

Quality assurance of administrative data used in population statistics: Armed Forces data



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1. Overview of Armed Forces data

| | |
|---|---|
| Data supplier: | Defence Statistics (Tri-Service) within the Ministry of Defence (MOD) |
| Supplier info: | <p>The Defence Statistics (Tri-Service) team has two principal roles:</p> <ul style="list-style-type: none">• to provide statistical advice and research to underpin decision making, policy development and evaluation within MOD; and• to contribute to the department's accountability for its activities through the publication of Official Statistics on Defence, and by answering Parliamentary Questions (PQs), Freedom of Information requests (FOIs) and other requests for information. |
| Data type (counts or unit records) | Counts |
| Data content: | The number of United Kingdom Armed Forces personnel (Regular Forces and Ghurkhas both Trained and Untrained) by single year of age, sex, service branch and local authority in which based. |
| Supply schedule: | Annual |
| Use of data: | <ul style="list-style-type: none">• Mid-year population estimates• Small area population estimates• Population projections for Scottish Areas |
| Matrix Score | A1 – Basic Assurance |
| Last updated | 06 October 2020 |

2. Data source information

The Defence Statistics (Tri-Service) department within the Ministry of Defence (MOD) publish statistics relating to Armed Forces personnel. These statistics are primarily counts of the number of Service personnel in the Armed Forces (or 'strengths'), the number of personnel joining (intake) and number of personnel leaving (outflow). These statistics are all reported relating to the 1st of the month for various categories of interest and at differing levels of detail.

Data supplied by the MOD is used in the production of population statistics published by National Records of Scotland (NRS). Data provided by the MOD is used within the cohort component methodology to estimate the usually resident Armed Forces population within Scotland. More information about the cohort component method used to estimate the population is available from the [methodology guide](#). The Armed

Forces population is treated as a special population in the calculation of population estimates as the movements of military personnel are not captured by the usual internal or international migration estimates.

3. Operational context and administrative data collection (Data collection)

Statistics on Armed Forces personnel are derived from the MOD's Joint Personnel Administration (JPA) system, which is used for the administration of all Armed Forces personnel.

All personnel in the Regular Armed Forces must be recorded on JPA in order for them to receive their pay. Therefore the figures on the number of Service personnel in the Armed Forces are accurate. However, more detailed breakdowns relying on the information recorded for each individual can be less accurate due to variable quality of the data entered for these different fields.

The variation in quality is partly due to key information required for managing individuals being recorded and updated centrally, whereas other information is left to the individual to complete through a self-service tool. There is also a reasonable amount of late reporting which can adversely impact the quality of the data on the extract, particularly for exits and changes of individual's status from untrained to trained. Defence Statistics obtain the extract on the sixth calendar day and then calculate the strength at the first of the month to overcome much of this late reporting.

Defence Statistics published statistics on UK Armed Forces are the definitive personnel statistics in the MOD. There are no other publicly available regular publications on the numbers of UK Armed Forces to ensure coherence. Within the MOD direct queries of the JPA system will produce slightly different numbers due to timing and quality issues.

4. Communication with data supply partners

A Data Confidentiality Agreement exists between MOD and NRS. This agreement covers data on Armed Forces personnel for use in the mid-year population estimates and other population statistics.

The Data Confidentiality Agreement covers:

- Data to be provided
- Permitted use of the data
- Permitted distribution of the data
- Details of security arrangements

Statisticians within NRS population and migration statistics communicate with the Defence Statistics team by email. A review of the Data Confidentiality Agreement is

held annually to maintain and/or update the data requirements. Data is requested once both parties have agreed on any changes to the agreement.

The variables in the dataset requested are:

- Count
- Age
- Sex
- Service branch – Army, Royal Navy, Royal Marines, or Royal Air Force
- Local authority

The Armed Forces data is produced by Defence Statistics on 1st of the month. NRS request an extract of the number of armed forces on 1 July of the reference year. The July extract is used as it contains the mid-year population estimates reference date of 30 June.

5. Quality assurance principles, standards and checks applied by data suppliers

Extracts are taken from JPA each month and stored on a separate database to form a time series. The extracts are taken six calendar days after the end of the month and the situation as at the 1st of the month is calculated; this ensures most late-reporting is captured.

The data goes through a series of automatic validation checks based on previous corrections. As a result of these checks, edits are made to the data to ensure the basic quality of the data and a series of derived fields are also calculated. A “flows” file is then created by comparing the current month’s data to the previous month’s data by low-level groupings and recording any changes in strengths.

The data is then made available to Defence Statistics’ single Service branches (Navy, Army, Air) where they undertake a wide range of validation checks and implement specialist editing rules using their expert knowledge and experience as well as data obtained from other sources within the Department.

Once the data is confirmed as being accurate, the database is queried to produce the dataset for NRS. Data from the same source is used in the production of tables for National Statistics publications on military personnel published by Defence Statistics.

MOD publish further information on the quality of UK Armed forces Personnel Statistics in their [Background Quality Report](#).

6. Producer's quality assurance investigations and documentation

When data is received from Defence Statistics, statisticians within the Population and Migration Statistics team carry out a number of checks to ensure the data is

accurate. The latest data is compared with previous data held and any large differences are investigated. Other checks include: checking that subtotals at lower geographic levels add up to the Scotland total and checking the age distribution. If any unusual patterns are discovered, Defence Statistics are contacted for confirmation and/or investigation.

6.1 Strengths and limitations of the data source

| Strengths | Limitations |
|---|---|
| <ul style="list-style-type: none"> Defence Statistics published statistics on UK Armed Forces are the definitive personnel statistics in the MOD. Armed Forces personnel must be registered on JPA for a range of management activities. Data goes through a series of automatic validation checks and checks by experts in each Service branch. | <ul style="list-style-type: none"> Detailed information recorded on the JPA can be less accurate due to key information being updated centrally vs other information uploaded by self-service tool. Late reporting can impact number of exits reported. Direct queries of the JPA system will produce slightly different numbers due to timing and quality issues. |

7. Risk/Profile Matrix

This section contains a risk/profile matrix for the armed forces data. The matrix reflects the levels of risk of data quality concerns and the public interest profile of the statistics. These have been determined by a review undertaken by the NRS Population and Migration Statistics team using the information contained within the UK Statistics Authority's [Administrative Data Quality Assurance Toolkit](#). For the use of data for this project, the cell highlighted is appropriate:

| Level of risk of quality concerns | Public interest profile | | |
|-----------------------------------|---|--|---|
| | Low | Medium | High |
| Low | Statistics of low quality concern and low public interest. [A1] | Statistics of low quality concern and medium public interest. [A1/A2] | Statistics of low quality concern and high public interest. [A1/A2] |
| Medium | Statistics of medium data quality concern and low public interest. [A1/A2] | Statistics of medium quality concern and medium public interest. [A2] | Statistics of medium quality concern and high public interest. [A2/A3] |

| | | | |
|-------------|--|--|--|
| High | Statistics of high data quality concern and low public interest. [A1/A2/A3] | Statistics of high quality concern and medium public interest. [A3] | Statistics of high quality concern and high public interest. [A3] |
|-------------|--|--|--|

*A1/A2/A3 – definitions supplied UK Statistics Authority's [Administrative Data Quality Assurance Toolkit](#).

Justification for Matrix Score

The public interest profile has been set to high due to the use of population estimates and projections statistics to make decisions on resource allocation by central and local government.

The risk of quality concerns has been set to low given the many stages of automatic validation and checking by experts in each Service branch. As all personnel in the Regular Armed Forces must be recorded on JPA in order for them to receive their pay, the figures on the number of Service personnel are deemed very accurate.

The Armed Forces population make up a small part of the population in most areas across Scotland. Therefore, any inaccuracies in the Armed Forces population are likely to have a negligible impact on the population estimates for Scotland and its administrative areas. Inaccuracies in the data could have a larger impact on population estimates for small areas which are located around Armed Forces bases, although detailed quality assurance also takes place during the production of the small area population estimates.

As the scores were deemed low for risk of quality concerns and high for public interest profile, the assurance rating was deemed by the Population and Migration Statistics team as A1: Basic assurance (highlighted in matrix above).

8. Useful links and contact details

You can access detailed statistics that we have produced from the [Statistics](#) section of our website. Scottish Census statistics are available on the [Scotland's Census](#) website.

We also provide information about [future publications](#) on our website. If you would like us to tell you about future statistical publications, you can register your interest on the Scottish Government [ScotStat website](#).

You can also follow us on twitter [@NatRecordsScot](#)

Enquiries and suggestions

Please contact our Statistics Customer Services if you need any further information.
Email: statisticscustomerservices@nrscotland.gov.uk

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