Exposition Book Public Health Allocations 2013-14 and 2014-15: Technical Guide

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Document Purpose	For Information
Gateway Reference	18552
Title	Exposition Book Public Health Allocations 2013-14 and 2014-15: Technical Guide
Author	Resource Allocation Team and Public Health Policy & Strategy Unit
Publication Date	**10 January 2013**
Target Audience	Local Authority Chief Executives, Local Authority Directors of Finance, Directors of Public Health
Circulation List	
Description	This document provides details of the public health grant allocated to local authorities for 2013-14 and 2014-15.
Cross Ref	N/A
Superseded Docs	N/A
Action Required	N/A
Timing	**N/A**
Contact Details	Resource Allocation Team Strategy, Finance and NHS Directorate Department of Health 4W07 Quarry House Leeds LS2 7UE
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First published December 2012
Published to DH website, in electronic PDF format only.
http://www.dh.gov.uk/publications

Exposition Book Public Health Allocations 2013-14 and 2014-15: Technical Guide

Prepared by the Department of Health Resource Allocation Team

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Executive summary

1. The public health allocations formula, set out in the Excel workbooks *'Exposition Book Public Health Allocations 2013-14'* and *'Exposition Book Public Health Allocations 2014-15'* aims to allocate the new ring-fenced public health grant across upper tier and unitary local authority areas based on relative need for the next two financial years.

2. The Advisory Committee on Resource Allocation's (ACRA's) letter to Secretary of State sets out their recommendations on the public health allocations formula. The Exposition Books are based on these recommendations. The letter is published alongside this technical guide.

3. The Excel workbooks calculate upper tier and unitary local authority weighted populations and the final allocations to these local authorities.

4. Weighted populations are resident populations adjusted for:
   - relative need – areas with higher need have higher shares, all else being equal
   - unavoidable geographical variation in the cost of providing services (the Market Forces Factor (MFF)) – higher costs areas have higher shares all else being equal.
   - age and gender – some public health functions are clearly directed at certain age and gender groups.
   - for certain drugs services only[1], resident populations are retrospectively adjusted for outcomes[2].

5. Given the total national budget available, these weighted populations are converted into target monetary allocations for each upper tier and unitary local authority, and Pace of change (PoC) policy determines final allocations. PoC is the level of increase given to all local authorities and the level of extra resources we give to under target local authorities to move them closer to their target allocations.

6. This Technical Guide supports the Excel workbooks *Exposition Book Public Health Allocations 2013-14* and *Exposition Book Public Health Allocations 2014-15* by setting out more detail on the calculation of weighted populations and final allocations.

7. This technical guidance should be read in conjunction with the Excel workbooks and ACRA's letter to Secretary of State.

[1] All drugs services previously funded through the Pooled Treatment Budget (PTB)
[2] 2013-14 allocations only

1. Introduction

1.1 The public health allocations formula, set out in the Excel workbooks *'Exposition Book Public Health Allocations 2013-14'* and *'Exposition Book Public Health Allocations 2014-15'* aims to allocate the new ring-fenced public health grant across upper tier and unitary local authority areas based on relative need.

1.2 The Advisory Committee on Resource Allocation's (ACRA's) letter to Secretary of State sets out their recommendations on the public health allocations formula. The Exposition Books are based on these recommendations, building on the interim exposition book[3] based on ACRA's interim recommendations.

1.3 ACRA is an independent expert body made up of individuals with a wide range of relevant experience and expertise from within, and outside, the National Health Service (NHS) and local government, including experts on public health. ACRA advises the Secretary of State for Health on the appropriate distribution of resources across the NHS, and this extends to advising on the appropriate distribution of resources across local authorities for public health.

1.4 ACRA's final recommendations to the Secretary of State for the public health formula included:

- the indicator of need should be the standardised mortality ratio (SMR) for those aged under 75 years
- the SMR<75 should be applied at MSOA level to take account of inequality within local authorities as well as between local authorities
- the gradient of the formula across small areas should be exponentially weighted at a ratio of 5:1 to target funding towards areas with the poorest health outcomes
- the weighted population for local authorities should be built up from the weighted populations for the MSOAs in their area
- an unavoidable cost adjustment should be used in the formula and this should be the Market Forces Factor as this will be updated regularly
- Office for National Statistics (ONS) resident population projections based on the 2011 Census should be the main basis of the public health formula
- there should be an age-gender adjustment applied to those services with the highest proportion of public health spend which are also directed at specific age-gender groups to weight for relative needs between different age-gender groups
- the component to support drug treatment services funded through the pooled treatment budget up to 2012-13 should continue to broadly follow the approach used to allocate that budget. This is currently based on a need component, an activity

[3] 'Public Health Exposition Book based on ACRA's interim recommendations' (June 20102) available at http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_134578

component and an outcome component. ACRA recommends the need component is replaced with SMR<75 as recommended for the rest of the public health formula

1.5 This is the first time that there has been a formula specifically for public health and ACRA wishes to build on this formula and develop it over future years.

1.6 The public health formula has three components:

- mandatory services
- non mandatory services (excluding drugs and alcohol services)
- substance misuse services – this includes drugs services which were previously commissioned by drug action team partnerships (DATs) funded through the pooled treatment budget (PTB), all other drugs services, and alcohol services. These services are all non-mandated.

1.7 A weighted population is calculated for each of these three components. The age-gender adjustment is different for mandated and non-mandated services and so there is a need to calculate these weighted populations separately. The weighted populations for each component are combined to give a single overall weighted population. These overall weighted populations are converted into target monetary allocations for each upper tier and unitary local authority based on the total resources available.

1.8 Pace of change (PoC) policy determines final allocations. PoC is the level of increase we give to all local authorities and the level of extra resources we give to under target local authorities to move them closer to their target allocations. Pace of change policy for 2013-14 is on the basis that:

- average local authority growth is 5.5% in 2013-14
- minimum growth is 2.8% in 2013-14, except for one local authority which receives 2.2% due to the additional adjustment for historical performance based on movements in drugs activity
- under target local authorities receive minimum growth or above minimum growth capped at 10% growth

1.9 PoC policy for 2014-15 is on the basis that:

- average local authority growth is 5.0% in 2014-15
- minimum growth is 2.8% in 2014-15
- under target local authorities receive minimum growth or above minimum growth capped at 10% growth

1.10 Section 2 of this guide discusses the data used, section 3 sets out the detail of the weighted population calculations, section 4 sets out the detail of the age-gender adjustments, and section 5 sets out the PoC policy.

2. Data

Population data

2.1 The primary determinant of resource allocation by local authority must be the size of the population, as this is the key determinant of the need for public health services.

2.2 There are two resident population estimates which are used in the calculation of the weighted populations in the public health allocations formula. These are:

- Populations for Middle Layer Super Output Area[4] (MSOA)
- Populations for local authorities

2.3 The population data used in the formula for MSOAs are mid-2010[5] population estimates. In order for the final populations used in the formula to be closer to those when local authorities assume their new public health responsibilities, we have uplifted these estimates at local authority level to 2013 population estimates in the 2013-14 formula, for 14-15 these estimates have been uplifted to 2014 population estimates[6]. Both population estimates are produced by the ONS.

2.4 The Mid-2010 population estimates for MSOAs are pre-2011 Census based. The 2011 census based MSOA populations for 2011 were published by ONS in November 2012. However, these 2011 estimates are not used in the public health allocations formula. This is because of the interaction with the SMRs which are based on pre-2011 Census populations. A MSOA with high population growth not captured in the Mid-2010 population estimates will have an over stated SMR<75. If we use the 2011 MSOA populations that MSOA benefits from both an over stated SMR<75 and the higher population.

Standardised mortality ratio (SMR) <75

2.5 The SMR<75 is an indicator of the health of the whole population[7], and hence the need for public health. The SMR<75 is a measure of how many more or fewer deaths there are in a local area compared with the national average, having adjusted for the differences

[4] An MSOA is a small (a population of approximately 7,000) geographical area defined by the ONS and used for statistical analysis.

[5] Mid 2010 MSOA population estimates are based on the 2001 Census to which births, deaths and migration are added or subtracted. Later MSOA population estimates were published by the ONS on 23 November 2012 but these estimates were not available in time for inclusion in the calculation of weighted populations. For the Mid-2010 estimates please see: http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-230902

[6] 2013 and 2014 Sub National Population Projections (SNPPs) based on the 2011 Census. These are trend-based population projections. For these projections please see: http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/index.html

[7] The SMR<75 covers all causes for death under 75 for the time period 2006-2010. The SMR<75 captures mortality, but not morbidity. The SMR<75 for 2006-2010 is published by the Network of Public Health Observatories and is available at www.**apho**.org.uk/resource/view.aspx?RID=97049

between the age profile of the local areas compared with the national average. It is available at the MSOA level. A higher SMR<75 number represents a higher relative number of deaths. SMR<75 is recommended by ACRA as a good indicator of the whole population's need; it should not be interpreted that the formula does not reflect the needs of those aged over 75 years or that morbidity is unimportant[8].

Market Forces Factor (MFF)

2.6 The MFF Index accounts for variations in unavoidable geographical costs of providing public healthcare services between local authorities. It is applied to the weighted population so that local authorities in higher cost areas receive additional funding to ensure they can afford the same level of services relative to need as those in other areas.

2.7 The MFF used in the public health formula is derived from the MFF used in the previous Primary Care Trust (PCT) weighted capitation formula[9] [10].

2.8 To develop the PCT MFF into a local authority MFF, two steps are required:

- Firstly, the medical and dental (M&D) component is combined with the staff component. The PCT MFF consists of five weighted components: staff, medical and dental London weighting (M&D), building, land, and 'other'. The M&D component relates to specialist medical and dental staff costs and is not relevant for most public health services. As staff costs are a large part of the costs of delivering public health services, the weighting normally given to the M&D component has been added onto the staff component to develop the MFF for the public health formula.

- Secondly, populations are used to convert the PCT MFF values into local authority values[11].

2.9 The resulting MFF local authority values are shown in the MFF sheet of the Excel workbooks.

Baseline expenditure for 2013-14 public health allocations

[8] While alternatives such as the Disability free life expectancy (DFLE) and healthy life expectancy (HLE) capture morbidity (albeit at a basic level) as well as mortality, the SMR<75 is highly correlated with both DFLE and HLE, suggesting these have little advantage in terms of capturing morbidity. The SMR<75 also has the advantage of being updated regularly at the MSOA level.

[9] Detail on the MFF used in the most recent PCT weighted capitation formula is in the document 'Resource allocation: weighted capitation formula - seventh edition' (2011) available at http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_124946

[10] The PCT host MFF is used which was originally developed for maternity and community services which cover a set geographical area as opposed to the non-host MFF which covers the providers used by commissioners. The host MFF is applied to the public health formula to reflect that public health services are provided over a wide geographical area rather than by specific providers. The PCT host MFF can be found in the PCT Exposition Book 2011-2012 which is available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_124949

[11] The population is Attributed dataset (ADS) 2010 constrained to 2008 SNPPs for 2011. Further data required to update the population used was not available at the time of calculating weighted populations for public health allocations.

2.10 2010-11 PCT baseline spend estimates were published in February 2012[12].

2.11 The baseline spend estimates used in the 2013-14 public health allocations formula are the estimates published in February 2012 adjusted for:

- updates since publication received from PCTs
- updated estimates since February of the costs of termination of pregnancy, sterilisation and vasectomy services to be removed from the original collection. At the time of the 2011 collection these service expected to be a local authority responsibility, but this was no longer the case by February 2012
- locally agreed apportionments of baselines from PCTs to their local authorities agreed since February for two PCTs
- the addition of baseline spend on support for surveillance and control of infectious diseases previously apportioned to Public Health England
- a few amendments made by DH based on a validation of the 2010-11 spending estimates using information from the collection undertaken in 2012.

2.12 Drug Interventions Programme (DIP) funding is now also included in these baselines. DIP funding was excluded from the 2010-11 collection from PCTs and the baselines published in February as it only began to be funded by DH from 2011-12. Bedford, Central Bedfordshire and Luton each receive a population weighted average of Bedfordshire Drug Partnership's DIP allocation.

2.13 The overall substance misuse weighted population and the overall weighted population are calculated using relative 2010-11 baseline spend estimates as weights. The mandated and non-mandated age-gender adjustments are also calculated using relative 2010-11 baseline spend estimates as weights.

2.14 The baseline spend estimates are used as a basis for final allocations by providing a starting point for the PoC policy. These spend estimates have been uplifted to 2012-13 values and are available in the baselines sheet of the Excel workbook. For the 2014-15 public health allocations, the starting point for final allocations is the 2013-14 allocations rather than a measure of actual spend.

Age-gender adjustments

2.15 Age-gender adjustments are applied in the public health allocations formula to weight for relative needs between different age-gender groups. These adjustments are based on national data that reflects behavioural characteristics of different age-gender groups. Three key data sources are used:

- The Health Survey for England (HSE) (2010)[13]
- Diagnoses rates for sexually transmitted infections (STI) from the Health Protection Agency (HPA) (2010) [14]
- Drug treatment activity from the National Treatment Agency (NTA) (2010-11)[15]

[12] The 10-11 PCT baseline spend estimates are available at http://www.dh.gov.uk/health/2012/02/baseline-allocations/.
[13] http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles-related-surveys/health-survey-for-england/health-survey-for-england--2010-trend-tables
[14] The latest HPA STI data is available at http://www.hpa.org.uk/web/HPAweb&Page&HPAwebAutoListName/Page/1201094610372#2._STI_data_tables
[15] This data is not publicly available

2.16 Further information on these data sources and how they are used in the public health allocations formula is in Section 4: age-gender adjustments.

3. Calculating overall local authority weighted populations

3.1 There are three key steps to calculating the weighted populations:

1. Calculating MSOA level weighted populations
2. Calculating local authority level weighted populations. This involves calculating weighted populations for three key functions:
    a) Mandated services weighted populations
    b) Non-mandated services weighted populations
    c) Substance misuse weighted populations
3. Calculating overall final weighted populations

3.2 Each of these steps is discussed in turn below.

Calculating MSOA level weighted populations

3.3 Below is a description of the process used to weight the mid-2010 MSOA level populations for the SMR<75.

3.4 ACRA recommended that the SMR<75 should be applied at MSOA level, to take account of inequality in health within as well as between local authorities. The SMR<75 is a weight per head to take account of relative need between small areas. Weighting for the SMR<75 at the local authority level would only account for health inequalities between local authorities.

3.5 The first step is to split the MSOAs into ten groups based on their SMR<75. Column 2 in Table 1 (page 14) shows the SMR<75 values in each of these ten groups.

3.6 ACRA considered a number of approaches to defining the groups, such as each group having the same number of MSOAs. However, this resulted in a number of the groups covering a small range of SMR<75 values, and so increasing the probability that MSOAs with similar SMR<75s would be in different groups. ACRA therefore recommended that i) each group should have at least 5% of MSOAs, to reduce the impact of random fluctuations in the SMR<75 over time and remove the impact of outliers which may be due to data issues, and ii) the other groups should each cover the same span of SMR<75 values, called ‘equal width’ groups. The span or width is 12.4, obtained by dividing the total range of SMR<75 values covered by these groups by the number of equal width groups.

3.7 The percentage of MSOAs that fall into each of these ten groups are listed in Column 1 of Table 1.

3.8 Each of the ten groups is assigned a weight per head from one to five (column 4).

3.9 The weights for each group indicate how quickly the need for public health resources increase as the SMR<75 increases. Therefore the MSOAs with the highest SMR<75 values have a weight per head that is five times higher than those MSOAs with the lowest SMR<75 values This ensures a SMR<75 weight that increases more quickly than the SMR<75 across small areas, reflecting that public health need and costs increase more quickly than the SMR<75.

Table 1: SMR<75 weights for MSOAs

Column 1	Column 2	Column 3	Column 4
Cumulative % of MSOAs	SMR<75 Score	Group	SMR<75 weight
5%	25.90 to 61.90	1	1.00
14%	61.91 to 74.29	2	1.20
20%	74.29 to 86.67	3	1.43
16%	86.67 to 99.06	4	1.71
12%	99.06 to 111.44	5	2.04
9%	111.44 to 123.83	6	2.45
8%	123.83 to 136.21	7	2.92
6%	136.21 to 148.59	8	3.50
5%	148.60 to 165.89	9	4.18
5%	165.90 to 275.60	10	5.00

3.10 ACRA recommended that, to adequately account for inequality within as well as between local authorities, the SMR<75 groups' weights should increase exponentially. This means the differences in the weights between each group increases as the SMR<75 rises.

3.11 The MSOA level populations are weighted using the values in column 4 of table 1. The first step is to assign each MSOA into one of the ten groups on the basis of its SMR<75 score. For example, MSOA X with a SMR<75 of 90.00 would be assigned to group 4 (as 90.00 is within 86.67 and 99.06). Each MSOA is then assigned a corresponding SMR<75 weight. So for MSOA X, the SMR<75 weight would be 1.71. The population in

each MSOA is then multiplied by the SMR<75 weight. If the MSOA X population is 10,000, then the weighted population will be 17,100. The weighted populations by MSOA are then normalised, i.e. the figure for each MSOA is scaled by the same proportion so that the total weighted population for all MSOAs together equals the 2010 mid-year population estimate for England.

3.12 This provides MSOA need weighted populations for 2010 population estimates. This calculation is set out in the MSOA level weighted population sheet in the Excel workbooks.

Calculating local authority level weighted populations

Mandatory and non-mandatory services

3.13 The MSOA need weighted populations are aggregated up to local authority level by summing the MSOA weighted populations in each local authority[16]. For the 2013-14 allocations (2014-15) these local authority figures are then uplifted to 2013 (2014) populations using the 2011 Census based sub-national population projections. The local authority weighted populations are then normalised so that the total weighted population for all local authorities together equals the 2013 (2014) population projections for England.

3.14 The MFF is applied to the local authority need weighted populations and normalised for the 2013 (2014) population estimates for England. This provides local authority level need and MFF weighted populations for 2013 (2014) population estimates.

3.15 The calculation of local authority need and MFF weighted populations is set out in the local authority SMR<75 and MFF weighted population sheet in the Excel workbook.

3.16 Mandatory and non-mandatory services then have age-gender adjustments applied to their weighted populations. The age-gender indices are applied to the weighted populations in the tab ‘Age-gender adjustments, and the calculation of the age-gender indices is discussed in Section 4: Age-gender adjustments.

Substance misuse services

3.17 The public health allocations formula includes a separate component for substance misuse services. This includes calculating a weighted population for three service areas:

- Drugs services previously funded through PTB
- All other drugs services

[16] Data mapping MSOAs to local authorities is available at http://www.neighbourhood.statistics.gov.uk/dissemination/Info.do?page=aboutneighbourhood/geography/superoutputareas/soalookupfiles/soa-constitutions.htm

- Alcohol misuse services

3.18 These are all non-mandatory services. A separate weighted population is calculated for each of these three service areas, discussed in turn below.

Drugs services previously funded through PTB

3.19 The formula for drugs services previously funded through the PTB has three components:

- activity (weight of 56% in 2013-14 and 76% in 2014-15)
- need or SMR<75 (weight of 24%).
- Performance[17] (weight of 20%[18] in 2013-14)

3.20 For 2013-14, this is the same as the 2012-13 PTB formula, except that the SMR<75 has replaced a need measure from earlier research by York University for the need component. For 2014-15, this is the same as in 2013-14, except that the performance component is removed[19].

Activity

3.21 The activity component is based on drug user activity by Drug Partnership Teams which are the same as upper tier and unitary local authorities except for three areas[20]. Each of these three areas consists of two local authorities, and each local authority is assigned drug user activity based on their relative population in their area (using 2013 population projections based on the 2011 Census[21]). The activity data used in the Public Health formula are from the National Treatment Agency (NTA), and is the same activity data applied in the 2012-13 PTB formula.

3.22 The activity on drug users is split by opiate and crack users (OCU) and non-OCU on account that OCU drug users cost approximately twice as much to treat. An activity score is calculated by combining OCU and non-OCU activity, and this activity score for each local authority is adjusted for the MFF.

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[17] The performance component was included in the NTA drugs formula for 2012-13 Drug Action Team (DAT) allocations in response to the new Drug Strategy which made clear that from April 2011 there should be a move to promoting recovery. .

[18] Modelling of different scenarios by the NTA concluded that a 20% weight is the optimal point at which local organisations are incentivised to improve outcomes, but the reduction in funds in poorer performing areas would not be large enough to destabilise delivery of treatment

[19] The performance component is not included in 2014-15 allocations as it is not deemed appropriate to adjust weighted populations for performance for the same activity twice.

[20] Bedfordshire, Cheshire, and Cornwall & Isles of Scilly

[21] 2013 Sub National Population Projections (SNPPs) based on the 2011 Census. These are trend-based population projections. For these projections, and further information, please see: http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/index.html

3.23 The MFF adjusted activity scores are applied to each local authority's population to give activity and MFF weighted populations. The weighted populations are normalised so the total equals the 2013 (2014) population projections for England.

3.24 This activity data in the 2013-14 and 2014-15 public health formula is for the period 1 April 2011 to 31 March 2012.

Need

3.25 The need component follows exactly the same methodology as the mandated and non-mandated formula components, described earlier.

Performance (only applicable for 2013-14 public health allocations formula)

3.26 This component is based on the number of adult drug users (aged 18 or over at the midpoint of the 12 month period being reported) that have successfully completed treatment and who have not re-presented to treatment anywhere in England within six[22] months of successful completion. The data used covers the 12 month period from January 2011 to December 2011.

3.27 Those local authorities with a higher treatment success rate will be rewarded with proportionately larger allocations. The aim is to incentivise local organisations to deliver a more recovery-orientated service, encouraging a stronger focus on reducing re-presentation for drug misuse treatment.

3.28 Within the performance element, there is a weighting for four drug treatment categories:

- Treatment for opiates only
- Treatment for crack only
- Treatment for opiates and crack
- Treatment for other drugs

3.29 This is because the presenting substance(s) of a patient significantly affects their chances of achieving a successful completion and recovery.

3.30 The weighting for each drug treatment category is based on national activity and performance data. Using activity data of numbers in treatment for the same period (calendar year 2011), nationally, opiate only users successfully complete treatment and recover from their addiction (in line with the performance definition) at a rate of 9%. This rate is 32% for users of crack only, 8% for users of opiates and crack, and 41% for users of 'other' drugs.

[22] Six months was chosen as it aligns with the Public Health Outcomes Framework drug treatment indicator: indicator 2.15 successful completion of drug treatment defined as 'number of drug users that left drug treatment successfully (free of drug(s) of dependence) who do not then re-present to treatment again within six months as a proportion of the total number in treatment'.

3.31 Using these national figures, a weighting for each drug treatment category is calculated.

- Treatment for Opiates only 41% / 9% = 4.5
- Treatment for crack only 41% / 32% = 1.3
- Treatment for Opiates and crack 41% / 8% = 5.0
- Treatment for other drugs 41% / 41% = 1.0

3.32 The weighting for each drug treatment group is applied to the performance activity by local authority to calculate a performance score for each local authority. This performance score is used to adjust the weighted populations.

3.33 The higher weighting towards more difficult to treat drugs is to discourage cherry-picking and incentivises investment in resources needed to achieve outcomes with the more entrenched and most problematic users.

All other drugs services and alcohol misuse services

3.34 The weighted population for these elements is calculated in exactly the same way as the weighted populations for non-mandated services, discussed earlier.

Total weighted population for substance misuse services

3.35 For 2013-14 the total weighted population for services previously funded through the PTB is calculated by combining the activity, need and performance weighted populations using weights of 56%, 24% and 20% respectively, as in the 2012-13 PTB formula. For 2014-15 the total weighted population for services previously funded through the PTB is calculated by combining the activity and need weighted populations using weights of 76% and 24% respectively.

3.36 The total weighted population for substance misuse services is calculated by combining the drugs services previously funded through PTB, other drugs services, and alcohol misuse services weighted population using relative 2010-11 baseline spend estimates as weights.

3.37 The calculation of the weighted component for substance misuse services currently is shown in the substance misuse services sheet of the Excel workbooks.

Overall weighted populations

3.38 The weighted populations for mandatory services, non-mandatory services (excluding drugs and alcohol services) and substance misuse services are combined using relative 2010-11 spend to give an overall weighted population for each local authority.

3.39 The overall weighted populations are shown in the final weighted populations sheet of the Excel workbook.

4: Calculating age-gender adjustments.

4.1 There are age-gender adjustments applied to those services with the highest proportion of public health spend which are also directed at specific age-gender groups to weight for relative needs between different age-gender groups.

Calculating national age-gender indices

4.2 There are six public health service areas that ACRA recommended should have an age-gender adjustment. These are listed in table 2 below, alongside the relevant sources of data and evidence for the age and gender adjustments. The table is split by age group as there is limited data available for under 16's.

Table 2: Service areas for which age-gender adjustments are calculated

Service area	Mandated or non-mandated service areas?	Indicator for those aged 16 and over	Indicator for 5 to 15 year olds (if different)	Indicator for children aged under 5 years
Nutrition, obesity and physical activity	Both	Health Survey for England (HSE) 2010[23] Percentage in each age-gender group who eat fewer than 5 portions of fruit and vegetables per day		Average of the weights for parental age groups (where parental age is taken to be between 16 and 54).
Alcohol misuse	Non-mandated	Health Survey for England (HSE) 2010 Percentage of each age-gender group who engage in binge drinking. Binge drinking is defined as more than 8 units for men and more than 6 units for women in the heaviest drinking day last week.	Percentage of 14-15 year olds who reported they had an alcoholic drink or alcopop in the last 4 weeks. This data is used to calculate a weight for all 5-15 year olds.	Average of the weights for parental age groups (where parental age is taken to be between 16 and 54)
Tobacco misuse	Non-mandated	Health Survey for England (HSE) 2010 The percentage in each age-gender group who are current smokers	Percentage of 14-15 year olds who reported they had either a) smoked in the last week or b) smoked sometimes or c) are often near people who smoke at home. This data is used to calculate a weight for all 5-15 year olds.	Average of the weights for parental age groups (where parental age is taken to be between 16 and 54)
Sexual	Both	Health Protection Agency	No weight for age 5-14	No weight for under 5's

[23] http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles-related-surveys/health-survey-for-england/health-survey-for-england--2010-trend-tables.

health		(HPA) 2011 rates of diagnoses at Genitourinary Medicine (GUM) clinics for gonorrhoea, syphilis, herpes (first episode only) and warts (first episode only) per 100,000 population for those aged 15 and over, and rates of diagnoses at GUM clinics and in the community for chlamydia per 100,000 population for those aged 15 and over, [24] [25].		
Children's 5-19 services	Non-mandated	A weight of one for each member of the population aged 5-19, and zero for all other population age groups. No gender adjustment is applied		No weight for under 5's
Drug misuse[26]	Non-mandated	National Treatment Agency (NTA) – activity data of all treatment activity for drug misuse (2010-11)[27] that was previously funded through the PTB, as a proportion of the age-gender group population[28] This covers ages 12+	Under 12's get the average of the weights for parental age groups (where parental age is assumed between 18 and 54).	

4.3 For four service areas (Nutrition, obesity and physical activity, Alcohol misuse, Tobacco misuse, and Drugs misuse) ACRA recommended using the average weights for the parental age groups for children aged under 5 years. ACRA recognised that local authorities will not be formally responsible for this age group initially for at least the first two years, but felt in line with Marmot's recommendations account should be taken of the very early development years for their future health, influenced by their parents.

4.4 Data collected from the evidence base in table 2 was used to construct national age-gender indices for all six service areas to show how behavioural characteristics vary by age-gender groups. These indices are in Annex A.

Calculating local authority level age-gender indices

4.5 For each of the six service areas, the relevant national age-gender index is applied to the ONS unweighted 2013 (2014) population estimates[29] by local authority, age and gender. This generates six service specific age-gender weighted populations.

[24] The STI data used to calculate the sexual health age-gender index is published by the Health Protection Agency (HPA). And is available at http://www.hpa.org.uk/web/HPAweb&Page&HPAwebAutoListName/Page/1201094610372#2._STI_data_tables
[25] Each STI has been given the same weight for calculating the age-gender index.
[26] Drug misuse here covers all drug misuse services i.e. drug misuse services previously funded through the PTB and all other drug misuse services.
[27] Data supplied by the NTA and not publicly available.
[28] Where the population used is 2011 ONS SNPPs available at http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/index.html
[29] 2013 and 2014 Sub National Population Projections (SNPPs) based on the 2011 Census available at: http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/index.html

4.6 These weighted populations are combined using relative 2010-11 baseline spend estimates as weights, and this is done separately for mandated, non-mandated, drugs misuse and alcohol misuse functions.

4.7 The resulting weighted populations for each of the four functions are converted into age-gender indices and applied to the relevant weighted populations in the exposition book.

4.8 As the age-gender adjustment is applied in the formula by multiplying the total population by an overall index for age-gender it is ensured that where there is zero weight for some age groups, the size of this population group still contributes to the area's target allocations.

4.9 These age-gender indices and weighted populations are in the sheet 'age gender adjustments'.

5: Pace of Change policy

Pace of Change (PoC) for 2013-14

5.1 Pace of change (PoC) policy determines final allocations. Local authorities do not receive their target allocations immediately, instead they move towards this allocation over time.

5.2 The difference between the baseline expenditure[30] of public health services and the target allocations is known as the distance from target (DFT). The DFT will differ between local authorities, in both size and direction.

5.3 If the target allocation is greater than the baseline estimates then the local authority is said to be under target. If the baseline estimate is greater than the target allocation then the local authority is said to be over target.

5.4 PoC policy sets the differential growth in allocations which local authorities receive. The local authorities furthest under target receive the highest growth to move them closer to target allocations.

5.5 For 2013-14 public health allocations there are three steps to determining final allocations through PoC policy:

i. Establishing a minimum threshold for baselines
ii. Calculating differential growth rates from baselines to target allocations
iii. Adjusting for significant changes in substance misuse activity and performance since 2010-11

5.6 These steps are discussed in turn below, and the calculations are available in the pace-of-change sheet.

Establishing a minimum threshold for baselines

5.7 The first step in is to establish an absolute minimum threshold for baselines: all local authorities must start with a minimum baseline that is equal to 110% of 2013-14 mandated services estimated baseline spend. Each local authority starts with a baseline spend estimate of the higher of either this minimum value, or their total 2012-13 baseline spend. In practice the latter value is higher for all local authorities.

Calculating growth rates from baselines to target allocations

5.8 The next step is to determine what the growth rate from 2012-13 baseline spend should be to move towards final allocations. The overall agreed growth rate of the public health grant is 5.5%, but individual local authorities do not receive this amount. How much they

[30] Baseline expenditure estimates are discussed in section 2: data

receive depends on whether they are under or over target, and how far away they are from target relative to all other local authorities.

5.9 The minimum growth rate is set at 2.8% (before the adjustment for historic drug misuse performance) and the maximum growth rate is set at 10.0%. The local authorities that are most under target get the maximum growth rate of 10%, and those least under target get a growth rate of 2.8%. A number of local authorities who are relatively under target, but not the most under target, receive a growth rate above 2.8% depending on their position from target relative to all other local authorities.

5.10 This determines final allocations for local authorities, subject to an adjustment for historic drug misuse performance.

Adjusting for historic drug misuse performance

5.11 The third step is an adjustment for movements in activity and performance for substance misuse services previously funded through the PTB. It is designed to preserve the incentive effect of the drugs component which rewards local authorities for increased activity coupled with relatively strong performance, and conversely reduce funding to local authorities for reduced activity coupled with relatively weak performance.

5.12 Only significant changes were taken into account in pace of change, and so this adjustment affects only one local authority in 2013-14. This is the only exception to minimum growth of 2.8%.

5.13 The calculations behind this adjustment are in the sheet PTB reference calculation.

Final allocations

5.14 Once all these steps are completed the final allocations quantum is equal to the sum of 12-13 baselines uplifted by 5.5%.

5.15 Each local authority receives a single grant which is not broken down by policy area.

Pace of Change (PoC) for 2014-15

5.16 For 2014-15, the DFT is defined as the difference between the 2013-14 final allocations and target allocations.

5.17 If the 2014-15 target allocation is greater than the 2013-14 final allocations then the local authority is said to be under target. If the 2013-14 final allocation is greater than the target allocation then the local authority is said to be over target. The local authorities furthest under target receive the highest growth to move them closer to target allocations.

5.18 For 2014-15 public health allocations there is one step to determining final allocations through PoC policy and this is by calculating differential growth rates from 2013-14 final allocations to 2014-15 target allocations.

5.19 The overall growth rate of the public health grant is 5.0%. The minimum growth rate is set at 2.8% and the maximum growth rate is set at 10.0%. The local authorities that are most under target get the maximum growth rate of 10%, and those least under target get a growth rate of 2.8%. A number of local authorities who are relatively under target, but not the most under target, receive a growth rate above 2.8% depending on their position from target relative to all other local authorities.

5.20 The final allocations quantum is equal to the sum of 2013-14 final allocations uplifted by 5.0%.

5.21 Each local authority again receives a single grant which is not broken down by policy area.

Annex A: National age-gender indices

Table 3: Age gender index for Nutrition, Obesity and Physical Activity services

Fruit and vegetable consumption: proportion of the national population consuming less than 5 portions of fruit and vegetables per day (2010)		
	Male	Female
0-4	77	74
5_15	81	80
16_24	81	79
25_34	76	75
35_44	76	74
45_54	73	70
55_64	74	68
65_74	68	72
75+	71	77

Table 4: Age gender index for Alcohol services

Alcohol consumption: proportion of the national population who engaged in binge drinking on their heaviest drinking day in the last week (2010)		
	> 8 units	> 6 units
	Male	Female
0-4	27	18
5-15	31	31
16-24	27	21
25-34	29	17
35-44	28	18
45-54	24	17
55-64	21	9
65-74	9	4
75+	5	1

Table 5: Age gender index for Tobacco services

Smoking: % of population who are current smokers (2010)		
	Male	Female
0-4	26	22
5-15	25	30
16-24	22	28
25-34	34	22
35-44	26	19
45-54	21	19
55-64	18	16
65-74	14	12
75+	4	7

Table 6: Age gender index for Sexual Health services

Sexual Health: Rates of new episodes of selected diagnoses (Gonorrhoea, Syphilis, Anogenital Herpes, Anogenital Warts) per 100,000 of the national population (2010)		
	Male	Female
0-4	0	0
5-14	0	0
15-19	1417	3989
20-24	3011	3900
25-34	1203	747
35-44	426	200
45-54	141	63
55-64	141	63
65+	18	4

Table 7: Age gender index for Children aged 5-19 services

Children 5-19		
	Male	Female
0-4	0	0
5-19	1	1
20-24	0	0
25-34	0	0
35-44	0	0
45-54	0	0
55-64	0	0
65-74	0	0
75+	0	0

Table 7: Age gender index for Drugs services

Drugs services: activity as a percentage of the national population (2011-12)		
	Male	Female
0-11	0.011	0.004
12-17		0.004
18-24	0.006	0.003
25-29	0.012	0.005
30-34	0.018	0.007
35-39	0.017	0.005
40-44	0.012	0.004
45-49	0.007	0.002
50-54	0.003	0.001
55-59	0.002	0.001
60+	0.000	0.000