Dental Statistics – NHS Registration and Participation
Update of statistics as at 30 September 2014
Publication date – 27 January 2015
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Background
This release provides information on NHS dental registrations from September 2000 to September 2014 and participation (contact with an NHS dentist) from September 2006 to September 2014.

Key points
Registration
- Almost 9 out of 10 people in Scotland are now registered with an NHS dentist, the highest reported rate (87%; over 4.6 million).
- Children are more likely to be registered than adults (92% compared with 85%).
- Registration has been increasing since 2007, as a result of several changes in the time after which registration lapses have been introduced.
- There was some variation in registration rates across the NHS Boards, particularly for adults.
- In September 2014, there was no deprivation gap between registration rates in children (89% for the most deprived; 90% for the least deprived).
- A different picture is seen for adults. In September 2014, those living in the most deprived areas were more likely to be registered with an NHS dentist than those living in the least deprived areas (87% for the most deprived; 81% for the least deprived).

Participation
- 74% of those registered with an NHS dentist in September 2014 had seen their dentist within the last two years.
- Children are more likely than adults to have seen the dentist within the last two years (86% compared with 71%).
- Both adults and children are more likely to have seen their dentist within the last two years if they live in the least deprived areas:
  - Most deprived children – 83%
  - Least deprived children – 91%
  - Most deprived adults – 68%
  - Least deprived adults – 77%
Key Definitions

NHS General Dental Services
The NHS General Dental Service (GDS) is usually the first point of contact for NHS dental treatment. The majority of GDS is provided by independent dentists (“High Street dentists”) who have arrangements with NHS boards to provide GDS. People register with a dentist in order to receive the full range of NHS treatment available under GDS.

Historically, there were a number of salaried dentists who also provided GDS. Salaried dentists were directly employed by NHS boards, and provided an alternative service to independent dentists when this was considered the best solution to meet local needs. People could also register with salaried dentists.

Historically, the Community Dental Service (CDS) provided a ‘safety net’ dental service for people who were unable to obtain care through the GDS, such as patients with special care needs or patients living in areas where there were few NHS dentists providing GDS. It was not possible to register with the CDS and data in relation to patients seen by a community dentist were not collected or counted as part of the national dental database.

From 1 January 2014 the salaried dental service merged with the CDS to become the Public Dental Service (PDS).

The main role of PDS dentists is to provide GDS for people who cannot access care from an independent dentist. People previously registered with a salaried dentist will remain registered under the PDS. People who were seen by the CDS will now be able to register with PDS dentists.

Registration and participation statistics in this report include independent dentist and PDS data. For the purposes of this publication an ‘NHS dentist’ is a dentist providing GDS, whether an independent dentist or a PDS dentist.

Registration
Data are presented on the number and percentage of the population who are registered with an NHS dentist. Based on the postcode of the registered person’s home address, the percentage of population registered with an NHS dentist is calculated as follows:

For each administrative area:

\[
\frac{\text{the number of people registered with an NHS dentist (any location)}}{\text{the number of people resident in that administrative area}} \times 100
\]

where administrative area is the NHS Board or local authority.

Note that some “cross-boundary flow” exists, as people may live in one administrative area (e.g. NHS Lanarkshire) but be registered with a dentist whose practice is located in another (usually adjacent) administrative area (e.g. NHS Greater Glasgow & Clyde).

MIDAS
Management Information & Dental Accounting System (MIDAS), the computerised payment system for GDS and PDS dentists, processes information on people registered with an NHS dentist in a dynamic database that changes daily. Therefore, the number of
people registered with an NHS dentist will change over time, depending on when data are entered into and extracted from the database. Data are collected through [GP17 forms](#).

**Policy impacts on registration**

A key policy change influencing registration levels has been the introduction of [non-time-limited registration](#). Prior to April 2006, patient registration lapsed after a period of 15 months if the patient did not attend the dental practice. This was extended to 36 months from April 2006, and further extended to 48 months from April 2009. In April 2010, ‘lifetime registration’ was introduced, e.g. the patient will remain registered with that dentist unless they move to another dentist, or upon death. These extensions to the registration period are likely to have had, and will continue to have, an impact on registration rates.

Different population and service profiles for NHS Boards may mean there is differing use of private dentistry or, historically, the CDS across the boards. This will impact on patient registration data and may explain some of any variation seen between the boards.

As a result of the introduction of lifetime dental registration, the registration rate has become less informative as a measure of patient accessibility and utilisation of GDS. Therefore, in addition ISD has published figures on patients’ participation since 2010.

**Participation**

Participation is defined as contact with GDS for examination or treatment in the last two years.

This measure is restricted to only those patients who are registered with an NHS dentist and therefore does not include patients who only see a dentist for occasional or emergency treatment.

Based on the postcode of the registered person’s home address, the percentage of participation is calculated as follows:

For each NHS Board:

\[
\text{Percentage of Participation} = \frac{\text{the number of registered patients who participated in GDS in the previous two years} \times 100}{\text{the number of people resident in that NHS Board who are registered with an NHS dentist}}
\]

Participation as a measure was formally introduced in September 2010 but has been calculated for data since September 2006 in this publication to allow a longer trend to be reported to show the effect of the changes to the registration rules. See [policy impacts on registration](#) for further information.

**Policy impacts on participation**

As with registration, different population and service profiles for NHS Boards may mean there is differing use of private dentistry or, historically, the CDS across the boards. This will impact on participation data and may explain some of any variation seen between the boards.
Dentists are paid a monthly fee for each registered patient. This is reduced to 20% of the fee if the patient has not attended for three years. It was suggested that dentists may only be submitting forms once every three years to ensure continued full payment, rather than for each visit. If this were the case, reported participation figures could potentially have been lower than they should have been (with the measure being based on attendance within two years). Following investigation, ISD found no evidence that this is the case and therefore there is no evidence to suggest that the participation figures in this report are undercounted.

Data are collected through GP17 and GP17(O) forms. As with registration, the number of patients examined or treated by GDS will change over time, depending on when data are entered into and extracted from MIDAS.

**Methodology**

**Data**

This release provides information on NHS dental registrations from September 2000 to September 2014 and participation (contact with an NHS dentist) from September 2006 to September 2014.

Data is extracted from MIDAS and dental activity may take several months to be included in MIDAS, because GP17 and GP17(O) forms are submitted by dentists after the completion of a course of treatment (but must be received by Practitioner Services Division (PSD; now part of Practitioner & Counter Fraud Services) within three months of the completion date of treatment). As a result of this, data for September 2014 are marked provisional. It has also been decided to label March 2014 provisional to be conservative. All figures for 2014 will be re-extracted at the time of the next publication, and therefore are subject to change in future analyses.

**NHS Board boundaries**

2014 NHS Board boundaries, which came into effect from 01 April 2014, are used throughout this publication.

**Deprivation**

Data is analysed using the Scottish Index of Multiple Deprivation (SIMD) Scottish level population-weighted quintiles. Each quintile consists of approximately 20% of the population living in Scotland.

There have been SIMD releases in 2004, 2006, 2009 and 2012. The most appropriate SIMD release has been used for each year of data, as illustrated in the following table.

<table>
<thead>
<tr>
<th>Data for Years</th>
<th>Index and release</th>
</tr>
</thead>
</table>
Please note: Following the release of SIMD 2009, ISD changed its ordering of quintiles to fit with the method used by the Scottish Government. The method is now:

- Quintile 1 = MOST deprived
- Quintile 5 = LEAST deprived

and this applies to all data analysed by SIMD 2009 and SIMD 2012.

Figures based on SIMD 2004 and 2006 have been left in the previous format i.e. 1 = LEAST deprived quintile, 5 = MOST deprived.

To avoid confusion, deprivation categories have been fully labelled, e.g. for SIMD 2012, ‘1 (most deprived)’ … ‘5 (least deprived)’ and for SIMD 2006, ‘1 (least deprived)’ … ‘5 (most deprived)’. The attached tables have been re-ordered so that the most deprived quintile is always in the first column in the table and the least deprived quintile is in the last column. This ensures that data for the least and most deprived categories are always in the same place in the table for each data snapshot. This is noted in the tables.

**Populations**

Registration rates are calculated using mid-year population estimates provided by the National Records of Scotland (NRS).

To enable a consistent time trend to be reported, all rates in this release are based on the most recently available populations. For further details please see Appendix A1.

The population estimates should be treated with some caution as there are some potential issues which may arise when using the estimates as denominators for the registration rates. These include the following:

- Short term migrants who had not been accounted for in the estimated population may be registered with an NHS dentist and therefore counted in the numerator.
- The population is based on mid-year estimates, whereas registration is based on the patient’s age at the date of snapshot. As a result, a patient initially counted in the population estimate (denominator) may have a birthday after the mid-year and will therefore be counted in the higher age category within the numerator (number registered).

The impact of these population estimate issues are most apparent for the high registration rates for some child age groups, which appear to be over 100% as a result of these. As such, registration rates have been capped at 100% in this report and all figures have been footnoted accordingly. The actual (uncapped) rates are provided in the attached tables.

**Changes to the publication**

Several changes have been made to this publication to try to improve the available long term information. These include changes to the data extracts, the populations, the NHS Board boundaries and the deprivation measures. Detailed analysis of the impact of the changes on registration and participation statistics can be found in Appendix A2.

**Data extracts**

Previously, figures were based on six-monthly snapshots of data extracted at the time of publication. This data was held constant and the new six-monthly snapshot was simply appended to the results each time. Extracts were only available from March 2007 and therefore longer trends could not be analysed.
In 2010, PSD undertook a one-off exercise using an extract from the Community Health Index (CHI) to identify any patients who had died or moved out of the UK since 2006 and de-registered them from the system. As a result, previously published figures reported from the snapshots of data could not reflect these changes.

In November 2014, the dental team re-extracted data going back to September 2000. As a result, previously published registration figures from March 2007 and March 2014 have been revised and figures from September 2000 to September 2006 are newly available to aid interpretation. Participation figures from September 2010 to March 2014 have also been revised and figures from September 2006 to March 2010 are newly available.

The number of people registered or participating with GDS will change daily. As noted previously, in this publication, data for 2014 are marked provisional. Each future publication will re-extract the two most recent data snapshots to ensure any movements related to the above are ironed out. This will ensure the long-term trend data built up over time is more robust.

**Deprivation**
Previously published figures up to 2013 were based on NHS Board SIMD quintiles, whereas figures for March 2014 published in June 2014 were based on ‘Scotland-level’ SIMD quintiles (as within NHS Board quintiles cannot be compared across the NHS Boards). To enable a consistent time trend to be reported all figures in this release are based on the population-weighted ‘Scotland-level’ SIMD quintiles.

**Geographies**
Previously, ISD published registration and participation data by NHS Board, Local Authority (LA), Community Health Partnership (CHP), Scottish Parliamentary Constituency (SPC) and Scottish Parliamentary Region (SPR). Population estimates are no longer available at SPC or SPR level and therefore figures were estimated using ‘best-fit’ data zone population estimates. From 2011, CHPs were replaced by Health and Social Care Partnerships. Therefore, ISD have decided to no longer publish registration and participation data at SPC, SPR or CHP level. Going forward, data will be published at NHS Board and LA level.

**NHS Board boundaries**
Previously published figures were based on 2006 NHS Board boundaries. New NHS Board boundaries came into effect on 1 April 2014. The biggest impact of the boundary change was the transfer of more than 72,000 patients from NHS Greater Glasgow & Clyde to NHS Lanarkshire, with around 1,600 moving the opposite way. To enable a consistent time trend to be reported, all figures in this release are based on the new 2014 NHS Board boundaries.

**Patient postcode of residence**
Previously published figures from 2007 to 2009 were based on the postcode of the dental practice and figures from 2010 to 2014 were based on the patient’s postcode of residence as recorded in the CHI database at the time the data was extracted.

To enable a consistent time trend to be reported, all figures in this release reflect the patient’s postcode as recorded in the CHI database in November 2014. This may differ from the patient’s postcode at earlier contacts with GDS.
In some previous reports, out-of-date geography lookups were used, and as a result, a higher number of records could not be identified or matched to an NHS Board or local authority. The data in this release are more accurate, as information can now be incorporated for people whose residence was classed as unknown at the time of the previous extract.

Population estimates
Registration rates are calculated using mid-year population estimates provided by the National Records of Scotland (NRS).

Previously published rates for 2014 were calculated using 2013 mid-year population estimates based on the 2011-based census, whereas the mid-year estimates used for previous snapshots were based on the 2001-based census. To enable a consistent time trend to be reported, all rates in this release are based on the most recently available populations. For further details please see Appendix A1.

Registration-only GP17 forms
It is possible to register with a new NHS dentist as an adult without being seen by the dentist. In contrast, children can only register with a dentist if they are actually seen by the dentist at the same time.

Previously, adult registration-only GP17s were counted under participation, therefore inflating participation rates slightly (by <2%). ISD are now able to exclude registration-only forms from analysis and therefore participation figures in this release exclude adult registration-only forms.

Registration-only forms for children will continue to be included in participation analysis because the assumption is made that they were seen by an NHS dentist.
Results and Commentary

Registration trends

Overall the number of registrations declined slightly from over 2.7 million patients in September 2000 to under 2.6 million in March 2007 (figure 1). Registration has since increased following changes in the time after which registration lapses. See policy impacts on registration for further information.

As at 30 September 2014, over 4.6 million patients (87% of the population) were registered with an NHS dentist in Scotland, a 79% increase since registration started climbing in March 2007 (when 50% of the population were registered). Relatively more adults have registered with a dentist between March 2007 and September 2014 (95% increase) than children (36% more registrations).

Figure 1: Number of children and adults registered with an NHS dentist in Scotland; September 2000 to September 2014

The percentage of the Scottish population registered with an NHS dentist increased from 67% to 92% of children, and 46% to 85% of adults between March 2007 and September 2014, respectively. This again shows adult registration has risen more sharply than for children (figure 2).
Figure 2 - Percentage of children and adults registered with an NHS dentist in Scotland; by dental service; September 2000 to September 2014\textsuperscript{P,R}

Source: ISD, MIDAS, November 2014
\textsuperscript{P} Figures for March 2014 and September 2014 are provisional
\textsuperscript{R} Figures from March 2007 to March 2014 have been revised

*PDS (salaried GDS (not including CDS) prior to Jan 14 and Salaried and CDS for Jan 14 onwards)

Trend data is available on NHS dental registrations by age group, NHS Board and local authority (Table 1).
Registration rates by patient age
A breakdown of the percentage of patients registered with an NHS dentist in September 2014 by age group is given in figure 3.

**Figure 3: Percentage of the population registered with an NHS dentist in Scotland; by age group as at 30 September 2014**

![Percentage of the population registered with an NHS dentist in Scotland; by age group as at 30 September 2014](chart)

Source: ISD, MIDAS, November 2014

- Figures are capped at 100%. The actual (uncapped) rates are provided in the attached figure, see list of tables and charts.
- Figures for September 2014 are provisional

**Children**
Registration rates increased with age, from 48% of children aged 0-2 to 100% of children aged 13-17 (figure 3). A similar pattern was seen in previous years (Table 1).

**Adults**
Registration rates decreased incrementally with age from 97% in the 25-34 age group to 71% for people aged 75 and over (figure 3).

A similar pattern was seen in 2013 and 2014. However, between 2000 and 2007, adult registration rates were highest in the 35-44 age group, and between 2008 to March 2012, registration was at a peak in the 18-24 age group.
Registration rates by NHS Board
Differing use across the boards in private dentistry and the number of patients seen through the CDS historically, may explain some of the variation in the registration rates across the Boards (figures 4a and 4b).

As with national figures, registration rates continue to rise within each NHS Board.

Children
There was some variation across the boards with registration rates varying between 84% and 93% of children registered as at 30 September 2014. Four boards (NHS Greater Glasgow & Clyde, NHS Lanarkshire, NHS Orkney and NHS Shetland) had more than 90% of children registered with an NHS dentist in September 2014, and all boards had at least 85%, except for NHS Western Isles.

Although NHS Western Isles continued to have the lowest registration rates, this board reported the largest increase in rates since September 2010, up from 55% to 84% (figure 4a).

Figure 4a: Percentage of the population registered with an NHS dentist in Scotland; by NHS Board as at 30 September \(^{P,R}\) - Children

Key: A&A – Ayrshire & Arran; D&G – Dumfries & Galloway; GG&C – Greater Glasgow & Clyde

Source: ISD, MIDAS, November 2014

\(^{P}\) Figures for September 2014 are provisional

\(^{R}\) Figures for September 2010 and September 2012 have been revised
Adults

Much greater variation is seen in adult registration rates between the NHS Boards. NHS Grampian had 66% of adults registered with an NHS dentist, whereas more than 85% of adults in NHS Ayrshire & Arran, NHS Forth Valley, NHS Greater Glasgow & Clyde and NHS Lanarkshire were registered (figure 4b).

**Figure 4b: Percentage of the population registered with an NHS dentist in Scotland; by NHS Board as at 30 September**

Registration rates by deprivation

Data are analysed using the ‘Scotland level’ Scottish Index of Multiple Deprivation (SIMD) population-weighted quintiles. Trend data is available on NHS dental registrations by SIMD, NHS Board and dental service (Table 2). Following the release of SIMD 2009, ISD changed its ordering of quintiles to fit with the method used by the Scottish Government. Please refer to the definitions tab in Table 2 for further information.

Children

From September 2000 to March 2014, child registration rates increased incrementally across the SIMD quintiles, with the lowest rates reported in the most deprived quintile. In September 2000, the registration rate in the most deprived SIMD quintile was 52% compared to 70% in the least deprived quintile (Table 2).
The difference in values between the SIMD quintiles has decreased over the years and in September 2014 similar registration rates were seen across the SIMD quintiles for the first time (figure 5a).

A similar pattern was generally seen across most NHS Boards for data for September 2014 (Table 2).

### Figure 5a: Percentage of patients registered with an NHS dentist in Scotland; by Scottish Index of Multiple Deprivation (SIMD) as at 30 September 2014

<table>
<thead>
<tr>
<th>SIMD Quintile</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (most deprived)</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>88</td>
</tr>
<tr>
<td>3</td>
<td>88</td>
</tr>
<tr>
<td>4</td>
<td>88</td>
</tr>
<tr>
<td>5 (least deprived)</td>
<td>90</td>
</tr>
</tbody>
</table>

Source: ISD, MIDAS, November 2014
*Figures for September 2014 are provisional*

### Adults

Between September 2000 and March 2006, adult registration rates decreased incrementally across the SIMD quintiles, with the lowest rates reported in the most deprived quintile. However, this pattern changed over the years, and since September 2010, adult registration rates were highest in the most deprived quintiles (Table 2).

In September 2014, adults from the most deprived quintiles (87% in quintile 1 and 83% in quintile 2) were more likely to be registered with an NHS dentist than the other quintiles (around 80%) (figure 5b). This may be because free NHS dental treatment is available to people who receive certain benefits.
Figure 5b: Percentage of patients registered with an NHS dentist in Scotland; by Scottish Index of Multiple Deprivation (SIMD) as at 30 September 2014 – Adults

Source: ISD, MIDAS, November 2014

P Figures for September 2014 are provisional
Participation
Participation is defined as contact with GDS for examination or treatment in the last two years. This measure is restricted to only those patients who are registered with an NHS dentist and therefore does not include patients who only see a dentist for occasional or emergency treatment.

Participation trends
There were over 3.4 million registered patients who participated in GDS in the two-year period up to 30 September 2014. This is a 34% increase from 2.6 million who participated in the two years prior to September 2006 (figure 6).

The figures for 2014 may rise slightly in future as a result of additional GP17 and GP17(O) claim forms submitted after the extracts were taken in November 2014.

Participation rates from September 2006 to March 2008 were around 99%. This is largely because between April 2006 and March 2009, patient registration lapsed after a period of 36 months if the patient did not attend the practice. See policy impacts on registration for further information.

The interpretation of trends in participation rates is affected by the trends in the registration rates. Despite an increasing number of patients participating, the participation rate is falling. This is because although the number of patients who registered with an NHS dentist has increased since March 2007, not all of these patients were seen by their dentist within the previous two years. As such, the number of patients registered with an NHS dentist has increased year on year, but the percentage of these patients who saw a dentist within the previous two years has shown a steady decline (figure 6) to 74% in September 2014, the lowest reported rate.
Figure 6: Number of registered patients participating in NHS GDS in Scotland; September 2006 to September 2014\(^{P,R}\)

Source: ISD, MIDAS, November 2014

\(^P\) Figures for March 2014 and September 2014 are provisional

\(^R\) Registration figures from March 2007 to March 2014 and participation figures from September 2010 to March 2014 have been revised

**Children**

Nationally, the participation rate for children fell steadily from 100% in September 2006 to 86% in September 2014 (figure 7a).
Although there has been a 36% increase in child registrations from around 700,000 to around 955,000, there has only been a 17% increase in participation, from around 700,000 to around 820,000 over the same time period.

**Adults**

Participation rates for adults also fell from 99% to 71% between September 2006 and September 2014 (figure 7b).
Participation figures increased by 41%, from 1.9 million to 2.6 million, whereas registration nearly doubled over the same time period (from 1.9 million to 3.7 million).

Trend data is available on participation by NHS Board and age group (Table 3).

**Participation rates by patient age**

A breakdown of the percentage of patients participating in GDS in the two-year period up to September 2014 by age group is given in figure 8.
Figure 8: Percentage of registered patients participating in NHS GDS in Scotland; by age group as at 30 September 2014

Source: ISD, MIDAS, November 2014
*Figures for September 2014 are provisional

**Children**
As at 30 September 2014, the highest national participation levels were reported for children aged 0-2 (98%). This is largely as a consequence of the definition (i.e. contact within 2 years). The participation rate decreased incrementally with age, to 82% for the 13-17 age group.

A similar pattern was seen in previous years (*Table 3*). Between 2008 and 2010, participation rates for 3-5 year olds decreased year on year, but have remained at around 90% since 2011. Despite consistently reporting the highest registration rates, participation rates for children in the 6-12 and 13-17 age groups have decreased year on year since 2008 (*Table 3*).

**Adults**
Although national registration levels for adults aged over 24 decreased with age (figure 3), participation increased incrementally through the adult age groups, with the exception of the lowest participation rates being in the over 75s.

A similar pattern was seen in previous years. Participation rates in all age groups have decreased year on year since 2008 (*Table 3*).
Participation rates by NHS Board

As with registration, differing use of private dentistry and the CDS historically may explain some of the variation in the participation rates across the Boards (figures 9a and 9b).

Children

There was some variation in child participation rates across the NHS Boards. NHS Borders had the highest participation rate for children (93%) as at 30 September 2014, while NHS Shetland was lowest (83%) (figure 9a).

Figure 9a: Percentage of registered patients participating in NHS GDS; by NHS Board as at 30 September\(^P\,R\) - Children

Generally, participation rates have fallen over time for most NHS Boards. One of the exceptions was NHS Western Isles where child participation increased from 79% in September 2010 to 88% in September 2014. However, this is largely because of their registration rates (figure 4a), which were much lower than the rest of Scotland in September 2010.
Adults
There was a larger gap between the lowest and highest participation rates as at 30 September 2014 in adults: with NHS Orkney, NHS Shetland and NHS Western Isles having the lowest participation rates at below 65%, with most NHS Boards having participation rates in the 72-78% range, while NHS Borders was highest at 83% (figure 9b).

Participation rates have been falling generally overall, with the biggest decrease seen in NHS Shetland (down 24 percentage points between September 2010 and September 2014) (figure 9b and Table 3).

Figure 9b: Percentage of registered patients participating in NHS GDS; by NHS Board as at 30 September\textsuperscript{p,r} - Adults

Key: A&A – Ayrshire & Arran; D&G – Dumfries & Galloway; GG&C – Greater Glasgow & Clyde

Source: ISD, MIDAS, November 2014
\textsuperscript{p} Figures for September 2014 are provisional
\textsuperscript{r} Figures for September 2010 and September 2012 have been revised

Participation rates by deprivation
Data are again analysed using the ‘Scotland level’ Scottish Index of Multiple Deprivation (SIMD) population-weighted quintiles. Trend data is available on participation by SIMD, NHS Board and dental service (Table 4). Following the release of SIMD 2009, ISD changed its ordering of quintiles to fit with the method used by the Scottish Government. Please refer to the definitions tab in Table 4 for further information.
Participation rates by SIMD quintile for children and adults in September 2014 are given in figures 10a and 10b.

**Children**

Figures suggest children living in the most deprived areas are least likely to see their dentist within two years (83% for most deprived, SIMD1; 91% for least deprived, SIMD5) (figure 10a).

Given that almost 100% of children were participating in September 2006 for all deprivation quintiles, this inequality has occurred since then, with the gap around 3% in September 2008, the participation rate (95% in the most deprived SIMD quintile; 98% in the least deprived quintile).

**Adults**

A similar pattern was seen for adults, with patients living in the most deprived areas least likely to participate (68% in SIMD1, 77% in SIMD5) (figure 10b). This differs from the pattern seen for registration rates, where adults living in the most deprived were most likely to be registered with an NHS dentist (figure 5b). This inequality has again occurred since the change of the registration rules.
Figure 10b: Percentage of registered patients participating in NHS GDS; by Scottish Index of Multiple Deprivation (SIMD) as at 30 September 2014\(^p\) - Adults

Source: ISD, MIDAS, November 2014

\(^p\) Figures for September 2014 are provisional
Conclusion
Registration has increased steadily following changes in registration policy and in September 2014 over 4.6 million patients (87% of the population) were registered with an NHS dentist in Scotland, the highest reported rate.

There is some variation in registration rates across NHS Boards, particularly for adults, however as with national rates, registration rates continue to rise across all Boards.

The gap in child registration rates living in the least and most deprived areas has narrowed over the years, and in September 14, figures suggested no relationship between registration rates and deprivation.

In contrast, in previous years adults living in the most deprived areas were least likely to be registered, however, this pattern has reversed, and since September 2010, registration rates have being highest for adults living in the most deprived areas.

Due to the increasing registration rates, participation has shown a steady decline since 2007. Figures for September 14 showed that 74% of patients had seen their dentist in the previous two years, the lowest reported rate.

As with overall figures, participation rates for children and adults are decreasing, however child participation remains higher than adults (86% compared with 71%).

Patients living in the most deprived areas are least likely to see their dentist in the previous two years.
<table>
<thead>
<tr>
<th><strong>Glossary</strong></th>
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| **CDS** | Community Dental Service  
CDS provided a ‘safety net’ dental service for people who were unable to obtain care through the GDS. From 1 January 2014 the salaried dental service merged with the CDS to become the Public Dental Service (PDS) |
| **CHI** | The Community Health Index (CHI) is a unique patient number from which a patient’s age and postcode can be derived when linked to the appropriate data sources. ISD Scotland has appended the (CHI) number to records in the patient registration dataset.  
NOTE: Where patient age is unknown, this information is sourced from MIDAS where available. |
| **GDS** | General Dental Service  
The NHS General Dental Service (GDS) is usually the first point of contact for NHS dental treatment |
| **Independent dentist** | Independent contractor dentist working on behalf of an NHS Board |
| **LA** | Local Authority |
| **MIDAS** | Management Information & Dental Accounting System  
Computerised payment system for GDS and PDS dentists |
| **Participation** | Contact with GDS for examination or treatment in the last two years |
| **Registration** | Registration with an NHS dentist |
| **PDS** | Public Dental Service  
From 1 January 2014 the salaried dental service merged with the CDS to become the Public Dental Service (PDS).  
Throughout this publication, ‘PDS’ will be used when referring to ‘PDS (salaried GDS (not including CDS) prior to Jan 14 and Salaried and CDS for Jan 14 onwards)’. |
| **PSD** | Practitioner Services Division (now part of Practitioner & Counter Fraud Services) |
| **Salaried dentist** | Dentist working in the salaried General Dental Service (or Community Dental Service) as an employee of an NHS Board |
| **SIMD** | Scottish Index of Multiple Deprivation  
Data for NHS dental registrations and participation in this report are analysed by the ‘Scotland level’ Scottish Index of Multiple Deprivation (SIMD) population-weighted quintiles. Each quintile consists of approximately 20% of the population living in Scotland, with deprivation quintile 1 indicating the population living in the most deprived areas |
## List of tables

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<td>September 2010, 2012 &amp; 2014</td>
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<td>Figure 4b</td>
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Contact

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Further Information
Further information can be found on the ISD website

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Appendix

A1 – Population Estimates

To enable a consistent time trend to be reported, all rates in this release are based on the most recently available populations as noted in the table below. 2014 mid-year population estimates are due to be published in 2015, and rates for 2014 will be updated in future releases.

<table>
<thead>
<tr>
<th>Date of snapshot</th>
<th>Mid-year population estimates</th>
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<td>2013 (based on 2011 Census)</td>
</tr>
<tr>
<td>31/03/2012, 30/09/2012</td>
<td>2012 (based on 2011 Census)</td>
</tr>
<tr>
<td>31/03/2011, 30/09/2011</td>
<td>2011 (rebased on 2011 Census)</td>
</tr>
<tr>
<td>31/03/2010, 30/09/2010</td>
<td>2010 (rebased on 2011 Census)</td>
</tr>
<tr>
<td>31/03/2009, 30/09/2009</td>
<td>2009 (rebased on 2011 Census)</td>
</tr>
<tr>
<td>31/03/2008, 30/09/2008</td>
<td>2008 (rebased on 2011 Census)</td>
</tr>
<tr>
<td>31/03/2007, 30/09/2007</td>
<td>2007 (rebased on 2011 Census)</td>
</tr>
<tr>
<td>31/03/2006, 30/09/2006</td>
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<tr>
<td>31/03/2005, 30/09/2005</td>
<td>2005 (rebased on 2011 Census)</td>
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<tr>
<td>31/03/2004, 30/09/2004</td>
<td>2004 (rebased on 2011 Census)</td>
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<td>2003 (rebased on 2011 Census)</td>
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<tr>
<td>31/03/2001, 30/09/2001</td>
<td>2001 (based on 2001 Census)</td>
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<tr>
<td>30/09/2000</td>
<td>2000 (based on 2001 Census)</td>
</tr>
</tbody>
</table>
A2 – Impact of changes on registration and participation data

National registration data
Previously, ISD only published registration data from March 2007. Extracting data back to September 2000 has enabled a longer trend to be viewed.

In 2010, PSD undertook a one-off exercise using a CHI extract to identify any patients who had died or moved out of the UK since 2006 and de-registered them from the system. Since 2010, this is undertaken regularly. This is likely to explain why the revised figures between 2007 and 2010 are lower than what was published previously (figures 1a & 1b).

Figure A1a: Number of patients registered with an NHS dentist in Scotland; September 2000 to 2014\(^p\) – Children

Source: ISD, MIDAS, November 2014

*Figures for March 2014 and September 2014 are provisional*
Figure A1b: Number of patients registered with an NHS dentist in Scotland; September 2000 to 2014⁶ – Adults

Source: ISD, MIDAS, November 2014

Figures for March 2014 and September 2014 are provisional

NHS Board registration data
As expected, the NHS Board boundary change has had a big impact on registration data for NHS Greater Glasgow & Clyde and NHS Lanarkshire, whereas the impact is smaller for the remaining boards, which follow a similar pattern to that seen in figures 1a & 1b.

Data reflecting the impact on NHS Board registration figures are not reported in this publication.

Impact of changes on participation data
Participation as a measure was introduced in September 2010 following the introduction of the lifetime registration.

From April 2006, patients were removed from registration lists if they had not been seen within 36 months. Prior to this, patients were removed from the list after 15 months and therefore, by definition, participation was 100%. Therefore, participation rates are now published from September 2006.

National participation data

Children
Child participation rates are slightly higher than the previously published figures (figure 2a). This is probably because of late submission of GP17 claim forms after the original extracts were taken.
Adults

Adult participation rates are generally higher than the previously published figures (figure 2b). Again, this is likely to be due to late submission of GP17 or GP17(O) claim forms after the original extracts were taken. The revised participation rate for September 2012 is slightly lower (0.4 percentage points) than the previously published rate. This is probably because registration-only contacts for adults were excluded from the participation figures.
Figure A2b: Percentage of registered patients participating in NHS GDS in Scotland; September 2006 to September 2014 – Adults

Source: ISD, MIDAS, November 2014

Figures for March 2014 and September 2014 are provisional

NHS Board participation data
As with registration data, the biggest impact on participation data is seen in NHS Greater Glasgow & Clyde and NHS Lanarkshire, whereas the impact is smaller for the remaining boards.

As with registration, data reflecting the impact on NHS Board participation figures are not reported in this publication.
A3 - Links/comparisons to other sources of dental health information

The sources below offer information related to dental services and dental health. Most of these sources are external to ISD and we cannot guarantee the content or accessibility of these external web sites.

Childsmile - improving the oral health of children in Scotland.

Dental data in Scotland

ISD publish
- Information relating to the general dental service workforce in Scotland.
- An annual NHS Adult & Child Fees and Treatments report providing information on GDS fees paid to dentists and on treatments provided to children and adults.
- An annual National Dental Inspection Programme (NDIP) report which advises the Scottish Government, NHS Boards and other organisations concerned with children's health of the oral disease prevalence in their area.

The 2012 Scottish Health Survey covers dental health topics such as dental health problems and trends in prevalence of natural teeth.

ISD also publish information on the application of fluoride varnishing to children’s teeth. The recorded clinical activity is also being monitored under the Scottish Government’s HEAT target (at least 60% of 3- and 4-year-old children in each SIMD quintile to receive at least two applications of FV per year by March 2014).

Comparison with other UK dental data

<table>
<thead>
<tr>
<th>Country</th>
<th>Registration measure</th>
<th>Participation measure</th>
<th>Comparable to Scottish Participation?</th>
<th>Links:</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>no</td>
<td>Yes (number of patients seen within two-year period)</td>
<td>No – Scottish participation is restricted to patients registered to an NHS dentist</td>
<td>The Health and Social Care Information Centre (HSCIC)</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>no</td>
<td>no</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wales</td>
<td>no</td>
<td>Yes (number of patients treated within two-year period)</td>
<td>No – Scottish participation is restricted to patients registered to an NHS dentist</td>
<td>StatsWales</td>
</tr>
</tbody>
</table>

The Health and Social Care Information Centre (HSCIC) in England produces annual and quarterly statistical publications providing a range of information on all patients who receive NHS dental care in Scotland, England, Northern Ireland and Wales. Subjects covered include: dental activity, clinical treatments, orthodontic activity and dental workforce. Information on the number of patients seen by an NHS dentist in the previous 2 years at specified dates is also included.
StatsWales provide statistics on GDS, including data on the proportion of patients treated.

It should be noted that the definition of patients seen/treated used by HSCIC and StatsWales differs to ISD’s definition of participation (which is restricted to patients who are registered with an NHS dentist).

The Office for National Statistics' (ONS) has carried out a Dental Health Survey of Children and Young People every ten years since 1973. The study provides information to underpin dental health care for children in England, Wales and Northern Ireland. The information collected helps the NHS to understand how the dental health of each generation of children is changing. It is used in the planning of dental care services for the future.

Please note that if you want to compare deprivation levels in Scotland and England, the Scottish Index of Multiple Deprivation (SIMD) is not directly comparable with the Index of Multiple Deprivation used in England.
### A4 – Publication Metadata (including revisions details)

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<th>Metadata Indicator</th>
<th>Description</th>
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<tr>
<td>Publication title</td>
<td>Dental Statistics – NHS Registration and Participation.</td>
</tr>
<tr>
<td>Description</td>
<td>This release provides information on NHS dental registrations from September 2000 to September 2014 and participation (contact with an NHS dentist) from September 2006 to September 2014.</td>
</tr>
<tr>
<td>Theme</td>
<td>Dental health care.</td>
</tr>
<tr>
<td>Topic</td>
<td>Registration and participation.</td>
</tr>
<tr>
<td>Format</td>
<td>Excel workbooks.</td>
</tr>
<tr>
<td>Data source(s)</td>
<td>MIDAS, NRS.</td>
</tr>
<tr>
<td>Date that data are acquired</td>
<td>November 2014</td>
</tr>
<tr>
<td>Release date</td>
<td>27 January 2015</td>
</tr>
<tr>
<td>Frequency</td>
<td>Six-monthly.</td>
</tr>
<tr>
<td>Timeframe of data and timeliness</td>
<td>The latest iteration of data is 30 September 2014, therefore four months in arrears. Data for September 14 are marked provisional. It has also been decided to label Mar 14 provisional to be conservative. Data for 2014 will be re-extracted in the next publication, due May 2015, and therefore are subject to change in future analyses. This will ensure the long-term trend data built up over time is more robust.</td>
</tr>
<tr>
<td>Continuity of data</td>
<td>Reports six-monthly as at 31 March and 30 September.</td>
</tr>
<tr>
<td>Revisions statement</td>
<td>These data are not subject to planned major revisions. However, ISD aims to continually improve the interpretation of the data and therefore analysis methods are regularly reviewed and may be updated in the future.</td>
</tr>
<tr>
<td>Revisions relevant to this publication</td>
<td>Several changes have been made to this publication to try to improve the available long term information and are summarised below. Detailed analysis of the impact of the changes on registration and participation statistics can be found in Appendix A2.</td>
</tr>
</tbody>
</table>

**Data extracts**

Previously, figures were based on six-monthly snapshots of data extracted at the time of publication. This data was held constant and the new six-monthly snapshot was simply appended to the results each time. Extracts were only available from March 2007 and therefore longer trends could not be analysed.

In 2010, PSD undertook a one-off exercise using an extract from the Community Health Index (CHI) to identify any patients who had died or moved out of the UK since 2006 and de-registered them from the system. As a result, previously published figures reported from the snapshots of
data could not reflect these changes.

In November 2014, the dental team re-extracted data going back to September 2000. As a result, previously published registration figures from March 2007 and March 2014 have been revised and figures from September 2000 to September 2006 are newly available to aid interpretation. Participation figures from September 2010 to March 2014 have also been revised and figures from September 2006 to March 2010 are newly available.

The number of people registered or participating with GDS will change daily. As noted previously, in this publication, data for 2014 are marked provisional. Each future publication will re-extract the two most recent data snapshots to ensure any movements related to the above are ironed out. This will ensure the long-term trend data built up over time is more robust.

**Deprivation**
Previously published figures up to 2013 were based on NHS Board SIMD quintiles, whereas figures for March 2014 published in June 2014 were based on ‘Scotland-level’ SIMD quintiles (as within NHS Board quintiles cannot be compared across the NHS Boards). To enable a consistent time trend to be reported all figures in this release are based on the population-weighted ‘Scotland-level’ SIMD quintiles.

**Geographies**
Previously, ISD published registration and participation data by NHS Board, Local Authority (LA), Community Health Partnership (CHP), Scottish Parliamentary Constituency (SPC) and Scottish Parliamentary Region (SPR). Population estimates are no longer available at SPC or SPR level and therefore figures were estimated using ‘best-fit’ data zone population estimates. From 2011, CHPs were replaced by Health and Social Care Partnerships. Therefore, ISD have decided to no longer publish registration and participation data at SPC, SPR or CHP level. Going forward, data will be published at NHS Board and LA level.

**NHS Board boundaries**
Previously published figures were based on 2006 NHS Board boundaries. New NHS Board boundaries came into effect on 1 April 2014. The biggest impact of the boundary change was the transfer of more than 72,000 patients from NHS Greater Glasgow & Clyde to NHS Lanarkshire, with around 1,600 moving the opposite way. To enable a consistent time trend to be reported, all figures in this
Information Services Division

release are based on the new 2014 NHS Board boundaries.

Patient postcode of residence
Previously published figures from 2007 to 2009 were based on the postcode of the dental practice and figures from 2010 to 2014 were based on the patient’s postcode of residence as recorded in the CHI database at the time the data was extracted.

To enable a consistent time trend to be reported, all figures in this release reflect the patient’s postcode as recorded in the CHI database in November 2014. This may differ from the patient’s postcode at earlier contacts with GDS.

In some previous reports, out-of-date geography lookups were used, and as a result, a higher number of records could not be identified or matched to an NHS Board or local authority. The data in this release are more accurate, as information can now be incorporated for people whose residence was classed as unknown at the time of the previous extract.

Population estimates
Registration rates are calculated using mid-year population estimates provided by the National Records of Scotland (NRS).

Previously published rates for 2014 were calculated using 2013 mid-year population estimates based on the 2011-based census, whereas the mid-year estimates used for previous snapshots were based on the 2001-based census. To enable a consistent time trend to be reported, all rates in this release are based on the most recently available populations. For further details please see Appendix A1.

Registration-only GP17 forms
It is possible to register with a new NHS dentist as an adult without being seen by the dentist. In contrast, children can only register with a dentist if they are actually seen by the dentist at the same time.

Previously, adult registration-only GP17s were counted under participation, therefore inflating participation rates slightly (by <2%). ISD are now able to exclude registration-only forms from analysis and therefore participation figures in this release exclude adult registration-only forms.

Registration-only forms for children will continue to be included in participation analysis because the assumption is made that they were seen by an NHS dentist.
<table>
<thead>
<tr>
<th>Concepts and definitions</th>
<th>Registrations</th>
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<tr>
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<td>Data are presented on the number and percentage of the population who are registered with an NHS dentist.</td>
</tr>
<tr>
<td></td>
<td>Based on the postcode of the registered person's home address, the percentage of population registered with an NHS dentist is calculated as follows:</td>
</tr>
<tr>
<td></td>
<td>For each administrative area:</td>
</tr>
<tr>
<td></td>
<td>( \text{the number of people registered with an NHS dentist (any location)} \times 100 )</td>
</tr>
<tr>
<td></td>
<td>( \text{the number of people resident in that administrative area} )</td>
</tr>
<tr>
<td></td>
<td>where administrative area is the NHS Board or Local Authority.</td>
</tr>
<tr>
<td>Participation</td>
<td>Data are presented on the number and percentage of registered patients who participated with GDS.</td>
</tr>
<tr>
<td></td>
<td>Based on the postcode of the registered person’s home address, the percentage of participation is calculated as follows:</td>
</tr>
<tr>
<td></td>
<td>For each NHS Board:</td>
</tr>
<tr>
<td></td>
<td>( \text{the number of registered patients} )</td>
</tr>
<tr>
<td></td>
<td>( \text{who participated in GDS in the previous two years} \times 100 )</td>
</tr>
<tr>
<td></td>
<td>( \text{the number of people resident in that NHS Board who are registered with an NHS dentist} )</td>
</tr>
</tbody>
</table>

| Relevance and key uses of the statistics | Making information publicly available for planning, provision of services, research etc. |

| Accuracy & Completeness | GDS data are highly accurate and reliable; they are the product of practitioners’ detailed records of treatments provided to their patients for payment and clinical governance purposes. Practitioner Services Division’s (PSD) internal reporting routinely quantifies the accuracy of MIDAS source data. However, errors made by practitioners in claiming for treatment provided are identified by PSD’s validation systems and corrected in the next available payment schedule (usually the following month). |

| Summary of the quality assurance undertaken on the dental payments database | Two types of checks are made as payment verification of the GDS payment database (see http://www.psd.scot.nhs.uk/professionals/dental/payment-|
The Level 1 checks are there to check the quality of the data held in the database; Levels 2-4 are designed to determine fraudulent claims by dentists.

The Level 1 checks cover a range of validations to ensure the payment claims submitted meet the criteria laid down within the Statement of Dental Remuneration, they are not duplicates, that they make sense with regards to the claim being made by the dentist, and are run against all records before being accepted onto the database. In the 2013/14, 6.6% of claims submitted were returned for clarification as they did not meet the specified criteria/were duplicates etc. It is unknown how many of these claims were resubmitted (as it is not possible to track them through as they haven’t made it onto the database). In addition, upon payment of the claim, 0.43% were queried by the dentists as to why they did not match what they were expecting. Some of these queries are found to be mistakes in the claim, and are resolved, others are not upheld and the payment left as is, and a few are errors made during processing. Any amendments are made to MIDAS and the data quality improved. (Figures supplied by Martin Morrison, Head of Service Delivery, Practitioner Services Division, personal communication).

Additionally, around 1% of claims are also checked for their appropriateness for clinical need as part of a prior approval process for all claims for treatment over £350. This also helps to ensure data quality.

The second type of checks (the Level 2-4 checks) is largely aimed at detecting fraud. The Level 2 checks involve undertaking trends analysis to try to identify outlier patterns which may indicate fraudulent activity, while levels 3 and 4 involve examining and auditing dental care records. While the purpose of these checks is to safe-guard against fraud, this activity will improve accuracy with any errors identified and resolved within the database.

<table>
<thead>
<tr>
<th>Comparability</th>
<th><strong>Comparisons with UK-wide statistics</strong></th>
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<tbody>
<tr>
<td></td>
<td>See <a href="#">Appendix A3</a>.</td>
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</table>

<table>
<thead>
<tr>
<th>Accessibility</th>
<th>It is the policy of ISD Scotland to make its web sites and products accessible according to <a href="#">published guidelines</a>.</th>
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<table>
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<tr>
<th>Coherence and clarity</th>
<th>Tables and charts are accessible via the ISD website at: <a href="#">www.isdscotland.org/Health-Topics/Dental-Care/Publications/</a>.</th>
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<table>
<thead>
<tr>
<th>Value type and unit of measurement</th>
<th>Number of patients and percentage of population registered with an NHS dentist/participating in GDS.</th>
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</table>

<table>
<thead>
<tr>
<th>Disclosure</th>
<th>The <a href="#">ISD protocol on Statistical Disclosure Protocol</a> is followed.</th>
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<td>UK Statistics Authority Assessment</td>
<td>Awarded. Further details can be found in the UKSA assessment report (<a href="#">report 209</a>).</td>
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<tr>
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<td>30 June 2014.</td>
</tr>
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<td>(Registrations) 2007.</td>
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A5 – Early Access details (including Pre-Release Access)

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", ISD are obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

Standard Pre-Release Access:
  - Scottish Government Health Department
  - NHS Board Chief Executives
  - NHS Board Communication leads
A6 – ISD and Official Statistics

About ISD

Scotland has some of the best health service data in the world combining high quality, consistency, national coverage and the ability to link data to allow patient based analysis and follow up.

Information Services Division (ISD) is a business operating unit of NHS National Services Scotland and has been in existence for over 40 years. We are an essential support service to NHSScotland and the Scottish Government and others, responsive to the needs of NHSScotland as the delivery of health and social care evolves.

Purpose: To deliver effective national and specialist intelligence services to improve the health and wellbeing of people in Scotland.

Mission: Better Information, Better Decisions, Better Health

Vision: To be a valued partner in improving health and wellbeing in Scotland by providing a world class intelligence service.

Official Statistics

Information Services Division (ISD) is the principal and authoritative source of statistics on health and care services in Scotland. ISD is designated by legislation as a producer of ‘Official Statistics’. Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Official Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within ISD.

ISD’s statistical publications are currently classified as one of the following:

- National Statistics (ie assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (ie legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (ie still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

Further information on ISD’s statistics, including compliance with the Code of Practice for Official Statistics, and on the UK Statistics Authority, is available on the ISD website.

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics. Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.