

Overview of Administrative Comparator Data Used in 2011 Census Quality Assurance

1. Introduction

The 2011 Census population estimates have been subject to a rigorous quality assurance process. As a part of this quality assurance process, a series of checks have been carried out that involve comparing census data to a range of other data sources, including administrative data. This paper gives an overview of these administrative sources with a focus on those used to quality assure census population estimates by age and sex.

Administrative sources covered are:

- GP NHS Patient Register
- Birth Registration
- School Census (including data on independent schools)
- Customer Information System (CIS)
- Higher Education Statistic Agency (HESA)
- Migrant Worker Scan (MWS)
- Valuation Office Agency (VOA)
- Armed Forces Data (Defence Analysis Service Agency and United States Air force)
- Further Education Data (Department for Business, Innovation & Skills and Welsh Government)
- Local Authority supplied Council Tax data

Each of the sources are administered for different purposes and so inevitably covered different populations to that enumerated in the 2011 Census. This paper begins with an overview of the usual residence enumeration base for the 2011 Census.

2. 2011 Census enumeration base

A person's place of usual residence is generally the address in the UK at which they spend the majority of time. For most people this will be their permanent or family home. A usual resident of the UK, for census purposes, is anyone who, on 27 March 2011:

- was in the UK and had stayed or intended to stay in the UK for a period of 12 months or more, or;
- had a permanent UK address and was outside the UK and intended to be outside the UK for less than 12 months

In addition to this, someone was counted as usually resident at an address if, on 27 March 2011:

- they were temporarily away from home, for example on holiday, visiting friends or relatives or travelling (unless outside the UK for 12 months or more)
- they were in a communal establishment such as a care homes or hospitals for less than six months
- they were a baby born on or before 27 March 2011
- they had more than one UK address and are staying at the second address on census night
- they were present at the address, even if temporarily, and have no other usual address in the UK

Someone was not counted as usually resident at an address on 27 March 2011 if:

- the address at which they were staying was not their usual address and they usually live elsewhere in the UK (these people would be counted as visitors)
- they were away from their home address and had been staying or were expected to stay in a communal establishment such as a care home or hospital for six months or more. In this case they were counted as usually resident at the communal establishment

Further clarification was given for the usual residence definition of certain population sub-groups:

- **Students and children at boarding school** should be counted as usually resident at their term-time address
- **Children with parents who live apart** should be counted as usually resident at the address they spend the majority of their time
- **Armed forces** should be counted as usually resident at their permanent or family home even if the majority of their time is spent at their 'working' address.
- **People who live at more than one address** should be enumerated at their permanent or family home even if the majority of their time is spent at another address.
- **People with no usual address** should be enumerated at the address at which they are staying on 27 March 2011.
- **People in prison.** Convicted prisoners with a sentence of longer than six months or more should be counted as usually resident in the prison. If the sentence is less than six months the prisoner should be counted at their permanent or family home. All prisoners on remand should be treated as visitors.

A. GP NHS Patient Register

The GP Patient Register data is a live database administered by individual primary care trusts (PCTs). The database contains some 60 million individuals with approximately 600,000 new patient registrations added each year.

In the 2011 Census quality assurance process patient register data are used to assess:

- Age/sex estimates at local authority level;
- Estimates at middle layer super output area (MSOA) and lower layer super output area (LSOA);
- Household size and household count (derived by grouping individuals into households based on address provided);
- International and internal migration

The Patient Register is the only non-ONS source used in the quality assurance to check numbers of adults aged 16 to 64. Mid-year population estimates are also used rolled forward from the previous census. Patient registration data is particularly useful for the quality assurance process as it is held at record level (with individuals name and address). By matching the register to census data (and other administrative sources) detailed investigations will be carried out when required.

The Patient Register for babies under one is a 'hard' check in the quality assurance process. As set out in previous methodology papers¹, where the upper confidence interval of the 2011 Census estimate is lower than the Patient Register count of babies under one additional supplementary analysis will routinely be carried out.

Coverage

As a list of where individuals are registered, coverage only extends to those people who have registered with a GP. Examples of those groups not registered with an NHS GP include sole private care users, armed forces personnel, long-term prisoners, and patients in long stay hospitals.

Individuals intending to stay in the United Kingdom for longer than three months can register with an NHS GP². This will mean that the register will include some individuals who would be excluded from the 2011 Census definition of usual residence (individuals who intended to stay for longer than twelve months). It is not possible to distinguish between short-term migrants (those who intend to stay for less than twelve months) and usual residents on the register, nor is it possible to identify whether all short-term migrants were removed from the register when they departed.

Accuracy

The accuracy of the Patient Register depends on all patients registering with an NHS GP when they move into or within England and Wales. Accuracy of the register is known to vary across England and Wales as individual PCTs are responsible for its maintenance.

List inflation exists on the register where individuals are no longer resident at the address at which they are on the register. Estimated list inflation is 5 per cent on average for PCTs in England but is thought to be as high as 30 per cent in some areasⁱ. NHS Primary Care Commissioning recently published guidance on how PCTs should tackle list inflation³. The guidance acknowledged that the extent of any list inflation depends on the demographic profile of each area. It specifically identified seven population sub-groups where list inflation should be targeted:

- students
- pupils in residential schools
- multi-occupancy dwellings
- deceased patients
- immigrants
- patients who go abroad for more than three months
- elderly patients over 100 years old

Within the guidance reference was made to a number of list cleaning exercises. For example, NHS Berkshire Westⁱ carried out a list validation exercise focused on multiple occupancy housing and patients with an immigrant status. By March 2012 it is estimated that this will have removed 16,500 patients.

Recent improvements to ONS official internal migration estimates based on GP Patient Registration data indicated that list inflation was greater for males than females⁴. The improvements involved supplementing existing estimates with data from the Higher Education Statistics Agency (HESA) to improve the estimation of student migration at the start and at the end of their studies. This work found that an adjustment of 101,600 was made to the distribution of population around England & Wales. For individuals not re-registering with a GP when they moved to university 55 per cent were male and for individuals not re-registering at the end of their studies 69 per cent were male.

ⁱ West Berkshire PCT consists of Reading, Wokingham and West Berkshire Local Authorities.

Estimates of households and household size have been derived from the patient register prior to beginning the quality assurance process. These estimates are based on grouping individuals by their residential address on the register. Matching addresses together in this way is known to contain inaccuracies, for example where addresses could not be matched because of minor inaccuracies in the address information provided. List inflation will also inflate the size of some individual households.

Timeliness

The extract of patient register data used by ONS for census quality assurance is taken a month after census day. A month lag is assumed for individuals to change their GP registration, consistent with the assumed lag in patient registration data used for official ONS estimates of internal migration⁵.

B. Birth Registration

Birth registration data

Births that occur and are registered in England and Wales are legally required to be registered. Registration is carried out by the Local Registration Service in partnership with the General Register Office (GRO). The extract used in census quality assurance includes all births which occurred in England and Wales in the 12 months prior to census day.

In 2011 Census quality assurance birth registration data is used:

- to assess age and sex estimates of babies under one year of age
- in fertility analysis where the number of births are used in conjunction with census estimates (and other comparators) to calculate fertility rates

Coverage

Birth registration is a legal requirement under the Births and Deaths Registration Act (1836), including those to mothers who are not usually resident. Not all births occurring in England and Wales in the twelve months prior to census day will still be resident at census day. The register is not updated with babies who die or where migration takes place (either internationally or around England and Wales). In the year to mid-2010 for under- one year olds:

- the number of deaths was 2,900
- the gross number of international migration moves was 3,200
- the gross number of moves between local authorities in England and Wales was 45,100

Accuracy

Information supplied at birth registration is generally believed to be correct since wilfully supplying false information may render the informant liable to prosecution for perjury⁶. As noted information provided when the baby was born may not be the same as at census day when the extract refers to.

Timeliness

Registration of a birth must take place within 42 days of occurrence. The extract of data used in the quality assurance process is taken in May 2011 to cover the registration of all births which occurred in the 12 months prior to census.

C. School Census (English / Welsh), Independent Schools data

The School Census is collected by the Department for Education (DfE) to ensure appropriate school funding for each local authority (LA) in England. There are approximately 8 million children on the English School Census when it is collected each year.⁷ An equivalent School Census is also collected by the Welsh Government (WG).

Independent Schools data for England and Wales used in the quality assurance process also come from DfE and WG respectively. Independent schools are those which are not maintained by local authorities. Academies and non-maintained special schools are also not independent schools. The 2,400 independent schools cater for 580,000 pupils and include day schools, boarding schools, single sex schools, co-educational schools, and schools catering for ethnic minority and faith groups.

Ethnicity is not available from independent schools data used.

In the 2011 Census quality assurance process School Census data are used to assess:

- age/sex estimates for children aged 5-14 at local authority level (along with independent schools data)
- estimates of ethnicity for children aged 5-14

As School Census is held by ONS at record level matching will be carried out to census data (and other administrative sources) where more detailed quality investigations are required.

The School Census is used as a 'hard' check for children aged 5 to 14 in the quality assurance process. As set out in previous methodology papers¹, where the upper confidence interval of the 2011 Census estimate is lower than the School Census the count of children aged 5-15 additional supplementary analysis will routinely be carried out.

Coverage

Parents of children of compulsory school age (5 to 15 at the start of school year) are legally required to ensure that they receive a suitable education by regular attendance at school or otherwise. The School Census does not however cover children attending independent schools, pupil referral units and those who are home schooled. As a result approximately 7 per cent of children aged 5-15 are not covered⁸.

The extract of School Census data (for both England and Wales) is based on pupil's residence and so is consistent with the definition used in the 2011 Census. Independent Schools data however is based on the location of the establishment. As previously noted, ethnicity data is not available for independent schools data.

Accuracy

The issue of Independent Schools data being based on school location rather than pupil's residence is particularly problematic in London where pupils can more easily cross local authority boundaries to attend school. This is particularly apparent in the City of London where 2011 Independent Schools data identifies more than 1,200 children attending a school in the borough aged 5-14 whereas the mid-2010 population estimates show only 538 children of these ages were resident in total.

The geographic distribution of independent schools varies outside London. There are 41 local authorities with fewer than 100 children at independent schools (including Wales). In contrast there are 13 local authorities with more than 3,000 children at independent schools – six of which are in the South East of England.

School Census data (England and Wales) is based on age as at census day. As Independent Schools data is based on age as at August 31st 2010 it has been necessary to make basic assumptions on how many children will have reached their next birthday by census day.

The ethnicity information collected on the School Census is provided by the child's parents up to the age of 11. Beyond this age it is recommended that pupils should have the opportunity to determine their own ethnicity. As DfE recognise ethnicity is personal to each individual and cannot be objectively determined or recognised⁹.

Timeliness

The School Census and Independent Schools extracts used in the quality assurance process are based on the spring term 2011. This is taken in January.

D. Customer Information System (CIS)

The Customer Information System (CIS) is the central repository of personal and biographic details for Department for Work and Pensions (DWP) which also contains certain information from HM Revenue and Customs (HMRC)¹⁰. This includes children whose parents have been awarded child benefit and individuals who are receipt of state pensions. Only aggregate CIS data is currently held by ONS.

In the 2011 Census quality assurance process CIS data are used to assess:

- age/sex estimates for children aged 5-15 and adults aged over 65 at local authority level

Coverage

Take up of child benefit data for under -one year olds is estimated at 96 per cent. Take up increases with age but does not reach 100 per cent¹¹. This coverage is likely to vary across England and Wales. Child benefit is subject to residence conditions¹² and is, for example, only paid to parents of children who are ordinarily resident in the UK. As a consequence it is unlikely to cover short-term migrants.

The CIS only covers individuals who have been allocated a National Insurance Number (NINO) either because they had child benefit paid for them or had applied for one as an adult (usually but not exclusively adult migrants). Some groups are not entitled to have a NINO if they do not have the right to work in the UK and don't have entitlement to claim benefits including State Pension. This will include some international migrants who have retired¹³. As with child benefit, coverage is likely to vary across England and Wales.

An assessment of the coverage of pensions data concluded that there is good agreement between the number of pensions claimants and the mid-year population estimates¹³. This found that coverage was broadly consistent across all government office regions but that there were more notable differences, particularly in some London boroughs.

Accuracy

HMRC and DWP carry out extensive checks to ensure the accuracy, reliability, consistency, completeness and quality of the data. There may be some lags in updating of address information in some cases. For example child benefit claimant information is self-reported and receipt of the benefit (until age 16 years) is not dependent on correct address information.¹¹

Information on the CIS remains current until a death notification is received on to the system. Deaths registered outside the UK will not be automatically updated so individuals who have emigrated may well remain on the system. The number of individuals remaining on the system will reflect geographic variation in emigration patterns. Estimated emigration (total persons) in the year to mid-2010 was much higher from London (125,000) than from any other region (estimated emigration from the South East was 41,400).

Timeliness

The CIS data used in the quality assurance process was extracted at census day.

E. Higher Education Statistics Agency (HESA) data on students in higher education

Higher Education Statistics Agency (HESA) data used in census quality assurance are based on data supplied to HESA by all publically funded Higher Education Institutions (HEIs). The data excludes one private HEI, the University of Buckinghamshire. Data are captured from each HEI's internal administrative systems which include student records, human resources and financial systems¹⁴.

The HESA data are collected for the administrative purposes of the government departments and statutory bodies responsible for higher education policy and funding in the UK.

In the 2011 Census quality assurance process HESA data are used to assess:

- estimates of students age 18 years or over in full-time education
- estimates of students aged over 18 in full time-education by accommodation type (residential or communal)

Coverage

The 2011 Census does not distinguish between higher education students and other individuals in full time-education such as at language schools or at further education institutions (see below). In the QA process the census estimates of students only covers individuals who were aged 18 at the start of the academic year 2010-11. Similarly the HESA data used exclude individuals who were younger than 18 at the start of the academic year and individuals on part-time courses.

HESA data will include short-term migrant students who stay in the UK for less than twelve months. To be consistent with the census usual resident definition, some HESA records have been excluded where individuals are assumed to be short-term migrants. Students are assumed to be short-term migrants if they have arrived in the last year and i) are exchange students with an expected length of study of a year or less (or not known) or ii) are from non-EU countries and have an expected length of study of a year or less. This excluded 93,600 students in total, 14,900 and 78,700 respectively.

HESA data used in the census quality assurance process are based on student's term-time address. As the term-time address collected at the start of the academic year it is inevitable that in some cases term-time address will have changed by census day, March 27th. This is difficult to quantify but would be possible to assess with census records matched to HESA records. It is not possible using 2001 Census data as HESA have only collected term-time address since the academic year 2007-08.

Only individuals on higher education courses (post A-level) are covered by the HESA data used.

Accuracy

Not all student records have a term-time address on the HESA data. Missingness varies across the country between higher education institutes. In the academic year 2011-12 there are 4.5 per cent of records without a term-time address. The University of Kent and the London Business School had missingness of more than 30 per cent. Term-time address has been imputed as part of the preparation for the census QA based on records at the same institution where a term-time address was provided. A similar imputation was carried out when HESA data was used to improve the internal migration component of the annual mid-year population estimates series¹⁵.

Students who live in halls of residence are specifically flagged on the HESA data. Analysis of this flag indicated that in some instances this may not be updated when the student moves into residential accommodation. Some individuals with a hall of resident flag were found to be living at an address with fewer than 10 other students.

Timeliness

The HESA data used refer to the academic year 2010/11. Students start and end date is used in combination to determine which individuals were still students on census day. Similarly, age at census day is calculated using the date of birth provided on the HESA data.

F. Migrant Worker Scan

The Migrant Worker Scan (MWS) is a subset of data from the National Insurance and PAYE System (NPS). It contains information on all overseas nationals (i.e. non-UK citizens) who have registered for and been allocated a National Insurance Number (NINo). Migrants need to register for a NINo to enable them to work, or claim benefits, within the UK. The MWS will only capture migrants aged over 15 years 9 months who wish to work legally or claim a benefit. It shows nationality at date of NINO allocation only so will not reflect any change in nationality after that date.

In the 2011 Census quality assurance process MWS data are used to assess:

- The number of international migrants who moved to England & Wales from outside the UK in the twelve months prior to census day.

Coverage

The MWS does not include all adult migrants, only those who are non-UK citizens that have received a NINo in order to work legally or claim benefits. The extract also contain migrants who may not be residing in the UK. Some migrants may delay registering for a NINo for over a year after arriving in the UK or may never register. Moreover, applications for NINos by asylum seekers will not usually be approved until they have been granted rights to reside in the UK. Groups that are excluded from the

MWS are: UK or dual-nationality migrants, child migrants, migrants who work illegally and adult migrants who neither work nor claim benefits. This last group are commonly spouses of working migrants or students.¹⁵

The MWS does not hold any information on how long migrants stay in the country. Some migrants may arrive in the UK, register for a NINo, and work for a short time before returning overseas. Similarly, a small number apply and are allocated a NINo before entering the UK and then never arrive usually because they are the dependent spouse's of UK nationals resident abroad who are entitled to benefits normally Retirement Pension.

Accuracy

Residential address is recorded when a migrant registers for a NINo at Jobcentre Plus. Subsequent changes in address will only be recorded on NIRS-2, and hence the MWS, if the migrant or the Department for Work and Pensions (DWP) informs HM Revenue & Customs (HMRC) of the change. Anecdotal evidence suggests that DWP are most likely to be informed of address changes for migrants claiming benefits and HMRC for those self-employed and required to pay self employed National Insurance contributions and complete an annual tax return. It is likely that address information for some migrants will be out of date.¹⁵

Assessment of the address information on the MWS indicates that some addresses are not residential e.g. bank, c/o, hotel. Workplace address may not be within the same local authority as residential address.

The ONS assessment of MWS published in 2009 found that a very small minority of records (less than 0.01 per cent) did not have any address information and around seven per cent did not have a postcode. DWP assign local authority geography using postcodes. If no postcode was available, then post town and city was used. If no address information was available then records were randomly allocated to local authorities¹⁵.

Timeliness

The extract of Migrant Worker Scan data used in census QA refers to March 27th 2011.

G. Valuation Office Agency - Council Tax data

Dwellings liable for council tax in England and Wales are registered by the Valuation Office Agency. The Valuation Office Agency (VOA) is a central government agency responsible for banding homes for council tax purposes. It does not set the level of council tax nor collect the money, which is the task of local government. The extract used in census quality assurance includes all dwellings as at September 2010.

In 2011 Census quality assurance VOA council tax data is used to assess the total number of dwellings.

Coverage

The VOA council tax data includes all dwellings in England and Wales.

A particular issue with using VOA council tax data is that it includes those dwellings that are unoccupied for the purposes of census (e.g. holiday homes, second residences, vacant properties, and properties under construction). Council tax data provided directly from local authorities identifies such unoccupied dwellings - where the owner receives a discount if the address is not their main residence. Particular concentrations of second residences are found in Central London boroughs (Westminster, 7,000) and in areas with large numbers of holiday homes (Cornwall, 13,700).

Furthermore, the census definition of a household and communal establishment may differ to the VOA definition of a dwelling in some cases. For example, the census will list one university student hall as a communal establishment, whereas the VOA council tax data may list each flat within the student hall as a separate dwelling. Again, local authority provided council tax data identifies where dwellings are part of a student communal establishment. In Nottingham the locally provided data indicated 2,900 such dwellings.

Accuracy

Information supplied by VOA is generally believed to be accurate, as the local authority must inform the VOA when a property is extended or altered such that planning permission is required.

However, there may be some cases where properties are converted or merged without legal planning permission, causing inaccuracies in the VOA council tax data.

Timeliness

The extract of VOA council tax used in the quality assurance process is taken in September 2010.

H. Armed Forces data (Defence Analytical Services Agency and United States Air Force)

Numbers of UK armed forces personnel used in the census QA process are based on data from the Defence Analytical Services Agency (DASA) and are taken from the Joint Personnel Administration (JPA) system. Data for foreign armed forces resident in England and Wales are collected by the US Air Force. They collate data from RAF Mildenhall (US Air Force), the US Embassy (for the US Army) and the US Navy HQ. Both sources are also used in the annual production of mid-year population estimates¹⁷.

In the 2011 Census quality assurance process armed forces data are used to assess:

- estimates of armed forces personnel by age/sex for each local authority

Coverage

Data from DASA covers UK Regular Forces and includes all trained and untrained personnel. Gurkhas are included but full time reserve personnel, and mobilised reservists are excluded.

US civilians working on US military bases are not included as part of the information collated by the US Air Force. There are currently only small numbers of armed forces from countries other than the US resident in England and Wales, except for armed forces on short term training¹⁷. These individuals will also not be included in the comparator data used.

Accuracy

DASA data supplied refer to where personnel are stationed rather than where they are resident. A residence distribution has been applied to the DASA data to give greater comparability to the 2011 Census. The same approach is used as in the mid-year population estimates, applying a base-to-residence matrix compiled from information on both the workplace and residence of armed forces from the 2001 Census. This approach will be inaccurate not only because the distribution is ten years out of date but also because the instructions given to where armed forces personnel should consider themselves resident differed for the 2011 Census. In 2011 personnel were told to record themselves as resident at their permanent family home whereas in 2001 they were told to record themselves where they spent the majority of their time.

Similarly US Air Force data refers the local authority in which personnel are based rather than local authority of residence. No adjustment has been applied. Inevitably there will be personnel living off base, potentially in a different LA.

Timeliness

DASA data used refer to April 2011 whereas US Armed Forces data refer to March 2011.

I. Further Education Data (Department for Business, Innovation & Skills and the Welsh Government)

The number of individuals in full-time education at further education institutions (FEIs) within England is supplied by the Department for Business, Innovation & Skills (BIS) and by the Welsh Government (WG) for individuals at FEIs in Wales.¹⁹

Data from BIS are extracted from the Individualised Learner Record (ILR). The ILR is a collection of data about learners and their learning that is requested from providers in the FE and Skills sector.¹⁸ Data from WG are extracted from the Lifelong Learning Wales Record (LLWR) to which Welsh FEIs also provide annual returns.

In the 2011 Census quality assurance process FE data are used to assess:

- estimates of students age 18 years or over in full-time education

Coverage

The FE data used in the QA will only cover government-funded learners – those funded by the Skills Funding Agency/Education Funding Agency. Information is not available for learners in further education providers who do not receive government funding.

This data does not include learners studying further education courses in Schools or Higher Education Institutions however it does include those studying HE courses at Further Education Institutions.

A wide variety of institutions are covered by the FE data used. These include general further education colleges (including tertiary colleges), sixth form colleges, special colleges (agriculture and horticulture colleges, art, design and performing arts colleges and specialist designated colleges), private providers (but government-funded learning) and other providers such as local authorities.

The ILR data covers learners studying full-time courses in the Education and Training provision type only. The data does not include information on learners who are studying full-time for part of the year or those learners on Apprenticeships, Workplace Learning or Community Learning courses.

Accuracy

Data for both England and Wales are based on where individuals study rather than where they are resident. This will be inconsistent with the census where individuals will be at their term-time address. It is not possible to identify how many individuals study at an institution in a different local authority to the one in which they live. This is likely to be a particular issue in London where individuals can most easily travel between boroughs.

Age has been calculated on March 27th and so will be consistent age recorded on the census form.

Timeliness

The data provided for England and Wales refer to full-time learners enrolled on FE courses as at 27th March 2011 only.

J. Local Authority Provided Council Tax data

Council tax is the main source of locally raised income for many local authorities. Each local authority is responsible for the collection of Council Tax including the administration of uniform exemption and discount codes. A key recommendation from the Census 2011 Quality Assurance Studies was that local authorities should be asked to provide aggregate Council Tax data with this additional exemption and discount information to provide counts of occupied, unoccupied and second home addresses.²⁰ The aggregate Council Tax data received is at postcode or ward level.

In 2011 Census quality assurance VOA council tax data is used to assess estimates of the number of occupied and unoccupied addresses.

Coverage

As stated above for Valuation Office Agency (VOA) data, locally provided council tax data covers all dwellings.

Exemption and discount information identifies dwellings which are unoccupied either because they are vacant or because they are used as a second residence. Again as stated in the previous section on VOA data, the number of second residences are particularly high in central London and in areas with large numbers of holiday homes (such as Cornwall).

No exemption or discount information is available to distinguish between addresses which are occupied by people who are usually resident and addresses which are occupied by short-term migrants.

Accuracy

The accuracy of the Council Tax data, as noted for VOA data, is high. However detailed assessment of Council Tax data provided by the ten local authorities involved in the Census 2011 Quality Assurance Studies identified three quality issues. These issues were that (i) some postcodes were invalid, (ii) some postcodes were outside the geographic boundaries of the local authority, and (iii) there were inconsistencies between the definition of a single dwelling. This third issue covered student halls of residences which contained individual flats. In some cases these were counted as single units and in others as a large number of individual units.

Timeliness

Data was requested to refer to March 27th 2011. In a small number of instances councils were not able to extract data at this point. In these cases the data refer to a number of days or weeks after March 27th.

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