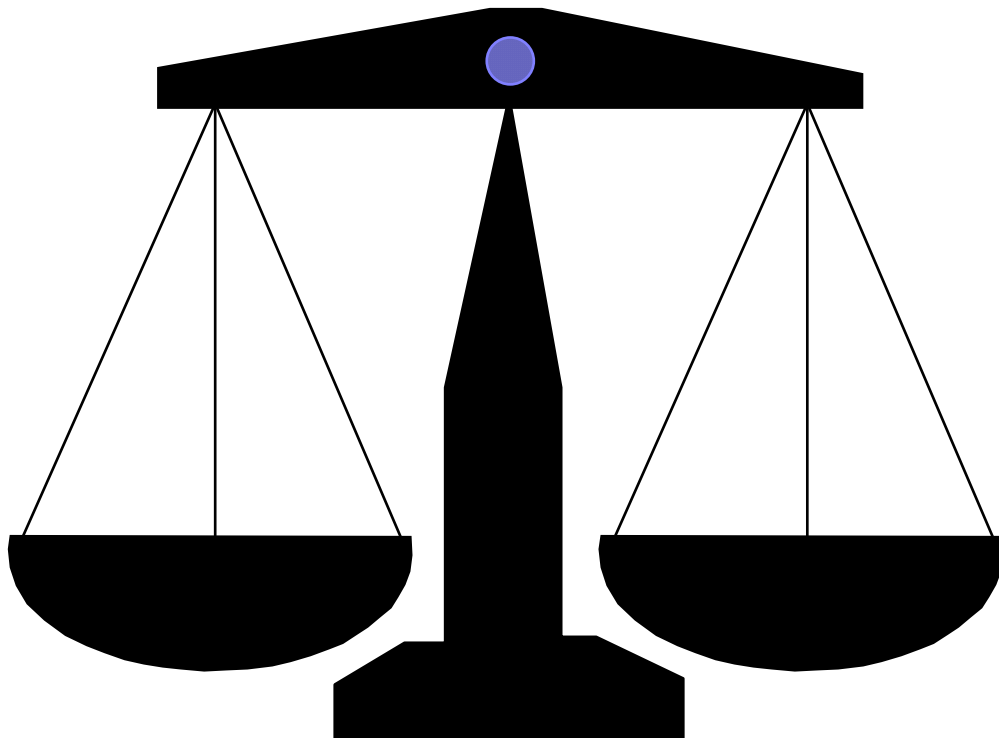


**ALLOCATING RESOURCES TO HEALTH AND SOCIAL
SERVICES BOARDS: PROPOSED CHANGES TO THE
WEIGHTED CAPITATION FORMULA**

**A SUMMARY OF THE
FOURTH REPORT FROM THE
CAPITATION FORMULA
REVIEW GROUP**



July 2004

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1.0 INTRODUCTION

- 1.1 Health and Social Services (HSS) Boards are responsible for commissioning health and social services for their resident populations. To enable them to do so the Department of Health, Social Services and Public Safety (DHSSPS) provides a block grant of funds to each Board on an annual basis based on a resource allocation formula. The aim of this formula is to allocate the available resources equitably between Boards. Given that the demands for services can be greater than the funds available for this purpose, the formula cannot ensure that all needs are met but rather that, as far as possible, all populations have equitable access to the services that exist.
- 1.2 This report provides a summary of work designed to achieve improvements in the resource allocation formula. In considering such improvements it is important to note that although the formula is concerned with the allocation of resources to Boards, it is also used by Boards to inform the subsequent deployment of those resources to localities.
- 1.3 The formula takes account of the number of people in the respective Board areas, the age and gender profile of those populations and differential need for care between those populations. Other relevant factors, such as the differential cost of providing care in urban and rural areas, and the impact of diseconomies of scale, are also taken into account.
- 1.4 This type of capitation formula was first introduced for the 1998/99 financial year, following the first and second reports (in 1995 & 1997) of the Capitation Formula Review Group (the Group) – a multi-disciplinary group of Departmental and Health and Social Service Board representatives, chaired by the Director of Finance of the Department).

1.5 Under the auspices of the Group significant additional research and analysis has been undertaken with a Third Report being produced in October 2000 and the latest research programme now being available for consideration.

1.6 The new research for this Fourth Report covers:

- An investigation into the determinants of need for learning disability services;
- An investigation into the determinants of need for physical and sensory disability services;
- An investigation into the determinants of need for family and child care services;
- An update of the determinants of need for mental health services;
- An investigation into economies/diseconomies of scale on cost in rural versus urban areas; and
- An investigation into unmet need and health inequalities.

1.7 This work is of a highly complex and technical nature and this report provides a summary, in a non-technical way, of the initial conclusions. It is structured as follows:

- Chapter 1 provides an Introduction;

- Chapter 2 outlines the key features of the weighted capitation formula and describes its various components;
- Chapter 3 describes how care needs associated with the age and gender profiles of the populations are reflected in the formula;
- Chapter 4 describes proposals relating to how differential need across the four HSS Boards' populations should be taken into account in the formula;
- Chapter 5 deals with a number of other relevant factors including how the different costs of providing care in urban and rural areas might best be reflected in the formula and the impact of diseconomies of scale;
- Chapter 6 deals with Targeting Health and Social Need and Equality issues associated with the Group's proposals; including testing for the inequitable distribution of unmet needs, and finally
- Chapter 7 provides some concluding remarks.

2.0 **KEY FEATURES OF THE WEIGHTED CAPITATION FORMULA**

2.1 This chapter describes the main components of the weighted capitation formula (the formula) so that the various analyses outlined in subsequent chapters can be placed in context. It begins with a statement of the objective of the formula, demonstrates the key influences on needs for health and social care resources within given populations and shows how these are taken into account for the different services and client groups before being consolidated into a single formula. It also describes other issues, which need to be factored into the development of a formula for allocating resources if a robust analysis is to be achieved.

Objective of the Formula

2.2 The objective of the formula is to allocate the resources, made available for health and personal social services, across the populations of the four Health and Social Services Boards in as fair a way as possible, taking account of their different population structures, differential need within those populations and other relevant factors.

How the Formula is constructed

2.3 The key influences on need for health and social care resources across the four Boards are:

- The number of people living within their area
- The age/gender profile of those populations
- The socio-economic profile of the population

- 2.4 The formula essentially provides funding based on the official population count in each Board's area.
- 2.5 The age and gender structure of each Board's population is different and this leads to different levels of need across the Board populations. For example, an elderly person is more likely to be admitted to hospital or need help at home than a young adult. The formula adjusts the total numbers in the population using a weighting derived from analysis of service utilisation and (if possible) cost by age group and gender (see Chapter 3).
- 2.6 It is not only the age and gender structure of the population that governs the need for health and social care. A range of other factors are involved. For example, it is now widely accepted that health and social care status has clear links with deprivation. The formula takes account of such additional needs through further weighting of the population numbers. The actual weightings used have been derived from a detailed programme of research (see Chapter 4). Concern had been expressed at the time of the Third Report about whether the level of unmet needs was higher in some areas than others. This was explored and a method developed for checking if there were any imbalances in the distribution of unmet needs.
- 2.7 Different weightings for age/gender and need have been individually calculated for the different categories of care e.g. for hospital (acute) services, or for services for people with a mental illness. In total some nine different categories or Programmes of Care (POCs) have been used as follows:
- Acute Services
 - Maternity and Child Health

- Family and Child Care
- Elderly Care
- Mental Health
- Learning Disability
- Physical and Sensory Disability
- Health Promotion and Disease Prevention
- Primary Health and Adult Community

2.8 A separate formula has been developed for each POC and applied to the relevant populations to provide a weighted population by Board for each POC. These are subsequently merged together to provide a single weighted population for each of the four Boards, with the larger programmes in terms of expenditure having an appropriately greater influence on the overall result. These weighted populations are expressed as a percentage of the total NI population and the resultant percentage (known as each Board's weighted capitation share) is used to distribute resources to each of the Boards.

2.9 A number of other adjustments are made before monies are allocated to Boards based on the weighted capitation shares (see chapter 5).

2.10 Firstly, it is recognised that it costs more to provide services in rural areas – more professional time is spent travelling to clients and travel costs tend to be higher. A financial adjustment is made to equalise the impact of this across the four Boards.

2.11 The cost of running organisations can also be affected by their size, for example to allow patients and clients reasonable access to services it is sometimes necessary to provide facilities that support a smaller population than that required to optimise efficiency. A financial adjustment has been agreed to take account of such issues but further

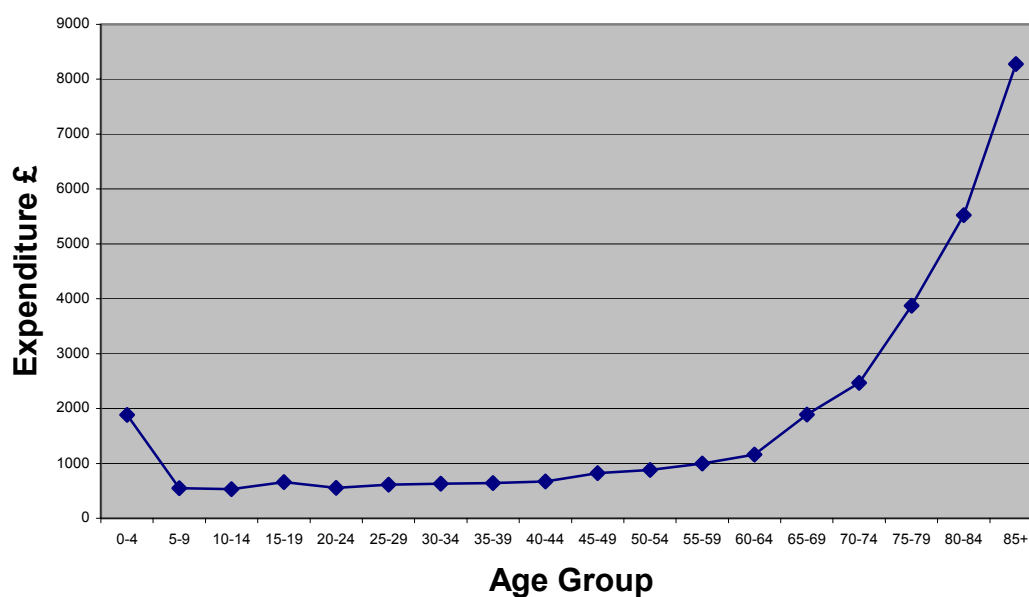
investigation is required to ensure that the additional costs exhibited are unavoidable in the medium to longer term and do not result from other cost pressures.

- 2.12 Within the elderly programme an adjustment has been made to take account of the differential levels of financial contribution from elderly clients. In the past there have also been adjustments for residential allowances being paid by Social Security and the different numbers of people in residential or nursing home care whose costs were being met by the Social Security system, but this is no longer required since the funding for these cases has been incorporated into the main health and social services allocation.
- 2.13 Similarly, there are differential levels of financial contribution from clients within the other programmes and a limited adjustment has been made to acknowledge the differential impact of this across Board populations.

3.0 TAKING NEEDS ASSOCIATED WITH AGE AND GENDER INTO ACCOUNT

3.1 The age /gender structures of the Board populations are different. For example, the population of the Eastern HSS Board on average would be somewhat older than that of the Western HSS Board. On the other hand the Western HSS Board would have proportionately more children in its population. Age is a key determinant of the overall health and social care needs of a population. The average expenditure per person by age group changes significantly over time (see Fig 3.1) reflecting different levels of utilisation of care services by age.

Fig 3.1 Average cost per person by age group across all POCs, 2002/03



3.2 In order to ensure a fair distribution of resources the allocation formula needs to be sensitive to the age distribution of the Board populations. Similarly the gender profile is important.

- 3.3 The Group were also aware that the age structure of the population accessing services changed according to the nature of the service – the age structure of the population accessing Family and Child Care Services is obviously different from that for Mental Health Services or Elderly Services.
- 3.4 In addressing these various issues the Group had to obtain detailed analyses of the utilisation and cost of service by age group and gender for each of the POCs. Often the relationship between age/gender and cost was produced as a by-product of the research into the impact of additional needs associated with social deprivation. The results for the Acute POC were developed for the original Reports but in most cases the relationships between age/gender and cost have been updated in this latest phase of the research. For two POCs the latest information came from detailed surveys commissioned by the Group for the 3rd Report.
- 3.5 The results of this costing work were then converted into a relative age/gender weighting for each service area which could be applied to the population numbers to provide an age/gender weighted population for each Board area. This has the effect of giving due weight to the age/gender associated needs of for example the elderly, children etc. This work means that an accurate assessment, using Northern Ireland data, of the differential costs for care by age group and gender can be factored into the formula.
- 3.6 The results of the Group's analysis are included at Annex 2.

4.0 **TAKING DIFFERENTIAL NEED INTO ACCOUNT**

- 4.1 The need for health and social care obviously is explained not only by the age and gender profile of a population. As discussed in chapter 2, other factors can play a significant part in determining the need for care. It is known, for example, that there are higher levels of morbidity in deprived areas.
- 4.2 A formula which seeks to distribute resources fairly across Board populations must also consider such issues so that each Board is resourced appropriately, relative to other Boards, to take account of differential need over and above that explained by the age and gender profile of the population.
- 4.3 The approach to developing a needs weighting for each programme uses detailed statistical research at the level of small population groupings such as Electoral Wards. The relationship is examined between the actual utilisation of services in Northern Ireland, supply of those services and a variety of socio-economic and morbidity variables such as unemployment rates, proportion of lone parents, proportions receiving income support or family credit, the proportion of people with a limiting long term illness etc. Those variables which are best able to explain differential utilisation across Board populations are combined into a “needs index” which is applied to the age/gender weighted Board populations to produce a ‘needs’ weighted population for each Board.

CFRG 3rd Report

- 4.4 Determining the needs indices for any one programme requires a significant research project and so each phase of the research programme can tackle only a few POCs. The research for the Acute

POC comes from the original reports. The Third Report recommended needs indices based on Northern Ireland research for the following POCs:

- Maternity and Child Health
- Family and Child Care
- Elderly Care
- Mental Health.

4.5 The Third Report also reflected research into the differing needs for care of people living in urban and rural areas. The researchers recommended no additional 'needs' weighting for urban or rural populations.

CFRG 4th Report

4.6 The Group's work programme for this Report (the 4th Work Programme) was based around issues identified in the 3rd Report from the CFRG. It was also informed by issues raised during public consultation and which emerged in the course of the Equality Impact Assessment carried out in 2000. In addition, the work programme also took account of issues which have emerged more recently, for example, new developments in methodology. In order to keep the Work Programme manageable within a three year timeframe, components of the work were prioritised with the order informed by consultation, the findings of the Equality Impact assessment and by CFRG Board members.

4.7 Following the completion of the research work for the Fourth Report, the Group are proposing a number of new needs weightings for the following POCs:

- Mental Health
- Family and Child Care
- Learning Disability

- Physical and Sensory Disability.

- 4.8 Work for the Third Report had highlighted that the Mental Health needs index was sensitive to the precise relationship between the cost of short stay and long stay beds in psychiatric hospitals. A survey was therefore carried out to obtain more precise information about the relationship between the costs of beds where patients stayed under 35 days (the average of short stay cases) compared to the cost of longer stays. This new information was fed into the original analysis and a new needs index was arrived at.
- 4.9 The impact of the introduction of the Children Order (NI), coupled with later research evidence from England on the effect of the supply of services, meant that further research for the Family and Child Care needs index had to be undertaken.
- 4.10 The research produced two possible needs indices for the Family and Child Care Programme. One used estimates of costs for the different types of care provided; the other did not distinguish between such costs. The decision to adopt the “costed” or “uncosted” model was finely balanced. On the one hand there was a very strong argument that the use of a costed model was most in keeping with CFRG principles. On the other hand there were concerns about the consistency and accuracy of the costings used which could skew resources in an inappropriate way. On balance the general consensus of the Group was to adopt the uncosted model as an interim needs index until such times that the costing methodology could be thoroughly reviewed and a robust costed model developed. This position was influenced by the the much better better fit of the uncosted model to the data and also its better correlation with the Noble Multiple Deprivation Index, but was not universally shared across the Group.

- 4.11 The Fourth Report also recommends needs indices based on Northern Ireland data for the first time for Learning Disability and Physical and Sensory Disability POCs. These new indices result in changes to the distribution of resources between Boards. The research raised some interesting issues around unmet need and costing which could usefully be explored in further work. However, the new indices still represented a significant improvement on the non-evidenced based default indicators which are currently used in these programmes.
- 4.12 No change has been recommended for the needs weighting currently used for the two smallest programmes: -
- Health Promotion and Disease Prevention, and
 - Primary Health and Adult Community.
- 4.13 Details of the needs weightings recommended by the Group to be applied to each POC are provided at Annex 2.

5.0 ADJUSTING FOR THE DIFFERENTIAL COSTS OF CARE

5.1 In ensuring that resources are allocated fairly to the four Health and Social Services Boards the Department has also to take into account the differential costs of providing care in urban and rural areas. (This is separate from the additional needs associated with living in a rural or urban area discussed in the previous chapter.) In addition, it has to adjust for any differences in the level of unavoidable extra costs incurred by organisations because the size of their facilities or of their catchment populations do not provide optimal performance. It also has to take account of the level of income available to providers in the Board's areas as this income can be used to reduce overall costs.

Rural and urban costs: impact of economies/diseconomies of scale

5.2 Sometimes it costs more to provide the same care. As mentioned earlier, the costs of professionals travelling to visit individuals in their own homes is higher in rural settings than in urban areas. For example, a district nurse visiting a patient in a rural area will generally spend more time travelling to the patient than a district nurse in a town or city. Not only does increased travelling time for professionals raise the cost of treating patients but the travel costs e.g. petrol, are also higher.

5.3 To address this issue the Group commissioned a special research programme for the Third Report to examine and quantify the extra costs of providing services in rural areas. Information about the current costs of running services in different areas was not sufficient as some areas could have been more efficient than others. Instead, the project used electronic maps of Northern Ireland to estimate the most efficient routes along the road network to get from the base from which the service was

provided to where the people live. The need for journeys was based on the numbers of people living in the area, their ages and appropriate measures of ‘additional need’.

- 5.4 The resultant model produced an overall budget for each Board for these “rurality” factors and this was incorporated into the final formula. Each year the rurality budget for each service is uplifted by the same percentage increase as that incurred for the total of expenditure on that service. This process maintains the value of the adjustment. The Group has recommended that reviews should take place to update the locations from which services are provided and any other factors that could change over time and impact on the result.
- 5.5 The Group also commissioned further work for the Fourth Report to explore potential economies/diseconomies of scale in the provision of care services as these may fall disproportionately on individual Boards. In an attempt to avoid compensating Boards for having organisations or facilities located in inappropriate places or being of a size that does not promote optimal efficiency, the research used the theoretically best locations of community facilities and the hospital locations as planned for through the Developing Better Services (DBS) policy. While accepting this approach,, some Boards were concerned that the high costs of their current configurations, which had been demonstrated through this research, were not being met. The Group agreed that the research should be reviewed and updated at appropriate intervals to take account of changing activity levels within hospitals as DBS is implemented.
- 5.6 The research involved detailed examination of costs of different sized organisations for the same procedures. After taking account of differences in length of stay which were deemed avoidable, the

remaining cost differences were plotted against organisation size. The research identified a relationship between size and cost, with smaller organisations/ facilities experiencing higher costs in both the hospital and community sectors. This demonstrated a clear need to compensate Boards, particularly in rural areas, for any smaller sized hospitals and facilities which were required to ensure reasonable levels of access for patients and service users.

- 5.7 The research also suggested that very large organisations had higher than expected costs. The Group debated whether this phenomenon was genuinely related to organisational size or whether other factors could be contributing to the higher costs. Given the relatively small number of large hospitals in Northern Ireland the evidence base was not conclusive on this point and further investigation is required. In the interim the Group accepted the researchers' recommendation that an adjustment should be implemented to reflect the higher costs at large as well as small hospitals.
- 5.8 The Group also considered whether any adjustments to the formula were required to take account of unentitled users of local services and health and social care needs associated with "the Troubles". No additional adjustments have been recommended.

Other Resources

- 5.9 The Department distributes some £2.0bn of its total budget of £3.2bn to HSS Boards through the capitation formula. The balance of £1.2bn represents the resources made available to the Department for a variety of other services and initiatives. CFRG examined the scope for distributing these resources using the formula. It also considered whether the formula should be adjusted to take account of any

differential impact across Boards of the availability of other resources outwith the control of the Department, for example from the EU or other Departments.

- 5.10 As the majority of this expenditure was already subject to other allocation formulae (e.g. family doctor services and the cost of prescribed drugs), CFRG concluded that there was limited scope for extending the application of the formula to those Departmental resources not currently subject to its distribution. Similarly no adjustment to the formula has been recommended in respect of monies allocated by other agencies working in the health and social care field. CFRG has however emphasised the need to continue to monitor the potential impact of such allocations on HPSS investment decisions to assess their materiality, and where possible to encourage other funding bodies to adopt a suitable needs-based approach to their investment decisions.

6.0 **TARGETING HEALTH AND SOCIAL NEED, EQUALITY CONSIDERATIONS AND INVESTIGATING UNMET NEED**

6.1 The first New Targeting Social Need (New TSN) Annual Report, “Vision into Practice”, published in November 1999 by the Office of the First Minister and Deputy First Minister (OFM/DFM) recommended that the principle of Targeting Social Need should be built into formula used for funding service provision to the statutory sector. The Departmental Action Plan for 2004/05 says that the DHSSPS will target resources more effectively towards people in greatest social need by continuing to implement improvements to the sensitivity of the capitation formula. Following an interim evaluation of New TSN, OFMDFM launched a consultation document in April 2004 on the future of New TSN. This proposes a revised strategy to be named the N Ireland Anti-Poverty Strategy. The Group will carefully consider the role of the capitation formula within the framework of the new strategy, but in the meantime remain of the view that one of the characteristics of an effective formula is that it should be sensitive to New TSN.

This section describes how the formula proposed by the Group addresses New TSN. It also considers the Equality implications of the Group’s proposals and describes the investigation undertaken to identify and address unmet needs.

Targeting Social Need

6.2 As previously mentioned, the weighted capitation formula attempts to match resources to the need for health and social care. In doing so, the key consideration is the population size. We have also seen how the age and gender profile of the population has to be taken into account.

- 6.3 The third component of need is associated mainly with socio-economic conditions. This element of need exerts its strongest influence at small area level (where it is not masked by the socio-economic conditions that apply on average to larger populations) and consequently it is analysis of the distributive impact of the formula at this level that is most relevant to New TSN.
- 6.4 The Group has examined the distributive effect of the formula at local level. The results demonstrated significant sensitivity to the increased needs associated with socio-economic conditions. The proposed new formula redistributes a slightly higher proportion of funds to deprived areas than the existing Third Report formula.
- 6.5 As a further test of the sensitivity of its proposals to deprivation related need, the formula was tested against the Noble measure of multiple deprivations and also with a general indicator of morbidity (the 'under 75 Standardised Mortality Ratio').
- 6.6 The analysis showed that the Group's proposed needs weightings were highly correlated with the above indicators and indeed the correlations were stronger than for the Third Report formula. Having considered the results of the various analyses the Group concluded that the proposed formula does target health and social need well, and better than the existing formula.
- 6.7 Nevertheless, the Group did acknowledge that its work was largely dependent on data on the utilisation of services and that consequently unmet need, which may fall disproportionately across populations, may not be fully taken into account. Under-utilisation of services may not be confined just to deprived areas but may also exist in rural or travelling communities, and can be attributable to a variety of reasons. The section

below describes how CFRG has addressed this issue.

Investigation of Unmet Need

- 6.8 While the available public funding cannot address all the possible demands for health and social care services, if these are distributed in the same proportions as the recognised need then populations will still receive their equitable share of the resources. Unmet need is an issue of concern because certain sub-groups of the population (for example very deprived groups or groups living in remote rural areas) can tend to under-use resources due to socio-economic, financial or other perceived barriers. If unmet needs were to be distributed in a different pattern than the needs that were met, the use of resources in deprived or remote areas could underestimate the true need for resources and perpetuate existing inequalities.
- 6.9 Research therefore was commissioned to investigate whether a method could be found to identify any differential levels of unmet need and to adjust for these when required. The researchers suggested using two approaches. The first looked at the increasing level of service utilisation associated with increasing levels of deprivation, and focussed on testing whether utilisation reflected expected levels in populations with the highest levels of deprivation. If this was not the case it could indicate that unmet need existed. Measures of need not related to utilisation such as those contained in health and social care surveys were examined to confirm whether or not reported needs continued to rise with deprivation levels.
- 6.10 The second approach was to look at the relationships between utilisation and deprivation for each Trust to assess if they all exhibited a similar pattern. If any one Trust were to display a negative relationship between

utilisation and deprivation then the data for this area would be excluded as not following the normal pattern. This would prevent a strong relationship between utilisation and deprivation being diluted in the Northern Ireland formula by unusual results from one area.

- 6.11 The researchers' original analysis, looking at the formulae derived from the CFRG 3rd Report, identified some differential unmet need in certain POCs, but the new needs weightings recommended by the recently completed research for the 4th Report took full account of this and no adjustments for unmet need were found to be necessary. However, the researchers did raise a potential issue about the Acute POC, but given the age of the research they could not recommend any adjustment.

Assessment of Equality Implications of the Group's Proposals

- 6.12 In accordance with recent guidance in relation to the statutory duty of equality, the Group has considered the degree to which its proposals promote equality of opportunity and good relations between relevant groups of people.
- 6.13 The Group's aim is to promote equity and fairness and all of its work has been undertaken with this in mind. For the Third Report the Group tested its findings against independent advice and has borne these recommendations in mind in carrying out an equality assessment of the proposals in the Fourth Report.
- 6.14 In overall terms the Group believes its proposals are regarded as providing for improved equality of opportunity when compared to the formula currently in use. The formula is constructed on a better evidence base and where people in the various equality categories are affected differentially, this is expected in terms of the requirement to provide

equal resources for equal need. The new needs indices for Learning and Physical and Sensory Disability POCs are increasing the allocations towards populations with higher levels of disabilities. In addition, the improved targeting of resources in a fair and transparent way, on the basis of evidence, may also help to promote good relations between persons of different religious beliefs, political opinions or ethnic origins.

- 6.15 The Group recognises the importance of continuing to monitor the impact of the formula over time and of the need to commission further research in the Elderly and Acute PoCs in order to minimize the possibility of future adverse impacts.

7.0 CONCLUDING REMARKS

- 7.1 It is not possible to obtain a one hundred per cent accurate prediction of an area's need for health and social care services. However, the Group has attempted to draw upon the best information and techniques available at the current time in order to make improvements to the existing formula, and to ensure that resources are allocated in as fair a way as possible to individual Boards and that the approach is appropriate to support and inform allocations to local areas within Boards. In doing so it has ensured that its analysis stands up to external scrutiny by subjecting the research findings and methodologies to independent peer review and quality assurance.
- 7.2 Inevitably, however, there is a degree of estimation in the process and data constraints also pose difficulties. The Group has recognised the limitation of its work and identified a number of areas where additional analysis and research is required to further improve the formula. A full list of the Group's recommendations is set out at Annex 1.
- 7.3 The following summarises the key results and recommendations:
- once post-Census population projections are available, their use in place of the Mid Year Estimates is to be explored to see if they can provide a more accurate estimate of the population shares in the allocation year;
 - the adoption of new age/gender weightings for Family and Child Care, Learning Disability and Physical and Sensory Disability POCs;
 - the adoption of new needs weightings for Family and Child Care, Mental Health, Learning Disability, and Physical and Sensory Disability POCs. These refine the skewing of resources to better target needs;

- a better income adjustment to take account of differential levels of income across Boards in programmes other than Elderly Services. This helps to avoid an inappropriate distribution of such resources;
- the establishment of an approach to ensure that any differential unmet need is addressed in the future development of research based needs indices;
- continued updating of the value of actual additional costs associated with providing services in rural areas;
- the identification of an adjustment to take account of the extra costs associated with having to provide services in organisations or facilities that are not the optimal size for efficient performance.

7.4 Overall, the Group is confident that, notwithstanding the limitations, which it has identified, its proposals provide for a substantial improvement over the formula currently in use and promote equality of opportunity by better matching the allocation of resources to health and social care need.

ANNEX 1**RECOMMENDATIONS FOR FORMULA REVISIONS AND FUTURE WORK****Population and Census Issues**

The Group recommends that:

- all future research commissioned uses data at small area level defined by the electoral ward boundaries as used in the 2001 Census;
- further consideration is given to the adoption of population projections for resource allocation purposes rather than mid year estimates. The Group awaits release of the 2002 based population projections at HSS Board level (available in Autumn 2004) in order that any decision can also be informed by the latest Census data;
- the inherent error rates in the estimates of Boards and sub Board populations are borne in mind in resource allocation decisions;
- consideration be given to harmonisation in how people in residential/nursing homes are treated in the allocation process. This will involve consideration of how they are enumerated in the Census, how they are enumerated in additional needs modelling, and how they are actually paid for in cases where they currently reside in a Board outside their Board of origin; and
- the impact of the latest population projections on the medium term application of the formula at Board and locality level be considered

and a strategy developed for dealing with the consequence of these changes.

Acute Services

The Group recommends that:

- the entire Acute formula should be considered as a matter of priority in any future programme of work developed after the 4th Report from the CFRG;
- evidence should be gathered, including information on the locality of the patient, in order that any future work on A+E funding can be evidence-based; and
- the Department, following consultation, makes a policy determination with regard to the provision and associated funding of A&E services, based on evidence but which has minimum transaction costs.

Maternity and Child Health

The Group recommends that:

- the existing needs index continues to apply to the Maternity and Child Health Programme.

Family and Child Care

The Group recommends that:

- the funding for this programme be based on population aged 0-44 weighted separately for males and females based on the age/gender weights set out in Annex 2 for those aged 0-19 and a nominal weighting for those aged 20-44 informed by the existing age/gender weights;
- the additional needs formula set out in Annex 2 should be adopted as the new needs index;
- due to the wide variations in recording of financial and activity data, further work by both Board and Trust finance and information staff is carried out to clarify that data is collected and used in a consistent manner across all Trusts; and
- when resources permit, a new survey of social work time is carried out as part of a further attempt to develop a robust costed needs model.

Elderly Care

The Group recommends that:

- a review of the Elderly PoC, as recommended in the Third CFRG Report, is undertaken as soon as possible, to reflect changing circumstances such as the introduction of Free Nursing Care and changes in Residential Care Allowance.

Mental Health

The Group recommends that:

- the current model be replaced by the new model with a 0.9 weighting in respect of long stay: short stay inpatient episodes which contains the variables and coefficients depicted in Annex 2;
- information on contacts with community mental health services for all Boards should be made available for any future mental health modelling.
- the relationship between resource costs and diagnosis is explored, and if this cannot be done due to unavailability of relevant data, consideration be given to routinely recording such data. Consideration also be given to recording ward type on central information systems;
- the relationship between resource costs and length of inpatient stay be periodically reviewed; and
- work should commence to improve the coverage and quality of data on the provision of residential care for mental health clients so that in future it might be possible to improve the estimation of needs indicators for this service.

Learning Disability

The Group recommends that:

- the funding for this programme be based on total population weighted separately for males and females based on the age/gender weights set out in Annex 2;
- the additional needs formula set out in Annex 2 should be adopted as the new needs index;
- when resources permit, further work is commissioned to refine the cost weightings associated with residential/nursing home and long-stay hospital patients; and
- further investigation as to why activity varies between areas, after taking account of socio-economic conditions and age.

Physical and Sensory Disability

The Group recommends that:

- the funding for this programme be based on population aged 0-64 weighted separately for males and females based on the age/gender weights set out in Annex 2;
- the additional needs formula set out in Annex 2 should be adopted as the new needs index;

- future research in this programme attempts to develop a robust set of cost weights in order to differentially weight clients in different care settings and with different degrees of disability;
- a mechanism is developed to identify hospital patients with a disability who are being treated in non-specialist wards/units thus allowing the hospital sector to be included in any future modelling exercise; and
- consideration is given to whether the current model based approach is the best way to fund HSS Boards in respect of small numbers of very high cost patients, such as people who are technology-dependent.

Health Promotion and Disease Prevention

The Group recommends:

- the continued application of the current index for this programme.

Primary Health and Adult Community

The Group recommends:

- the continued application of the current index for this programme.

Rural Costs

The Group recommends that:

- the HSS Board ‘rurality budgets’, provided in Annex 2, and other recommendations as qualified in the 3rd Report, continue to be used as the basis for making a rurality adjustment to Board allocations.

Unmet Need

The Group recommends that:

- Acute model - despite shortfall being detected, no adjustment to be made to the existing formula at present. When the formula is next updated using more recent utilisation data, the shortfall test to be carried out again and, if necessary, adjustment made;
- Mental Health model– no adjustment to be made to the existing formula as no shortfall was detected in the updated modelling work;
- Elderly model – no adjustment for unmet need to be made. When the formula is next updated using more recent utilisation data, the shortfall test to be carried out again and, if necessary, adjustment made;
- Family & Child Care model – awaiting results from remodelling [DN:update]
- Learning Disability – whilst some evidence of unmet need was found when the Shortfall Test was applied to the revised model, the Group note that as the associated unmet need adjustment would result in

such small changes to allocations (less than 0.1%), the adjustment should not be made;

- Physical & Sensory Disability model – awaiting results from remodelling [DN: update]
- those areas which exhibit atypical relationships with need (as identified via the Variations Test) should be considered for exclusion from the modelling as outliers if the impact on allocations is material; and
- methodological issues (such as treatment of supply, the use of epidemiological data, the functional form of models) to be considered as part of the Group's future work programme.

Cross Border Population Issues

The Group recommends that:

- information systems are refined and mechanisms are put in place in order to help monitor and quantify future cross-border patient flows with a view to restricting non-entitled use of health and social care services; and
- births data used in the Capitation Formula should in future exclude births occurring in N. Ireland to mothers who reside outside N. Ireland because such births will already be compensated for by way of payment to Trusts.

Using the Formula to inform Local Equity Strategies

The Group recommends that:

- the Capitation Formula should be used to inform equity analysis and the subsequent preparation of Board strategies to maintain or achieve equitable resources for local areas within Boards taking account of their differing needs;
- the accuracy of the Formula for populations of local areas is borne in mind in reviewing the equity position; and
- Boards take full account of local factors and other technical issues in arriving at a judgement about the equity position.

Economies of Scale

The Group recommends that:

- the Capitation Formula compensates HSS Boards for both the EoS costs associated with 'DBS' and community services, provided in Annex 2, using the same methodology as employed in the existing 'Rural Costs' adjustment;
- progress towards implementing "DBS" should be one of the factors taken into account when moving HSS Boards towards their target shares;

- a detailed examination of gross costs in large hospitals should be undertaken, then be benchmarked to larger teaching hospitals in GB regions and the implications for the model considered;
- research be commissioned to develop a predictive model of patient flows associated with future hospital configurations;
- any future modelling exercise empirically investigates community scale costs related to facilities with differing workloads and in teams facing different levels of daily demand;
- future research takes account of fixed community facility scale costs using an appropriate apportionment mechanism; and
- all input and demand assumptions associated with the modelling be periodically reviewed and updated as new evidence becomes available.

Allowing for Ability to Pay

The Group recommends that:

- the income adjustment continues to be applied in the Elderly PoC;
- additional validation measures are introduced by both DHSSPS, HSS Boards and HSS Trusts in respect of the TFR (E) financial return;
- the contributions element of the income adjustment is extended to cover other relevant PoCs in a phased manner; and commencing at a level of 50%;

- planned expenditure information, when shown to be robust, is used to inform the PoC expenditure weights thus bringing the income adjustment more in line with the actual allocation year;
- preserved rights are excluded from the income adjustment when Boards cease to be funded on the basis of actual numbers of such cases;
- the feasibility of including self-funders in any future re-estimation of the Elderly PoC needs formula should be considered; and
- the impact of recent and future changes to social security allowances, care costs and the introduction of the ‘Supporting People’ initiative should be monitored with a view to considering and, if deemed necessary, a revision to the income adjustment.

Other Resources

The Group recommends that:

- DHSSPS should consider the further application of the Capitation Formula to distribute pay related resources which are currently managed centrally; and
- as a range of services are provided by organisations funded directly by the Department, consideration is given, where appropriate, to absorbing these resources into Board allocations using the Capitation Formula for their distribution. CFRG acknowledges that this would require changes to policy in how certain initiatives are taken forward.

With regard to the resources outwith Departmental control, the Group recommends that:

- no adjustment is made to the capitation formula in respect of monies allocated by other agencies; however
- these resources should continue to be monitored to determine their potential impact on HPSS investment decisions and to assess their materiality; and
- bodies providing funding for health and social care related services should be encouraged where possible to adopt a suitable needs-based approach to their investment decisions to ensure equity across the NI population and avoid duplication.

Combining Programme of Care (PoC) Weights

The Group recommends that:

- the PoC weights shown in Annex 2 should be used as the basis for weighting PoCs together in the 2005/2006 allocations;
- the flexibility to adjust the weights to take account of significant special allocations related to major policy changes should be retained by the Department; and
- planned expenditure weights are accepted in principle, and should be introduced for 2006/07 if the Group's review of these weights confirms their consistency with Board policy plans.

Consideration of the Cost of the “Troubles”

The Group concluded:

- that the current allocation formula, based on extensive empirical research, represents the most promising way of skewing resources to areas affected by the ‘Troubles’. Higher need continues to be detected and compensated for by the existing formula, and there is now also the scope for employing adjustments for unmet need where appropriate.

Technical Considerations

The Group recommends that:

- population, individual SMRs, the Maternity Inpatient Index and financial data continue to be updated in the formula on an annual basis;
- in the absence of official population estimates, population changes at Local Government District (LGD) level should be used to periodically estimate electoral ward populations for the purpose of re-calculating needs indices at higher geographical levels;
- the PoC specific age/gender and needs elements of the formula are considered for re-estimation at 5 year intervals unless existing limitations suggest an earlier revision;

- the rural needs adjustment is considered for update as part of the next work programme based on an assessment of changes to current service locations;
- the economies of scale adjustment is recalibrated in light of new data becoming available on predicted flows to the 'DBS' pattern of hospitals; and
- whilst analysis shows that the formula provides a robust basis for allocations at both HSS Board and locality level, uncertainty intervals around allocations should be one of the factors considered in determining the speed of movement toward revised target shares.

New Targeting Social Need (TSN)

The Group recommends that;

- work is commissioned at the earliest opportunity into developing updated needs indices for the Acute and Elderly PoCs so that the Formula continues to be sensitive to the distribution of need;
- tests for unmet need continue to be carried out on updated needs indices, and where necessary, adjustments be made to the Formula to ensure that the issue of unmet need is addressed as appropriate;
- methods for detecting and adjusting for unmet need continue to be monitored so that the best possible methodology is at the Group's disposal.

Equality Impact Assessment

The Group recommends that:

- the formula continues to be refined so that it meets its objective of allocating equal resources for equal need; and
- all comments regarding equality implications of the application of the formula will continue to be given full consideration by the Department.

The Way Forward

The Group recommends that:

- a review of the quality and scope of all datasets, which might be used in future modelling, be undertaken by suitably qualified staff in the DHSSPS, HSS Boards and Trusts before any further research is commissioned. This review should commence as a matter of urgency;
- the Elderly and Acute additional needs formulae be re-estimated; and
- a fundamental review of the formula be undertaken when the above have been completed.

ANNEX 2

**PROGRAMME OF CARE, RURALITY AND ECONOMIES OF SCALE
- SUMMARY RESULTS**

Acute Services – Summary**2002/03 POC Expenditure Weight:**

41.14%

Age/Gender Weightings:

These have been statistically estimated from Northern Ireland inpatient activity and specialty cost data.

Age/Gender Relative Costs									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44
Male	270.4	79.1	70.2	79.0	88.0	98.2	102.3	109.6	120.6
Female	205.4	63.7	61.1	78.1	93.0	113.2	122.8	125.9	139.1
Age	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Male	153.0	202.2	261.9	350.3	456.4	525.4	602.2	684.1	831.6
Female	156.9	185.1	217.8	260.5	324.8	389.0	448.5	517.5	568.9

Additional Needs Index:

The needs index is individual to each HSS Board and is derived from a statistical modelling exercise based on Northern Ireland data. The needs index is really a composite index made up of the following five variables – ‘Over 75 Living Alone’, ‘Income Support’, ‘Not in Receipt of Family Credit’, ‘All Ages Standardised Mortality Ratio (SMR)’ and ‘Low Birth Weight’. At Northern Ireland level the needs index = 100. HSS Boards with a value greater than this have a need for acute services greater than the NI average whilst values less than this indicate a need less than the NI average.

HSS Board	Additional Needs Index
EHSSB	98.74
NHSSB	96.68
SHSSB	101.01
WHSSB	103.65
N Ireland	100.00

Relevant Research:

“A study to Devise a Formula to Assist in Allocating Resources for Acute Hospital Services within Northern Ireland” (1997) - Health and Health Care Research Unit (QUB).

“Rurality and the Need for Health and Social Care Services in Northern Ireland” (1999) – York Health Economics Consortium/Morgan Spollen Associates.

Maternity and Child Health - Summary

2002/03 POC Expenditure Weight:

5.58%

Age/Gender Weighting:

The principal driver of resource consumption in this programme is number of births which is partly an age/gender weighting and partly an additional needs weighting.

Additional Needs Index:

Inpatient Maternity Services and Antenatal Care

The needs index is individual to each HSS Board and is derived from a statistical modelling exercise based on NI data. The needs index is really a composite index made up of the following variables – ‘Mothers Age’, ‘Low Birthweight’, ‘No Previous Births’ and ‘Multiple Births’. At NI level the needs index = 100. HSS Boards with a value greater than this have a need for services greater than the NI average whilst values less than this indicate a need less than the NI average. The index is updated annually and is based on, and applied to, the latest three years births data that are available for each HSS Board. The overall inpatient needs index, controlling for the age/gender structure of the population, is shown below.

HSS Board	Additional Needs Index
EHSSB	102.22
NHSSB	99.41
SHSSB	99.28
WHSSB	97.12
N Ireland	100.00

Community Child Health Services

It did not prove possible to develop a formula appropriate for resource allocation purposes so the Group recommended using the population aged 0-4 with the 'under 75 SMR' applied to 30% of these services (representing the non-statutory element).

Relevant Research:

“Development of Health & Social Care Needs Indicators for the HPSS Capitation Formula” (1998) - York Health Economics Consortium/Morgan Spollen Associates.

“A Revised Capitation Funding Formula for Maternity and Child Health Services in Northern Ireland” (1999) - York Health Economics Consortium/Morgan Spollen Associates

“Rurality and the Need for Health and Social Care Services in Northern Ireland” (1999) – York Health Economics Consortium/Morgan Spollen Associates.

Family and Child Care - Summary

2002/03 POC Expenditure Weight:

6.69%

Age/Gender Weightings.

Age/Gender Relative Costs					
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 44
Male	1.14	1.36	1.37	1.00	0.10
Female	1.02	1.25	1.20	1.15	0.10

Additional Needs Index:

The Needs Index presented in the table below is derived from a statistical modelling exercise using Northern Ireland data. The needs index is a composite index made up of the following five variables – ‘Proportion of Children in income support households’, ‘Proportion of 16-18 year olds not in full-time education’, ‘Noble Social Environment Score’, ‘Proportion of children in owner occupied housing’, ‘Proportion of children in DLA claimant households’. At Northern Ireland level the Needs Index = 100. HSS Boards with a value greater than this have a need for Family & Child Care Services greater than the NI average whilst values less than this indicate a need less than the NI average.

HSS Board	Additional Needs Index
EHSSB	117.94
NHSSB	79.78
SHSSB	85.32
WHSSB	105.97
N. Ireland	100.00

Relevant Research:

“Additional Needs Analysis for the Family and Child Care Programme of Care” (2004)- SECTA/ MSA Ferndale.

Elderly Care - Summary

2002/03 POC Expenditure Weight:

23.69%

Age/Gender Weighting

The composite NI weights presented in the table below have been developed as a result of an exercise carried out across all four HSS Boards.

Age/Gender Relative Cost Weights			
Age Band	65 – 74	75 - 84	85 +
Males	1.0	3.4	8.4
Females	1.1	4.5	11.5

Additional Needs Index:

The needs index presented in the table below is derived from a statistical modelling exercise using Northern Ireland data. The needs index is a composite index made up of the following four variables – ‘Standardised Mortality Ratio < 65’, ‘Standardised Mortality Ratio 65 - 74’, ‘Age Standardised Limiting Long-Term Illness > 75’ and ‘Proportion of Pensioners aged less than 85+’. At Northern Ireland level the needs index = 100. HSS Boards with a value greater than this have a need for acute services greater than the NI average whilst values less than this indicate a need less than the NI average.

HSS Board	Additional Needs Index
EHSSB	100.09
NHSSB	96.22
SHSSB	101.43
WHSSB	104.84
N. Ireland	100.00

Relevant Research:

“Development of Needs Indicators for the Elderly Programme of Care in Northern Ireland – Stage 1” (1998) – Health and Social Care Research Unit/York University.

“Development of Needs Indicators for the Elderly Programme of Care in Northern Ireland – Stage 2” (2000) - Health and Social Care Research Unit/York University.

“Rurality and the Need for Health and Social Care Services in Northern Ireland” (1999) – York Health Economics Consortium/Morgan Spollen Associates.

Mental Health - Summary

2002/03 POC Expenditure Weight:

7.70%

Age/Gender Weighting

The composite NI weights presented in the table below have been developed as a result of an exercise carried out across all four HSS Boards.

Age/Gender Relative Costs							
Age Band	0 - 4	5 - 14	15 - 44	45 - 64	65 - 74	75 - 84	85 +
Male	0.0	0.2	1.0	1.5	1.6	1.6	1.4
Female	0.0	0.2	0.9	1.3	1.6	1.8	2.1

Additional Needs Index:

The needs index presented in the table below is derived from a statistical modelling exercise using Northern Ireland data. The needs index is a composite index made up of the following five variables – ‘Proportion of 16-64 year olds on income support’, ‘Proportion of dependents not in single carer households’, ‘Proportion of persons in households with head in manual class’, ‘Proportion of working age population who are students’, ‘Standardized mortality ratio 65-74 years of age’. At Northern Ireland level the needs index = 100. HSS Boards with a value greater than this have a need for acute services greater than the NI average whilst values less than this indicate a need less than the NI average.

HSS Board	Additional Needs Index
EHSSB	99.04
NHSSB	91.58
SHSSB	102.96
WHSSB	112.44
N. Ireland	100.00

Relevant Research:

“Development of Health & Social Care Needs Indicators for the HPSS Capitation Formula” (1998) - York Health Economics Consortium/Morgan Spollen Associates.

“A Revised Capitation Funding Formula for Mental Health services in Northern Ireland” (2000) - York Health Economics Consortium/Morgan Spollen Associates

“Rurality and the Need for Health and Social Care Services in Northern Ireland” (1999) – York Health Economics Consortium/Morgan Spollen Associates.

“A Revision of the Mental Health Funding Formula for Mental Health Services in Northern Ireland” (2003)- Project Support Analysis Branch, Information and Analysis Directorate, DHSSPS.

Learning Disability - Summary

2002/03 POC Expenditure Weight:

7%

Age/Gender Weightings:

The composite NI weights presented in the table below have been developed as a result of an exercise carried out across all four HSS Boards.

Age/Gender Relative Costs				
	0 to 19	20 to 34	35 to49	50+
Male	23.35	36.21	33.27	19.49
Female	14.33	25.71	27.06	15.86

Additional Needs Index:

The needs index presented in the table below is derived from a statistical modelling exercise using Northern Ireland data. The needs index is a composite index made up of the following three variables – ‘Proportion of households with no central heating’, ‘Proportion of persons aged 16-74 with no qualifications’, ‘Proportion of children in disability living allowance households’. At Northern Ireland level the needs index = 100. HSS Boards with a value greater than this have a need for acute services greater than the NI average whilst values less than this indicate a need less than the NI average.

HSS Board	Additional Needs Index
EHSSB	96.01
NHSSB	92.75
SHSSB	104.34
WHSSB	115.54
N. Ireland	100.00

Relevant Research:

“Modelling the Distribution of Services for People with Learning Disabilities in Northern Ireland” (2004)- SECTA/ MSA Ferndale.

Physical & Sensory Disability - Summary

2002/03 POC Expenditure Weights:

3.51%

Age/ Gender Weightings:

The weights shown in the table below were constructed from the 1990 Policy Planning and Research Unit Disability Survey (1990).

Age/Gender Relative Costs			
	0 to 24	25 to 44	45 to 64
Male	7.58	10.41	29.61
Female	6.17	13.06	36.25

Additional Needs Index:

The needs index presented in the table below is derived from a statistical modelling exercise using Northern Ireland data. . The needs index is a composite index made up of the following three variables – ‘Proportion of persons aged 18-64 in disability working allowance households’, ‘Proportion of persons under 65 with a limiting long term illness’, ‘Noble Income Score’. At Northern Ireland level the needs index = 100. HSS Boards with a value greater than this have a need for acute services greater than the NI average whilst values less than this indicate a need less than the NI average.

HSS Board	Additional Needs Index
EHSSB	99.73
NHSSB	83.72
SHSSB	106.35
WHSSB	119.02
N Ireland	100.00

Note: ‘under 75’ SMR to be updated on an annual basis

Relevant Research:

“Modelling the Distribution of Services for People with Physical and Sensory Disabilities in Northern Ireland” (2004)- SECTA/ MSA Ferndale.

Health Promotion and Disease Prevention - Summary

2002/03 POC Expenditure Weights:

1.72%

Age/Gender Weightings:

No specific age/gender weighting is used. Resources are allocated on the basis of equal shares for all age groups within the total population.

Additional Needs Index:

The interim needs index applied is the 'under 75' Standardised Mortality Ratio (SMR). HSS Boards with a value of more than 100 have a higher than expected death rate for this age group whereas a value of less than 100 indicates a lower than expected death rate. The under 75 SMR is considered to be a good proxy for morbidity in an area.

HSS Board	'Under 75 SMR' (1998-2002 deaths and revised 2000 MYE)
EHSSB	104.38
NHSSB	93.63
SHSSB	97.20
WHSSB	102.21
N Ireland	100.00

Note: 'under 75' SMR to be updated on an annual basis

Relevant Research:

None

Primary Health and Adult Community - Summary

2002/03 POC Expenditure Weights:

2.96%

Age/Gender Weightings:

No specific age/gender weighting is used. Resources are allocated on the basis of equal shares for all age groups within the population aged 16-64.

Needs Index:

The interim needs index applied is the 'under 75' Standardised Mortality Ratio (SMR). HSS Boards with a value of more than 100 have a higher than expected death rate for this age group whereas a value of less than 100 indicates a lower than expected death rate. The under 75 SMR is considered to be a good proxy for morbidity in an area.

HSS Board	'Under 75 SMR' (1998-2002 deaths and revised 2000 MYE)
EHSSB	104.38
NHSSB	93.63
SHSSB	97.20
WHSSB	102.21
N Ireland	100.00

Note: 'under 75' SMR to be updated on an annual basis

Relevant Research:

None

Rurality Adjustment – Summary

HSS Board Rurality Budgets (£ '000s) and Percentage Share, 2004/05

	Rurality Budget (£ '000s)	Percentage Share
Eastern	£13,326	29.60%
Northern	£11,541	25.64%
Southern	£10,089	22.41%
Western	£10,066	22.36%
NI Total	£45,022	100%

The rurality adjustment takes the form of a plus/minus adjustment to each Board's final allocation based on the difference between each Board's weighted capitation share of the NI rurality budget and their calculated rurality budget as per the table above. If a Board's rurality budget is greater than their weighted capitation share then they are allocated the shortfall and vice versa if it is less.

Relevant Research:

“Research into the Effect of Rurality on the Capitation Formula for Health and Social Services in Northern Ireland” (1998) – PwC/Lancaster University.

“Modelling the Impact of Rurality on the Provision of Accident and emergency Services in Northern Ireland (1998) – PwC/Lancaster University.

Economies of Scale (EoS) Adjustment – Summary

HSS Board EoS Budgets (£ '000s) and Percentage Share, 2004/05

	EoS Budget (£ '000s)	Percentage Share
Eastern	£13,557	36.73%
Northern	£9,789	26.52%
Southern	£6,792	18.40%
Western	£6,772	18.35%
NI Total	£36,910	100%

The EoS adjustment takes the form of a plus/minus adjustment to each Board's final allocation based on the difference between each Board's weighted capitation share of the NI rurality budget and their calculated rurality budget as per the table above. If a Board's EoS budget is greater than their weighted capitation share then they are allocated the shortfall and vice versa if it is less.

Relevant Research:

“Research on the Differential Costs of Providing Health and Social Services in Areas Across Northern Ireland Arising Through Economies of Scale” (2003) – MSA-Ferndale Secta.