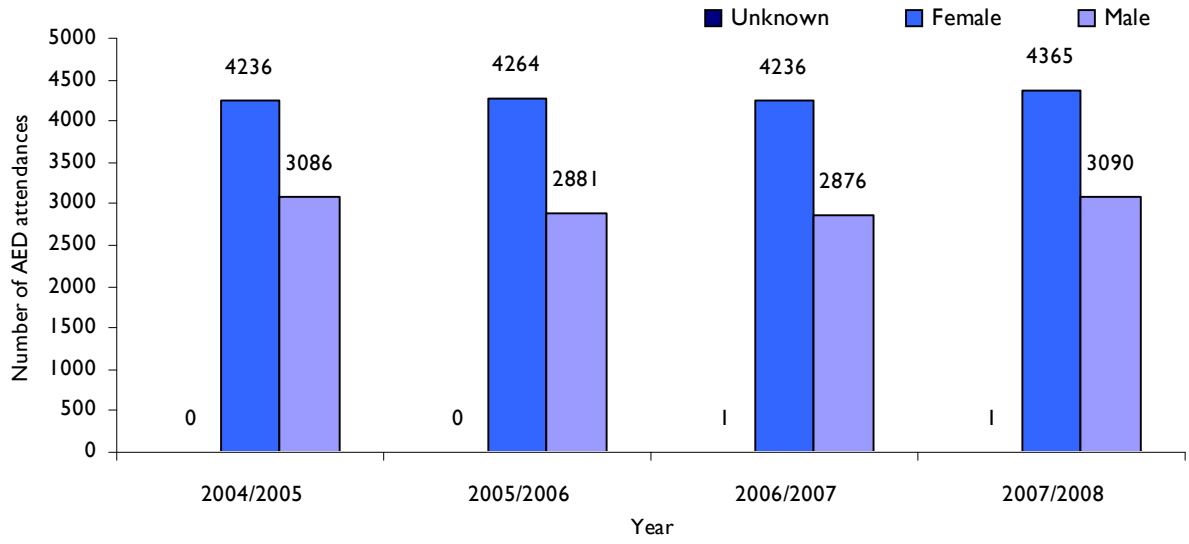


Table 22: Fall attendances to the Royal Liverpool and University Hospital Aintree AEDs, Liverpool Local Authority residents only, by age group and gender, 2004/05 to 2007/08 combined

Age group	Unknown		Female		Male		Total	
	N	%	N	%	N	%	N	%
0 - 4	<5	0.0	74	0.4	103	0.9	177	0.6
5 - 9	<5	0.0	74	0.4	62	0.5	136	0.5
10 - 14	<5	0.0	96	0.6	135	1.1	231	0.8
15 - 19	<5	50.0	791	4.6	856	7.2	1648	5.7
20 - 24	<5	0.0	974	5.7	897	7.5	1871	6.4
25 - 29	<5	0.0	716	4.2	715	6.0	1431	4.9
30 - 34	<5	0.0	690	4.0	692	5.8	1382	4.8
35 - 39	<5	0.0	789	4.6	745	6.2	1534	5.3
40 - 44	<5	0.0	866	5.1	764	6.4	1630	5.6
45 - 49	<5	0.0	923	5.4	739	6.2	1662	5.7
50 - 54	<5	50.0	1030	6.0	710	5.9	1741	6.0
55 - 59	<5	0.0	984	5.8	736	6.2	1720	5.9
60 - 64	<5	0.0	845	4.9	714	6.0	1559	5.4
65 - 69	<5	0.0	970	5.7	712	6.0	1682	5.8
70 - 74	<5	0.0	1296	7.6	845	7.1	2141	7.4
75 plus	<5	0.0	5983	35.0	2508	21.0	8491	29.2
Total	<5	100.0	17101	100.0	11933	100.0	29036	100.0

Figure 19 shows the crude rates per 100,000 population for attendances for falls to the Royal Liverpool AED by residents of Liverpool Local Authority, by MSOA. The MSOA of E02001370, covering the Breckfield Road South area, had the highest rate of attendance for falls, at 2,103.63 per 100,000 population. This was followed by the MSOA E02001369, covering the Everton, Shaw Street area, at 1,979.76 per 100,000 population (Table 23).

Table 23: Top five Middle Super Output Areas for attendances for falls to the Royal Liverpool AED, Liverpool Local Authority residents only, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001370	Breckfield Road South area	475	2103.63
E02001369	Everton, Shaw Street area	450	1979.76
E02001390	Toxteth	597	1955.90
E02001389	Princes Park	428	1798.17
E02001368	Vauxhall	439	1780.79

Figure 20 shows the crude rates per 100,000 population for attendances for falls to University Hospital Aintree AED by residents of Liverpool Local Authority, by MSOA. The MSOA of E02001350, covering the Croxteth area, had the highest rate of attendance for falls, at 3,360.72 per 100,000 population. This was followed by the MSOA E02001347, covering the Fazakerley area, at 3,235.39 per 100,000 population (Table 24).

Table 24: Top five Middle Super Output Areas for attendances for falls to University Hospital Aintree AED, Liverpool Local Authority residents only, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001350	Croxteth	1039	3360.72
E02001347	Fazakerley	1002	3235.39
E02001348	Fazakerley, Warbreck Moor area	815	2808.50
E02001351	Fazakerley, University Hospital Aintree area	1010	2787.44
E02001356	Norris Green	605	2568.35

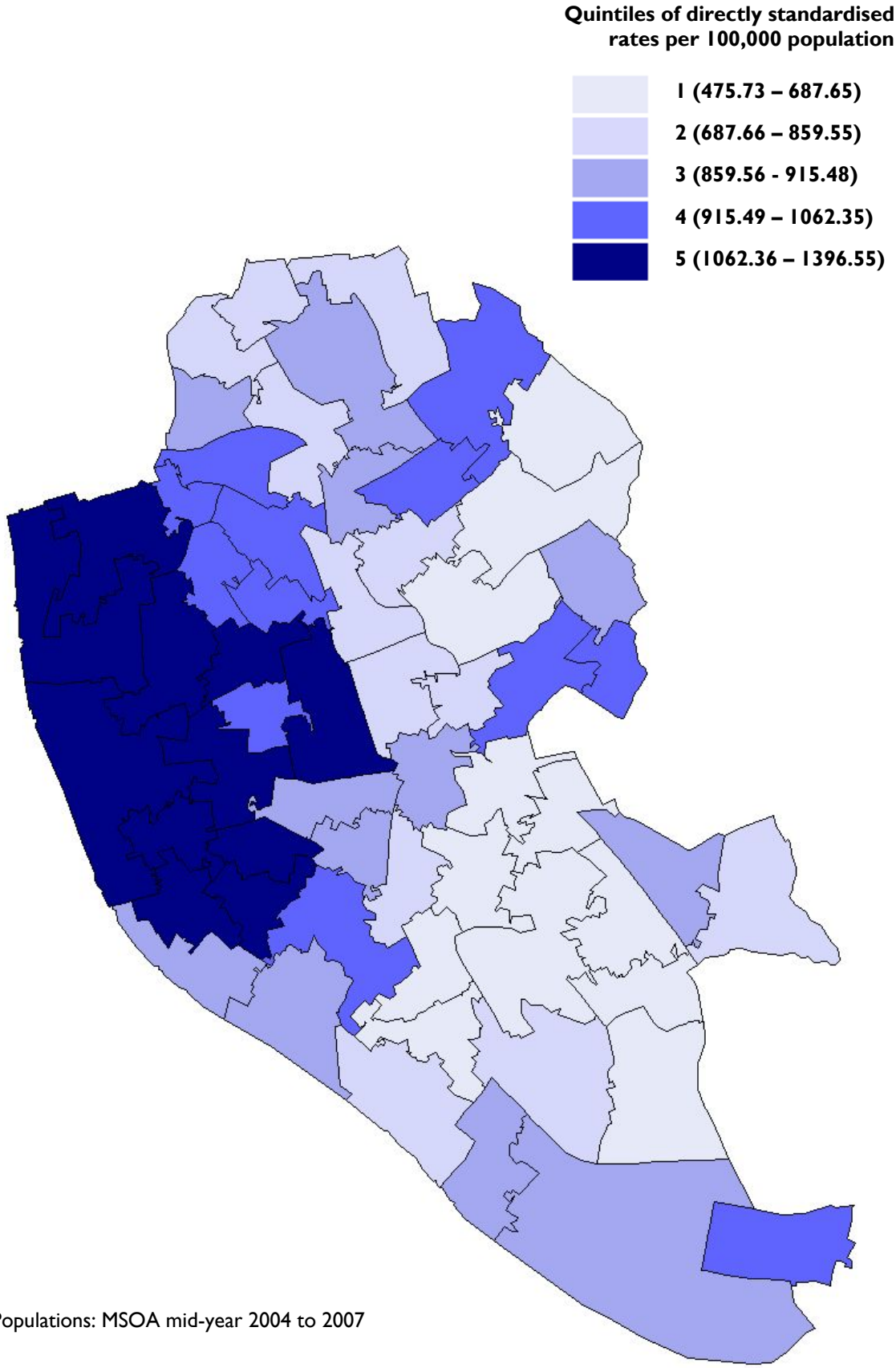
Fall-related injuries: summary

- **HES data showed a year on year increase in fall attendances**
- **AED attendances for falls peaked in 2007/08**
- **Hospital admissions for falls and AED attendances for falls, were higher for females and older people (people aged 75 plus for hospital admissions or 65 plus for AED attendances)**
- **Hospital admissions for falls were higher for those living in the most deprived areas, Urban challenge and Senior Neighbourhoods**

Recommendation

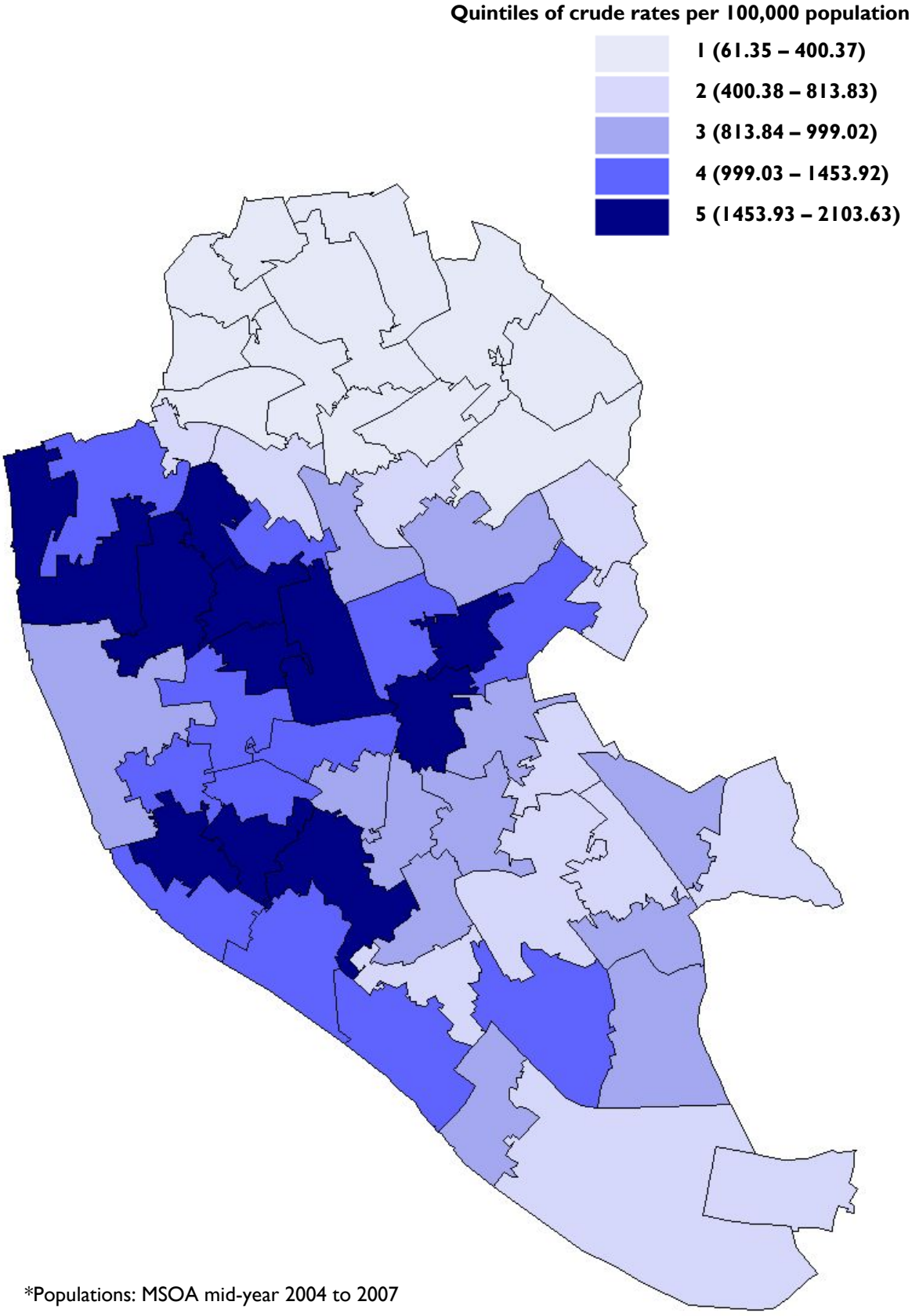
- **A comprehensive strategy and plan of action to prevent falls amongst those over 65 years of age should be developed and monitored by the steering group. Interventions implemented should be evidence-based and include, for example, exercise programmes for older people and multi-component programmes to prevent falls**
- **Interventions should be targeted at older communities and the most deprived areas of Liverpool, particularly the MSOAs of E02001360, E02001389, E02001370, E02001369 and E02001368**

Figure 18: Middle Super Output Area of residence for patients admitted to hospital for falls, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



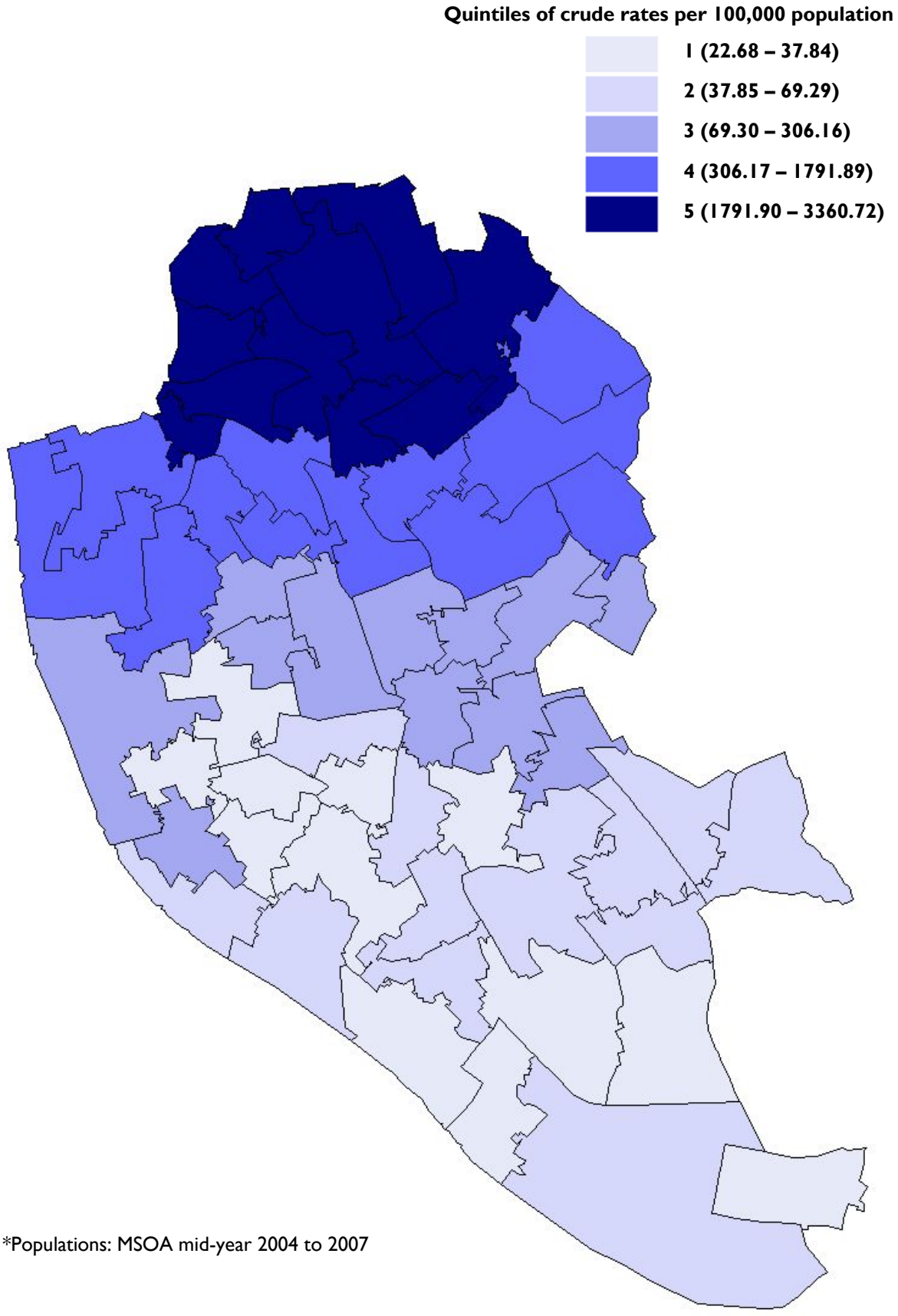
*Populations: MSOA mid-year 2004 to 2007

Figure 19: Middle Super Output Area of residence for patients attending the Royal Liverpool Hospital AED for falls, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

Figure 20: Middle Super Output Area of residence for patients attending University Hospital Aintree AED for falls, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

4.3.5 Poisonings

This section contains information on hospital admissions for poisonings from April 2004 to March 2008. Poisonings data has been extracted from the HES dataset using ICD10 codes X40 to X49.

Hospital Episode Statistics

During the period April 2004 and March 2008 there were 3,611 hospital admissions for poisoning for residents of Liverpool Local Authority. HES data shows a 16% increase in hospital admissions from 834 in 2004/2005 to 968 in 2007/2008. As Figure 21 shows, the majority of poisoning admissions were female (58%). People aged between 15 and 24 years of age (32%) were more likely than any other age group to be admitted to hospital due to a poisoning.

Figure 21: Number of hospital admissions for poisonings, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

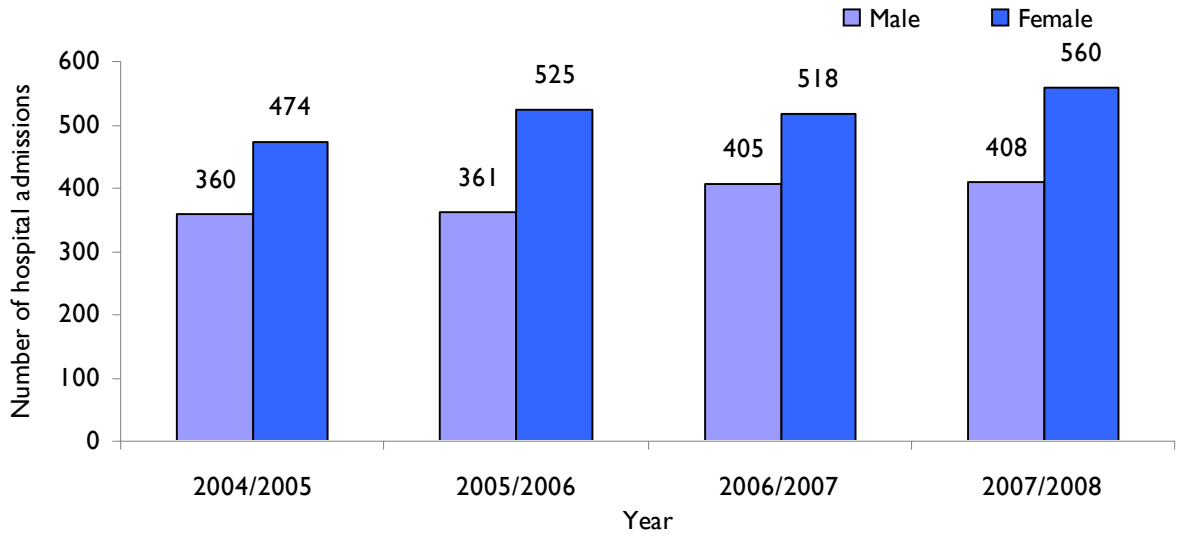


Table 25 shows that the majority (87%) hospital admissions for poisonings were for a poisoning by a prescription or over the counter drug (X40, X41, X43, X44) by a narcotic (X42) was the second most common type of poisoning (9%).

Table 25: Hospital admissions for poisonings, Liverpool Local Authority residents only, by type of poisoning, 2004/05 to 2007/08 combined

ICD10 Code	Poisonings	N	%
X40,X41,X43,X44	Prescription drug/over the counter	3148	87.2
X42	Narcotics	328	9.1
X49	Other, chemicals	72	2.0
X45	Alcohol	37	1.0
X46	Hydrocarbons	12	0.3
X47	Gasses	9	0.2
X48	Pesticides	5	0.1
X40-X49	Total	3611	100.0

Figure 22 shows the directly standardised rates per 100,000 population for hospital admissions for poisonings by residents of Liverpool Local Authority, by MSOA. The MSOA of E02001370, covering the Breckfield Road South area, had the highest rate of poisoning hospital admissions at 525.78 per 100,000 population. This was closely followed by the MSOA E02001369, covering the Everton Shaw Street area, at 519.78 per 100,000 population (Table 26).

Table 26: Top five Middle Super Output Areas for hospital admissions for poisonings, Liverpool Local Authority residents only, directly standardised rate per 100,000 population, 2004/05 to 2007/08 combined

MSOA code	General location	N	Directly standardised rate/100,000 (-+ 95% confidence intervals)
E02001370	Breckfield Road South area	113	525.78 (427.49 - 624.07)
E02001369	Everton, Shaw Street area	111	519.78 (422.26 - 617.30)
E02001364	Breckfield/Stanley Park	136	512.73 (426.26 - 599.21)
E02001374	Fairfield/Wavertree	164	477.27 (403.43 - 551.11)
E02001389	Princes Park	107	472.93 (377.18 - 568.68)

Analysis of the relationship between Index of Multiple Deprivation and hospital admissions for poisonings by Liverpool Local Authority residents found a positive correlation with quintile of deprivation. The most deprived quintile (quintile 5) had the greatest rate of hospital admissions (355.12 per 100,000) (Table 27).

Table 27: Crude rate per 100,000 population for hospital admissions for poisoning, Liverpool Local Authority residents only, by residential quintile of multiple deprivation, 2004/05 to 2007/08 combined

Crude rate/100,000 and 95% confidence intervals (CI)	Index of Multiple Deprivation quintile					
	1 (Least)	2	3	4	5 (Most)	All
Rate	85.00	162.66	204.26	239.54	355.12	206.84
Lower CI	75.82	149.60	189.52	223.48	335.24	200.15
Upper CI	95.00	176.56	219.84	256.45	375.88	213.70

People and places geodemographic classification has been used to understand what type of communities are worst affected by poisoning. Multicultural Centres (365.17 per 100,000) and Urban Challenge (347.71 per 100,000) LSOAs have the greatest rates of hospital admissions for poisoning (Table 28).

Table 28: Crude rate per 100,000 population for hospital admissions for poisoning, Liverpool Local Authority residents only, by People and Places geodemographic classification, 2004/05 to 2007/08 combined

People and Places geodemographic classifications: Tree classifications	Crude rate/100,000 and 95% confidence intervals (CI)		
	Rate	Lower CI	Upper CI
Mature Oaks	71.01	49.46	98.77
Blossoming Families	65.46	44.77	92.41
Country Orchards*	N/A	N/A	N/A
Rooted Households	82.54	67.71	99.65
Senior Neighbourhoods	140.85	110.40	177.10
Qualified Metropolitans**	116.55	46.69	240.15
Suburban Stability	109.79	93.90	127.59
New Starters	294.47	268.55	322.21
Urban Producers	112.73	98.42	128.54
Weathered Communities	193.53	177.29	210.85
Multicultural Centres	365.17	311.57	425.33
Disadvantaged Households	220.79	204.47	238.07
Urban Challenge	347.71	327.67	368.64

* There are no Country Orchard LSOAs in Liverpool Local Authority
** The confidence intervals are extremely wide due to a count of <10

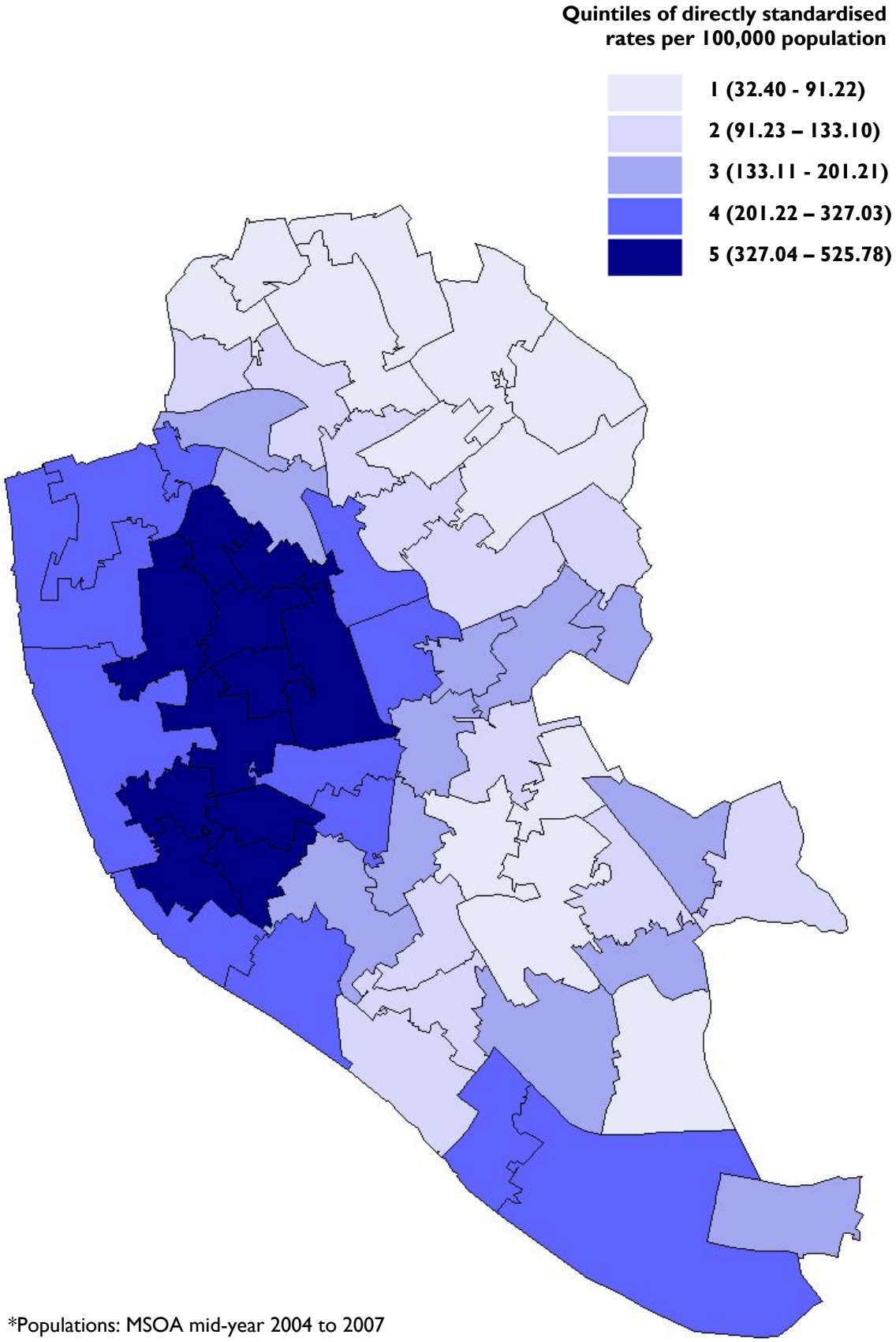
Poisonings: summary

- **Hospital admissions for poisonings increased over time**
- **Females, and those aged 15-24 had highest rates of hospital admission for poisonings**
- **Nearly all of hospital admissions for poisonings were due to prescription and over the counter drugs**
- **Hospital admissions for poisonings were higher for those living in the most deprived areas, and for those in the Multicultural Centres lifestyle classification**

Recommendation

- **Research should be conducted to understand why females and those aged 15-24 have the highest rates of hospital admissions for poisoning**
- **Safe-use of prescription and over the counter drugs needs to be promoted specifically in the 15-24 age group and in the most deprived areas of Liverpool, including the MSOAs of E02001370, E02001369, E02001364, E02001374 and E02001389**

Figure 22: Middle Super Output Area of residence for patients admitted to hospital for poisoning, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

4.3.6 Drowning

This section contains information on hospital admissions for drowning from April 2004 to March 2008. Drowning data has been extracted from the HES dataset using ICD10 codes W65 to W74.

Hospital episode statistics
During the period April 2004 and March 2008 there were only nine hospital admissions for drowning for residents of Liverpool Local Authority. Because of the low numbers no further analysis has been conducted.

4.3.7 Sports injuries

This section contains information on hospital admissions for sports injuries and AED attendances from April 2004 to March 2008. Sports injuries data has been extracted from the HES dataset using ICD10 codes W21 and W51.

Hospital Episode Statistics
Between April 2004 and March 2008 there were 334 hospital admissions for sports injuries by residents of Liverpool Local Authority. Admissions were lowest in 2004/2005 (64) and have increased by 45% to 93 in 2007/2008. These figures are too small to carry out analysis by MSOA location. More males (86%) and individuals aged 10 to 19 (39%) were admitted to hospital for sports injuries.

AED data (Royal Liverpool Hospital and University Hospital Aintree)
During the period April 2004 and March 2008 there were 4,301 AED attendances for sports injuries by residents of Liverpool Local Authority to the Royal Liverpool and Aintree. AED data show a 43% increase in AED attendances from 840 in 2004/2005 to 1,201 in 2007/2008. As Figure 23 shows, the majority of sport injury attendances were male (91%). People aged 15 to 24 (57%) were more likely than any other age group to attend an AED due to a sports injury (Table 29). The majority of AED attendances for sports injuries were discharged (69%).

Figure 23: Sports injury attendances to the Royal Liverpool and Aintree AEDs, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

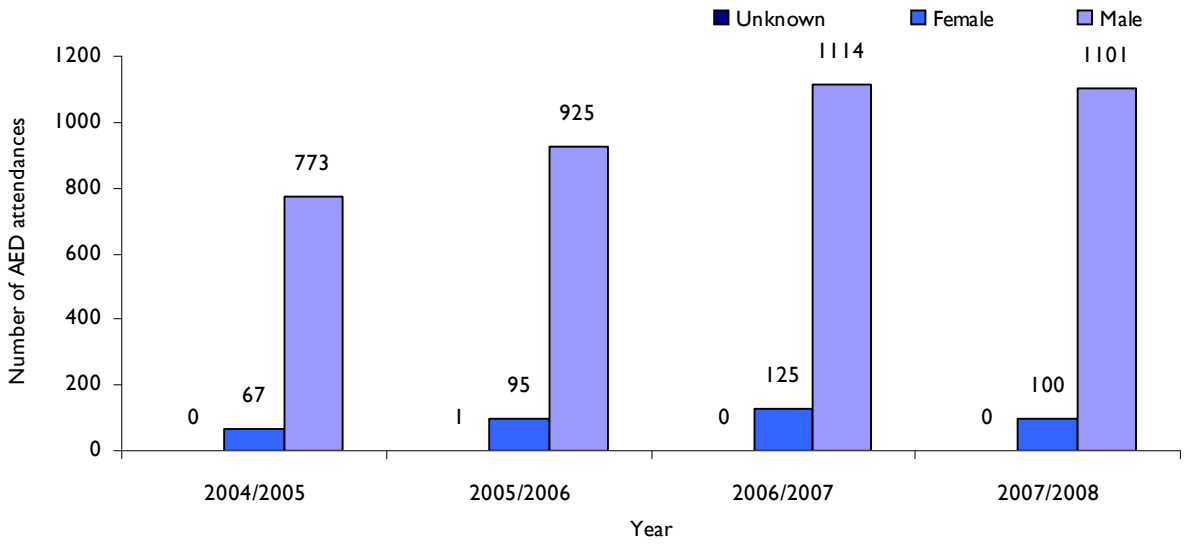


Table 29: Sports injury attendances to the Royal Liverpool and University Hospital Aintree AEDs, Liverpool Local Authority residents only, by age group and gender, 2004/05 to 2007/08 combined

Age group	Unknown		Female		Male		Total	
	N	%	N	%	N	%	N	%
0 - 4	<5	0	<5	0.0	<5	0.1	<5	0.0
5 - 9	0	0	<5	0.5	11	0.3	13	0.3
10 - 14	<5	0	31	8.0	142	3.6	173	4.0
15 - 19	<5	100	119	30.7	1115	28.5	1235	28.7
20 - 24	<5	0	91	23.5	1132	28.9	1223	28.4
25 - 29	<5	0	37	9.6	629	16.1	666	15.5
30 - 34	<5	0	17	4.4	351	9.0	368	8.6
35 - 39	<5	0	33	8.5	215	5.5	248	5.8
40 - 44	<5	0	26	6.7	156	4.0	182	4.2
45 - 49	<5	0	14	3.6	84	2.1	98	2.3
50 - 54	<5	0	7	1.8	43	1.1	50	1.2
55 - 59	<5	0	6	1.6	19	0.5	25	0.6
60 - 64	<5	0	<5	0.5	<5	0.1	<5	0.1
65 - 69	<5	0	<5	0.0	8	0.2	8	0.2
70 - 74	<5	0	<5	0.0	<5	0.1	<5	0.0
75 plus	<5	0	<5	0.5	<5	0.1	<5	0.1
Total	<5	100	387	100.0	3913	100.0	4301	100.0

Figure 24 shows the crude rates per 100,000 population for AED attendances to Royal Liverpool AED for sport injuries by residents of Liverpool Local Authority, by MSOA. The MSOA of E02001379, covering the City Centre/docks area, had the highest rate of attendance for sports injuries, at 263.82 per 100,000 population. This was followed by the MSOA E02001384, covering the Smithdown Road, Wavertree Park area, at 223.32 per 100,000 population (Table 30).

Table 30: Top five Middle Super Output Areas for attendances for sports injuries to the Royal Liverpool AED, Liverpool Local Authority residents only, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001379	City Centre/docks area	107	263.82
E02001384	Smithdown Road, Wavertree Park	80	223.32
E02001388	Allerton Road area	55	183.95
E02001383	City Centre, Hope Street area	40	173.75
E02001377	Edge hill	68	153.45

Figure 25 shows the crude rates per 100,000 population for AED attendances to University Hospital Aintree for sport injuries by residents of Liverpool Local Authority, by MSOA. The MSOA of E02001347, covering the Fazakerley area, had the highest rate of attendance for sports injuries, at 784.63 per 100,000 population. This was closely followed by the MSOA E02001348, covering the Fazakerley, Warbreck Moor area at 706.43 per 100,000 population (Table 31).

Table 31: Top five Middle Super Output Areas for attendances for sports injuries to University Hospital Aintree AED, Liverpool Local Authority residents only, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001347	Fazakerley	243	784.63
E02001348	Fazakerley, Warbreck Moor	205	706.43
E02001351	Fazakerley, University Hospital Aintree area	232	640.28
E02001355	Walton, Rice Lane	153	566.12
E02001354	Walton, Walton Hall Avenue area	162	558.74

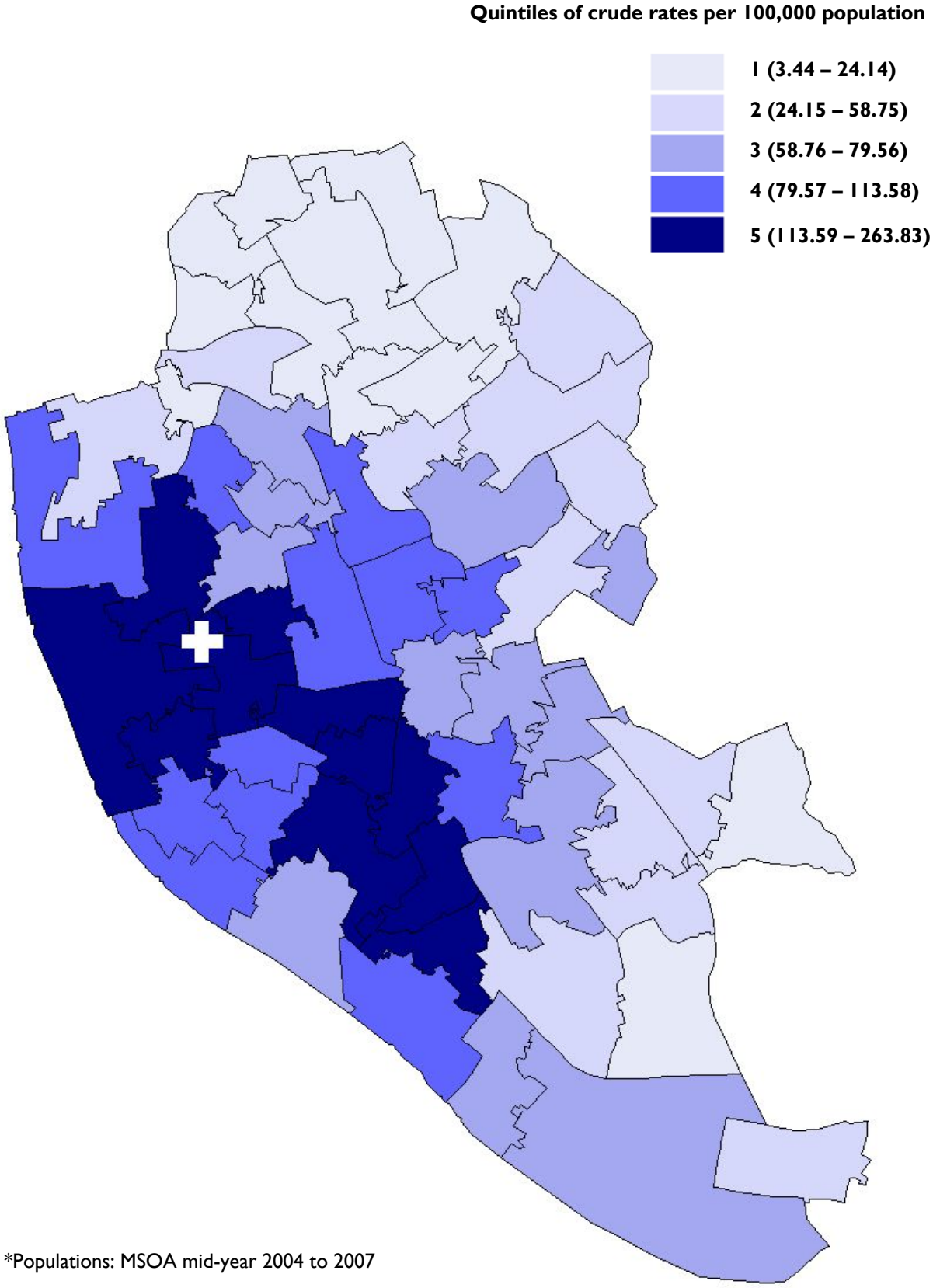
Sports injuries: summary

- **Datasets showed an increase in sports injuries over time**
- **Hospital admissions and AED attendances for sports injuries were highest for males and young people (aged 10-19 for hospital admissions and age 15-25 for AED attendances)**

Recommendation

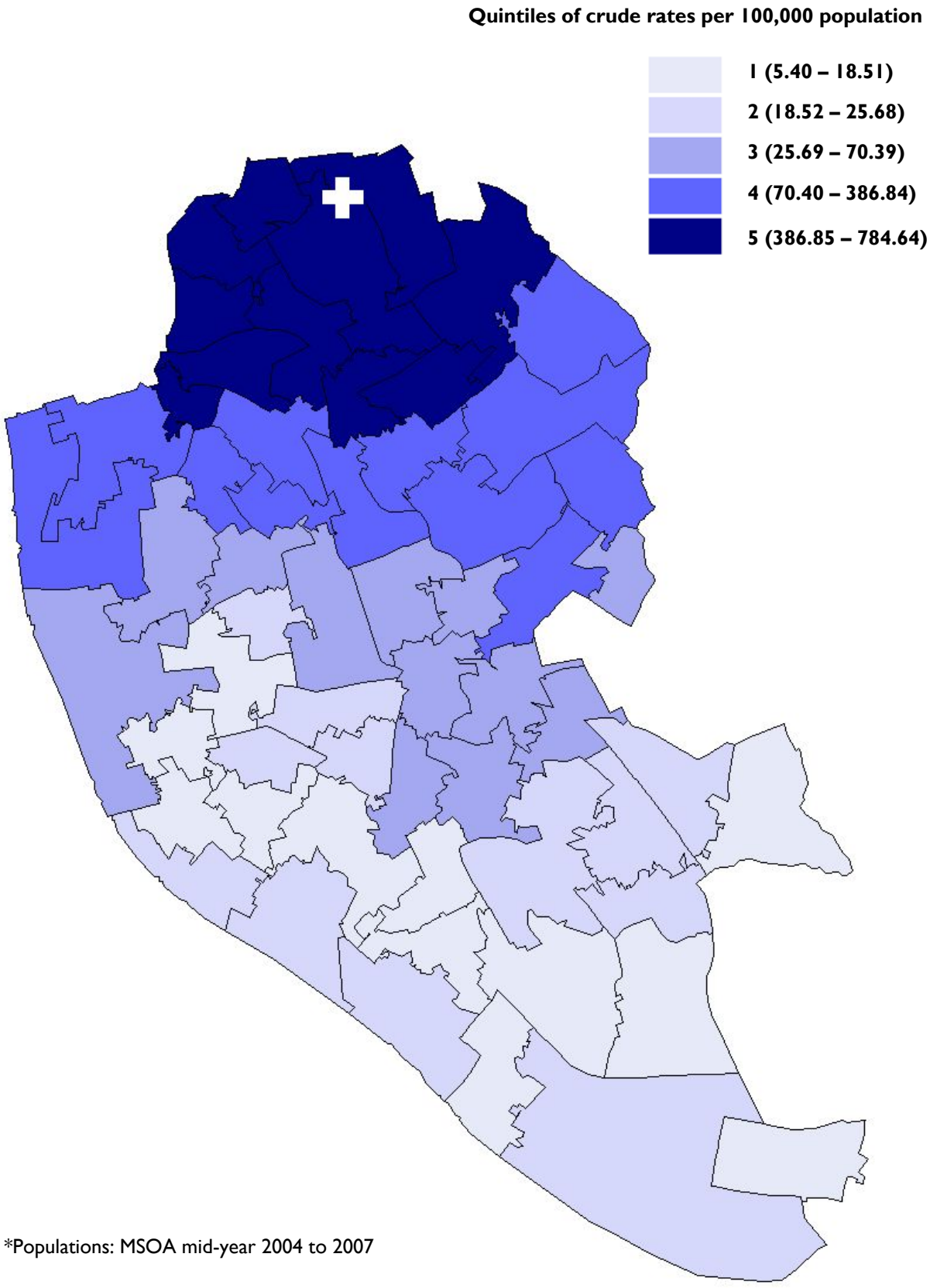
- **More investigative work is required to understand the causes of sports injury and its prevention**

Figure 24: Middle Super Output Area of residence for patients attending the Royal Liverpool Hospital AED for sports injuries, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

Figure 25: Middle Super Output Area of residence for patients attending University Hospital Aintree AED for sport injuries, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

4.3.8 Events of undetermined intent

This section contains information on hospital admissions for events of undetermined intent from April 2004 to March 2008. Events of undetermined intent data has been extracted from the HES dataset using ICD10 codes Y10 to Y34.

Hospital episode statistics
During the period April 2004 and March 2008 there were only 187 hospital admissions for events of undetermined intent for residents of Liverpool Local Authority. Because of the low numbers no further analysis has been conducted.

4.3.9 Child injuries

This section contains information on child injuries (aged 0-17 years) recorded by HES and Alder Hey AED from April 2004 to March 2008. Hospital admission for unintentional and deliberate injuries (ICD10 codes V01-Y98 excluding X33-X39 and X52) in children aged 0-17 years is a national indicator and therefore has been extracted from HES using ICD10 codes V01-Y98 excluding X33-X39 and X52.

Hospital Episode Statistics
During the period April 2004 to March 2008 there were 7,205 hospital admissions for unintentional or deliberate injuries in children aged 0-17 years by residents of Liverpool Local Authority. HES data show hospital admissions peaked in 2006/2007 at 2,187 but decreased by 17% to 1,817 in 2007/2008 (Figure 26). More males (62%) were admitted to hospital than females. Children aged 10-14 (31%) were more likely than any other age group to be admitted to hospital due to unintentional or deliberate injuries.

Figure 26: The number of hospital admissions for unintentional or deliberate injuries in children aged 0-17 years, Liverpool Local Authority residents only, by gender and year, 2004/05 to 2007/08 combined

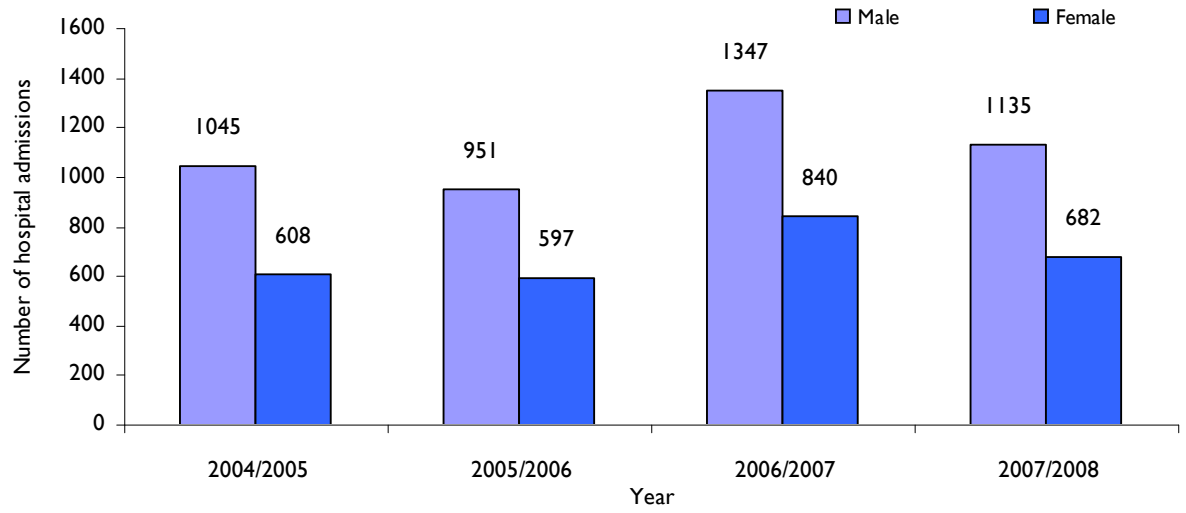
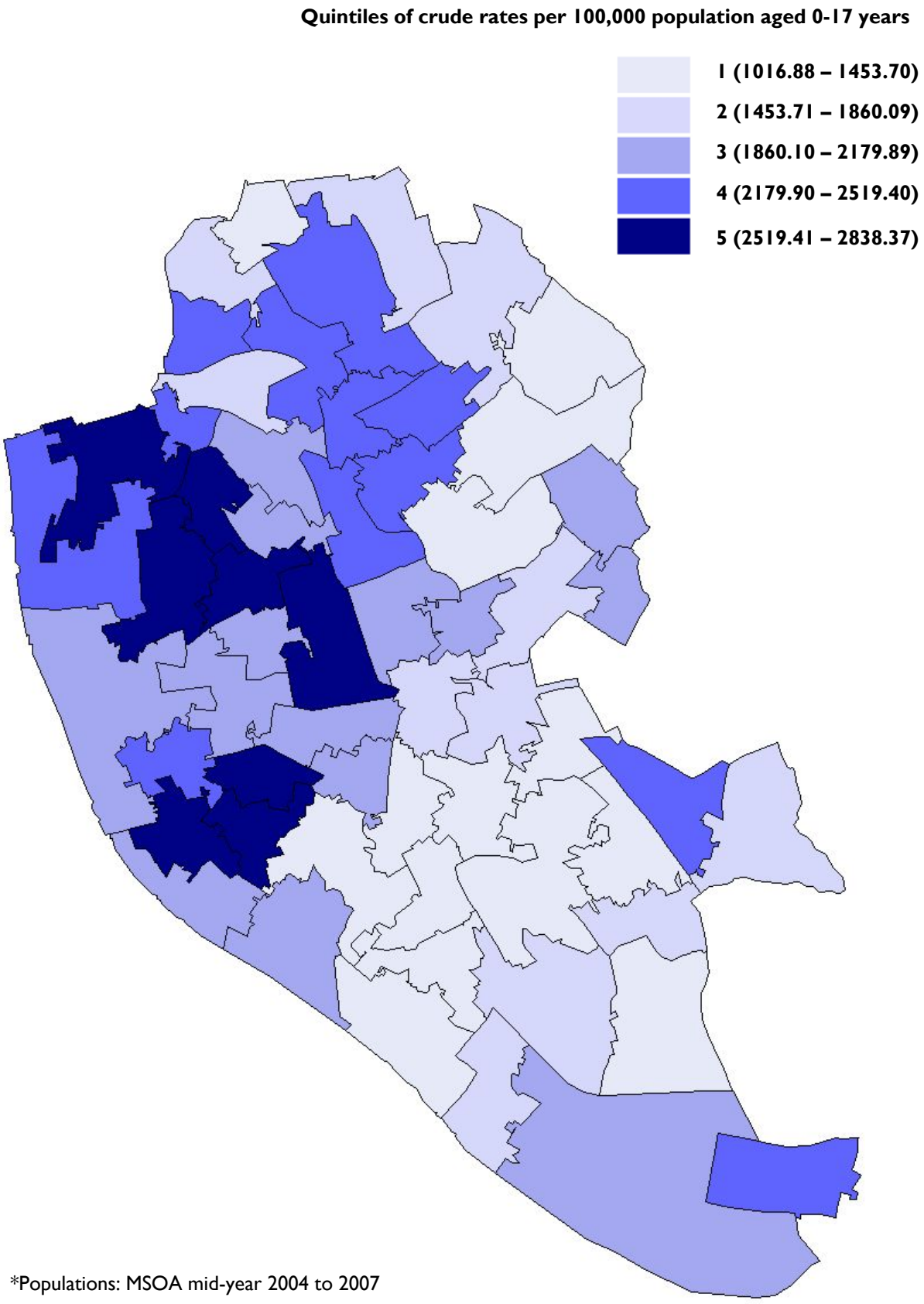


Figure 27 shows the crude rates per 100,000 population for hospital admissions for unintentional and deliberate injuries in children aged 0-17 years by residents of Liverpool Local Authority, by MSOA. The MSOA of E02001390, covering the Toxteth area, had the highest rate of hospital admissions for unintentional and deliberate injuries in children aged 0-17 years, at 2,838.37 per 100,000 population. This was closely followed by the MSOA E02001389, covering the Princes Park area, at 2,835.60 per 100,000 population (Table 32).

Figure 27: Middle Super Output Area of residence for children aged 0-17 years admitted to hospital for unintentional and deliberate injuries, Liverpool Local Authority residents only. Quintiles of crude rate per 100,000 population, 2004/05 to 2007/08 combined



*Populations: MSOA mid-year 2004 to 2007

Table 32: Top five Middle Super Output Areas for unintentional and deliberate injuries in children aged 0-17 years, Liverpool Local Authority residents only, 2004/05 to 2007/08 combined

MSOA code	General location	N	Crude rate/100,000
E02001390	Toxteth	203	2838.37
E02001389	Princes Park	94	2835.60
E02001360	Kirkdale	191	2811.72
E02001370	Breckfield Road South area	134	2750.41
E02001369	Everton Shaw street area	115	2613.64

A relationship was found between Index of Multiple Deprivation and hospital admissions for unintentional and deliberate injuries in children aged 0-17 years by Liverpool Local Authority residents. The most deprived quintile (quintile 5) had the greatest rate of hospital admissions (2,572.07 per 100,000) (Table 33). People and places geodemographic classification has been used to understand what types of communities are worst affected by unintentional and deliberate injuries in children aged 0-17 year. LSOAs categorised as Urban Challenge (2,514.34 per 100,000) and Multicultural Centres (2,392.51 per 100,000) have the greatest rates of hospital admissions for unintentional and deliberate injuries in children aged 0-17 years (Table 34).

Table 33: Crude rate per 100,000 population for hospital admissions for unintentional and deliberate injuries in children aged 0-17 years, Liverpool Local Authority residents only, by residential quintile of multiple deprivation, 2004/05 to 2007/08 combined

Crude rate/100,000 and 95% confidence intervals (CI)	Index of Multiple Deprivation quintile					
	1 (Least)	2	3	4	5 (Most)	All
Rate	1254.24	1600.72	2035.29	2349.03	2572.07	1987.38
Lower CI	1173.26	1505.39	1930.50	2242.19	2461.52	1941.75
Upper CI	1339.32	1700.50	2144.28	2459.64	2686.31	2033.81

Table 34: Crude rate per 100,000 population for hospital admissions for unintentional and deliberate injuries in children aged 0-17 years, Liverpool Local Authority residents only, by People and Places geodemographic classification, 2004/05 to 2007/08 combined

People and Places geodemographic classifications: Tree classifications	Crude rate/100,000 and 95% confidence intervals (CI)		
	Rate	Lower CI	Upper CI
Mature Oaks	1074.18	879.43	1299.20
Blossoming Families	1215.03	1021.43	1434.65
Country Orchards*	NA	NA	NA
Rooted Households	1239.01	1111.52	1377.12
Senior Neighbourhoods	1074.52	847.96	1342.99
Qualified Metropolitans**	1290.32	737.05	2095.54
Suburban Stability	1531.76	1398.44	1674.35
New Starters	1768.48	1579.13	1974.28
Urban Producers	1973.04	1845.10	2107.51
Weathered Communities	1997.61	1882.42	2118.01
Multicultural Centres	2392.51	2118.54	2692.08
Disadvantaged Households	2318.16	2213.41	2426.60
Urban Challenge	2514.34	2392.63	2640.63

* There are no Country Orchard LSOAs in Liverpool Local Authority

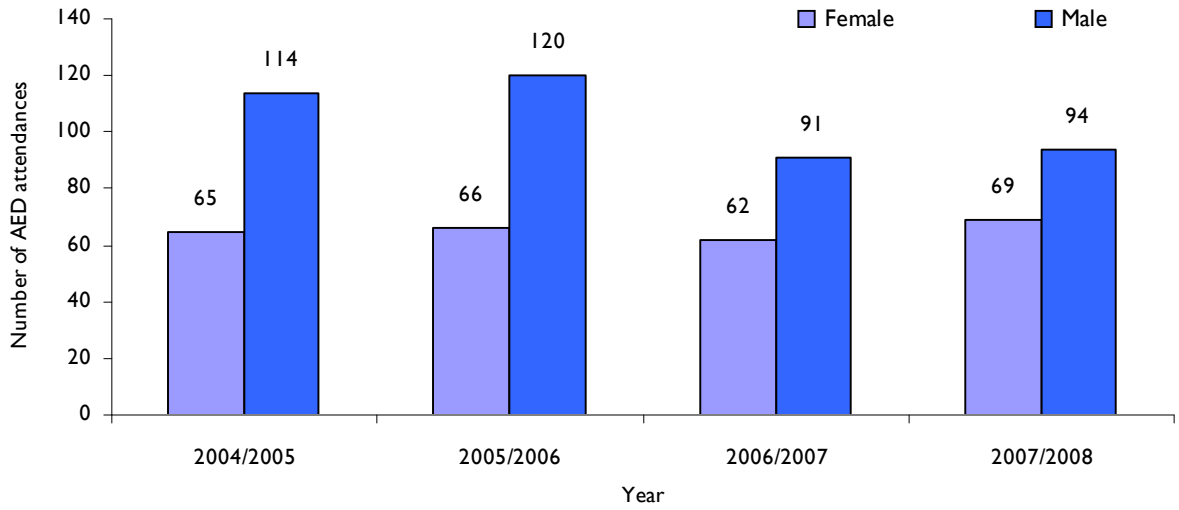
** The confidence intervals are extremely wide due to a count of <20

Alder Hey AED

Bites and Stings

Between April 2004 and March 2008 there were 681 bite/sting AED attendances by Liverpool Local Authority residents to Alder Hey. Bite/sting attendances peaked in 2005/2006 at 186 but have since decreased by 12% to 163 in 2007/2008 (Figure 28). Over the four year period more males (62%) attended AED for a bite/sting injury than females. Children aged 10-14 made the most (42%) AED attendances for bites/sting injuries. The primary locations for bites/stings in children aged 0 to 17 were in a public place (37%) and in the home (32%). The majority of AED attendances for bites/stings were discharged.

Figure 28: Bite/sting attendances to Alder Hey AED, Liverpool Local Authority residents aged 0-17 only, by gender and year, 2004/05 to 2007/08 combined



Accidental-ingestion injuries

Between April 2004 and March 2008 there were 680 AED attendances for accidental ingestion injuries by Liverpool Local Authority residents. Accidental ingestion attendances peaked in 2005/2006 at 188 but have since decreased by 22% to 147 in 2007/2008 (Figure 29). Over the four year period more males (54%) attended AED for an accidental ingestion injury than females. Children under five made (73%) the most AED attendances for accidental ingestion injuries. The primary location for accidental ingestion in children aged 0 to 17 were in the home (69%).

Deliberate ingestion

Between April 2004 and March 2008 there were 614 AED attendances for deliberate ingestion injuries by Liverpool Local Authority residents to Alder Hey AED. Deliberate ingestion attendances peaked in 2005/2006 at 213 but have since decreased by 48% to 110 in 2007/2008 (Figure 30). There has been a proportionally greater decrease in female attendances (-56%) compared to males (-21%). Over the four year period more females (75%) attended AED for a deliberate ingestion injury than males. Children aged 10-17 (97%) made up nearly all of the AED attendances for deliberate ingestion injuries. The primary locations for deliberate ingestion in children aged 0 to 17 were other (43%) and public place (27%).

Figure 29: Accidental-ingestion injury attendances to Alder Hey AED, Liverpool Local Authority residents aged 0-17 only, by gender and year, 2004/05 to 2007/08 combined

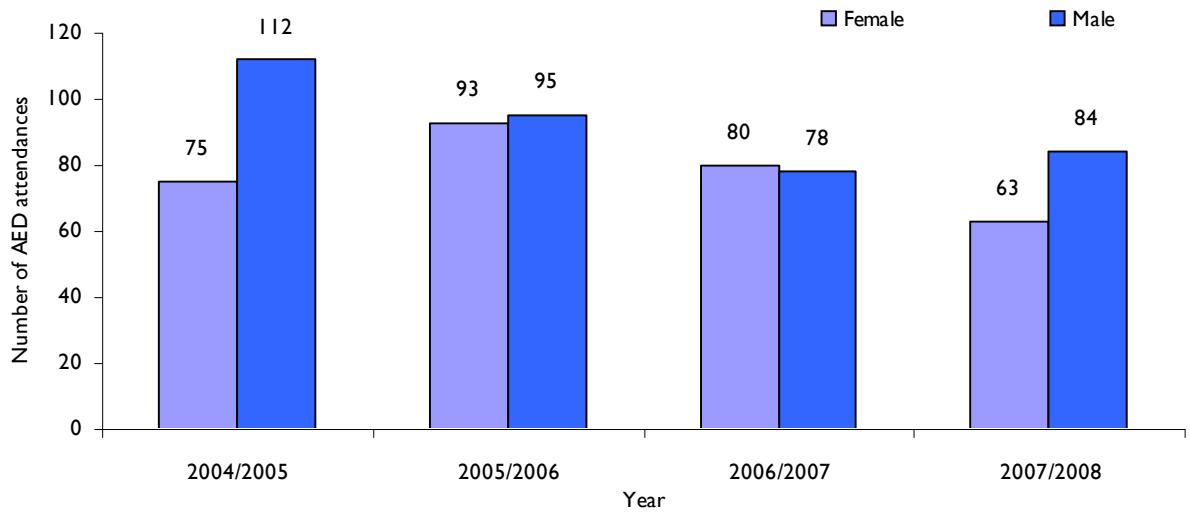
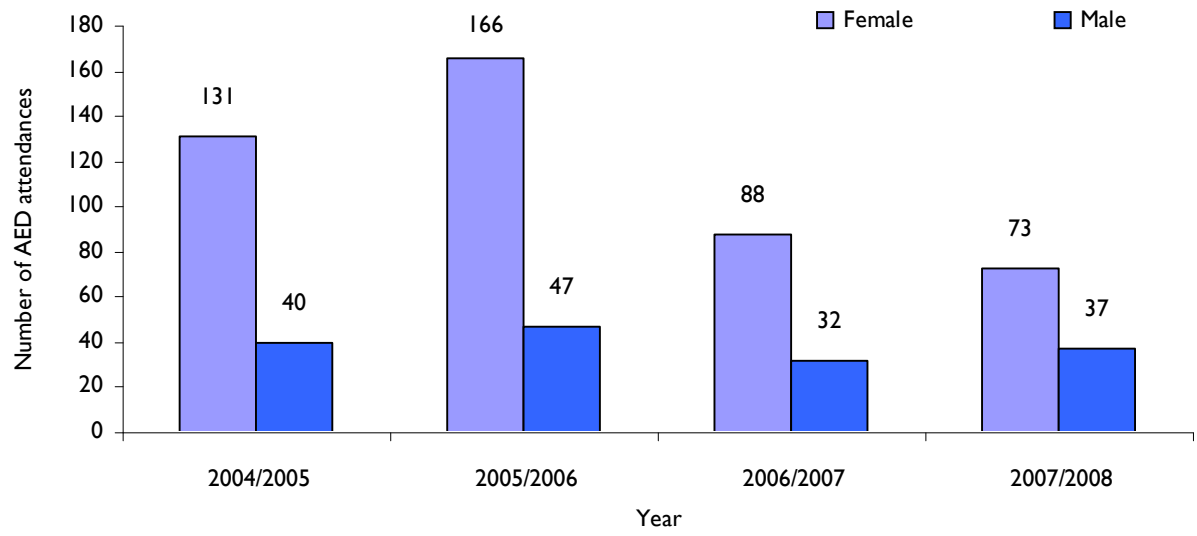


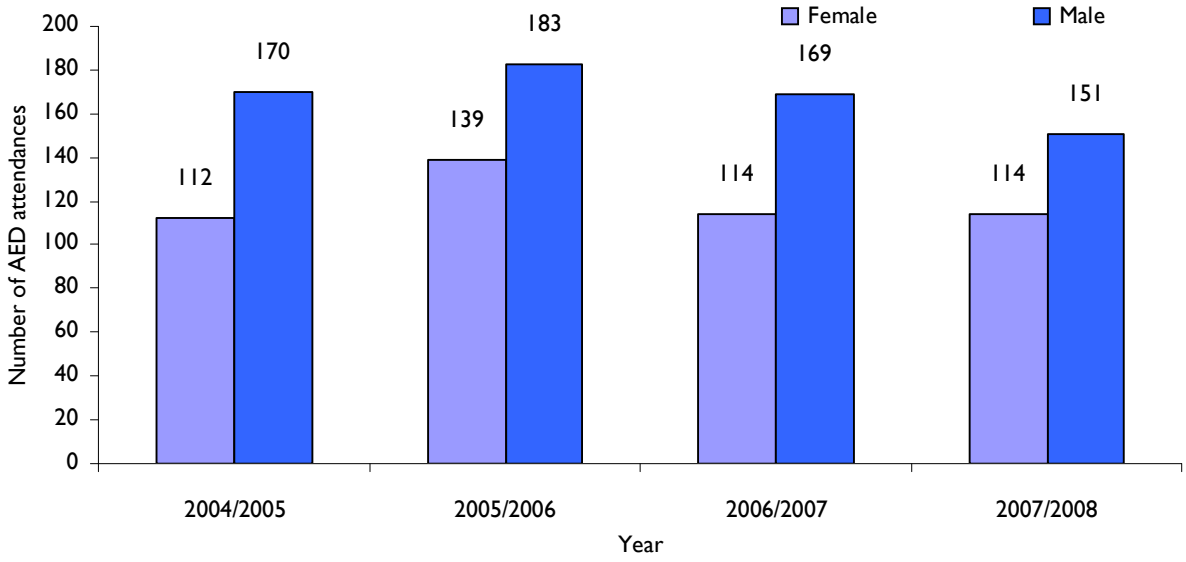
Figure 30: Deliberate ingestion attendances to Alder Hey AED, Liverpool Local Authority residents aged 0-17 only, by gender and year, 2004/05 to 2007/08 combined



Road traffic accidents

Between April 2004 and March 2008 there were 1,152 RTA AED attendances by Liverpool Local Authority residents aged 0-17. RTA attendances peaked in 2005/2006 at 322 but have since decreased by 18% to 265 in 2007/2008 (Figure 31). Over the four year period more males (58%) attended AED for a RTA than females. Children aged 10-14 (42%) made the most AED attendances for RTAs.

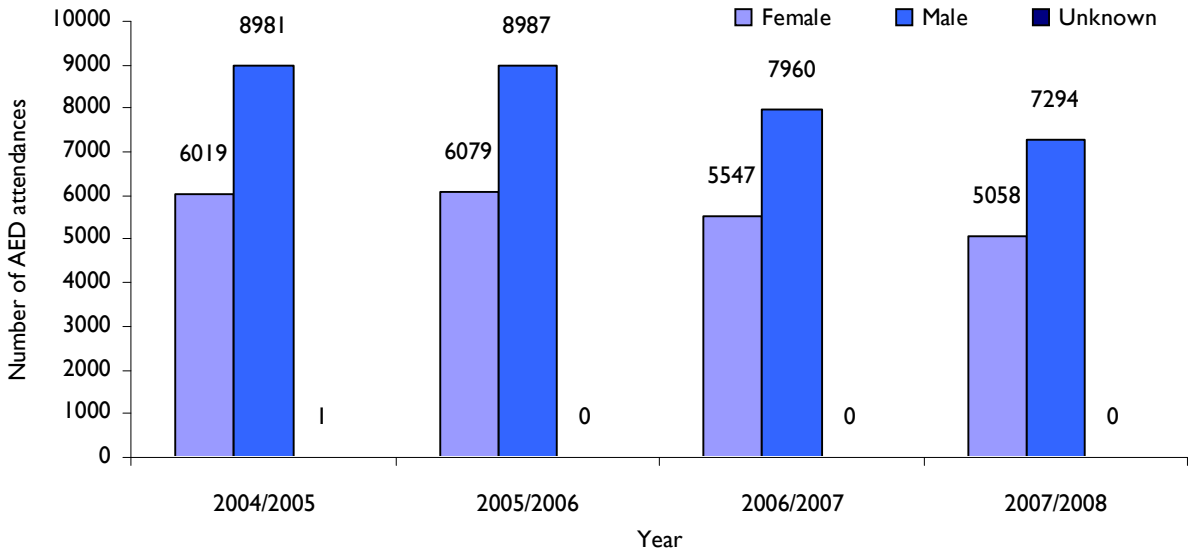
Figure 31: Road traffic accident attendances to Alder Hey AED, Liverpool Local Authority residents aged 0-17 only, by gender and year, 2004/05 to 2007/08 combined



Other accidents

Between April 2004 and March 2008 there were 55,926 other accident AED attendances by Liverpool Local Authority residents aged 0-17. Other accident attendances peaked in 2005/2006 at 15,066 but have since decreased by 18% to 12,352 in 2007/2008 (Figure 32).

Figure 32: Number of AED attendances for accidents grouped as other to Alder Hey AED, Liverpool Local Authority residents aged 0-17 only, by gender and year, 2004/05 to 2007/08 combined



Over the four year period more males (59%) attended AED for other accidents than females. Children aged 10-14 (40%) made the most AED attendances for other accidents. The primary locations for other accidents in children aged 0 to 17 were in the home (34%) and public place (22%).

Child injuries: summary

- **The number of hospital admissions for unintentional or deliberate injuries peaked in 2006/07 then decreased**
- **The number of AED attendances for most injury categories peaked in 2005/06 then decreased**
- **Males were at higher risk for most injuries, with the exception of deliberate ingestion, for which females were most at risk**
- **Those aged 10-14 were most at risk of injuries, with the exception of accidental-ingestion injuries (higher risk for those under the age of five)**

Recommendation

- **The steering group should liaise with colleagues from Alder Hey AED, children centres and local schools to further understand the causes of childhood injury and support the development of childhood injury prevention initiatives**
- **Interventions should be targeted at the most deprived areas of Liverpool, particularly the MSOAs of E02001390, E02001389, E02001360, E02001370, and E02001369**

4.3.10 Injuries in the workplace

This section contains information on injuries recorded by RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) from April 2004 to March 2008.

RIDDOR

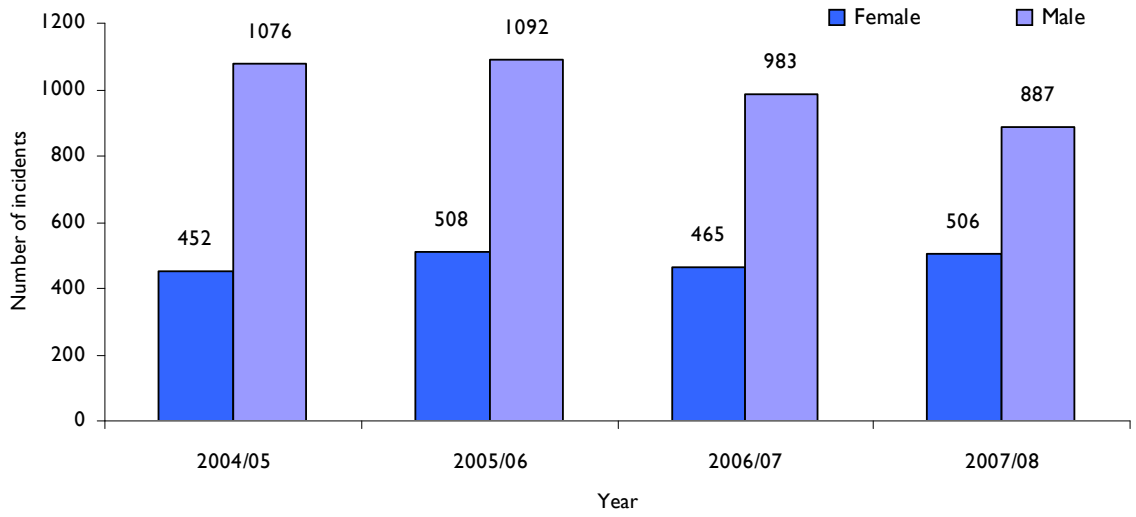
During the period April 2004 to March 2008 there were 5,969 injuries in the workplace recorded by RIDDOR. RIDDOR data show that recorded incidents occurring in the workplace peaked in 2005/2006 with 1600 incidents, but have since decreased by 13% to 1393 in 2007/08. As figure 33 shows over two thirds (68%) of recorded incidents happened to males. The majority of injuries recorded happened to employees (77%) and only 5% to members of the public. Employees injured were mainly aged[10] between 35 and 49 years of age (43%) and members of the public were predominately aged under 15 (45%).

Table 34 breaks the data down by classification of injury. These include:

- Fatal injuries
- Major injuries: serious injury to employees, including fracture, amputation, and injuries leading to resuscitation or 24 hour admittance to hospital
- Non fatal injuries to members of the public (MOP): injuries that result in an individual being taken directly to hospital
- Over-3-day injuries: non-major injuries to workers that lead to absence from work or inability to carry out their work for more than three days.

The majority of injuries were over-3-day injuries, and only a very small proportion was fatal.

Figure 33: Number of injuries recorded by RIDDOR, by gender and year, 2004/05 to 2007/08 combined



[10] Age was unknown for 706 employee injuries and 68 members of the public injuries, therefore percentages are calculated with those records with an "unknown age" removed from the denominator

Figure 34: Number of injuries recorded by RIDDOR by severity of injury, 2004/05 to 2007/08 combined[11]

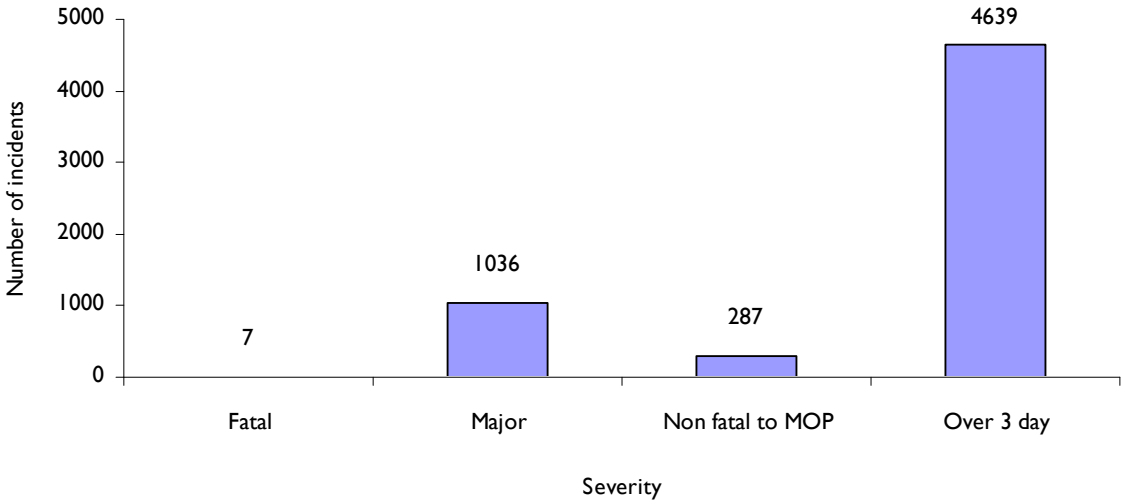


Table 35 shows the cause of injury for injuries recorded by RIDDOR, the majority of injuries were caused by slip, trip or fall (29.1%) or injuries sustained whilst handing, lifting, carrying, pulling or pushing. Sprains (38%) and fracture (17%) were the most common outcomes of an incident (Table 36).

Table 35: Injury cause recorded by RIDDOR, 2004/05 to 2007/08 combined

Injury cause	N	%
Slipped, tripped or fell	1735	29.1
Injured while handling, lifting, carrying, pulling or pushing	1563	26.2
Hit by a moving, flying or falling object	800	13.4
Physically assaulted by a person	368	6.2
Injured through cuts from sharp/coarse material or equipment or from trapped fingers	284	4.8
Fall from a height, up to and including 2 metres	252	4.2
Other accident	242	4.1
Hit by a moving vehicle	170	2.8
Exposure/contact harmful substance	162	2.7
Hit something fixed or stationary	142	2.4
Fall from a height, over 2 metres	55	0.9
Injured by an animal	50	0.8
Fall from a height - unspecified distance	49	0.8
Exposed to fire/fumes	34	0.6
Accidentally hit by another person	29	0.5
Contact with electricity or electrical discharge	26	0.4
Drowning or asphyxiation	<5	N/A
Exposed to high/low ambient temperature	<5	N/A
Total	5969	100.0

[11] Non Fatal MOP= a non-fatal injury to a member of the public

Table 36: Type of injury recorded by RIDDOR, 2004/05 to 2007/08 combined

Type of injury	N	%
Sprain	2244	37.6
Fracture	1036	17.4
Contusion	948	15.9
Lacerations	462	7.7
Superficial	350	5.9
Multiple injuries	314	5.3
Other known	157	2.6
Burns	155	2.6
Not known	126	2.1
Dislocation	70	1.2
Concussion, internal injuries, etc	38	0.6
Asphyxiation, poison etc	27	0.5
Amputation	24	0.4
Electricity	12	0.2
Loss of sight	<5	N/A
Natural causes	<5	N/A
Total	5969	100

Injuries in the workplace: summary

- **Injuries in the workplace peaked in 2005/06 and then decreased**
- **More males were involved in workplace injuries than females**
- **The majority of workplace injuries are not severe; most of those reported are non-major injuries to employees that lead to absence from work for more than three days**
- **Most injuries were caused by slips, trips or falls, or from handling, lifting, carrying, pulling or pushing objects**
- **The majority of injuries resulted in sprain, fracture or contusion**

4.4 Prevention initiatives and targets

This section contains information gathered from the practitioner interviews on: the role agencies play in unintentional injury prevention; current and past prevention strategies; and local and national unintentional injury targets.

Agencies' roles in unintentional injury prevention

Local Children's Centres provide pregnant women, 0-5 year olds and their families with integrated services and information covering, for example, early learning and health. The Children's Centres are heavily involved in promoting health and preventing unintentional injuries in children. To help provide these services each centre has a health promotion officer. Working closely with Children Centres and other agencies are the health promotion staff from the local *children's hospital*. Health promotion staff are involved in multi-agency initiatives to prevent first and return AED attendances and hospital admissions.

Liverpool City Council have a number of departments which cover different facets of unintentional injury prevention. The *Commercial Unit* covers safety and accidents in the commercial sector, working to enforce the *Health and Safety at Work etc Act 1974*. Under this Act a business/commercial premise has a responsibility to ensure the safety of its workers. The *Healthy Homes Programme* at Liverpool City Council has been developed to prevent deaths and illness due to poor housing conditions. The Council also has a designated road traffic safety team. *Liverpool PCT* is also actively involved in the Healthy Homes Programme and seeks to prevent falls in the elderly through a designated team working on preventing ill health in the over 50 population.

Working with all these agencies is *MFRS* (Merseyside Fire and Rescue Service) which has changed its role over the last ten years from primarily being a response unit to having three core streams: prevention, protection and response. Through their prevention stream they undertake a number of community initiatives around fire safety and general unintentional injury prevention, especially in the home and workplace. MFRS conduct home visits to households which have been identified by them or other agencies as high-risk of unintentional injury. Not only do they focus on preventing accidental fires in the home but also identify other potential harms such as the risk of slips, trips and falls through their risk assessment. Liverpool PCT and Liverpool City Council are also a partner of *Health@Work* a registered charity and company limited by guarantee working in Liverpool that aim to improve health in the workplace. They achieve this aim through providing health and safety services to primary care organisations, other health sector organisations, Small and Medium Enterprises (SME) and individuals.

A key aim of this audit is to identify current and past unintentional injury prevention initiatives in Liverpool. Interviews suggest that there is currently a wide range of prevention strategies being carried out. Examples of these prevention strategies are shown in Table 37.

Current policy and targets around unintentional injury

Table 38 contains examples of current policy and targets relating to unintentional injury for each agency that has been interviewed to date.

Table 37: Examples of current and past unintentional injury prevention strategies, by agency

Agency	Example prevention strategies
Commercial Unit (Liverpool City Council)	• The Commercial Unit are not directly involved in unintentional injury prevention campaigns. However the unit ensures that businesses adhere to regulations that are in place to prevent workplace injuries and promote a safe working environment.
Liverpool PCT: older people's prevention services	• No specific campaigns were identified to prevent unintentional injuries. However the PCT is involved in the Healthy Homes Programme, which covers unintentional injury prevention.
Local children's hospital: health promotion	• Involved in the organisation and running of the 999 Safety week and Road Traffic Safety week, both multi-agency led and involve a number of emergency services. • Road Safety Initiative campaign, including police and AED staff. The project will target law breaking drivers in Liverpool who will be offered a choice of points on their license or a health promotion exercise with AED staff. • Straight Away campaign to reduce serious burn injuries in young children caused by hair straighteners. Using a media campaign to promote the use of heat resistant storage pouches.
Children's Centres (Liverpool City Council)	• Visit families with new born babies and provide child safety packs including free plug guards, cupboard catches and information. • Health promotion officers are trained to provide safety information to parents and to recruit volunteers to become child safety champions in the local community. • Road safety is being tackled with children as young as three who attend children centre nurseries using role play with mock roads and pavement sets.
Healthy Homes Programme (Liverpool City Council)	• Assess the work that is being carried out by agencies in Liverpool to prevent unintentional injury in the home and provide services to fill in any gaps in provision. • Environmental health officers attend homes to evaluate the risk of unintentional injuries to residences. Use data to identify at risk groups and communities.
Health at Work	• Targeted Small and Medium Enterprises from the Muslim and ethnic business sector to help improve health and safety standards in the workplace. Also aimed to improve employee/employer communication on relevant health and safety matters.
Merseyside Fire and Rescue Service	• Provide and install smoke detectors, provide advice and undertake risk assessments. • A specialist team is working with colleges and schools, speaking to young drivers about road safety. • Fire network of volunteers - conduct a range of specialist interventions in the homes of individuals that have been identified as high risk. E.g. cleaning cookers, ensuring stand alone heaters are safe.

Table 38: Examples of national and local policy and targets relating to unintentional injury prevention for local agencies

Agency	National policy	National targets	Local policy	Local targets
Liverpool PCT	National Indicators for Local Authorities and Local Authority Partnerships	N170: to reduce emergency hospital admissions caused by unintentional and deliberate injuries to children and young people NI47: to reduce people killed or seriously injured in road traffic accidents NI48: to reduce children killed or seriously injured in road traffic accidents	A new Health Service for Liverpool. Strategic Plan 2008-2011	By 2011 cut deaths from accidents by 20% in under 75 year-olds, compared with 2004
Children Centres (Liverpool City Council)	National Indicators for Local Authorities and Local Authority Partnerships	N170: to reduce emergency hospital admissions caused by unintentional and deliberate injuries to children and young people		
Local children's hospital	National Indicators for Local Authorities and Local Authority Partnerships	N170: to reduce emergency hospital admissions caused by unintentional and deliberate injuries to children and young people NI48: to reduce children killed or seriously injured in road traffic accidents	Because your health matters: a public health strategy	
Commercial Unit (Liverpool City Council)	HSE, FIT3 (Fit for Work, Fit for Life, Fit for Tomorrow) Programme. 2005/06 to 2007/2008 The Revitalising Health and Safety strategy statement, launched in June 2000, set three national targets for improving health and safety performance by 2010 - The Health and Safety at Work etc Act 1974	3% reduction in the incidence of work-related fatal and major injuries 9% reduction in the incidence rate of days lost due to work-related injuries and ill health To reduce the incidence rate of fatalities and major injuries by10% To reduce the incidence rate of cases of work-related ill health by 20% To reduce the number of working days lost per worker from work-related injury and ill-health by 30%		

Agency	National policy	National targets	Local policy	Local targets
Healthy Homes Programme (Liverpool City Council)	National Indicators for Local Authorities and Local Authority Partnerships	N170: to reduce emergency hospital admissions caused by unintentional and deliberate injuries to children and young people. Specifically accidents in the home		Target to attend 5,500 private rented houses in deprived areas of Liverpool
Health at Work	The Health and Safety at Work etc Act 1974			
Merseyside Fire and Rescue Service	National Indicators for Local Authorities and Local Authority Partnerships	NI49: to reduce the number of primary fires and related fatalities and non-fatal casualties (excluding precautionary checks)	Service Plan 2008-2009	LPI4: Reduce the number of staff injuries LPI9: Reduce the number of RTCs (Road Traffic Collisions) attended LPI10: Reduce the number of injuries in RTCs

4.5 Partnership working, barriers and areas for development

This section includes information gathered from the practitioner interviews on multi-agency working and areas of good practice, and key barriers to developing, implementing and evaluating unintentional injury prevention initiatives.

Multi-agency working

All of the agencies interviewed worked with a least one other agency in the prevention of unintentional injury. For example, Children's Centres and the local children's hospital carry out a range of prevention campaigns together and also liaise with other emergency services, especially when conducting safety weeks and events. The local children's hospital is also currently working with local police to develop a road safety initiative. MFRS is active in working with a number of different agencies; all the work they carry out around unintentional injury prevention in the community is multi-agency based. Their community teams are made up of community volunteers from a range of backgrounds (e.g. mental health workers) ensuring they have access to a wide range of expertise. They have a close relationship with Liverpool PCT and the Healthy Homes Programme team based at Liverpool City Council. A member of the fire service sits within the healthy homes team allowing them to identify and access those most at risk of injuries in the home and provide immediate support where relevant. They also have a good working relationship with registered social housing landlords and provide consultation and advice to them, for example regarding installing domestic sprinkler systems. Furthermore, the fire service has a threat response group who work with other local agencies to identify emerging threats (eg. heat waves, firework use, anti-social behaviour) and put prevention strategies in place. For example, they may use meteorological and police data so they can form a strategic multi-agency response to a heat wave.

Key barriers and areas for development

While agencies are pleased with the sort of focus and resources that are being invested in the prevention of unintentional injury across Liverpool, interviewees identified a lack of awareness of what other agencies are doing. Subsequently, there were concerns that across Liverpool agencies may be duplicating injury prevention efforts, and that resources are not being used as effectively as possible. For instance, it was highlighted that a number of different agencies provide stair gates to families with young children, which could mean a family may receive more than one from different agencies. It was recognised that an unintentional injury prevention steering group could help communicate current prevention campaigns; ensuring work is not duplicated, whilst highlighting areas of good practice and information on what works to reduce injuries. This would allow a more coordinated approach to reducing the burden injuries place on Liverpool's residents and local agencies. However interviewees were mindful that any steering group should be very operational, inspiring positive and coordinated action on the ground. It was also suggested that because injury prevention is very broad topic, it may be appropriate to have a number of steering groups that focus on particular at risk groups or injury types, so that specific expertise can be utilised.

"There is no forum for sharing coming together on accident prevention" Children's Centres

"What has struck me in Liverpool … is pockets of people doing lots of different things, some really good stuff around accident prevention but nothing is coordinated, it's just sort of really bitty" Children's Centres

Although a lot of good work around unintentional injury prevention in children is occurring, it was recommended that more effort should be applied to providing safety information and devices to young families who do not access community services and therefore are excluded from a range of unintentional injury prevention initiatives. It was suggested that this type of service could be attached to post-natal home health visits before the child becomes mobile. This policy of addressing more than one health issue at once is championed by the fire and rescue service, which aims to

address more than just fire safety when carrying out home visits. They would like to see a more joined up approach to injury prevention through attaching it to other health initiatives, which would therefore improve multi-agency working and be more cost-effective. Another recommendation to make injury prevention more cost effective was means testing for the distribution of free safety devices so that agencies' resources are being provided to those who most require help.

Whilst interviewees felt that their prevention campaigns were typically evidenced based, evaluations were not always carried out because either there is no measurable outcome or they lack good quality data to evaluate the intervention effectively. For example, the impact of safety devices distributed to families is typically assessed through the number of devices given out and through questionnaires assessing customer satisfaction with the service provided. The Straight Away campaign at the children's hospital on the other hand has a definite evaluation procedure analysing attendances to AED and hospital admissions for hair straightener-related burns. Some services such as MFRS have excellent data collection procedures so are able to monitor prevention campaigns and targets. It was highlighted that the availability of detailed data is the biggest barrier to systematic evaluation procedures.

4.6 Review of national and international research on interventions and policy to prevent unintentional injury in at-risk groups

There are many interventions designed to prevent or reduce unintentional injuries, and a large number of systematic reviews examining overall effectiveness. These reviews vary by how interventions are examined, so for example they may be broken down by setting (e.g. home, school), intervention type (e.g. education, campaigns), target group (e.g. children, older people), type of injury (e.g. fractures, head injury) or cause of injury (e.g. RTA, fire-related injuries). Here, for ease of reading, we present findings based on two broad classifications of injury cause (road traffic injuries, and injuries in the home and community). We focus on those interventions targeted at high-risk groups such as children and older people, low income families, or those living in deprived areas. We also include safety-for-all strategies, although it is often unknown whether such interventions can differentially favour those groups with higher injury rates. A summary of interventions can be found in Table 39.

Road traffic injuries

High risk groups: children and older people, those living in deprived areas, urban areas.

Traffic calming

Traffic calming measures aim to reduce traffic speed and volume in specific areas through a variety of measures, including: speed humps, road narrowings, 20mph zones, road closures and speed cushions. There is good evidence that these measures are effective in reducing traffic speeds and reducing injuries in the general population, and in children in particular (Morrison et al., 2003; Towner et al., 2001). For instance, the UK Urban Safety Project included measures to redistribute traffic, improve the safety of roads, and reduce speeds. Evaluations of the scheme found that RTAs were reduced by 13%, and that there were considerable cost savings in its implementation (Towner et al., 2001). Additionally, the introduction of 20mph speed zones in the UK was effective in reducing vehicle speeds by 9mph, child pedestrian injuries by 70%, and child cyclist injuries by 48%. (Webster et al., 1996). Speed enforcement detection devices (e.g. speed cameras and laser and radar devices) have also found to be effective in reducing traffic speeds and reducing the level of road traffic crashes in the vicinity of device sites (Wilson et al., 2006). Traffic calming measures implemented in more deprived, urban neighbourhoods can help to reduce the inequalities gap in road traffic injuries between the most affluent and most deprived geographical areas (Jones et al., 2005).

School-crossing patrols
Evidence on the effectiveness of school crossing patrols is lacking. However, in the UK, an evaluation of their use in the late 1980s suggested that they can reduce the number of injuries occurring to child pedestrians at, or near, crossing sites (Boxall et al., 1988).

Safety education programmes for pedestrians
There is some evidence for the effectiveness of safety education programmes for child pedestrians, but there is a lack of evaluations for adult programmes (Reading, 2002; Duperrex et al., 2002). For children, safety education programmes have been implemented in a variety of settings (home, school or semi-real traffic environments), and have been targeted either directly at children, or at children with parents or teachers. A review of these programmes found that they could positively change observed road crossing behaviours among children, but none of the trials included assessed changes in the occurrence of pedestrian injury (Reading, 2002).

Provision and promotion of bicycle helmets
Whilst evidence for an association between the use of bicycle helmets and cyclist injuries is mixed (Hewson, 2005a; Hewson 2005b), internationally, a range of educational and promotional methods have been shown to increase cycle helmet use and reduce injuries among children (Spinks et al., 2005; Towner et al., 2001). Interventions are often targeted at individuals living in low income or deprived areas. They appear to have little effect on levels of helmet ownership (Royal et al., 2005). However, reducing the cost of helmets through discounts, or offering helmets free of charge has been found to facilitate their uptake and use (Towner et al., 2001). In the UK, a hospital-led helmet promotion campaign targeted 5 to 15 year olds and used educational methods involving children, parents, schools and safety organisations. The scheme also offered a low cost helmet purchasing scheme. Compared to a control group, self-reported helmet use significantly increased among those targeted after a five year period, from 11% to 31%. Furthermore, the percentage of head injuries as a proportion of all bicycle-related injuries decreased from 22% to 12% in the intervention area (Lee et al., 2000). Since ownership and use of bicycle helmets is lower among children living in deprived areas (Lang, 2007), such schemes have the potential to address inequalities in injuries between socio-economic groups.

Provision and promotion of child restraints and seat belt use
In health care settings, the loan of car safety seats for children has been found to be effective in increasing the numbers of children transported safely in cars (Towner et al., 2001). There is also evidence for the effectiveness of educational campaigns to increase the use of child restraints (Towner et al., 2001). Often these two components are combined together for a more comprehensive intervention. However, there is a lack of studies measuring the impact of the provision and promotion of child restraints on RTAs or injuries, and their effectiveness is as yet unknown (Towner et al., 2001).

Use of visibility aids
Fluorescent materials, lamps, flashing lights, and retroflective materials have been found to improve the detection of cyclists and pedestrians among drivers (Kwan and Mapstone, 2002). However no studies have examined their effects on accidents or injuries. Furthermore, research is needed on the efficacy of programmes aiming to increase accessibility of visibility aids or promote their use for pedestrians or cyclists.

Multi-component community interventions
Comprehensive interventions that combine strategies such as education and traffic calming measures and engage the community at large have been found to be effective in reducing the incidence of childhood pedestrian injury (Turner et al., 2004). While there have been no evaluations of such schemes in the UK, those implemented in the US, Australia and Norway have reported reductions in pedestrian injury among children of between 12% and 54%. The greatest reductions in injuries were

found in those projects that involved a wide variety of governmental and voluntary organisations in its implementation (Turner et al., 2004).

Media education campaigns

In the UK, media education campaigns have been used to increase knowledge around a range of road safety behaviours using television, radio and printed materials such as newspapers, posters and magazines. These include for instance: reducing speed, wearing seat belts, using child restraints, drink driving, driver tiredness, and using a mobile phone while driving (DfT, 2009). While these campaigns have been effective in reaching high levels of the population, increasing knowledge, and changing attitudes towards safety behaviours, changes in behaviour are harder to determine. However, some positive results have been reported. For instance, following a Department of Transport campaign promoting the use of child seats and restraints, 14% of people surveyed said they had bought or installed a child seat or restraint as a result of the campaign (DfT, 2006). A meta-analysis of 48 health behaviour campaigns (covering a range of health behaviours) reported that on average, 9% more people performed a health behaviour following a campaign than before (Snyder et al., 2002).

Legislation on the use of child restraints, seat belts and bicycle helmets

Child restraint and seat belt legislation has been found to be effective in increasing the numbers of children observed using restraints, and in reducing injury and death (Dinh-Zarr et al., 2001; Shults et al., 2004; Towner et al., 2001). Although it is not a legal requirement to wear a bicycle helmet in the UK, a review of the effectiveness of such legislation in other countries have reported some positive changes in helmet use. While the baseline rate of helmet use among the studies reviewed varied between 4% and 59%, after legislation this range changed to 37% and 91% (Karkhaneh et al., 2006). However, it is not known whether the change in legislation was associated with any reductions in cycle-related injuries.

Legislation on blood alcohol concentration

There is evidence for the effectiveness of lower blood alcohol concentration laws for young and experienced drivers in reducing alcohol impaired driving and alcohol-related crashes (Morrison et al., 2003; Shults et al., 2001). In Norway, France and Australia, reducing the illegal limit from 0.08 to 0.05 was found to substantially reduce injury crashes (Fell and Voas, 2006). In Sweden, lowering the illegal limit from 0.05 to 0.02 resulted in a 9.7% reduction in fatal crashes, 11% reduction in single vehicle crashes, and 7.5% reduction in all crashes in the six years following the change in legislation (Norström and Laurell, 1997).

Injuries in the home and community (fire-related, falls, poisonings)

High risk groups: children and older people, those living in deprived areas.

Improved playground layout

Although more research is needed, there is some indication that modification of playground environments can be effective in reducing childhood injuries (Towner et al., 2001). For instance, in Wales, reducing the height of play equipment and increasing the depth of impact-absorbing surfaces around equipment has been found to reduce overall injury rates and fractures among children (Sibert et al., 1999).

Provision of home safety devices

The provision of home safety devices, such as cupboard catches, electric socket covers, stair-gates, fire guards, window locks, thermometers to test hot water temperatures, anti-scald devices in hot water taps, and smoke alarms can offer some protection against injuries arising in the home. Devices can be distributed free of charge, loaned, or offered at a reduced cost to households, and such schemes are often targeted at families with children, or older children themselves, living in disadvantaged areas. In general, the provision of home safety equipment has been found to achieve some positive benefits in terms of behaviours (reported use of safety devices), but the impact on

injury rates is inconclusive (Towner et al., 2001). In the UK, evaluation of a home safety equipment loan scheme, targeted at families with children less than five years of age and living in low income areas, found that while home accidents among children decreased by 10% following the scheme, there was no effect on injury outcomes (Thompson et al., 1998). Similarly, a scheme providing safety advice and free (or low cost) safety devices that were fitted without charge was targeted at deprived families in Nottingham with a child less than five years of age. Compared to a control group, families participating in the scheme were significantly more likely to have a range of safety practices, but there were no differences in the rates of injury among children (Watson et al., 2005). Further analysis of the scheme reported that it was partially successful in reducing inequalities in the use of safety equipment by social-economic group (Kendrick et al., 2009).

Home safety education programmes

Home safety education is most commonly provided on a one-to-one basis, either in the home or health care setting. Programmes are often combined with the provision of home safety devices, and targeted at families with young children or living in deprived areas. There is evidence of the effectiveness of such programmes in increasing safety behaviours and the use of safety devices. For instance, a comprehensive review of programmes found that they increased: stair-gate use; safe storage of medicine and cleaning products; possession of syrup of ipecac (substance that can induce vomiting); the likelihood of having poison control centre telephone numbers accessible; socket covers on unused sockets; safe storage of sharp objects; possession of a functional smoke alarm and the likelihood of having safe hot tap water temperatures (Kendrick et al., 2007). There was also some evidence for a reduction in the use of baby walkers and an increase in the use of fire guards. However, there was little evidence of increased possession of other items such as window locks, windows with limited openings, fire extinguishers, or non-slip bath mats. Furthermore, there was little evidence that changes in safety practices impacted on subsequent accident or injury rates among children. Programmes were found to have more of an effect if they provided safety equipment alongside education sessions.

Exercise programmes for older people

There is clear evidence that exercise programmes can significantly reduce the incidence of falls in older adults (Carter et al., 2001; Chang et al., 2004; Gardner et al., 2000) and they are recommended by the National Institute for Health and Clinical Excellence (Box 2). A review of physical activity interventions reported that the risk of falling among older people could be reduced through the use of either individually prescribed home exercise programs focusing on strength, balance and walking practice, or non-prescribed group exercise programmes that challenged balance (e.g. Tai Chi) (Sherrington et al., 2004). However, there is not enough evidence to determine whether such programmes can reduce injurious falls.

Multi-component community interventions to prevent falls among older people

Multi-component interventions use a wide range of activities to change attitudes, behaviours, and other known risk factors for fall-related injuries among older people. Activities can include: community education using posters, television and radio, home visits, the removal of hazards, control of medication, and promotion of safe footwear and physical activity. Although it included no studies from the UK, a review of multi-component programmes in other countries reported significant decreases in fall-related injuries in all included studies, ranging from 6% to 33% (McClure et al., 2005).

Multi-factorial and single interventions in the community for falls prevention

A multi-factorial intervention is based on individual assessment of risk factors and subsequently different combinations of interventions are provided based on this assessment. Multi-factorial interventions have been shown to be effective in reducing the rate of falls in the elderly (Campbell and Robertson, 2006; Campbell and Robertson, 2007). However, in the community single, targeted interventions such as exercise programmes and home safety programmes have been shown to be just as effective as multi-factorial interventions in preventing falls and maybe more cost effective (Campbell and Robertson, 2006; Campbell and Robertson, 2007). Nevertheless for individuals the

use of multi-factorial interventions after an individual has been risk assessed should provide more comprehensive support than a single intervention, although it is likely to be more costly.

Community and media campaigns to promote safety

Community and media campaigns have been used to educate about safety practices and promote a variety of safety behaviours. Campaigns can be targeted at the general population or at certain higher risk groups such as children, or families with children. In the UK, campaigns have included: increasing awareness of firework safety (BERR, 2009), encouraging people to test smoke alarms in their homes, the dangers of burning candles, smoking in the home and cooking (Direct Gov, 2009), and safe storage of medicines (Stone, 1998). However, such campaigns are rarely evaluated, and little is currently known about their effectiveness in preventing injuries either in the general population or among children. In Scotland, evaluation of a television campaign to raise awareness of fire dangers in the home reported that the advertising had made the public think about safety issues. However, there were few changes in attitudes towards fire safety, and no evidence of any change in behaviour or intended behaviour in relation to smoke alarm fitting or testing (Scottish Executive, 2006).

Table 39: Summary of interventions and evidence for their effectiveness

Setting	Road traffic	Home and community Burns / Falls / Poisonings
Environment	**Traffic calming** **School-crossing patrols**	**Improved playground layout**
School	**Provision and promotion of bicycle helmets** Safety education programmes for pedestrians	Provision of home safety devices Home safety education programmes
Home	Safety education programmes for pedestrians	**Exercise programmes for older people** Provision of home safety devices Home safety education programmes
Hospital or health care	**Provision and promotion of bicycle helmets** Child restraint loan schemes	**Exercise programmes for older people** Provision of home safety devices Home safety education programmes
Community	**Multi-component community interventions**	**Exercise programmes for older people** **Multi-component community interventions to prevent falls among older people** Home safety education programmes
Society	Media campaigns	Media campaigns
Governmental	**Legislation on the use of child restraints, seat belts and bicycle helmets** **Legislation on blood alcohol concentration**	
Other	Visibility aids	

Bold: Evidence for a reduction in injuries / accidents
No bold: Evidence for an increase in safety behaviours

Box 2: Standards and guidance on falls prevention among the elderly

In 2001, the National Service Framework for Older People was published by the Department of Health to improve standards of care among the elderly. Standard six dealt specifically with falls, and aimed to *'reduce the number of falls which result in serious injury and ensure effective treatment and rehabilitation for those who have fallen' (Department for Health 2001)*.. Following the National Service Framework, a number of guidance documents were drawn up to recommend best practice in falls prevention. These included guidance from National Institute for Health and Clinical Excellence (NICE) on preventing falls among the elderly, and guidance from the Department of Health on helping older people who have experienced a fall not to fall again.

NICE guidance on the prevention of falls among the elderly

In 2004, the (NICE) published guidelines on the assessment and prevention of falls among the elderly. The guidance intended to make recommendations on the most clinically effective and cost-effective interventions (NICE 2004). Key recommendations from the report included:

- Multi-factorial falls risk assessment among those presenting with a fall, with a history of falling, or with balance or walking difficulties;
- Individualised multi-factorial interventions, including: strength and balance training; home hazard assessment and intervention; vision assessment and referral; and medication review with modification/withdrawal;
- Strength and balance training, particularly among people with a history of falling or gait problems;
- Exercise programs (included as part of a multi-factorial intervention) among older people in extended care settings;
- Home hazard and safety interventions among those that have received hospital treatment for a fall;
- A review of psychotropic medications; and
- Cardiac pacing for older people with cardio-inhibitory carotid sinus hypersensitivity who have experienced unexplained falls.

Department of Health guidance on helping older people not fall again

Guidance on helping older people not fall again was introduced by the Department of Health in 2003 (Department for Health 2003). The document identified elements of good practice in commissioning falls services and falls prevention initiatives. One key element was that interventions are most beneficial when targeted at those most at risk, based on agreed assessment processes, and integrated in a falls strategy developed with the full range of local services. Furthermore, interventions are most effective when targeted at those who have already fallen once and who have other risk factors. A literature review of interventions to prevent falls found:

- Multi-factor, interdisciplinary approaches to falls prevention which address the complexity of older peoples' lives are the most successful;
- There is some evidence for the use of exercise, such as balance training, in reducing the risk of falling;
- Home assessment of older people who have not been identified as being at risk of falling is not recommended as a cost-effective intervention;
- Assessment and modification of risk factors of older people following presentation to an AED with a fall is effective; and
- The provision of hip protectors for some residents of nursing homes is effective.

5. Discussion

With Liverpool having the highest rate of hospitalised unintentional injury in the North West region, this audit was conducted to provide an in-depth understanding of the current situation for injuries across the PCT. It aimed to identify strategies to increase injury intelligence and further develop the prevention efforts being currently implemented across Liverpool. The audit was designed to determine: the availability, accessibility and quality of injury data; the types of injuries that occur and their locations; groups of people most at risk; prevention strategies currently in place across Liverpool PCT; and effective, evidence-based prevention strategies reported in the scientific literature. Based on the findings of the audit, we make a number of key recommendations to help further develop unintentional injury prevention in Liverpool PCT (see Box 3 and Box 4).

Availability, accessibility and quality of data

Availability of unintentional injury data was good; nine data sources were identified that included the Liverpool PCT area. Seven of these datasets were accessible within the time frame of the report, and access to one (NWAS) was under discussion at the time of writing. Only one dataset proved more difficult to access (GMP data) due to the lack of a central data collection point or provider. The quality and content of available datasets varied considerably. More importantly however, datasets often varied internally between the different data providers (e.g. between different AED departments), highlighting the need for the development of more unified data reporting. Furthermore, quality of data differed according to injury type, with more complete and detailed information being available for RTAs than any other injury classification. In general, datasets provide limited information on the location and circumstance of unintentional injuries. Since examination of these fields offers a valuable opportunity to determine the most effective locations and settings for injury prevention programmes, this finding highlights a need to improve data quality in these areas. Furthermore, although access was gained to data from MIU/WICs, no data were provided on injury type and cause, and it was not possible within the project time scales to explore how many of the centre attendances were for unintentional injury. However this is a potentially useful source of information, with over 126,000 visits to the four Liverpool centres over a one year period. Further work could explore this data source more thoroughly to assess its use as part of a surveillance system.

Unintentional injury levels in Liverpool

Overall, levels of unintentional injuries in Liverpool have increased between 2004 and 2007. However this trend was not found for all types; levels of RTAs and fire-related injuries have decreased over time. For the majority of injury types, males experienced higher proportions of injury than females. The only exceptions were for falls and poisonings. Falls are expected to be higher among females given that they are more likely to occur in those aged 75+, and that, on average, females live longer than males. This makes the elderly an ideal target group for fall prevention initiatives. Risk of injury varied by age group, but was dependent on the injury type. In general, higher levels of injury were found among older people for all injuries, falls, and fire-related injuries, while young people were most affected for RTAs, poisonings and sports-related injuries. For all types of injury analysed, relationships were found with deprivation, where those living in the most deprived areas experienced higher rates. Deprived populations should therefore be a priority group for intervention. Children's injuries were analysed as a separate category and showed very similar findings across injury types, with a higher proportion experienced by males and 10-14 year olds (10-17 for deliberate ingestion). The only exception was for accidental ingestion, where higher percentages were found for children under the age of five and are likely the result of young children accidentally consuming tablets or household products.

Current unintentional injury prevention initiatives and multi-agency working

Interviews with practitioners highlighted a wide range of prevention strategies currently in place across Liverpool PCT that addressed unintentional injuries in children, road safety, health and safety in the workplace, and injuries in the home (including falls among the elderly). Although a number of initiatives were focused on children, these were mainly provided through the use of community services, and thus may exclude those unable or unwilling to access such services. More research may need to be carried out to determine how best to access these groups that may be most in need of intervention. Although a range of prevention initiatives were in place, these were rarely evaluated, limiting the ability to determine effectiveness and value for money. Prevention initiatives would benefit from building evaluation activities into the initial planning stages to ensure thorough evaluations are carried out. While all agencies were involved in multi-agency work, practitioners highlighted a general lack of awareness of prevention activities implemented by other agencies and concerns about possible duplication of effort. This highlights the need for greater information sharing between agencies, and the potential benefit of an injury steering group that could communicate current prevention campaigns and co-ordinate prevention efforts across the PCT.

Evidence-based injury prevention interventions

The scientific literature contains a wide range of evaluated national and international interventions for injury prevention. For RTAs, evidence suggests that the most effective include traffic calming measures, (particularly the use of 20mph zones to reduce traffic speeds), the provision and promotion of bicycle helmets, and multi-component community interventions that combine education on road and pedestrian safety with traffic calming measures. For home and community injuries, there is evidence for the effectiveness of improved playground layout to reduce childhood injuries, and exercise and multi-component programmes to prevent falls among older people. Further promising interventions are the provision of home safety devices and home safety education programmes, which are often targeted at deprived neighbourhoods. While there is good quality evidence for the effectiveness of these programmes in increasing safety behaviours and the use of safety devices, few studies have examined effects on injury rates. More research is needed on their use in reducing levels of injuries before they can be recommended as an effective intervention.

Box 3: Key recommendations

1. Establish a multi-agency steering group for unintentional injury prevention

A multi-agency steering group should be set up to ensure that a joined up approach to unintentional injury is implemented, and to enable the sharing of good practice. If required, smaller, specialised steering groups could be set up covering specific injury groups/age groups to improve the effectiveness and functionality of co-ordinated action.

2. Develop an unintentional injury prevention strategy

Based on current data, a prevention strategy should be drawn up by the steering group to help co-ordinate the prevention work being carried out in the PCT. The strategy should set out the roles of the different agencies involved in injury prevention, agreed targets to reduce unintentional injuries, and planned strategies to achieve these goals.

3. Monitor and evaluate prevention initiatives

Agencies should be encouraged to consider evaluation in the initial stages of intervention planning, to ensure thorough evaluations are carried out for all prevention activities. The provision of home safety devices, a commonly utilised intervention throughout Liverpool, should be evaluated in terms of injury reductions.

4. Promote injury prevention initiatives among local agencies

Information on any prevention initiatives that are being (or have been) carried out within Liverpool should be shared with other relevant agencies via the steering group. This will ensure all agencies are aware of current practice and prevent duplication of efforts.

5. Target interventions at high risk groups

Initiatives should be targeted at those individuals most at risk of injury (e.g. deprived populations) to help reduce inequalities in injury burden. Families and communities that rarely come in to contact with local services are a particular target group, since most current prevention initiatives are service based.

6. Develop the consistency and quality of Accident and Emergency Department datasets

Liverpool PCT and the Injury Prevention Steering Group should work closely with TIIG to encourage more comprehensive and consistent data collection across AEDs. Key developments should include the expansion of location information to include places in the home. This could be used to inform the development of prevention initiatives for home settings, including the prevention of falls among the elderly.

7. Assess the feasibility of a central data collection point for GMP data

Work should be carried out to assess the feasibility and usefulness of setting up a central data collection point for GMP data. An audit of the data could determine what is currently collected, what extra information could be collected, whether such data would be useful to agencies, and how data could be accessed.

8. Explore the use of MIU/WIC data further

Further work should explore MIU/WIC data more thoroughly to assess its use as part of a surveillance system.

9. Develop a routine monitoring system

A routine monitoring system should be put into place to enable unintentional injuries to be observed more regularly and thoroughly. Such a system would allow any emerging problems to be identified and addressed quicker and prevention efforts to be evaluated easier. This system could be located within the existing TIIG injury surveillance system.

Box 4: Injury specific recommendations

1. All unintentional injuries

Prevention initiatives should be developed, implemented and targeted towards high risk groups. These are: males, those aged 65 years and over, residents living in the most deprived areas, and those living in Urban Challenge and Multicultural Centre lifestyle classification areas across Liverpool. In particular interventions should be targeted in the following MSOA areas of Liverpool, E02001370, E02001360, E02001389, E02001369 and E02001374.

2. Road traffic accidents

The steering group should liaise with Merseyside Road Safety Partnership and support local initiatives and road safety strategies where relevant. Interventions should be targeted at children and young drivers living in the most deprived areas of Liverpool, particularly the MSOAs of E02001385, E02001385 and E02001354 Traffic calming and multi-component road safety interventions should be initiated in hotspots contained within Speke, Liverpool City Centre and Kensington.

3. Fire-related injuries

The steering group should liaise with Merseyside Fire and Rescue Service and support local initiatives and fire safety strategies where relevant. Interventions should be targeted at older communities and the most deprived areas of Liverpool, particularly the MSOAs of E02001374, E02001379 and E001360.

4. Fall-related injuries

A comprehensive strategy and plan of action to prevent falls amongst those over 65 years of age should be developed and monitored by the steering group. Interventions implemented should be evidence-based and include, for example, exercise programmes for older people and multi-component programmes to prevent falls. Interventions should be targeted at older communities and the most deprived areas of Liverpool, particularly the MSOAs of E02001360, E02001389, E02001370, E02001369 and E02001368

5. Poisoning

Research should be conducted to understand why females and those aged 15-24 years have the highest rates of hospital admissions for poisoning. Safe-use of prescription and over the counter drugs needs to be promoted particularly in the 15-24 age group and in the most deprived areas of Liverpool, including the MSOAs of E02001370, E02001369, E02001364, E02001374 and E02001389.

6. Sports injury

More investigative work is required to understand the causes of sports injury and its prevention.

7. Childhood injuries

The steering group should liaise with colleagues from Alder Hey AED, children centres and local schools to further understand the causes of childhood injury and support the development of childhood injury prevention initiatives. Interventions should be targeted at the most deprived areas of Liverpool, particularly the MSOAs of E02001390, E02001389, E02001360.

Appendix 1: Description of P2 People and Places lifestyle groups

Mature Oaks: These are older, mostly married adults, living in owner occupied large detached houses with large gardens in rural areas. Each household is generally quite wealthy, with professions usually comprising managers, professionals or employers. A good proportion may work from home.

Country Orchards: These rural areas predominantly contain agricultural workers, though mostly in the position of manager or employer. Many are well educated with high incomes. It is also likely that people will be self-employed. This group is mostly older adults, who own big detached houses with large gardens.

Blossoming Families: These are families with mainly infants, with the parents aged 25-34. They are buying their detached houses, and are very likely to be married. The average household will contain two or more people. The adults are well qualified, and well paid, and are mainly professionals, managers or employers. A large proportion of women in these areas also work.

Rooted Households: In these areas, people are mainly buying, or have bought, their houses, which are mostly semi-detached. The workers in this area are mainly skilled manual workers, though the income they receive is quite high.

Qualified Metropolitans: Those who live in these areas are highly qualified, and live mostly in single households, likely to be small accommodation, such as flats or bedsits, with no car, and concentrated in the centre of cities. They are professional people, who commute to work on the train, and have well paid jobs. There are a high proportion of females between the ages of 16 and 44, and the professional men are likely to be aged between 35 and 54. There are likely to be a high proportion of Jewish people in this area, as well as Chinese, Black and Indian or Pakistani. Many move house early.

Senior Neighbourhoods: These areas contain pensioners and old people, who live in their owner occupied detached houses, which can have very large gardens. A lot of these are single occupant households, but these occupants can be quite affluent. They are also quite likely to own a second home.

Suburban Stability: This area contains semi-detached and terraced housing, occupied by skilled manual, routine and semi routine workers.

New Starters: This group contains a high proportion of students and highly qualified young adults. There are also a high proportion of females aged 16-44. Many live in single households without a car, and much of the accommodation is bedsits, purpose built flats, and small accommodation. There is a high proportion of cohabiting within this group. Many of the properties do not contain central heating. Income is low, as most classified here are students.

Multicultural Centres: This group is predominantly families living in terraces, but also includes a high proportion of bedsits and purpose built flats. Accommodation is mostly housing association or council owned, and many do not have a garden. Most households have no car, and generally travel to work by train, and have low incomes. There are also many lone parents. The majority of the population of this group are Jewish, Muslim, Black, Chinese, Indian, Pakistani and Bangladeshi. They are mostly employed as semi skilled manual and unskilled workers. Unemployment amongst males and long-term unemployment is also high amongst this group, as is the incidence of long-term illness.

Urban Producers: This group lives mostly in terraced council housing, and a lot of these homes are without central heating or gardens. Occupants are generally aged 25-34, with children, and are mostly single parent households. People are very unlikely to have qualifications, and jobs include routine, or semi-routine occupations, skilled manual work, jobs in manufacturing, and also semi- and unskilled manual jobs. Incomes are low, and unemployment and long-term unemployment is high, as is long term illness. Car ownership is also low. This group is very likely to smoke.

Weathered Communities: This group contains a high proportion of pensioners both under and over the age of 74, and has many single households, living mostly in semi-detached housing or purpose built flats. There is also a high incidence of lone parent families. Housing is likely to be housing association or council owned, and generally small accommodation. Income is low, as is car ownership. Unemployment and long term unemployment is high, as is long-term illness. Those who do work are employed in routine or semi-routine occupations, manufacturing and semi- and unskilled manual jobs, and most do not have qualifications.

Disadvantaged Households: This group contains families, lone parent families, and 25-34 year olds with children. Accommodation is council or housing association owned, and includes purpose built flats and terraces, many without central heating. Households also are very unlikely to own a car. Incomes are low, qualifications few, and jobs include semi- and routine occupations and semi- and unskilled manual work. Unemployment and long term unemployment and illness are high.

Urban Challenge: This group comprises old people, who live in purpose built flats, council or housing association owned homes, and in small accommodation. Unemployment and long term unemployment is high, as is long term illness, and incomes are low. This group are extremely likely to smoke. Households mainly consist of one person, and car ownership is low. There is a low incidence of qualifications, and those with jobs work in semi- and routine occupations.

Unclassified: Unclassified areas tend to be those where a high proportion of the resident population do not live in households.

Appendix 2: Definitions of acronyms

AED	Accident and emergency department
GMP	General Medical Practitioner
HES	Hospital Episode Statistics
ICD-10	International Classification of Diseases and related health problems, version 10
IMD	Index of Multiple Deprivation
IMT	Information Management and Technology
ISS	Injury surveillance system
LJMU	Liverpool John Moores University
LSOA	Lower Super Output Area
MIU	Minor Injury Unit
MFRS	Merseyside Fire and Rescue Service
MSOA	Middle Super Output Area
NWAS	North West Ambulance Service
NWPHO	North West Public Health Observatory
PCT	Primary Care Trust
RTA	Road traffic accident
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
SME	Small and Medium Enterprises
TIIG	Trauma and Injury Intelligence Group
WIC	Walk in Centre

Appendix 3: Additional figures

Figure 35: Liverpool Local Authority, Middle Super Output Area boundary map

N	MSOA
01	E02001347
02	E02001348
03	E02001349
04	E02001350
05	E02001351
06	E02001352
07	E02001353
08	E02001354
09	E02001355
10	E02001356
11	E02001357
12	E02001358
13	E02001359
14	E02001360
15	E02001361
16	E02001362
17	E02001363
18	E02001364
19	E02001365
20	E02001366
21	E02001367
22	E02001368
23	E02001369
24	E02001370
25	E02001371
26	E02001372
27	E02001373
28	E02001374
29	E02001375
30	E02001376
31	E02001377
32	E02001378
33	E02001379
34	E02001380
35	E02001381
36	E02001382
37	E02001383
38	E02001384
39	E02001385
40	E02001386
41	E02001387
42	E02001388
43	E02001389
44	E02001390
45	E02001391
46	E02001392
47	E02001393
48	E02001394
49	E02001395
50	E02001396
51	E02001397
52	E02001398
53	E02001399
54	E02001400
55	E02001401
56	E02001402
57	E02001403
58	E02001404
59	E02001405

Figure 36: Ordinate Survey map of Liverpool Local Authority with Middle Super Output Area overlay

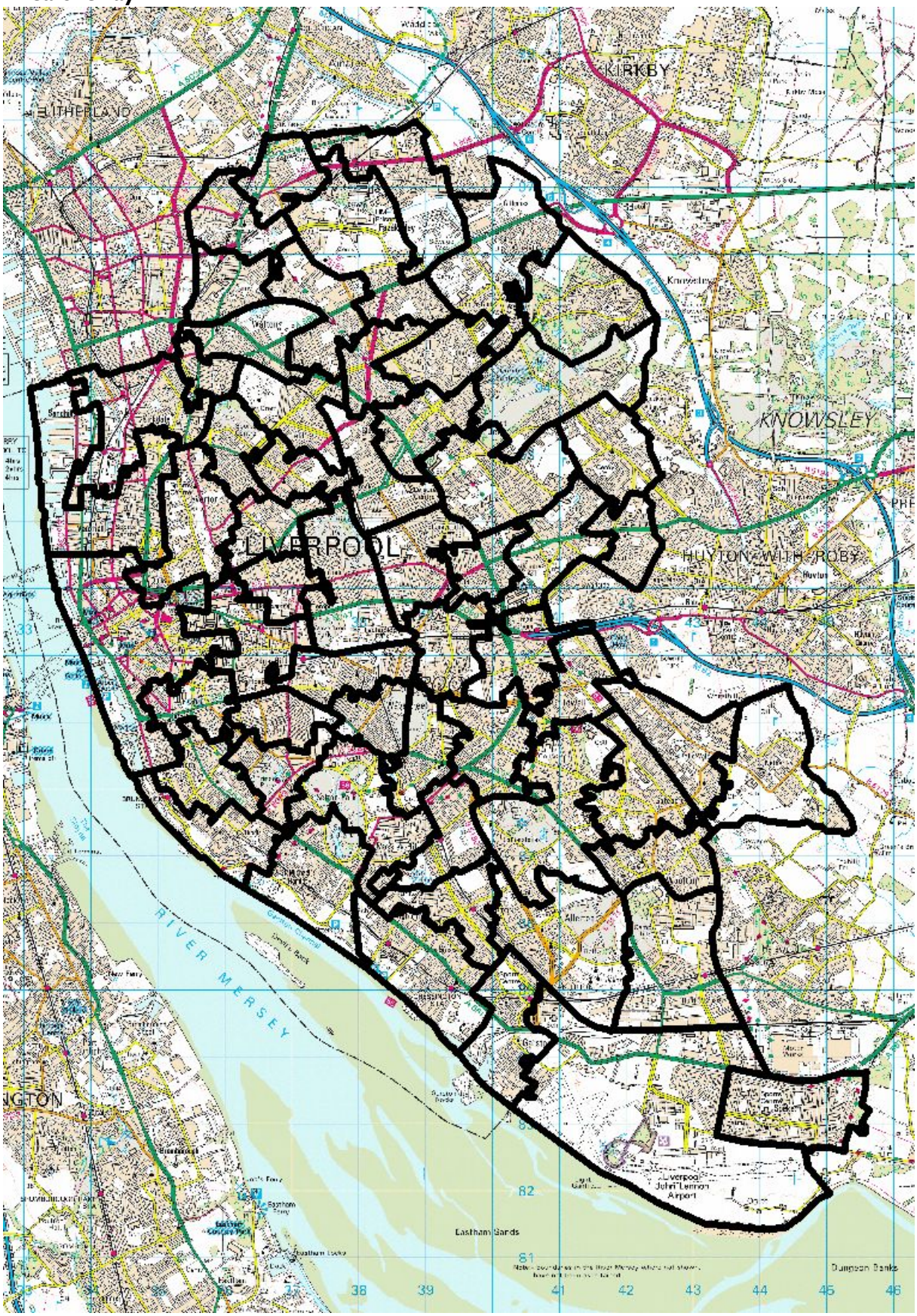


Figure 37: Ordinate Survey map of Liverpool Local Authority with Ward boundary overlay

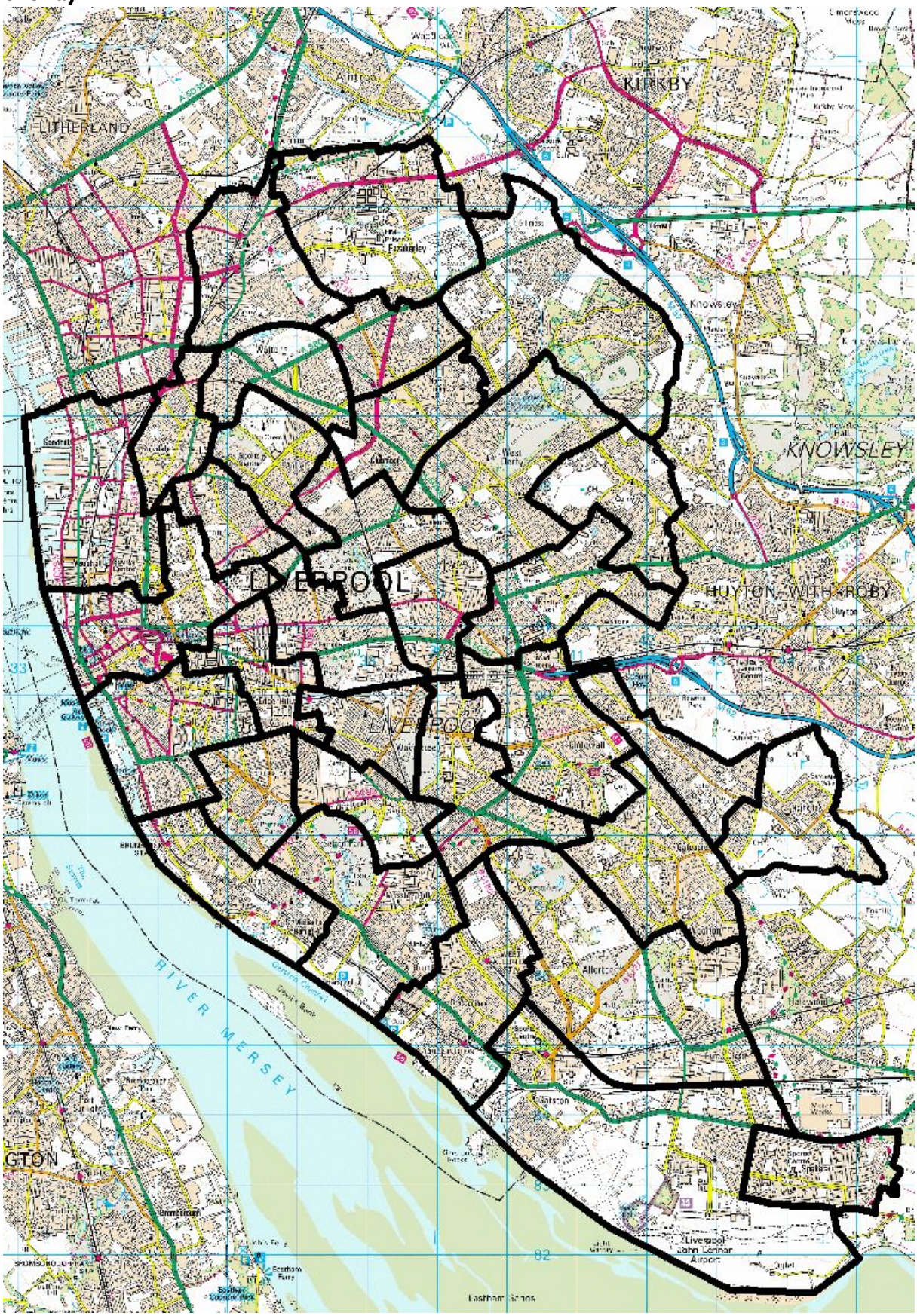


Figure 38: Liverpool Local Authority, Wards boundary map

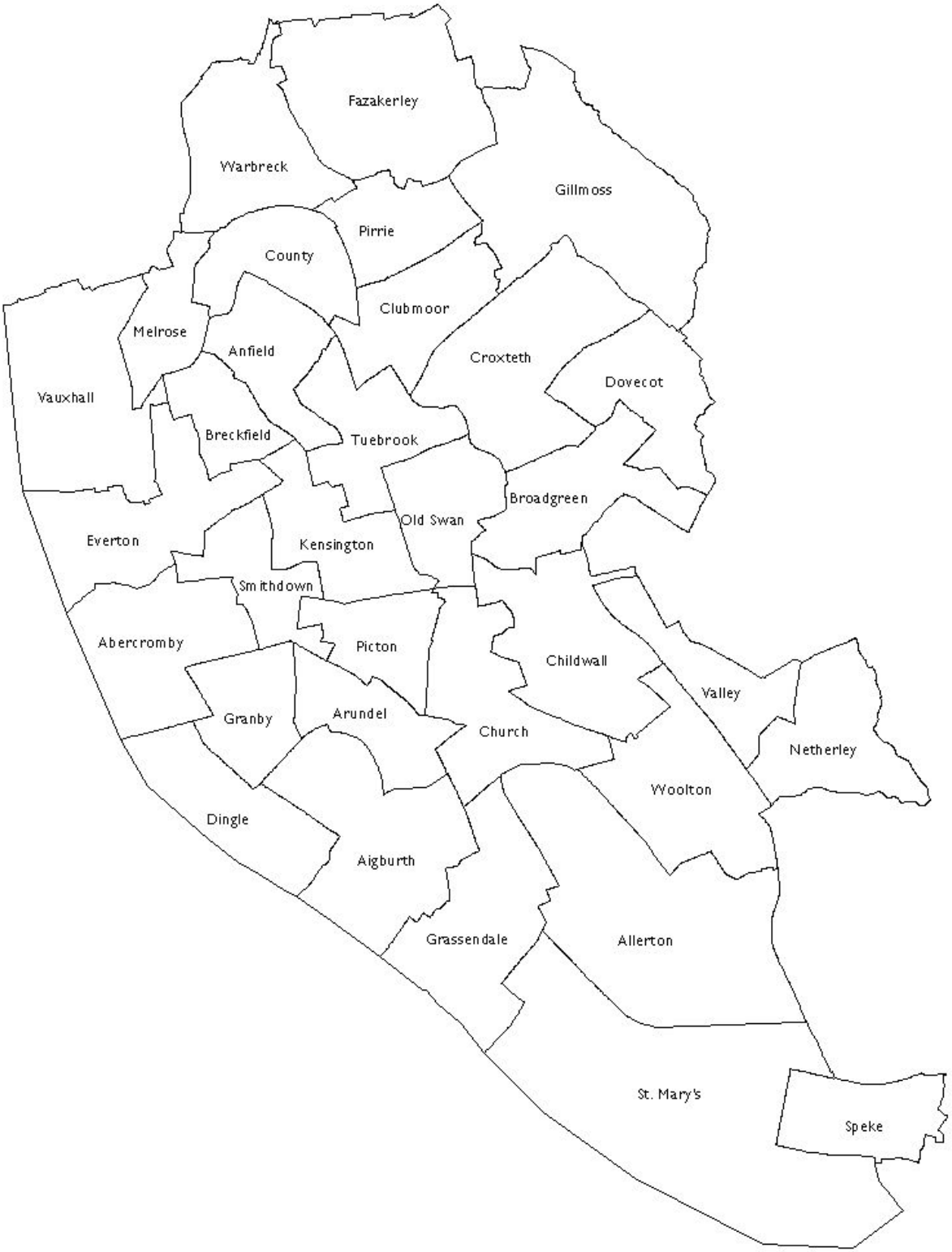
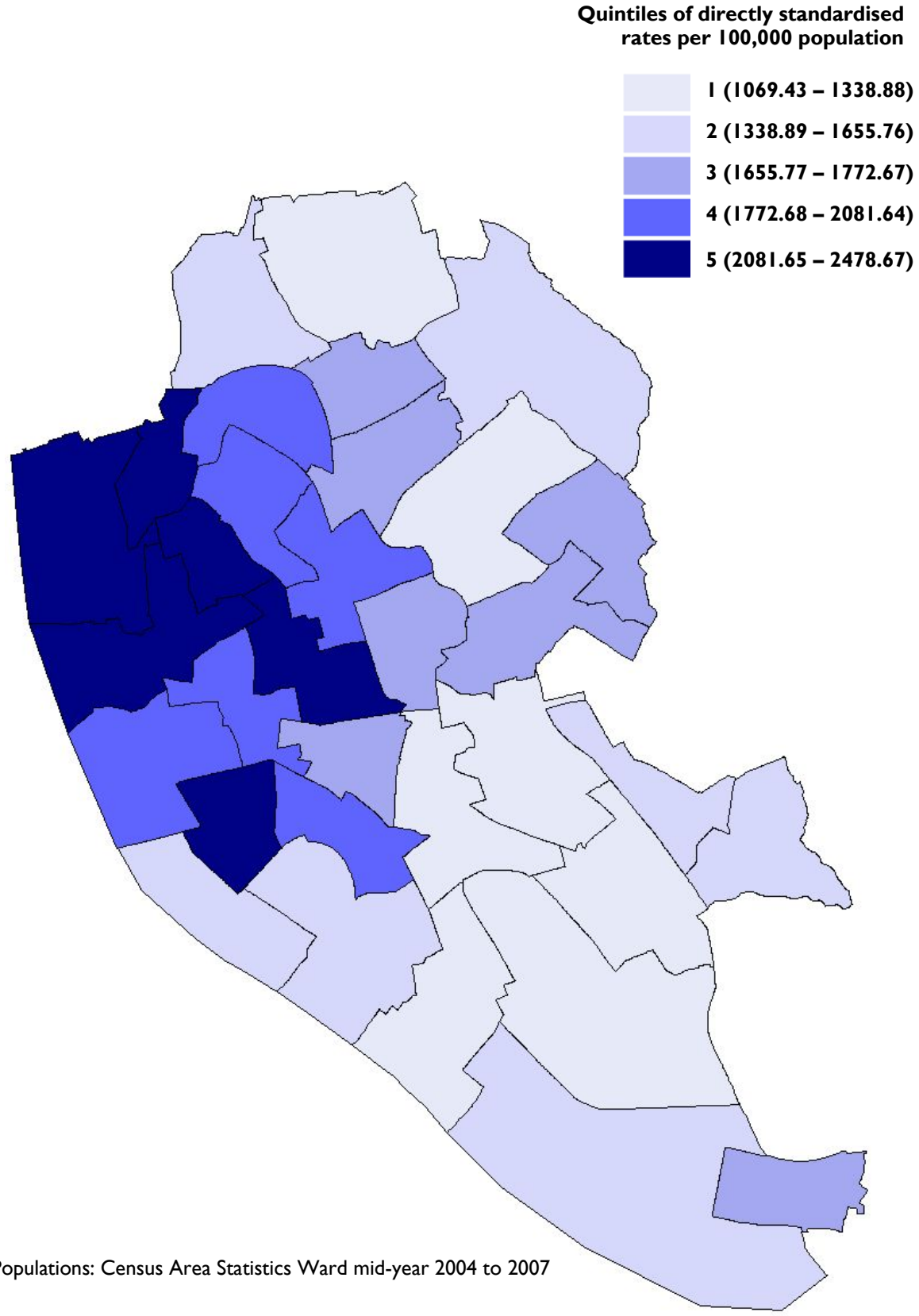
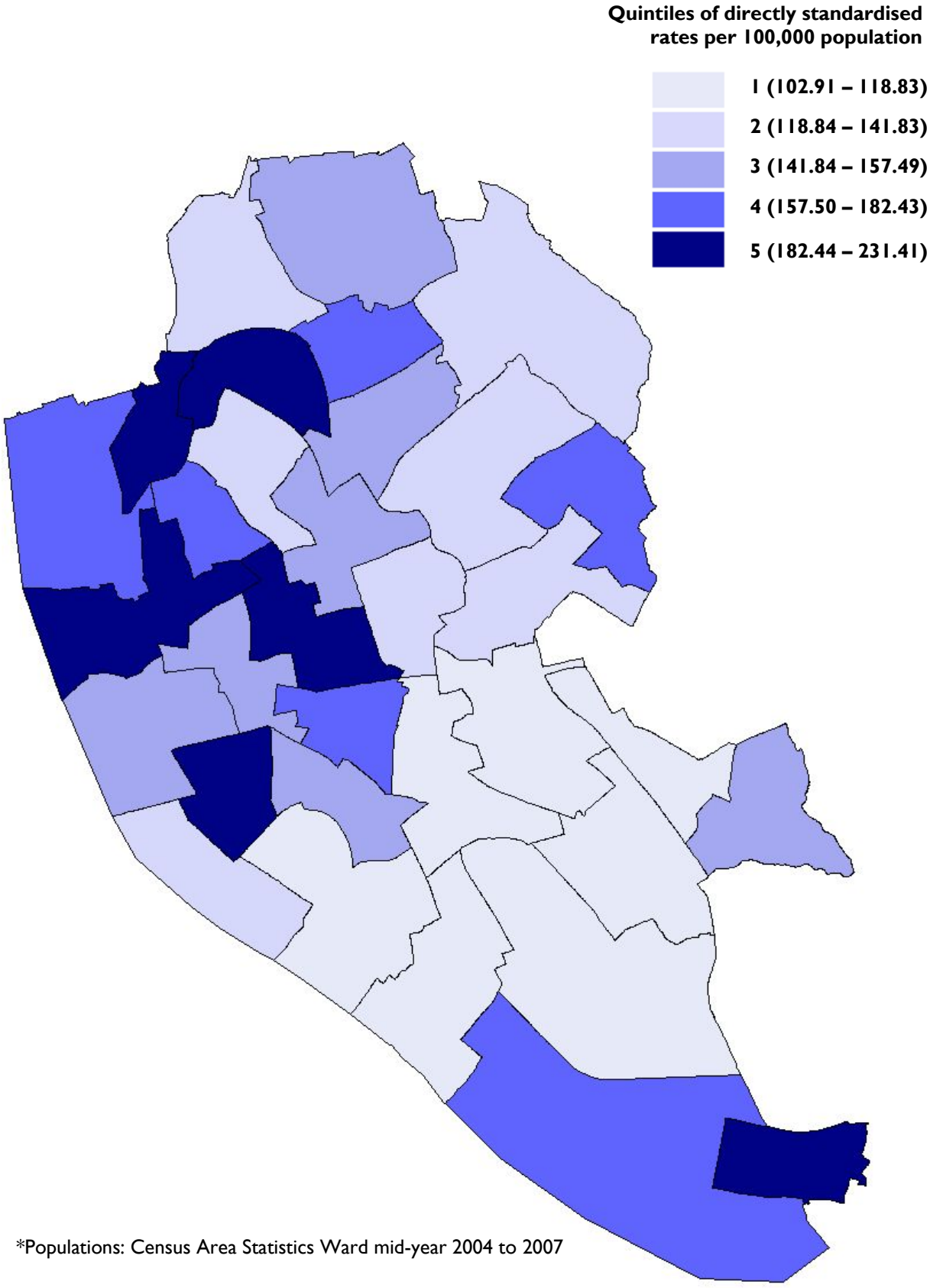


Figure 39: Ward of residence for patients admitted to hospital for unintentional injuries, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



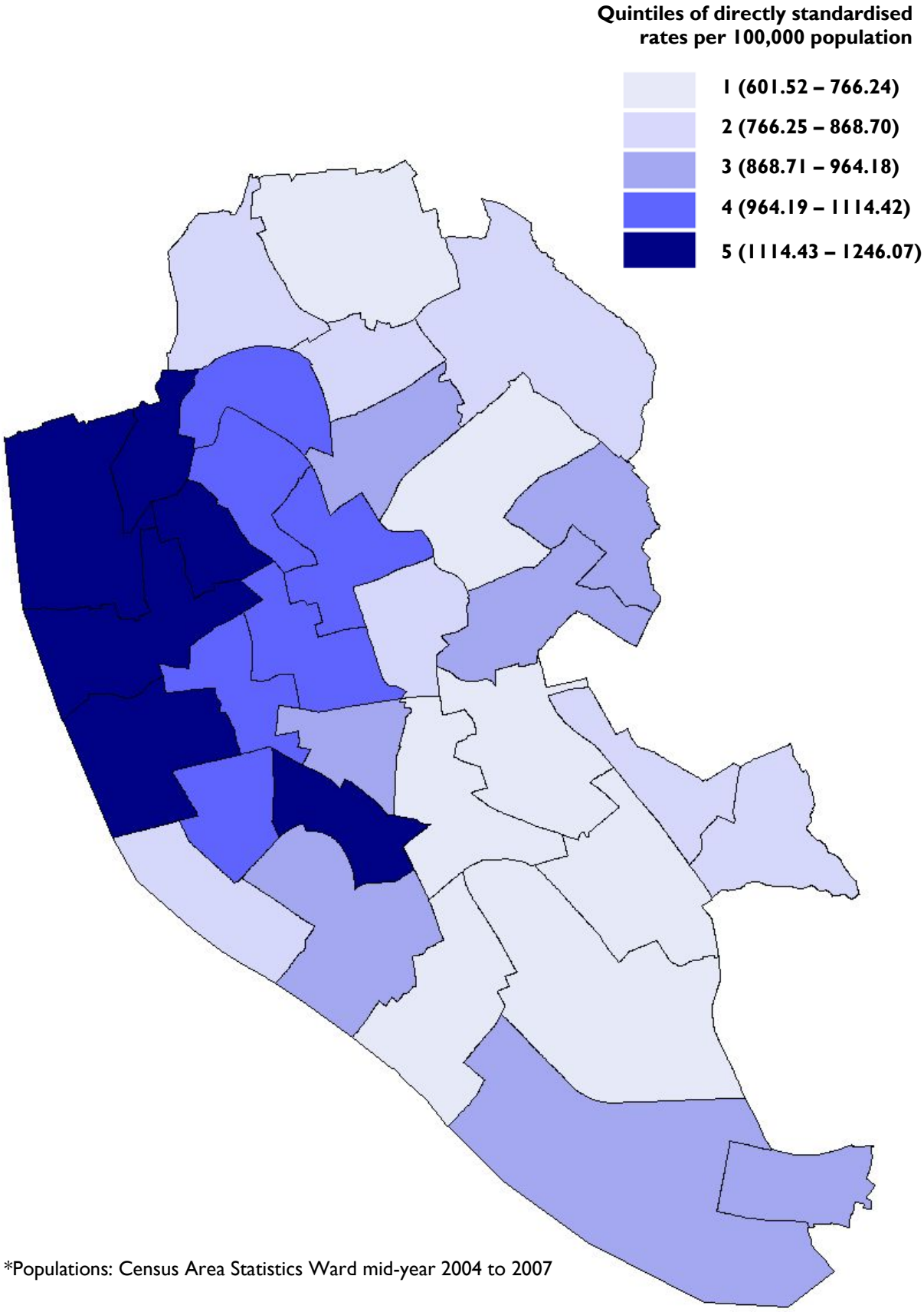
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 40: Ward of residence for patients admitted to hospital for RTAs, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



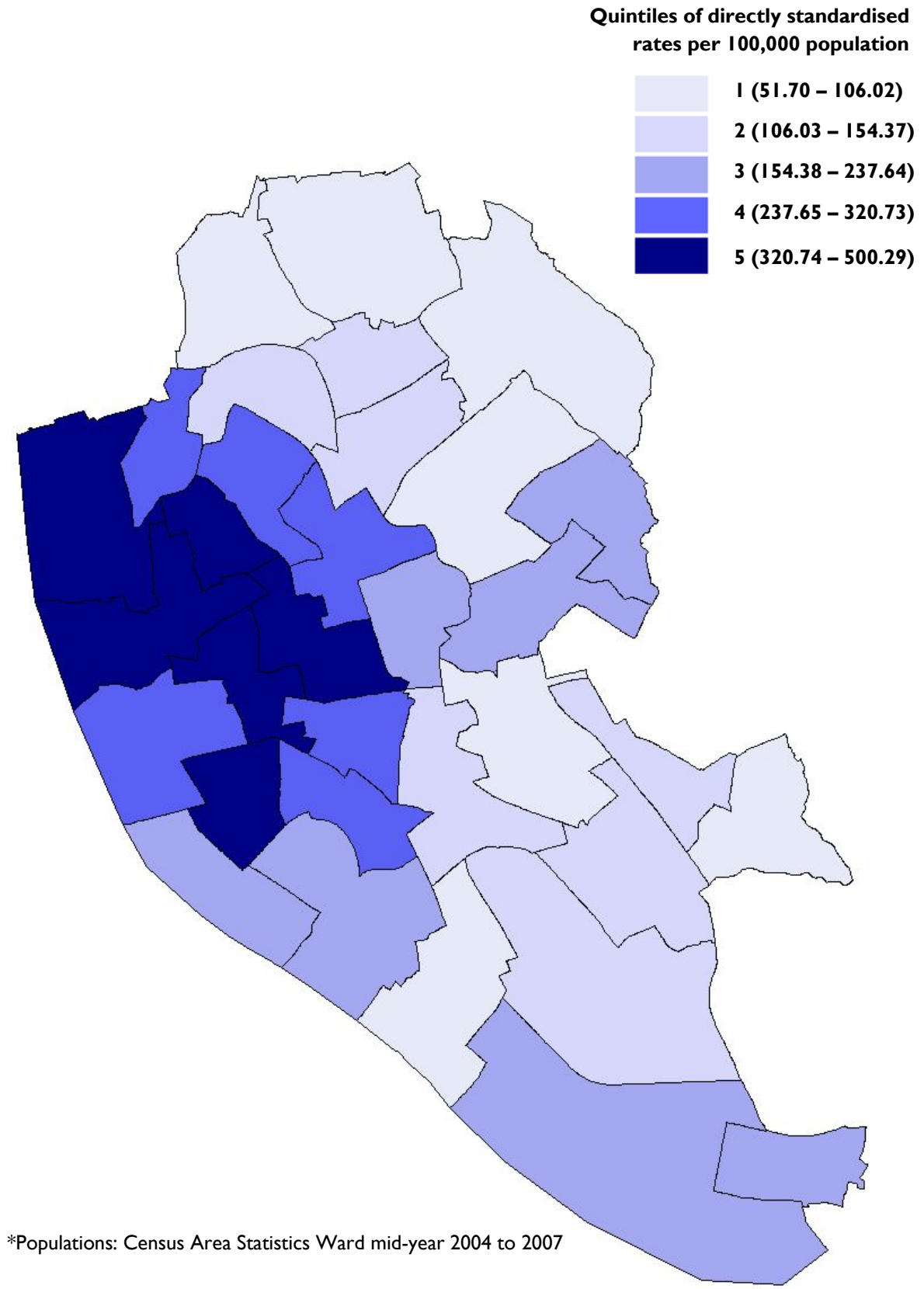
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 41: Ward of residence for patients admitted to hospital for falls, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



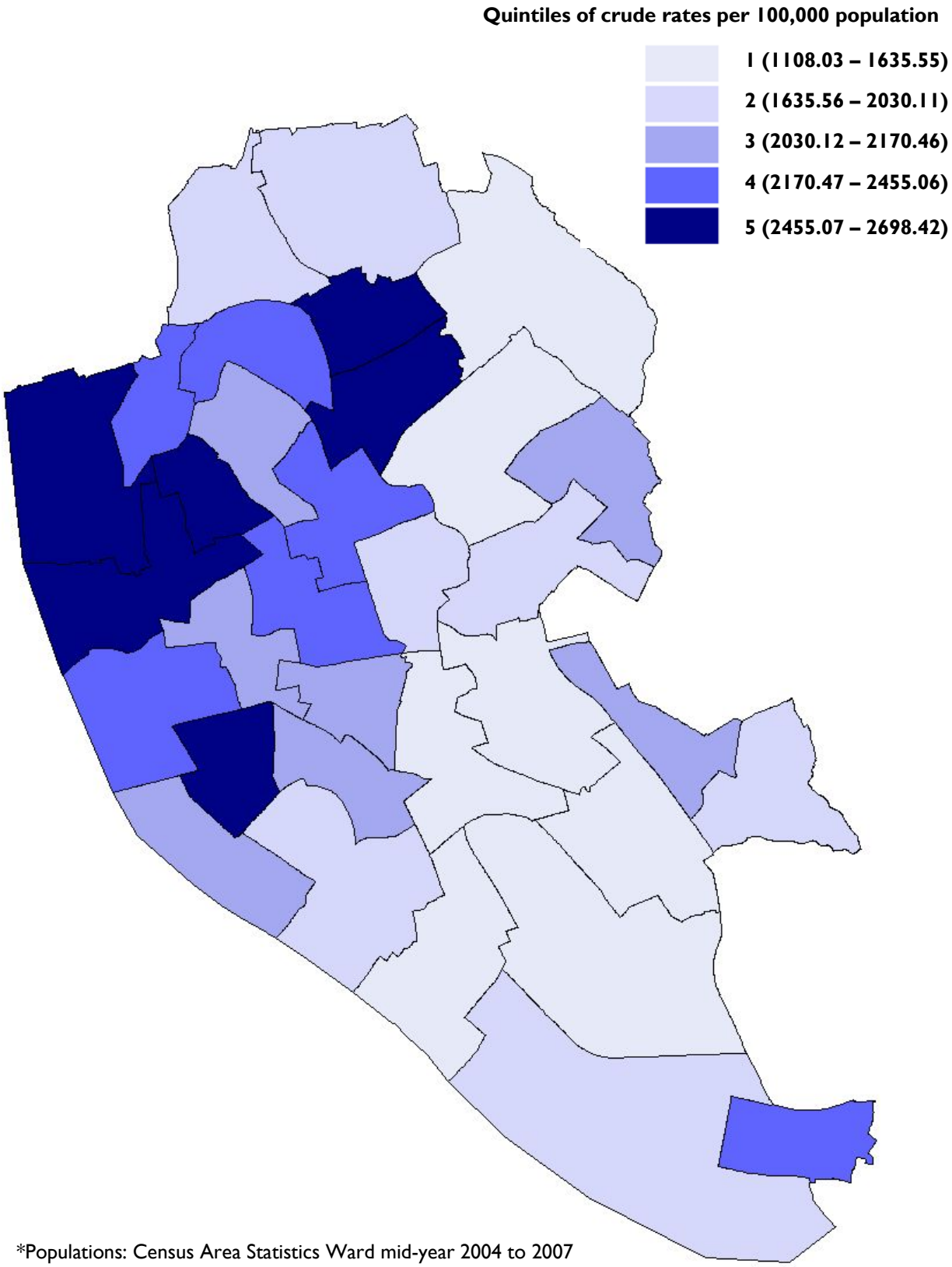
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 42: Ward of residence for patients admitted to hospital for poisoning, Liverpool Local Authority residents only. Quintiles of directly standardised rates per 100,000 population, 2004/05 to 2007/08 combined



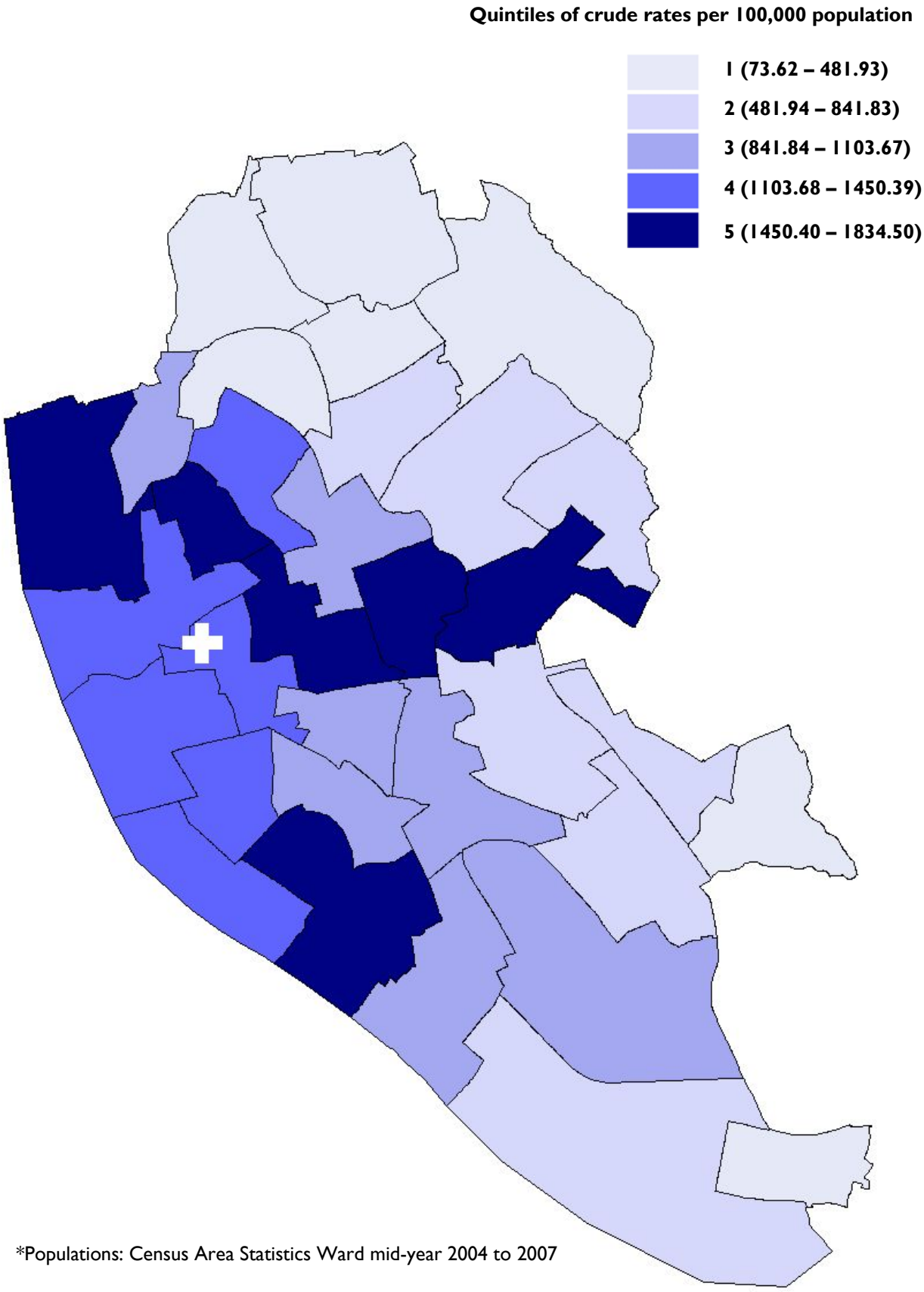
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 43: Ward of residence for children aged 0-17 years admitted to hospital for unintentional and deliberate injuries, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



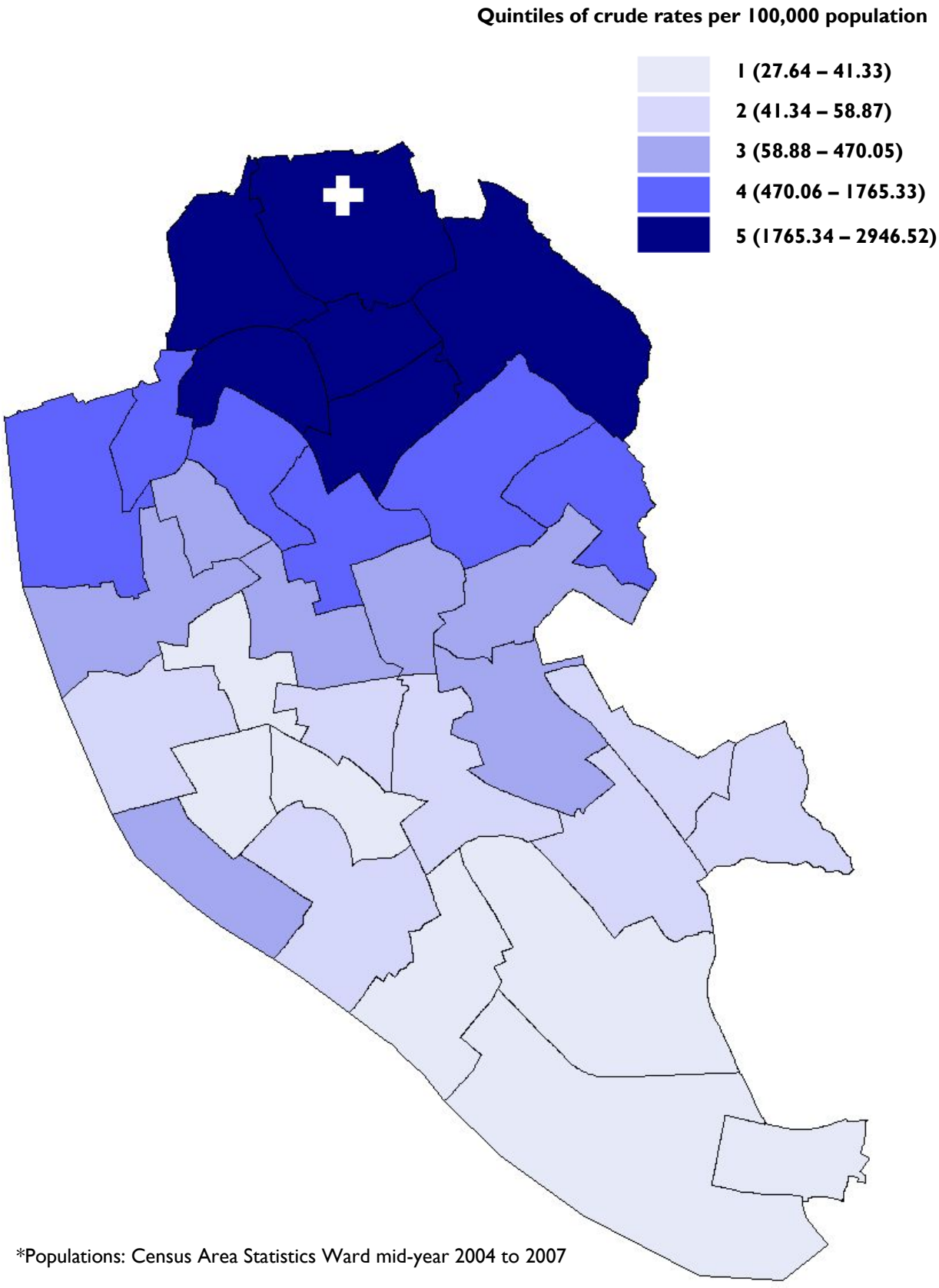
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 44: Ward of residence for patients attending the Royal Liverpool Hospital AED for falls, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



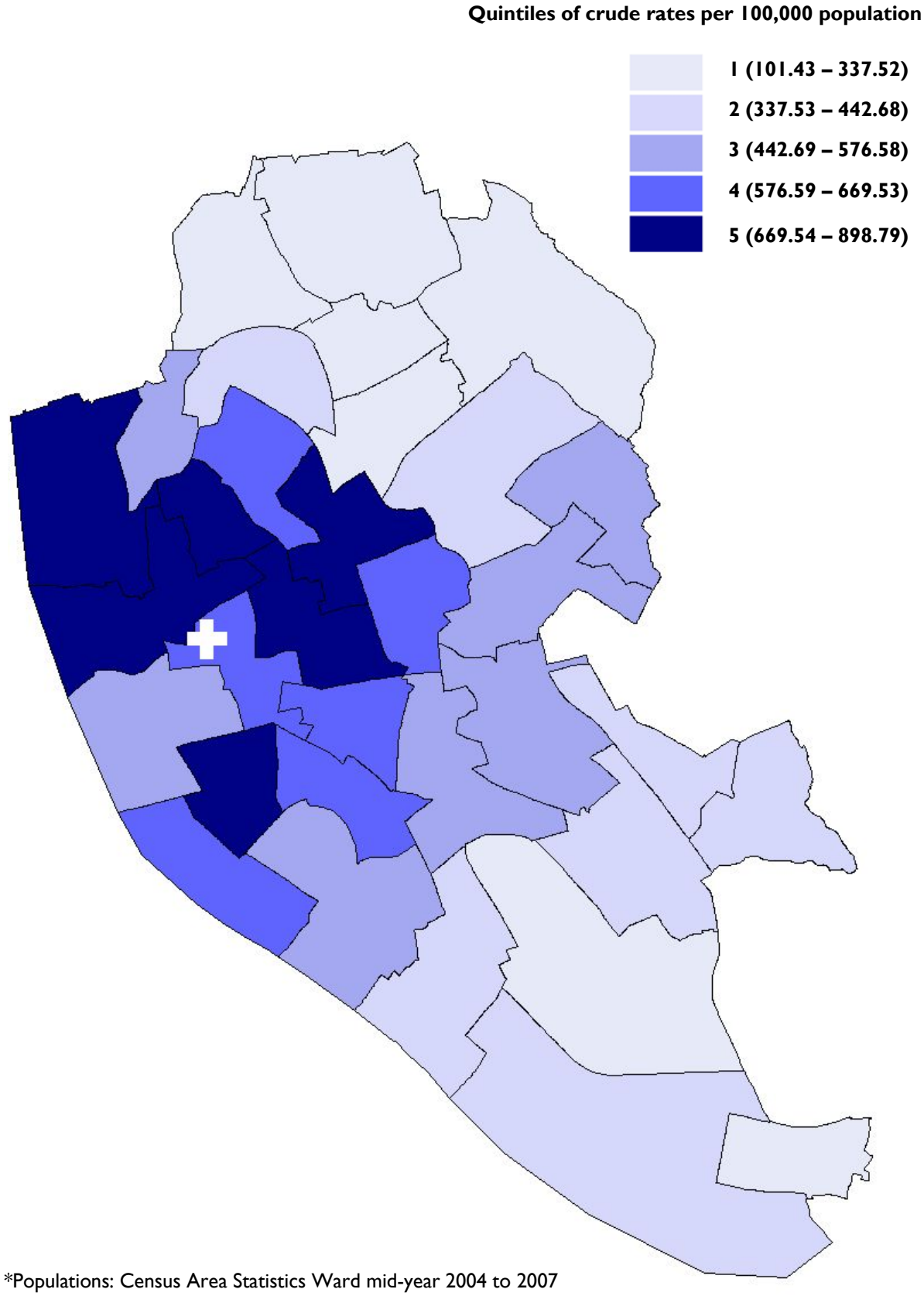
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 45: Ward of residence for patients attending University Hospital Aintree AED for falls, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



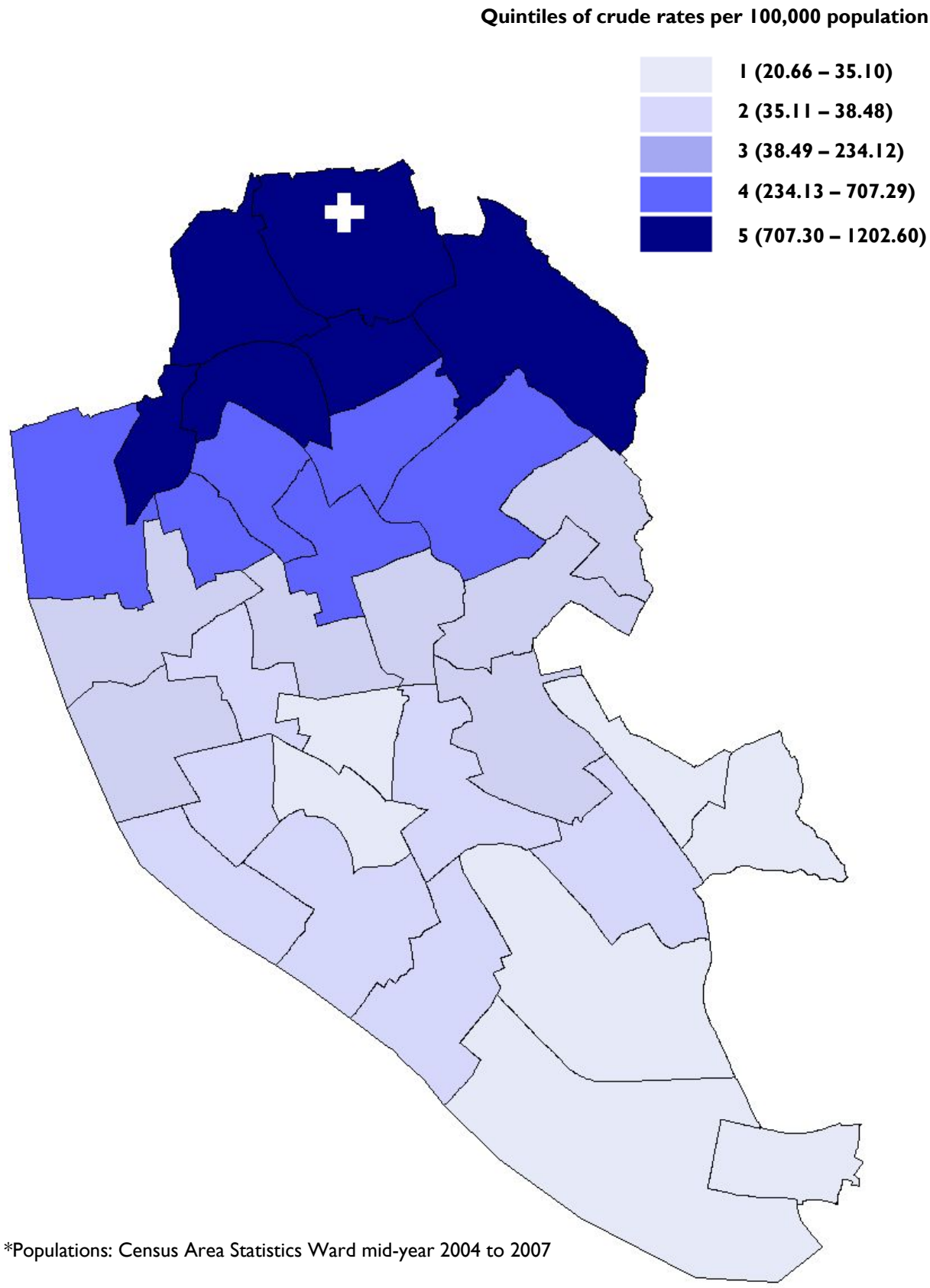
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 46: Ward of residence for patients attending the Royal Liverpool Hospital AED for RTAs, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



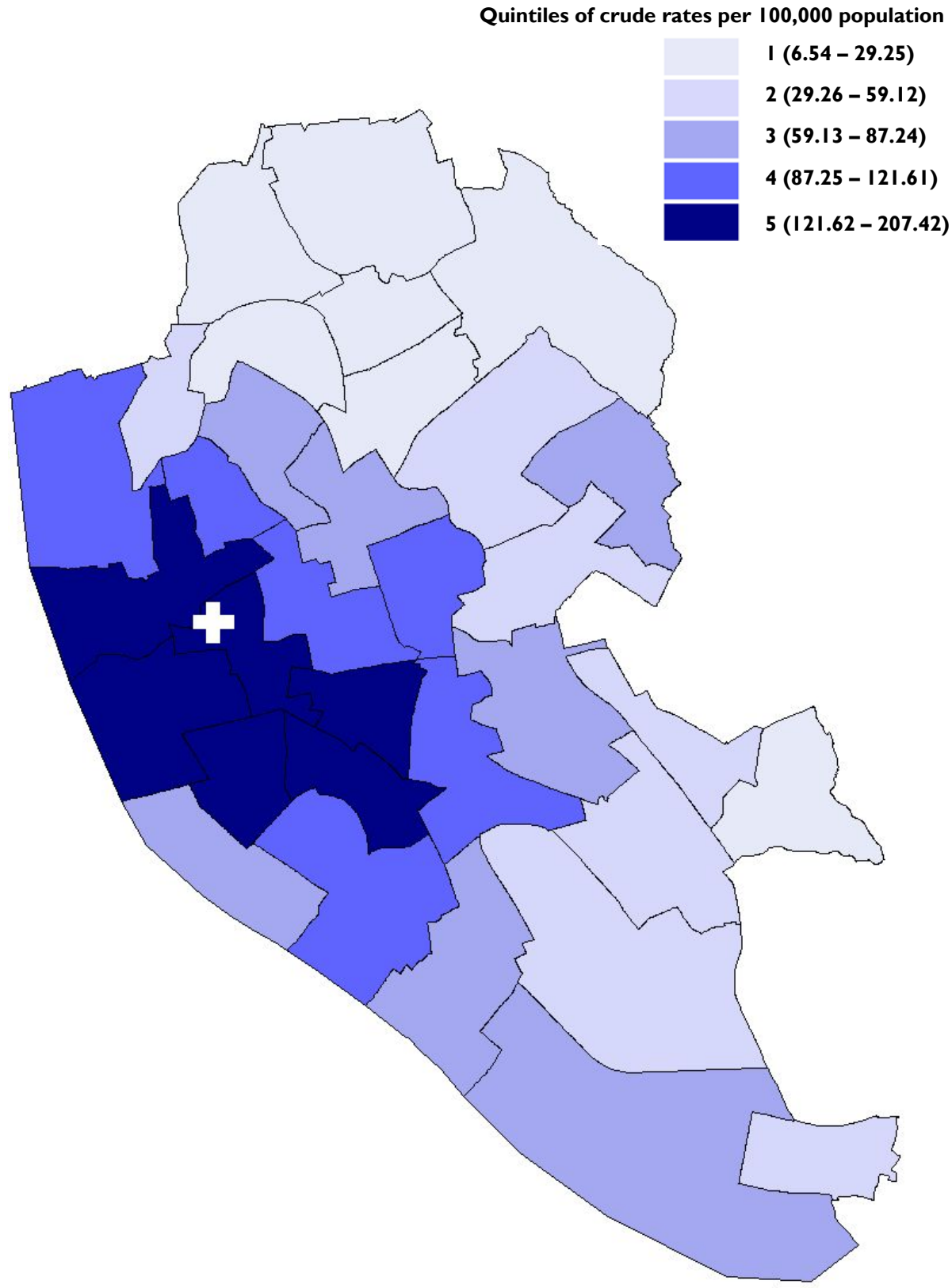
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 47: Ward of residence for patients attending University Hospital Aintree AED for RTAs, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



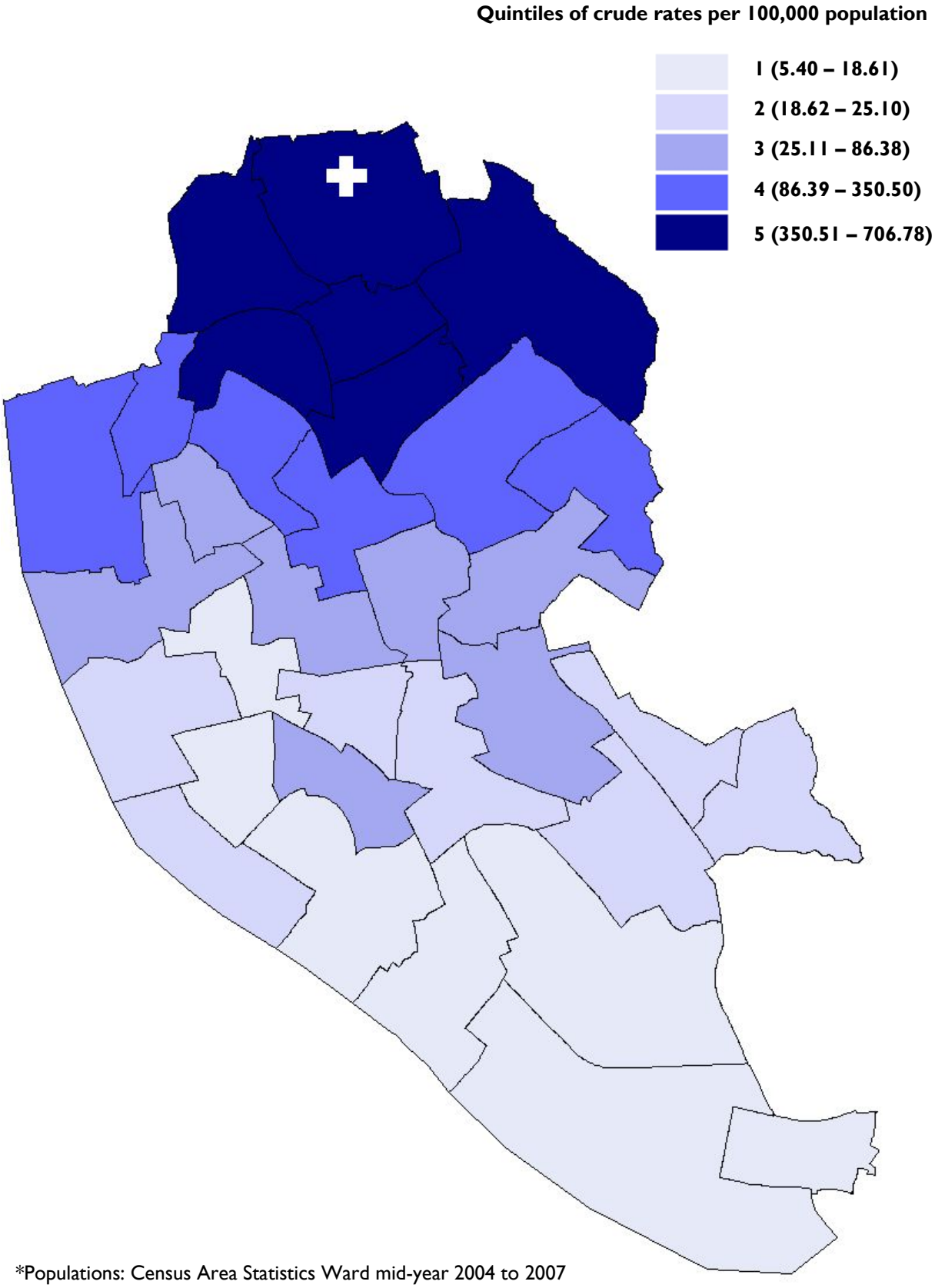
*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 48: Ward of residence for patients attending the Royal Liverpool Hospital AED for sport injuries, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Figure 49: Ward of residence for patients attending University Hospital Aintree AED for sports injuries, Liverpool Local Authority residents only. Quintiles of crude rates per 100,000 population, 2004/05 to 2007/08 combined



*Populations: Census Area Statistics Ward mid-year 2004 to 2007

Appendix 4: Additional tables

Table 40: Hospital admissions for unintentional injury, Liverpool Local Authority residents only, by age group and gender, 2004/05 to 2007/08 combined[12]

Age group	Male			Female			Total		
	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)
Unknown	0	0	N/A	4	0	N/A	4	0	N/A
0-4	956	5.9	1955.21 (1833.21 - 2083.19)	746	5	1602.65 (1489.69 - 1721.9)	1702	5.5	1783.26 (1699.54 - 1870.05)
5-9	826	5.1	1722.7 (1607.2 - 1844.3)	502	3.4	1113.03 (1017.78 - 1214.8)	1328	4.3	1427.19 (1351.45 - 1506.07)
10-14	1337	8.3	2512.26 (2379.38 - 2650.63)	553	3.7	1113.77 (1022.86 - 1210.6)	1890	6.1	1837.27 (1755.36 - 1922.01)
15-19	1370	8.5	2065.43 (1957.49 - 2177.77)	862	5.8	1304.46 (1218.82 - 1394.53)	2232	7.2	1685.66 (1616.45 - 1757.08)
20-24	1380	8.5	1526.51 (1447.03 - 1609.23)	830	5.6	897.39 (837.37 - 960.58)	2210	7.1	1208.36 (1158.5 - 1259.82)
25-29	1017	6.3	1610.48 (1513 - 1712.58)	556	3.7	906.67 (832.86 - 985.27)	1574	5.1	1264.54 (1202.83 - 1328.59)
30-34	937	5.8	1692.86 (1586.19 - 1804.82)	527	3.5	927.21 (849.73 - 1009.87)	1464	4.7	1304.96 (1238.96 - 1373.57)
35-39	969	6	1582.89 (1484.78 - 1685.78)	537	3.6	903.95 (829.1 - 983.74)	1506	4.8	1248.52 (1186.25 - 1313.21)
40-44	994	6.1	1649.38 (1548.42 - 1755.19)	575	3.8	883.15 (812.43 - 958.38)	1569	5	1251.47 (1190.3 - 1314.96)
45-49	812	5	1440.69 (1343.28 - 1543.29)	558	3.7	899.04 (825.98 - 976.83)	1370	4.4	1156.82 (1096.37 - 1219.74)
50-54	694	4.3	1405.11 (1302.5 - 1513.66)	539	3.6	1016.33 (932.33 - 1105.87)	1233	4	1203.81 (1137.54 - 1272.93)
55-59	669	4.1	1386.1 (1283.04 - 1495.23)	549	3.7	1092.82 (1003.3 - 1188.18)	1218	3.9	1236.52 (1168.05 - 1307.97)
60-64	614	3.8	1637.29 (1510.32 - 1772.08)	464	3.1	1175.13 (1070.62 - 1287.08)	1078	3.5	1400.25 (1317.9 - 1486.41)
65-69	622	3.8	1757.41 (1621.99 - 1901.12)	636	4.3	1636.39 (1511.67 - 1768.66)	1258	4	1694.07 (1601.74 - 1790.34)
70-74	705	4.4	2264.04 (2099.98 - 2437.52)	867	5.8	2393.37 (2236.69 - 2558.14)	1572	5	2333.59 (2219.64 - 2451.87)
75+	2289	14.1	5151.81 (4942.89 - 5367.28)	5637	37.7	7609.24 (7411.88 - 7810.52)	7926	25.5	6687.93 (6541.49 - 6836.82)
Total	16191	100	1906.49 (1877.24 - 1936.09)	14942	100	1666.63 (1640.01 - 1693.57)	31134	100	1783.37 (1763.61 - 1803.29)

[12] One persons gender was unknown and therefore were excluded from the table.

Table 41: Hospital admissions for falls, Liverpool Local Authority residents only, by age group and gender, 2004/05 to 2007/08 combined

Age group	Male			Female			Total		
	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)
Unknown	0	0.0	N/A	2	0.0	N/A	2	0.0	N/A
0-4	428	5.3	875.35 (794.37 - 962.34)	326	3.4	700.35 (626.38 - 780.66)	754	4.2	790 (734.61 - 848.46)
5-9	393	4.8	819.64 (740.59 - 904.82)	253	2.6	560.95 (493.95 - 634.5)	646	3.6	694.25 (641.74 - 749.91)
10-14	577	7.1	1084.2 (997.52 - 1176.39)	246	2.5	495.46 (435.47 - 561.4)	823	4.6	800.04 (746.31 - 856.62)
15-19	385	4.7	580.43 (523.89 - 641.41)	182	1.9	275.42 (236.86 - 318.47)	567	3.2	428.21 (393.69 - 464.96)
20-24	417	5.1	461.27 (418.06 - 507.74)	236	2.4	255.16 (223.64 - 289.88)	653	3.7	357.04 (330.18 - 385.51)
25-29	311	3.8	492.49 (439.26 - 550.38)	195	2	317.99 (274.92 - 365.89)	506	2.8	406.52 (371.86 - 443.53)
30-34	314	3.9	567.3 (506.28 - 633.65)	202	2.1	355.4 (308.08 - 407.94)	516	2.9	459.95 (421.11 - 501.4)
35-39	309	3.8	504.76 (450.04 - 564.3)	184	1.9	309.73 (266.59 - 357.87)	493	2.8	408.71 (373.42 - 446.43)
40-44	417	5.1	691.94 (627.11 - 761.66)	233	2.4	357.87 (313.39 - 406.89)	650	3.7	518.45 (479.36 - 559.89)
45-49	371	4.6	658.24 (592.96 - 728.76)	252	2.6	406.02 (357.43 - 459.37)	623	3.5	526.06 (485.55 - 569.04)
50-54	363	4.5	734.95 (661.28 - 814.59)	327	3.4	616.59 (551.56 - 687.17)	690	3.9	673.66 (624.33 - 725.86)
55-59	426	5.2	882.63 (800.79 - 970.56)	379	3.9	754.42 (680.37 - 834.34)	805	4.5	817.24 (761.75 - 875.7)
60-64	406	5	1082.64 (979.87 - 1193.25)	320	3.3	810.43 (724.06 - 904.28)	726	4.1	943.03 (875.67 - 1014.2)
65-69	457	5.6	1291.22 (1175.53 - 1415.21)	518	5.4	1332.78 (1220.46 - 1452.66)	975	5.5	1312.97 (1231.84 - 1398.05)
70-74	575	7.1	1846.56 (1698.69 - 2003.86)	733	7.6	2023.46 (1879.61 - 2175.41)	1308	7.3	1941.69 (1837.87 - 2049.84)
75+	2001	24.6	4503.61 (4308.42 - 4705.37)	5065	52.5	6837.11 (6650.1 - 7028.05)	7066	39.7	5962.27 (5824.05 - 6102.94)
Total	8150	100	959.66 (938.94 - 980.73)	9653	100	1076.69 (1055.32 - 1098.39)	17803	100	1019.76 (1004.84 - 1034.86)

Table 42: Hospital admissions for poisonings, Liverpool Local Authority residents only, by age group and gender, 2004/05 to 2007/08 combined

Age group	Male			Female			Total		
	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)
Unknown	0	0.0	N/A	1	0.0	N/A	1	0.0	N/A
0-4	72	4.7	147.25 (115.21 - 185.45)	75	3.6	161.12 (126.73 - 201.97)	147	4.1	154.02 (130.13 - 181.03)
5-9	15	1.0	31.28 (17.5 - 51.6)	7	0.3	15.52 (6.22 - 31.98)	22	0.6	23.64 (14.81 - 35.8)
10-14	14	0.9	26.31 (14.37 - 44.14)	41	2.0	82.58 (59.25 - 112.03)	55	1.5	53.47 (40.27 - 69.59)
15-19	145	9.5	218.6 (184.47 - 257.22)	402	19.4	608.34 (550.32 - 670.82)	547	15.1	413.11 (379.21 - 449.22)
20-24	226	14.7	249.99 (218.46 - 284.8)	368	17.7	397.88 (358.26 - 440.68)	594	16.4	324.78 (299.18 - 351.98)
25-29	159	10.4	251.79 (214.17 - 294.11)	196	9.4	319.62 (276.43 - 367.64)	355	9.8	285.2 (256.3 - 316.47)
30-34	178	11.6	321.59 (276.08 - 372.46)	168	8.1	295.58 (252.57 - 343.82)	346	9.6	308.41 (276.77 - 342.69)
35-39	207	13.5	338.14 (293.64 - 387.48)	173	8.3	291.22 (249.43 - 337.99)	380	10.5	315.03 (284.15 - 348.36)
40-44	168	11.0	278.77 (238.2 - 324.26)	177	8.5	271.86 (233.28 - 314.99)	345	9.6	275.18 (246.9 - 305.8)
45-49	115	7.5	204.04 (168.45 - 244.92)	172	8.3	277.12 (237.25 - 321.78)	287	7.9	242.34 (215.11 - 272.06)
50-54	81	5.3	164 (130.23 - 203.84)	93	4.5	175.36 (141.53 - 214.83)	174	4.8	169.88 (145.57 - 197.08)
55-59	45	2.9	93.24 (68 - 124.76)	57	2.7	113.46 (85.93 - 147.01)	102	2.8	103.55 (84.43 - 125.71)
60-64	27	1.8	72 (47.44 - 104.76)	48	2.3	121.57 (89.62 - 161.18)	75	2.1	97.42 (76.62 - 122.12)
65-69	31	2.0	87.59 (59.5 - 124.33)	14	0.7	36.02 (19.68 - 60.44)	45	1.2	60.6 (44.2 - 81.09)
70-74	17	1.1	54.59 (31.78 - 87.42)	18	0.9	49.69 (29.43 - 78.54)	35	1.0	51.96 (36.18 - 72.26)
75+	34	2.2	76.52 (52.99 - 106.94)	67	3.2	90.44 (70.09 - 114.86)	101	2.8	85.22 (69.41 - 103.56)
Total	1534	100.0	180.63 (171.7 - 189.9)	2077	100.0	231.67 (221.81 - 241.85)	3611	100.0	206.84 (200.15 - 213.7)

Table 43: Hospital admissions for RTAs, Liverpool Local Authority residents only, by age group and gender, 2004/05 to 2007/08 combined

Age group	Male			Female			Total		
	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)	N	%	Crude rate/100,000 (-+ 95% confidence intervals)
Unknown	0	0	N/A	1	0.1	N/A	1	0	N/A
0-4	52	3.1	106.35 (79.42 - 139.47)	22	2.6	47.26 (29.61 - 71.56)	74	2.9	77.53 (60.88 - 97.34)
5-9	123	7.2	256.53 (213.2 - 306.08)	62	7.4	137.47 (105.39 - 176.23)	185	7.3	198.82 (171.2 - 229.62)
10-14	236	13.9	443.45 (388.67 - 503.79)	67	8	134.94 (104.57 - 171.37)	303	11.9	294.55 (262.31 - 329.65)
15-19	274	16.1	413.09 (365.62 - 465.01)	106	12.6	160.41 (131.33 - 194.01)	380	14.9	286.99 (258.85 - 317.34)
20-24	207	12.2	228.98 (198.84 - 262.39)	82	9.8	88.66 (70.51 - 110.05)	289	11.4	158.02 (140.32 - 177.33)
25-29	134	7.9	212.2 (177.79 - 251.32)	56	6.7	91.32 (68.98 - 118.59)	190	7.5	152.64 (131.71 - 175.96)
30-34	103	6	186.09 (151.89 - 225.69)	51	6.1	89.73 (66.8 - 117.98)	154	6.1	137.27 (116.45 - 160.75)
35-39	103	6	168.25 (137.33 - 204.06)	57	6.8	95.95 (72.67 - 124.32)	160	6.3	132.64 (112.89 - 154.87)
40-44	97	5.7	160.96 (130.52 - 196.35)	43	5.1	66.04 (47.79 - 88.96)	140	5.5	111.67 (93.93 - 131.77)
45-49	74	4.3	131.29 (103.09 - 164.83)	22	2.6	35.45 (22.21 - 53.67)	96	3.8	81.06 (65.66 - 98.99)
50-54	68	4	137.68 (106.91 - 174.54)	32	3.8	60.34 (41.26 - 85.18)	100	3.9	97.63 (79.44 - 118.75)
55-59	59	3.5	122.24 (93.05 - 157.69)	37	4.4	73.65 (51.85 - 101.52)	96	3.8	97.46 (78.94 - 119.02)
60-64	39	2.3	104 (73.94 - 142.17)	32	3.8	81.04 (55.42 - 114.41)	71	2.8	92.22 (72.02 - 116.33)
65-69	43	2.5	121.49 (87.92 - 163.66)	26	3.1	66.9 (43.69 - 98.02)	69	2.7	92.92 (72.29 - 117.6)
70-74	28	1.6	89.92 (59.74 - 129.96)	40	4.8	110.42 (78.88 - 150.37)	68	2.7	100.94 (78.38 - 127.97)
75+	63	3.7	141.79 (108.95 - 181.42)	103	12.3	139.04 (113.48 - 168.62)	166	6.5	140.07 (119.57 - 163.07)
Total	1703	100	200.53 (191.12 - 210.28)	839	100	93.58 (87.36 - 100.13)	2542	100	145.61 (140 - 151.38)

Table 44: Hospital admissions for poisonings, Liverpool Local Authority residents only, by type of poisoning and age group 2004/05 to 2007/08 combined[13]

Age group	X40 Non-opioid analgesics, antipyretics and antirheumatics	X41 Antiepileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs	X42 Narcotics	X43 Other drugs acting on the ANS	X44 Other and unspecified drugs, medicaments and biological substances
Unknown	<5	<5	<5	<5	<5
0-4	32	23	6	N/A	52
5-9	7	<5	<5	N/A	6
10-14	28	<10	<5	N/A	7
15-19	325	70	42	N/A	91
20-24	328	124	43	N/A	87
25-29	169	89	39	N/A	41
30-34	156	89	50	N/A	37
35-39	171	97	51	N/A	52
40-44	135	131	29	N/A	45
45-49	108	98	16	N/A	51
50-54	65	59	16	N/A	27
55-59	43	31	9	N/A	13
60-64	28	23	<5	N/A	18
65-69	15	11	6	N/A	9
70-74	8	8	<5	N/A	10
75+	26	21	10	N/A	35
Total	1644	885	328	38	581

[13] Data is only included for prescription and over the counter drug poisoning and narcotics due to low numbers in the other categories.

Table 45: Accidental injury attendances to Alder Hey AED, Liverpool Local Authority residents aged 0-17 only, by gender and ward, 2004/05 to 2007/08 combined

Ward name	Ward code	Bites and stings	Accidental ingestion	Deliberate ingestion	RTA	Other accident
Abercromby	00BYFA	12	7	8	11	642
Aigburth	00BYFB	5	18	14	15	894
Allerton	00BYFC	16	18	13	28	1347
Anfield	00BYFD	26	35	30	46	2222
Arundel	00BYFE	17	14	7	25	741
Breckfield	00BYFF	28	19	22	48	1702
Broadgreen	00BYFG	26	39	42	38	2886
Childwall	00BYFH	18	14	26	27	1748
Church	00BYFJ	13	15	12	22	1268
Clubmoor	00BYFK	28	23	25	50	2139
County	00BYFL	32	26	22	53	2206
Croxteth	00BYFM	23	17	11	54	2593
Dingle	00BYFN	15	19	16	20	1288
Dovecot	00BYFP	49	41	19	60	3156
Everton	00BYFQ	17	<7	6	15	936
Fazakerley	00BYFR	14	24	20	34	1765
Gillmoss	00BYFS	36	36	27	56	3443
Granby	00BYFT	33	26	25	38	1374
Grassendale	00BYFU	<5	17	10	13	1108
Kensington	00BYFW	24	25	29	61	1686
Melrose	00BYFX	26	28	20	35	1872
Netherley	00BYFY	8	<7	12	19	976
Old Swan	00BYFZ	15	24	21	48	2160
Picton	00BYGA	14	26	18	41	1045
Pirrie	00BYGB	35	29	21	62	2617
St. Mary's	00BYGC	15	21	15	20	1324
Smithdown	00BYGD	11	12	15	19	891
Speke	00BYGE	21	12	13	21	1234
Tuebrook	00BYGF	45	27	37	56	2387
Valley	00BYGG	15	15	15	29	1466
Vauxhall	00BYGH	23	13	6	26	1017
Warbreck	00BYGJ	16	21	22	47	2586
Woolton	00BYGK	<5	12	15	15	1207
Total		681	680	614	1152	55926

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