



NorthWest  
Public Health  
Observatory

NOVEMBER 2005 ISSUE 04

# synthesis

*bringing together policy, evidence and intelligence*

## KEY messages:

- *The epidemiology of behaviours in the North West over recent years indicates a gradual improvement in smoking levels, a gradual deterioration in sexual health, alcohol-related effects and mental health with little robust information on trends in food consumption and physical activity*
- *Local lifestyle surveys remain the most popular, and possibly the most appropriate, mechanism of obtaining detailed population measures of individual behaviours that impact on health and will be important for informing progress on Choosing Health key topics and in monitoring health targets incorporated in Local Area Agreements*
- *There are several issues around robustness of such data that must be considered when planning a survey; most importantly sample size and the consistency of instruments*
- *This synthesis recommends some standard questions that can be applied to local surveys to enable national and/or international comparisons, whilst allowing local flexibility for local needs, and lists many sources for obtaining other standards*
- *If lifestyle survey data is not available, proxy measures for behaviours and related outcomes can provide very meaningful and robust indicators of local changes in behaviours (see also forthcoming APHO technical briefing [www.apho.org.uk](http://www.apho.org.uk))*
- *A regional co-ordination of survey methodology and standardisation of questions would greatly assist local areas in carrying out surveys and allow a regional lifestyle picture to be collated*
- *NWPHO can provide advice and support for carrying out lifestyle surveys, can offer recommendations for standard questions and can collate and analyse local survey data for a more comprehensive regional picture*

## 1 Introduction

There are a number of risk factors associated with lifestyle that are also linked to health, health inequalities and life expectancy. Some examples of these lifestyle factors include: consumption of fruit and vegetables, physical activity, smoking and alcohol consumption. If Governments are to succeed in increasing healthy life expectancy they must address these lifestyle factors, something that according to the 2000 *World Health Report*<sup>1</sup> can be achieved for relatively little cost. However, successfully tackling such lifestyle issues requires consistent high quality intelligence on individuals' behaviour in order to identify areas where lifestyles require change, to develop the interventions most appropriate to each community and to measure their effectiveness once implemented. While consistent measures have been developed in many clinical environments, methodologies for measuring lifestyles often vary dramatically between and within public services and academic institutions. Such variations impair comparisons between areas and over time and consequently inhibit a better understanding of how improvements in lifestyles can successfully be achieved. This report is designed to help inform those developing tools to measure lifestyles and provides some of the information necessary to identify; the appropriate methodology, questions already validated in lifestyle studies and the best sample to survey.

A number of well-established routine monitoring and surveillance systems for communicable diseases, drug misuse, hospital episodes etc. have already been developed. However, a lack of systems to monitor lifestyle factors and behaviours at a local level means that other data sources are often used. Alternative data sources have a variety of advantages and disadvantages beyond the remit of this report. However, a technical briefing by the Association of Public Health Observatories (APHO, [www.apho.org.uk](http://www.apho.org.uk)) is currently in preparation and will provide more detailed information about sources of lifestyle data in local populations. For example:

- **National surveys:** Surveys such as the Health Survey for England (HSE)<sup>2</sup> and the General Household Survey (GHS)<sup>3</sup> collect lifestyle data at a national level. Some have adequate sample sizes or are conducted frequently enough to provide sub-national statistics. However for most, data cannot be produced below regional level.
- **National survey boosts:** One option for gathering more local information is through the purchase of HSE 'Boosts'<sup>4</sup>. Such information would allow Primary Care Trusts (PCTs) and Local Authorities a greater ability to target interventions to local need. Questions can be tailored to local requirements. However, the costs of these 'Boosts' may discourage their uptake.

continued overleaf ►►

- **Synthetic estimates<sup>4</sup>:** Synthetic estimation uses information from surveys such as the HSE along with various other area-level data already available (e.g. census data) to generate information at ward, PCT and Local Authority level. The process uses relationships between variables (e.g. alcohol consumption and deprivation) at a large geography through mathematical modelling techniques to calculate a variety of lifestyle estimates at a lower geography. Although useful for planning purposes, these estimates cannot be used for monitoring local change and are therefore not a suitable alternative to local surveys.
- **NHS primary care data:** The collection of data through GP practice systems such as Quality Management and Analysis System (QMAS)<sup>ii</sup> and MIQUEST<sup>iii</sup>.
- **Commercial datasets:** Many commercial organisations use consumer surveys to collect lifestyle data for marketing purposes, which are then made available for purchase. Such data (on individuals) can be used to provide estimates of lifestyle data at low geographic level. For example, Acxiom carries out a National Shoppers Survey three times a year, from which information is gathered that offers estimates of smoking prevalence ([www.claritas.co.uk](http://www.claritas.co.uk)).

## Current Policy Drivers

The report *Securing Good Health for the Whole Population*<sup>5</sup> highlighted the need for improved collection of comprehensive information on health and lifestyle behaviours such as diet and exercise, physical activity and smoking, particularly at a local level. This information is vital in monitoring the populations' health and targeting and evaluating interventions. The White Paper *Choosing Health*<sup>6</sup> also recognised the need for better, more timely information and evidence and states the need to:

provide the information and research evidence to achieve realtime health surveillance.

A number of policy and strategy documents highlight issues relating to lifestyle and identify key actions and targets to reduce the related mortality and morbidity. All of the key priorities identified within *Choosing Health* are directly associated with lifestyle. The paper highlights the need for action to:

- Reduce the number of people who smoke
- Reduce obesity and improve diet and nutrition
- Increase exercise
- Encourage and support sensible drinking
- Improve sexual health
- Improve mental health

Appendix 1 sets out some examples of the Government proposals for action - by Government, media, local organisations, communities and individuals - to address these lifestyle changes.

## Intelligence: Epidemiology of Lifestyle Factors

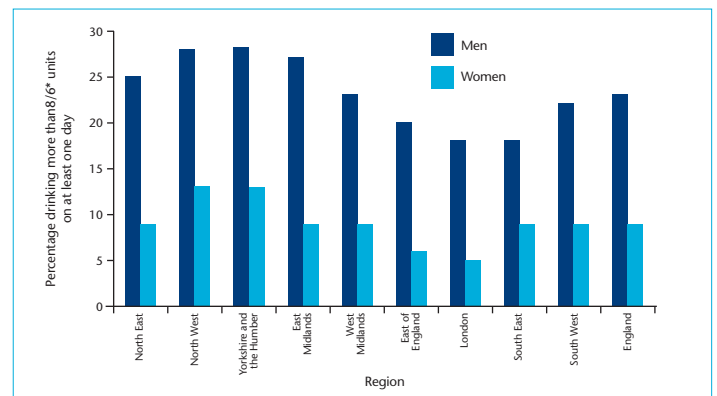
### Alcohol

The North West has among the highest levels of alcohol consumption in the country, and correspondingly, among the highest rates of alcohol-related mortality<sup>7</sup>. Both men and women drink less frequently but in larger quantities than the national average. Alcohol is having particularly damaging effects in the more deprived areas and is making a considerable contribution to inequalities across the region<sup>7</sup>.

Across the regions in 2002, the North had the highest level of binge drinking<sup>iv</sup> for both males and females (see Figure 1)<sup>8</sup>. Nationally produced synthetic estimates for the percentage of adults in the North West who binge drink, show that the highest rates of binge drinking are estimated to be in the Local Authorities of Liverpool, Knowsley and Manchester. The lowest are in Blackburn with Darwen, Wigan and High Peak<sup>8</sup>. However, there are no actual data on levels of alcohol consumption routinely and consistently collected across the North West Region. Consequently, synthetic estimates of binge drinking are untested and should always be treated with caution.

For further information about alcohol and binge drinking in the North West, see *Taking Measures: A Situational Analysis of Alcohol in the North West* available at: [www.cph.org.uk/cph\\_pubs/reports/CH/Taking\\_Measures.pdf](http://www.cph.org.uk/cph_pubs/reports/CH/Taking_Measures.pdf).

Figure 1: Binge drinking\* by sex and Government Office Region, General Household Survey 2003<sup>9</sup>.



\* More than 8 units for men and 6 units for women.

### Smoking

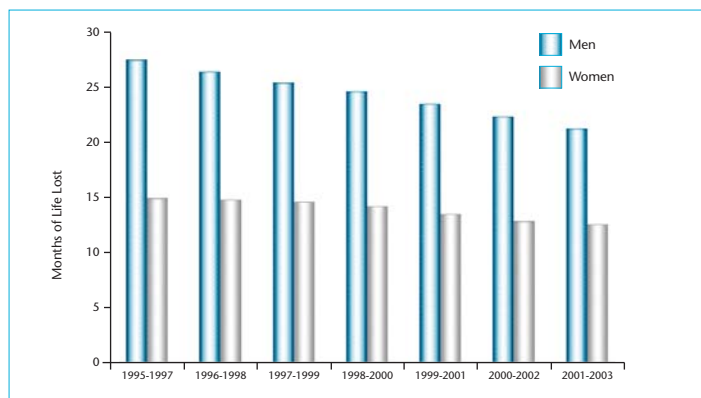
There are an estimated 12 million smokers in the UK<sup>9</sup>. Despite continued improvements in mortality due to smoking in developed countries, smoking remains the single most preventable cause of illness and death in the UK<sup>10</sup>.

With an estimated 1.5 million smokers, the North West has a higher overall prevalence (30%)<sup>11</sup> and rate of smoking related mortality than any other English region<sup>12</sup>. Figure 2 shows trends from 1995 to 2003 in the average months of life lost due to smoking in the North West compared to the average for England and Wales among under 75 year olds<sup>13</sup>.

Data based on synthetic estimates reveals that the highest rates of smoking are estimated to be in the Local Authorities of Knowsley, Manchester and Liverpool, the lowest in Ribbles Valley, Macclesfield and Congleton<sup>4</sup>.

Further information about smoking in the North West can be found in the *Tobacco Control Research Bulletins* available from the Centre for Public Health website [www.cph.org.uk/publications](http://www.cph.org.uk/publications).

**Figure 2:** Contribution to Life Expectancy due to smoking in under 75 year olds living in the North West - Months of Life Lost compared with the England and Wales average, 1995 - 2003<sup>13</sup>.



## Diet and Nutrition

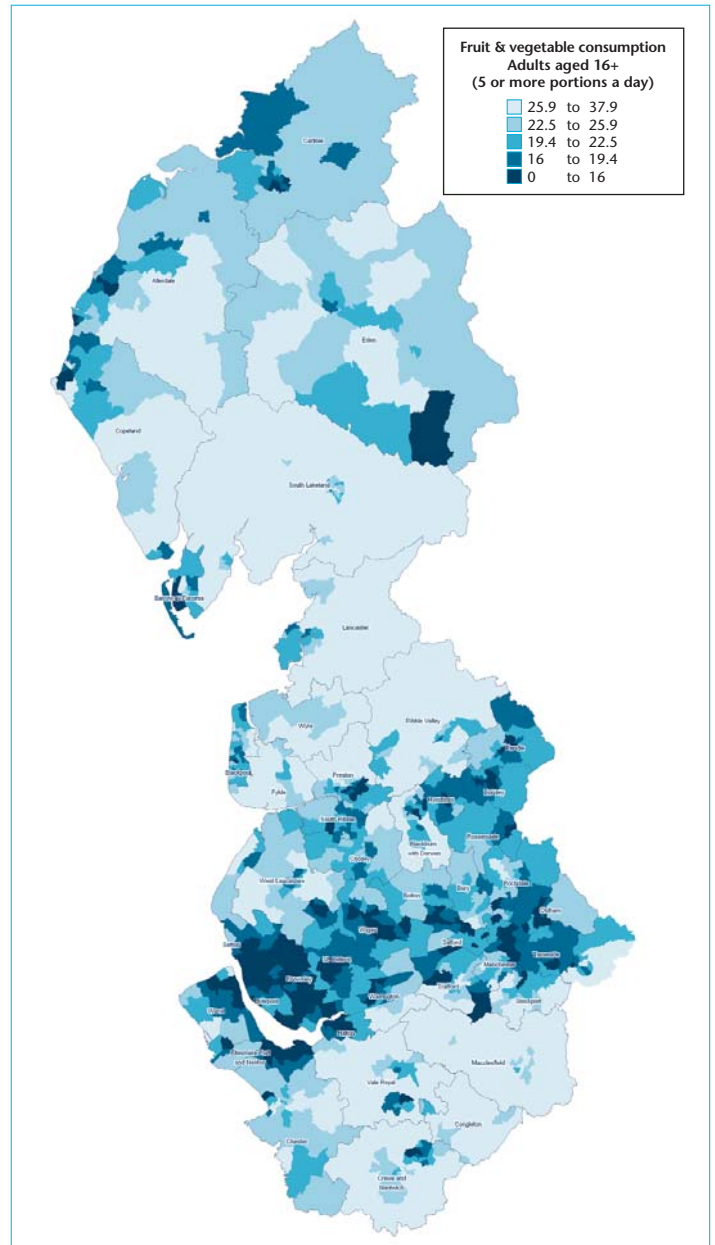
The adult daily-recommended intake of fruit and vegetables is five portions per day. This level of consumption can protect against cancer and heart disease, as well as cutting the symptoms of asthma in childhood<sup>14</sup>. Findings from the 2004 *National Diet & Nutrition Survey*<sup>15</sup> show that nationally, adults aged 19-64 consumed, on average, less than three portions of fruit and vegetables a day.

In Liverpool, a study of 13,000 school children from Year 5 (9-10 years) and Year 7 (11-12 years), found that just 33% of those in Year 7 and 23% of those in Year 5 consumed fruit and vegetables on the same day, figures that are well below Government targets<sup>16</sup>.

Figure 3 uses nationally produced synthetic estimate data to display regional variations in the percentage of adults consuming five or more portions of fruit and vegetables. The highest proportion of adults eating good levels of fruit and vegetables are found in Eastern Cheshire, Fylde and Trafford South PCTs, whilst the lowest proportions are seen in Knowsley, North Liverpool and Central Liverpool PCTs<sup>4</sup>.

For further details about fruit and vegetable consumption in the North West and to view information and maps about a wide range of health inequalities for the region please refer to the website [www.nwpho.org.uk/information](http://www.nwpho.org.uk/information).

**Figure 3:** Synthetic Estimates of Adult Fruit and Vegetable Consumption in the North West of England, 2000-2002. Percentage of adults eating five or more portions a day<sup>4</sup>.



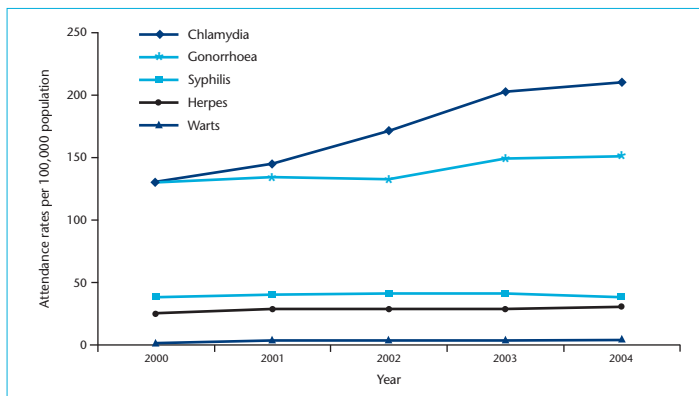
## Sexual Health

The sexual health crisis in the North West is continuing. The North West saw the largest percentage increase in the number of new episodes of Sexually Transmitted Infections (STIs) diagnosed in any region in England from 2000 to 2004 (31%), an even greater increase than that seen across the whole of the UK for the same period (21%)<sup>17</sup>.

Figure 4 illustrates North West trends in the rates of selected STIs per 100,000 population from 2000 to 2004<sup>17</sup>. Data from Genito-urinary medicine (GUM) clinics shows that chlamydia is a particular problem in the North West. Rates of new episodes of diagnosis (from KC60 returns) have shown a sharp increase over the years, reaching a rate of 210.2 persons per 100,000 population in 2004. This rate is greater than that for the UK (174.5 persons per 100,000 population).

For further information about the Sexual Health of the North West please see [www.cph.org.uk/research\\_sexualhealth.asp](http://www.cph.org.uk/research_sexualhealth.asp).

**Figure 4:** Attendance at Genito-urinary Medicine Clinics for selected STIs, rate per 100,000 population in the North West, 2000-2004<sup>17</sup>.



Diagnoses are calculated based on GUM clinics in the region, attendance rates are calculated for the region's resident population. 2003 mid-year population estimates were used for 2004.

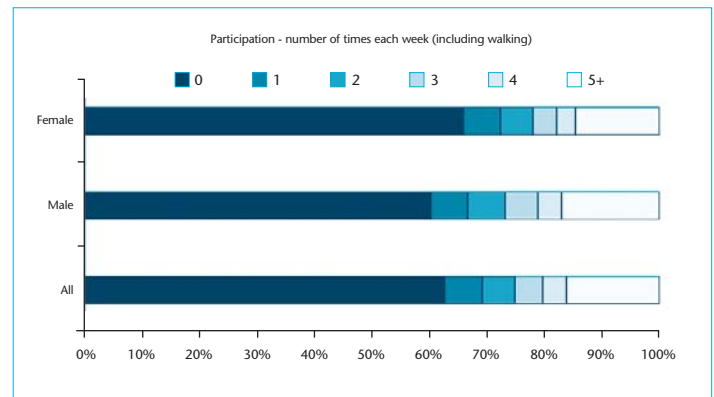
## Physical Activity

A lack of physical activity contributes to a number of diseases such as coronary heart disease, diabetes, stroke and some cancers. The Chief Medical Officer's recommended level of physical activity for adults is 30 minutes of moderate activity on at least five days a week whilst for children and young people it is one hour of moderate activity every day<sup>18</sup>. In England, the levels of physical activity are low; results from the 2003 HSfE revealed that just 37% of men and 24% of women met the recommended physical activity target<sup>19</sup>. Comparing these HSfE figures to a survey of health across Greater Merseyside (conducted by Heart of Mersey in 2003) reveals that Merseyside residents reported higher levels of physical activity (39% for men and 32% for women)<sup>20</sup>. It is difficult to gain a true picture of physical activity levels, as survey results often provide conflicting data due to the varying instruments used.

A recent North West survey of 11,600 adults revealed that just 16% take part in 30 minutes of exercise (including walking) on five or more occasions in a week, whilst 11% currently take part in exercise (excluding walking) for 30 minutes or longer on three or more occasions each week<sup>21</sup> (see Figure 5). The North West has been set targets of increasing participation in sport and physical activity from 33% of the North West population active in 2003 to 50% in 2020 (1% annual increase)<sup>22</sup>.

Further information on physical activity in the North West is available from Sports England North West, [www.sportengland.org/northwest\\_index](http://www.sportengland.org/northwest_index) and the Physical Activity Taskforce, [www.nwph.net/phys](http://www.nwph.net/phys).

**Figure 5:** Frequency of participation in exercise lasting at least 30 minutes per week (individuals aged 16 years and over), North West, 2004<sup>21</sup>.



## Mental Health

One in six adults suffers from some form of mental illness at any one time with as many as nine million people being affected nationally<sup>23, 24</sup>. In England, women appear to be at greatest risk, with an estimated 20% of women and 14% of men having some form of mental illness<sup>25</sup>. Mental health problems not only affect the adult population, but are prevalent among children with an estimated one in ten children (under 16 years of age) affected; girls appear to be at greater risk than boys<sup>23, 25</sup>.

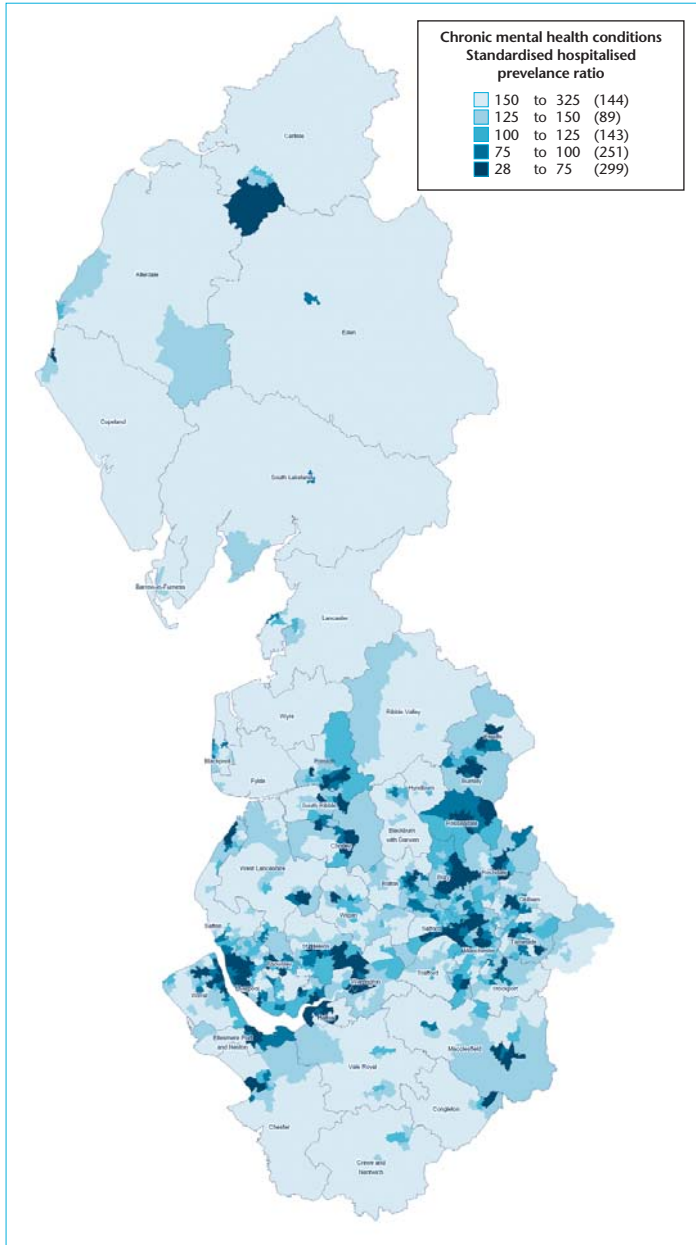
Figure 6 shows North West regional variations in the prevalence of diagnosed chronic mental health conditions (schizophrenia, mood disorders and neuroses), which result in hospital admission. Urban localities have high levels (based on a regional average of 100), for example as seen in Bolton, Bury, Salford, Liverpool, Manchester, Warrington and others urban areas. Rural localities and counties consistently have lower than average ratios<sup>13</sup>.

People diagnosed with mental health problems are at increased risk of suicide with up to 90% of suicide victims reported to have been suffering from a psychiatric disorder at the time of their death. In England and Wales there are approximately 4,500 suicides each year and figures for attempted suicide may be over ten times that number<sup>26</sup>.

Over the past 30 years adult suicide rates have been decreasing. Across England and Wales there are large regional differences in suicide rates. In 2000-2003, the North West had the highest female adult suicide rate and the second highest male adult suicide rate (slightly less than the North East) (see Figure 7) of all English Regions. Both male and female suicide rates are higher in the North West than across England and Wales as a whole<sup>27</sup>.

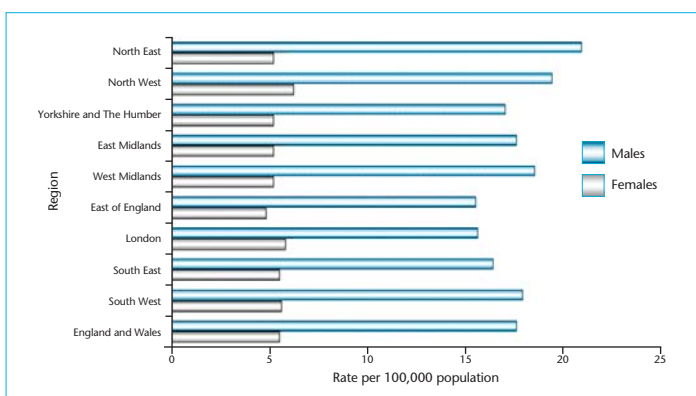
For further information about mental health in the North West please see the Mental Health Public Health Information report [www.nwpho.org.uk/reports/mentalhealth.pdf](http://www.nwpho.org.uk/reports/mentalhealth.pdf).

**Figure 6:** Hospitalised prevalence of chronic mental health conditions (persons admitted for any reason but with a mental health condition identified)<sup>13</sup>. ICD Codes F20-F48\*.



\* International Classification of Diseases (ICD) Codes: F20-F29 schizophrenia, F30-F39 mood disorders, F40-F48 neuroses

**Figure 7:** Adult suicide rates, by Government Office Region, 2000-2003<sup>27</sup>.



## 3 Conducting Lifestyle Surveys<sup>v</sup>

The following section aims to give a brief overview of the process involved in conducting a lifestyle survey. However for more comprehensive details please refer direct to the sources detailed, as well as the resources listed in Appendix 2.

There are a number of stages to survey production:

- Establish your aims, areas of interest and information required
- Consider the uses of the information you will gather
- Identify your target audience and your sample size
- Choose your survey methodology
- Create and test your questionnaire
- Conduct interviews and enter data
- Analyse data and produce report

The type of survey you conduct may be influenced by a number of factors including:

- Finance - consider the cost implications of the style and size of survey you choose to conduct
- Timescales - be realistic and include additional time for unforeseen delays. Try to keep to deadlines and monitor progress regularly. Allow time for ethical approval to be sought
- Repeatability - how often should the survey be repeated?  
For a list of commonly used time frames see Table 1 overleaf

continued overleaf ►►►

Table 1: Survey Time Frames

Survey frequency	Description	Advantages	Disadvantages
Continuous	Survey carried out continuously throughout the year e.g. General Household Survey	<ul style="list-style-type: none"> <li>- Provides timely data</li> <li>- Data is consistent and good quality (no gaps)</li> <li>- Allows seasonal trends to be seen</li> <li>- Fewer administration costs (e.g. same interviewers used so not having to retrain for each survey)</li> </ul>	<ul style="list-style-type: none"> <li>- Cost</li> </ul>
Annual	Survey repeated yearly e.g. Health Survey for England	<ul style="list-style-type: none"> <li>- Allows trends over time to be assessed</li> <li>- Data consistency</li> </ul>	<ul style="list-style-type: none"> <li>- Administration issues</li> <li>- No seasonality</li> <li>- Cost</li> </ul>
Periodic	Surveys conducted on two, three, five or ten yearly basis e.g. Census of the Population (every 10 years)	<ul style="list-style-type: none"> <li>- Useful for monitoring trends over set time periods</li> <li>- Data consistency</li> </ul>	<ul style="list-style-type: none"> <li>- Administration issues</li> <li>- Cost</li> </ul>
Ad-Hoc	Survey conducted infrequently e.g. Youth Lifestyles Survey	<ul style="list-style-type: none"> <li>- Cheaper</li> <li>- Provides a 'snapshot' view</li> </ul>	<ul style="list-style-type: none"> <li>- Data can go out of date. May need to update questions as areas of interest change</li> <li>- Not suitable for trends analysis</li> </ul>
One-off	Survey only conducted once and may not be repeated e.g. Time Use Survey	<ul style="list-style-type: none"> <li>- Provides a 'snapshot' view</li> <li>- Respondents not required to maintain long term interest</li> </ul>	<ul style="list-style-type: none"> <li>- Poor data consistency</li> <li>- Not suitable for trends analysis</li> <li>- Poor data consistency</li> </ul>

Source: <http://qb.soc.surrey.ac.uk> accessed 06/07/2005

Some of the more recent public health policy documents e.g. *Wanless*<sup>5</sup> and *Choosing Health*<sup>6</sup> have identified the importance of partnership working. As surveys often cover a wide range of topics you may have to identify a variety of bodies to be involved. This means that a number of issues can be addressed within the same survey, which is often cost effective as well as useful for informing multi-agency work. In addition to providing varying opinions and input these organisations may be able to provide additional funding to your project.

The quality of the data gathered is an essential element in the analysis. Quality issues for consideration include:

- *Sample size - careful consideration must be given to the size of your sample as this will affect the value of your survey results (see section 'selecting your sample/sample size')*
- *Non-response rate - non-response bias occurs due to differences between the ideal respondent sample and the sample that actually respond. It creates errors in statistical measurement as confidence intervals become greater as the sample size is reduced. You should account for non-response when deciding on your sample size (see section 'response rate')*

- *Coverage - your survey should cover as many areas and population sub-groups as possible to ensure the sample is representative*
- *Compliance - providing an 'incentive' for your respondents to complete the questionnaire may increase compliance*
- *Questionnaire completeness - returned surveys are not necessarily complete surveys and some may not be useable in your final analysis*

You may decide to design your own survey or alternatively you may choose to outsource the work to a specialist organisation such as a specialist academic/University department, or a local/national research agency/consultant.

Postal surveys are the most commonly used survey method for local lifestyle surveys. However this is only one of a range of survey types available (see Table 2). In order to get the most from your survey, it may be worthwhile considering using more than one method (a multi-mode approach), to allow more in-depth information to be gathered. There is more information about this style of surveying on the MORI website [www.mori.com/pubinfo/scg/combine-methodologies.shtml](http://www.mori.com/pubinfo/scg/combine-methodologies.shtml).

Table 2: Types of Survey

Survey type	Description	Advantages	Disadvantages
<b>Self Completion Surveys</b>			
Postal	The most commonly used survey type for lifestyle surveys. Paper questionnaires distributed via the mail allowing a very broad sample group at relatively low cost. Reminders sent out to encourage response.	<ul style="list-style-type: none"> <li>- Lower cost than most other survey types</li> <li>- Convenient - allow respondents to complete at their leisure</li> <li>- Little chance for direct bias</li> <li>- Allows a large sample to be gathered</li> <li>- Reasonably non-intrusive</li> <li>- Wide coverage</li> </ul>	<ul style="list-style-type: none"> <li>- Difficult to achieve good response rate</li> <li>- Respondent may be unable to complete for a number of reasons e.g. may be literacy or language barriers</li> <li>- Not suitable for complex information requests</li> <li>- Cannot guarantee that the respondent completes the survey, could be another member of the household</li> <li>- Slow response</li> <li>- Difficult to get a balance in responses. Tends to be interested groups that respond</li> </ul>
Group administered	Questionnaires provided to a group for completion at the same time	<ul style="list-style-type: none"> <li>- High response rate</li> <li>- Allows versatile range of questions</li> </ul>	<ul style="list-style-type: none"> <li>- Small sample only useful for specific information from specific groups</li> <li>- Requires a scheduled time suited to all respondents</li> </ul>
Web based	Increasing in popularity as the internet becomes more widely available. Can be distributed in a number of ways: <ul style="list-style-type: none"> <li>- Electronic mail messages</li> <li>- Posted as World Wide Web forms on the Internet</li> <li>- Publicly available computers in locations with high volume of persons such as shopping centres</li> </ul>	<ul style="list-style-type: none"> <li>- Low cost</li> <li>- Easy to edit and analyse</li> <li>- Fast distribution</li> <li>- Allows a pre-survey letter to be sent and indications of interest to be gathered</li> <li>- Responses may be more honest than paper or interview surveys</li> <li>- Quick response time</li> </ul>	<ul style="list-style-type: none"> <li>- Possible bias as sample limited to those with computer/online access (those in lower socio-economic groups less likely to have access)</li> <li>- Less ability to guarantee confidentiality</li> <li>- Computer questionnaires more difficult to design (layout) than those on paper</li> <li>- May need to provide additional guidance to respondents on how to complete questionnaire</li> </ul>
<b>Oral Surveys</b>			
Individual (face to face) interview  Group Interview  Telephone Interview	These types of survey are the most personal type and are useful for gathering opinions from respondents	<ul style="list-style-type: none"> <li>- More personal than other methods</li> <li>- Useful for gathering opinions and detailed responses</li> <li>- Ability to react to situation e.g. explain questions further</li> <li>- Response rate high once respondents obtained. Can continue to arrange interviews until sample size reached</li> <li>- Potentially faster response</li> </ul>	<ul style="list-style-type: none"> <li>- Time consuming - length of survey may need limiting to hold interviewee's interest</li> <li>- Costly</li> <li>- Face to Face and telephone interviews may allow bias</li> <li>- Types of questions used must be carefully considered, particularly for telephone interviews where respondent doesn't have visual aid</li> <li>- Telephone interviews may receive negative responses</li> </ul>
<b>Longitudinal</b>			
Can use any of the methods mentioned above	Data is provided by a sample over a period of time e.g. Millennium Cohort Study	<ul style="list-style-type: none"> <li>- Allow trends to be seen (if conducted over time/repeated)</li> <li>- More realistic results</li> </ul>	<ul style="list-style-type: none"> <li>- Initial sample must be carefully selected to ensure long term commitment and keep dropouts to a minimum</li> <li>- May require an incentive to keep respondents interested</li> <li>- Cost</li> </ul>

Source: <http://writing.colostate.edu/guides/research/survey> and [www.lifestylesurvey.org.uk](http://www.lifestylesurvey.org.uk) accessed 06/07/2005

continued overleaf ►►►

## Consistency of Questions

When developing your survey questions it is worthwhile looking at other surveys carried out nationally and locally. These surveys can be used not only for ideas on layout but also for finding validated<sup>vi</sup> questions relevant to your survey to use in your own research. Using such questions will allow you to benchmark your local data with regional/national indicators and to make direct comparisons of data across surveys, saving a great deal of time. You should however be careful when selecting your questions, ensuring that:

- *Your source is reliable and experienced in surveying*
- *The questions suit the method of survey that you have chosen i.e. more complex questions may be suitable for telephone interview but not postal questionnaires*
- *Care is taken when adjusting questions to ensure they remain valid and reliable*

Think about your survey design in terms of your target group, it must be suitable to meet their needs, also bear in mind the type of analysis you want to carry out. When deciding on your questions, you should consider how each one will be analysed and how you will manage any missing data. There are two main types of question used in surveys, closed questions and open-ended questions (see Box 1). Try to avoid straying from the needs of your survey and asking questions because it would be "interesting to know". In addition to the main body of your questions, it is important to include a number of demographic questions to allow you to gain an idea of your respondent profile.

## Selecting your sample/sample size

Your sample size is dependant on the likely response rate and the number of responses required to make the sample representative. Surveys allow you to make a generalisation about the whole population by studying a sample group that you feel represents the larger population. The *population* is all the members of the group that you are interested in and the *sample* is a sub-set of the population<sup>28</sup>. Finding a relevant *representative* population is an important part of the survey process and the quality of your survey results depend heavily on the selection of an appropriate sample. The two most important considerations when deciding on your sample are:

- *Accuracy: Large samples allow for smaller sampling error<sup>vii</sup>. Generally, the greater your sample size, the more accurately it reflects your population. Details of sample size calculators can be found in Appendix 2*
- *Bias: care must be taken to ensure that the sample you select is random and not open to bias*

Sampling methods can be classified as Random or Non Random (see Box 2). Sampling error can be calculated in random sampling, but not in non-random sampling. If in doubt, the North West Public Health Observatory (NWPHO) can advise on sampling methods.

### Box 1 - Question Types

#### Closed Questions

- *These are questions with a limited pre-coded response to which the respondent simply selects an answer. They can be written in a number of ways such as - set choice (e.g. yes/no, true/false), multiple choice with 'other' option or scaled/ranked response. These questions have a number of advantages as they are easy to analyse, provide standard responses, are quick to complete, are less time consuming in interviews and provide a greater response rate than other question types. The main disadvantage of closed questions is that the respondent is limited in their response and unable to express feelings or communicate lack of understanding of question through their answers. Closed questions are also more difficult to design and require some knowledge of the responses you are likely to receive.*

#### Open Ended Questions

- *These questions do not provide a choice of answer; the respondent provides the answer in their own words. This style of question is useful for gathering more detailed information, including attitudes and is also useful for secondary analysis. The respondent must read each question fully, preventing them from simply giving the same response to each question. There are however some disadvantages to open-ended questions, such as difficulties in analysing responses as coding answers may mean some responses lose their meaning.*

Source: <http://coe.sdsu.edu/eet/articles/surveyquest/index.htm> accessed 06/10/2005

## Box 2 - Sampling Methods

### Random Sampling

- *Simple random sampling - each member of the population has an equal chance of being selected for the sample*
- *Stratified sampling - requires identification of the sub population and their representation within that population. You must then identify a sufficient number of subjects from each stratum to ensure that the sample is representative of the whole population. Less sampling error than simple random sampling*
- *Cluster sampling - random selection of clusters of people rather than individuals. Although this method is easier and cheaper than some other methods, the sampling error can be greater*
- *Multistage sampling - a combination of more than one random sampling method*

### Non-Random Sampling

- *Systematic sampling - a sequential process of selecting records from a sample (e.g. every 10th record from a sample). Sampling list must be random and not have any order e.g. alphabetical*
- *Convenience sampling - selecting your sample by who is available to you e.g. stopping people on the street. Often used as a quick, low cost preliminary research method to obtain a gross estimate of results*
- *Quota sampling - a non-random version of stratified sampling. You decide on your sample size and then identify the strata and their proportions represented in the population. Convenience or judgement sampling is then conducted to select the required number of individuals from each stratum*
- *Snowball sampling - useful for sampling difficult to reach groups e.g. drug abusers. Uses a referral method whereby contact is made through one individual who then contacts others on your behalf*
- *Judgement sampling - sample is selected based on judgement e.g. sample drawn entirely from one city as a representative sample of all cities*

Source: extracts from Designing Surveys and Questionnaires [www.statpac.com/surveys/index.htm#toc](http://www.statpac.com/surveys/index.htm#toc) accessed 06/10/2005

## Sampling Frame

The *sampling frame* is the list that you use to select your sample from. The list should include all the necessary contact details and adequate information about your population to allow you to select your sample. Some examples of commonly used sampling frames are:

- *Electoral register*
- *GP register lists*
- *School registers*

You will be required to gain consent in order to use sampling frames from those bodies responsible for their maintenance.

## Response Rate

It is important that you try to gain as great a response rate as possible for your results to be valid. Non-response can affect the validity of your study by introducing bias<sup>29</sup>. Gaining a significant response rate is not easy; this is reflected in the declining response rates seen nationally. From 1991 to 2003 the response rate for the GHS has fallen from 84% to 69%<sup>30</sup> and the HSFE response fell from 85% to 73%<sup>2</sup>.

## When your survey is ready

You should always have a 'test run' of your survey, this can be done with colleagues and will allow you to make sure that the sequence of the questions flows well and any errors can be highlighted. When your final draft is ready you may find it useful to run a pilot survey (a smaller version of the full survey). A pilot survey will allow you to:

- *Clarify questionnaire content*
- *Check that the questionnaire is easy to complete*
- *Identify item non-response*
- *Estimate non-response rate*
- *Consider sample size requirements e.g. calculate sample size needed for the full survey*
- *Determine the amount of time it will take for administration, processing and analysis*

continued overleaf ►►►

When sending out postal surveys a covering letter is very important, as it is your opportunity to persuade the respondent to complete the survey. You should provide clear instructions on how to complete the survey and you may also choose to give an indication of the time it will take for completion. Request that the survey is completed and returned as soon as possible and give a deadline to give respondents a focus. It is worthwhile having an introductory statement and contact/return information, just in case the covering letter/return envelope is mislaid. Each questionnaire should be coded (using letters and/or numbers) for your reference, to maintain anonymity, monitor your response rate and for data entry/ analysis. If your survey is more than one page you should use an identifier on each page just in case pages become separated. Follow up is vital for good response rates; you may need to make repeated attempts to obtain a response without antagonising non-respondents. As a general rule you should make no more than three attempts at contacting your respondents.

For surveys involving interviews you must ensure that the interviewers are selected carefully and receive the appropriate training.

## Ethics and confidentiality

When embarking on the surveying process you must consider any ethical implications and usually this requires seeking ethical approval in order to carry out your survey and protect the rights of your survey respondents. Researchers should comply with the Data Protection and Human Rights legislation by using the data only in the way specified on the questionnaire. If the information you request is particularly sensitive you may need to obtain consent from the respondent, letting them know what the data will and will not be used for, to grant permission for the data to be used. It may well be necessary to ensure complete anonymity, whereby nobody (not even the researcher) can identify the participant. Assuring your respondent that the information they provide will be kept confidential can encourage a greater response rate.

According to the Department of Health's (DH) Research Governance Framework<sup>31</sup>, all health and social care research must be subject to an independent ethical review. Any NHS organisation wishing to conduct a survey of health related data must present their survey proposal to the relevant NHS Ethics committee. Information about Research Ethics Committees in the UK can be found at the Central Office for Research Ethics Committees (COREC) website [www.corec.org.uk](http://www.corec.org.uk).

## 4 Recommendations for Questions

### Standardisation of Data

Across the UK and Europe, surveys are a popular method of data collection. Unfortunately, comparison of survey data is difficult because different measurement instruments are used and the majority of surveys are produced in isolation at different times by different organisations. The result is a failure to allow for comparison of data and effective monitoring and trends analysis. Both the UK and Europe recognise that standardisation of surveys would alleviate the problem. In Europe, projects have been set up to develop comprehensive, comparable information on health, health-related behaviour, diseases and health systems. The project 'Health surveys in the EU: HIS and HIS/HES evaluations and models' developed a health surveys database combining Health Interview Surveys (HIS) and Health Examination Surveys (HES). This database contains information on surveys carried out across EU Member States, European Free Trade Association (EFTA) countries as well as Canada, Australia and the USA and details all questions used in these surveys as well as reference to standards developed between these countries. Thus if analysis of local data requires wider European or other international comparisons, questions and standards within this database are important to review.

In the UK, the Office for National Statistics (ONS) has introduced the harmonisation project, a cross Governmental programme investigating standardisation of inputs/outputs to allow comparisons across data sources. The wide range of Government surveys were designed at different times, to meet different needs, and were commissioned by a range of departments. Consequently, they lack cohesion - very much mirroring the development of local surveys. Thus, using common classifications, definitions and standards developed by this national project will lead to improved comparability of economic and social statistics. For example, national UK standards are listed for certain health measures: general health, longstanding illness and provision of care. An index of all primary and secondary standards is provided online [www.statistics.gov.uk/harmony](http://www.statistics.gov.uk/harmony), which includes: gender, age, date of birth, economic status, fear of crime and Internet use amongst many others. In addition, ONS have produced an interactive question bank that builds on the social capital survey matrix. This system allows a comparison of the wording of social capital questions used in 15 surveys [www.statistics.gov.uk/socialcapital](http://www.statistics.gov.uk/socialcapital)

## Questions on Alcohol

Most analysis relates to either the number of units consumed by the population or the proportion of the population consuming more than the recommended daily limits or binge drinking. The HSE and the GHS ask a similar set of quite detailed questions. Other surveys tend to ask for similar information but not necessarily with the same level of complexity. The results from both sets of questions will be comparable, as ultimately they allow for a calculation of units of alcohol consumed per week.

International comparisons are more difficult as they can appear to relate to litres of pure alcohol consumed per person per year. If your questionnaire does not ask about units of alcohol consumed, you can calculate this (and approximations of litres of pure alcohol) from questions identifying the amounts and types of alcoholic drinks consumed.

Box 3 details a reasonable set of alcohol questions to allow for national and ultimately international comparison. This set of questions was a part of the questions used in the British Regional Heart Study<sup>32</sup>.

There are a number of alcohol screening tools available, one of which is the Single Alcohol Screening Question (SASQ). This asks 'when was the last time you had more than six (women)/eight (men) drinks in one day?' as a measure of hazardous drinking. Other variations to this question are available for harmful drinking. Details of other alcohol screening tools are summarised in the Primary Care Alcohol Information Service (PCAIS) factsheet, available at: [www.alcoholconcern.org.uk/files/20030910\\_143338\\_Screening%20fact%20sheet%20final%20for%20web%202.pdf](http://www.alcoholconcern.org.uk/files/20030910_143338_Screening%20fact%20sheet%20final%20for%20web%202.pdf).

### Box 3 - Suggested Standard Questions on Alcohol<sup>32</sup>

1. Have you ever consumed alcoholic drinks?
2. Do you take alcoholic drinks at present?
3. Think back carefully over the last seven days. Please write the number of alcoholic drinks you have consumed on each day during the past week. It may help if you try to remember where you were and whom you were with on each day.

For each day write in how much you have drunk:

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Pints of non alcoholic beer, lager etc							
Pints of low alcohol beer, lager etc							
Pints of normal strength beer, lager, shandy, stout, cider etc							
Pints of strong beer, lager, shandy, stout, cider etc							
Single glasses of spirits such as whisky, vodka, gin, rum etc.							
Single glasses of wines and fortified wines such as sherry, port, martini etc							

4. Would you say last week was a fairly typical of what you usually have to drink in one week?
5. If last week was not typical, would you normally drink more or less in a week?
6. Have you changed your alcohol intake in the last 5 years?
7. If you have cut down or given up was this due to personal choice, doctors advice, illness or ill health, being on medication?

## Questions on Smoking

Two standards are considered important in defining the requirements for local smoking prevalence data: comparison with National trends and targets and European guidelines ([www.cph.org.uk/cph\\_pubs/reports/SM/SFNW2\\_dec04.pdf](http://www.cph.org.uk/cph_pubs/reports/SM/SFNW2_dec04.pdf)). The European Union (EU) HIS guidelines were last updated in June 2003 and request data on present and former smoking for persons in various age groups:

### Present smoking

- Number of respondents who do not smoke (non-smokers)
- Number of respondents who smoke occasionally (smokers)
- Number of respondents who smoke daily (smokers)

### Former smoking

- For non-smokers: number of respondents who never smoked
- For non-smokers: number of respondents who used to smoke occasionally
- For non-smokers: number of respondents who used to smoke daily

[If occasional smokers cannot be separated from daily smokers, then use the category 'smokers' including both daily and occasionally].

Current tobacco control recommendations (Global Link) suggest that a minimum of seven questions is used to fully assess smoking behaviour, the first four of which relate directly to smoking prevalence (see Box 4)<sup>33, 34</sup>.

The Health Surveys for England and Scotland ask over 20 detailed questions relating to smoking behaviour but the Health Survey for Wales asked the single question. Other surveys have varying numbers of questions and attempts to summarise are important for postal or self-completion surveys. The questions recommended in Box 4 should be used in local lifestyle surveys if possible. However, if fewer questions are necessary, it would be possible to analyse smoking prevalence to meet both the DH and EU requirements using the questions detailed in Box 5.

### Box 4 - Global Link<sup>33, 34</sup> recommended standard questions on smoking to conform to EU guidelines for measurement of smoking prevalence

1. Have you ever smoked?  Yes  No
2. Have you ever smoked at least 100 cigarettes in your lifetime?  Yes  No
3. Have you ever smoked daily?  Yes  No
4. Do you now smoke:
  - Daily
  - Occasionally
  - Not at all
5. On average, what number of the following items do/did you smoke per day?
  - Manufactured cigarettes
  - Hand-rolled cigarettes
  - Bidis
  - Pipefuls of tobacco
  - Cigars/cheroots/cigarillos
  - Goza/hookah
6. How many years have you smoked/did you smoke daily?
7. How long has it been since you last smoked daily?
  - Less than one month
  - One month or longer but less than six months
  - Six months or longer but less than one year
  - One year or longer but less than five years
  - Five years or longer but less than 10 years
  - 10 years or longer.

### Box 5 - Minimum questions enabling the identification of smoking prevalence to meet DH and EU standards

1. Have you ever smoked cigarettes, cigars or other tobacco products?  Yes  No ➔ Q2  
 Yes  No ➔ next question not related to smoking
2. Which of these best describes you?
  - I smoke daily
  - I smoke occasionally but not every day
  - I used to smoke daily but do not smoke at all now
  - I used to smoke occasionally but do not smoke at all now
3. Do you smoke cigarettes at all nowadays?  Yes  No

## Questions on Diet and Nutrition

A number of surveys ask questions relating to diet and nutrition, for example HSfE

[www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/HealthSurveyForEngland](http://www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/HealthSurveyForEngland), the Health and Lifestyle Survey (1991)

[www.data-archive.ac.uk/findingData/snDescription.asp?sn=3279](http://www.data-archive.ac.uk/findingData/snDescription.asp?sn=3279)

[www.food.gov.uk/science/101717/ndnsdocuments](http://www.food.gov.uk/science/101717/ndnsdocuments).

Questions tend to focus on gaining estimated consumption levels of various food types (in particular fruit and vegetables) within a given time period. Some surveys such as the Expenditure and Food survey

[www.statistics.gov.uk/ssd/surveys/expenditure\\_food\\_survey.asp](http://www.statistics.gov.uk/ssd/surveys/expenditure_food_survey.asp)

also ask respondents to monitor their food consumption in a food diary. Due to the complexity of questions relating to diet and nutrition, it is beyond the scope of this report to make recommendations. The process of selecting suitable questions therefore requires local project review and management. Useful sources of questions on diet and nutrition can be found at <http://qb.soc.surrey.ac.uk/surveys/hse/03eatingselfcomplt.pdf>.

## Questions on Sexual Health

The National Survey of Sexual Attitudes and Lifestyles (NATSAL)

[www.data-archive.ac.uk/findingData/snDescription.asp?sn=5223](http://www.data-archive.ac.uk/findingData/snDescription.asp?sn=5223)

is probably the most comprehensive sexual health survey conducted in Britain. NATSAL asks questions such as age at first sexual intercourse, number of heterosexual/homosexual partners in the last four weeks and condom use in the last four weeks. Asking other questions such as total number of lifetime partners, would allow for a more detailed picture to be gathered. Other surveys that ask for sexual health information include; the OMNIBUS surveys which ask questions on sexual health and contraception

[www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/ListOfSurveySince1990/SurveyListHealthIssues](http://www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/ListOfSurveySince1990/SurveyListHealthIssues) and the GHS, which contains questions relating to contraception [www.statistics.gov.uk/lib2002](http://www.statistics.gov.uk/lib2002).

## Questions on Physical Activity

The HSfE information is useful in that it provides details of activity in the population at large and has been followed up by a nurse visit in all age groups. The limitation is that the questionnaires used for physical activity have not been validated via peer review. A useful source of validated physical activity questionnaires is the International Physical Activity Questionnaire (IPAQ - available at [www.ipaq.ki.se](http://www.ipaq.ki.se)). IPAQ provides a set of well-developed tools that can be used internationally to obtain comparable estimates of physical activity. The questionnaire is available in two versions - short and long. It is always advisable to use the shortest

questionnaire possible when conducting a survey. Longer questionnaires often result in smaller sample sizes and reduced compliance. It is VITAL that you have a reason for any question you include in your survey as anything that increases the length risks reducing the quality of your results.

In the UK, the first really solid piece of dedicated physical activity research (other than perhaps the Allied Dunbar National Fitness Survey in 1992) is currently being conducted by Sports England and is known as the 'Active People' survey. One thousand people will be selected at random from each Local Authority in England and asked to complete the survey, which has been built from IPAQ questions. In addition to completing the survey, some individuals will also be asked to wear a pedometer<sup>35</sup>.

The Global Physical Activity Questionnaire (GPAQ) is a physical activity surveillance tool developed to gather physical activity data in low and middle income countries where occupational, transport and domestic activity account for more energy expenditure than does leisure-time. This situation is the reverse of what is seen in most developed countries, where occupational and transport activities require very little energy expenditure [www.who.int/hpr/NPH/docs/regional\\_consultation\\_report\\_emro.pdf](http://www.who.int/hpr/NPH/docs/regional_consultation_report_emro.pdf).

## Questions on Mental Health

The complexity of questions asked about mental health varies greatly and the questions you use will depend on the depth of information you require. An overview of the range of national mental health surveys are available on the DH website, including details of Psychiatric Morbidity Surveys of children and adolescents, adults and carers

[www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/ListOfSurveySince1990/SurveyListMentalHealth](http://www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/ListOfSurveySince1990/SurveyListMentalHealth).

The short form 36 (SF-36) is a short health survey profiling health and well-being scores as well as psychometrically based physical and mental health summary measures [www.sf-36.org/tools/sf36.shtml](http://www.sf-36.org/tools/sf36.shtml). It was developed for the Medical Outcomes Study, and has been tested and validated extensively [www.mcw.edu/midas/health/SF-36.html](http://www.mcw.edu/midas/health/SF-36.html). Box 6 contains examples of mental health questions taken from this survey.

**Box 6 - Suggested Standard Questions on Mental Health**

1. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (e.g. feeling depressed or anxious)? *(Please circle one number on each line.)*
- |  | Yes | No |
|--|-----|----|
| (a) Cut down on the amount of time you spent on work or other activities | 1   | 2  |
| (b) Accomplished less than you would like                                | 1   | 2  |
| (c) Didn't do work or other activities as carefully as usual             | 1   | 2  |

2. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups? *(Please tick one box.)*

Not at all     
  Slightly     
  Moderately     
  Quite a bit     
  Extremely

These questions are about how you feel and how things have been with you **during the past 4 weeks**. Please give the one answer that is closest to the way you have been feeling for each item. *(Please circle one number on each line.)*

3.

	All of the time	Most of the time	A good bit of the time	Some of the time	A Little of the time	None of the time
Did you feel full of life?	1	2	3	4	5	6
Have you been a very nervous person?	1	2	3	4	5	6
Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
Have you felt calm and peaceful?	1	2	3	4	5	6
Did you have a lot of energy?	1	2	3	4	5	6
Have you felt downhearted and blue?	1	2	3	4	5	6
Did you feel worn out?	1	2	3	4	5	6
Have you been a happy person?	1	2	3	4	5	6
Did you feel tired?	1	2	3	4	5	6

4. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives etc.) *(Please tick one box.)*

All of the time     
  Most of the time     
  Some of the time     
  A little of the time     
  None of the time

In addition to this range of detailed questions, a mental health measure developed in New Zealand, known as the affectometer, is currently being validated for wider use in the UK. Further details can be found at

[www.nimhe.org.uk/index.cfm?fuseaction=main.viewItem&intItemID=26924&intSectionID=1064&intParentID=0](http://www.nimhe.org.uk/index.cfm?fuseaction=main.viewItem&intItemID=26924&intSectionID=1064&intParentID=0).

## 6 Conclusion & Recommendations

It is not within the scope of this short synthesis to provide a comprehensive methodology for carrying out lifestyle surveys. Here we have focussed information around policy, intelligence and recommendations for standard questions on the six key areas identified in the White Paper *Choosing Health*<sup>6</sup>. In addition to topic-specific questions, it is also essential that lifestyle surveys record demographics effectively and consistently, to ensure that a respondent profile is assessed and to enable appropriate analysis of the results. The list of resources identified in this report should provide the tools necessary to assist local lifestyle survey projects. NWPFO can also provide advice in using these tools and additional support to help carry out lifestyle surveys. In the past, investment in local surveys has often been lacking, many of the instruments are poorly developed and compliance has been low. When implemented effectively, a considerable amount of resources (staff and financial) are expended on carrying out local lifestyle surveys and the process would be greatly benefited by regional co-ordination. This would allow consistency of questions and methodology to progress across the North West with a greater ability to link data and analyses in with national and international comparators. Many issues to consider have been raised throughout this report and some additional points about the compromises between consistency and local flexibility are:

- *Using validated questions ensures more clarity in analysis and interpretation, even if some tailoring to local needs is lost*
- *Changing questions can mean that comparisons cannot be made to previous years. However, if compliance has been low in the past, year-on-year comparisons are of limited use*
- *Increasing questionnaire length may appear to increase value but often reduces compliance and therefore reduces quality. Always ensure you know why a question is being asked and how the answer will be used before you include the question*
- *Make sure you have confidence that the sample you collect is appropriate to give a representative and statistically robust picture for the lifestyle and population you wish to examine and if in doubt please contact the NWPFO. Small samples with insufficient power are a false economy and often provide flawed intelligence*
- *All lifestyle surveys could follow the same best practice with minor changes and minimal additional costs*

Part of the PHO Information and Intelligence function identified in the white paper *Choosing Health*<sup>6</sup> is to support new systems for recording lifestyle measures. The NWPFO can provide expert advice on methods for carrying out surveys, standardisation of questions and co-ordination/collation of local surveys to enable a North West picture of lifestyle behaviours to be developed. To this end, we recommend that:

- *PCTs, Local Authorities and other agencies carrying out local surveys need to work together across wide geographies to ensure that, where possible, the same set of core questions are used consistently. Local flexibility can still be catered for by the addition of questions for local needs, but NOT the replacement of core standards*
- *NWPFO can advise on a regional set of questions that should be included, to conform to national and international standards, and will also advise on sampling, survey and analysis methodologies*
- *The data collected may have uses outside of your organisation and the NWPFO will post some or all of it online to allow either open or limited access*
- *NWPFO can also collate data from local surveys that have applied consistent instruments and provide a much wider regional intelligence, to which analyses from local surveys can be compared*

Appendix I: Actions proposed in *Choosing Health*<sup>6</sup> and associated delivery and action plans.

Choosing Health Actions	Related Policies and Evidence	Examples and Related Targets
<b>Smoking</b>		
<p>In line with other smoking targets, Choosing Health proposed actions on smoking that are aimed at reducing adult smoking rates, particularly amongst manual workers. Examples of the methods in which they hope to achieve this are through restricting tobacco advertising, reducing tobacco sales and promoting smoke free environments.</p>	<ul style="list-style-type: none"> <li>■ Smoking Kills</li> <li>■ National Service Framework (NSF) for Coronary Heart Disease</li> <li>■ NHS Cancer Plan</li> <li>■ Every Child Matters</li> </ul>	<p>Public Service Agreement (PSA): <a href="http://www.hm-treasury.gov.uk./media/4B9/FE/sr04_psa_ch3.pdf">www.hm-treasury.gov.uk./media/4B9/FE/sr04_psa_ch3.pdf</a></p> <ul style="list-style-type: none"> <li>■ Reducing adult smoking rates from 26% (2002) to 21% or less by 2010</li> <li>■ Reduce smoking prevalence amongst routine and manual groups from 31% (2002) to 26% or less by 2010.</li> </ul> <p>Smoking Kills: <a href="http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4006684&amp;chk=AqVFgM">www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4006684&amp;chk=AqVFgM</a></p> <ul style="list-style-type: none"> <li>■ To reduce smoking among children from 13% to 9% or less by the year 2010; with a fall to 11% by the year 2005. This will mean approximately 110,000 fewer children smoking in England by the year 2010.</li> <li>■ To reduce adult smoking in all social classes so that the overall rate falls from 28% to 24% or less by the year 2010; with a fall to 26% by the year 2005.</li> <li>■ To reduce the percentage of women who smoke during pregnancy from 23% to 15% by the year 2010; with a fall to 18% by the year 2005.</li> </ul> <p>National Standards, Local Action: <a href="http://www.dh.gov.uk/assetRoot/04/09/61/80/04096180.pdf">www.dh.gov.uk/assetRoot/04/09/61/80/04096180.pdf</a></p> <ul style="list-style-type: none"> <li>■ 800,000 smokers from all groups successfully quitting at the 4-week stage by 2006.</li> </ul>
<b>Obesity, Diet and Nutrition</b>		
<p>Choosing Health and the accompanying food and health action plan <i>Choosing a Better Diet</i> propose a wide range of actions aimed at improving diet/nutrition and reducing obesity, particularly amongst children. These include: developing food labeling to be more consistent and to show better nutritional information; restricting advertisement and promotion of high fat/salt/sugar foods to children through various media (e.g. television, packaging, vending machines) and introducing a cross-government campaign to raise awareness of the health risks of obesity and how it can be prevented through diet and exercise.</p>	<ul style="list-style-type: none"> <li>■ NHS Plan</li> <li>■ NSFs (CHD, Cancer, Diabetes)</li> <li>■ NHS Cancer Plan</li> <li>■ Every Child Matters</li> <li>■ Chief Medical Officer's (CMO's) Annual Report 2002</li> </ul>	<p>PSA: <a href="http://www.hm-treasury.gov.uk./media/4B9/FE/sr04_psa_ch3.pdf">www.hm-treasury.gov.uk./media/4B9/FE/sr04_psa_ch3.pdf</a></p> <ul style="list-style-type: none"> <li>■ Stop the year on year increase in obesity amongst children under 11 years by 2010, in the context of a broader strategy to tackle obesity in the population as a whole.</li> </ul>
<b>Physical Activity</b>		
<p>Increasing physical activity, particularly amongst 5 to 16 years is a major public health challenge. Choosing Health and the accompanying physical activity action plan <i>Choosing Activity</i> detail plans to improve this situation and meet PSA targets by actions such as: ensuring all schools to have active travel plans by 2010; introducing a National Standard for cycle training across England by 2006; and increasing funding for PE and school sport as part of the National Strategy for PE, School Sport and Club Links.</p>	<ul style="list-style-type: none"> <li>■ National Strategy for PE, School Sport and Club Links</li> <li>■ NSFs (CHD, Diabetes, Older People)</li> <li>■ Game Plan</li> <li>■ NHS Cancer Plan</li> <li>■ At least five a week: evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer</li> </ul>	<p>PSA: <a href="http://www.hm-treasury.gov.uk./media/965/FB/sr2004_ch18.PDF">www.hm-treasury.gov.uk./media/965/FB/sr2004_ch18.PDF</a> and <a href="http://www.hm-treasury.gov.uk./media/4B9/FE/sr04_psa_ch3.pdf">www.hm-treasury.gov.uk./media/4B9/FE/sr04_psa_ch3.pdf</a></p> <ul style="list-style-type: none"> <li>■ Increase the uptake of sport by 5 to 16 year olds so that the percentage of school children in England who spend a minimum of two hours each week on high quality PE and school sport increases from 25% in 2002 to 75% by 2006 and to 85% by 2008 (at least 75% in each School Sport Partnership by 2008).</li> </ul>

Choosing Health Actions	Related Polices and Evidence	Examples and Related Targets
<b>Physical Activity continued</b>		
		<ul style="list-style-type: none"> <li>■ Increase the take-up of cultural and sporting opportunities by adults and young people aged 16+ from priority groups (women, black and ethnic minorities, lower socio-economic groups and those with physical or mental disabilities) by 1) increasing by 3% the number who participate in active sports at least 12 times a year and 2) increasing by 3% the number who engage in at least 30 minutes of moderate-intensity-level sport, at least three times a week.</li> <li>■ Stop the year on year increase in obesity amongst children under 11 years by 2010, in the context of a broader strategy to tackle obesity in the population as a whole.</li> </ul> <p>Game Plan: <a href="http://www.strategy.gov.uk/work_areas/sport/index.asp">www.strategy.gov.uk/work_areas/sport/index.asp</a></p> <ul style="list-style-type: none"> <li>■ Increase the percentage of the population who are reasonably active (taking at least 30 minutes of moderate exercise five times a week) from 30% to 50% in 2011 and 70% by 2020.</li> </ul>
<b>Alcohol</b>		
<p>Choosing Health proposes action to reduce alcohol related harm and build on the commitments in the Alcohol Harm Reduction Strategy. For example, developing a social responsibility scheme for alcohol (on a voluntary basis for alcohol producers and retailers), to protect young people by putting information on alcohol containers and in retail outlets, placing responsible drinking messages on alcohol advertisements and ensuring alcohol is not sold to under 18 year olds.</p>	<ul style="list-style-type: none"> <li>■ Alcohol Harm Reduction Strategy for England</li> <li>■ NSFs (CHD, Mental Health, Diabetes and Older People)</li> <li>■ NHS Cancer Plan</li> <li>■ Every Child Matters</li> </ul>	<p>There are currently no targets in England, Wales or Northern Ireland relating to a reduction in alcohol consumption. Scotland has targets relating to a reduction in the proportion of the population exceeding the recommended weekly limits of alcohol for both men and women, as well as a target for a reduction in the frequency and level of drinking by 12-15 year olds.</p>
<b>Sexual Health</b>		
<p>Building on the National Strategy for Sexual Health and HIV, Choosing Health proposes a number of actions to improve sexual health. For example, implementing a national chlamydia screening programme by March 2007, modernising sexual health services and reducing waiting times for referral to GUM clinics to 48 hours.</p>	<ul style="list-style-type: none"> <li>■ NSF for Children, Young People &amp; Maternity Services</li> <li>■ Better Prevention, Better Services, Better Sexual Health: the National Strategy for Sexual Health and HIV</li> <li>■ Getting ahead of the curve - a strategy for combating infectious diseases</li> <li>■ National Teenage Pregnancy Strategy</li> </ul>	<p>PSA: <a href="http://www.hm-treasury.gov.uk/media/4B9/FE/sr04_psa_ch3.pdf">www.hm-treasury.gov.uk/media/4B9/FE/sr04_psa_ch3.pdf</a></p> <ul style="list-style-type: none"> <li>■ Tackle the underlying determinants of ill health and health inequalities by reducing the under-18 conception rate by 50% by 2010 as part of a broader strategy to improve sexual health.</li> </ul> <p>National Teenage Pregnancy Strategy: <a href="http://www.dfes.gov.uk/teenagepregnancy/dsp_content.cfm?pageID=84">www.dfes.gov.uk/teenagepregnancy/dsp_content.cfm?pageID=84</a></p> <ul style="list-style-type: none"> <li>■ Halve the under 18-conception rate in England by 2010 (with an interim reduction target of 15% by 2004).</li> <li>■ Increase the participation of teenage mothers in education, training or work to 60% by 2010 to reduce the risk of long-term social exclusion.</li> </ul>
<b>Mental Health</b>		
<p>Through actions such as improving the help available to people with mental illness, extended coverage of child and adolescent mental health services and encouraging employers to promote better mental health at work, Choosing Health aims to improve mental health.</p>	<ul style="list-style-type: none"> <li>■ NSFs for Mental Health, Older People and Children, Young People &amp; Maternity Services</li> <li>■ NHS Plan</li> </ul>	<p>PSA: <a href="http://www.hm-treasury.gov.uk/media/4B9/FE/sr04_psa_ch3.pdf">www.hm-treasury.gov.uk/media/4B9/FE/sr04_psa_ch3.pdf</a></p> <ul style="list-style-type: none"> <li>■ Substantially reduce mortality rates by 2010 from suicide and undetermined injury by at least 20%.</li> </ul>

Appendix 2: Useful Resources and Survey Tools

Resources	Link	Description
<b>United Kingdom</b>		
National Statistics harmonisation project	<a href="http://www.statistics.gov.uk/Harmony">www.statistics.gov.uk/Harmony</a>	Information about the cross governmental harmonisation programme looking into standardising inputs and outputs for use in National Statistics
Social Survey Questions Database	<a href="http://qb.soc.surrey.ac.uk">http://qb.soc.surrey.ac.uk</a>	A 'bank' of various national/European social surveys
SEPHO Lifestyle Survey Toolkit	<a href="http://www.lifestylesurvey.org.uk">www.lifestylesurvey.org.uk</a>	This website is in the style of a toolkit, offering a step-by-step guide on all aspects of conducting lifestyle surveys, from questionnaire design to sampling sizes. The 'Resource Bank' is a useful section containing links to national and local surveys
Centre for Applied Social Surveys (CASS)	<a href="http://www.socstats.soton.ac.uk/CASS">www.socstats.soton.ac.uk/CASS</a>	CASS is an Economic and Social Research Council resource centre run jointly by the National Centre for Social Research, the University of Southampton and the University of Surrey
Economic and Social Research Council (ESRC)	<a href="http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/index.aspx">www.esrcsocietytoday.ac.uk/ESRCInfoCentre/index.aspx</a>	ESRC is the UK's leading research funding and training agency addressing economic and social concerns
National Centre for Social Research (NatCen)	<a href="http://www.scpr.ac.uk">www.scpr.ac.uk</a>	NatCen design, carry out and analyse research studies in the fields of social and public policy
Local Authorities Research and Intelligence Association (LARIA)	<a href="http://www.laria.gov.uk">www.laria.gov.uk</a>	Promotes the role and practice of research within the field of local government and provides a supportive network for those conducting or commissioning research
Social Research Association (SRA)	<a href="http://www.the-sra.org.uk/ethicals.htm">www.the-sra.org.uk/ethicals.htm</a>	Organisation open to social research practitioners and trainees from all sectors, as well as others with an interest in social research
Data Archive UK	<a href="http://www.data-archive.ac.uk">www.data-archive.ac.uk</a>	Contains datasets from a wide variety of surveys such as HSE, GHS, British Crime Survey and many more. The site allows you to explore data and also enables you to produce online tabulations and charts
Regional Intelligence Unit - Basic Guide to Survey Methods	<a href="http://www.nwriu.co.uk">www.nwriu.co.uk</a>	Provides an overview of the key issues to consider when undertaking or commissioning survey research
<b>European</b>		
Health Interview & Health Examination Surveys Database	<a href="http://www.iph.fgov.be/hishes">www.iph.fgov.be/hishes</a>	Inventory of nationally and internationally administered health surveys in EU Member States, EFTA countries and some countries of other regions (USA, Canada and Australia)
Eurostat	<a href="http://epp.eurostat.cec.eu.int/portal/page?_pageid=1090,30070682,1090_30298591&amp;_dad=portal&amp;_schema=PORTAL">http://epp.eurostat.cec.eu.int/portal/page?_pageid=1090,30070682,1090_30298591&amp;_dad=portal&amp;_schema=PORTAL</a>	Browseable database of statistics including lifestyle data, from across Europe
<b>Commercial*</b>		
CACI	<a href="http://www.caci.co.uk">www.caci.co.uk</a>	Contains information about lifestyle datasets available for purchase. Includes Lifestyles UK, a database containing information on over 300 lifestyle selections on 44 million consumers in the UK and Acorn which is a geodemographic tool containing 287 lifestyle variables
Claritas	<a href="http://www.clusterbigip1.claritas.com/claritas/Default.jsp">www.clusterbigip1.claritas.com/claritas/Default.jsp</a>	Various data products available for example PRIZM which is built from lifestyle and demographic data at postcode level

Resources	Link	Description
<b>Commercial* continued</b>		
Experian Ltd	<a href="http://www.experian.com/products/behaviourbank.html">www.experian.com/products/behaviourbank.html</a>	Various data available through Experian such as Behaviour Bank data on self reported interest, lifestyle and behaviours
Added Value Data sets - P2 people and places. Dept of civic design, Beacon Dodsworth	<a href="http://www.p2peopleandplaces.co.uk/index.html">www.p2peopleandplaces.co.uk/index.html</a>	Data classified by where people live
<b>Survey Tools</b>		
Statistical Sample Size Calculator	<a href="http://www.psychnet-uk.com/experimental_design/statistical_sample_size_calculator.htm">www.psychnet-uk.com/experimental_design/statistical_sample_size_calculator.htm</a>	Online calculator for determining the number of people you must survey in order to accurately reflect your population
SEPHO Lifestyle Survey Toolkit	<a href="http://www.lifestylesurvey.org.uk/samplesize.html">www.lifestylesurvey.org.uk/samplesize.html</a>	Guidance on many aspects of conducting a Lifestyle Survey including research design, calculating sample size, sampling techniques and questionnaire design
Questionnaires and Survey Design	<a href="http://www.statpac.com/surveys">www.statpac.com/surveys</a>	Information on conducting and designing questionnaires and surveys. Covers subjects such as qualities of a good question, response rates and sampling methods
Central Office for Research Ethics Committees (COREC)	<a href="http://www.corec.org.uk">www.corec.org.uk</a>	Information about Research Ethics Committees in the UK

\* The information held and value of these datasets is reviewed in the APHO technical briefing [www.apho.org.uk](http://www.apho.org.uk)

## Staff of the North West Public Health Observatory

<b>Professor Mark A Bellis</b> , Director	m.a.bellis@ljmu.ac.uk	+44 151 231 4511
<b>Dr Karen Tocque</b> , Director of Science and Strategy	k.tocque@ljmu.ac.uk	+44 151 231 4506
<b>Jeremy Hooper</b> , Public Health Information Project Manager	j.p.hooper@ljmu.ac.uk	+44 151 231 4508
<b>Neil Potter</b> , Web Developer & Programmer	n.potter@ljmu.ac.uk	+44151 231 4388
<b>Daniel Dedman</b> , Public Health Information Analyst	d.dedman@ljmu.ac.uk	+44 151 231 4508
<b>Sacha Wyke</b> , Data Manager	s.wyke@ljmu.ac.uk	+44 151 231 4472
<b>Tom Hennell</b> , Consultant Analyst GONW	thomas.hennell@doh.gsi.gov.uk	+44 161 952 4359
<b>Wayne Murray</b> , Web Developer/Programmer	w.s.murray@ljmu.ac.uk	+44 151 231 4388
<b>Alyson Jones</b> , Senior Project Officer	a.m.jones@ljmu.ac.uk	+44 151 231 4445
<b>Rebecca Manning</b> , Regional Researcher	r.manning@ljmu.ac.uk	+44 151 231 4508
<b>Craig Timpson</b> , Research Assistant (Cancer & Equity)	c.timpson@ljmu.ac.uk	+44 151 231 4508
<b>Ann Lincoln / Mel Davis</b> , Administrative Support	pa-cph@ljmu.ac.uk	+44 151 231 4511

## References

- 1 World Health Organization (2000). *The World Health Report 2000 - health systems: improving performance*. WHO.
- 2 Department of Health (n.d.) Health Survey for England [Online] [www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/HealthSurveyForEngland/fs/en](http://www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/HealthSurveyForEngland/fs/en) [Accessed 6th September 2005].
- 3 National Statistics (2003). General Household Survey [Online] [www.statistics.gov.uk/ssd/surveys/general\\_household\\_survey.asp](http://www.statistics.gov.uk/ssd/surveys/general_household_survey.asp) [Accessed 6th September 2005].
- 4 Department of Health (2005). Synthetic Estimates of Healthy Lifestyle Behaviours [Online]. [www.dh.gov.uk/PublicationsAndStatistics/Statistics/StatisticalWorkAreas/StatisticalWorkAreaNeighbourhood/StatisticalNeighbourhoodArticle/fs/en?CONTENT\\_ID=4116713&chk=PzuiSK](http://www.dh.gov.uk/PublicationsAndStatistics/Statistics/StatisticalWorkAreas/StatisticalWorkAreaNeighbourhood/StatisticalNeighbourhoodArticle/fs/en?CONTENT_ID=4116713&chk=PzuiSK). [Accessed 19th September 2005].
- 5 Wanless D (2004). *Securing Good Health for the Whole Population. Final Report*. London: The Stationery Office.
- 6 Department of Health (2004). *Choosing Health: Making healthier choices easier*. London: The Stationery Office.
- 7 Hughes K, Tocque K, Humphrey G and Bellis MA (2004). *Taking Measures: A Situational Analysis of Alcohol in the North West*. Liverpool: Centre for Public Health, Liverpool John Moores University. ISBN1-902051-62-9. [www.cph.org.uk/cph\\_pubs/reports/CH/Taking\\_Measures.pdf](http://www.cph.org.uk/cph_pubs/reports/CH/Taking_Measures.pdf)
- 8 National Statistics (2005). Drinking last week by sex and Government Office Region: GHS 2003 [Online] [www.statistics.gov.uk/statbase/Product.asp?vlnk=13459&image.x=9&image.y=7](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=13459&image.x=9&image.y=7) [Accessed 13th October 2005].
- 9 Action on Smoking and Health - ASH (2005). ASH basic facts: Smoking Statistics Factsheet [Online]. [www.ash.org.uk](http://www.ash.org.uk) [Accessed 26th July 2005].
- 10 Peto R, Lopez AD, Boreham J and Thun M (2004). *Mortality from Smoking in Developed Countries 1950-2000 (2nd edition)*. Clinical Trial Service Unit: Oxford University.
- 11 National Statistics (2005). Prevalence of cigarette smoking by sex and Government Office Region: 1998 to 2003: GHS 2003 [Online] [www.statistics.gov.uk/statbase/Product.asp?vlnk=13459&image.x=9&image.y=7](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=13459&image.x=9&image.y=7) [Accessed 13th October 2005].
- 12 Tocque K, Barker A and Fullard B (2005). Tobacco Control Research Bulletin: Issue 1. Liverpool: Centre for Public Health, Liverpool John Moores University. [www.cph.org.uk/cph\\_pubs/reports/SM/SFNW1\\_oct04.pdf](http://www.cph.org.uk/cph_pubs/reports/SM/SFNW1_oct04.pdf)
- 13 Health Inequalities (2005). North West Public Health Observatory [Online]. [www.nwpho.org.uk/information](http://www.nwpho.org.uk/information). [Accessed 29th September 2005].
- 14 Forastiere, F, Pistelli, R, Sestini, P, Fortes, C, Renzoni, E, Rusconi, F, Dell'Orco, V, Ciccone, G, Bisanti, L, and the SIDRIA Collaborative Group (2000). Consumption of fresh fruit rich in vitamin C and wheezing symptoms in children. *Thorax*, 55: 283-288.
- 15 Ruston D, Hoare J, Henderson L and Gregory J (2004). *National Diet & Nutrition Survey: Adults aged 19 to 64, Volume 5* 2004.
- 16 SportLinx (2004). *Liverpool SportLinx Project 01-03. Report on the Health and Fitness of Liverpool Primary and Secondary School Children*. Liverpool: Liverpool City Council.
- 17 Health Protection Agency (2005). *Diagnoses and rates of selected STIs seen at GUM clinics, United Kingdom: 2000 - 2004. National, Regional and Strategic Health Authority Summary Tables*. Health Protection Agency: London.
- 18 Department of Health (2004). *At least five a week: Evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer*. London: The Stationery Office.
- 19 Joint Health Surveys Unit (2004). *Health Survey for England 2003*. London: The Stationery Office.
- 20 Heart of Mersey (2005) *In Sickness and in Health. 2003 Health Survey for Greater Merseyside: Full Technical Report*.
- 21 Knight, Kavanagh and Page (2005). *Participation in Sport, the Arts, Physical and Creative Activities in England's Northwest*. North West Regional Development Agency.
- 22 Sport England North West (2004). *North West on the Move. The North West plan for Sport and Physical Activity 2004-2008, Executive Summary*.
- 23 Department of Health (2004). *Summary of intelligence on Mental Health*. London: The Stationery Office.
- 24 Department of Health (1999). *National Service Framework for Mental Health: Modern Standards and Service Models*. London: The Stationery Office.
- 25 Mental Health Foundation (2003). Factsheet: Statistics on Mental health [Online]. [www.mentalhealth.org.uk](http://www.mentalhealth.org.uk) [Accessed 26th July 2005].
- 26 Mental Health Foundation (2003). Factsheet: Suicide [Online]. [www.mentalhealth.org.uk](http://www.mentalhealth.org.uk) [Accessed 26th July 2005].
- 27 National Statistics (2005). *UK Suicide Rates reach 30 year low in 2003* [Online]. [www.statistics.gov.uk/pdfdir/suicide0305.pdf](http://www.statistics.gov.uk/pdfdir/suicide0305.pdf) [Accessed 6th September 2005].
- 28 Burgess TF (2001). *A general introduction to the design of questionnaires for survey research. Edition 1.1*. University of Leeds.
- 29 Edwards P, Roberts I, Clarke M, Di Guseppi C, Prapat S, Wentz R and Kwan I (2002). Increasing response rates to postal questionnaires: systematic review. *British Medical Journal*, 324:1183.
- 30 National Statistics (2005). Results from the General Household Survey. Appendix B sample design and response [Online]. [www.statistics.gov.uk/StatBase/Product.asp?vlnk=5756](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=5756) [Accessed 6th September 2005].
- 31 Department of Health (2005). *Research Governance Framework for Health and Social Care* [Online] [www.dh.gov.uk/PolicyAndGuidance/ResearchAndDevelopment/ResearchAndDevelopmentAZ/ResearchGovernance/ResearchGovernanceArticle/fs/en?CONTENT\\_ID=4002112&chk=PjlaGg](http://www.dh.gov.uk/PolicyAndGuidance/ResearchAndDevelopment/ResearchAndDevelopmentAZ/ResearchGovernance/ResearchGovernanceArticle/fs/en?CONTENT_ID=4002112&chk=PjlaGg). [Accessed 5th October 2005].
- 32 British Regional Heart Study (BHRS) (2004). BHRS website [Online]. <http://www.ucl.ac.uk/primcare-popscl/bhrs/index.htm> [Accessed 22nd September 2005].
- 33 Pierce JP (2005). *Conducting a smoking prevalence survey*. GlobalLink [Online]. <http://factsheets.globalink.org/en/prevalence.shtml>. [Accessed 29th September 2005].
- 34 Global Link (2000) *Revised standard questions for tobacco control* [Online]. [www.globalink.org/tobacco/docs/definitions/definitions.rtf](http://www.globalink.org/tobacco/docs/definitions/definitions.rtf) [Accessed 29th September 2005].
- 35 Sport England (2005). Sport England Embarks on Biggest Ever National Participation Survey [Online]. [www.sportengland.org/index/news\\_and\\_media/news\\_pr/sport\\_england\\_embarks\\_on\\_biggest\\_ever\\_national\\_participation\\_survey.htm](http://www.sportengland.org/index/news_and_media/news_pr/sport_england_embarks_on_biggest_ever_national_participation_survey.htm) [Accessed 30th September 2005].

## Footnotes

- 1 'Boosts' involve over sampling of the national survey at a local level to increase the sample size thus creating more robust data.
- 2 QMAS is a national system that automatically retrieves GP practice data on a monthly basis. It supports the payments process associated with the Quality and Outcomes Framework (QOF) of new General Medical Services.
- 3 MIQUEST is a common query language that all GP practice systems should be able to run.
- 4 Binge drinking is defined as taking eight or more units of alcohol for men or six or more units of alcohol for women, on at least one day in the previous week
- 5 This section is a summary of information available at: <http://coe.sdsu.edu/eet/articles/surveyquest/index.htm>, [www.statpac.com/surveys/index.htm#toc](http://www.statpac.com/surveys/index.htm#toc), <http://writing.colostate.edu/guides/research/survey>, [www.lifestylesurvey.org.uk](http://www.lifestylesurvey.org.uk), <http://qb.soc.surrey.ac.uk/>
- 6 Questions checked against recognised national or international standards, see section 4
- 7 Sampling error is the difference between an estimate derived from a sample survey and the true value that would result if a census of the whole population were taken. ([www.abs.gov.au/websitedbs/D3310116.NSF/0/d57480cfd24a324a2567ac0021e63f](http://www.abs.gov.au/websitedbs/D3310116.NSF/0/d57480cfd24a324a2567ac0021e63f))

We welcome your feedback on both content and style.

This report is also available on our website [www.nwpho.org.uk](http://www.nwpho.org.uk)

### Acknowledgments

Many thanks to other staff at the North West Public Health Observatory, the Centre for Public Health, Liverpool John Moores University and Government Office North West for their help and support, in particular Mark A Bellis, Karen Hughes, Sarah Hughes, Jeremy Hooper, Diana Leighton, Beccy Manning, Gareth Stratton, Jude Stansfield and Craig Timpson.

Lead author: Alyson M Jones

Additional authors: Karen Tocque



Centre for Public Health



North West  
Public Health  
Observatory

North West Public Health Observatory  
Centre for Public Health  
Castle House  
North Street  
Liverpool L3 2AY  
Tel: 0151 231 4454  
e-mail: [info@nwpho.org.uk](mailto:info@nwpho.org.uk)  
website: [www.nwpho.org.uk](http://www.nwpho.org.uk)  
ISBN Number: 1-902051-37-8