2021 Census Statistical Design (Coverage Strategy)

This paper outlines draft work as presented to MARP in December 2020. A more up-to-date version is available on ons.gov.uk

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Contents

Summary

The overall aim for the 2021 Census is to count everyone, in the right place and for all relevant questions to be accurately completed. However, recognising that this aim won't be achieved fully, a statistical design is in place to ensure there is a scientific basis for optimising the count and then to estimate/adjust for individuals who were not counted or were counted more than once.

This paper sets out the overall statistical design for the 2021 Census in England & Wales. The design has three key phases:
- Design/build: preparation ahead of the census;
- Monitor/counter: identifying where it is necessary to take corrective action during the operation itself; and
- Process/estimate: processing of census count data and combining with other sources such as the Census Coverage Survey and administrative data to create a final estimated database representing the population of England & Wales.

Figure 1 – Census Statistical Design Phases
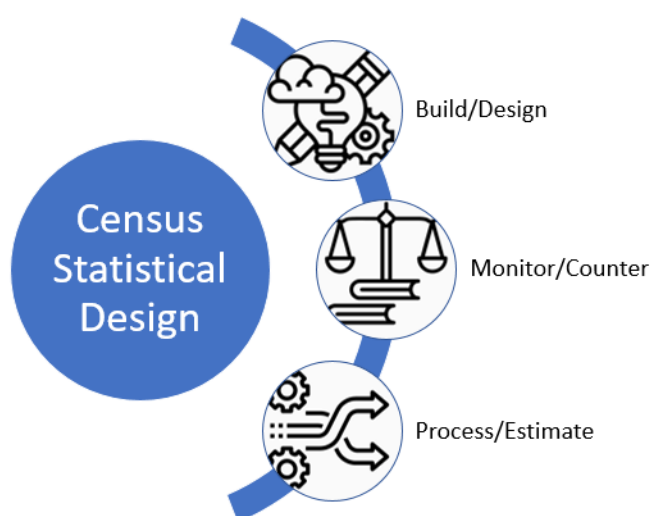
The design is based around achieving a number of high-level quality objectives. These are:

- nationally accurate as measured by a confidence interval of +/-0.2%, with bias less than 0.5% for England and Wales

- high-quality locally with 95% confidence intervals for all local authorities within +/-3%

- minimal variation of response within local authority area

- response rate targets of 94% nationally and 80% locally in all local authorities, to support these quality levels

- publish first estimates from the census within a year of census day with detailed characteristics published within two years and followed by further analysis and releases.

As part of the build/design phase, ONS are developing a statistical design to meet the high-level quality objectives. This includes methodologies for coverage estimation and adjustment, quality assurance and the production of high quality, accessible outputs..

This paper provides further detail on the three phases of the design.

A. Design/Build – Before Collection
- Ensuring that a sound address frame is in place as the basis for making initial contact with all households and communal establishments
- Rigorously tested questions that can be answered through an electronic questionnaire which minimises respondent burden (with a tested paper questionnaire also available)
- An evidence-based design to optimise response across the population of England & Wales based on an understanding of administrative data, 2011 Census, 2017/2019 Census test/rehearsal.

B. Monitor/Counter – During Collection
- Consistent management information to monitor census returns
- Quality assurance processes
- An automated mechanism (the Response Chasing Algorithm) which directs interventions – covering field visits, reminder letters and wider publicity/communications. Administrative data is used to optimise field efficiency and to be able to understand field

C. Process/Estimate – After Collection
- Cleaning of data including removing duplicates and imputation of incomplete characteristic fields.
- Coverage estimation of individuals/households where a census return was not completed using the Census Coverage Survey (CCS) and imputation of missed households. Administrative data will be used as part of the coverage strategy as detailed in this section.
- Rigorous quality assurance to identify potential quality concerns through aggregate level validation against existing administrative data and survey sources.
- Producing accessible outputs that deliver maximum value to our users whilst protecting the identity of individuals through robust statistical disclosure control methods

Recent international experience has demonstrated just how challenging taking a modern census can be. The New Zealand census in 2018 had a much lower than expected response rate and in the Canadian census in 2016 there were localised field issues resulting from

natural disasters. In both cases it was necessary to make greater use of administrative data than initially planned.

Through each stage of the 2021 Census statistical design ONS are planning far greater use of administrative data than in any previous UK census. This paper sets out the three stages of the statistical design as well as planning to mitigate a range of potential scenarios to allow us to respond quickly to challenges. This paper provides further detail on further development of the coverage strategy and a summary of the overall outputs approach.

The summary below provides an overview of the phases of the design and the statistical aspects covered.

Figure 2 – Phases of Statistical Design

	Phase	Statistical Design	Statistical objectives	Mitigating actions
Minimising undercount	Design/Build	Questionnaire design, address list, field simulation	Minimise respondent burden, ensure all addresses are identified and response modelled	International collaboration on lessons learnt, comprehensive user research, 2017 Census, 2019 Census Rehearsal, 2020 Address Check. Strategic engagement plan to identify groups likely to be difficult to count with amendments to standard design e.g. caravan parks and gated communities (in collaboration with local authorities, community groups and using administrative data)
	Monitor/Counter	Management information/business intelligence, Response Chasing Algorithm, Quality Assurance	Monitoring, identifying and responding to live issues	2017/2019 Test/Rehearsal operations, international collaboration, modelling capacity and capabilities under a range of scenarios. Systematic live identification of response issues based on comparison of census returns, modelled response and 2011 Census/administrative data. Directing reminders, field and comms to optimise response. Targeted interventions for hardest to reach groups.
Estimating and adjusting coverage	Process/Estimate	Census Coverage Survey, data cleaning, coverage estimation and adjustment, quality assurance, accessible outputs	Invoke planned bespoke adjustments	International collaboration census experience, scenario based approach to planning adaptations of statistical design. Comprehensive quality assurance of census estimates against administrative data (and other sources) to identify need to amend standard design. Methodology and administrative data in place ahead of processing operations.

Introduction

All censuses have the ambitious aim of counting everyone, in the right place and all relevant questions to be accurately completed. This challenge is becoming increasingly difficult as society becomes more complex and response rates to both surveys and censuses fall. Unlike many other countries who undertake a traditional census, the UK census will produce estimates which represent the whole population (rather than a count of people who responded).

Working in close partnership with the Northern Ireland Research and Statistics Agency and National Records for Scotland, ONS have developed a statistical design for the 2021 Census which provides a sound scientific basis for the optimisation of response and coverage adjustment (estimating for individuals did not respond or were double counted).

This paper sets out the end-to-end statistical design from the establishment of a sound address register to the implementation of the coverage strategy and outputs production. The design is based around achieving the high-level quality objectives:

- nationally accurate as measured by a confidence interval of +/-0.2%, with bias less than 0.5% for England and Wales

- high-quality locally with 95% confidence intervals for all local authorities within +/-3%

- minimal variation of response within local authority area

- response rate targets of 94% nationally and 80% locally in all local authorities, to support these quality levels

- publish first estimates from the census within a year of census day with results with detailed characteristics published within two years

This paper sets out the three main phases of the design. These are design/build, monitor/counter and process/estimate. Reference is made to where administrative data is used in each stage of the design as this is a fundamental development of the 2021 Census, building on learning from 2011 and the research that has been carried out across ONS over the past decade.

International experience has also been an important consideration in the development of the design. ONS has worked closely with other national statistics institutes who undertake a traditional census – most notably New Zealand, Australia, Canada and the United States. This has led to the development of a range of scenarios to help us prepare for what might be required across the UK.

The final section of the paper sets out how administrative data could be used to respond to potential scenarios which may impact on the robustness of estimates at either a local or national level.

Census Statistical Design

Design/Build

Extensive research has been undertaken to develop and evaluate methods and approaches that will optimise Census responses in order to meet our overall quality objectives. Alongside this research, the 2017 Census test and 2019 Census rehearsal have provided opportunities to evaluate the effectiveness of the statistical design.

ONS have established an External Assurance Panel chaired by Sir Bernard Silverman to provide independent scrutiny of all aspects of the statistical design. The panel is drawn from a range of academic disciplines and members have experience in statistical methods and are users of census, survey and administrative data.

A – Address, Questionnaire, Wave of Contact

Essential components of census preparation are identifying the households and communal establishments to be contacted, the Census questionnaire and the strategy for reminding people to respond if they haven't already done so.

Address

Construction of a sound address frame is fundamental to the 2021 Census which involves the posting out of initial contact letters with an invitation to take part online for residential addresses and field visits for communal establishments.

The 2021 address frame is based on the Ordnance Survey AddressBase product but will benefit from findings of a 2020 Address Check and is supplemented by ONS (for example to include additional information on student room level addresses). Administrative data are at the core of AddressBase, including the Postal Address File, the Local Land and Property Gazetteer and Council Tax data.

An address check will be carried out in 2020 as part of the process of ensuring that the frame is as complete as possible. This includes both clerical checking of addresses (using administrative sources and internet research) to supplement a field address check across the country. This will help to confirm the existence of addresses and will improve the efficiency and effectiveness of the field operation by avoiding unnecessary visits to addresses which no longer exist and confirming address structures where they do.

Questionnaire

Development of the census questionnaire has incorporated questions from the 2011 Census as well as social surveys. Questions have been removed where administrative data can provide a direct replacement (number of rooms). Where new questions have been identified through consultation with users (veterans, sexual orientation, gender identity) or have

required change, behavioural insight methods and question testing have been undertaken to minimise burden while ensuring fit for purpose statistics can be produced.

New questions are only added where our testing shows strong user need that cannot be met from other sources. These questions are then subject to rigorous acceptability testing to ensure they do not compromise the core response targets.

The 2021 Census will be a predominantly digital census. To ensure that the online completion journey minimises burden across a range of users, a series of personas were identified around which online functionality was developed. While ONS plan for a planning for a 75% online response rate, a paper questionnaire will also be available for those who are less confident or able to complete online. All response objectives are based on overall response regardless of the mode used.

There is a strong user need for income statistics alongside the full range of Census variables. In 2021 administrative data on income will be linked to census data to answer this user need for the first time.

Wave of Contact

Statistical modelling has been central to the development of planned staging of contact with the public during the operation. A Field Operations Simulation (FOS) uses response profiles from the 2011 Census, the 2017 test (propensity to respond on paper and reminder effectiveness) and the Labour Force Survey (field contact and success) to model patterns of response across different population areas and types. A 'wave of contact' has been developed using the FOS to clearly stage the phases of the census operation and the Census Coverage Survey (CCS).

It is through the wave of contact that the staging of the field operation will be delivered to optimise response recognising that while a large proportion of the population will respond without significant additional prompting reminder letters and field visits are essential. Effective training and messaging are not part of the statistical design but will be fundamental to achieving field effectiveness.

ONS plan to use administrative data to improve the efficiency and effectiveness of the field operation. As an example, administrative data such as Council Tax (and potentially utilities data) will be used to identify second homes ahead of the operation to ensure follow-up visits can be prioritised to main residences. Intelligence from the 2020 address check will also be used to improve field efficiency.

Findings from the 2019 rehearsal have been incorporated into the wave of contact model. This includes findings from both Northern Ireland and Scotland. For example, in Northern Ireland a postcard prior to census day was successfully used to make households aware that the census was happening in their area. ONS have introduced a postcode into its design for 2021.

As set out in figure 3, the wave of contact model covers:

- Communications stages (including the public awareness campaign, changes to messaging over time and the running of tv, social media, paid online and radio)
- Public support stages (contact centre, assisted digital, eQ, CCS support)

- Paper services stages – post out (awareness postcards, initial contact letter, reminder letters)
- Field operation stages (three tranches of where field staff make direct contact with non-responding households, non-compliance direct contact, CCS field operations)

Figure 3 – Census 2021 Wave of Contact Model
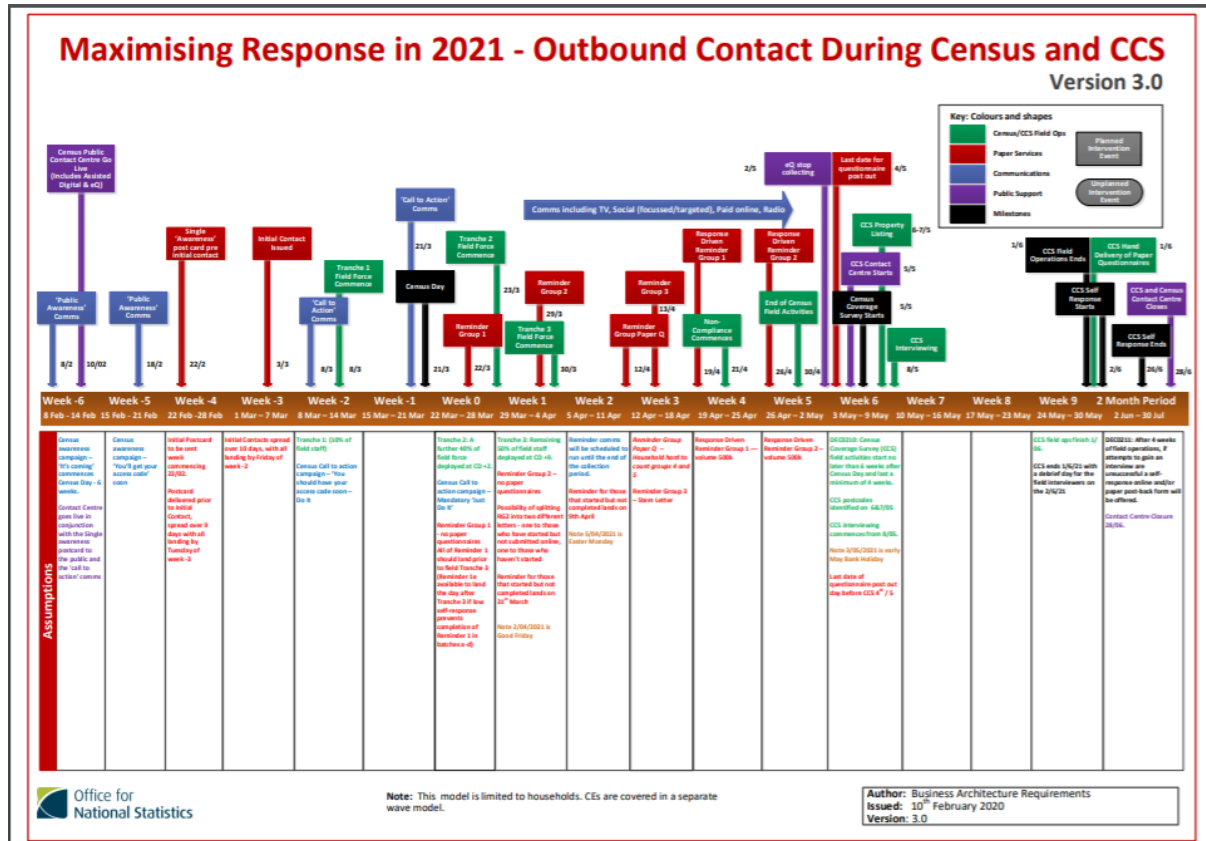
B – Geographic Classification, Digital and Willingness Indices

There will inevitably be variation in how able individuals are to respond online and how willing individuals will be to respond overall. Two indices have been developed to categorise small areas on both dimensions. This approach enables different strategies to be used to optimise response across the country.

Both indices have been developed making extensive use of administrative data as well as learning from the 2011 Census and other ONS social surveys.

Digital Hard to Count

Experience from the 2019 Census rehearsal and from other Census taking countries suggests that an online response rate of 75% can be achieved in 2021. Variation in access to and confidence in digital completion mean that parts of the public will still want to complete a paper questionnaire. A small area geographic classification – the Digital hard-to-count Index has been developed to identify areas where households should be offered paper first. It will also be used to help guide planning of online completion support.

The index is based on administrative data from OFCOM on broadband connections and the Driver and Vehicle Licensing Agency (DVLA). Online driving licence applications data are used as a proxy for identifying those areas particularly likely to be less confident in completing the census online. Annual extracts of data mean the index can be updated and maintained beyond 2021.

Willingness Hard to Count

For a variety of reasons there will be variation in the publics willingness to respond to the 2021 Census. Minimising variability is an essential component of the quality criteria defined for success. Building on the hard-to-count index developed in 2011 a Willingness hard-to-count Index has been developed to produce a small area classification of where households had not responded to the 2011 Census by the start of field follow up operations. It uses a range of census characteristics to classify areas into five levels of willingness and has been updated with administrative data.

The index will be used throughout the operation phase but is also a fundamental part of the coverage strategy (discussed further below).

C – Socio-Demographic Engagement

Alongside geographic classification, the statistical design also includes the identification of socio-demographic response types. By identifying these groups (who do not fit neatly into geographic areas) engagement activity and messaging can be tailored.

Target Action Groups

There are socio-demographic groups which UK and international experience has demonstrated respond to targeted approaches. This includes community engagement for community groups (such as religious or ethnic groups) and bespoke enumeration approaches for people living in certain types of address (such as gated communities or marinas).

A list of Target Action Groups and adaptations to the standard design is provided in the annex to this paper.

Market Segmentation

In preparation for using effective messaging and media channelling for communication activities in 2021 a market segmentation analysis has been carried out. This work identified persona groups through which different combinations of messaging and media channelling will be used. Segmentation is based on existing analysis developed by Experian using 2011 Census and other data.

Community Engagement

Engagement with community groups was recognised as a real success of the 2011 Census. Community engagement managers and community advisers will work with community groups ahead of the census operational period to address concerns, build support for the census and to identify opportunities to promote the census within the community in 2021. During the operation both roles will also help community members complete their census.

Monitor/Counter

The census operational period is complex with numerous activities taking place simultaneously. As the operational period is short it is important to be able to monitor and take corrective intervention quickly to be able to meet quality targets. The statistical design of the operational period provides tools and methods to both monitor and counter.

Response Chasing Algorithm

During the operational period ONS will monitor return rates daily. These will be monitored against expected return rates from the Field Operational Simulation (FOS). Where actual return rates fall short of expected return rates a Response Chasing Algorithm (RCA) will provide recommendations on the most appropriate combination of additional field visits, reminder letters and communications interventions.

The RCA is designed to optimise response in order to achieve quality objectives for both overall response and variability. Minimising variability in the RCA makes use of a Field Prioritisation Algorithm (FPA) to target small area interventions within a local authority or hard to count group. During the 2019 Census Rehearsal the RCA drove daily decision making, in particular identifying where there was a need to implement overtime, move field staff between areas and the requirement to introduce a surge team to reduce response variability in Hackney.

Quality Assurance

Experience in the UK and internationally has provided a range of examples of where parts of census process can go wrong during the live operation. ONS has developed a strategy of 'impact mapping' these known potential issues and has worked with experts from across the operation to identify where there is the potential for errors to occur.

Quality assurance processes have been developed to monitor and counter these situations. Where a risk has been identified diagnostics have been developed to monitor the risk, mitigations established, and contingencies identified. As an example, the address frame will both miss addresses and include addresses that no longer exist. Impact mapping has been used to develop metrics for monitoring both situations.

Management Information/Business Intelligence

A key learning from the 2019 Rehearsal was the need to have consistent and adaptable management information available across the end-to-end design. Presentation of management information and business information is essential to be able to monitor the operation overall. The statistical design of MI and BI provide a series of tools using GSS best practice principles on data presentation.

In 2021 ONS will be able to monitor a far broader range of interconnected elements of return rates than previously. As an example, monitoring field effectiveness – contact rates, field visits, hours worked and return rates. Understand these patterns against expectations, local variation and change overtime will provide a far more complete picture of the collection operation.

Expectations will not only be against return profiles. ONS will make use of 2011 Census data, population estimates and a range of administrative data (using the research carried out in developing a transformed social statistics system) to understand patterns of low response amongst population groups and communities. This work will be pivotal in identifying areas for

additional community engagement and tailored comms messaging to raise response during the operational period.

Process/Estimate

Data Cleaning

Once collected, census records are passed through a thorough validation and cleaning process. This involves removing invalid records and responses, removing duplicates and to imputing responses to mandatory questions where they have not been completed by a respondent.

Online validation built into the electronic question will improve overall data quality and reduce the time taken to clean data. However, this is not the case for data captured on paper. Majority online data capture will mean far fewer scanning errors as far fewer questionnaires will be scanned.

Administrative data are used in the editing and imputing of records. Where an individual has not completed date of birth the Patient Register Data (PDS) will be used alongside census data to narrow the donor pool used to impute age. The PDS date of birth will not be used directly.

Census Coverage Survey (CCS)

The CCS is central to the coverage strategy for the 2021 Census. Taking place six weeks after census day the CCS provides data to enable an independent estimate of census coverage. Key features of the survey are:

- A postcode sample design accounting for the hard-to-count (willingness) index, covering all local authorities.
- An address listing exercise undertaken by CCS field officers independent of the address frame used in the main census
- An overall sample of 350,000 households (about 1.5% of postcodes) in England & Wales
- Face to face interviews rather than self-completion

Importantly the CCS does not sample large Communal Establishments (more than 50 bedspaces). A separate coverage approach is taken for large communals (as detailed below).

Under and Over Coverage Estimation/Adjustment

Census and CCS records are matched using automated algorithms and clerical resolution to identify those individuals and households on both the Census and CCS, the CCS only and the Census only. A Dual-System Estimation approach by Hard-to-Count and key demographic characteristics estimates the number of households and individuals missed in the census. This will include an adjustment for over-coverage. These estimates are used to adjust the census database by imputing households and people to produce complete population statistics for England & Wales.

Coverage estimation only estimates basic demographic characteristics (age, sex, ethnicity) of those individuals who have not responded to the census. It is necessary to run a further round of item imputation to provide a complete database.

Final census estimates will have confidence intervals as a measure of uncertainty associated with using a CCS sample. The overall quality objectives for the census are designed to achieve population size estimates with sufficiently small confidence intervals to be fit for purpose.

Administrative data are used to estimate the number of individuals missed in large Communal Establishments (CEs). ONS will use aggregate administrative data directly to adjust large CEs including student halls of residence, care homes, prisons and military bases.

Administrative data are particularly accurate for under 1's (compulsory birth registration and the level of interaction with the NHS), where the census can face particular coverage issues. Where coverage adjusted estimates from the census are lower than the administrative data ONS will control to these counts at Local Authority level. This is likely to be a localised issue but an assessment will be made across England & Wales.

To account for any lack of independence between the Census and CCS the coverage strategy will make use of an Alternative Household Estimate (AHE). The AHE is an estimate of the number of occupied households. It is based on addresses where a return was submitted, evidence where an address did not a complete a return but where a field officer indicated that an address was occupied and administrative data (including council tax records). This will be used to indicate and adjust where there is evidence that the number of estimated households through dual-system estimation was too low. ONS are looking into the viability of using additional data sources as part of this work. This includes utilities data which could be in addition to the approach developed.

Quality Assurance

Processing and estimation can introduce further risks to final data quality. Impact mapping has again been used to identify risks and guide the development of diagnostics, mitigations and contingencies.

ONS will undertake a comprehensive validation of final estimates. In order to be published as National Statistics, ONS must demonstrate the consistency and comparability of 2021 Census estimates through comparison with administrative and survey sources. A network of topic experts developed within and across the organisation will be part of the validation process.

Direct, aggregate level comparisons will be made against administrative data to give users confidence in census estimates at national, local and small area levels. Sources compared include ONS Mid-year estimates, Council Tax, Patient Demographic Service, School Census and Tax/Benefit data. ONS will also compare the Census estimates to the latest available Ensset of Administrative Based Population Estimates (ABPEs). The ABPEs will be an iteration of the ONS linked population estimates based on signs of activity across a range of administrative sources, referenced to the Census day. These estimates and the research that that went into their compilation represents a major step forward in the understanding of population present on administrative data as well as the 2011 Census. Despite this research there remains inherent uncertainty with administrative data – in particular whether individuals current address is as up-to-date as is needed in the census where local level inaccuracy would result in complex bias.

The coverage strategy includes a national level validation stage. At this level, local variation in where individuals are resident is not a factor (other than movement to/from Scotland and Northern Ireland). In both 2001 and 2011 a national adjustment was made using

comparisons to administrative data, change since the previous census, evidence from the Longitudinal Study and demographic analysis (in particular sex ratios). ONS plan to undertake a similar exercise in 2021 and are preparing the evidence base for a national adjustment if required.

Further Development of the Coverage Strategy

The overall coverage strategy has been developed to produce robust estimates on the assumption that quality targets will be met.

ONS have developed a coverage contingency strategy which is integrated into the process/estimation phase. The strategy makes greater use of administrative data than the standard design as set out above and is based on a number of pre-defined scenarios.

The scenarios include:

- Evidence of missing individual questionnaires (as found in the New Zealand census)
- Evidence of localised census count issues (as found in Canadian census)
- Evidence of broader census count issues (such as missing the overall census quality targets)
- Evidence of population specific count issues (such as for an ethnic or community group)

If these scenarios occur there is likely to be an impact on the time taken to process estimates and to produce final estimates. Preparation is essential to minimise any potential delay.

Development of mitigation strategies involves preparation of administrative data, methodological research integrated into the overall statistical design, governance arrangements and resource planning. ONS have established sub-group of the International Census Forum to guide this development and will host a session on the overall statistical design and mitigating actions in Autumn 2020. The challenge session will involve census experts from New Zealand, Australia and Canada as well as the other UK Census Offices.

Implementation of a mitigating action will be rehearsed as part of the Processing and Outputs Rehearsal in Spring 2020. Two data models will be used integrating both evidence from the census and from administrative data as set out below.

The address centred approach brings together a range of administrative data ahead of census. This will be used in the creation of an address centric ABPE and could be used for the scenarios set out on the right.

Figure 3 – Address Centric Combined Intelligence Datastore (ACID)
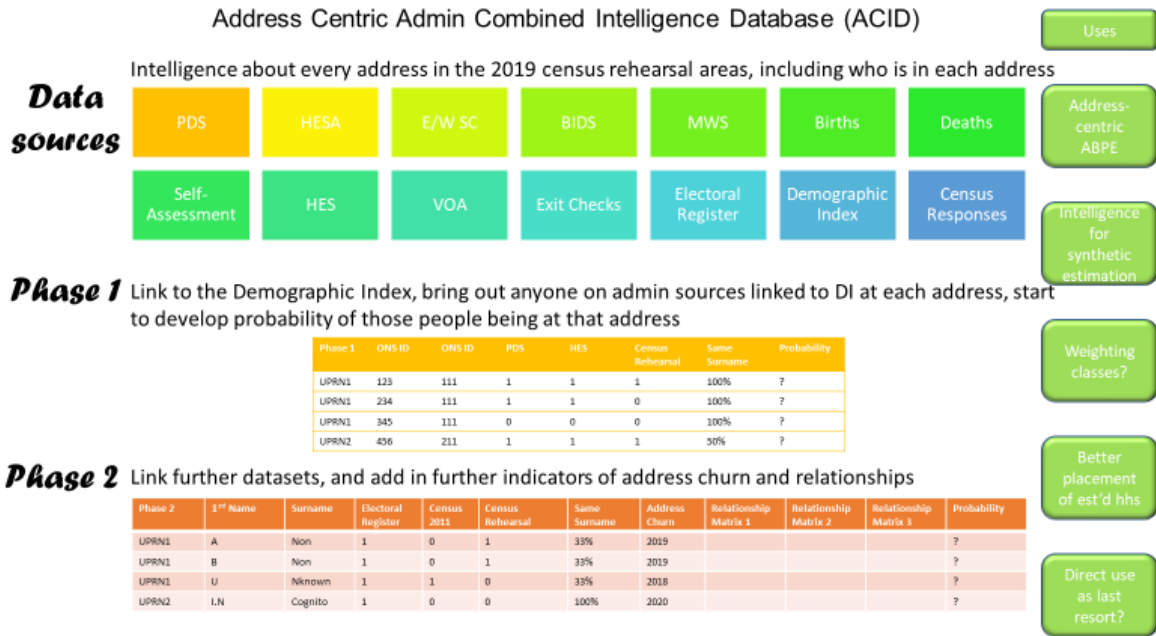
The Census Intelligence Datastore (figure 4) brings together information on addresses compiled during census from Response Management (RM) and from the Field Work Management Tool (FWMT) linked to the address frame. Administrative data are also pre-linked to the framed. As in figure 3, the potential areas for use are set out on the right.

Figure 4 – Census Intelligence Datastore
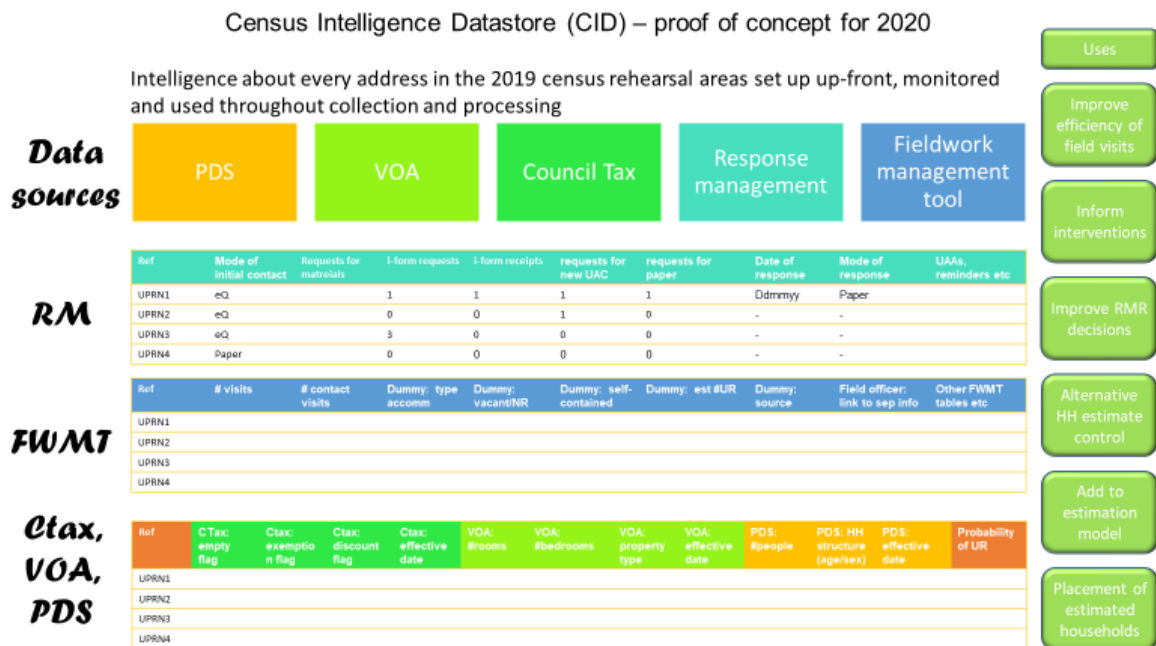
Outputs

The cost and effort of the census is only worthwhile if the benefits are realised by users having access to high-quality statistics to inform decision making, resource allocation, service planning and delivery.

Outputs are designed to meet users needs for the information, but also to protect the confidentiality of the information provided by respondents.

There are 3 main elements of designing data outputs:

Topic detail: The level of detail provided for specific variables, and the number of variable cross-classified into a single output (for example Age By Sex By Ethnicity)

Geographical Detail: The level of geography that a particular output is made available for. Clearly the higher the geographical area, the more people are likely to be included in the output and therefore less risk of disclosure

Statistical Disclosure Control: The method and level of disclosure control applied to the data to reduce the risk of disclosing confidential information. The methods include record swapping to create uncertainty, and perturbation of numbers to create noise in the data particularly focused on reducing the risk of identifying individuals through differencing of multiple data outputs.
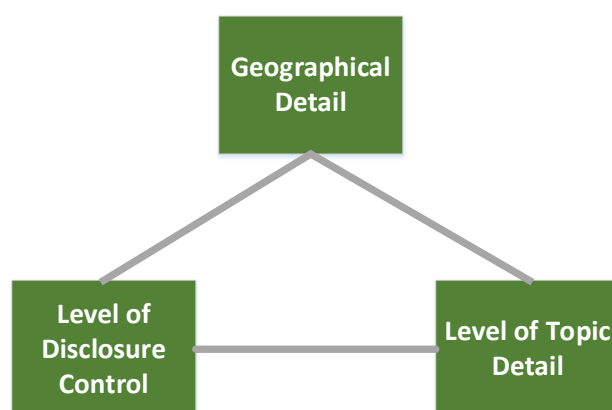
These 3 elements are applied as a set inter-related considerations when designing outputs, to ensure the most appropriate balance of meeting users needs, minimising the risk of disclosure and maintaining the utility and accuracy of the statistics.

For the 2021 Census with the introduction of Flexible Outputs, and the automation of the disclosure control methods, the consideration of these elements in the design of all the more

important in determining the level of topic and geographical detail provided into Flexible Datasets.

Annex – Target Action Group (summary – top 17 categories only)

Target Action Group	Issue	Design Adaptations
Illegal Immigrants	Potential issues accessing the internet and completing the form. Can't respond because we can't find them and may not want to be included	Clear messaging via website and field staff stating that ONS will not share personal data with any other government department and that there is no impact on their immigration status. Field staff training. Engagement with organisations across the sector that work with illegal immigrants.
Rough Sleepers	Issues with accessing the internet. Can't count them because we can't find them.	Potential night-count using approach already tested and used by Ministry of Communities and Local Government (MHCLG) and Welsh Government (WG). Will be holding virtual event with the sector to identify how best to do this
Gypsies/Travellers	Imputation rates 2011 Census. Can't respond because we can't find them	Community engagement managers working with this group. Traveller sites will be visited by trained communal establishment/special population groups officers to deliver paper questionnaires and support completion. Engaging nationally with representative organisations and key intermediaries.
Black/African Ethnic Group	Imputation rates 2011 Census	Community advisers and community engagement managers working with this community. Engaging nationally with representative organisations and inter-faith groups.
Black Caribbean Ethnic Group	Imputation rates 2011 Census	Campaign targeted via youth radio and engagement with youth groups. Specialist media campaign. Community advisers and community engagement managers working with this community. Engaging with representative organisations and community groups
Somali Ethnic Group	Imputation rates 2011 Census	Community advisers recruited to work specifically with this community. Engagement with representative groups nationally and locally and with key intermediaries.
Bangladeshi Ethnic Group	Imputation rates 2011 Census	Community advisers recruited to work specifically with this community
Roma	Difficult to engage in previous Census	Tick box now exists on the questionnaire, facilitating

		identification. Traveller sites will be visited by trained communal establishment/special population groups officers to deliver paper questionnaires and support people in completing their forms. Target group for Census engagement manager. National engagement with representative organisations and key intermediaries.
Short-term Migrants	Imputation rates 2011. May not think Census applies to them	Clear guidance on the website and on the questionnaire about who should fill out the form. Targeted through secondary media campaign. Field force training and messages on who should be included.
People in Multi-Occupancy Dwellings	Imputation rates 2011. Potential for within household undercount	Targeted through specialist media. Availability of individual forms. Field force training and messaging.
Students in Halls of Residence	Low engagement for some and may assume they are covered on parents form	Targeted through specialist media and student-focused campaign, engagement through university and private halls management. Clear messaging on web help and on questionnaire about who should be included and at which address. Engagement with representative organisations.
Chinese Ethnic Group	Imputation rates 2011 Census	Community advisers working with this group. Translation materials available. Engagement with national representative organisations.
HE Students not in Halls	Imputation rates 2011 Census	Engagement through student focused media campaign and engagement with universities, field staff training.
Homeless (not rough sleeping)	Difficult to find	Completion activity supported at Night Shelters and Day Centres. Engagement with key third sector organisations.
Young Adults (15-34)	Imputation rates 2011 Census	Targeted media campaign, community engagement working with youth groups.
Beds in Sheds	Difficult to find	Research using administrative data, address check and instructions to field officers
People in Asylum System	Potential issues accessing internet and may not think Census applies to them	Paper questionnaires hand delivered by communal establishment officers. Clear guidance on who should be included and clear messaging that personal information will not be shared with anyone else or any other government department. Engagement with organisations working with this group.